CROSSING THRESHOLDS:
BLENDING BOUNDARIES

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Table of Contents

Abstract

Urban boundaries exist in multiple forms. Interaction across these boundaries is typically unseen. Many forms of current architectural design reflect this isolated and individualistic feeling. Many contemporary buildings tend to be self-centered and seclude themselves from the rest of the urban environment in which they exist. One goal of the project is that the blending of boundaries will ultimately create a network of human interaction. Exploring the boundary and threshold conditions of building to ground, inside to outside, and adapting them to the surrounding context, will reveal new relationships that may connect people to the environment, community, and city. A primary interest is on the connection between natural landscape and architecture which attributes empty spaces to the conventional understanding. The project hopes to challenge this relationship to create new links in site design that embraces the user and surrounding context.

These relationships will become activated by human intervention within a new system of boundary strategies. Thus, a new form of identity can be conceived that allows for a community that can be shared with others. Using thresholds to create an arrangement of spatial layers will add to this identity. Thresholds are where transformations begin and where an awareness of interaction takes place. This concept works in conjunction with blending boundary conditions. The goal of this project is to challenge our current way of designing to create a new system of unification that engages people and buildings in an urban environment. Blending urban boundaries and crossing multiple thresholds will form new relationships, but also respond to the need for individuality and identity.

Conventional boundaries in architecture limit the amount of interaction that takes place. Architectural design can be used to create new relationships within this condition and thus re-connect the community. For example, a boundary may exist where multiple building types struggle to create a network of interactions. The relationships of inside to outside space and building to site also create boundary circumstances that are frequently overlooked. Being able to identify these relationships will allow for a new design that challenges the conventional techniques of site design and create new forms of adaptation. The ideal site conditions for increasing the amount of interaction would include several elements. It must present a situation where pedestrian and building interaction is not occurring. It needs to be located adjacent to multiple building types and should avoid areas that are full of vacancies and abandonment. An established base of density will help to promote blending boundaries to create human interaction. Contextual boundaries should be in proximity to the core site to add to the exploration of generating interaction. Incorporating multiple pieces of property that are defined by streets and sidewalks needs to be considered. These streets and sidewalks form defined boundaries that contain the building and people within them. The ability for the program to reach out to available nearby sites beyond the "first phase" is another necessary circumstance to permit an expansion of program and green spaces along with the ability to create layers of thresholds.

A building's program should physically interact with its surrounding context, so blending multiple defined programs is necessary. The goal is not to create a design that forms boundaries in itself, but rather opens up new relationships for humans to interact with each other and the rest of the community. Exploring the relationship of building to site, inside to outside, and private to public, the programmatic function of a building must commit to engaging people in a society. Focusing heavily on these relationships creates awareness of the environment and on interaction networks. Using thresholds to transform the urban environment by creating a system of spatial layering will ultimately help blend these boundary conditions. Certain activities may foster the blending of boundaries. A primary focus that symbolizes our technological world culture would be the creation of an Technology Campus. Programmatic elements would include a Technology oriented business incubator, a Interactive Technology learning/research center, a convention center, numerous galleries, and a hotel. The empowerment of technological space in today's world is a mandatory principle. A master plan scheme that spreads in multiple directions and includes these program types will promote a blending scenario. Combining these programs will create a new relationship among city centers that aims at engaging people and allowing for interaction without losing our sense of individuality.

Many current architectural designs have taken on characteristics such as isolation, loss of identity, and self centeredness when portrayed in urban environments. When seen as an individual entity, the architecture may be successful and meaningful, but this tends to be rare in an urban context. Cities are more than just architectural interventions. The inclusion of public spaces provides necessary areas for interaction to occur. Moments when people interact and adapt to their environment promotes the use of a space and a reason to explore the surrounding context. This exploration allows for a blending of contextual boundaries and the ability to challenge typical threshold conditions by confronting the inside/outside relationship and a building's relationship to the ground. These conditions result in new architectural interventions that maintain their own identity yet blend with public spaces that overlap into a unifying system of movement and inclusion.

Nature and culture may be thought of as contradictory, though they are linked to one another by the ecology of the human environment. Culture can be viewed in the context of the surrounding social and physical realm that has evolved through global changes in technology, religion, and life style. Julian Steward states his definition of cultural ecology as being "the study of the processes by which a society adapts to its environment"[1]. He explained how a culture and its institutions should be analyzed as environmental adaptations in which the environment encompasses a broad range of variables. A cultural core, which Steward states as being a combination of cultural features, intercedes with both humans and the environment. These features, such as the political system and technology, are basic elements for an economy to survive and grow. This might in turn shape other cultural features such as social organization that begins to emphasize independency rather than interaction.

Modern culture has developed as a result of nature's path, both in the natural and manipulative sense. This interaction has brought about effects that can be seen across the world. From the destruction of natural habitat for farm land and industrialization to the transition of that same farmland into mass inefficient sprawl developments that leads to global warming, the effects of human culture and activity have touched nearly all

expanses of the earth. Urban environments are drastic examples of the evolution of human culture. Small towns and villages have erupted into world cities today due to an ever increasing population. This leads to the destruction and abandonment of the natural environment. Today's trends try to revitalize natural conditions by creating artificial implications of nature, thus reflecting what once was prevalent, but now is obsolete. The distinction of this cause and effect relationship has caused an obvious disconnection between the built environment and natural landscape. Though this separation can be seen as forward progress in developing a safe and livable city, conventional architectural interventions have failed to inter-relate this dynamic. Categories of sustainable and green design have failed to be successful in finding a direct correlation to the natural world during an era of ever changing technological advancements. Researching, discovering, and implementing new relationships between natural and built environments can prove to be beneficial. Eliminating wasteful resource depletion and finding more efficient ways to bring nature and architecture together are realistic goals that should be executed.

As populations increase and cities continue to expand, natural landscape begins to change into the complete opposite of what natural is. This thesis aims at creating a new framework in order to disclose relationships that are typically overlooked. Conventional design techniques create artificial landscapes that tend to be thoughtless and self-centered. They tend to isolate themselves from the rest of the context in which they exist. Created in this way, the landscapes aim at representing an ideal condition. They begin to transform into a direction painted by our "technology" and artificial infused culture. Anita Berrizbeitia and Linda Pollak state that "the operation of reciprocity subverts the hierarchy embedded in the historical dichotomy between architecture and landscape, which has construed landscape as merely the ground on which something sits on. It recognizes the identity of both landscape and architecture as constructed"[2]. Blending the boundary between natural and built into a hybrid architectural form represents a new relationship in which nature becomes a cultural object. By integrating this relationship, architecture and landscape become fused by challenging conventional techniques that

are seemingly contradictory.

How an object interacts with its surroundings is where true beauty lies. The lack of dynamism between inside and outside conditions of conventional architectural design, carry with them isolation and loss of identity. These threshold irregularities fail to connect to the existing context in which they sit. The designs lack engagement with the block, district, and city beyond their site boundaries. An interesting result of this condition is that a void space is created that becomes a boundary for users. These users that occupy the spaces will serve as the engine for this project. The various points of view from all of the users will need to be taken into consideration as these views will challenge the conventional relationship of inside and outside spaces.

It is necessary to understand the definition of threshold. Merriam-Webster dictionary states that a threshold is the place or point of entering or beginning; the outset; a transitional interval. From ecology, [threshold] values the edge between two ecosystems as the zone of highest exchange and diversity. In ecological terms, thresholds are the most important part of a system. The place where field meets forest is more important than either the field or forest itself. Thresholds are where transformations begin, where exchanges between unlikely things occur, and where identities are declared[3]. Thresholds hold the potential where the introduction and maintenance of difference is possible. A successful threshold design is defined by the spaces and experiences that they connect. Using a varying range of scale, hierarchy, and passageways will help challenge current individualistic designs. Threshold as place can also be understood as a solution blending contextual boundaries that brings forward new readings of urbanity.

Making it possible for users to inhabit or visualize both private and public spaces from exterior contextual spaces is one strategy. “The threshold as a built facility is just as important for social contacts as thick walls are for privacy…the threshold as a platform in its own right, a place where two worlds overlap, rather than a sharp demarcation”[4]. In spatial terms, The Kimbell Art Museum provides a non-conventional way of threshold design rather than relying on image based means. The design incorporates landscape elements, including water and ranging densities of vegetation, to break up spaces and

externalize them rather than isolating them in an interior setting. Fountains, vegetation, and porticoes were used to disrupt the continuous ground plane and views for individuals[5].

Typical threshold conditions within today's buildings are seen primarily in passageways. Connection from the inside to the exterior environment is through doors and windows that provide entrances/exits and views. Landscaping is typically an after thought and rarely is successful in coinciding with the design. Most buildings are simply placed on the ground plane and designed with small areas of grass and gardens with numerous pedestrian circulation paths that rarely get used. Christian Norberg Shultz "calls for mans intervention to intensify the natural attributes of the situation. Certain significant elements of architecture have been celebrated by Phenomenologists as embodiments of difference: boundary and threshold are constituent elements of place. They form part of a figure which discloses the spatiality in question"[6]. Using elements of nature such as water, wind, and light, will help to awaken inside/outside connections that have been ignored in buildings for decades. As a boundary, the embodiment of a difference, it permits a presencing of the architectural intervention where an outlook on the world is opened up and then set back down. This may have little meaning in an information age. "In an information age, it is too easy to lose sight of the fact that what something is, is distinct from what it communicates"[7]. For many of the architectural designs that are published, the meaning that is communicated lacks understanding and, for the most part, is temporal. Many viewers fail to investigate the significance that is being portrayed. For example, many urban public areas are visually passed by with little physical interaction actually taking place within the intended design. Thus, the need for innovative threshold and ground plane connections are difficult to justify with the instantaneous and low cost designs that rule today's market.

Public spaces are typically designed into a form that limits their use. In many of today's buildings, public spaces are placed in convenient locations and/or are after thoughts. Some cities give incentives to developers who create public space on the ground level in return for additional floor levels. Studies have proven that these public

spaces, if carelessly designed, rarely get used. Even the circulation of fast paced business people fails to occupy these expansive concrete spaces. Sensitivity to public areas is completely lacking in American cities. Planning typically revolves around moving mass quantities of people around the city in the most efficient way possible. Expressways, freeways, and highways cut through cities without care for the environment or the surrounding context that it would affect. This misguided approach to transportation fails to advertise all a city has to offer. Rethinking transportation techniques, including private, public, and pedestrian means, can be intertwined with threshold and ground plane conditions. Streets, sidewalks and building street front design can be handled in a way that creates a place for interaction, while simultaneously connecting them all together. In a successful city, "the passerby must be able to cast an eye on all the goods on display in the shops opposite. The street space can only function when it is part of a system in which pedestrian access leads off the street"[8]. Placing all of the emphasis on street and sidewalk design will not solve urban problems, but combining efficient and user friendly ideas with other methods, such as the master planning of a built environment, can help eliminate conventional self-centeredness.

Public spaces, whether plazas, wading pools, gardens, or green space, must strive to be intimate, engaging, and unforgettable. People need spaces that allow interaction with others, whether physical or visual. Technology has developed in such a way that most individuals keep to themselves and primarily exist independently from their surroundings. This significant ideology must be rethought and is vital for a city to survive and grow. "Yet with the increasing social problems of the inner city, its socially inimical overcrowding, and its divisive fast road systems, the need for community identity has made the idea of landscape in the city increasingly desirable"[9]. Public spaces cannot simply be left open and be described as successful pedestrian friendly areas. The spaces that connect the buildings on the block in this thesis must be enticing, intimate, and open enough as to provide for the needs of visitors and users of the surrounding context. The relationship between how the ground plane is treated and threshold conditions of new architectural interventions needs to be studied carefully. Bringing nature into specific interior spaces of

buildings will create situations where one must decipher whether one is inside or outside. Designing public spaces that meander through the exterior environment and eventually into new building design will challenge the fact that these are two separate entities. Stated previously, conventional architecture closes itself off to the outside environment, which is the opposite of what the inhabitants usually want. Design techniques must be implemented to encourage exploration and discovery, but must be executed in a fashion that limits distractions.

Movement through space and threshold conditions are both connected and disconnected. Submerging and/or elevating areas and using physical and non-physical aspects of thresholds can be utilized to dissect current ideology. A thresholds relationship to experience can be challenged by the role of light, space, sound, and materials. These conditions can help represent and unify the expansive site being located in an area of uncontrollable and thoughtless developments. They can also act to engage the surrounding buildings. Using thresholds to blend contextual boundaries will help bring back a sense of community to areas lost and confused by today's independency driven technological world. While functionally driven solutions make designing easier, using spatial layering to multiply layers of the site permits a memorable experience to take place[10]. Physically restructuring a site in both plan and section inscribes a remade landscape that coordinates with an idea about the original site's structure. The meandering quality of green space will celebrate the uncontrollable and uncontainable processes that boosts human moral. This initiation parallels the dialogue between building and landscape and must be incorporated without contextual domination and isolation.

The dynamism between blending these boundaries must modestly create a new design that has presence. This presence will mark the beginning of a journey that heightens the transformation between threshold conditions. As users transcend though these areas, new perspectives describe the spaces that cities need to employ. Herman Hertzberger states that "mutual consideration of buildings and street is part of an urbanism of everyday spaces, in which to be urban implies being part of a web of interrelationships"[11]. The

intention to enrich the inside/outside condition must occur on the ground level so that users can expand their operations outward into public communal areas. Other levels can and should exercise a private realm, but one that allows for visible interaction to take place in strategic locations. Seeking methods that engage and are built for users, interior spaces must create an atmosphere in which users feel like they are unable to ignore the exterior environment.

Advancements in technology have created a culture that is global, places an emphasis on knowledge, and is appealing to a variety of users. "There is a struggle to balance urbanization, topography, internationalization, and identity"[12]. "Detroit has been taken over by the ecology of globalization in its first act of massive deurbanization. It is not only shrinking, but is moving out to the peripheres"[13]. The empowerment of technological space cannot be ignored nor can it be handled in the conventional way. A blending scenario must be created that instigates interaction while dealing with the circumstances of threshold. Creating a technology campus not only reflects our current culture, but strives to form a new and efficient central location that engages people and permits interaction to take place. Different elements compose the technology campus that primarily relate to the fast pace movement of workers.

Gaps created by the inside/outside boundaries around a campus like setting could affect the building envelope, exterior private and public spaces, and interior private and public spaces. The façade of a building is the first thing a person sees and is often where initial networks of interaction occur. The design of this façade should carry with it the ability to be inviting, advanced, and contextually related. Blending the edge of the building can be accomplished by a thought-out material palette and structural/curtain wall design. Solidity and transparency can create or prevent interaction and challenge typical passageway thresholds. A further justification for carefully exploring the building envelope is ecological concerns. Designing with the local climate in mind would result in a reduction of the overall energy consumption of the building by the use of passive systems. Savings in operational costs are derived from minimal use of electrical energy which is usually derived from the burning of non-renewable fossil fuels. The lowering of energy

consumption would further reduce overall emission of heat waste. These types of strategies create answers to the void space that connects inside and outside spaces. They form a new direction for threshold conditions to be experienced by the layering of a wall system. This would include using shading devices that correlate to exterior spatial layouts that could be a continuation of what takes place on the interior design. Thus, a passive system could be integrated into a new system of threshold experiences that help disrupt the edge of the building.

The threshold condition of built form to the natural environment can also be sought out within the confines of a technology campus. Ken Yeang states that "Eco-design is designing in such a way that the human built environment or our design system integrates benignly and seamlessly with the natural environment. We have to look at it not just as designing a building as an independent object in the city or in the site where it's located. We have to look at it in the context of the characteristics of the site in which it's located, the ecological features and we have to integrate with it physically, systemically and temporally"[14]. Architecture should not be created as a work of art or cheap means for business owners and developers. "Our preoccupation with technology and an international style of functional, environmentally controlled buildings has made it seem that plants and landscaped interiors are out of place. That people are constantly moving into new environments, unconnected with the natural environment, tends to give the impression that they are enlarging the range of their evolutionary past"[15]. The disconnection between nature and humans is growing as most architectural designs use technology to create artificial and unrealistic interior landscapes. Fake palm trees are placed in buildings situated in northern climates. Artificial gardens are designed as secluded elements that tend to push people away. In designed "natural" landscapes, it is not uncommon to see signs that say "Please stay off". By integrating outdoor experiences with a controlled interior environment, technology can be used as a tool to merge the two into a new connected system of interrelationships that also aims at creating multiple forms of human interaction.

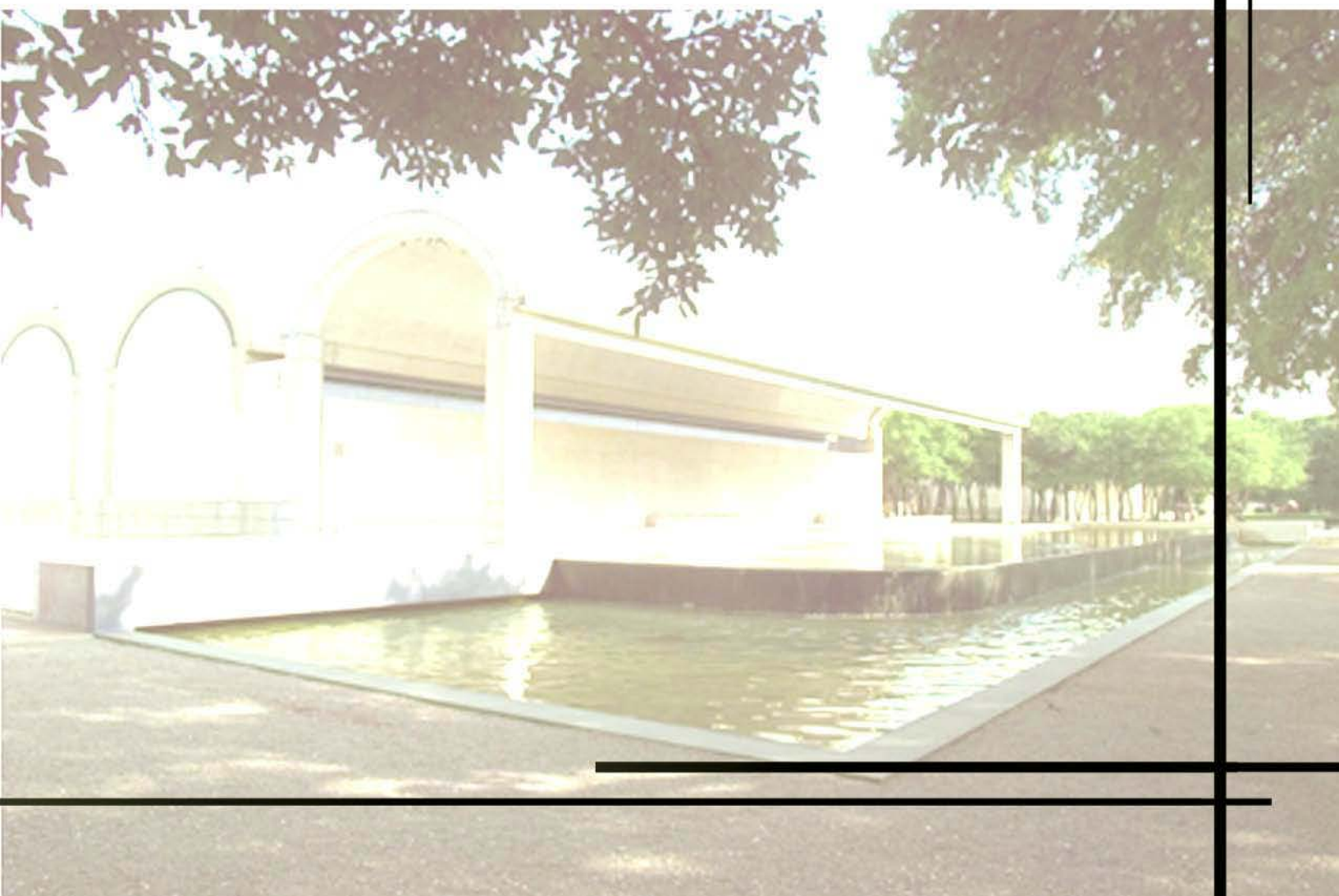
Programmatic layout per each facility can be strategically designed to follow these

ideas. Creating situations that allow and encourage people to travel around the campus is one major goal. Breaking apart the typical design of combined functional elements makes pedestrian circulation and interaction occur. It also permits occupants to become initiated by a system of threshold elements that challenges conventional relationships. By acknowledging that there are numerous view points for individuals at all times, the project can be more than a typical redesigned public space for interaction.

Considering how to include casual observers rather than limiting the use of the project to business people and hotel guests, the project can create an inviting and relaxing environment that differs from a conventional city park. The person on the outside experiences as many visions and emotions related to space as one who is directly involved inside. These conditions cannot be overlooked. A design must create interaction on a daily basis, not just during business hours. This will ultimately create a redefined sense of community. But, existing contextual conditions must be included. The new urban space and building design must compliment its neighbors and the city as a whole in order to be a creation of new threshold and interaction conditions.

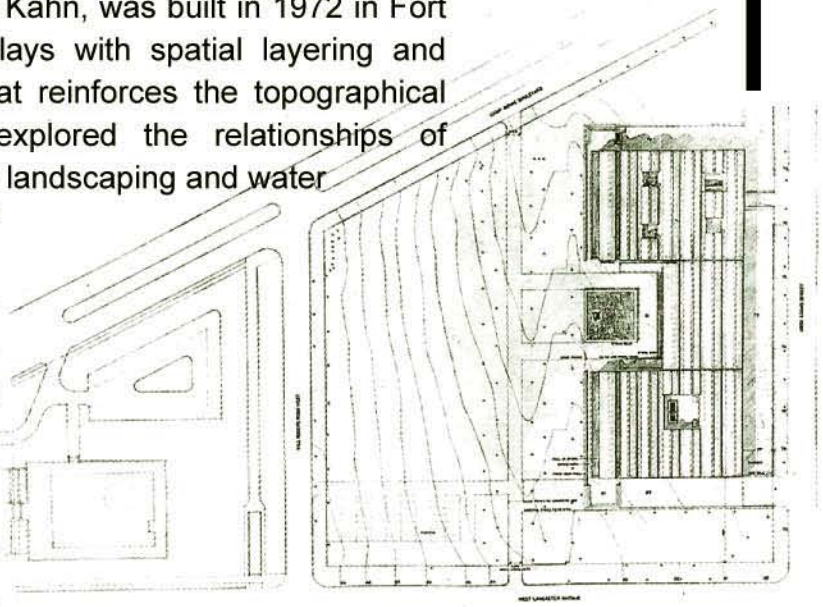
The roles that culture, nature and technology have played in the built environment have been profound. Nature has simply been miss-treated and forgotten due to technological advancements and the need for profit. Architectural design has developed into a functioning system of isolation and self-centeredness in which thoughtless meanings are attributed. The need to reconnect these elements goes beyond efficient design. Challenging the relationship of conventional threshold conditions and interaction networks must be employed. Exploration and discovery are necessary components that create new relationships of unifying boundary conditions.

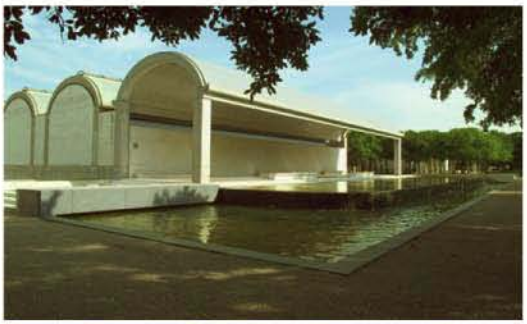
PRECEDENT STUDIES



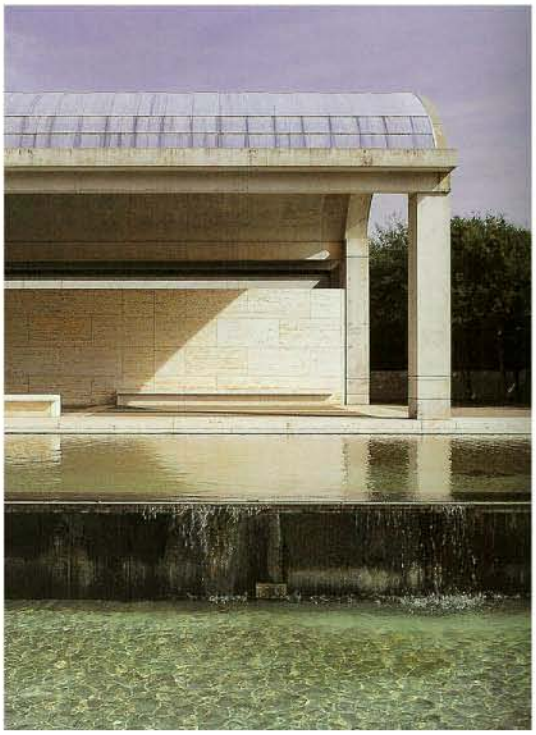
PRECEDENT: KIMBELL ART MUSEUM
ANALYSIS

The Kimbell Art Museum by Louis Kahn, was built in 1972 in Fort Worth, Texas. Kahn's design plays with spatial layering and thresholds to form a structure that reinforces the topographical order of the site. He also explored the relationships of inside/outside boundaries in which landscaping and water features support the continuity of space. "Both the landscape and architectural components of the court - the fountains, the vegetation, and the porticoes - operate at a local scale to disrupt the continuum of the ground plane, circulation, and views."[1] Dense trees are planted along the outside of the site to create a threshold so distant viewers do not see a space to just merely pass through. The geometry and density of the trees act to disperse movement and vision, which in turn slows down pedestrian movement towards the main entry.

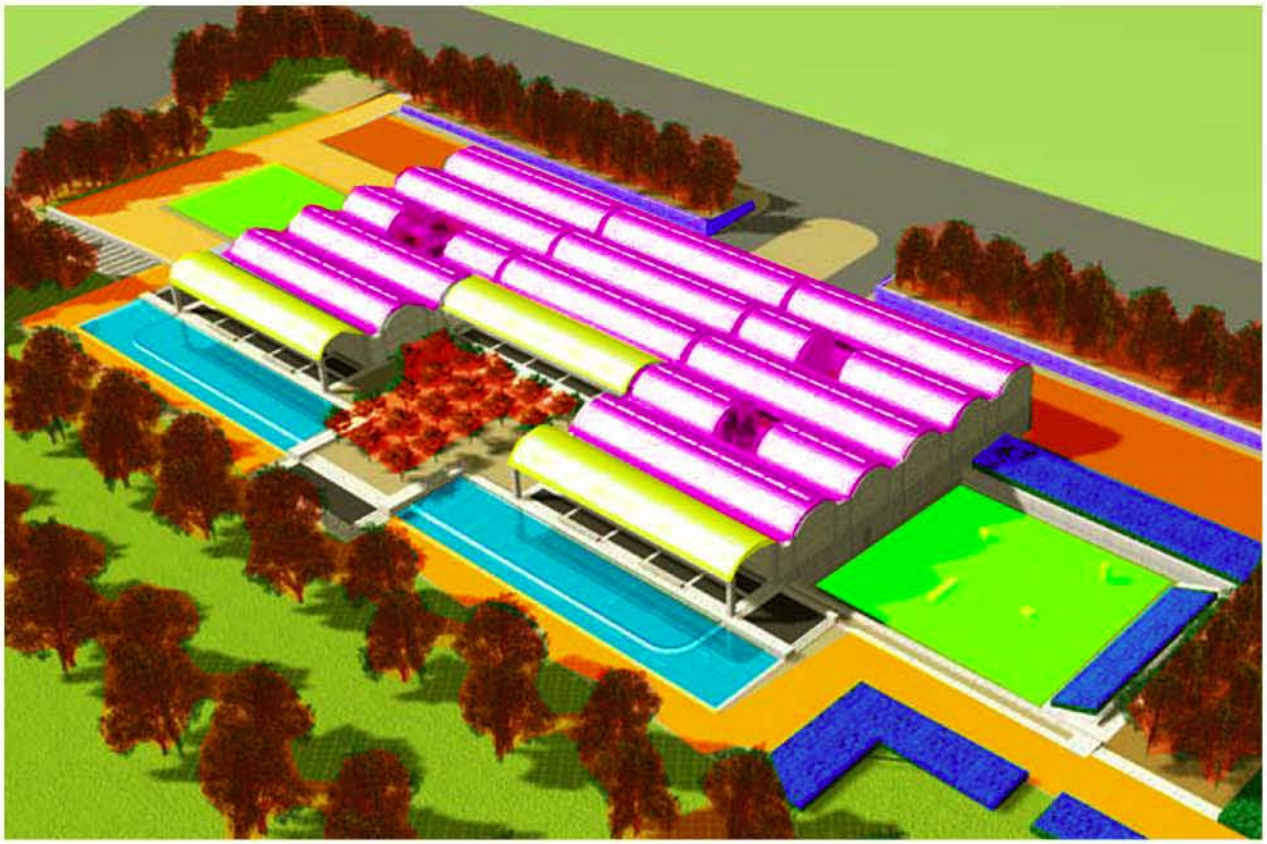




Containment of space was another characteristic that Kahn strived for. The siting of the symmetrical building around an alley of trees helps to eliminate the conventional approach toward building facade. "The space of the threshold, rather than the image of a facade, is here chosen to represent the institution."[2]



The layering of the two interior courtyard gardens and the entry court interrupt the barrel vault design of the building. The U-shaped plan boasting a central courtyard is programmed to be inviting and accomodating to the public in a spot that would typically be reserved for private use. The threshold elements leading to the entry of the museum including vegetation, porticoes, a fountain, and a pool, add to the realtionship of inside/outside boundaries. Physical form is not the only way to understand thresholds. The interior spaces glow with natural light bouncing off of the arched ceilings. This formation of aperatures also creates threshold spaces. The ability to discriminate between differences in light provides sensory evidence that a threshold is taking place. Glass walls bring pedestrians closer to the exterior environment, acting as if they were actually outside. Complete rhythmic harmony was created. Kahn's idea to return to classical greek form permitted him to achieve a masterpiece that uses materials to their greatest potential.



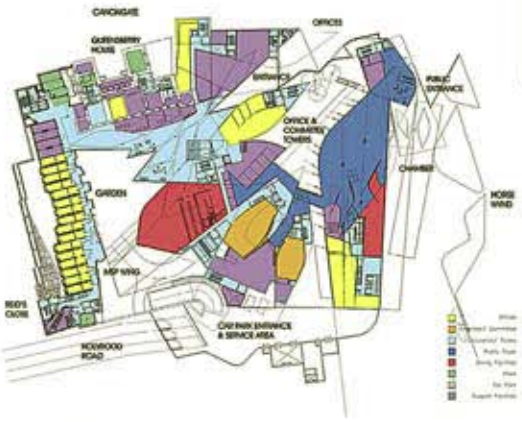
This diagram analyzes the multiple layers of thresholds leading to the entrance of the museum. The gracefulness of the buildings proportion adds to the theme of connecting the galleries with nature. Three small courtyards exist where Kahn sliced sections of the vaults away to help make one feel closer to the exterior. Designing for human scale and using natural light to spread across the art work, Kahn succeeded in developing spacial relationships that blend boundaries.

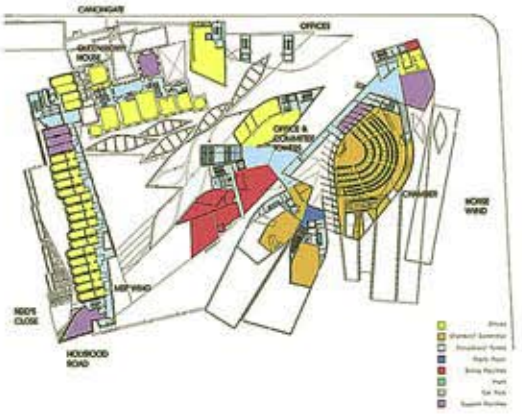
[1] Berrizbeitia. "Inside Outside Between Architecture and Landscape. p.86

[2] Berrizbeitia. "Inside Outside Between Architecture and Landscape. p.87

PRECEDENT: SCOTTISH PARLIAMENT
ANALYSIS

The Scottish Parliament Building was designed by Enric Mirrales and Benedetta Tagliabue (EMBT) in Edinburgh, Scotland. The initial construction started in 1998 and was completed in 2004. The intent of the design was to reflect the land that it came from, being built and carved directly from it. The form(s) of the design are meant to create an environment that allows for the gathering of people. The entire facility sits on a four acre brownfield site that was chosen to prevent the use of a greensfield site.





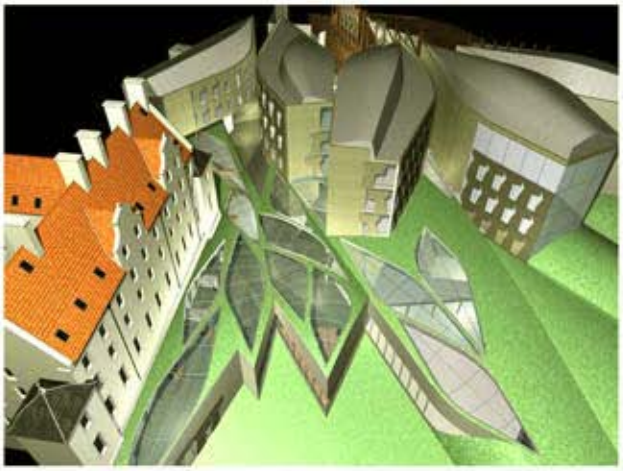
The project consists of 312,000 square feet of floor space that includes a 300 person debatingchamber, housing units, landscaped areas, garden rooms, offices, and many other programs. The union of all these program types and building forms was aimed at linking the Scottish culture with the people, city, and landscape.

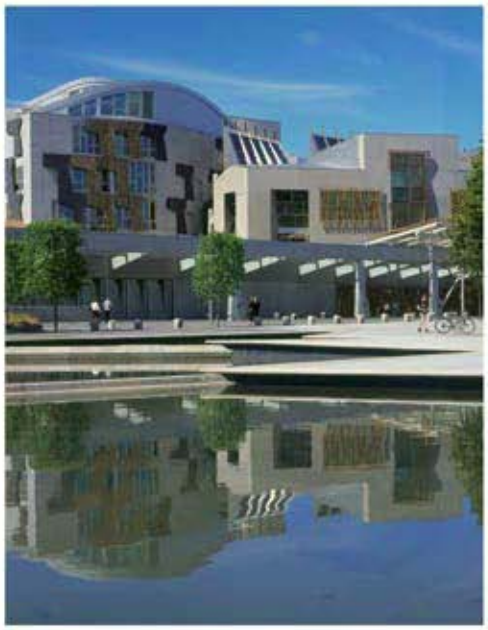
A blending of multiple boundaries and use types was also a main focus of the architects. Mirrales states that "the Parliament should be able to reflect the land it represents. The building should arise from the sloping base of arthur's seat and arrive into the city almost surging out of the rock"[1]. By using a multitute of organic forms without a hierarchical presence, Mirrales created a design that connects people to the surrounding areas. Viewing the floor plans shows how the site is full of interactions. It is not just a monument.

The Scottish Parliament incorporates many sustainable design techniques into the program which contributes to its overall theme of people interacting with nature and one another. Indigenous plant species, material selections, and building operations are just a few of the categories that were incorporated. Natural ventilation and lighting along with a grouping of solar panels helps keep the energy usage down to a minimum. There are existing bore holes left from the previous building that allow for all water being used for the toilets and also help keep the building cool. It is important to work with the environment in any way that you can in order to provide a better future for all. Being sustainable does not only provide economic and health benefits, but it also acts as an example for future designs.

The facade of the building is a good example of how to break things up into repetitive elements. Some of the panels even represent specific forms of the Scottish Culture. There is a direct relationship between this exterior design with the interior that also allows one to feel a connection between the two. This is a design techniques that Mirrales may not have solved completely. The sense of a relationship between the inside and outside seems to be lacking something. It could possibly be the abstract panel forms and/or the materials that were used.

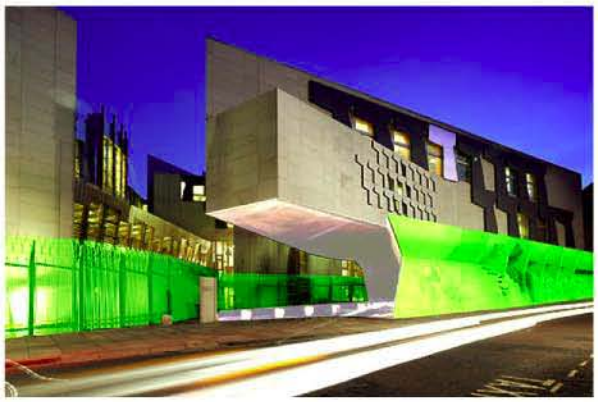
This project's primary scope is to develop a place where people can interact in an environment. It challenges the cities typical forms and setting by infilling a designated area that allows for the formation of interaction networks. The design allows for interpretation and does not results in a felling of containment. Mirrales succeeded in designing for nature, especially given a brownfield urban site. He created an area where people are free to roam and form an identity. By playing with different thresholds, an exciting arrangement of how one enters the different spaces takes form. Water features are used to create tranquil places for people to relax. Structures and topography are used to force people to engage in the design. They do not just walk down a concrete sidewalk, but walk in a place that seems to be the opposite of a busy and congested urban environment. The program of this design is a great example for the direction that could be taken for urban development and design.





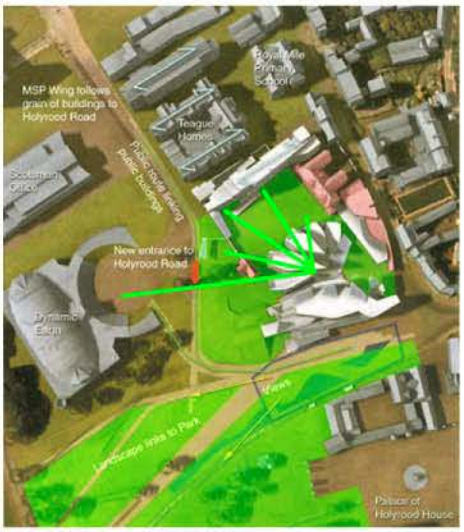
Though this project succeeds in its overall program, there are multiple weaknesses within the design. One of the major issues is that of it being too literal. Mirrales wanted a design that related to, and reflected, nature. The "leaf" design for windows and building roof form may be too literal for its situation. Also, all of the building forms could be said to be alien from the rest of the urban community. It was stated that the design was criticized for many months and was argued that it was located in the wrong type of area. The green space and water features are a great attribute to any urban environment, but the forms seem to be a bit to abstract for the location. Even the roof panels have a literal meaning which is to represent an up-turned boat. This design of the arched roofs and materials used does not necessarily show this intended meaning though.

The amount of repetition along the facade of the building is also something that has a negative impact. The layers of materials are intriguing, but because of the vast amount of surface area, it is too much.

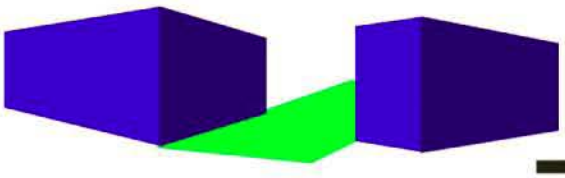


This analysis shows the relationship between boundaries. These include the boundary of site that the building and fence play. It shows an interesting way to take advantage of the site, but still allow for a welcoming entrance. There is a directed path to where you are suppose to go.

Site plans are a great way to view contextual boundaries. There is a direct relationship of the building form to adjacent structures, green spaces, pedestrian walkways, and roads. There is a lot of land that the project could have spread too, but instead, it is condensed to the corner of the site where existing buildings stand. This provides a link between the boundaries including interaction with other structures (due to their proximity). The building also "fans" out into the open public space. Here one can see the proportion of built environment to natural environment and its importance.



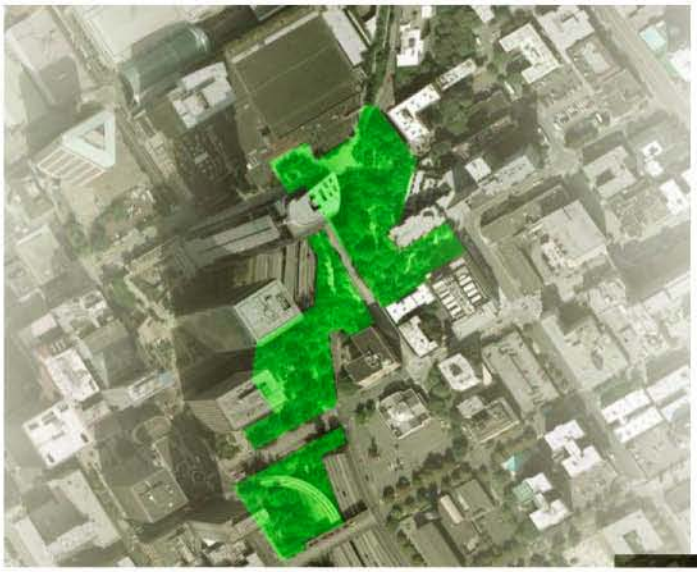
The boundary between new and existing and the interaction that happens (or doesn't) needs to be identified. The Parliament allows for interaction with other buildings by placing areas for people to interact with the environment including seats and green spaces. Not placing a building close to another permits that area to be used efficiently. The use of scale is also relevant in this analysis. Not using a design that overpowers other adjacent structures provides for a better human scale.



PRECEDENT: SEATTLE FREEWAY PARK
ANALYSIS

The Seattle Freeway Park was designed by modernist architect, Lawrence Halprin. The park opened to the public on July 4th, 1976 and was designed to create a bridge over the massive Interstate 5 expressway. It encompasses roughly 5.2 acres within the city and incorporates 3 major preoccupations of landscape design; the car, the garden, and ecology. In cooperation with the project designer, Angela Danadjieva, the two developed this idea that spread beyond the "given" plot of land into a new realm of urban park design. Their main emphasis was to scale down the impact of the interstate for both drivers and pedestrians. It was accomplished by developing spaces that linked numerous plazas which were enclosed by concrete walls and planters. The addition of trees, shrubs, flowers, and furnishings that extend throughout the park creates an area of nature that is uncommon in urban environments and was not only used for visual reasons, but also to help cut down on the noise created by traffic. Halprin and Danadjieva used concrete planters to create a ninety foot elevation change that is subtly viewed from traffic and pedestrians. By creating numerous perspectives, one can visually interact with the built environment.

Water features are used throughout the 5 acre park to drown out the expansive interstate noise. It flows over multiple concrete forms which create numerous wading pools located around the park. Thus resembling a mountain stream, the concrete was intended to represent a canyon in which railings were not used in order to emphasize interaction with the landscape. People can wade in the basins and relax to the sound of rushing water. The original design called for the use of 28,000 gallons per minute, but today that rate has been cut down to a mere 9,000 which is one of the reasons for its under-usage today.



The park represents a great way to incorporate landscape design into an urban environment. This relationship solves the problem of multiple boundary types occurring at the same location. Breaking the interstate boundary to connect two parts of the city is handled in a way that allows for human interaction within a natural setting that is rare to cities. The park breaks the typical normality for park design. By using multiple concrete steps that break up the otherwise flat site, a network of interactions was created. Allowing individuals to wade in water, sit on concrete forms, and view potted plants, helps to diffuse the busy city lifestyle. The design of the park does not place limitations on itself. The layering of spaces creates numerous places for interaction to occur. The architects succeeded in designing a park that places an emphasis on community interaction. Not containing a park to a single site formed a place that has its own identity, but still allows for contact and individuality among users. People can physically and visually adapt to this urban forest, but not be forced to withdraw from the vibrant city life.

Unfortunately, the park has went through many years of crime, un-manicured growth, and new safety provisions that have changed the original environment, but recently things have changed. More land has been bought and donated for the expansion of the freeway park. New maintenance crews have pruned trees and shrubs which has re-opened natural light allowing for a safer area. People continue to use the park, whether on their lunch break, visiting, or local residents.

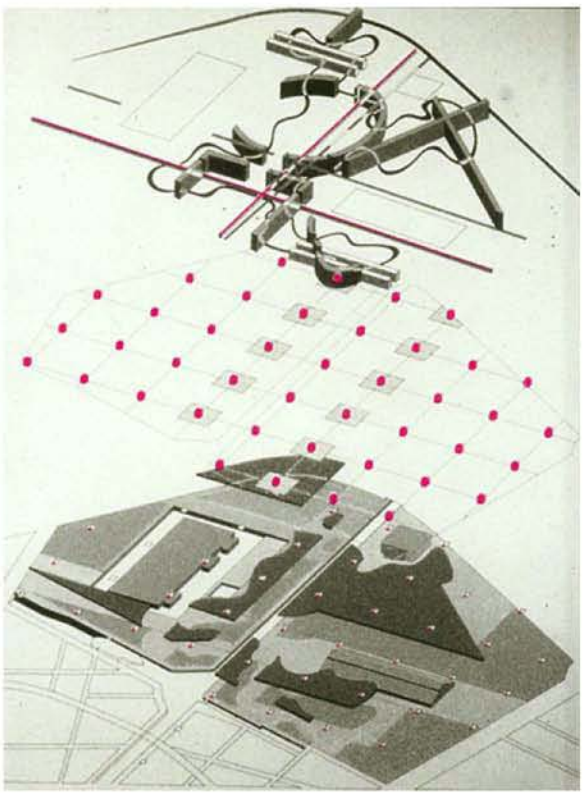
Breaking contextual boundaries helps the freeway park take advantage of dense city space and create a network of interaction paths. Constructing numerous thresholds around the park gives people different perspectives of the local environment. Replicating this park for other urban areas would probably be a bad idea. But, using parts of it could prove to be beneficial for creating an environment that emphasizes interaction and community. Combining parts of a green space with other architectural elements could connect boundaries that would otherwise be isolated.

These analysis pictures show the relationship of scale and emergence. The middle picture analyzes how one would enter and exit the park. A series of steps forms a transition to break the typical urban site boundary. The top picture shows another form of entrance to the park. It consists of a smooth transition where greenspace meets concrete. The use of scale is important in relation to these different entrances. The middle picture with topographical change displays the relationship of differing vertical scales. The role of changing heights permits people to adapt in different ways. The series of steps create a number of places for people to sit. The smooth transition acts to disperse people into areas of grass.

Using water to pursue forms of human interaction permits another form of adaptation. The multiple levels of concrete forms allow people to sit and relax to the sound of crashing water. They can also hang their feet over the edge to help cool down on hot summer days. Water is a intrical part to this urban “forest” design. The flowing paths and basins of water highly contribute to its overall success.

PRECEDENT: PARC DE LA VILLETTE
ANALYSIS

Bernard Tschumi was commissioned to design this 125 acre park in Paris, France after winning the Parc De La Villette design competition. The project was constructed in 1983 on the site of a former meat market and slaughter house. It was located at the northeast corner of the city and was meant to be a major step at urban renewal and cultural heritage for the area. In addition to the park design, other programmatic functions include a Museum of Science and Industry, a City of Music, a Grande Hall for Exhibitions, and a rock concert hall. The inclusion of restaurants, art galleries, workshops, and playgrounds added to the encouragement of interacting within a natural environment. Tschumi focused on contemporary society's disjunction of program use, form, and the implementation of social values. Many elements throughout the park resemble deconstructivist ideology in which functional consideration was ignored. The lack of meaning in these elements was intended.



The presence of abstract and programless elements, what Tschumi calls "folies", are one layer that make up the park system. Two other layers include lines and surfaces (picture on left). All of these layers overlap one another and objects are placed in relation to this coordinate system. The folies (red elements in both pictures) are placed on a 120 sqaure meter grid and are the main source for the park's identity. Because of their vibrant color and scale, they act as beacons to draw people around the entire park. The constant movement and interaction of people around the site is one of Tschumi's major successes.

Tschumi states that "each (of the folies are) essential to the program. Each is basically a 10 x 10 x 10 meter cube or, a three-story construction of neutral space, that can be transformed and elaborated according to specific programmatic needs."[1] The simple coordinate placement makes traveling through the park easy for unfamiliar guests and permits them to orientate themselves quickly.

The role of the line system in Tschumi's design created two major orthogonal paths where pedestrian circulation would be the greatest. One line runs north and south, linking the two Paris gates to the subway stations, Porte De La Villette and Porte De Pantin. The other line runs east and west that connects Paris to suburban areas. A five meter wide canopy spans the length of both paths, providing pedestrians with the option to avoid the weather, but still travel through the park. They border specific points where folies are located that encourage the interaction with other activities, including restaurants, art and science displays, and many other programmatic elements. Another designated line path exists through the curvilinear design of the Thematic Gardens. Tschumi states that this planned circuit provides unexpected encounters with unusual aspects of domesticated nature.

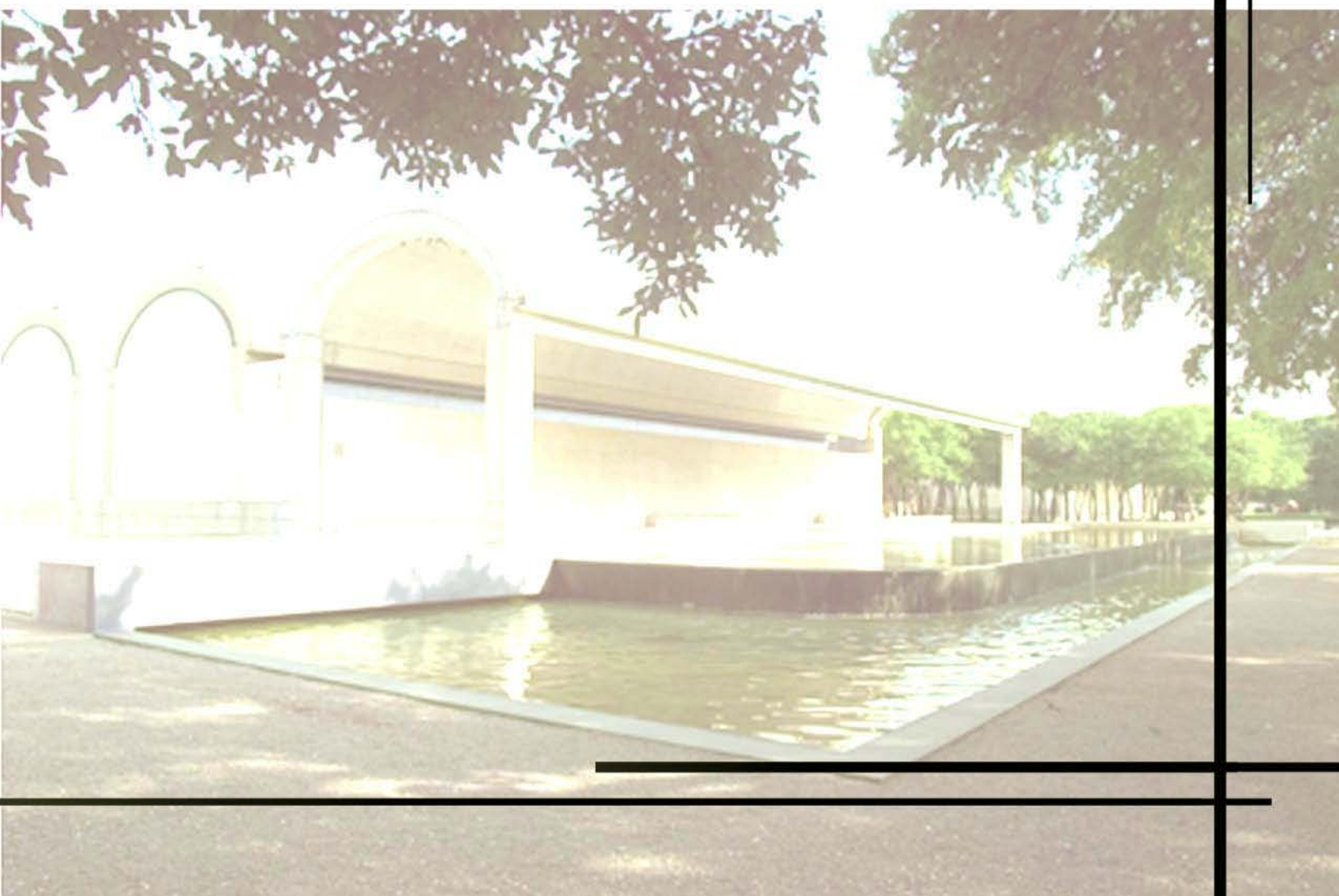
The last systematic element of Tschumi's design is the incorporation of surfaces. All of the surfaces are large horizontal spaces that were "left over" after all other programmatic spaces had been filled. These areas were constructed of compacted earth and gravel, park materials familiar to all Parisians which allows for programmatic freedom.[2]

The primary success for the park design is its ability to move large quantities of people around an open space. A strict coordinate system of folies provides locations where one does not simply pass by, but actually causes people to stop and visualize spaces that they were not planning to see.

This precedent analysis benefits this thesis by presenting a case of pedestrian interaction and circulation in a dense urban environment. It's multiple layers of thresholds and its ability to blend boundaries creates a design in which natural elements play an important role. Challenging the conventional park design of green open space permits new forms of human adaptation to artificial settings. The juxtaposition between man-made and natural elements offers numerous places for discovery and an array of unexpected encounters.

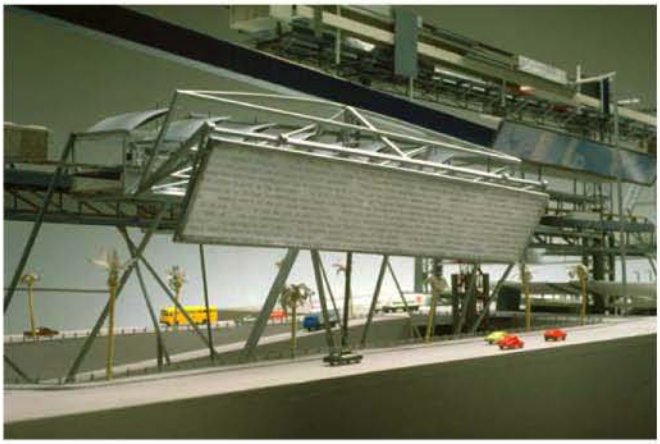
[1,2] Tschumi. Parc De La Villette. Bernard Tschumi Official Website.

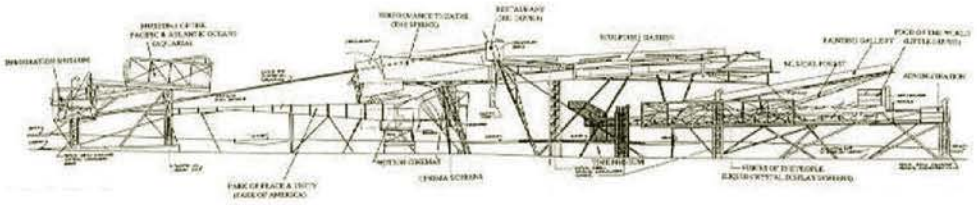
MISC. PRECEDENT STUDIES



PRECEDENT: STEEL CLOUD
ANALYSIS

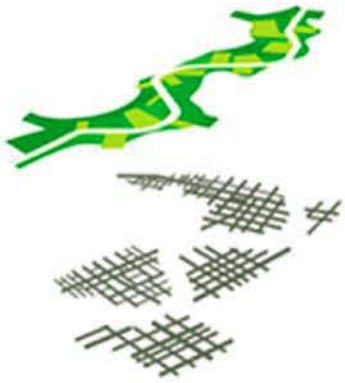
The Steel Cloud conceptual design was designed in 1988 by Asymptote Architects for a specific site in Los Angeles, CA. It was meant to be a monument for the city that reflected the increase of information and technology. The design straddles a busy freeway that created a boundary. Using the un-occupied space above the freeway would permit a necessary form of interaction to take place. The program is pedestrian oriented, including galleries, cinemas, parks, libraries, and plazas. The use of the site is an important aspect of "bridging" boundaries to form a connection. The design references and incorporates the horizontality of the city into all aspects. If this project were to be built today, it would not only be a design that creates community through boundary interaction, but it would have personified an image of our technological culture today and thus succeeded in creating a new identity.





The theme of Steel Cloud originated from the migration of immigrants to the U.S. They were given hope and freedom by crossing the border. This design would create a monument that would parallel the Statue Of Liberty in NY. It would allow people to recognize the strong culture of the city and engage them physically.

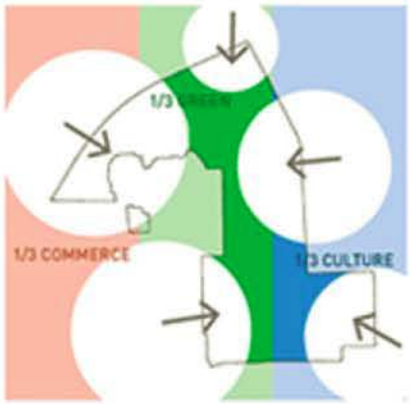
PRECEDENT: TAICHUNG PARKWAY
ANALYSIS



PARKWAY

+

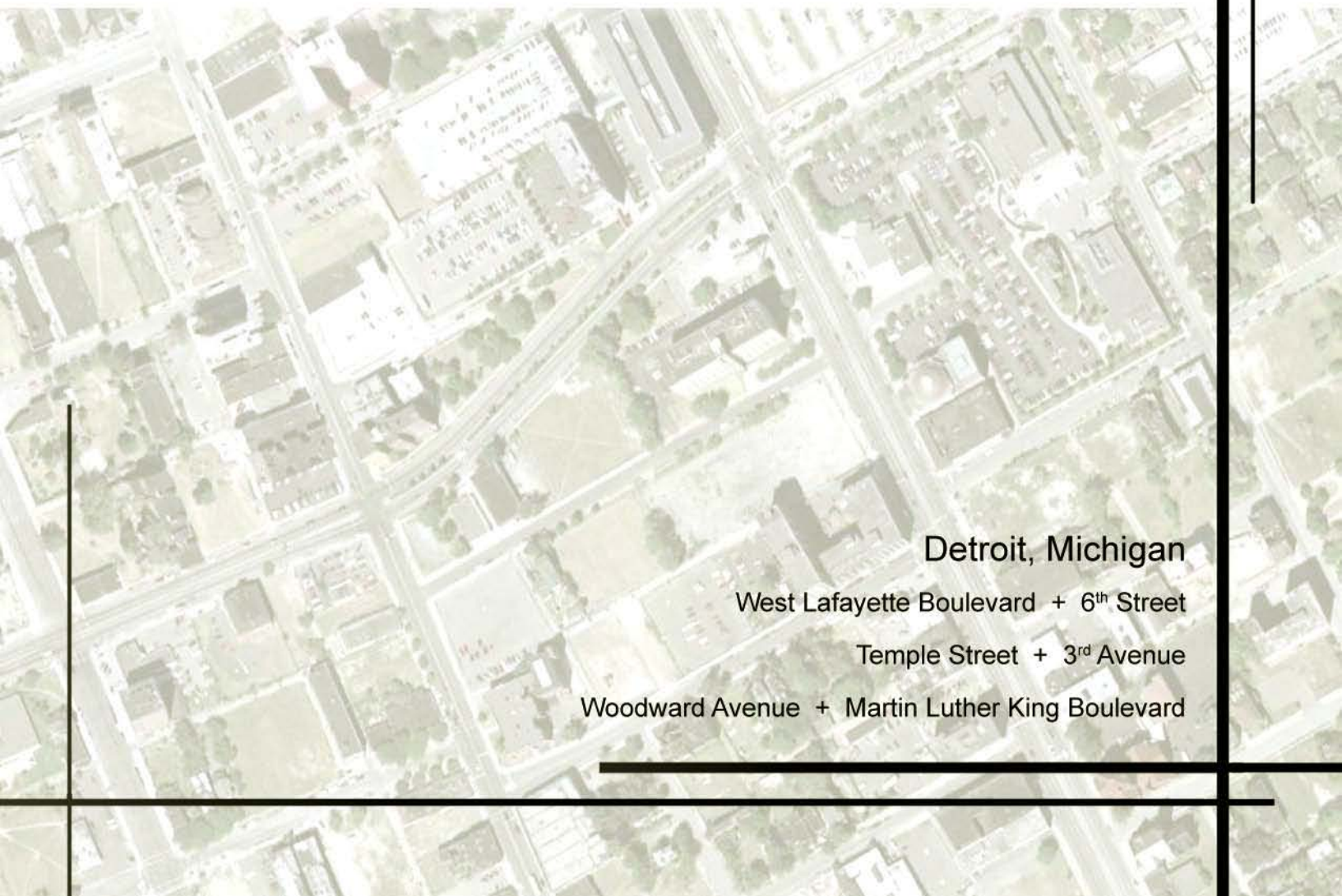
CITY FABRIC



URBAN PRESSURES

Stan Allen was commissioned to design Taichung Parkway in Taiwan where an old municipal airport was once sited. The goal was to design a new cultural district that would infill all of the vacant land. Allen's proposal creates one element with many parts that combines circulation, greenspace, cultural institutions, research facilities, and convention halls into an ecological environment. A major focus for the design was to open up edges to promote public interaction and connection to the existing buildings. This conceptual design is very similar to the goals of this thesis. Blending the urban fabric with green spaces that flow around edges of existing context, creates a new landscape network that challenges conventional site design. Designing for human scale and emphasizing cultural relationships, Allen developed an urban parkway that plays with spatial layering and blends boundaries.

SITE ANALYSIS



Detroit, Michigan

West Lafayette Boulevard + 6th Street

Temple Street + 3rd Avenue

Woodward Avenue + Martin Luther King Boulevard

West Lafayette Boulevard + 6th Street

Temple Steet + 3rd Avenue

Martin Luther King Boulevard + Woodward Avenue

West Lafayette Boulevard + 6th Street

Detroit is home to an array of vacant properties. These properties are located from the downtown core to the edge of the city limits.

The arrangement of sites located at the intersection of West Lafayette Boulevard and 6th street consist of three large abandoned surface parking lots. These lots are located in a dense area of multiple types of buildings. There are also two parks located adjacent to the site, Savage Park and a community playground with sports courts. Both are under used and in poor condition. In proximity are large scale apartment complexes, multi use buildings, industrial facilities, single family residential units, and numerous commercial buildings in an un-organized pattern. The district has not seen a change in population during the last six years, making it an ideal site to bring opportunities for growth and interaction. Being completely enclosed by fencing, the site is in desperate need to interact with its surroundings.

The initial study of the site proved beneficial in relation to its size and connection to multiple zoning conditions. One major site criteria is the ability of a site to explore and expand to other surrounding vacant sites. This is the downfall to this site. There is potential to expand to surface parking lots towards the east, but they are used for residents of a large apartment complex. This then only permits expansion over the John C Lodge Freeway (10).

Using the available air space above the Lodge Freeway is a possible solution to blend the two sides together. But, not being able to explore in other directions is a problem. The programmatic elements would be too contained at the edge of the site. Expanding in multiple directions is a necessary goal.

The abundant mixture of building types would provide a solid base for creating an interaction network. Though this may be true, there were very few people seen walking around the area. During typical business hours, there did seem to be some life, but both parks remained empty during multiple visits other than homeless folk sleeping on broken benches.

Temple Street + 3rd Avenue

The series of vacant properties located at the intersection of Temple Street and 3rd Avenue benefit from a medium density of pedestrian activity and location near multiple building types. Unlike the previous site selection west of the downtown core, this site permits the exploration into other available sites in multiple directions.

There is a large planned development site adjacent to the primary parcel that consists of two-story apartment buildings. The entire project is abandoned. All of the buildings, roughly forty of them, are rundown and would not be able to be renovated or salvaged for re-use. This is an unfortunate tragedy for this area, but would permit a major site expansion for new architectural development that aims at creating forms of interaction. There is a rich base of building types in the area. Cass Tech Highschool and the Masonic Temple are just a few of the prominent structures adjacent to the site. Cass Park, one of the only parks that are not under capacity, is alive with interaction, but known for its homeless attraction.

With an abundant availability of vacant land and abandoned structures, this site is too large for the intended program. There are numerous areas in which expansion could take place, but developing these areas, would take away from the downtown core's amenities.



The immense size of the site is represented in the top three photographs. Below, pictures of surrounding buildings and of the abandoned apartment development are shown. It's interesting to see Cass Tech High School investing in a new facility while other adjacent buildings lie abandoned on fence enclosed spaces. Responding to neighboring sites is not a priority in this area. Being self-contained seems to be the solution.





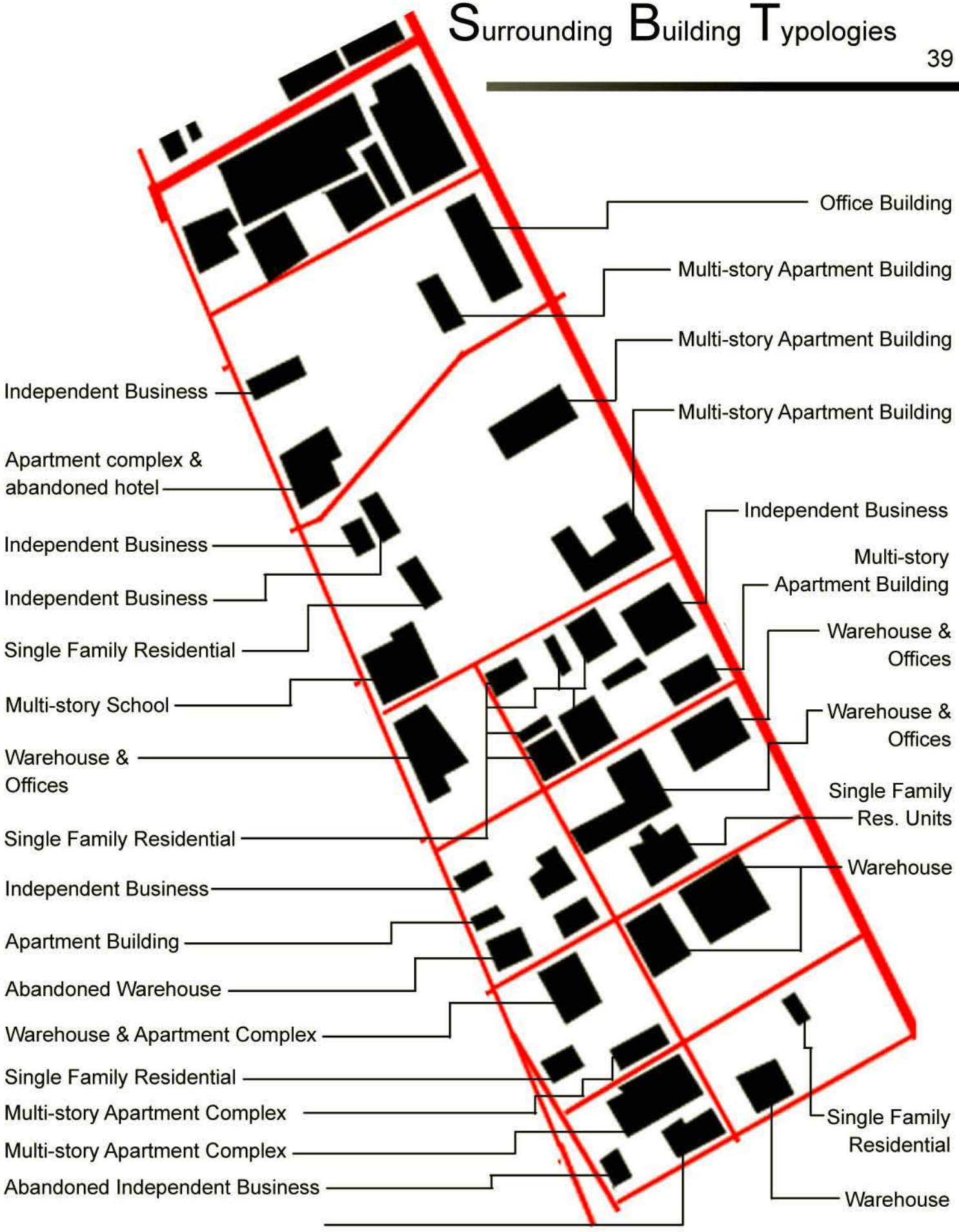
THIS IS THE ACTUAL SITE USED FOR THIS THESIS

Woodward is one of the major street arteries leading out of Detroit. It is a central axis that bypasses cultural centers, multiple business districts, and college campuses. The 27 mile stretch is adjacent to more than 300 historic sites and is the first street in Michigan to be honored with the title of *National Scenic Byway.*

This site is located in a dense area that is roughly half way between the downtown core and Wayne State Universities college campus. Blending this condition together will not deprive the areas of pedestrian activity. Surrounding building uses range from surface parking lots and commercial businesses to cultural centers and residential units. The diversity of building types around this area makes it an ideal site to create a interaction

The top picture analyzes the variety of zoning conditions that surround the primary site (bright green:site location, red:commercial/retail, yellow:single and multi-family residential, purple:institutional, dark green:park). More than half of the site is enclosed with chain link fencing that extends six feet in height. More fencing wraps around nearly all adjacent buildings, whether vacant or not, and parking lots/structures. During multiple visits, no human activity was seen in these fenced areas, but a steady flow of pedestrians walked on sidewalks along Woodward and Cass Avenue. A small park exists next to two large abandoned structures in the northwest direction. Other than manicured grass and large trees, the park exists as another under-capacity public space in Detroit. At a minimum, benches fail to be seen anywhere in the park or surrounding areas.

Surrounding Building Typologies

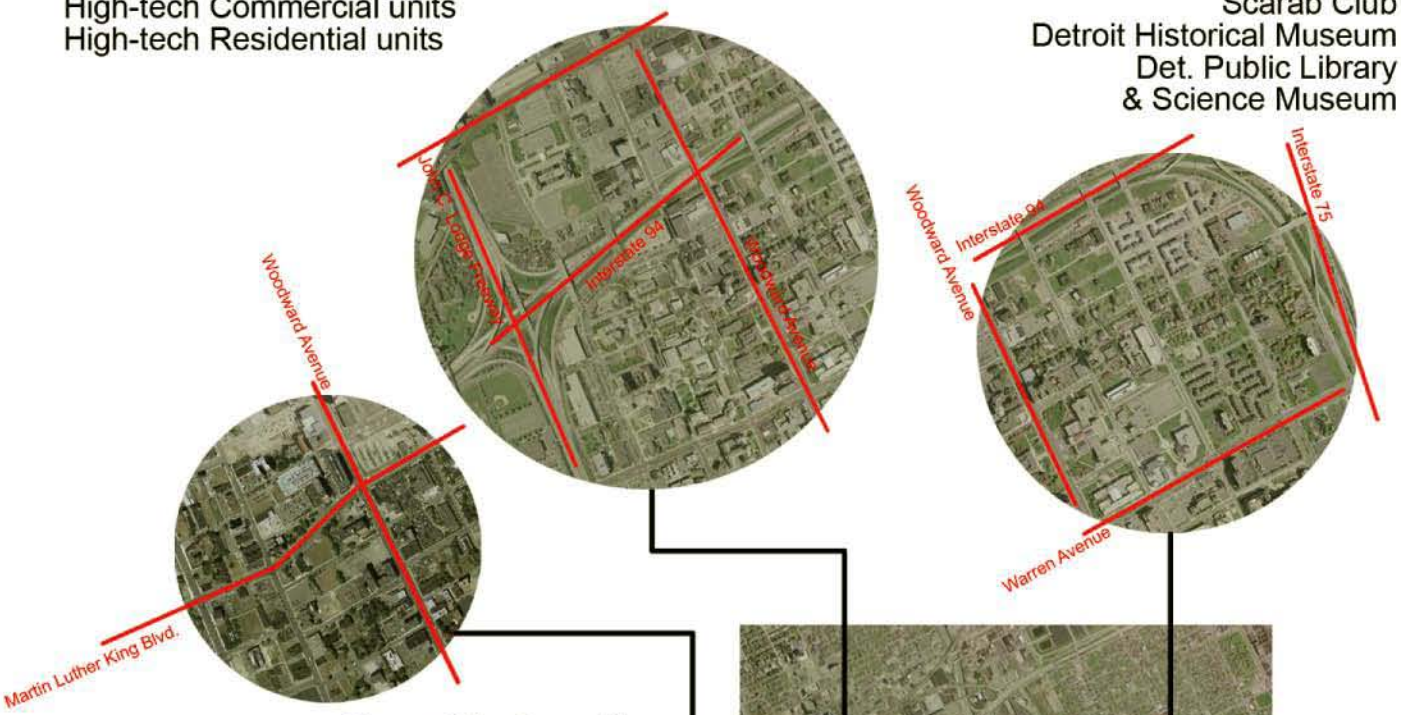


Tech - Town Campus

Composed of 12 city blocks
Between New Center + University Cultural Center
Lies within Amsterdam Historical District
Started in 2003; 10 year program
Plans call for:
New high-tech high schools
Mixed use buildings
Retail extentions of Wayne State Univ.
High-tech Commercial units
High-tech Residential units

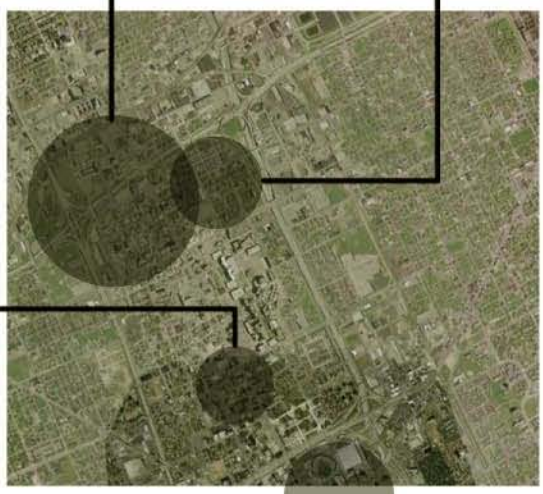
Detroit Cultural District

Detroit Institute of Arts
Museum of African American History
Scarab Club
Detroit Historical Museum
Det. Public Library
& Science Museum



Core Site Location

Circle = 1/4 mile radius
Availibility of vacant land
Availibility to use thresholds
Need for program uses

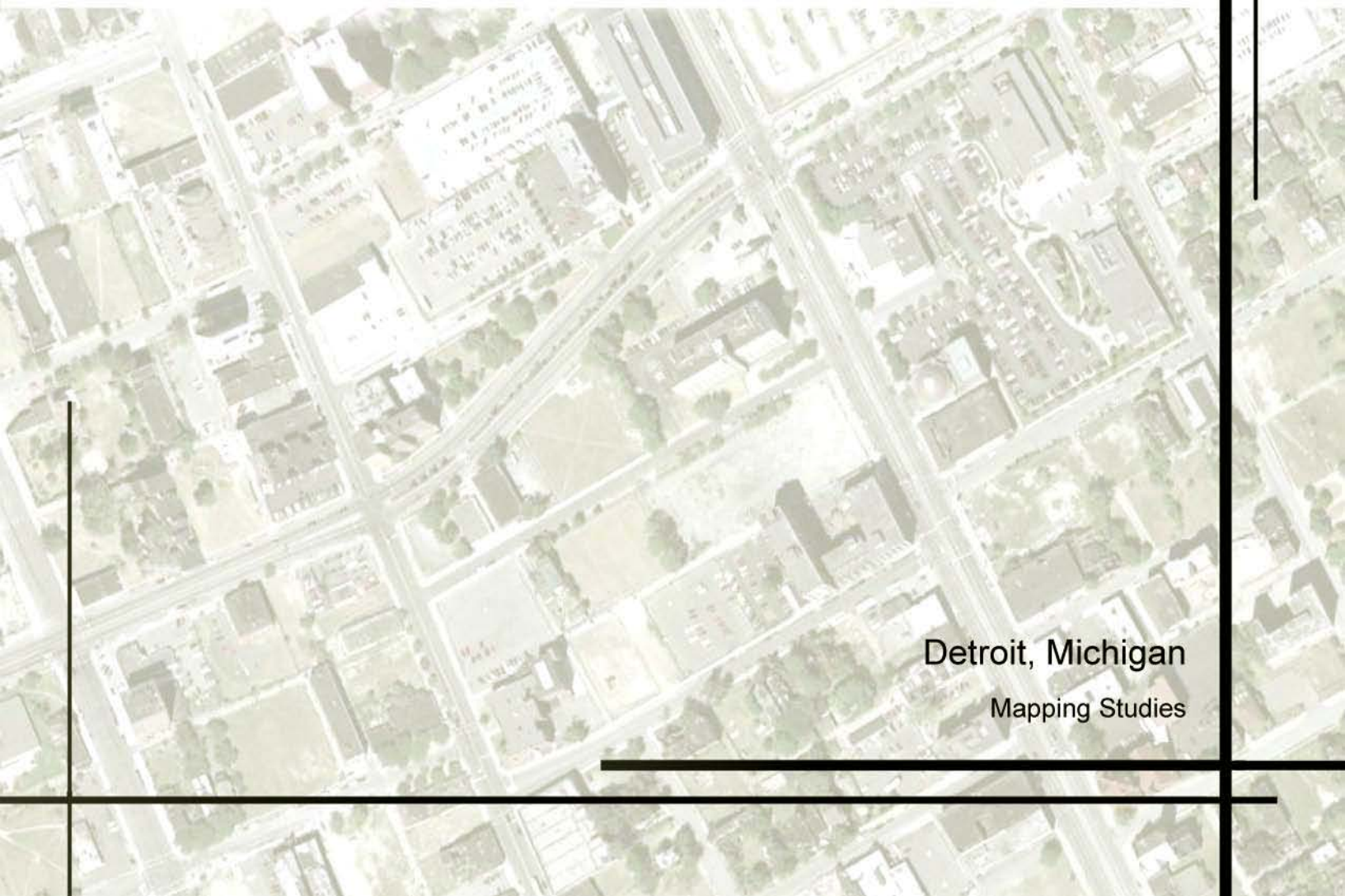


N

Det. Entertainment District

Comerica Park
Ford Field
Fox Theatre
Century Theatre
Gem Theatre
State Theatre
Music Hall
Detroit Athletic Club
Detroit Opera House
Grand Circus Park
Greektown District
Hockeytown Cafe

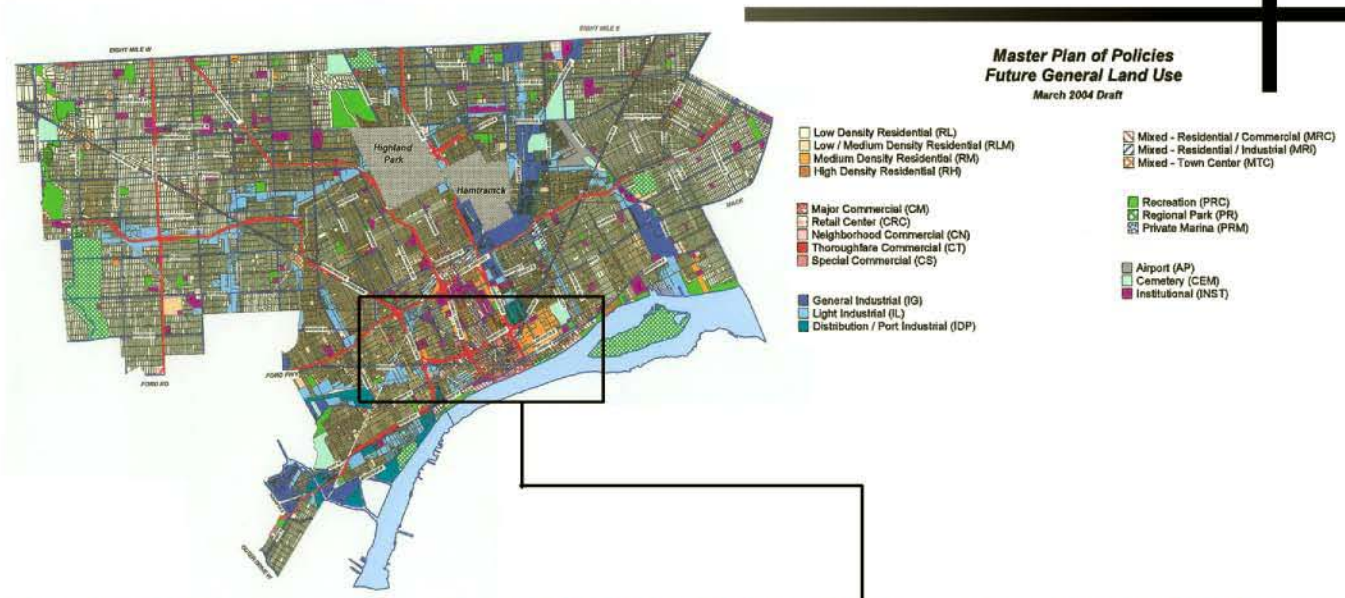
RESEARCH

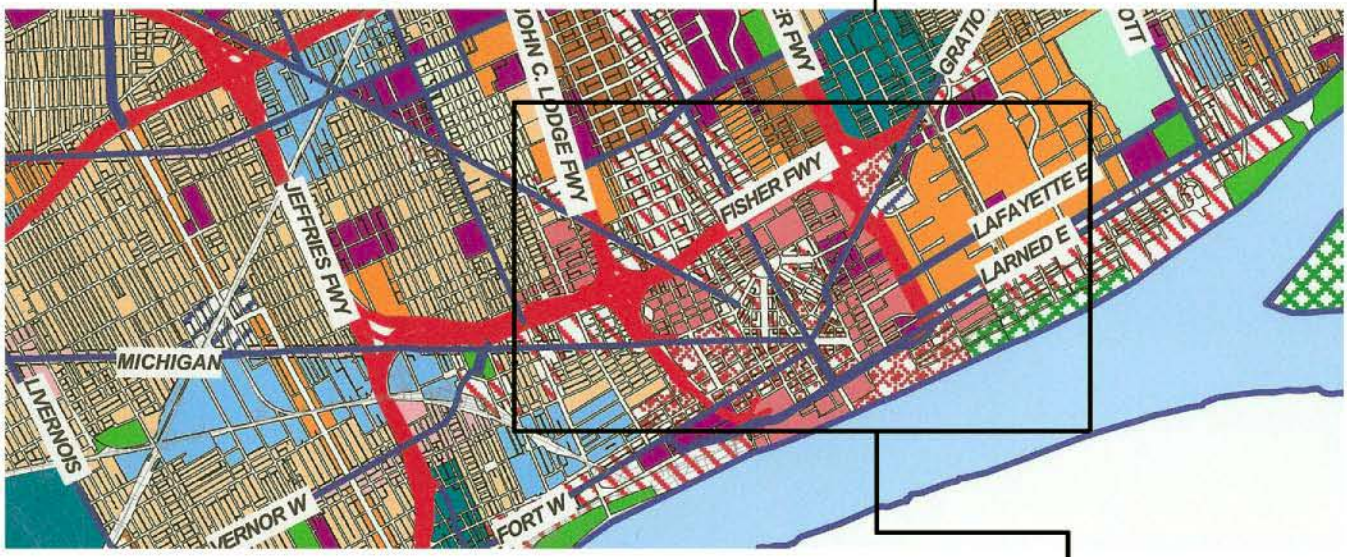


Detroit, Michigan

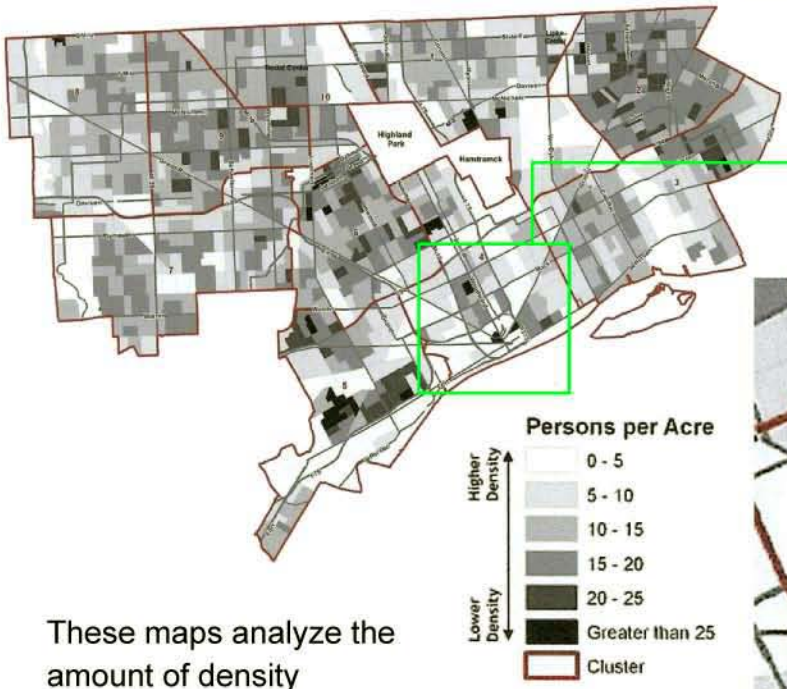
Mapping Studies

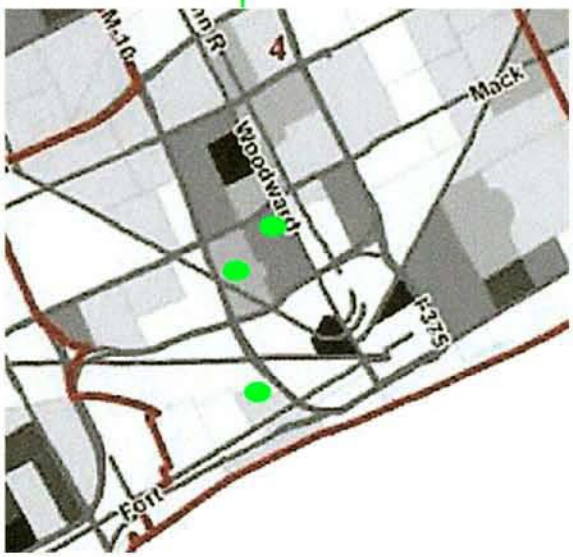
Detroit Zoning Conditions



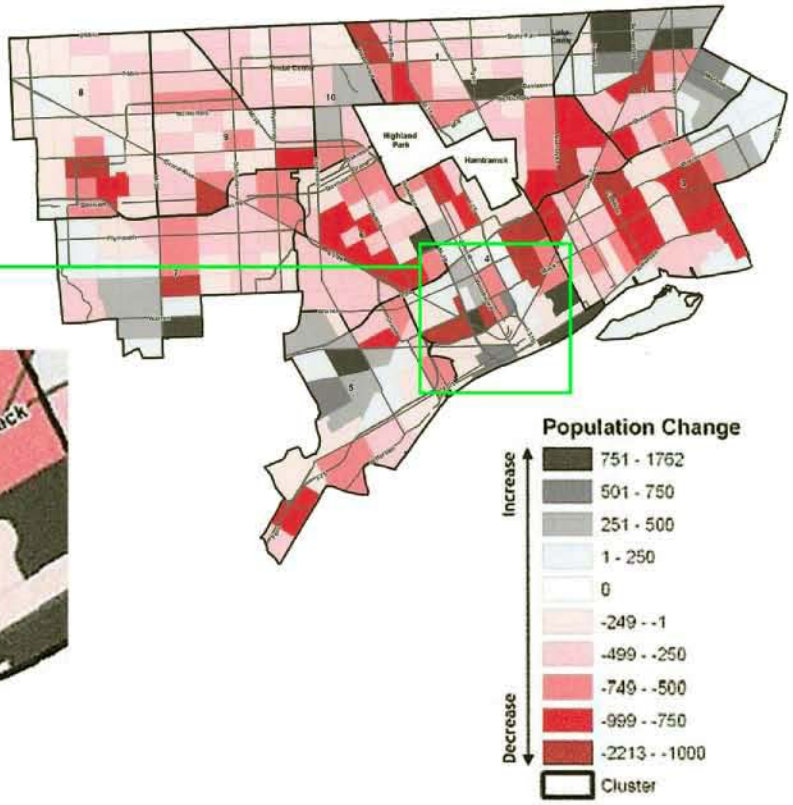


These maps show the current zoning conditions for the city of Detroit (2006). It is necessary for this project to locate possible sites that are surrounded by multiple zoning types. This relationship will allow for the exploration into blending these site conditions. The black dots represent the three possible site selections.

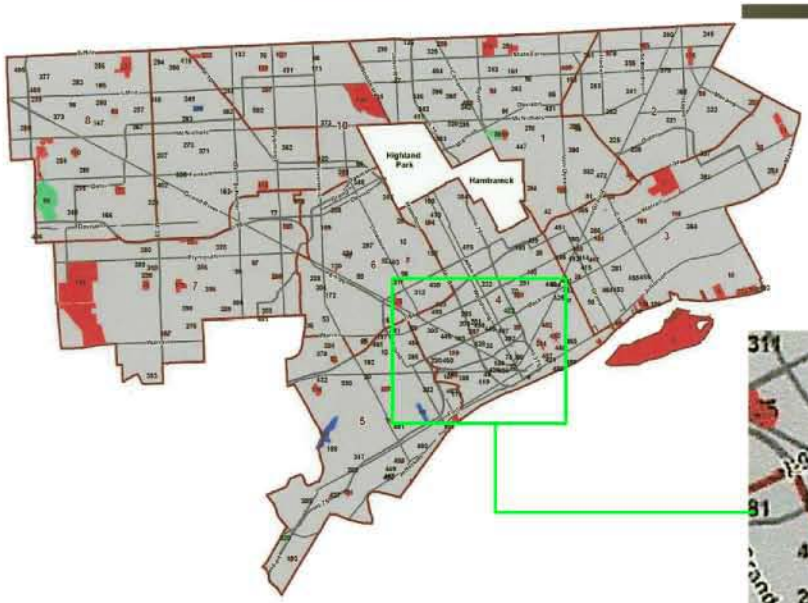




These maps analyze the amount of density throughout the city. It is unfortunate to see many areas housing few people, and districts that are drastically losing numbers during a very short period of time (2000-2006). The bright green dots represent the three possible site locations.

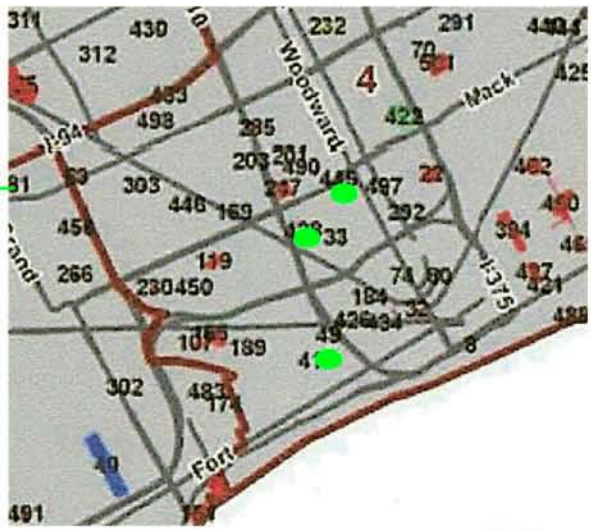


*maps retrieved from www.ci.detroit.mi.us

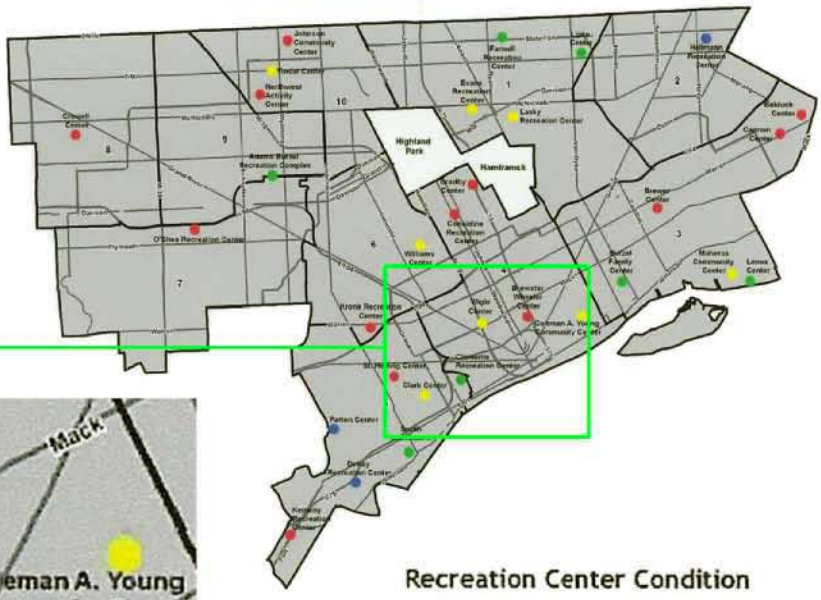


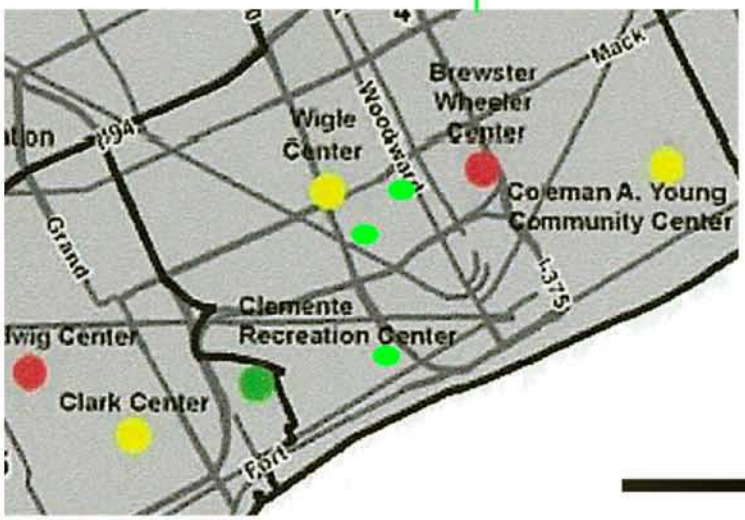
Park Capacity

- Over
- Near
- At
- Under



Public spaces in Detroit are typically under used and/or are in poor condition. These maps display prominent information on the need for new and remodeled parks, plazas, and recreation centers throughout the city limits. Exciting public space creates the potential for pedestrian interaction and in turn, adapts well to urban environments. The bright green dots represent the three possible site locations.



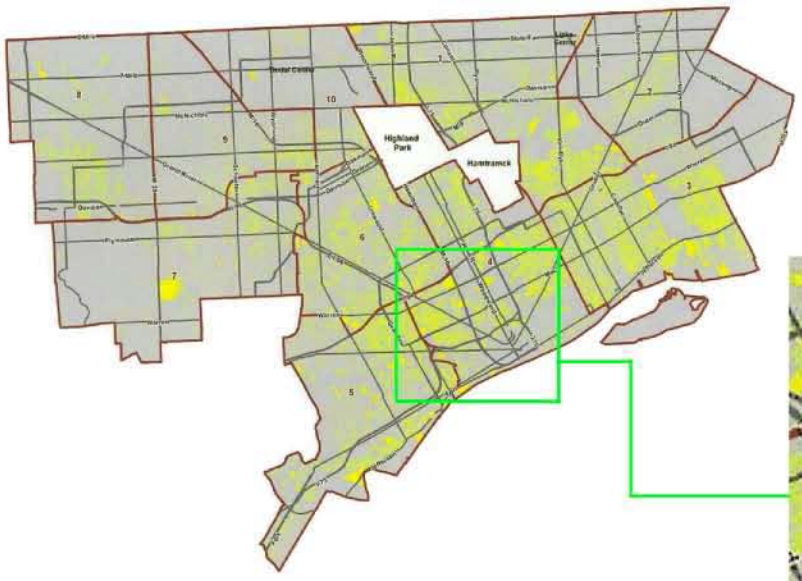


Recreation Center Condition

- Under Construction
- Good
- Fair
- Poor

*maps retrieved from www.ci.detroit.mi.us

Detroit Prioritization Areas

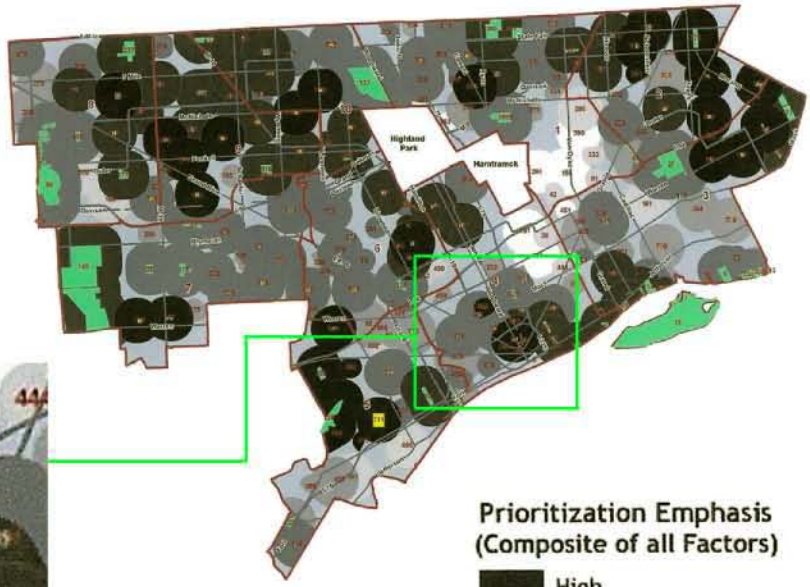


Legend

Vacant Land

Cluster

It is very useful to compare vacant land with areas that are in need of revitalization. The Prioritization Emphasis map represents a study that was conducted for all city districts. The potential site locations all exist in areas where a moderate to high level of emphasis is desperately needed. The bright green dots represent the three possible site locations.



Prioritization Emphasis
(Composite of all Factors)

High

Low

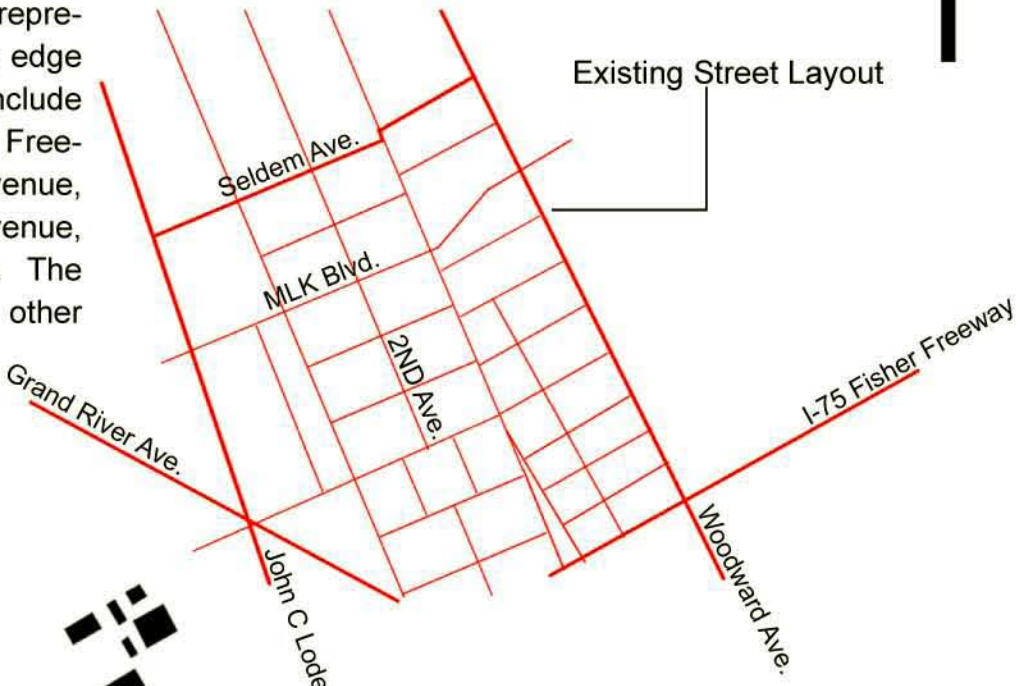
Park Condition

Existing Park

Future Park

*maps retrieved from www.ci.detroit.mi.us

The thick red lines represent major boundary edge conditions. These include The John C Lodge Freeway, Grand River Avenue, I-75, Woodward Avenue, and Seldem Avenue. The thin red lines show other street locations.



Analyzing conditions surrounding the core parcel, provides information that displays un-implied boundaries that act to create edges. These edges are not where program stops, but where transformations begin in which a meandering of hybrid green space fills these vacant locations.

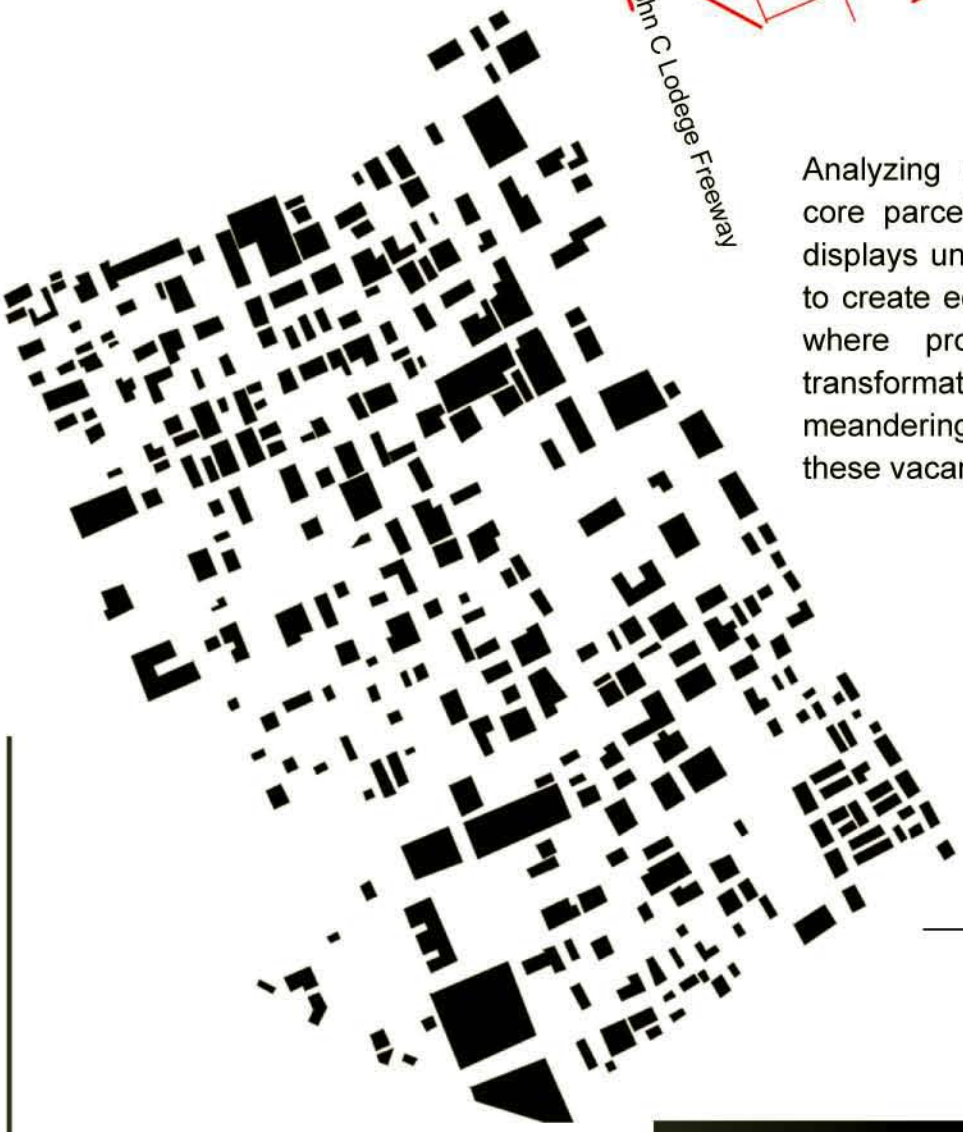
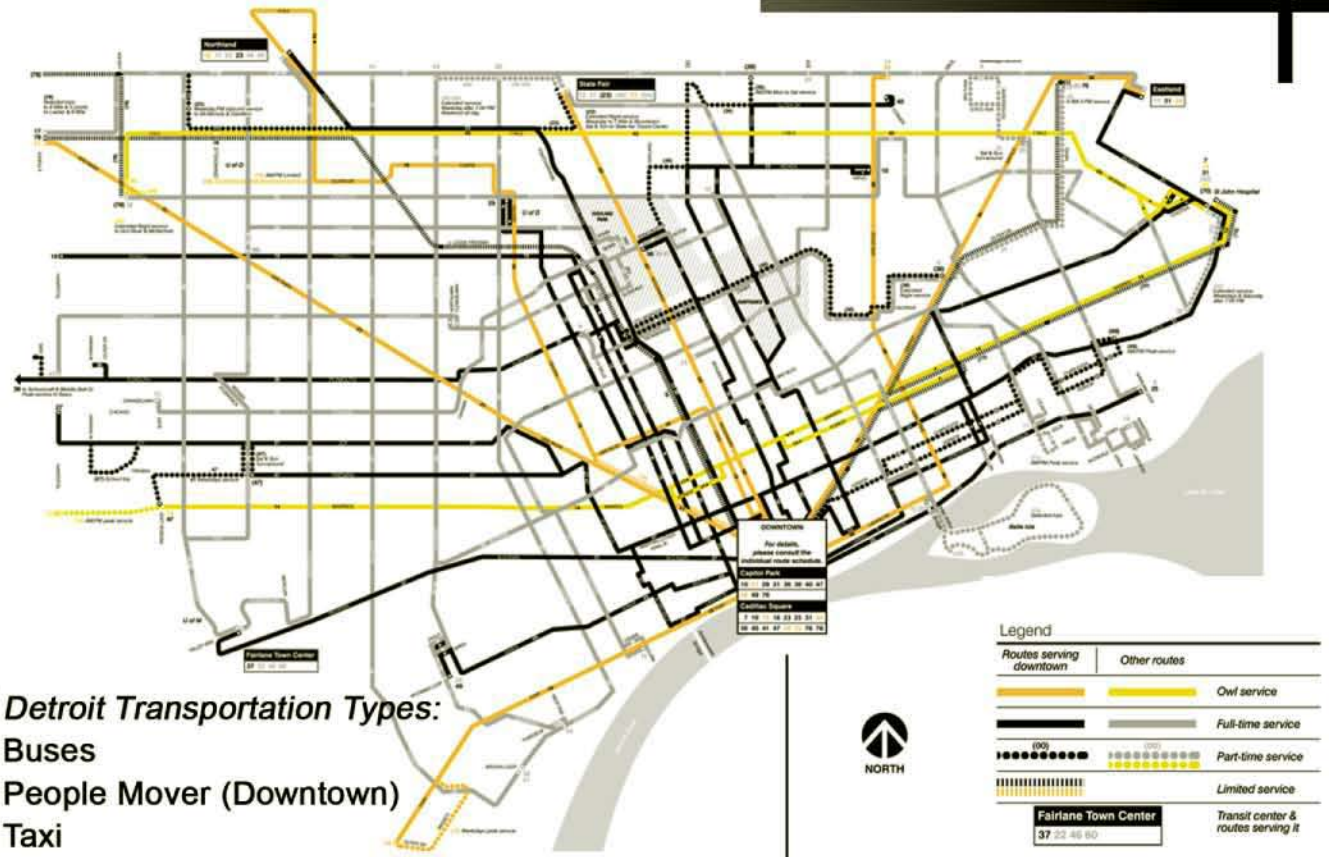


Figure Ground

Various edge conditions are shown in this diagram. The Green line represents the condition at Seldem Street. Here, a distinct change in building density is seen and provides a location where the meaning of hybrid green space is likely to stop. The orange line represents Woodward Avenue. This nine lane street is a major impenetrable boundary. The brown line represents 2ND Avenue where another distinct characteristic can be seen. To the west of the street are large tracts of vacant land in which complete new developments would be appropriate rather than hybrid green spaces due to the vast amounts of vacant land. The southern boundary, the cyan line, is I-75 which is a sunken expressway that drastically divides the city into pieces. This condition is the last section that closes off a district in need of revitalization.

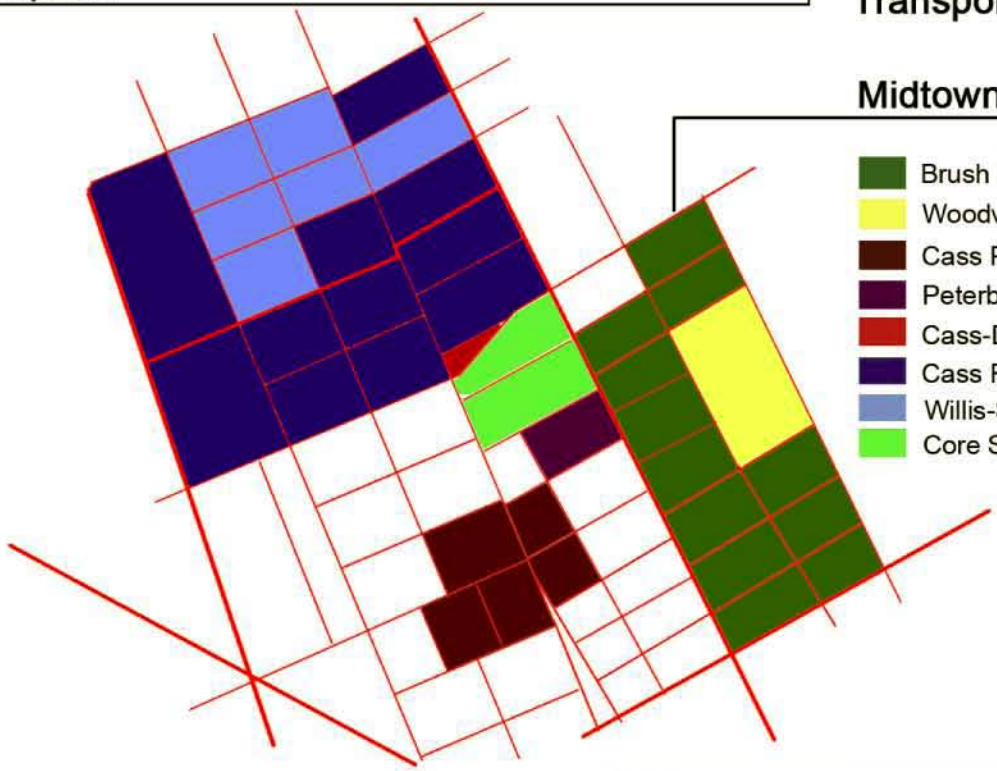
This diagram also analyzes the location of abandoned buildings which are the blue rectangular spaces on the figure ground map.

This figure ground drawing analyzes the location of vacant property within the defined boundaries listed previously (green areas). There are numerous empty parcels located adjacent to the core site which would allow for a meandering hybrid green space. Many of the parcels are located within the same city block of habited buildings, providing a base for blending different building uses. By exploring vacant sites in multiple directions, the ability to create a series of thresholds exists. Developing spaces to fill in voids along the Woodward corridor will hopefully create an interaction network.



Detroit Transportation Types:
Buses
People Mover (Downtown)
Taxi
Automobile
Airplane

Public Bussing Transportation Map



Midtown Historic Districts

- Brush Park Historic District
- Woodward East Historic District
- Cass Park Historic District
- Peterboro-Charlotte Historic District
- Cass-Davenport Historic District
- Cass Farms Historic District
- Willis-Selden Historic District
- Core Site Location

SouthEast Michigan

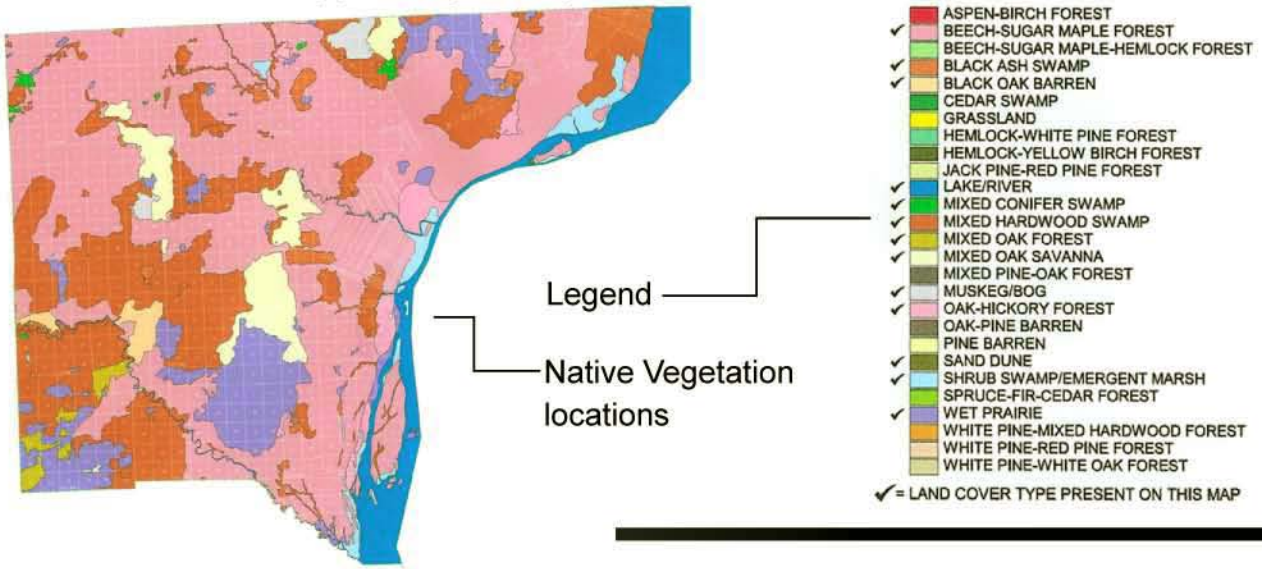
Regional Landscape Ecosystems: Beech-sugar maple forest, elm-ash forest, deciduous swamp, white oak-black oak savannas, wet prairies, coastal marshes[1].

Elevation: 580 to 750 feet

Climate: Climate is somewhat moderated by Lake St. Clair and Lake Erie. Growing season is generally long, ranging from 150 to 180 days; growing season is longer near the shorelines of the Great Lakes and shorter inland (Eichenlaub et al. 1990). Extreme minimum temperature ranges from -18*F to -26*F, with lowest temperatures along the inland edge of the sub-subsection. Snowfall is relatively light, ranging from 30 inches in the south to 50 inches in the north. Average annual precipitation ranges from 30 to 32 inches[1].

Bedrock Geology: Along Lake Erie, lacustrine deposits are more than 100 feet thick along the inland edge of the lake plain, but less than 5 feet thick near the shoreline. The surface lacustrine deposits are underlain by Mississippian, Devonian, and Silurian marine and nearshore bedrock, including sandstone, shale, coal, limestone, dolomite, gypsum, and other evaporites (Dorr and Eschman 1984, Milstein 1987). Bedrock is only locally exposed in stream banks and near the shorelines of Lake Erie. The oldest Silurian bedrock is near the surface in the south. Commercial deposits of rock salt and saline wells occur in the Silurian Salina formation near Detroit[1].

Landforms: The southern two-thirds of the sub-subsection is clay lake plain, with several broad channels of lacustrine sand. The northern third is primarily lake plain, with clay soils; but it includes several 1- to 3-mile-wide end moraines (Farrand 1982). These moraines have been reworked by water. Beach ridges and small sand dunes are common on the sand channels. The clay plain is generally broad and flat[1].



[1]All information retrieved from United States Geological Survey <http://www.npwrc.usgs.gov/resource/habitat/rlandscp/s6-1-1.htm>

Monthly Average Temperatures

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Anl.	Norm
2004	20.0	28.5	40.4	50.8	60.9	67.1	71.8	68.5	67.4	53.3	43.0	29.6	50.1	49.7
2005	24.1	28.5	33.1	50.7	56.6	74.1	75.4	74.8	68.4	55.2	43.2	25.8	50.8	49.7

Monthly Precipitation Totals

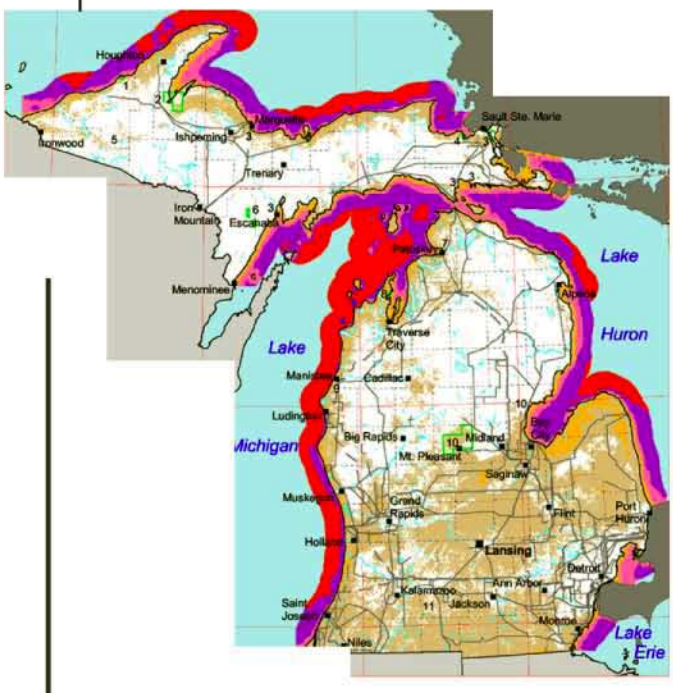
Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Anl.	Norm
2004	1.43	0.63	3.29	0.69	8.46	2.86	2.85	4.52	0.65	2.08	3.21	2.91	33.58	32.89
2005	3.40	3.02	0.74	1.66	1.85	1.95	5.38	1.33	1.63	0.13	4.70	2.52	28.31	32.89

Latitude: 42.331 N
Longitude: -83.045 W
Elevaton: 600 Feet (core site location)

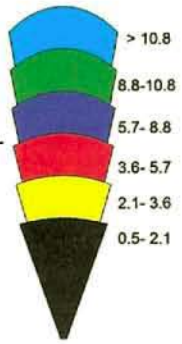
Wind Power Diagram

Wind Power Classification

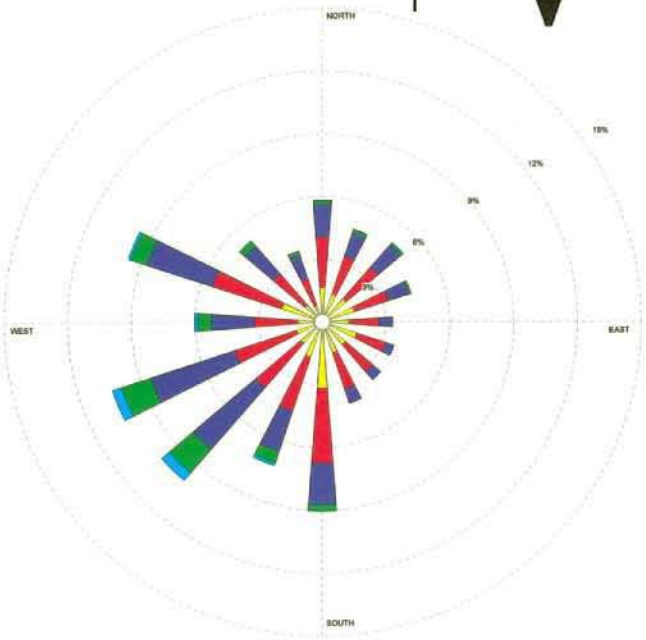
Wind Power Class	Resource Potential	Wind Power Density at 50 m W/m^2	Wind Speed[a] at 50 m m/s	Wind Speed[a] at 50 m mph
1	Poor	0 - 200	0.0 - 5.6	0.0 - 12.5
2	Marginal	200 - 300	5.6 - 6.4	12.5 - 14.3
3	Fair	300 - 400	6.4 - 7.0	14.3 - 15.7
4	Good	400 - 500	7.0 - 7.5	15.7 - 16.8
5	Excellent	500 - 600	7.5 - 8.0	16.8 - 17.9
6	Outstanding	600 - 800	8.0 - 8.8	17.9 - 19.7
7	Superb	> 800	> 8.8	> 19.7



Legend (MPH)



Wind Rose Diagram



PROJECT PROGRAM

Project Identification

This project will investigate an urban space that aims to bring people into an area of interaction, exploration, and spatial layering. The site should be viewed as a combination of meandering green spaces with programmatic elements that define a new campus like setting. Private and public spaces will provide opportunities for many different types of people to adapt to different situations. Elevated and submerged open spaces will meander into vacant properties with a goal of blending contextual boundaries and forming a place for afternoon and evening strolls, informal lunches and other modes of interaction. In order to fully explore these ideas, a direct connection of built form to site in combination with layers of thresholds is neccesary for this project to be successful. The program will consist of a multitude of fragmented elements. These elements will facilitate the movement between indoor and outdoor environments that directly correlate to nature, culture, and technology. Exhibition spaces, including a banquet facility / convention center, and small galleries, will intermingle with a technology based business incubator. The inclusion of an interactive technology learning center will help foster the blending of boundaries that emphasizes the appreciation for information with hands on experience. A hotel with parking decks is included in order to reinforce the idea of bringing different types of people to the site by facilitating groups of out-of-town visitors.

Articulation of Intent

It is the intent of this project to challenge conventional boundaries by blending them together by means of spatial layering of thresholds creating ambiguous circumstances and exploring direct and indirect connections to nature. This intervention will carefully consider the threshold conditions through fragmented building programs and the role of the overall site. With these actions, this project aims at avoiding isolation and disassociation in order to create new relationships that emphasize interaction and adaptation to surrounding contextual situations. It is the hope that merging nature with the urban environment will change our perception that these are two separate entities.

Major Components

The major components of this project are intended to attract many types of people into an area surrounded by culture and entertainment. Focusing on threshold conditions, a meandering green space that explores multiple vacant properties throughout a number of city blocks will ultimately fuse together contextual boundaries. Numerous water features, pathways, plazas, and a ranging density of vegetation will reinforce the park-like setting.

Public Exhibition Space.
A combination of small scale technology galleries will fragment themselves from a medium scale convention center / banquet hall. The convention center will provide large banquet spaces that are needed beyond a smaller meeting room. These permanent spaces, in combination with all other programmatic components, will focus on the connection of inside and outside spaces and the flow of space in between.

Technology Business Incubator.
A technology business incubator that will support start-up high tech companies by supplying specific services and resources will coincide with the above exhibition spaces. The incubator will mainly focus on business aspects. Included will be administrative and technical services, assistance with the commercialization of new inventions, providing space for offices and suites, business and training support in marketing, advertising, strategic planning, venture capital, human resources, and others, along with other necessary elements to encourage entrepreneurship.This permanent programmatic form aims at producing an environment whose goal is directed at public high-tech industries and promoting innovation through the discovery of inventions.

Hotel.
A multi-story hotel will help generate an adaptation to the site by introducing a wide variety of people into the space while reinforcing the vertical dimension of existing buildings. This element, combined with other programmatic elements, will create the need for parking decks located within the core site.

Interactive Technology Learning / Research Center.
A medium scale Interactive Technology Learning Center will physically disjoin itself from other programmatic elements that make up the site. With a focus on an appreciation for knowledge and the empowerment of our technological world culture, this center will include retail book stores, public and private computer facilities, research rooms, machine rooms, workshops and laboratories, and media studios for educating people using all forms of electronic media. The idea is to create a building with transformable spaces with the ability to access state of the art technology. Realizing the need to compete in a global economy, research collaboration and hands on experience are primary components. The research portions of the business incubator are located in this facility in order to mix both private and public uses. Services will include, but are not limited to, telecommunications, science, energy technology, and computer technology. It also aims at providing disadvantaged residents with access to information technology and the training for how to use it.

Public Garden Space.
Varying sizes of Winter Gardens will be located adjacent to the Technology Business Incubator and between the Interactive Technology Learning/Research Center and Convention Center. Within the winter gardens will exist a visibly growing arrangement of vegetation that will coincide with numerous water features. This slow development is aimed at growing year around in this harsh climent of sun, rain, and snow. The gardens will also serve as decorations for workers and visitors to enjoy throughout the winter months.

An organizational goal of these programs is to fragment the building elements as much as possible. This does not necessarily mean isolating them from each other, but rather leaving enough room for threshold conditions to take place within the green space and pedestrian paths. Arranging built form to reinforce a direct connection with site and exterior environment is another organizational tool to be absorbed into the process.

QUANTITATIVE SUMMARY

A. Interactive Technology Learning / Research Center

A1. Exhibition Space		3,000 s.f.
A2. Conference Rooms	(3 @ 750 s.f.)	2,250 s.f.
A3. Lobby	(2 @ 500 s.f.)	1,000 s.f.
A4. Mechanical / Electrical Room		1,000 s.f.
A5. Computer Rooms	(2 @ 1,500 s.f.)	3,000 s.f.
A6. Research Room		4,000 s.f.
A7. Labratories	(2 @ 2,000 s.f.)	4,000 s.f.
A8. Workshop Room		6,000 s.f.
A9. Classrooms	(10 @ 1,000 s.f.)	10,000 s.f.
A10. Media Space (for marketing and advertising studies)		10,000 s.f.
A11. Storage Rooms	(2 @ 150 s.f.)	300 s.f.
A12. Information Space		100 s.f.
A13. Offices	(10 @ 150 s.f.)	1,500 s.f.
A14. Break Room		250 s.f
A15. Bathrooms	(6 @ 300 s.f.)	1,800 s.f.
(3 Men's @ 300 s.f. + 3 Women's @ 300 s.f.)		
A16. Vertical Circulation (Elevator / Egress)		1,600 s.f.
(2 Elevators @ 250 s.f. + 3 Stairs @ 300 s.f.		
+ 1 Elevator Mech. Room @ 200 s.f.)		
A17. Machine Room (Production room)		8,500 s.f.
A18. Restaurant and Bar		3,000 s.f.
(1 Kitchen @ 500 s.f. + 1 Seating Area @ 2,000 s.f.		
+ 1 Bar @ 500 s.f.)		
A19. Bookstore		800 s.f.
A20. Rooftop Greenspace / Garden		5,000 s.f.

Net Area:	**67,100 s.f**
*20% increase for Circulation	13,500 s.f.
Gross Area:	**80,600 s.f.**

B. Technology Business Incubator

B1. Offices	(30 @ 125 s.f.)	3,750 s.f.
	(10 @ 300 s.f.)	3,000 s.f.
B2. Suites	(10 @ 500 s.f.)	5,000 s.f.
B2. Conference Rooms	(3 @ 1,000 s.f.)	3,000 s.f.
B3. Resource Room		600 s.f.
B4. Training Room	(5 @ 1,000 s.f.)	5,000 s.f.
B5. Computer Room	(2 @ 700 s.f.)	1,400 s.f.
B8. Reception / Waiting Area		750 s.f.
B9. Storage Rooms	(6 @ 100 s.f.)	600 s.f.
B10. Mechanical / Electrical		300 s.f.
B11. Mail / Information Room		150 s.f.
B12. Bathrooms	(8 @ 200 s.f.)	1,600 s.f.
(4 Men's @ 200 s.f. + 4 Women's @ 200 s.f.)		
B13. Coffee / Break Room		250 s.f.
	Net Area:	**25,400 s.f.**
*20% increase for Circulation		5,000 s.f.
	Gross Area:	**30,400 s.f.**

C. Gallery Space (X2)

C1. Atrium / Entry	(2 @ 300 s.f.)	600 s.f.
C2. Information / Receptionist Space / Office		400 s.f.
C3. Receiving / Shipping Area		700 s.f.
C4. Gallery Space		10,000 s.f.
C5. Coat Check / Storage		750 s.f.
C6. Mechanical / Electrical		200 s.f.
C7. Cafe		800 s.f.
C8. Bathrooms	(4 @ 200 s.f.)	800 s.f.
(2 Men's @ 200 s.f. + 2 Women's @ 200 s.f.)		
	Net Area:	**14,250 s.f.**
*20% increase for Circulation		3,000 s.f.
	Gross Area:	**17,250 s.f.**
		(X2)
		34,500 s.f.

D. Convention Center

D1. Banquet Space	(3 @ 8,000 s.f.)	24,000 s.f.
D2. Commercial Kitchen		2,500 s.f.
D3. Atrium / Entry		750 s.f.
D4. Bathrooms	(4 @ 300 s.f.)	1,200 s.f.
(2 Men's @ 300 s.f. + 2 Women's @ 300 s.f.)		
D5. Mechanical / Electrical		1,000 s.f.
D6. Storage		300 s.f.
D7. Administrative Offices	(10 @ 150 s.f.)	1,500 s.f.
	Net Area:	**31,250 s.f.**
*20% increase for Circulation		6,300 s.f.
	Gross Area:	**37,550 s.f.**

E. Hotel

E1. Rooms	(150 @ 500 s.f.)	75,000 s.f.
E2. Reception Counter / Offices		1,000 s.f.
E3. Lobby		2,000 s.f.
E4. Laundry Room		600 s.f.
E5. Dining Room		2,500 s.f.
E6. Kitchen		750 s.f.
E7. Bathrooms	(2 @ 300 s.f.)	600 s.f.
(1 Men's @ 300 s.f. + 1 Women's @ 300 s.f.)		
E8. Mechanical / Electrical		1,500 s.f.
E9. Storage	(8 @ 150 s.f.)	1,200 s.f.
E10. Machine Storage		1,000 s.f.
E11. Indoor Pool Room		7,500 s.f.
E12. Pool Mechanical Room		250 s.f.
E13. Fitness Center		750 s.f.
E14. Game Room		250 s.f.
E15. Vertical Circulation (Elevator / Egress)		2,500 s.f.
(2 Elevators @ 250 s.f. + 2 Stairs @ 1,000 s.f.)		
	Net Area:	**97,400 s.f.**
*20% increase for Circulation		20,000 s.f.
	Gross Area:	**117,400 s.f.**

F. Winter Gardens

F1. Depressed Garden Areas		8,000 s.f.
F2. Elevated Garden Areas		6,000 s.f.
F3. Level Garden Areas		6,000 s.f.
F4. Waterscape		1,500 s.f.
	Net Area:	21,500 s.f.
*30% increase for circulation		6,000 s.f.
	Gross Area:	27,500 s.f.

G. Green Space (Estimated)

G1. Depressed Plaza Areas	(3 @ 5,000 s.f.)	15,000 s.f.
G2. Elevated Plaza Area		3,500 s.f.
G3. Circulation Paths		20,000 s.f.
G4. Waterscape (Water Circulation Paths)		7,500 s.f.
	Gross Area:	**45,500 s.f.**

H. Parking

Parking Space Allotment

(9' x 25' = 225 s.f. per space + Circulation = 325 s.f per space)

Estimated required Spaces needed		600
Parking Deck	(2 decks @ 300 spaces)	600 spaces

*(2 Parking decks @ 97,500 s.f. each)

*(3 Levels per deck = 32,500 s.f. footprint per deck)

Gross Area: **65,000 s.f.**

Total Gross Square Footage: 438,450

Site Numbers

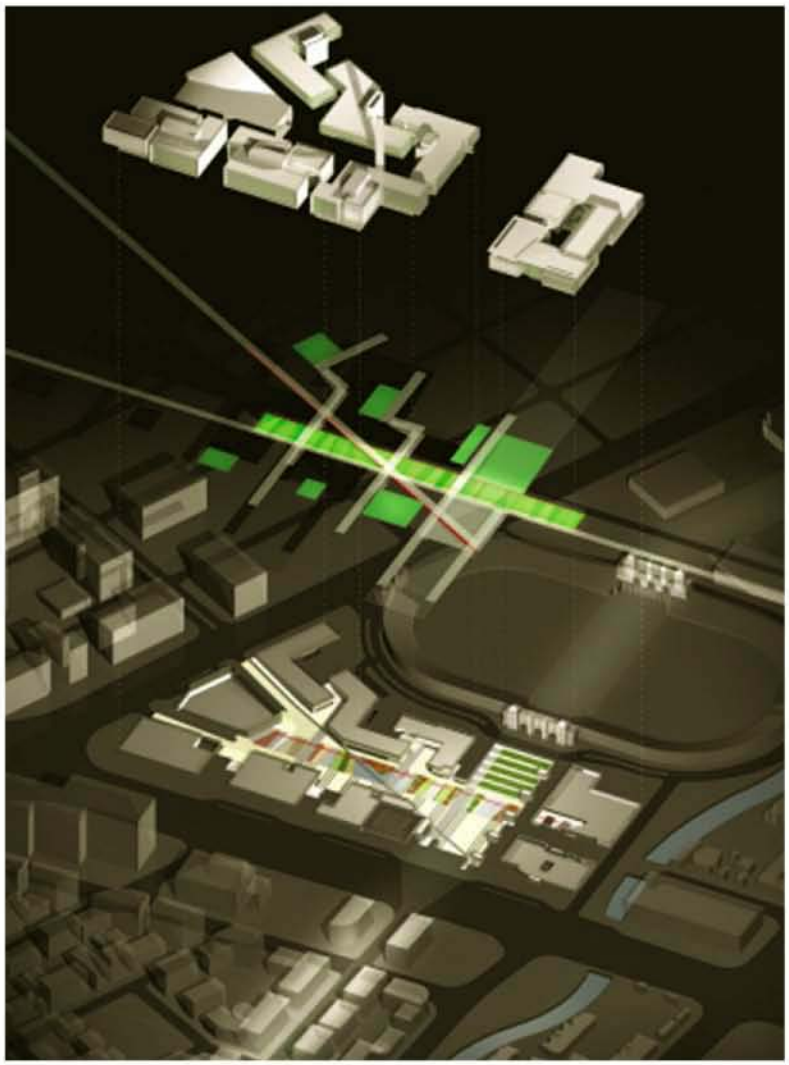
Available Land	578,000 s.f.
(Core Site @ 578,000 s.f.)	
Combined Building Footprint	327,950 s.f.
Parking Deck Footprint	65,000 s.f.
Remaining Area for Greenspace	
Core Site	277,550 s.f.

The Knowledge and Innovation Community (KIC) was completed in 2006 in Shanghai, China. The design was created by Skidmore, Owings, and Merrill (SOM) and was developed to become a nexus for technological inventions and research within the Yang Pu district. The total project area is 534,400 square feet and contained on a site of 219,800 square feet. A core goal for the project was to join the university area, the science-technology area, the cultural district, and the ecological environment into a new unifying element.

The Yang Pu district consists of 1.24 million people and is located in the north-east section of Shanghai. It is the largest urban area of Shanghai that also borders the Huangpu river. The KIC is located in the core of the city and is in proximity to fourteen major universities and colleges. The development aims at creating a new environment where technological innovations and business creation can be fostered. People are able to live, work, study, and relax within the district. There are five major elements that make up the KIC. The first component is a multi level plaza that acts as the cultural core where people can relax, entertain, work, and learn. The second component is a mixed use area titled "the knowledge hub". In this area, residential units coincide with retail shops, offices, and recreational amenities. A Technology Park is the third component making up the KIC. The park is designed to act as a research and development area for entrepreneurs to seek specific technological pursuits. SOHO, small office-home office, is the fourth component where more mixed use buildings exist. The last component of the KIC is a sports center. The Jiangwan Sports Centre is an area composed of a stadium and a mixture of athletic facilities.

Today's culture embodies technological advancements in media, sciences, knowledge, and research. The global economy is one where design and innovation are primary goals. Knowledge has become such an important commodity that competitiveness has started to erupt between nations. By establishing innovation centers, nations can provide services for people to carry out their innovative ideas, thus creating hot spots for strategic global sourcing and production of information[1].

The KIC will provide services for the following areas: Innovation watch, incubator facility, technology search, innovation partnering, business innovation review board, venture capital, and investment promotions. Funding for the services comes from the customers / business using them and the government. Creating economic development opportunities through technology, innovation, and knowledge, the KIC offers a forward step for nations and businesses to make a stand in the Global Market.



Expected results for businesses and entrepreneurs include innovations in Information Technology, nano-technology, software development, bio-technology, life sciences, and "green" or sustainable technology

"The concept is similar to the famous River Rouch of the Seine in Paris. Home of the revered University of Paris and the College of France and one of the most influential testing grounds for new ideas during the early twentieth century".[2]

The knowledge hub offers 30,000 square meters of commercial space whose goal is to create an environment for innovators to develop new technologies and commercialize their products. This would contribute to the cities economic growth, its skills, and its creation of new jobs. It is also the home to world famous research and development companies and high-tech businesses. Interior spaces include an exhibition hall, research and training rooms, and information and entertainment facilities. The Small office - home office (SOHO) building will house residents and retail shops. Programmatic elements include cafe's that will coincide with themed restaurants that encourage people to get together and interact with one another. Other elements include special galleries, bookstores, open air cafe's, ethnic restaurants, and other small shops aimed at creating gathering spaces. The Jiangwan Sports Park will include a large gymnasium, a stadium, swimming pool, exercise facilities, and other athletic related facilities.

This intellectual community offers more than services to high-tech business entrepreneurs, it offers significant investment opportunities in our ever-changing technological culture. The need for knowledge and education will continue to grow. By providing a Technology community in an area, businesses and the public will be able to compete with the advancements attributed to other cities and nations.

[1] Ministry of Foreign Affairs of Denmark. <http://www.dtcchina.um.dk>

[2] Shanghai Daily News. <http://english.eastday.com>

INTERACTIVE TECHNOLOGY LEARNING / RESEARCH CENTER

EXHIBITION SPACE

Quantities

Capacity: 100 No. Units: 1 NSF per Unit: 3,000 Total Net Area: 3,000

Purpose/Function

The exhibition hall will provide an interior area for the display of new innovative and inventive products. The room will also function as a space for small gatherings and community driven meetings. The goal of this program is to provide an area that is larger than a typical meeting room, but smaller than other programmatic galleries.

Activities

Most of the time, something will be on display for people. Whether it is a showcase of new product inventions or media innovations, the room will be a display in the traditional sense, thus creating a space for interaction and viewing. The room still also functions as a space for business and community meetings.

Spatial Relationships

The exhibition space will be located strategically on the second level as to emphasize interaction. It is a large space and will be located in one wing of the building.

Special Considerations

Due to the need for a large open space with limited structural invasiveness, support of the structure is a concern. Diffused natural lighting is of importance when circumstances arise where projecting media is of significance. The ability to block all natural lighting is also a key concern.

Equipment / Furnishings

None.

For the most part, the space will be completely open. Works can be hung from the ceiling or walls. Intruding structural columns can also act as a mounting tool. Occasionally, the need for tables, stands, and chairs may bring about the need for light weight and stackable items.

Behavioral Considerations

The activities and product displays must be enticing. They need to be arranged to be successful in attracting people into the space more than one time. The inventiveness of the products must coincide with the inventiveness of the display and spatial layout.

CONFERENCE ROOMS

Quantities

Capacity: 35 No. Units: 3 NSF per Unit: 1,000 Total Net Area: 3,000

Purpose/Function

The conference rooms will serve as spaces for administrative meetings to take place. They will also function as rentable rooms for businesses housed in the Incubator. As a potential income generator, the conference rooms will be isolated from public distractions.

Activities

Private group meetings of up to 35 people with the ability to connect to wireless internet, projectors, and other forms of communication and presentation techniques.

Spatial Relationships

The conference rooms will be located adjacent to one another and be placed near areas dedicated to generous circulation paths.

Special Considerations

The rooms will be isolated from areas of abundant noise. They also will be spread throughout the entire Technology Center to help activate the flow of movement. Natural light is not a top priority, but when glass is present, the need to block light is necessary.

Equipment / Furnishings

1 Large table for seating of 35
35 plush, lightweight, and rolling chairs
2 Flat screen televisions
1 Projector and screen
2 solid wood storage cabinets

Behavioral Considerations

At least one of the conference rooms will be in proximity to administrative offices while another is near classrooms.

INTERACTIVE TECHNOLOGY LEARNING / RESEARCH CENTER

LOBBY

Quantities

Capacity: 100 No. Units: 2 NSF per Unit: 500 Total Net Area: 1,000

Purpose/Function

To introduce people into the Technology Center for the first time. The impression that this leaves is of most importance. It should be treated in a way that is appropriate to innovative ideas and design techniques. The area will be able to accomodate the fast pace movement of business people while simaltaneously allowing local people and first timers a period to walk slow and visualize the interior.

Activities

Most likely, inhabitants will spend little time is this space, but this short period will have an effect on their impressions. People will be circulating through this space to get to other areas of the building. This will be the starting point for their experience. Some gatheing will take place which coincides with the main source of information for the entire building.

Spatial Relationships

There will be multiple lobby spaces that act as the entrance to the building. Large circulation areas will be adjacent to each of them with clear site lines of the building.

Special Considerations

The lobby is intended to be open to the community. There should be a direct link between the inside and outside environments. Threshold conditions of inside and out side spaces will be highly focused in this public area.

Equipment / Furnishings

The lobby will have several small couches and chairs for people to sit on and visualize interaction taking place. Information counters will also be located in this space

Behavioral Considerations

The pace that people move will be their own decision. The space will act as a place to facilitate movement, but also where one can wait for others to arrive.

INTERACTIVE TECHNOLOGY LEARNING / RESEARCH CENTER

COMPUTER ROOMS

Quantities

Capacity: 40 No. Units: 2 NSF per Unit: 1,500 Total Net Area: 3,000

Purpose/Function

The computer rooms will function as spaces that disadvantaged citizens and business people can use. They will also act as classrooms during dedicated teaching and learning periods. Interaction among public and private users is a goal within these spaces.

Activities

Researching, learning, teaching, and interaction are the key activities of these spaces. The spaces intend to give users the ability to create, explore, and carry out their ideas.

Spatial Relationships

There will be one computer room on the ground level and one on the second floor. They will each be near multiple classrooms, workshops, and labratories.

Special Considerations

The computer rooms need natural light. This will come in the form of diffused light to help eliminate glare on computer screens. The rooms need to be in proximity to the research room, labratories, and workshops. The room must be accessible to everyone. Efficient temperature control must also be executed here.

Equipment / Furnishings.

40 individual desks
1 large administration desk
43 computers
45 rolling and reclining office chairs
2 small sofa's
2 storage closet

Behavioral Considerations

Both computer rooms must have access to public spaces to facilitate the need for both physical and visual interaction.

INTERACTIVE TECHNOLOGY LEARNING / RESEARCH CENTER

RESEARCH ROOM

Quantities

Capacity: 75 No. Units: 1 NSF per Unit: 2,000 Total Net Area: 2,000

Purpose/Function

To allow public citizens and private businesses from the incubator to research and collaborate their inventive ideas. The space will function as a multi-media room aimed at providing factual information.

Activities

The reseach room will house books, computers, magazines, newspapers, and librarians in which people can research and act on their ideas. Presenting the oppertunity for people to collaborate on ideas and understand prior inventions, people will be able to sit down and learn.

Spatial Relationships

The research room will be located on the ground level and have direct access to dedicated outdoor spaces. It will be located near classrooms and a computer room.

Special Considerations

An abundance of natural light is essential to a space like this. This room will provide numerous spaces for people to research inside while feeling like they were really out side. The need for quiet is very important. HVAC pipes will be incorporated with efficient design techniques. This room must also be accessible to everyone, but also be able to be closed off for private research periods for businesses than are run out of the incubator.

Equipment / Furnishings

Numerous desks of different sizes
Abundance of chairs and sofa's
10 Computers
Administrative and Librarian desks
Current and previous books, magazines, and newspapers with large storage cabinets

Behavioral Considerations

The research room will be located adjacent to public spaces inside and outside. The ability to research and collaborate outside is neccessary.

INTERACTIVE TECHNOLOGY LEARNING / RESEARCH CENTER

LABORATORIES

Quantities

Capacity: 40 No. Units: 2 NSF per Unit: 1,200 Total Net Area: 2,400

Purpose/Function

A tool to help businesses physically invent their ideas. The laboratories will solely function as spaces for scientific studies and tests to be executed. Their purpose are also to facilitate movement between the Incubator and Technology Center.

Activities

Providing scientific equipment for entrepreneurs to hypothesize, test, re-test and form a conclusion on whether or not their ideas are safe, workable, and marketable. The labs will be for private use only and are an income generator for the entire facility.

Spatial Relationships

The laboratories will be located adjacent to one another and near classrooms and a computer room.

Special Considerations

The need for space, equipment, and materials creates a need for these rooms. Health and safety is the number one concern for people inside and outside of these spaces. Large spaces and wide circulation paths must prevail over innovative architectural design techniques. Bringing in as much natural light as possible is essential.

Equipment / Furnishings

Large counter spaces with sinks and drawers
40 bar stools
Commercial refrigerator
Hazardous material closet
Numerous lockable closets
Scientific and laboratory equipment including, but not limited to microscopes, burners, balances and scales, electronic supplies, glass containers

Behavioral Considerations

The rooms must have multiple means of escape and protection. It is not necessary to place these rooms near public spaces and access. The more private and secure the entrance, the better and safer the environment is.

WORKSHOP

Quantities

Capacity: 80 No. Units: 1 NSF per Unit: 4,000 Total Net Area: 4,000

Purpose/Function

The workshop will provide a space for entrepreneurs and private businesses to execute innovative and inventive products through the use of small tools. Its function is to provide a space that can be used at all hours of the day. This space will facilitate the movement and circulation of people between the Incubator and Technology Center. It also functions as one space that concludes the design of a new product which is ready to be showcased in the exhibition hall or one of the two large galleries on the campus.

Activities

Power tools and hand tools will be used to carry out new product prototypes. The space will be wide open with plenty of table and bench room.

Spatial Relationships

The workshop will be located in an isolated area to prevent disturbing noises from distracting other people throughout the building.

Special Considerations

Security and safety is a concern for this space. Authorized personnel will be required to supervise the space at all times. The workshop also needs to be in proximity to the Machine room.

Equipment / Furnishings

Large quantity of work benches, tables, and tools
60 bar stools
Supervisor desk and computer
10 Lockable storage containers
1 large lockable storage closet
Wash tub

Behavioral Considerations

Supervisors in the workshop should be advised not to allow access to questionable people who may jeopardize the safety of themselves and others. Theft is another concern that must be carefully watched.

INTERACTIVE TECHNOLOGY LEARNING / RESEARCH CENTER

CLASSROOMS

Quantities

Capacity: 30 No. Units: 10 NSF per Unit: 1,000 Total Net Area: 10,000

Purpose/Function

The classrooms will be spread throughout the levels of the building to allow different types of interaction between different users. They will function as teaching spaces for many aspects of the Incubator and Technology Center.

Activities

The activities that will take place in the classrooms are typical. Teaching and learning are the major functions while also permitting interaction and creativity. Hands on experience will be the primary concern for teachers to execute. These spaces will coincide with the computer rooms, research room, workshop, laboratories, machine room, and media space.

Spatial Relationships

The classrooms will be spread throughout the many levels of the building. For the most part, they will be grouped together and located near a computer room.

Special Considerations

A high volume of natural lighting will be used in all of the classrooms, helping to blend the relationship between inside and outside spaces. HVAC pipes have to be incorporated with efficiency to prevent noise from disturbing the classroom experience.

Equipment / Furnishings

Multiple rows of tables
30 chairs
Podium
Large flatscreen television
Projector and retractable screen

Behavioral Considerations

The classrooms must be adjacent to public circulation space. The ability to move from the incubator to the classrooms must be displayed through smart design.

INTERACTIVE TECHNOLOGY LEARNING / RESEARCH CENTER

MEDIA SPACE

Quantities

Capacity: 150 No. Units: 1 NSF per Unit: 10,000 Total Net Area: 10,000

Purpose/Function

The media space functions as a large open room where primarily marketing and advertising studies take place. Its purpose is to provide a large room for people to watch a presentation on specific techniques while learning how it gets executed through the use of electronics. The room can also serve as a large banquet space that is much larger than the exhibition room. The ability to generate income is a goal behind this room.

Activities

Both private and public presentations will take place in the media space. Large quantities of televisions, projection screens, and paper material will be housed in this area that teach and implement the skills that the Incubator focuses on, primarily being advertising and marketing. There will be 2 rooms that are sectioned off inside of the media space that are used to teach individuals how to work this electronic media.

Spatial Relationships

The media space will be located on the third level and have open adjacent areas to provide additional circulation room.

Special Considerations

The room needs to have minimal amounts of natural light as it is used primarily for presentations. Being able to easily control the amount and clarity of the light is a key concern.

Equipment / Furnishings

10 large flat screen televisions, 2 projectors, and 2 retractable screens
200 stackable chairs
1 large closet to store chairs
1 room housing electronics (amplifiers, soundboard, speaker control, etc...)
1 room housing electronics and conference table with 10 chairs

Behavioral Considerations

Security and protection of the electronics is important.

MACHINE ROOM

Quantities

Capacity: 50 No. Units: 1 NSF per Unit: 8,500 Total Net Area: 8,500

Purpose/Function

The machine room functions as a large space similar to the workshop. The purpose of this space is to provide room for numerous changeable powered machines that require a large area. This room will only house these large machines and be open during specific hours.

Activities

Teaching and research will coincide with private businesses from the Incubator that have a need to produce mass quantities of a product. Paying for their time, the users will be able to alter a stamping machine to conform to their invention.

Spatial Relationships

The machine room will be located on an underground level that is isolated from the rest of the building. It will be large and have high ceilings.

Special Considerations.

Health, safety, and security is a concern for this room. One wall of glass will provide one means of escape and challenge the conventional threshold of inside/outside space when located below grade.

Equipment / Furnishings

5 stamping machines
Numerous tables and work benches
50 bar stools
Security desk and chair
Administration desk with 2 computers and 2 chairs
20 large lockable storage units
10 small lockable storage units

Behavioral Considerations

The machine room must have direct access to public space, both inside and outside.

INTERACTIVE TECHNOLOGY LEARNING / RESEARCH CENTER

OFFICES

Quantities

Capacity: 1 No. Units: 10 NSF per Unit: 150 Total Net Area: 1,500

Purpose/Function

Main employee work spaces where work is coordinated and the business functions are taken care of. The offices purpose is to provide spaces for employees of the Technology Center and file work from the everyday affairs.

Activities

Typical office functions which include data entry, worker coordination and collaboration, printing (faxing and coping included), promotional activities, security consulting, etc...

Spatial Relationships

The offices will be adjacent to one another in a designated area on the second level. There will also be small offices adjacent to information/security desks in the lobby areas.

Special Considerations

No special considerations are necessary

Equipment / Furnishings

Typical office equipment to be the same in each office, including
Desk, rolling chair, computer, file cabinets, shelving, printers, etc...

Behavioral Considerations

Non-employee access is important. Security measures to prevent un-wanted guests into the business office area.

BREAK ROOM

Quantities

Capacity: 10 No. Units: 1 NSF per Unit: 250 Total Net Area: 250

Purpose/Function

Main employee space that is dedicated to employees throughout the Technology Center when break and lunch time occurs. The space is purposfully small to encourage individuals to take their break outside.

Activities

Typical break room activities take place here. Its a place where one can sit down at a table and eat their meal or relax from the hectic world outside.

Spatial Relationships

The break room will be located in the administration area where the majority of offices are. It will be close to an outdoor garden space that will spill into interior spaces.

Special Considerations

No special considerations are necessary

Equipment / Furnishings

1 large conference style table for 10
10 chairs
1 flat screen television
1 kitchenette with sink, microwave, and refrigerator

Behavioral Considerations

Non-employee access is important. Security measures to prevent un-wanted guests into the break room area.

INFORMATION ROOMS

Quantities

Capacity: 2 No. Units: 2 NSF per Unit: 150 Total Net Area: 300

Purpose/Function

To provide visitors with information and direction on the entire Technology Campus. Their function is to provide not just verbal direction, but hand out maps and brochures.

Activities

The rooms are intended to be smaller spaces that store and showcase information about the entire campus. Personnel will hand out information and verbally describe to visitors the location of components in all of the buildings. They will also act as greeters and security personnel who will answer questions that are brought up.

Spatial Relationships

The information rooms will be placed directly adjacent to each lobby area. This will provide a visible area for people entering the building to see where to get information. It will also allow personnel to see who enters and exits the building for security purposes.

Special Considerations

No special considerations are necessary. The spaces are typical information type booths that are located inside rooms.

Equipment / Furnishings

Built in counter for employees
Raised counter for guests
2 rolling chairs
Storage cabinetry
Display case

Behavioral Considerations

Since the information personnel are the first to see people entering the building, they need to be aware of possible security threats.

STORAGE ROOMS

Quantities

Capacity: 1 No. Units: 2 NSF per Unit: 150 Total Net Area: 300

Purpose/Function

Any materials that need storage, such as hardware and temporary walls, will be located in these lockable spaces.

Activities

These rooms are private and for staff only. The staff will be required to move all hardware to required spaces.

Spatial Relationships

The storage room will be strategically placed as to be hidden from main circulation paths. Their will be one storage room on the first level and one on the second.

Special Considerations

No special considerations are necessary.

Equipment / Furnishings

Typical maintenance supplies
Work bench
Water tub
Shelving

Behavioral Considerations

This is a straight forward support functioning room for the entire building. Special care may need to be taken in regards to the hazardous cleaning materials that may be used.

BATHROOMS

Quantities

Capacity: 20 No. Units: 6 NSF per Unit: 300 Total Net Area: 1,800

Purpose/Function

The bathroom will serve both the occupants of the entire building and provide bath rooms for occupants of the exterior green spaces and plaza's.

Activities

The bathroom will have hours of operation that coordinate with the system derived by authorized personnel who work the shifts. Once an area is closed, the bathrooms will no longer be open to the public until the area is re-opened.

Spatial Relationships

The bathrooms, both men's and women's, will be adjacent to one another.

Special Considerations

The restrooms will require sound absorbing material in the walls which will halt distracting sounds from entering other spaces.

Equipment / Furnishings

Each facility will be equipped with 7 stalls and 7 sinks. ADA design requirements will be utilized on all bathrooms. Each men's bathroom will have 3 stalls and 4 urinals. Each women's bathroom will have 7 stalls. Each will have minimum of one stall handicap accessible. All equipment, including flushing devices, water on/off, soap dispensers, and paper towel dispenser will have automatic sensors to control consumption and prevent wastefulness.

MECHANICAL / ELECTRICAL ROOM

Quantities

Capacity: 5 No. Units: 1 NSF per Unit: 1,000 Total Net Area: 1,000

Purpose/Function

The mechanical and electrical room will hold all necessary equipment to regulate the heating, cooling, and plumbing of the building. It will also house the equipment needed to operate the elevator. A back-up generator will also be located in this room, along with mass electrical equipment including servers, cable connections, breakers, etc...

Activities

The use and maintenance of the equipment are the primary activities for this room.

Spatial Relationships

The mechanical and electrical room will be placed in the basement level. This will allow for a large space that helps to conceal the noise caused by the mechanical units.

Special Considerations

Fire protection and security are concerns for this space.

Equipment / Furnishings

All of the heating, cooling, plumbing, and electrical equipment will be stored in this room
A diesel generator

RESTAURANT AND BAR

Quantities

Capacity: 150 No. Units: 1 NSF per Unit: 3,500 Total Net Area: 3,500

Purpose/Function

The purpose of the restaurant and bar is to provide a place for interaction to occur. It is located in a distinct visible place for passerby's to notice it. It will allow workers the space to prepare appetizers, drinks, and meals while providing a comfortable seating space for guests. It's main function is to be a place where business owners form the Incubator, guests, and visitors can enjoy a sit-down meal. It is meant to be a place where an individual does not have to wait long for a table or to receive and eat their food.

Activities

The restaurant and bar will be open from lunch time until late in the evening. It will house its own cleaning and stocking crew.

Spatial Relationships

The restaurant and bar will be located on the ground level and in a distinct place for people to notice it. A outdoor seating area will challenge the conventional way that the inside/outside threshold is viewed. Nature and vegetation on the outside will intervene and continue to the inside.

Special Considerations

Natural light and connections to the outside are implemented in its strategic location. The ability for outsiders to visualize the interaction taking place in the restaurant is a key concept.

Equipment / Furnishings

All commercial kitchen equipment
Reception kiosk
Waiting are with seats
Bar area with 20 bar stools
Dining room with tables and chairs for 150

Behavioral Considerations

All perishable and non-perishable items will have to be put away and locked up after the restaurant is closed to prevent theft.

INTERACTIVE TECHNOLOGY LEARNING / RESEARCH CENTER

BOOKSTORE

Quantities

Capacity: 15 No. Units: 1 NSF per Unit: 800 Total Net Area: 800

Purpose/Function

A retail store located strategically on the ground floor as to advertise its existence. Its purpose is to sell books related to technology and its advancements. The bookstore will function as an independent company, leasing a space from the Technology Center.

Activities

Selling books for profit. Relating to the appreciation for knowledge.

Spatial Relationships

The bookstore will be located on the ground level and in a distinct place for people to notice it. A outdoor patio will provide an added area for advertising while bringing the urban environment and vegetation, into the space.

Special Considerations

Natural light and connections to the outside are implemented in its strategic location. The ability for outsiders to visualize the interaction taking place in the restaurant is a key concept.

Equipment / Furnishings

Book shelves
Movable bookshelves
Book cases
Checkout counter
Outdoor seating including chairs and benches that can handle Detroit's weather

Behavioral Conditions

All books will need to be placed and locked inside when store in closed.

INTERACTIVE TECHNOLOGY LEARNING / RESEARCH CENTER

ROOFTOP GARDEN AND GREENSPACE

Quantities

Capacity: 100 No. Units: 2 NSF per Unit: 2,500 Total Net Area: 5,000

Purpose/Function

The rooftop garden features native vegetation to the cold climate of Michigan. It acts to create a picturesque environment where private business people and the general public can relax and lounge while visualizing the surrounding context.

Activities

The main activities for the rooftop garden are to provide a relaxing space for people to lounge about, eat lunch, or just take a break from work and life in general. They can walk about and meander through the numerous varieties of shrubs and flowers.

Spatial Relationships

The majority of the space above the second floor is dedicated to the rooftop garden. This means that people on the third floor will be able to access a expansive and dramatic space. The southern entryway also has a large canopy that will house a garden area for the second floor above.

Special Considerations

A watering system, whether from city water or rain collection, is needed. Structural support for the massive weight of the garden needs to be considered. Means of escape and security (because of the height above the ground level) also needs to be considered.

Equipment / Furnishings

Outdoor benches and chairs

Storage shed for manicuring and planting tools

Behavioral Considerations

The height of the rooftop garden will require the protection and strength of a tall guardrail system.

INTERACTIVE TECHNOLOGY LEARNING / RESEARCH CENTER

MECHANICAL AND STRUCTURAL SYSTEMS

MECHANICAL

Due to the nature of the large volume of the facility, roughly 64,000 square feet, forced air will be utilized as a mechanical system. Supply ducts will run through floor joists and ceiling trusses allowing for a high pressured flow of air that is supplemented by a system of return air ducts. Their will also be numerous areas that have integrated supply systems located in walls.

STRUCTURAL

The structural of the Technology Center is both concealed and expressive. A layered wall system will consist of a main structure comprised of concrete, steel, and glass. All interior supports transfer loads through a thought out steel structure, not set at a typical grid pattern. A secondary steel structure will support a wood and metal rain screen system. This entire system is coordinated by a series of three typical wall section details that will correlate with room locations and functions, changes to the ground plane, and the exterior environment.

TECHNOLOGY BUSINESS INCUBATOR

OFFICES

Quantities

Capacity: 1	No. Units: 30	NSF per Unit: 125	Total Net Area: 3,750
	No. Units: 10	NSF per Unit: 300	Total Net Area: 3,000

Purpose/Function

The business incubator includes forty rentable office spaces whose sole purpose is to encourage real and virtual tenants to develop high-tech businesses and technologies while generating income for the facility to operate. They will function as lockable spaces which will house and organize needed items, paperwork, and deskspace in order to run a successful business.

Activities

It is intended that the office space will be enough room for one person to run a technology oriented business. Data entry, paper filing, and making/receiving phone calls will be the main activities within in each office.

Spatial Relationships

The offices will be located throughout each level of the Incubator. They will be located in groups to create a more private entrance to each space.

Special Considerations

Because of limited space, each office will utilize as much wall space as possible. Natural light will be used, but it will not interfere with necessary storage and organization space.

Equipment / Furnishings

Built in Cabinetry and shelving to support semi-heavy loads
6'-0" to 8'-0" long and 3'-0" wide desk

Behavioral Considerations

The space must be designed for efficiency. Shelving, file cabinets, and desks must be arranged to allow easy access to paper work while simultaneously permitting large areas for storage. The conditions of the workspace must be beyond satisfactory.

TECHNOLOGY BUSINESS INCUBATOR

SUITES

Quantities

Capacity: 1-2 No. Units: 10 NSF per Unit: 500 Total Net Area: 5,000

Purpose/Function

The purpose of the suites are to create a space that is much larger than the typical office. The need for larger spaces, especially as businesses start to move beyond the beginning development stage, is the main purpose behind the suites. They will function as lockable spaces which will house and organize needed items, paperwork, and deskspace in order to run a successful business.

Activities

It is intended that the suites will be enough room for one or two people to run a technology oriented business. Data entry, paper filing, and making/receiving phone calls will be the main activities within in each suite.

Spatial Relationships

The suites will be grouped together in bunches and segregated from the smaller offices. They will be placed near the Resource and computer rooms.

Special Considerations

Because of limited space, each suite will utilize as much wall space as possible. Natural light will be used, but it will not interfere with necessary storage and organization space.

Equipment / Furnishings

Built in Cabinetry and shelving to support semi-heavy loads
6'-0" to 8'-0" long and 3'-0" wide desk (two if necessary)

Behavioral Considerations

The space must be designed for efficiency. Shelving, file cabinets, and desks must be arranged to allow easy access to paper work while simultaneously permitting large areas for storage. The conditions of the workspace must be beyond satisfactory.

TECHNOLOGY BUSINESS INCUBATOR

CONFERENCE ROOMS

Quantities

Capacity: 35 No. Units: 3 NSF per Unit: 1,000 Total Net Area: 3,000

Purpose/Function

The conference rooms will serve as spaces for administrative meetings to take place. They will also function as rentable rooms for businesses housed in the Incubator. As a potential income generator, the conference rooms will be isolated from public distractions and functions

Activities

Private group meetings of up to 35 people with the ability to connect to wireless internet, projectors, and other forms of communication and presentation techniques.

Spatial Relationships

The conference rooms will be located adjacent to one another. They will be placed on the first floor in an area surrounded by large open spaces to provide spill out space.

Special Considerations

The rooms will be isolated from areas of abundant noise. They also will be spread throughout the entire incubator facility in order to help activate the flow of movement. Natural light is not a top priority, but when glass is present, the need to block its admittance is necessary.

Equipment / Furnishings

1 Large table for seating of 35
35 plush, lightweight, and rolling chairs
2 Flat screen televisions
1 Projector and screen
2 solid wood storage cabinets

Behavioral Considerations

At least one of the conference rooms will be in proximity to administrative offices while the others are near the offices and suites.

TECHNOLOGY BUSINESS INCUBATOR

RESOURCE ROOM

Quantities

Capacity: 12 No. Units: 1 NSF per Unit: 600 Total Net Area: 600

Purpose/Function

The resource room will provide information technology to tenants and administrative personnel. It will function as a communal space in which access keys will be used to enter.

Activities

The room will include computers, printers, plotters, scanners, copiers, and fax machines where one can use a needed electronic device. Identification techniques will be used to identify and record the amount of time and material a person uses.

Spatial Relationships

The resource room is located adjacent to the offices and suites as to provide a central place where all can use its services.

Special Considerations

The resource room needs natural light. This will come in the form of diffused light to help eliminate glare on computer screens. Efficient temperature control must also be executed here.

Equipment / Furnishings

Tall built-in counter top to hold 10 computers
10 tall office chairs
Tall built-in counter top to hold 3 printers, 3 fax machines, 1 plotter, and 2 scanners
Built-in storage cabinetry for office supplies

Behavioral Considerations

The resource room must have visible areas where tenants can see the availability of electronics. This connection should also be implemented for security reasons.

TECHNOLOGY BUSINESS INCUBATOR

TRAINING ROOM

Quantities

Capacity: 35 No. Units: 5 NSF per Unit:1,000 Total Net Area: 1,000

Purpose/Function

The purpose of the training room is to provide a classroom type space where specialists can teach business skills such as marketing, advertising, financial services, etc. The purpose of five training rooms will match the need that new businesses have to learn how to run a successful company. Because of the large size of the incubator and amount of rentable spaces, the training rooms will be transformable to allow for more office space if necessary. The need for direction and knowledge is the training room's main function.

Activities

Business and training support will include marketing, advertising, strategic planning, capital strategies, legal advice, financial services, human resource issues, technology resources and updates, business guidance, and growth/expansion services. The training rooms will also be places for existing technology companies to present and sell there products.

Spatial Relationships

The training rooms will be spread throughout the many floors of the building. There will not be a distinct section of the building designated specifically for training rooms. The hope is to create situations for people to travel throughout the building.

Special Considerations

Natural light will be employed in the training rooms. Movable walls need to be used in order to create a larger space when necessary.

Equipment / Furnishings

Tables and chairs for 35 people in each room
Podium with computer
Projector and Projection screen
12' Marker board

Behavioral Considerations

The space needs to be comfortable as people may be inhabiting them for fairly long periods of time.

TECHNOLOGY BUSINESS INCUBATOR

COMPUTER ROOM

Quantities

Capacity: 15 No. Units: 2 NSF per Unit: 700 Total Net Area: 1,400

Purpose/Function

The computer rooms will function as spaces where tenants of the incubator can research, communicate, and transfer information. The purpose is to offer a space where small and mid sized start-up companies can use computer software, and/or create it, in order to carry out their innovations. The rooms act to help commercialize new life-changing inventions and improving research techniques by accessing the World Wide Web.

Activities

Tenants, and occasionally employees, will use and create computer software programs to facilitate the development of a high-tech business.

Spatial Relationships

There will be one computer located on each floor of the building. They will be centrally located to assist the needs of both office and suite renters.

Special Considerations

The computer rooms need natural light. This will come in the form of diffused light to help eliminate glare on computer screens. The rooms need to be strategically placed adjacent to offices and suites. Efficient temperature control must also be executed here.

Equipment / Furnishings.

Per room:

15 individual desks
1 large administration desk
16 computers
17 rolling and reclining office chairs
1 storage closet

Behavioral Considerations

Both computer rooms must have access to office and suite corridors to facilitate the need for both physical and visual interaction.

TECHNOLOGY BUSINESS INCUBATOR

RECEPTION / WAITING AREA

Quantities

Capacity: 15 No. Units: 1 NSF per Unit: 750 Total Net Area: 750

Purpose/Function

To introduce people into the Technology Business Incubator for the first time. The impression that this leaves is of most importance. It should be treated in a way that is appropriate to innovative ideas and design techniques. The area will be able to accommodate the fast pace movement of business people while simultaneously allowing for a calm entrance when needed.

Activities

Most likely, inhabitants will spend little time is this space, but this short period will have an effect on their impressions. People will be circulating through this space to get to other areas of the building. This will be the starting point for their experience. Some gathering will take place which coincides with the main source of information for the entire building.

Spatial Relationships

There will be two reception areas and one waiting area. They will be located adjacent to the main entrances.

Special Considerations

The entry is intended to be open and inviting to the outside and other interior components. There should be a direct link between the inside and outside environments. Threshold conditions of inside and outside spaces will be highly focused in this public area.

Equipment / Furnishings

The entry will have two small couches and chairs for people to sit on and visualize interaction taking place. A reception desk with chair, computer and cabinetry will be oriented towards the main entrance doors.

Behavioral Considerations

The pace that people move will be their own decision. The space will act as a place to facilitate movement, but also where one can wait for others to arrive or communicate with one another.

TECHNOLOGY BUSINESS INCUBATOR

STORAGE ROOMS

Quantities

Capacity: 1 No. Units: 6 NSF per Unit: 100 Total Net Area: 600

Purpose/Function

Any supplies needed for cleaning and other maintenance of the entire facility will be stored in these spaces. Also, any materials that need storage, such as hardware and surplus office supplies will be located in these lockable spaces.

Activities

These rooms are private and for staff only. The staff will be required to move all hardware to required spaces and clean facility as scheduled.

Spatial Relationships

The storage rooms will be placed in isolated areas to disguise their use.

Special Considerations

No special considerations are necessary

Equipment / Furnishings

Typical maintenance supplies
Work bench (only in one room)
Water tub (only in one room
Shelving and organizational components

Behavioral Considerations

These are straight forward support functioning room for the entire building. Special care may need to be taken in regards to the hazardous cleaning materials that may be used.

MAIL / INFORMATION ROOM

Quantities

Capacity: 5 No. Units: 1 NSF per Unit: 150 Total Net Area: 150

Purpose/Function

The purpose of the mail and information room is to provide a secure place for tenants to receive and send out packages, letters, and other forms of mail. The room will function through keyed access with large lockable mail boxes for each office and suite and large counters will provide space for brochures, pamphlets, and other informative material to be seen.

Activities

Typical mailing activities will take place in this room. Placing letters and packages in outgoing boxes along with private tenant receiving boxes act as the only activities.

Spatial Relationships

The mail and information room will be located close to one of the main entries to the building to provide quick access.

Special Considerations

Natural light is not a priority. The space should only be accessed by administrative personnel and tenants of the incubator.

Equipment / Furnishings

Long counter
Outgoing mail boxes and containers
50 mail boxes

Behavioral Considerations

No considerations are necessary.

TECHNOLOGY BUSINESS INCUBATOR

BATHROOMS

Quantities

Capacity: 10 No. Units: 8 NSF per Unit: 200 Total Net Area: 1,600

Purpose/Function

The bathroom will serve the occupants of the entire building.

Activities

The bathroom will have hours of operation that coordinate with the system derived by authorized personnel who work the shifts.

Spatial Relationships

The bathrooms, both men's and women's, will be adjacent to one another.

Special Considerations

The restrooms will require sound absorbing material in the walls which will halt distracting sounds from entering other spaces.

Equipment / Furnishings

Each facility will be equipped with 3 stalls and 3 sinks. ADA design requirements will be utilized on all bathrooms. Each men's bathroom will have 2 stalls and 1 urinal. Each women's bathroom will have 3 stalls. Each will have minimum of one stall handicap accessible. All equipment, including flushing devices, water on/off, soap dispensers, and paper towel dispenser will have automatic sensors to control consumption and prevent wastefulness.

TECHNOLOGY BUSINESS INCUBATOR

COFFEE / BREAK ROOM

Quantities

Capacity: 10 No. Units: 1 NSF per Unit: 250 Total Net Area: 250

Purpose/Function

The break room will function as a space dedicated to tenants of the incubator. It's purpose is to provide a place for eating lunch or taking a break in a protected and controlled environment. The room is intentionally left small as to encourage people to eat and take breaks outside.

Activities

Most of the time, the space will be empty as tenants are busy working on creating a successful business. But during short breaks, lunch will be eaten and coffee breaks will be taken within this room.

Spatial Relationships

The coffee / break room will be placed in a central location and near offices and suites.

Special Considerations

The space will be intentionally left unlocked and open to private offices and suites.

Equipment / Furnishings

2 tables
10 chairs
Cabinetry and counter space
Small refrigerator
Microwave
Sink

Behavioral Considerations

No considerations are necessary.

TECHNOLOGY BUSINESS INCUBATOR

MECHANICAL AND STRUCTURAL SYSTEMS

MECHANICAL

Due to the nature of the large volume of the facility, roughly 27,000 square feet, forced air will be utilized as a mechanical system. Supply ducts will run through floor joists and ceiling trusses allowing for a high pressured flow of air that is supplemented by a system of return air ducts.

STRUCTURAL

The structure of the Business Incubator is both concealed and expressive. Concrete, steel, and glass will make up the primary building structure while a rain screen system will be supported by steel columns and beams.

GALLERY SPACES

ATRIUM / ENTRY

Quantities

Capacity: 10 No. Units: 2 NSF per Unit: 300 Total Net Area: 600

Purpose/Function

To introduce people into the Gallery for the first time. The impression that this leaves is of most importance. It should be treated in a way that is appropriate to innovative ideas and design techniques. The area will be able to accommodate the steady and constant movement of business people and visitors while simultaneously allowing for a calm environment.

Activities

Most likely, viewers will spend little time is this space, but this short period will have an effect on their impressions. People will be circulating through this space to get to the main gallery space. This will be the starting point for their experience. Some gathering will take place which coincides with receptionist space.

Spatial Relationships

The entry will be adjacent to the reception area and have a direct connection to the main gallery space.

Special Considerations

The entry is intended to be open and inviting to the outside and other interior components. There should be a direct link between the inside and outside environments. Threshold conditions of inside and outside spaces will be highly focused in this public area.

Equipment / Furnishings

No equipment of furnishings will be located in the atrium / entry space.

Behavioral Considerations

The pace that people move will be their own decision. The space will act as a place to facilitate movement, but also where one can wait for others to arrive or communicate with one another.

GALLERY SPACES

INFORMATION / RECEPTIONIST SPACE

Quantities

Capacity: 10 No. Units: 1 NSF per Unit: 400 Total Net Area: 400

Purpose/Function

To provide visitors with information and direction on the entire Technology Campus and detailed descriptions of current gallery exhibitions. Their function is to provide not just verbal direction, but hand out maps and brochures. The area will be able to accommodate the steady pace of visitors entering the building while simultaneously allowing for a moment of conversation and direction. One administrative office will be located adjacent to this space. It's purpose is to provide an area for management for the displays in the gallery that are both current and to come.

Activities

Personnel will hand out information and verbally describe to visitors the location of components and displays throughout the gallery. The receptionists will also act as greeters and security personnel who will answer questions that are brought up.

Spatial Relationships

The information and reception space is located near the main entry of the gallery.

Special Considerations

No special considerations are necessary. The space is a typical information type booth that is located at the main entry to the building.

Equipment / Furnishings

Built in counter for employees
Raised counter for guests
2 rolling chairs
Storage cabinetry
Display case

Behavioral Considerations

Since these personnel are the first to see people entering the building, they need to be aware of possible security threats, thieves, and non-paying visitors.

GALLERY SPACES

RECEIVING / SHIPPING AREA

Quantities

Capacity: 8 No. Units: 1 NSF per Unit: 500 Total Net Area: 500

Purpose/Function

Any supplies or inventions needed for the gallery space will be delivered here. Also, any materials needing to be stored will be held in this area, such as hardware for hanging specific products. The room will also be a place where products can be stored as they will be shipped out to other places.

Activities

This space will be for authorized staff only. They will be required to move products carefully and securely into or out of the gallery space as the program sees necessary. This area shall also act as a service entrance to the space.

Spatial Relationships

This area will have direct access to the gallery space and outside.

Special Considerations

The main concern for receiving, shipping, and handling within this space will be access control and security. Only authorized personnel can enter this area.

Equipment / Furnishings

This will be a large space with high ceilings and at least one garage door.
Built-in heavy duty metal shelving is needed.

Behavioral Considerations

This is to be viewed as a support function and will not affect the gallery space once all of the inventive and innovative products are in place. Special care will most likely need to be taken for the products being displayed as their value and rarity is of utmost importance.

GALLERY SPACE

Quantities

Capacity: 300 No. Units: 1 NSF per Unit: 8,000 Total Net Area: 8,000

Purpose/Function

A broad spectrum of inventive products will be on display is this space. A majority of work on display will be ideas derived from individuals, tenants, and businesses that are housed in the Technology Business Incubator and the Technology Center. Other displays relating to technology and its advancements will be shown also in this space. The purpose of the room is to provide a space that is much larger than the exhibition space in the Technology Center and which is solely intended for the display or work.

Activities

The gallery space is used for the exhibition of technology product inventions and as such, the main activity is the viewing of these product displays.

Spatial Relationships

The connection of inside and outside space is important with this large area.

Special Considerations

Due to the need for a large open space with minimal structural invasiveness, support of the structure is a concern. Height of the space is also a issue to be dealt with, as some products will need more than others. Natural lighting should be used as much as possible in this space to challenge conventional relationships of inside and outside environments and allow one to visualize interaction taking place. The idea of threshold will be challenged in this space

Equipment / Furnishings

There is no equipment of furnishings in the gallery space.

Behavioral Considerations

The activities and product displays must be enticing. They need to be arranged to be successful in attracting people into the space more than one time. The inventiveness of the products must coincide with the inventiveness of the displays and spatial layout.

GALLERY SPACES

COAT CHECK / STORAGE

Quantities

Capacity: 10 No. Units: 1 NSF per Unit: 750 Total Net Area: 750

Purpose/Function

To provide a space for guests and visitors to securely check their coat into an authorized space. The coat check area will only function as a place to store coats. The purpose of the storage room is to be a practical place for maintenance supplies. It will house cleaning and office supplies that enable the functional integrity for the entire facility.

Activities

The storage of coats, maintenance and office supplies, and other related items.

Spatial Relationships

These spaces are located adjacent to the atrium / entry.

Special Considerations

No special considerations are necessary.

Equipment / Furnishings

Built in coat racks with hangers
Heavy duty storage shelving
Counter at coat check
3 stools
2 Computers

Behavioral Considerations

Security and protection of checked in coats is important. Also, the protection of maintenance and office supplies in the storage room cannot be overlooked. Only the staff will be able to access these spaces.

GALLERY SPACES

BATHROOMS

Quantities

Capacity: 10 No. Units: 4 NSF per Unit: 200 Total Net Area: 800

Purpose/Function

The bathroom will serve the occupants of the entire building.

Activities

The bathroom will have hours of operation that coordinate with the system derived by authorized personnel who work the shifts.

Spatial Relationships

The bathrooms, both men's and women's, will be adjacent to one another.

Special Considerations

The restrooms will require sound absorbing material in the walls which will halt distracting sounds from entering other spaces.

Equipment / Furnishings

Each facility will be equipped with 3 stalls and 3 sinks. ADA design requirements will be utilized on all bathrooms. Each men's bathroom will have 2 stalls and 1 urinal. Each women's bathroom will have 3 stalls. Each will have minimum of one stall handicap accessible. All equipment, including flushing devices, water on/off, soap dispensers, and paper towel dispenser will have automatic sensors to control consumption and prevent wastefulness.

GALLERY SPACES

CAFE

Quantities

Capacity: 20 No. Units: 1 NSF per Unit: 800 Total Net Area: 800

Purpose/Function

The indoor / outdoor cafe space is an eating area serviced by a small kitchen that provides customers with a quick snack or drink during their visit throughout the gallery space. The indoor area will be designed and employed as to prevent food and beverages from leaving a designated space. The purpose of the cafe is not only dedicated for gallery viewers, but will also serve any person throughout the campus.

Activities

Eating, drinking, lounging, talking, and relaxing are the primary activities for the space.

Spatial Relationships

The cafe will be located adjacent to the gallery space but be separated by a wall. Access to the cafe can be done by going through a strategically located door from the gallery space or from one of the two outdoor private entrances.

Special Considerations

A direct connection between the threshold of inside and outside spaces will be looked at in the design of the cafe. Natural light and the ability for interaction to form are both very important.

Equipment / Furnishings

Cafe style tables and chairs
Kitchen appliances - sink, microwave, coffee maker, cappuccino maker, Refrid. etc...
Food display case
Storage cabinetry for surplus food items
Cash register
Counter space
Condiment bar

Behavioral Considerations

Security and protection of the Cafe during closing hours needs to be looked at.

GALLERY SPACES

MECHANICAL AND STRUCTURAL SYSTEMS

MECHANICAL

Due to the nature of the large volume of the facility, roughly 25,000 square feet, forced air will be utilized as a mechanical system. Supply ducts will run through floor joists and ceiling trusses allowing for a high pressured flow of air that is supplemented by a system of return air ducts.

STRUCTURAL

The structure of the Gallery Space is both concealed and expressive. A rain screen system will be supported by a steel structure while the main building transfers loads by a concrete and steel structural system.

CONVENTION CENTER

ATRIUM / ENTRY

Quantities

Capacity: 30 No. Units: 1 NSF per Unit: 750 Total Net Area: 750

Purpose/Function

To introduce people into the Convention Center for the first time. It should be treated in a way that is appropriate to innovative ideas and design techniques. The area will be able to accommodate the steady and constant movement of guests while simultaneously allowing for a relaxing environment where talking and lounging can take place.

Activities

Most likely, guests will spend little time is this space, but this short period will have an effect on their impression. People will be circulating through this space to get to the main banquet space. This will be the starting point for their experience. Some gathering will take place as guests chat to one another.

Spatial Relationships

There will be two entrances that are connected by a large circulation corridor that will travel throughout the entire facility.

Special Considerations

The entry is intended to be open and inviting to the outside and other interior components. There should be a direct link between the inside and outside environments. Threshold conditions of inside and outside spaces will be highly focused in this area.

Equipment / Furnishings

No equipment of furnishings will be located in the atrium / entry space.

Behavioral Considerations

The pace that people move will be their own decision. The space will act as a place to facilitate movement, but also where one can wait for others to arrive or communicate with one another.

CONVENTION CENTER

BANQUET SPACE

Quantities

Capacity: 125 No. Units: 3 NSF per Unit: 7,000 T otal Net Area: 7,000

Purpose/Function

The banquet space is comprised of three areas that can be transformed into one large area if needed. Their purpose is to provide a large space for meetings, presentations, celebrations, banquets, and conventions that would otherwise be much too small to be held in the Technology Center meeting rooms. They will function as both private and public, being that the general public and private companies/businesses will be able to rent out space to hold specific meetings dedicated to any event. The banquet space also coincides, though a separate building, with the multi-story hotel also located within the campus.

Activities

Most of the time, the space will be rented out for specific events by either general public, hotel guests, or companies and businesses.

Spatial Relationships

The banquet spaces will be located adjacent to one another and have a centrally located kitchen area to be able to quickly service each space.

Special Considerations

Due to the need for a large open space with limited structural invasiveness, support of the structure is a concern. Natural lighting is important to provide both lighting and display interaction taking place inside and outside of the convention center. The ability to block natural lighting is also an issue to deal with.

Equipment / Furnishings

8 person tables and 8 chairs per table
Large podium
Movable elevated stage / platform

Behavioral Considerations

The banquet space needs to be enticing. It needs to be designed to leave a lasting impression on the guests who attend.

CONVENTION CENTER

KITCHEN

Quantities

Capacity: 50 No. Units: 1 NSF per Unit: 2,500 T otal Net Area: 2,500

Purpose/Function

To allow catering companies the space to prepare Hor D'Oervres, appetizers, meals, deserts, and drinks. It will function as a kitchen that will allow for up to three different catering companies to prepare food.

Activities

The preparation of food and drinks to be served to guests in the banquet space.

Spatial Relationships

Easy and quick access to the banquet space, even when set up as three different rooms.

Special Considerations

This space will be designed to be very efficient due to the travel distance needed to cover to hand out food or for guests to go to a buffet. Enough room for circulation of cooks and waitresses/waiters is a major concern.

Equipment / Furnishings

Kitchen tools and cookware
Baking equipment
Commercial grade appliances
Mixers, slicers, food processors
Storage and food handling devices
Vast amount of counter/preparation space

Behavioral Considerations

Easy cleaning capabilities is needed and necessary for catering companies.

CONVENTION CENTER

BATHROOMS

Quantities

Capacity: 20 No. Units: 4 NSF per Unit: 300 T otal Net Area: 1,200

Purpose/Function

The bathroom will serve occupants of the entire convention center

Activities

The bathroom will have hours of operation that coordinate with the system derived by authorized personnel who work the shifts.

Spatial Relationships

The bathrooms, both men's and women's, will be adjacent to one another.

Special Considerations

The restrooms will require sound absorbing material in the walls which will halt distracting sounds from entering other spaces.

Equipment / Furnishings

Each facility will be equipped with 7 stalls and 7 sinks. ADA design requirements will be utilized on all bathrooms. Each men's bathroom will have 3 stalls and 4 urinals. Each women's bathroom will have 7 stalls. Each will have minimum of one stall handicap accessible. All equipment, including flushing devices, water on/off, soap dispensers, and paper towel dispenser will have automatic sensors to control consumption and prevent wastefulness.

CONVENTION CENTER

ADMINISTRATIVE OFFICES

Quantities

Capacity: 1	No. Units: 10	NSF per Unit: 150	Total Net Area: 1,500
RECEPTION	No. Units: 1	NSF per unit: 100	Total Net Area: 100

Purpose/Function

Main employee work spaces where work is coordinated and the business functions are taken care of. The offices purpose is to provide spaces for employees of the Convention Center to file work from the everyday affairs.

Activities

Typical office functions which include data entry, worker coordination and collaboration, printing (faxing and coping included), marketing and advertising, etc...

Spatial Relationships

The administration offices will be located near the kitchen and centrally located to the three banquet spaces.

Special Considerations

No special considerations are necessary

Equipment / Furnishings

Typical office equipment to be the same in each office, including
Desk, rolling chair, computer, file cabinets, shelving, printers, etc...

Behavioral Considerations

Non-employee access is important. Security measures to prevent un-wanted guests into the business office area.

CONVENTION CENTER

STORAGE

Quantities

Capacity: 3 No. Units: 1 NSF per Unit: 300 Total Net Area: 300

Purpose/Function

Any supplies needed for cleaning and other maintenance of the entire facility will be stored in these spaces. Also, any materials that need storage, such as hardware and temporary walls, will be located in these lockable spaces.

Activities

These rooms are private and for staff only. The staff will be required to move all hardware to required spaces and clean facility as scheduled.

Spatial Relationships

The storage room will be located adjacent to the kitchen and near the administrative offices.

Special Considerations

No special considerations are necessary.

Equipment / Furnishings

Typical maintenance supplies
Office supplies
Work bench
Water tub
Shelving

Behavioral Considerations

This is a straight forward support functioning room for the entire building. Special care may need to be taken in regards to the hazardous cleaning materials that may be used.

CONVENTION CENTER

MECHANICAL AND STRUCTURAL SYSTEMS

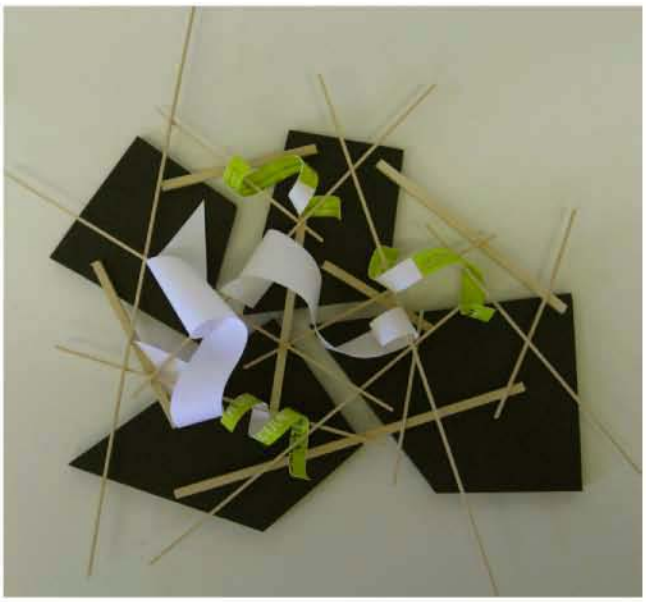
MECHANICAL

Due to the nature of the large volume of the facility, roughly 40,000 square feet, forced air will be utilized as a mechanical system. Supply ducts will run through floor joists and ceiling trusses allowing for a high pressured flow of air that is supplemented by a system of return air ducts.

STRUCTURAL

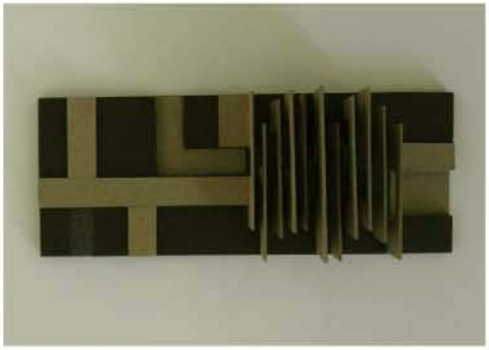
The structure of the Convention Center is both concealed and expressive. The main structure of the building will consist of concrete, steel, and glass. A secondary steel structure will support a wood and metal rain screen system.

The Springboard Design phase began to refine abstract ideas into concrete representations of architectural expression. The use of models, sketches, and diagrams permitted an exploration into specific ideas, theories, and proposals whose goal was to form a foundation for design. Many levels of ideas were executed from blending contextual boundaries and exploring the scale of the site to ecological questions and relationships to the urban environment along with threshold conditions.

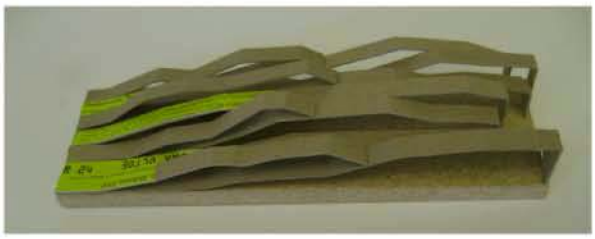


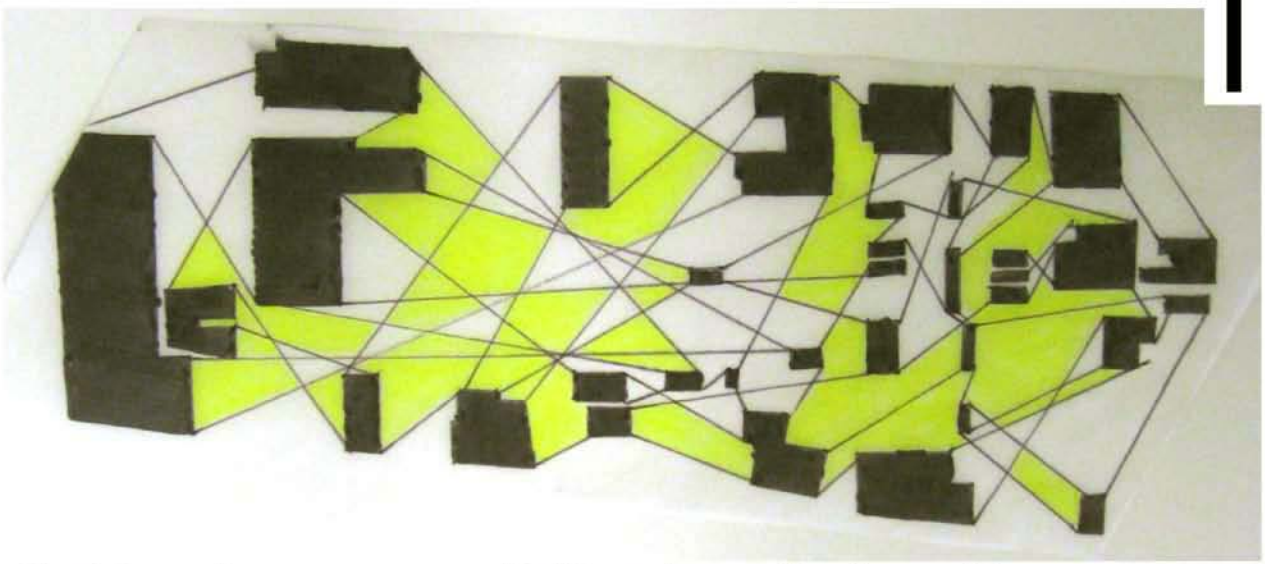
Using submerged and elevated spaces helped to break up the typical flat urban space. How one would enter and exit a space and how the inside/outside transition took place was the primary goal for this model.

The first series of models produced during the Springboard design phase were investigations of paths, boundaries, and thresholds. The images on the left were exploring the relationship of urban blocks that could be blended together by using circulation paths and green space. Buildings would intervene to help fill in void space. This study was very helpful for many of the models that were derived after it. The model at the bottom right of the page was investigating the relationship of thresholds to paths.

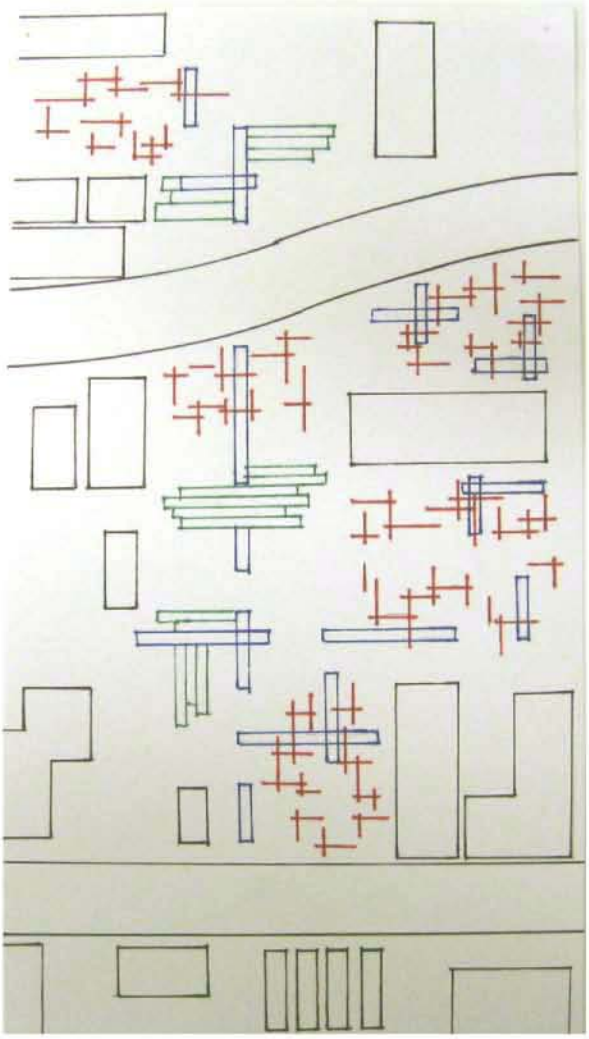


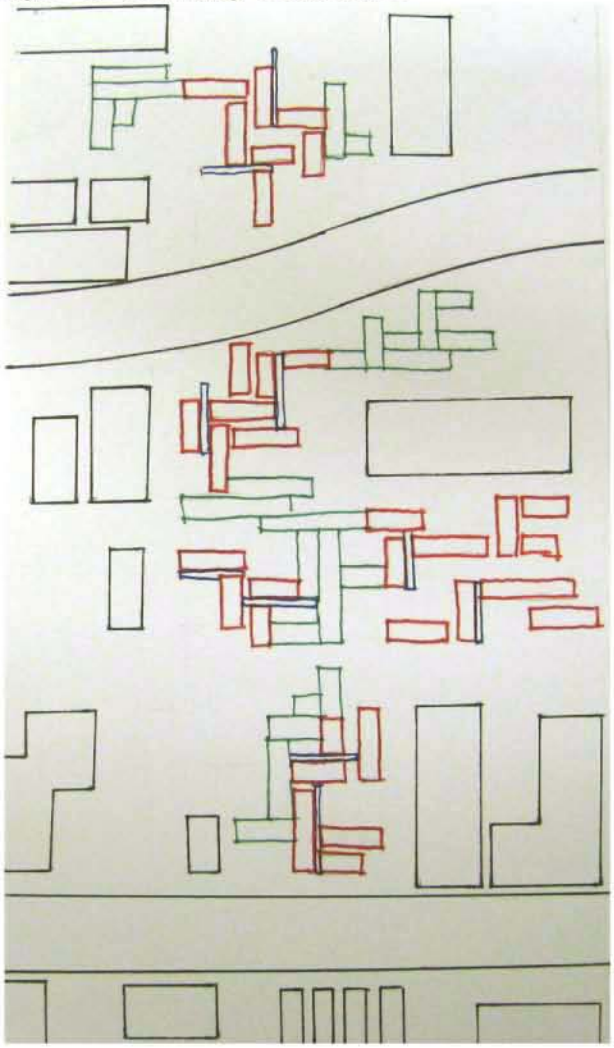
These models looked at the unfolding of the site into a series of diagonal paths. Buildings would also unfold from the ground plane in which green space would continue to extend onto the roofs creating situations where roof gardens could be located. The model on the right looked more specifically at the possibility of submerging large spaces and elevating circulation paths. The model on the left side of the page studied more specifically the unfolding of the building from the flat urban ground plane. The models were very helpful in trying to find relationships between that natural and built environment while respecting the inside/outside relationship.



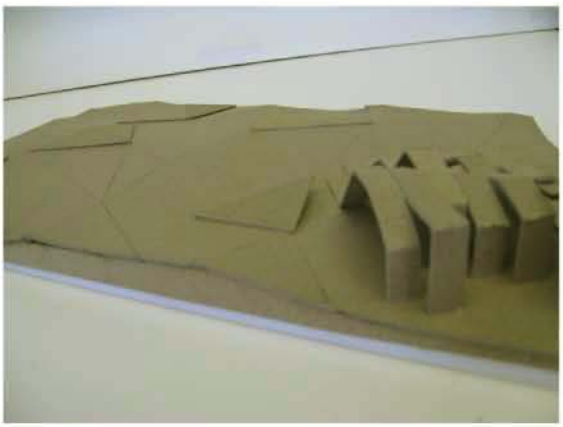


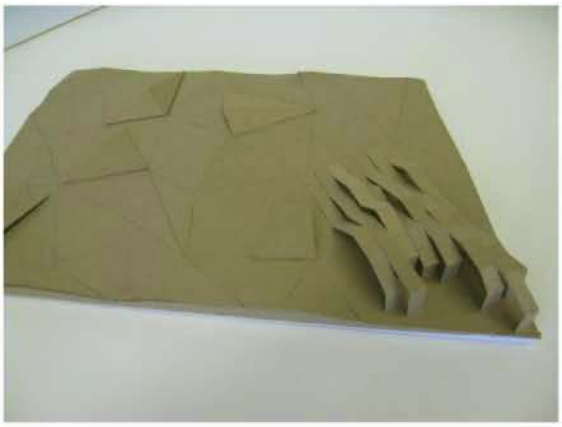
Circulation paths, greenspace, and building edges as blending conditions.

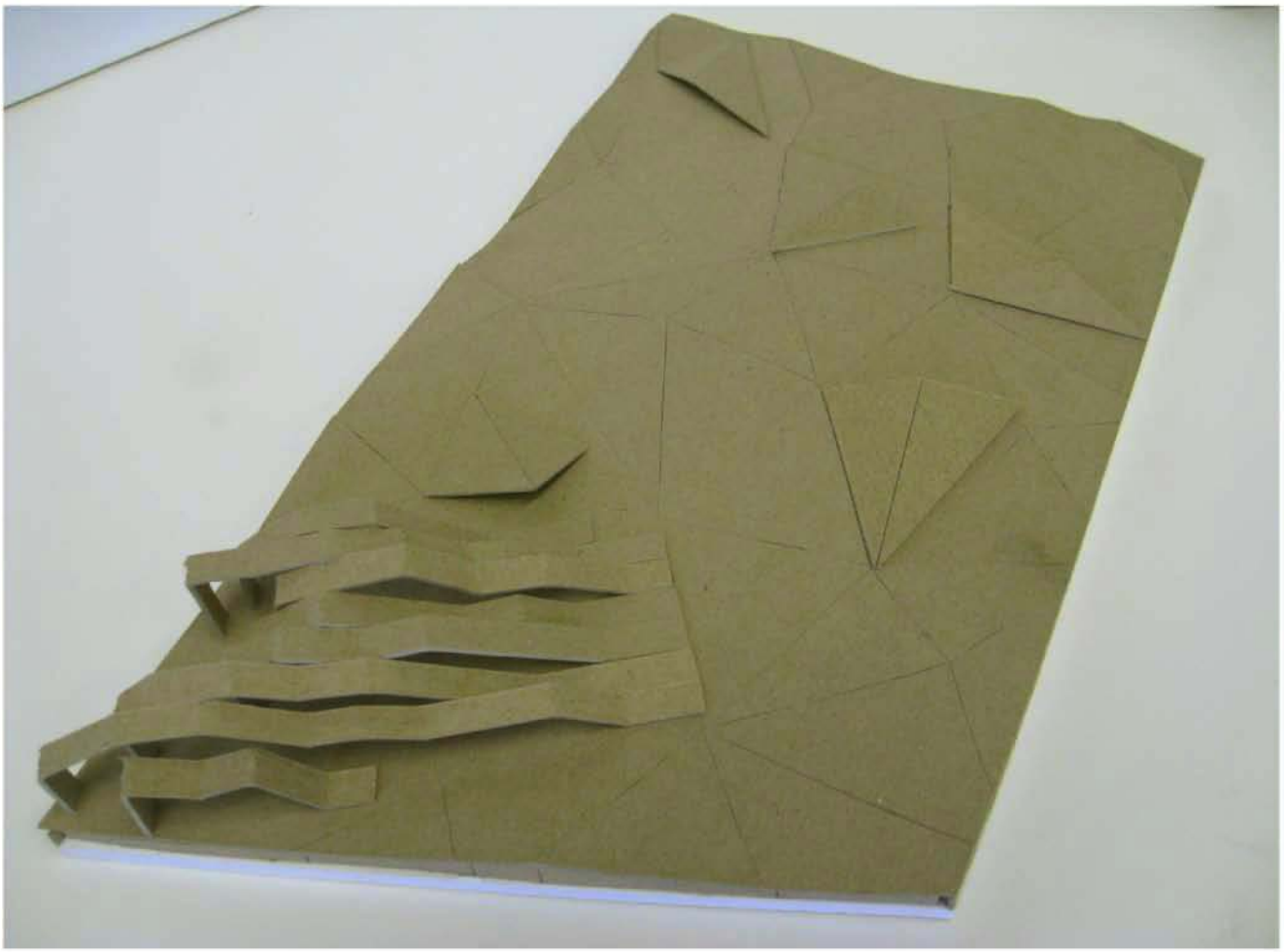


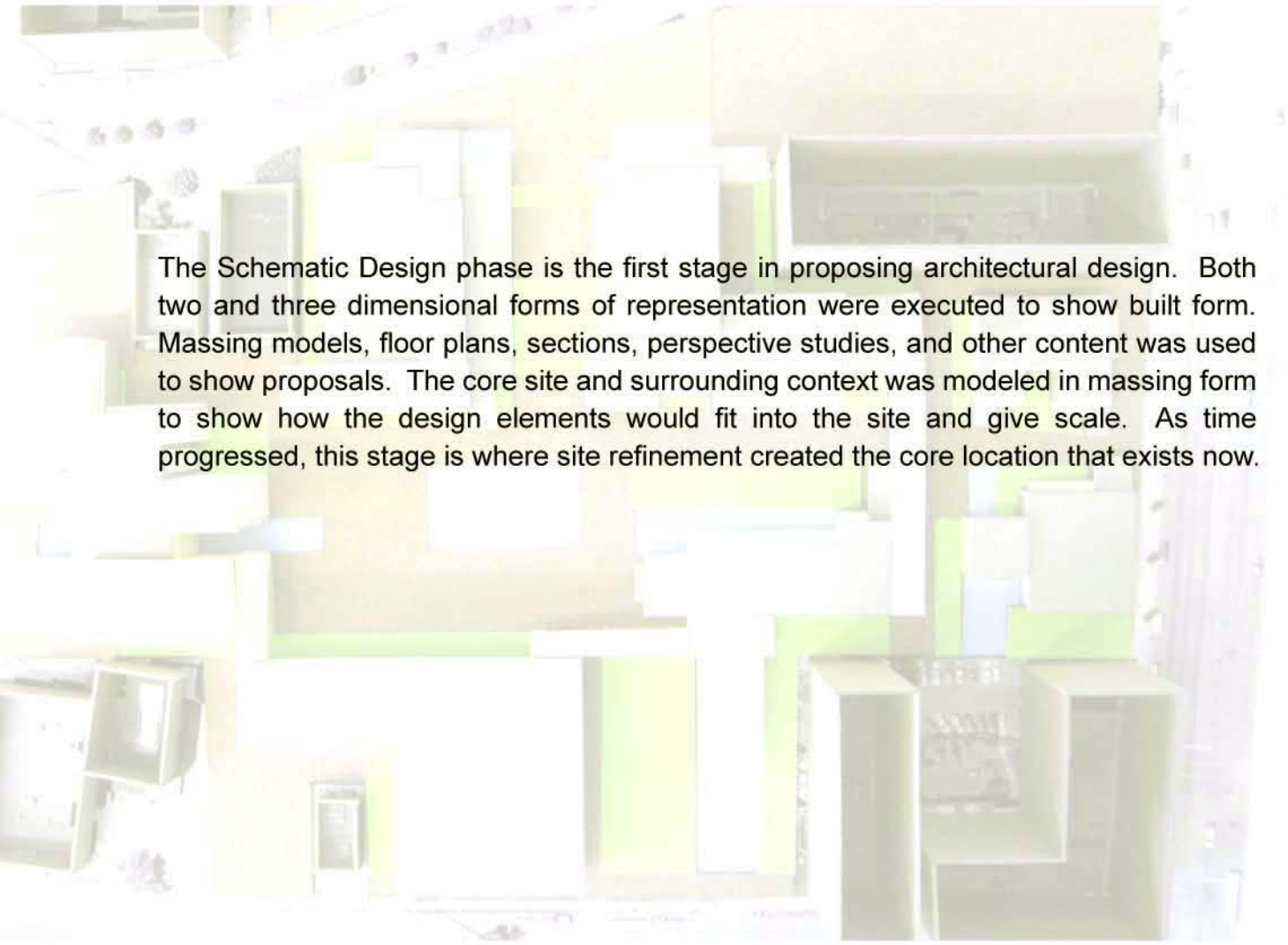


Unfolding the side into a rigid arrangement of triangular shapes was intended to create an artificial landscape for an urban environment. Avoiding a directly artificial landscape of rolling hills was the goal for this model. The need to alter the typical flat urban landscape in order to create a picturesque scenario where architecture can unfold and blend into the site proved to be very beneficial for models that followed.



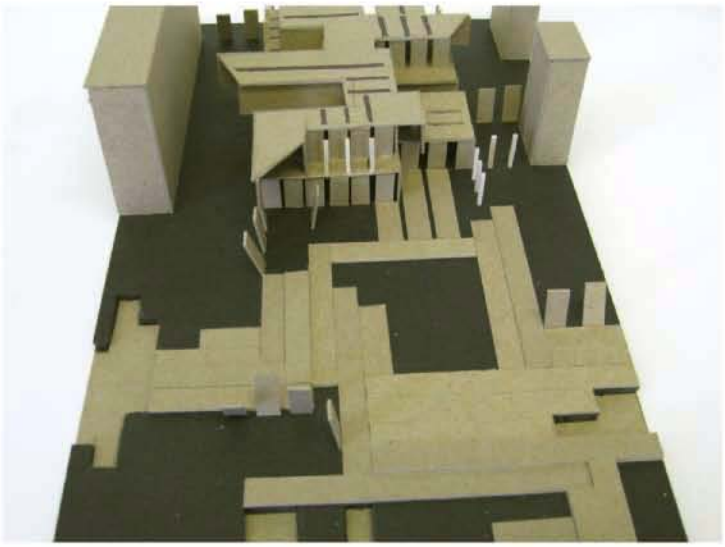


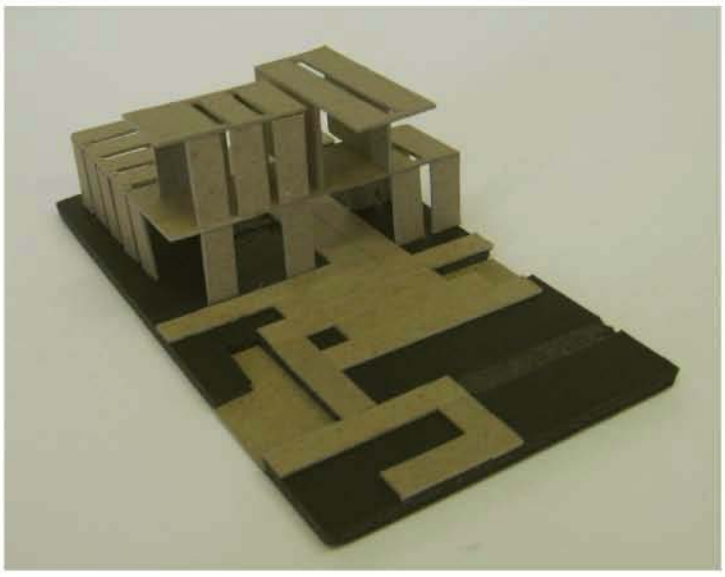


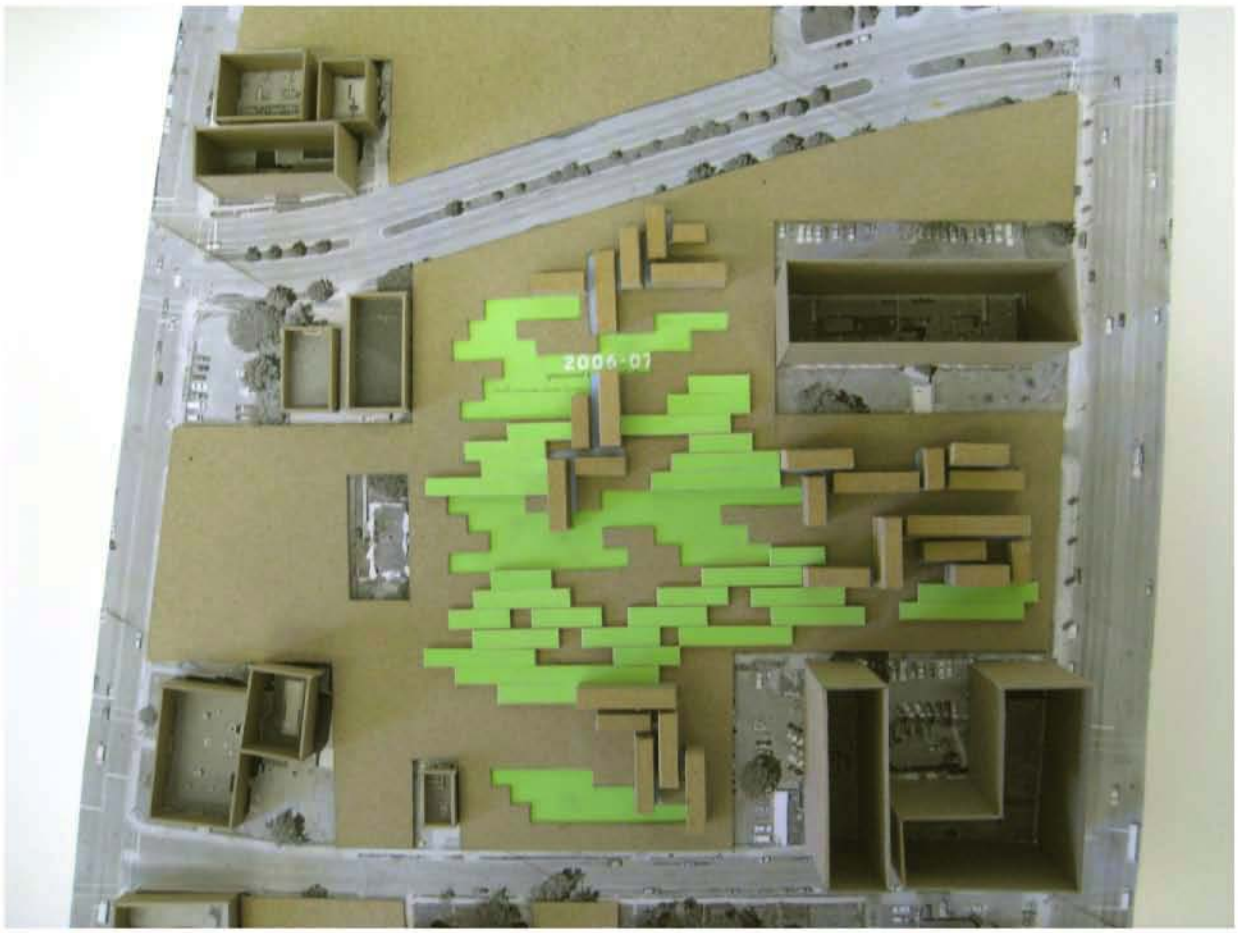


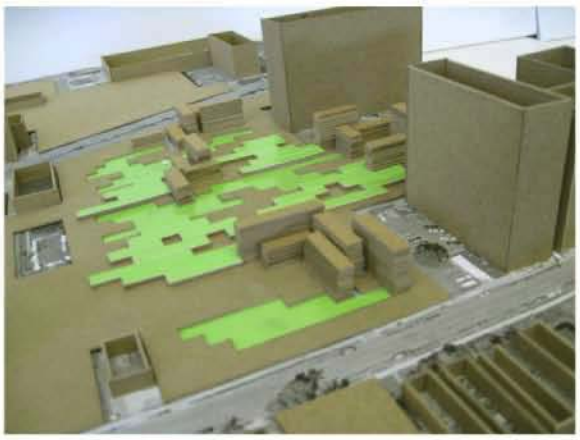
The Schematic Design phase is the first stage in proposing architectural design. Both two and three dimensional forms of representation were executed to show built form. Massing models, floor plans, sections, perspective studies, and other content was used to show proposals. The core site and surrounding context was modeled in massing form to show how the design elements would fit into the site and give scale. As time progressed, this stage is where site refinement created the core location that exists now.

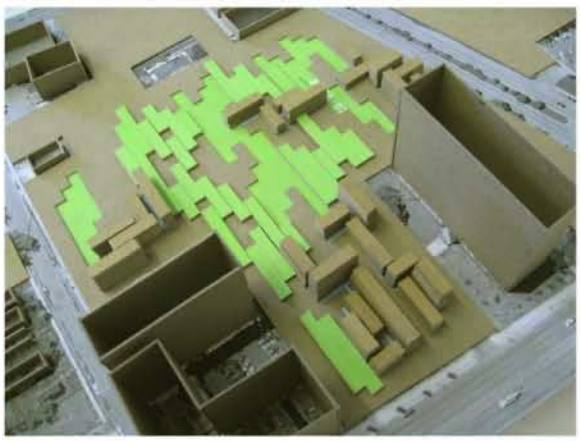
These models were the beginning stages of an in depth study on parallel and perpendicular lines. These lines would create circulation paths, whether a hard surface or one of vegetation, and building design that would attach these line characteristic details. These models were also some of the first studies that attempted to relate to the existing buildings on the core site. The use of intersecting lines related to the current city grid that exists in Detroit. The goal was to use the city grid to derive a green space design that would also encompass the architectural intervention.





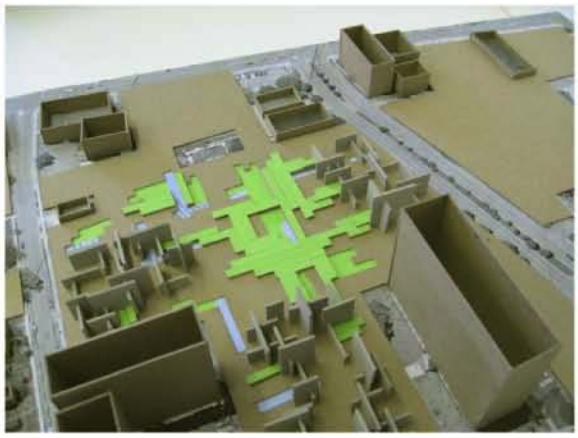


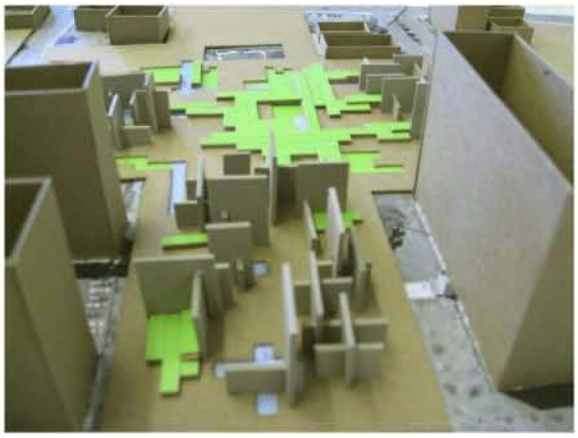


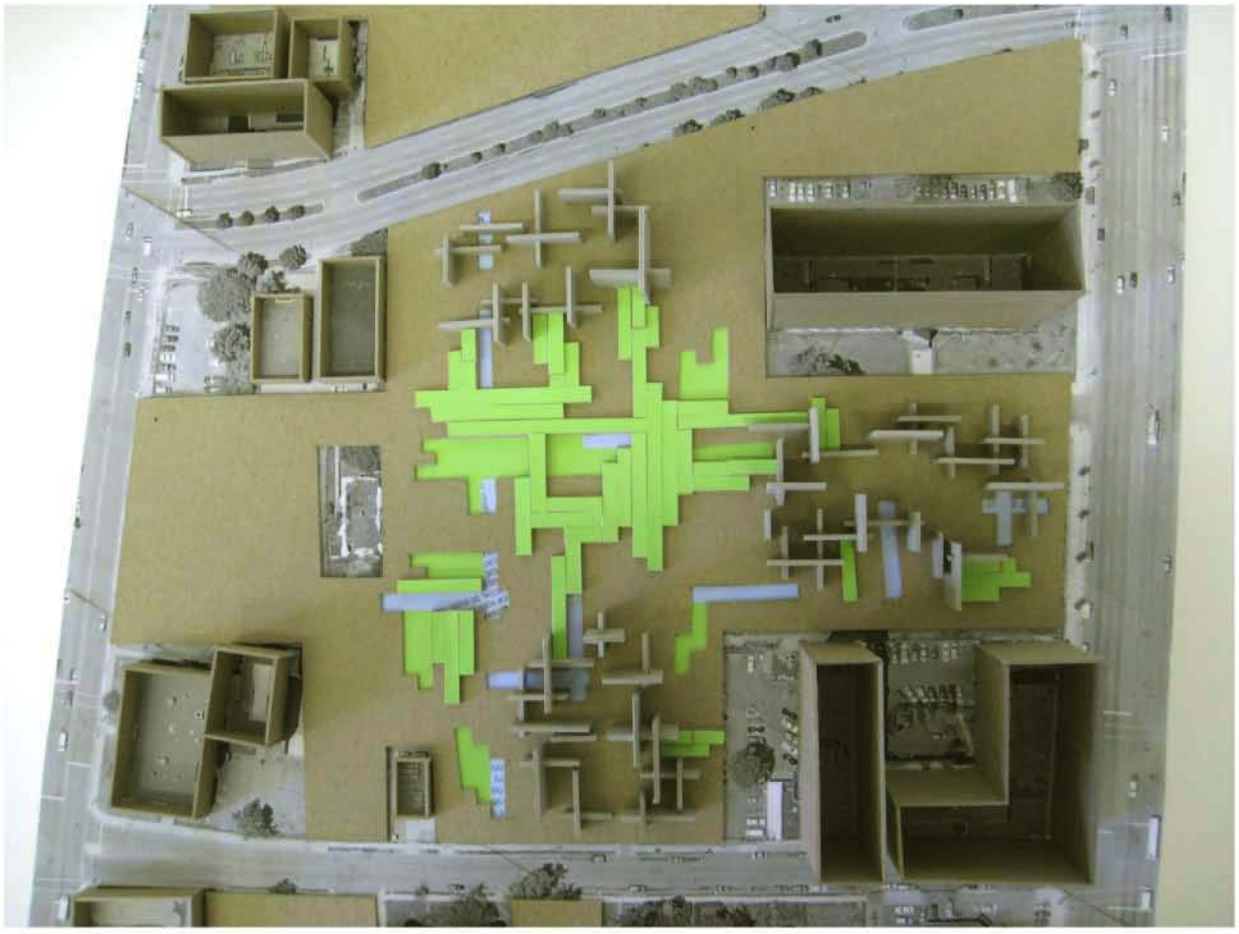


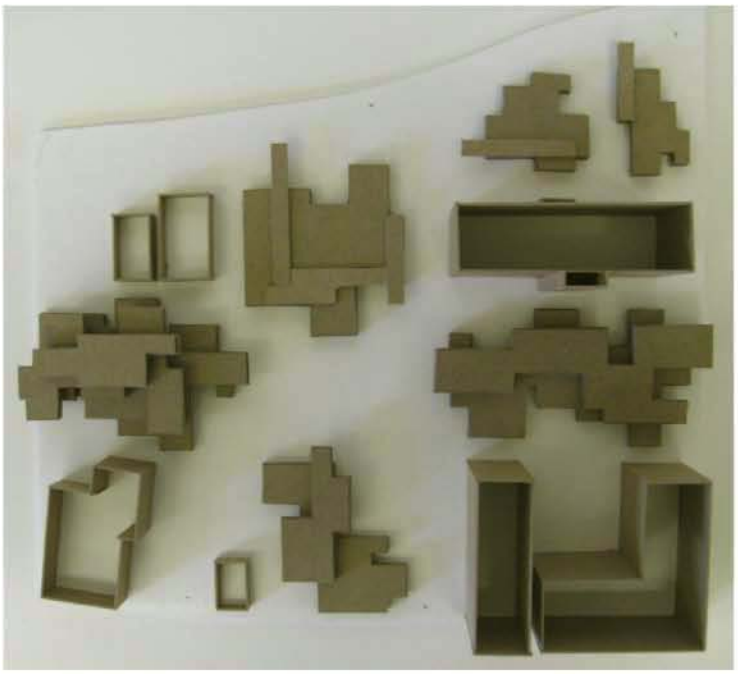
This massing model was a continuation of the previous models. Green space and circulation paths are arranged in a staggering pattern of parallel lines. The lines form depressed and elevated spaces. Building form would be a continuation of the paths which were set at 15 foot wide increments. This model was one of the first studies that looked at the arrangement of water spaces to separate building form. It also was the first model that looked at vegetation that would continue from an outside space, into the interior. (For example, a series of trees that continue from the outside, into inside spaces).

This model analyzed intersecting lines. The lines consist of water paths, paths of vegetation, solid surface paths, and implied form. The master plan scheme looked at the relationship of existing buildings and how to treat the “courtyard” space in the middle. Water paths were used to create an axis that is related to the existing city grid. The implied form of the builings challenged the current vertical scale of the existing adjacent structures by breaking the tall street front with a smaller scale.

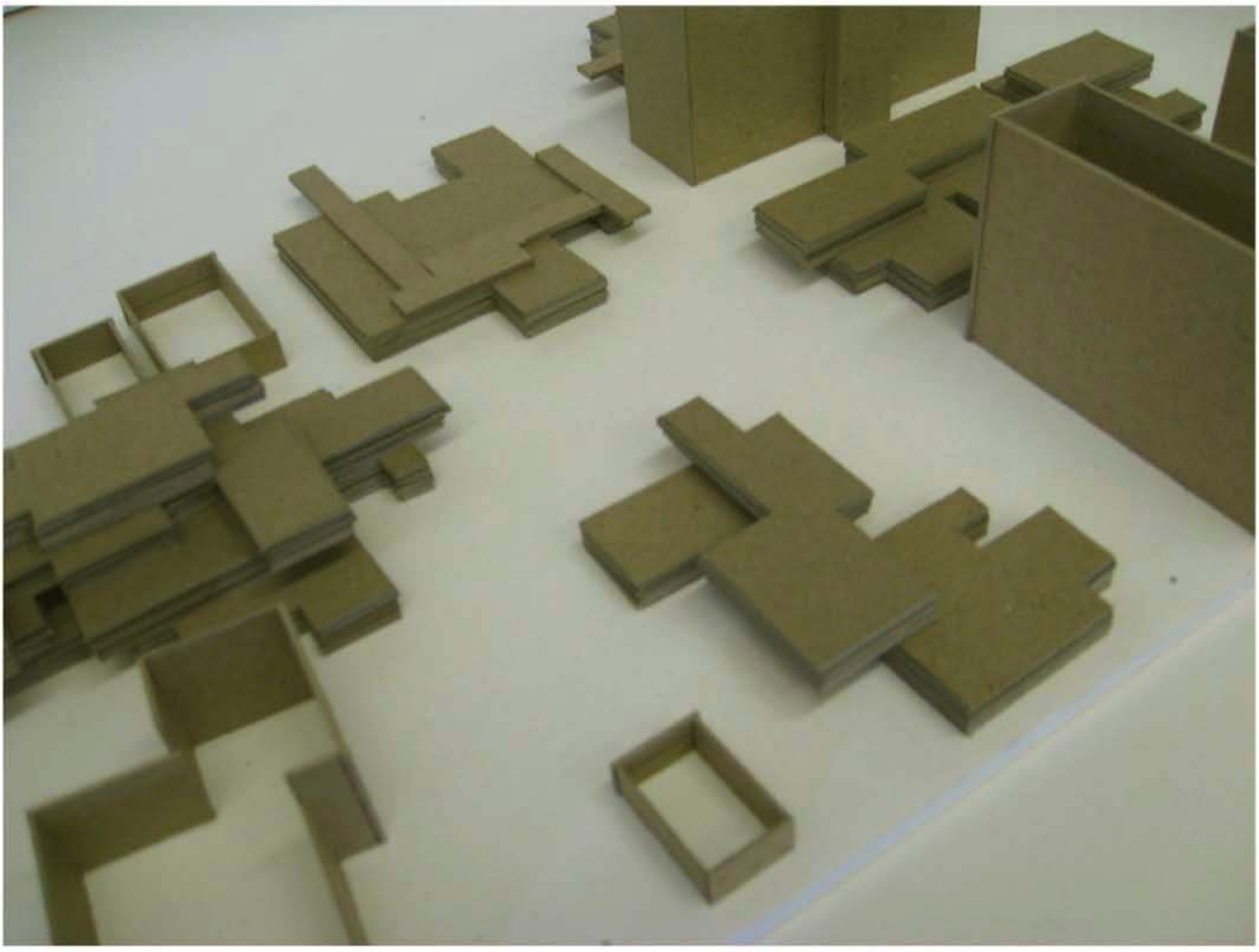








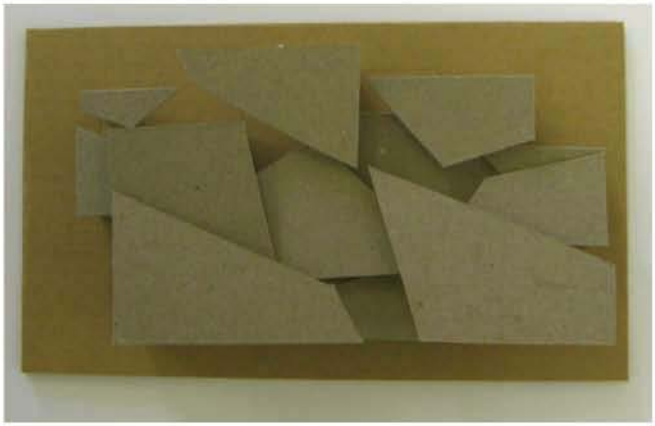
Transitioning from conceptual ideas to concrete form was the goal of this model. Using parallel and perpendicular lines as a foundation, rectilinear shapes were shifted and scaled in relation to the footprint of adjacent structures. Vertical scale continued to be studied while simultaneously dealing with interior spatial layout. Challenging conventional relationships of inside and outside spaces was a concern.

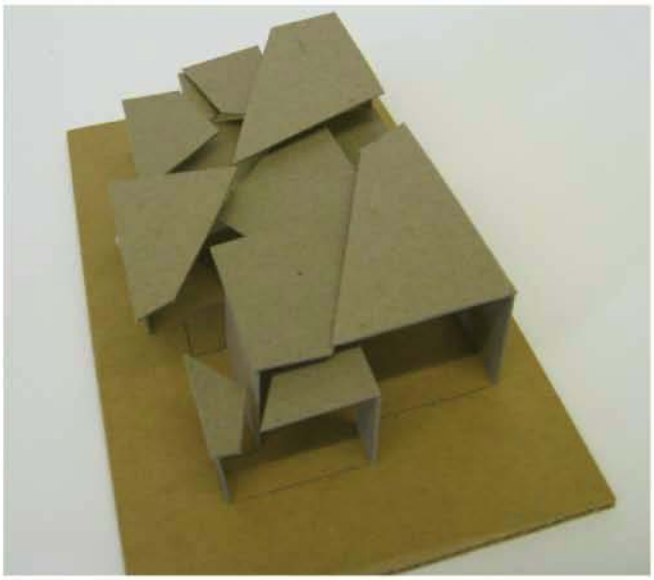


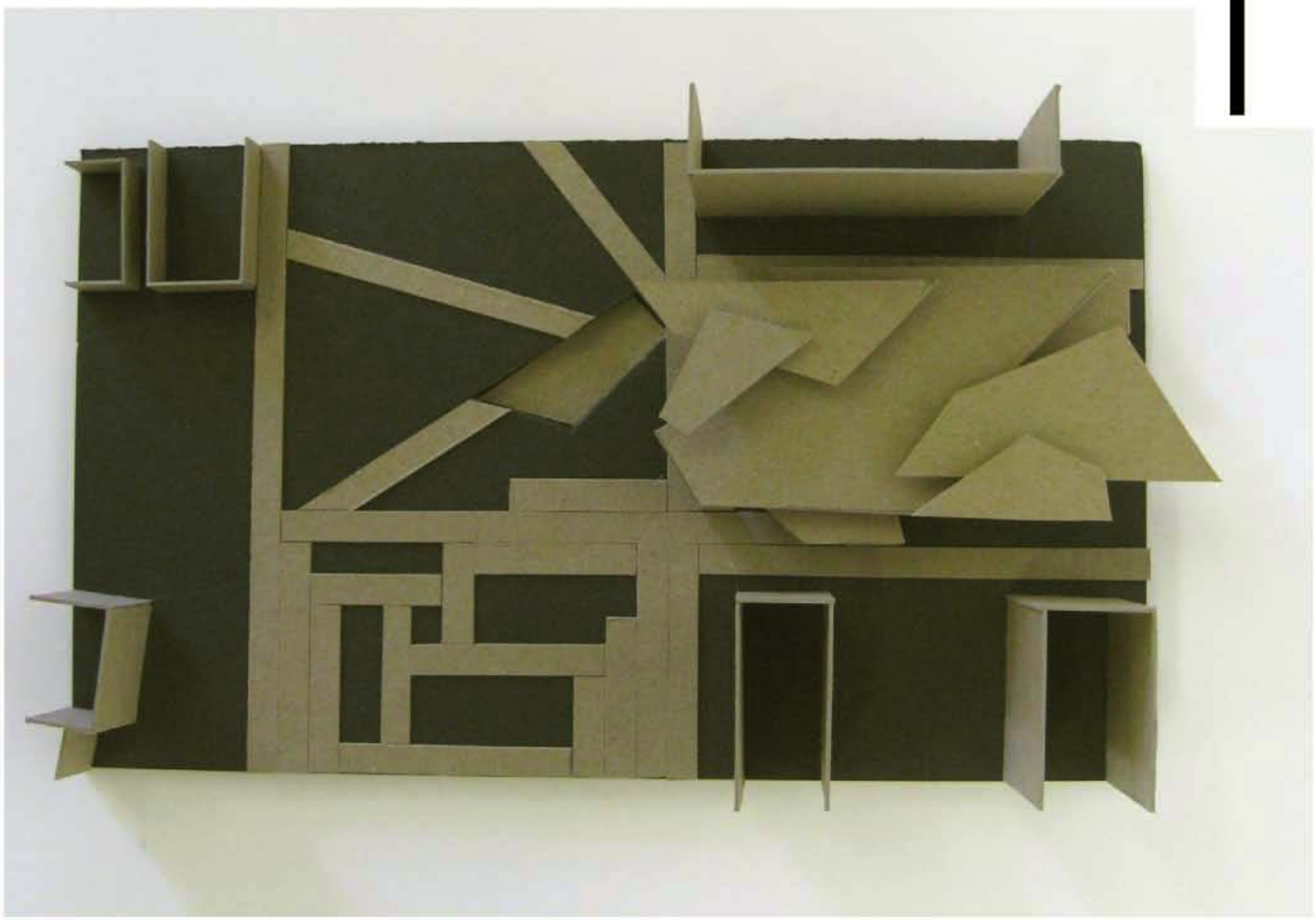
The following series of models were studies on orientation and inside/outside spaces (shown in series of when they were completed (1-7)). All of the models challenged the city grid idea that was previously shown. Many of them looked at respecting the outside edge by controlling the roof planes. The skewed and manipulative roof planes were used to control interior room layouts. Ideas of layered wall construction was also studied in some of the models.

1

2

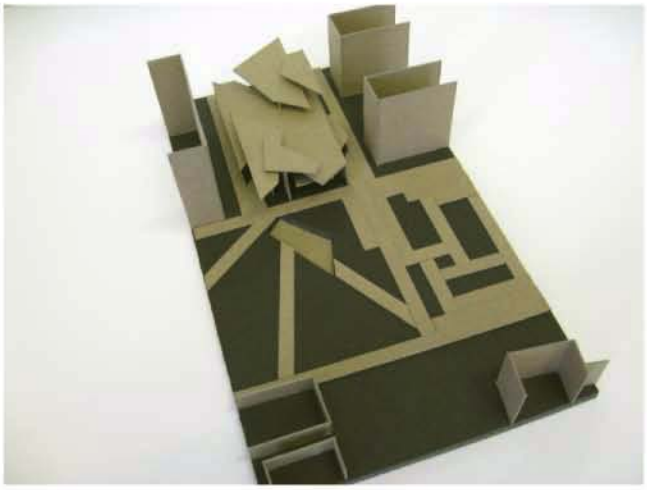




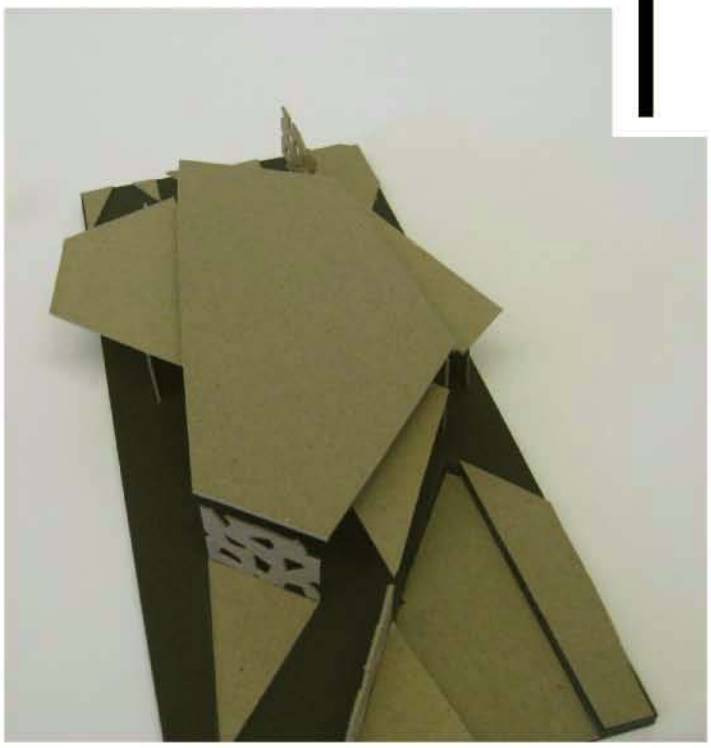


3

Instead of being limited to parallel and perpendicular lines, the idea behind this model was to continue the angled roof panel lines to create a new orientation of paths. The idea of roof gardens being located on a series of the staggered roof planes was also recognized in this model.



These models continued to look at spaces that would be defined by skewed interior room layouts. The study at the bottom (5) looked at creating a central path that would cut through one of the building components. All of the previous models created a situation where pedestrian circulation would be directed towards the two outside edges.



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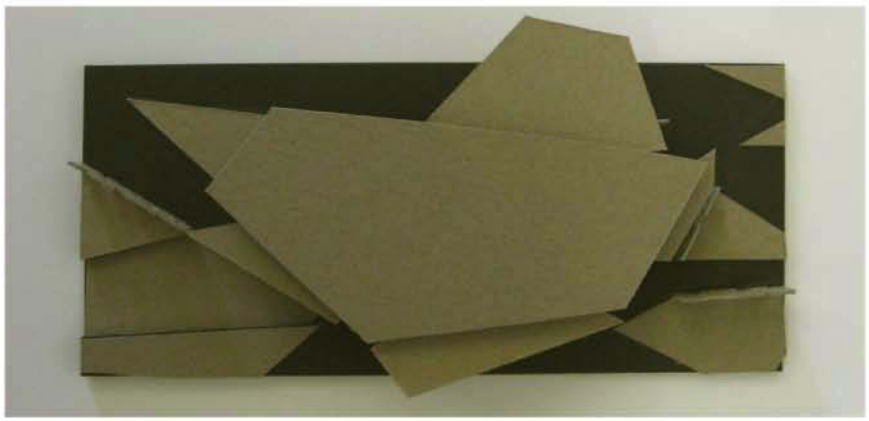

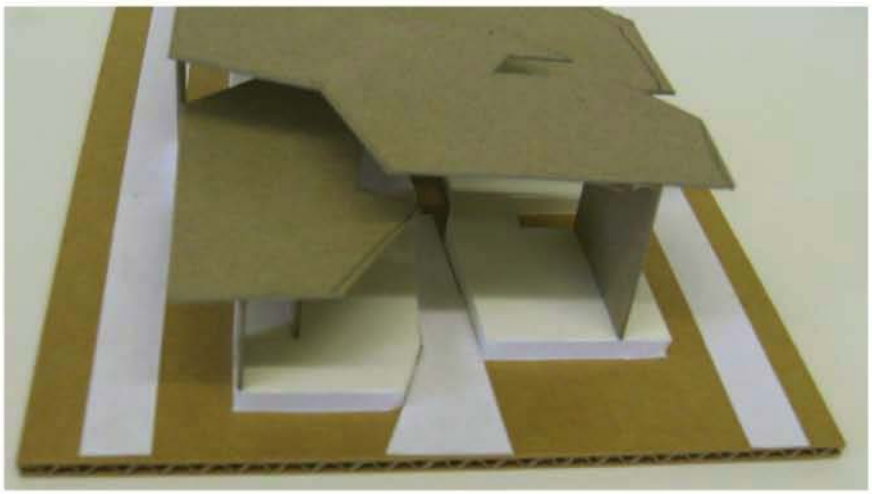

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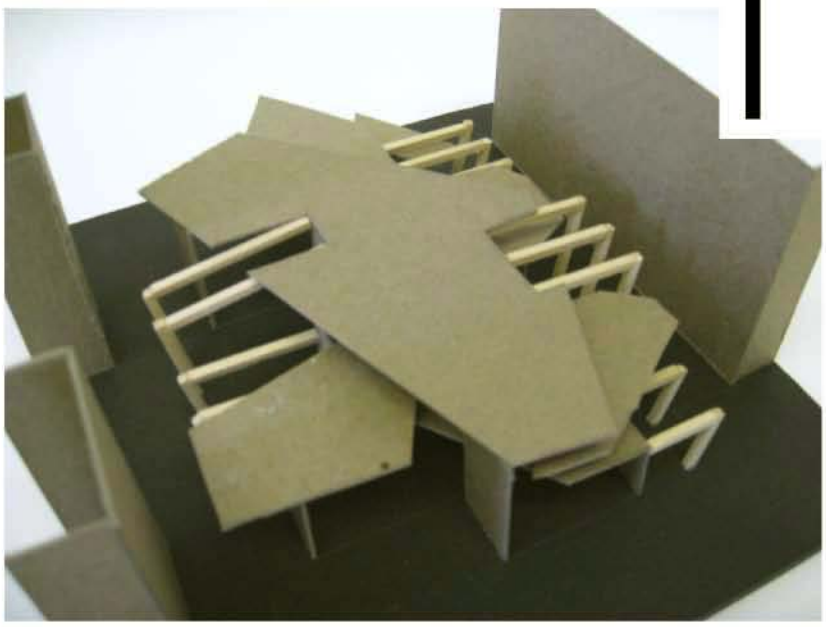
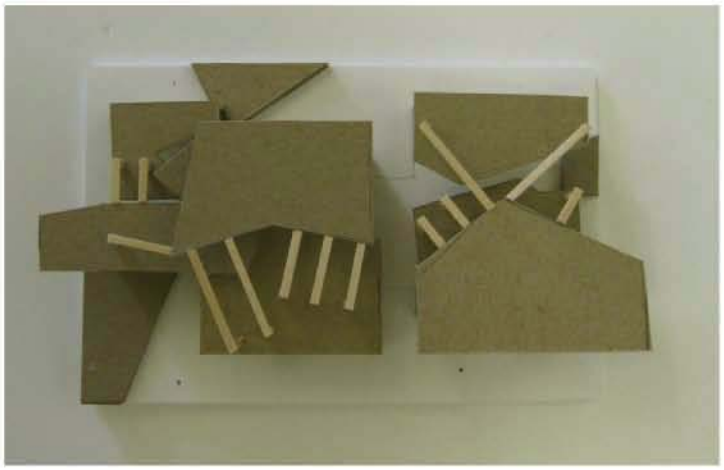


6

Structural expression was combined with skewed roof panels to challenge the inside/outisde relationship and relationship to the ground plane. These structural members would continue on the inside as they do on the outside. Covered and uncovered atriums and patios were looked at in these models. Permitting one to walk throughout the building and wonder if they are really inside was one of the questions that was considered and executed. The other question was how to include contextual edges as defining elements.



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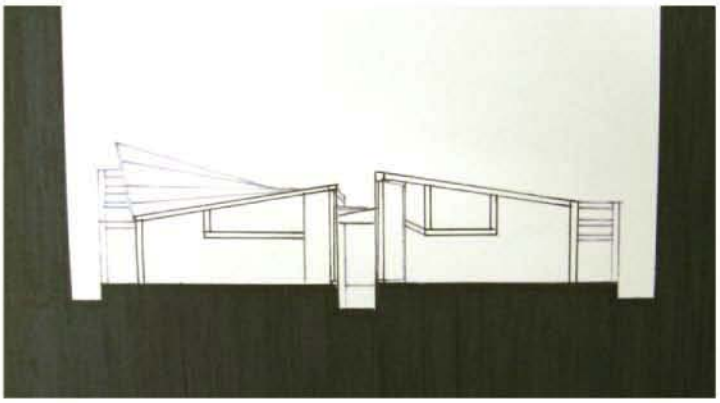
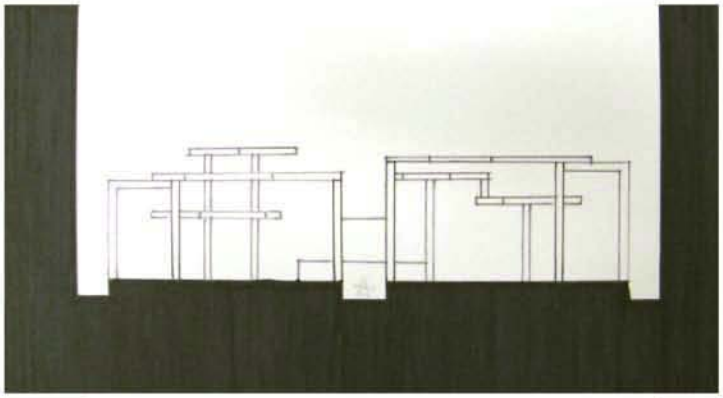
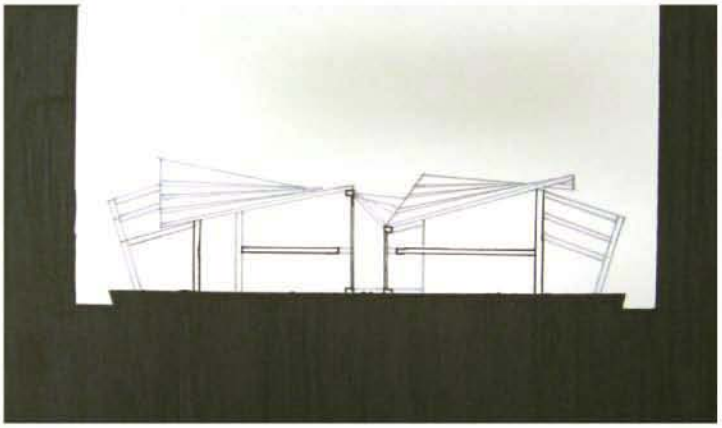
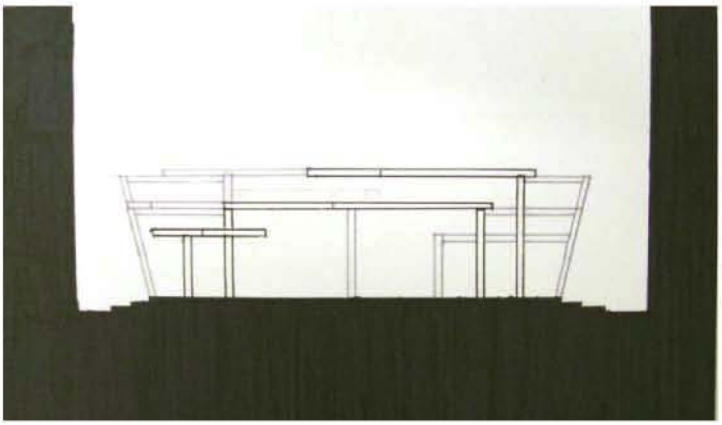


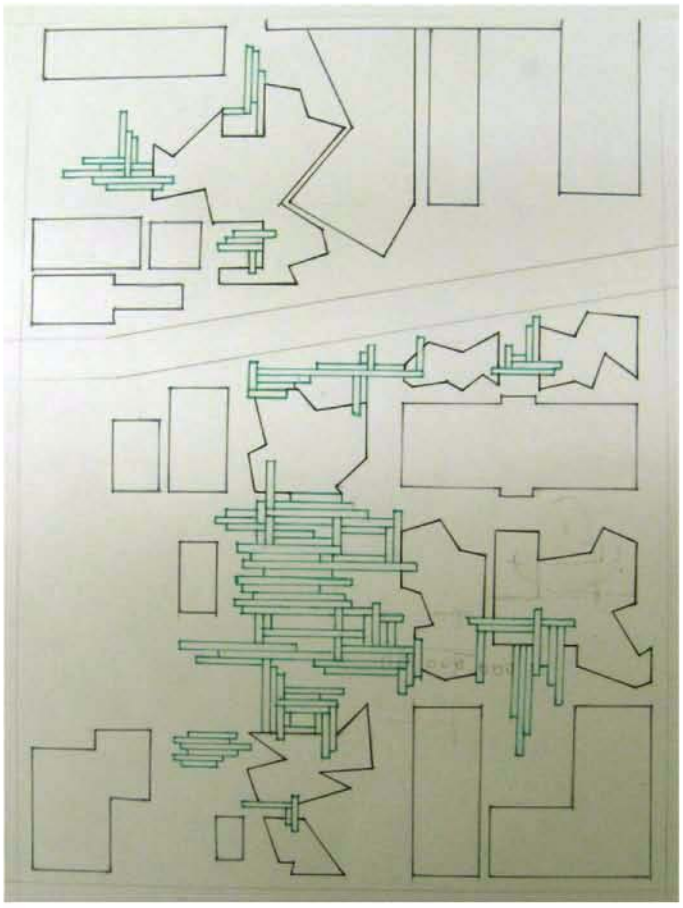


Sections were drawn to help study the relationship of threshold conditions. Concrete form was also practiced in these models in which specific design techniques were employed. Angled walls acted to break the typical vertical perspective. Angled roof planes created interesting interior spaces.

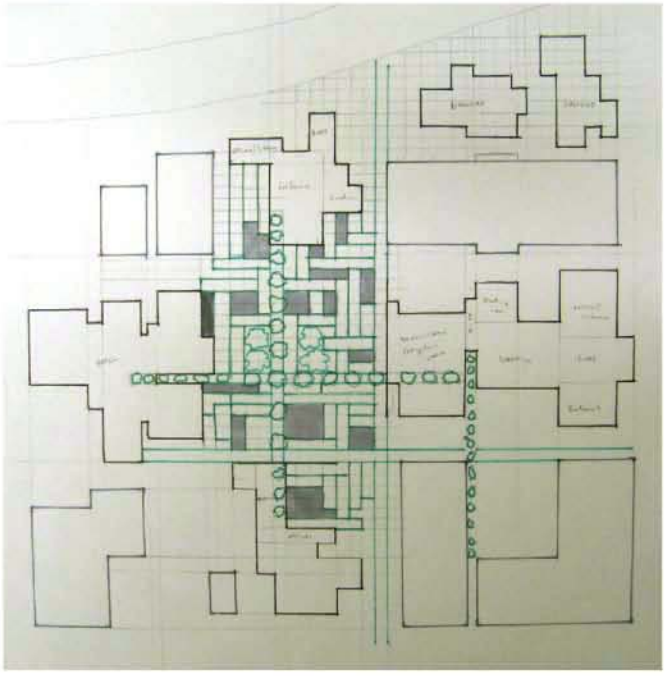


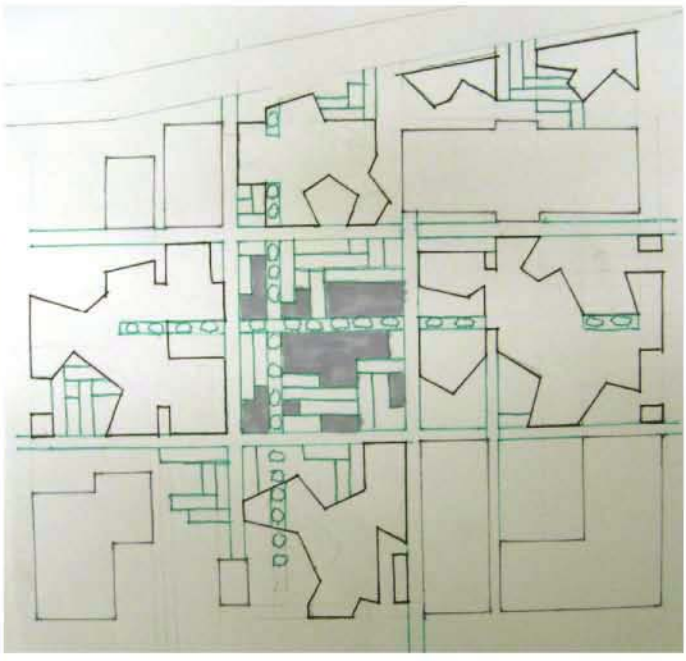
Flat roof planes were used to study the relationship of habitable space within a system of spatial layering. These habitable spaces would be in the form of roof gardens to help strengthen the role of landscape.

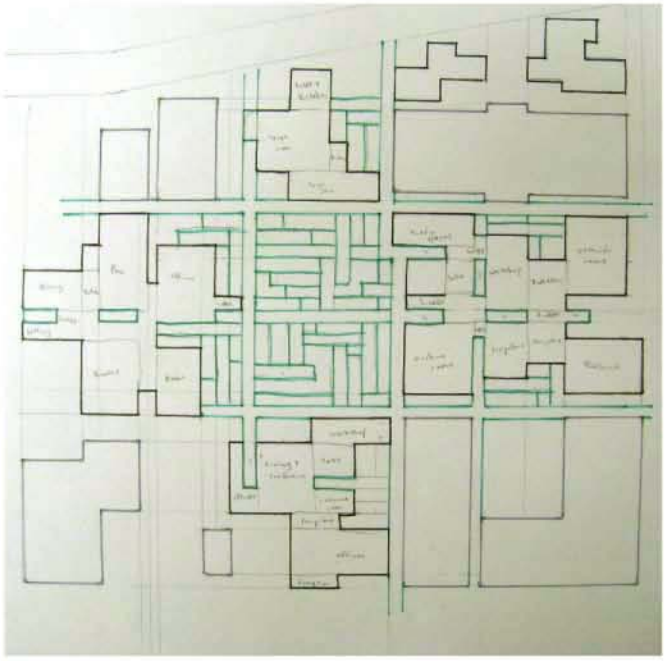




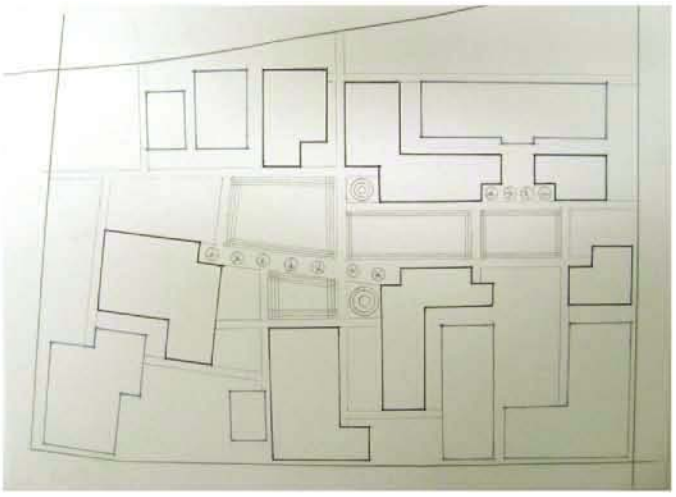
These drawings were created using both simple and manipulative building form with intertwining green spaces, water paths, and tree lines. They also studied functional space layout for each building.

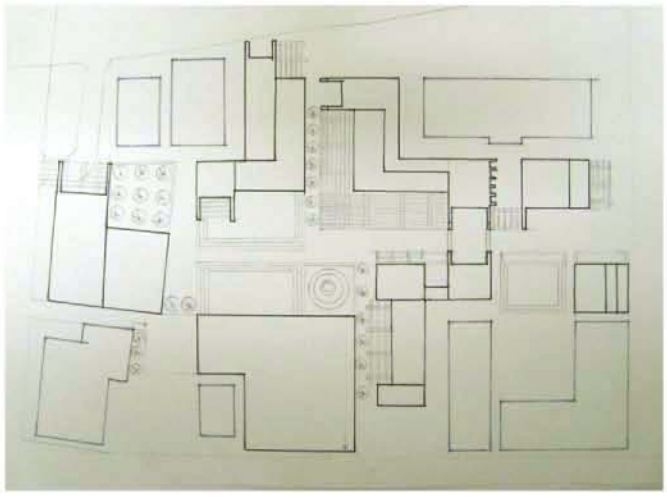


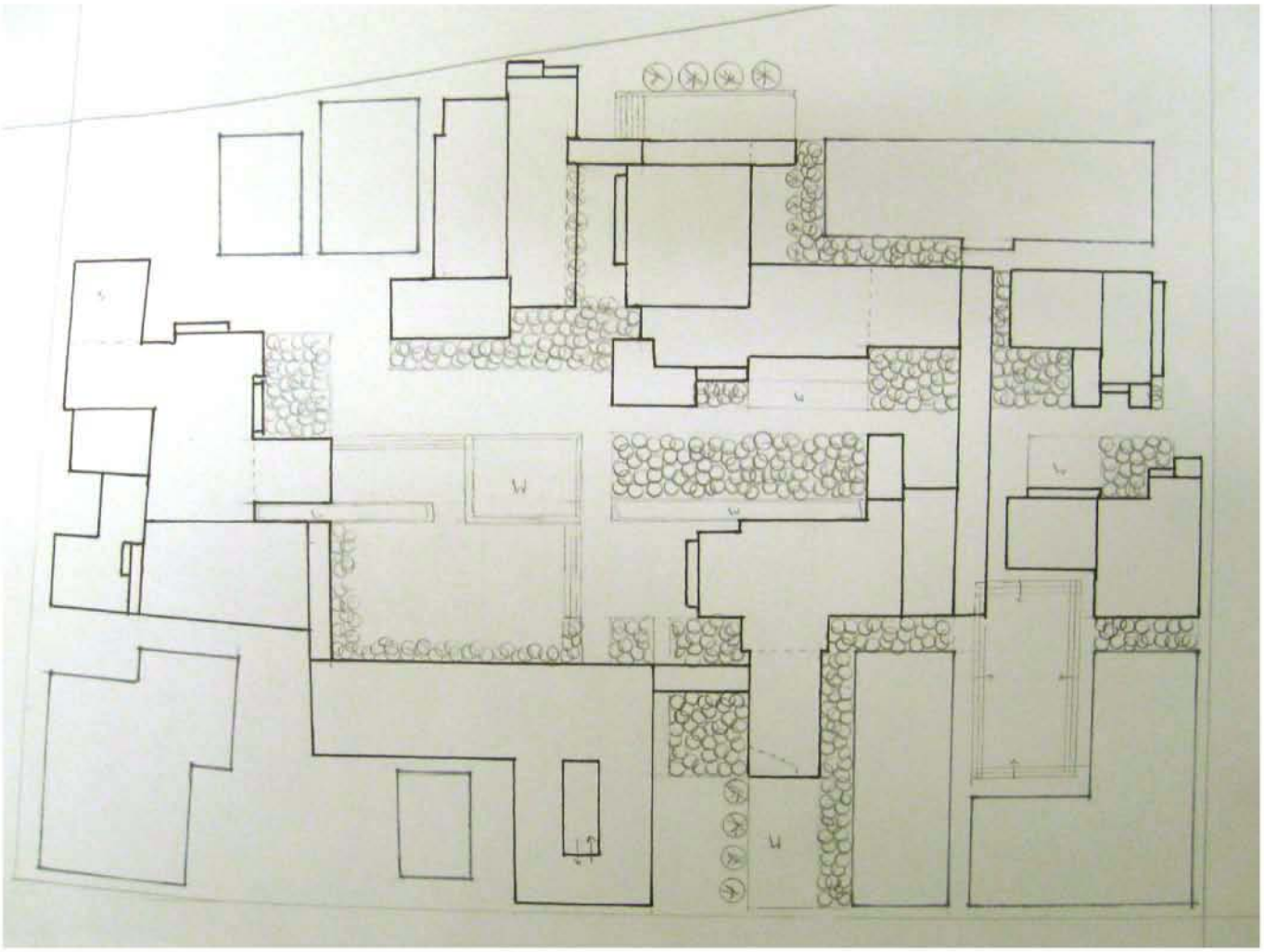




Plan studies of rectilinear shapes that were skewed and oriented to the street. Plazas where placed in locations to create relationships between the inside and outside environments. Varying densities of vegetation were also analyzed.







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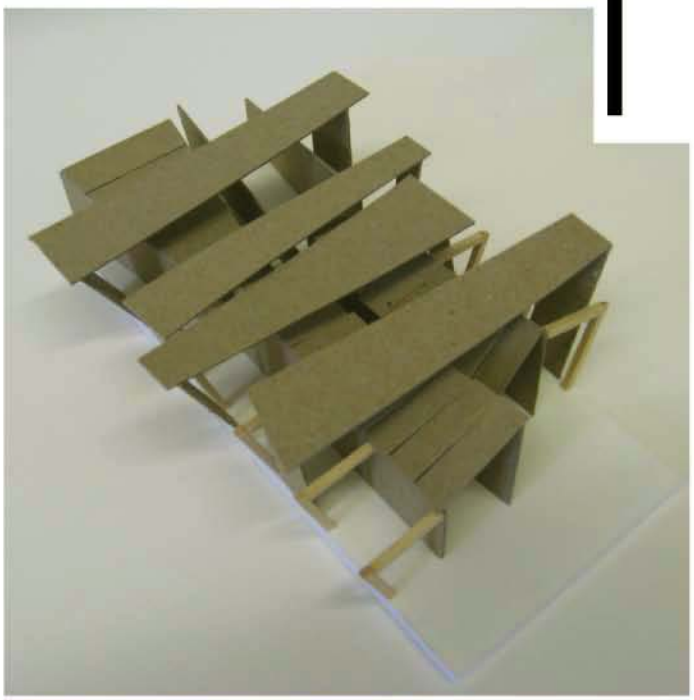

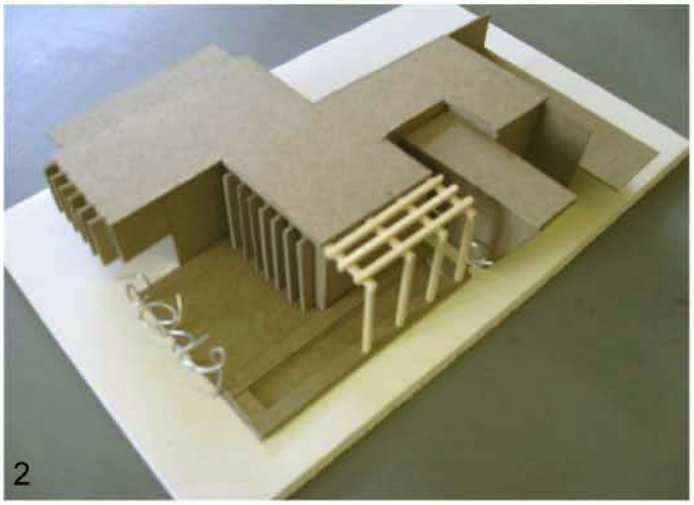

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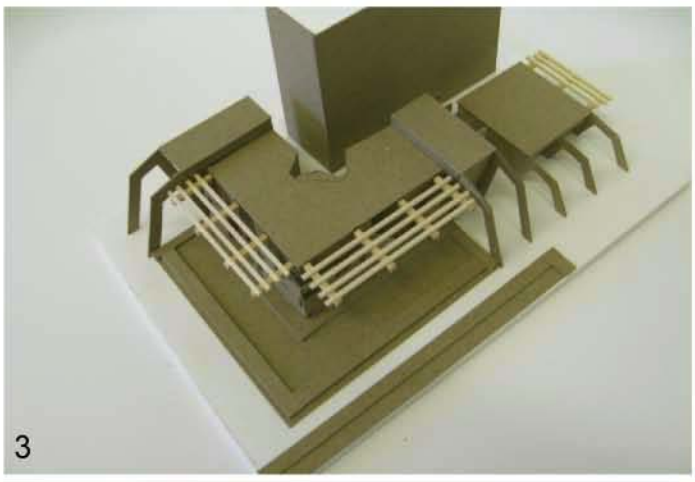
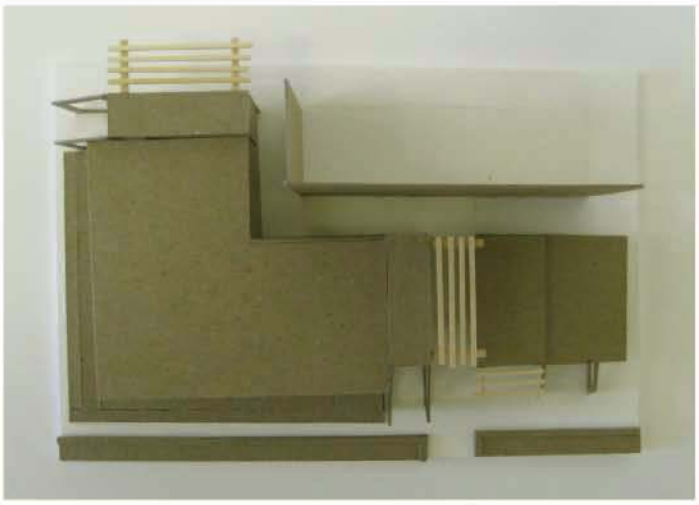
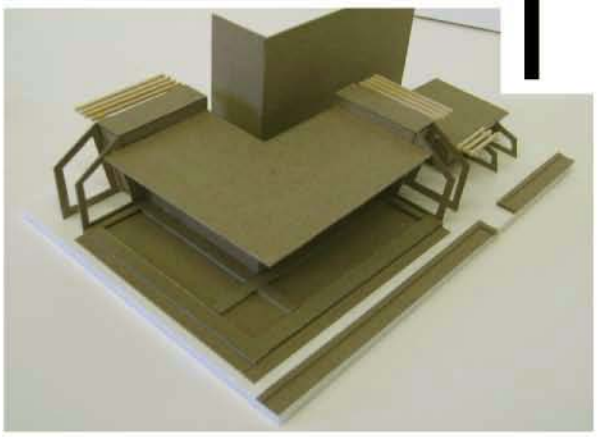


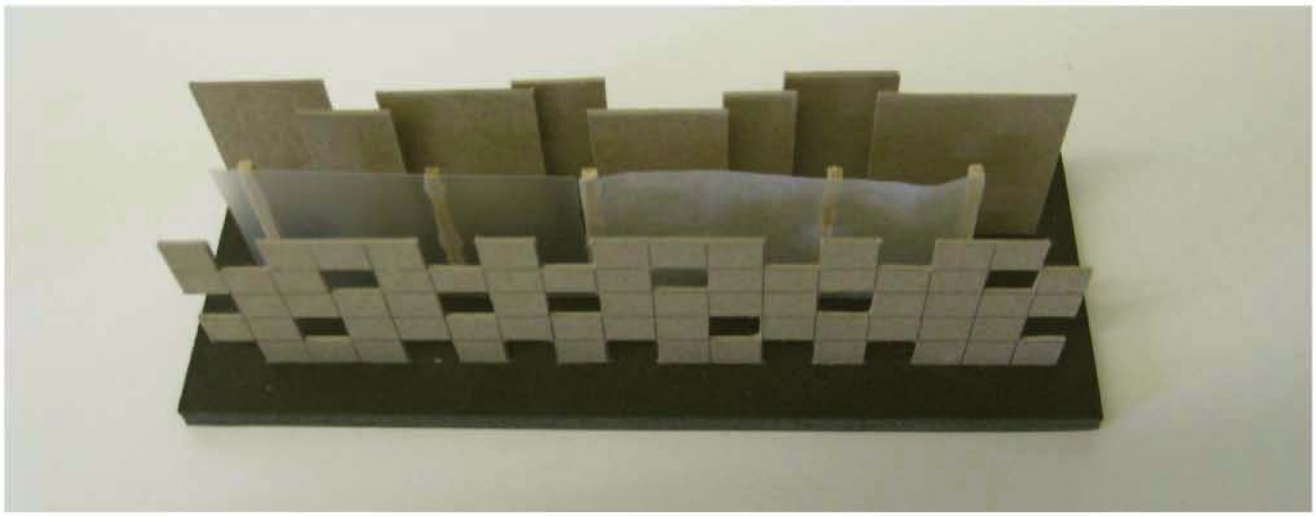
3

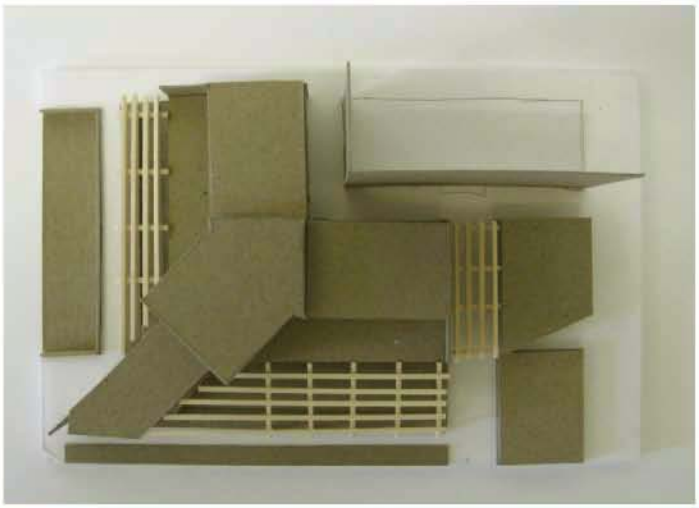
Model 1 above was an abstract idea that looked at layering roof planes and exposing structural members to create a form with numerous circulation paths. Model 2 and 3 were refined stages of all previous design work. They started to combine many of the elements that were studied in other models. From water features and exposed structure to a return to the original city grid design, these models strived to relate to the existing adjacent buildings. The idea was to not isolate them from their surroundings, but rather use the surroundings as an advantage. The inside/outside relationship was challenged by carrying paths of water and vegetation from the outside to the inside. Shading devices were implemented in these series of models.

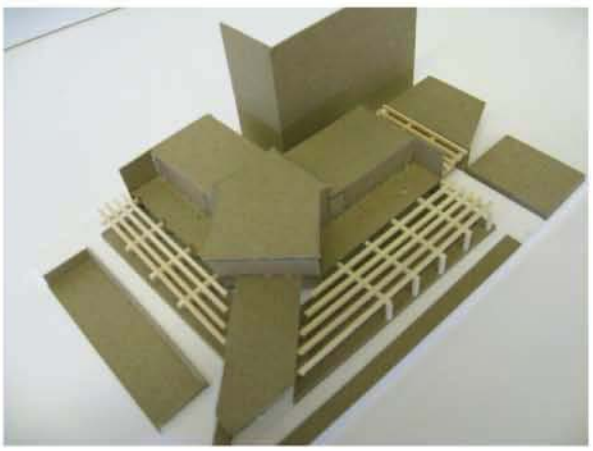




More models that studied the relationship of new form to adjacent structures. The middle image was a quick model of a possible layered wall system that would be employed in the design of the other studies on this page.

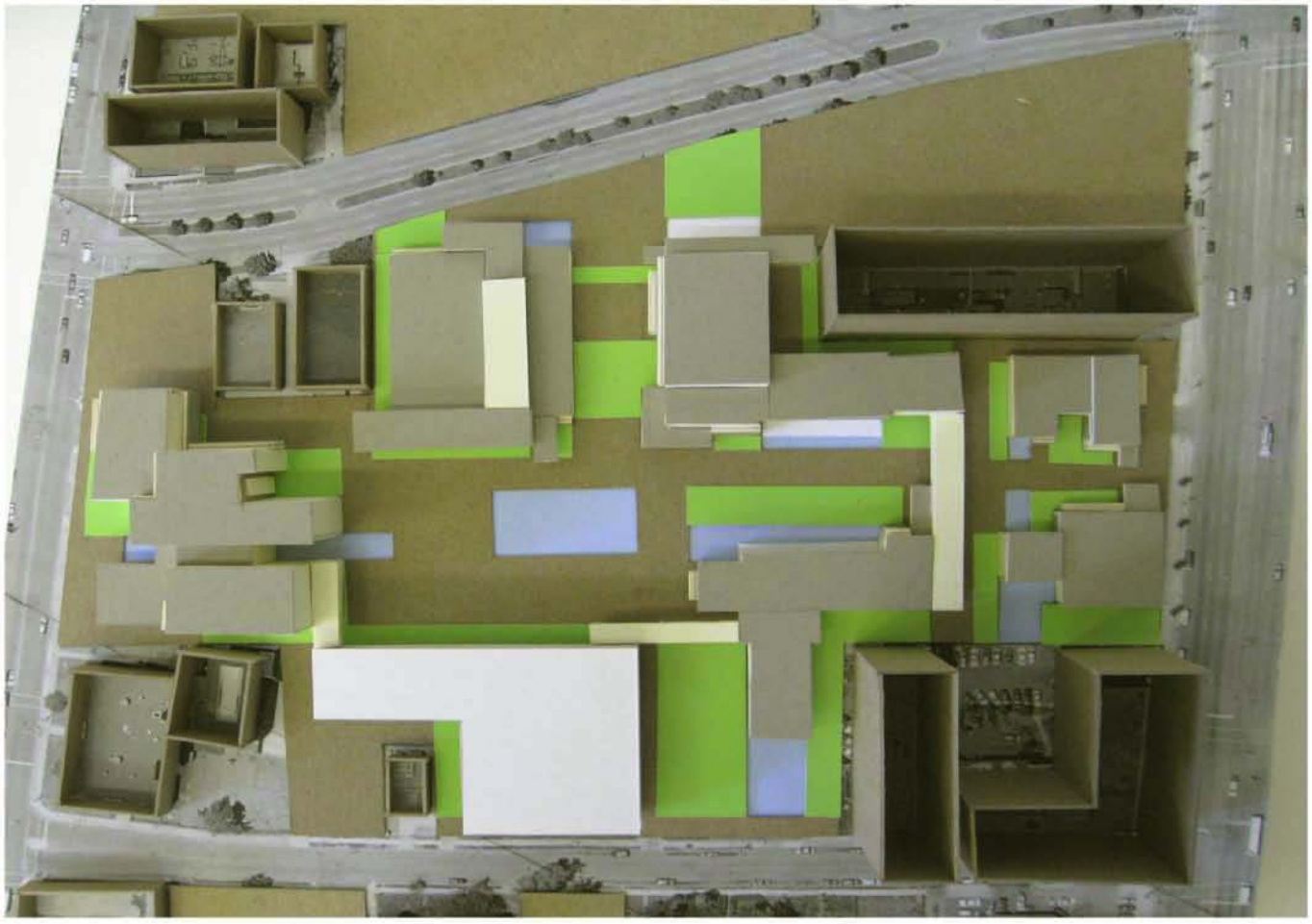




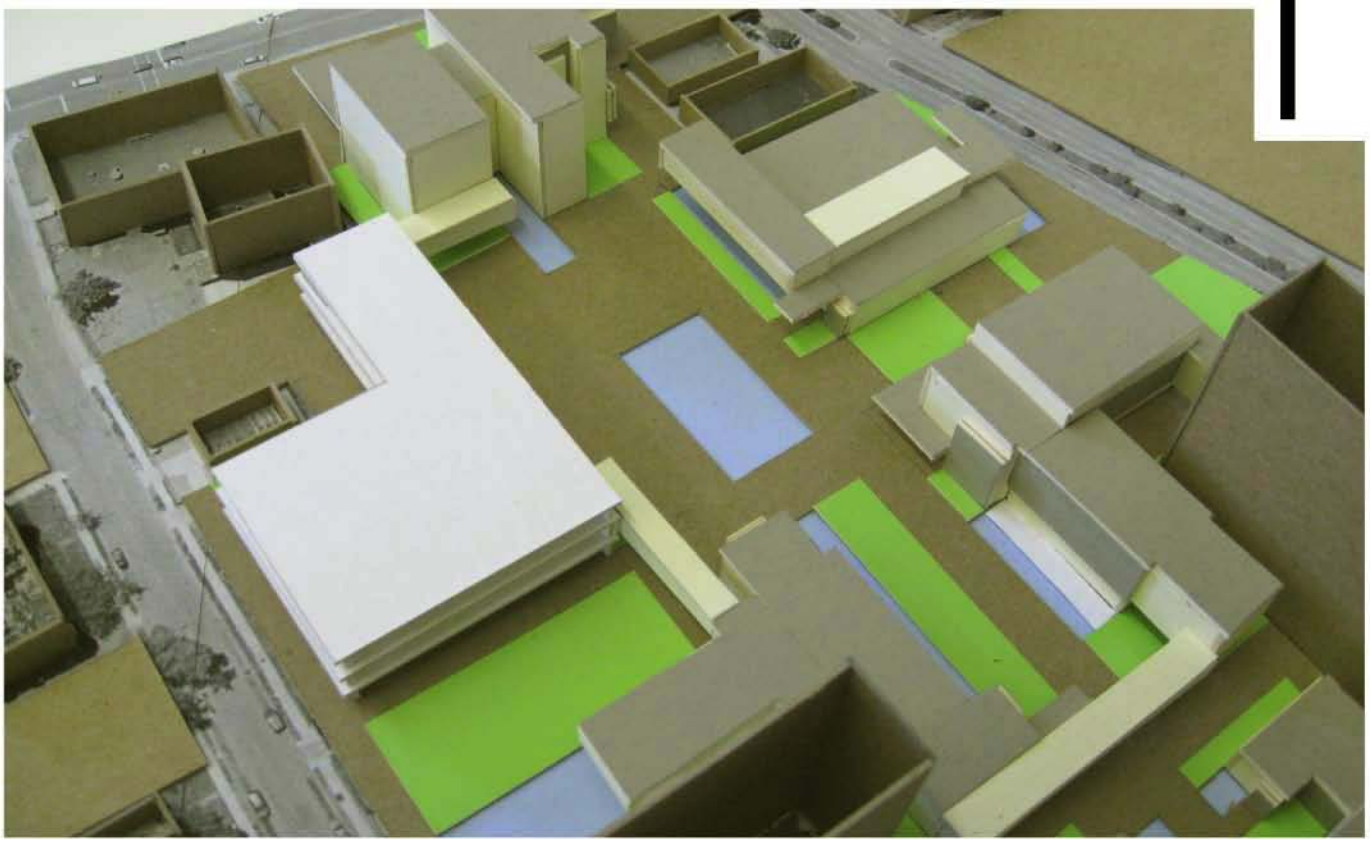


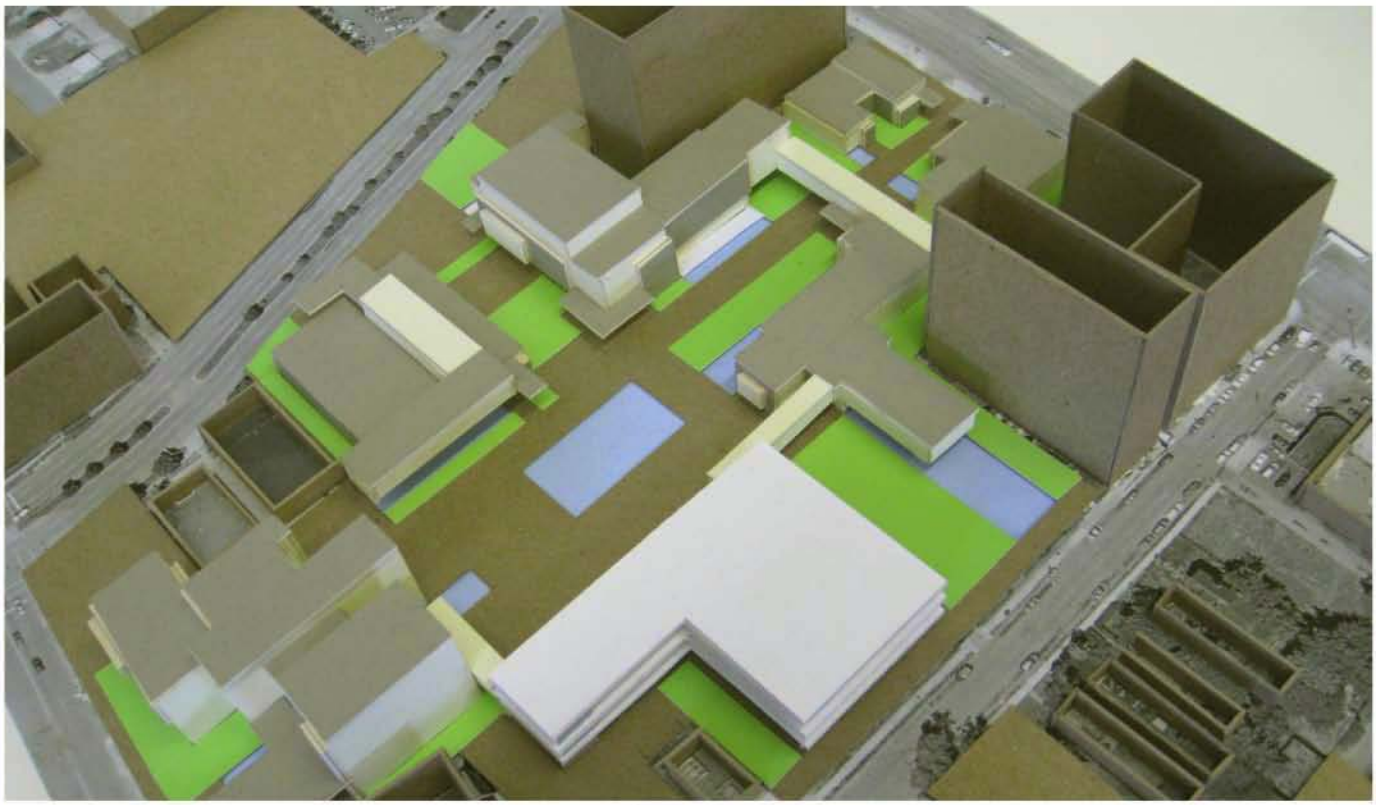
The following pages present the work that was shown at the semester review and give a good indication of where the project is going. The design work consisted of multiple ideas derived from all previous springboard and schematic models and drawings. By this time, all of the programmatic elements of the Technology Campus had been established. This is also the stage that refined the site to the core location due to its immense scale. Many of the beginning stages of this thesis worried about blending multiple block and other contextual boundaries, but the scale of all the vacant land proved to be much to large.

Combining massing models with detail models and drawings, the realization of program layout arose. The design presented below encompasses all program components, numerous water features for pedestrians and business workers to relax and/or wade in, multiple depressed plaza areas for gatherings, and thick vegetation that would produce a picturesque environment for viewers inside and outside of buildings. Numerous cantilevers were designed over water to create a new urban scenery. This combined with shrubbery and trees that spread around and into the buildings, try to create a new relationship of inside and outside spaces.

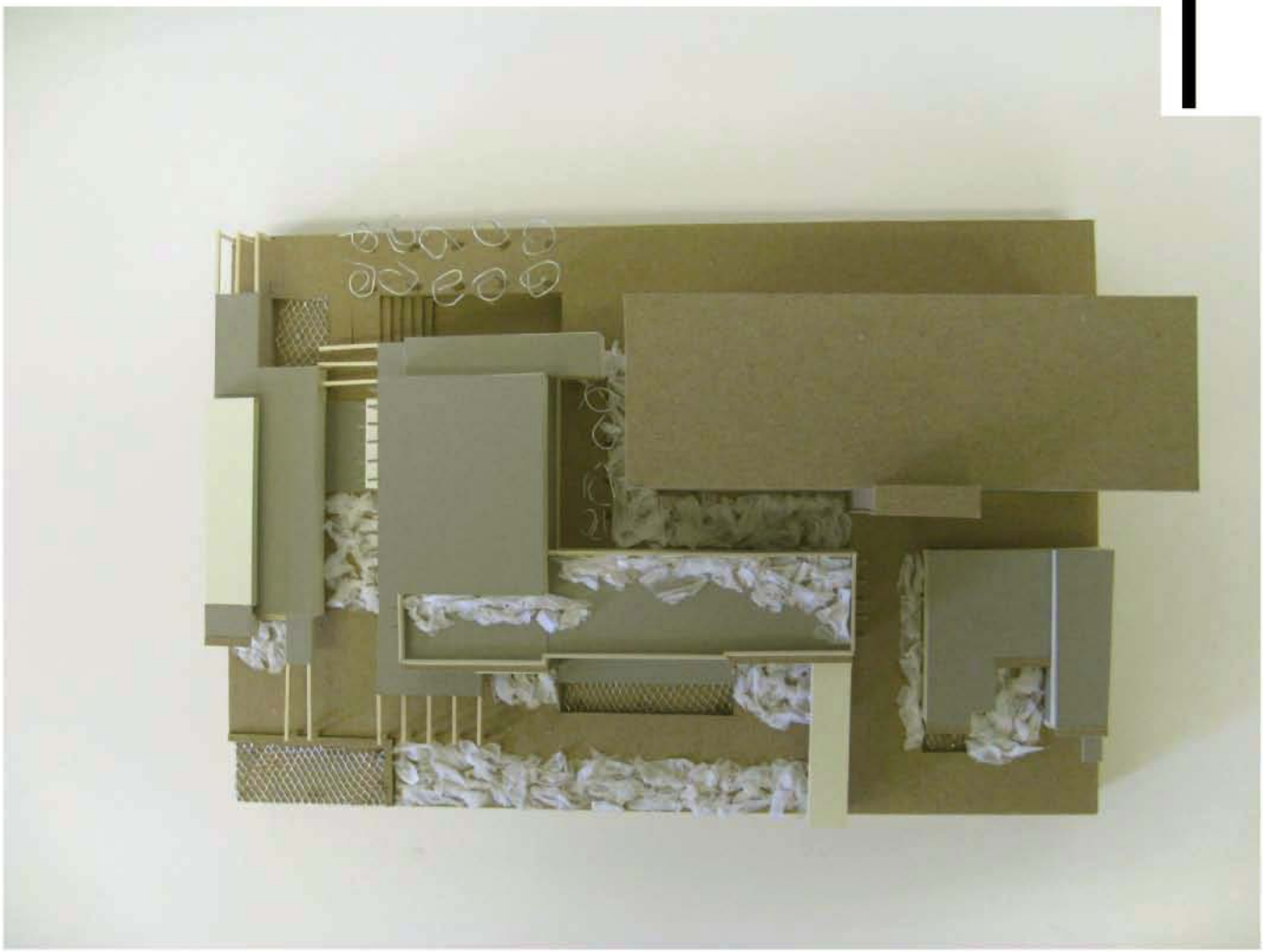


Massing Model



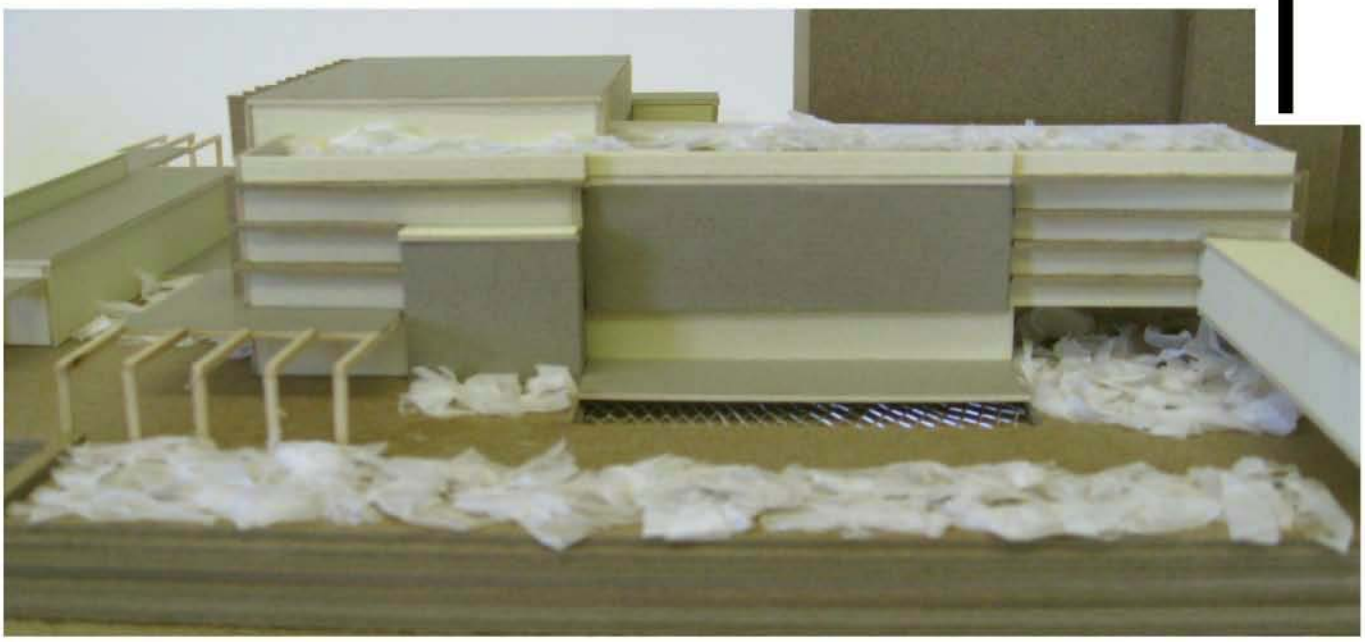


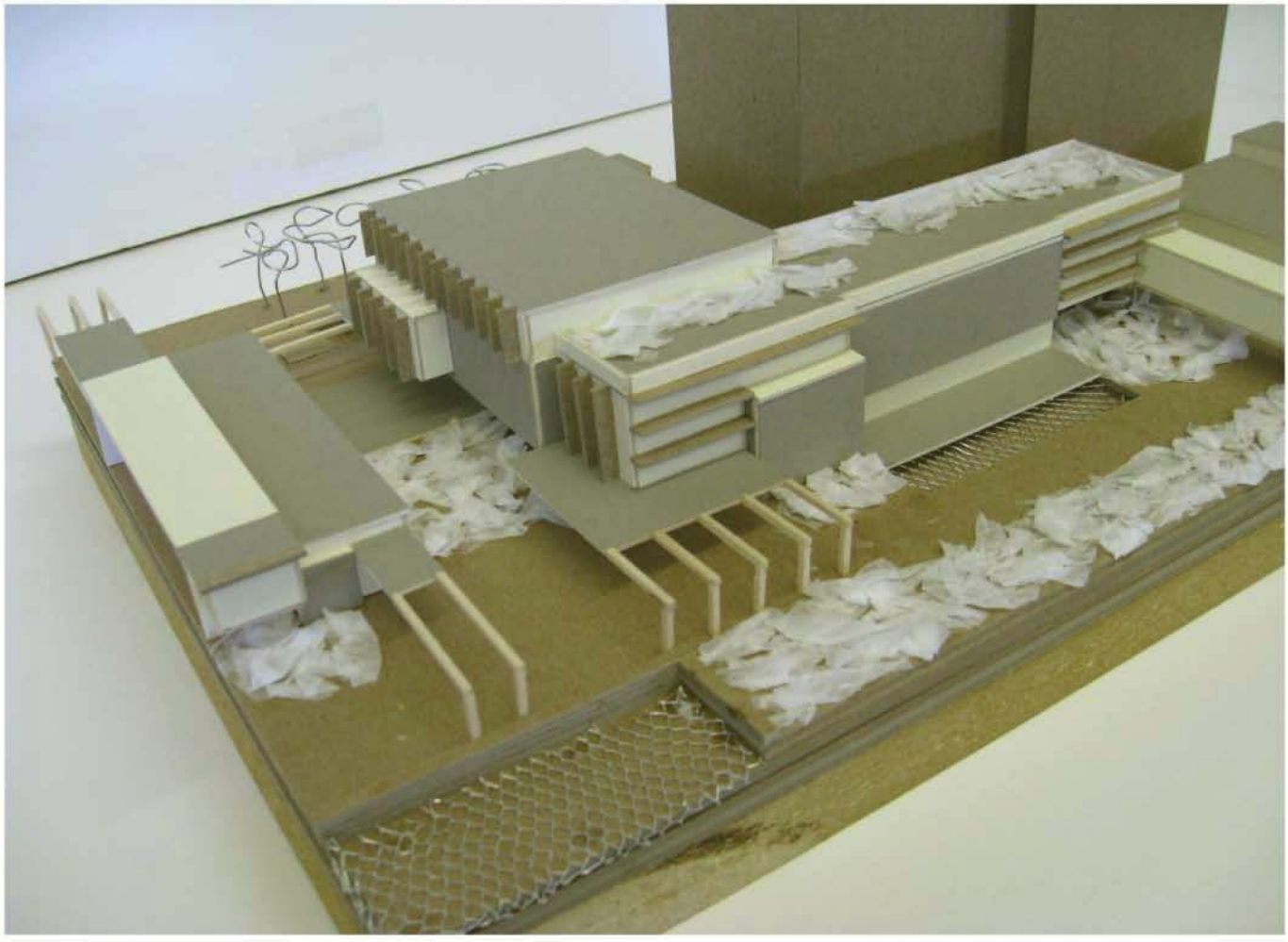
Detailed Massing Model



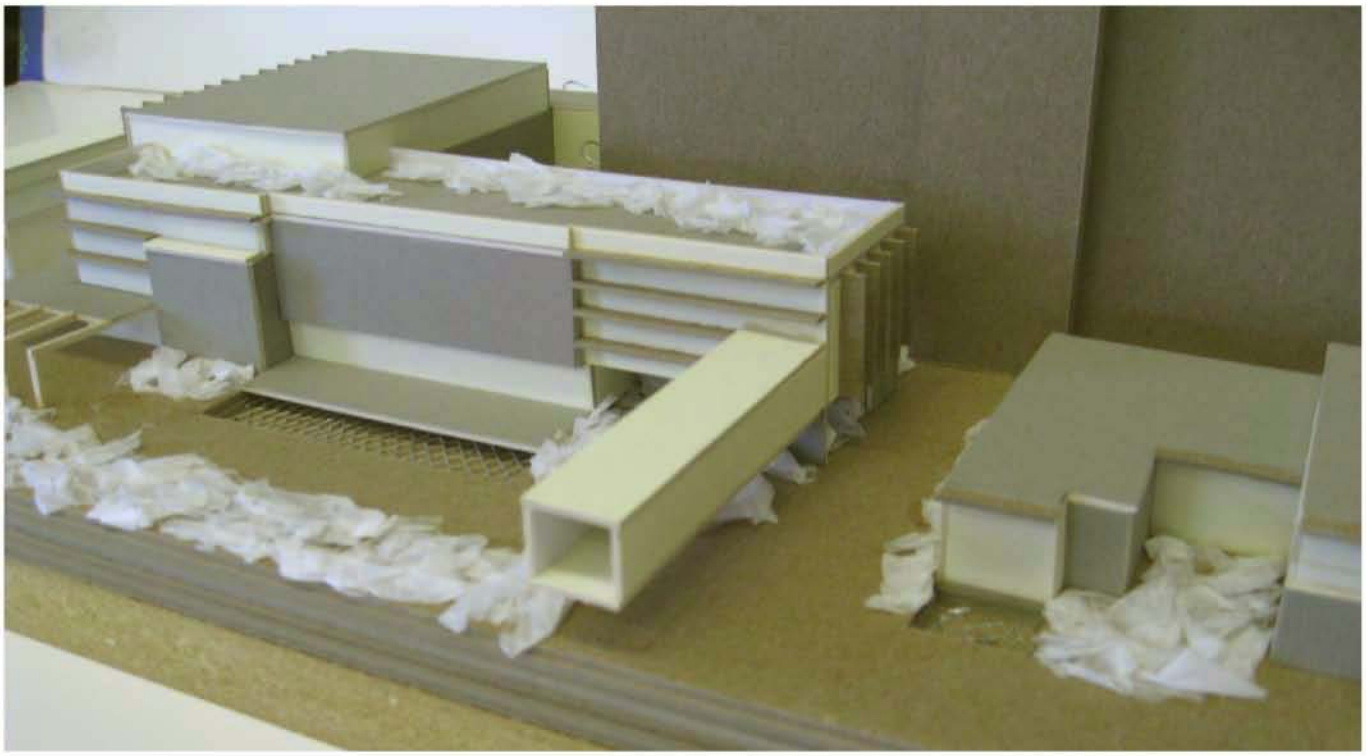
This model shows the design of the Interactive Technology Learning/Teaching Center. Many of the characteristics that this model uses would represent similar techniques for all of the other buildings. The design began by using the adjacent apartment complex to create edges and locations of entrances/exits and circulation paths. The white paper that spreads around and on top of the building represents vegetation. The vegetation on the ground plane would create distinct pedestrian paths between each of the buildings. Green roofs and roof gardens would be strategically located on many of the buildings, thus using all of the available space that the site and building has to offer. Cantilevers would hover over large patches of shrubbery and/or water with some areas of glass floor. The entire main level of the building would be glass in which lines of trees and groupings of shrubs/flowers would continue inside from the outside environment. Exposed structural members would show the location of main entrances and continue into the inside, again, focusing on the inside/outside relationship. Small "wading" pools are located adjacent to the new architectural interventions in which the water continues to flow throughout numerous interior spaces.

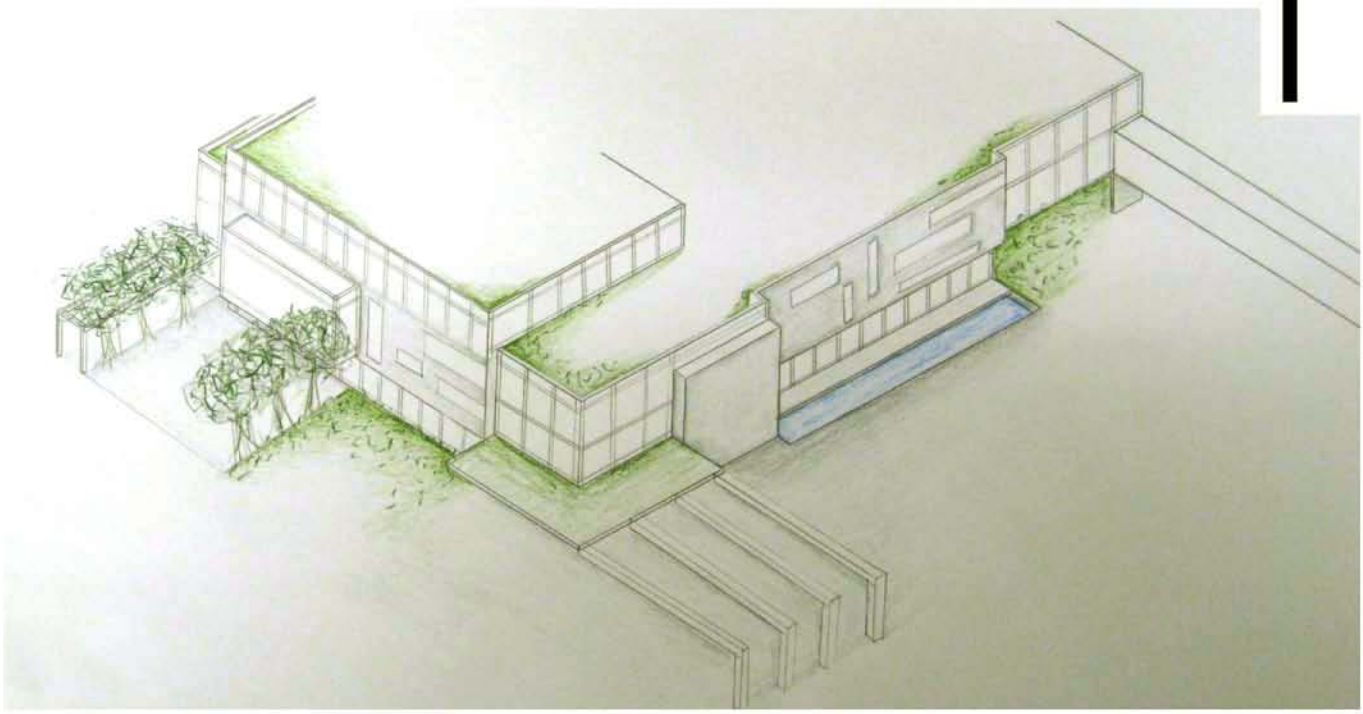
Detailed Massing Model



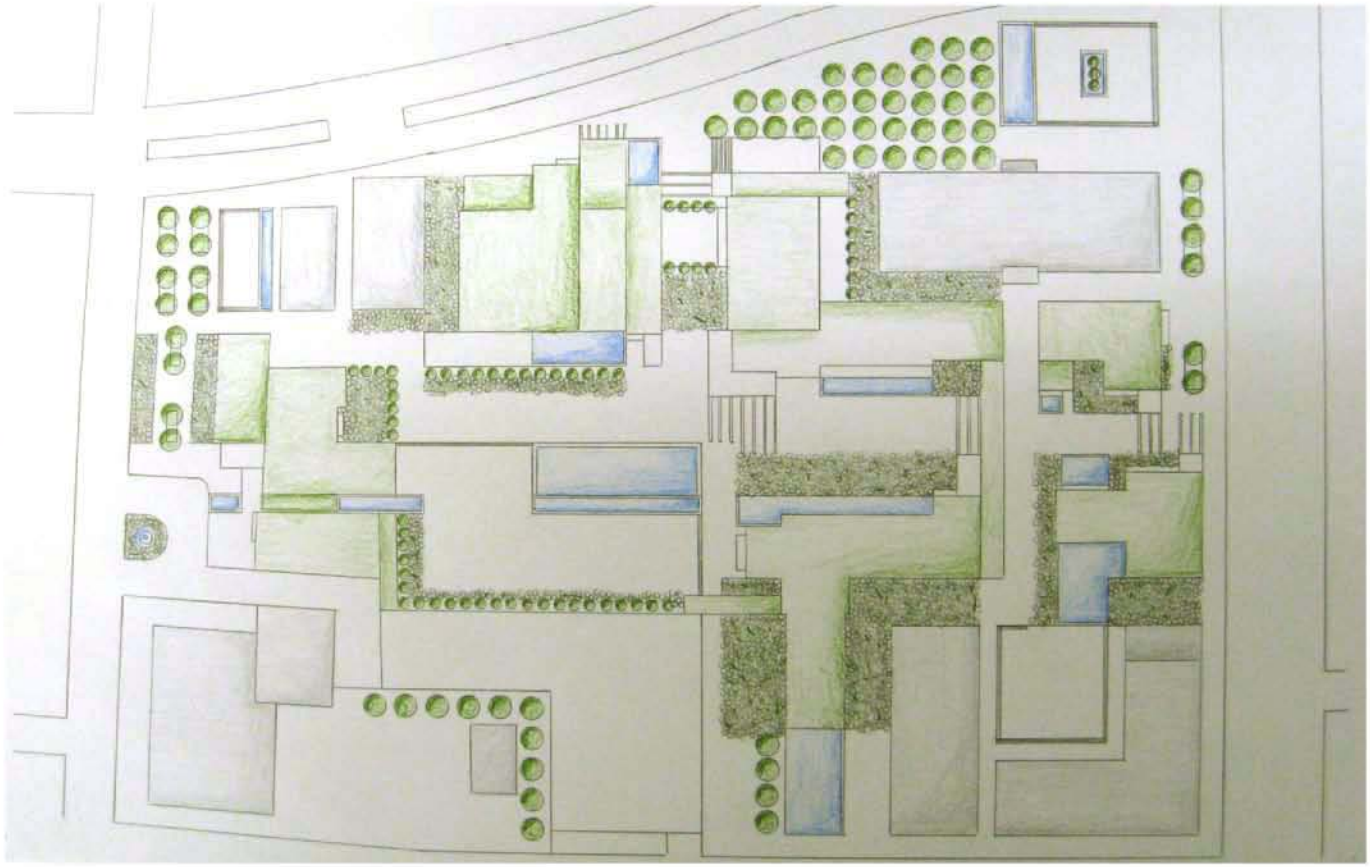


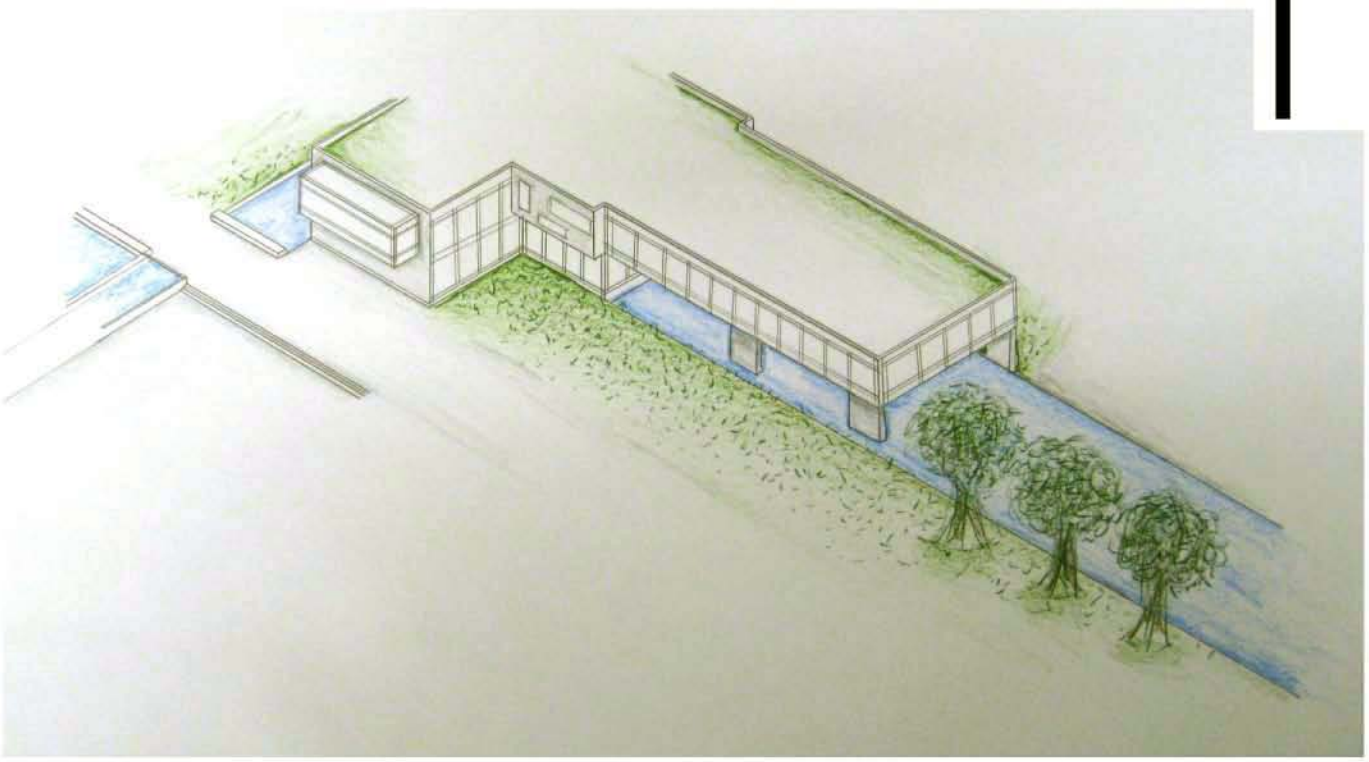
Detailed Massing Model



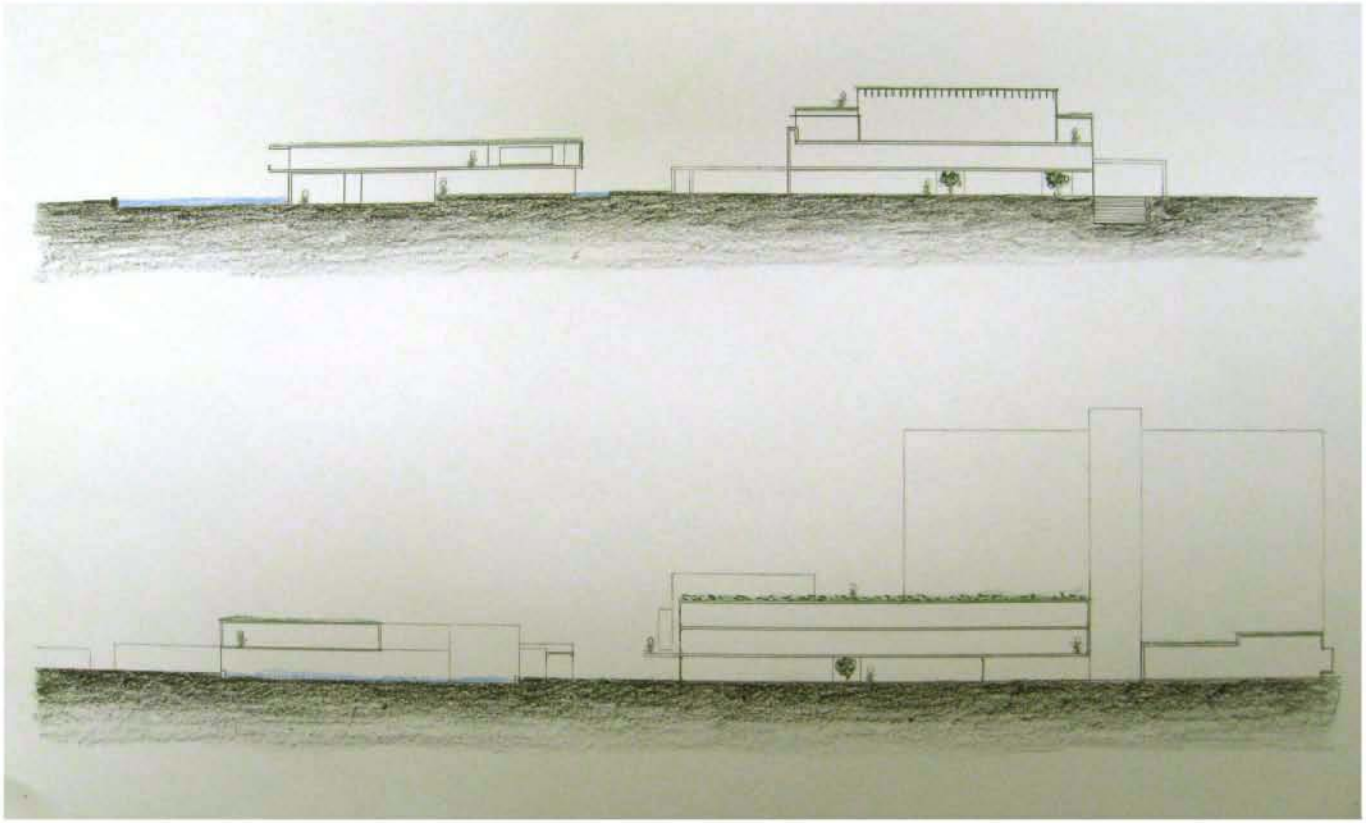


Drawings for the final schematic presentation in December

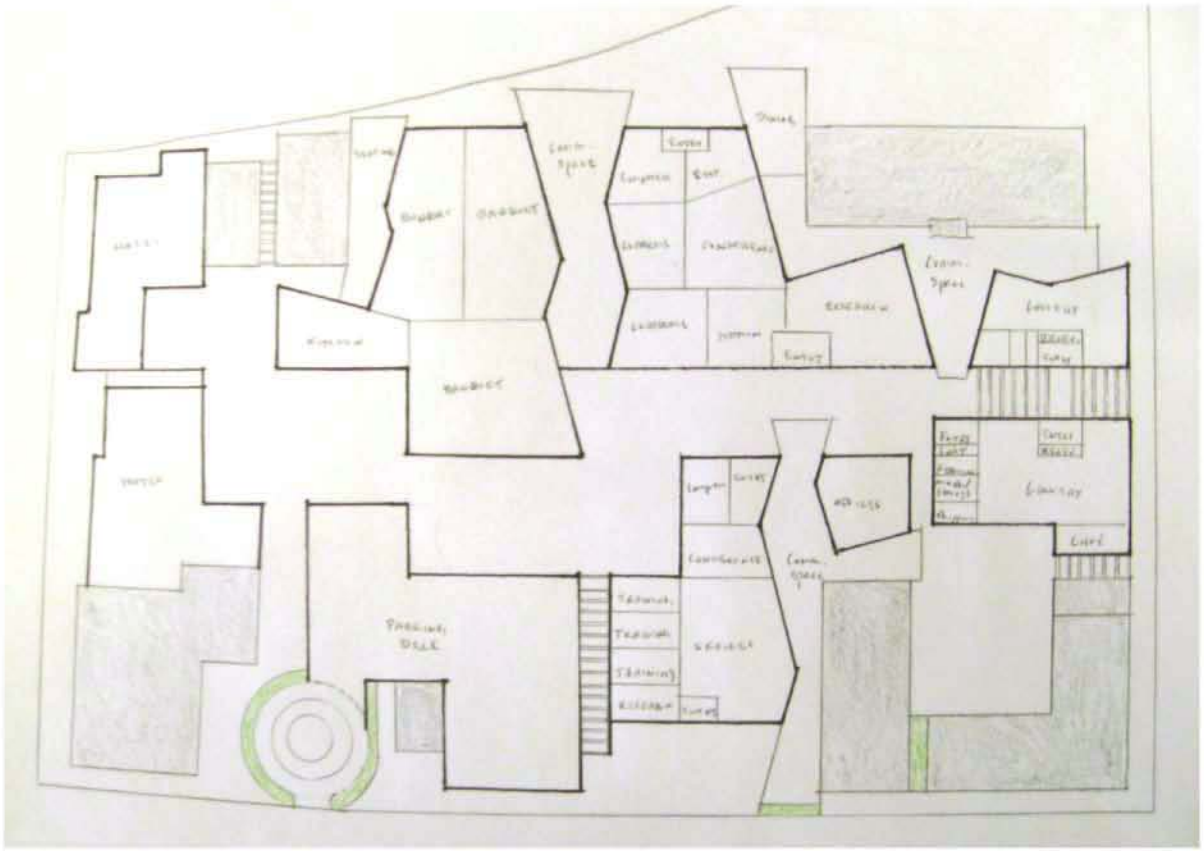




Drawings for the final schematic presentation in December



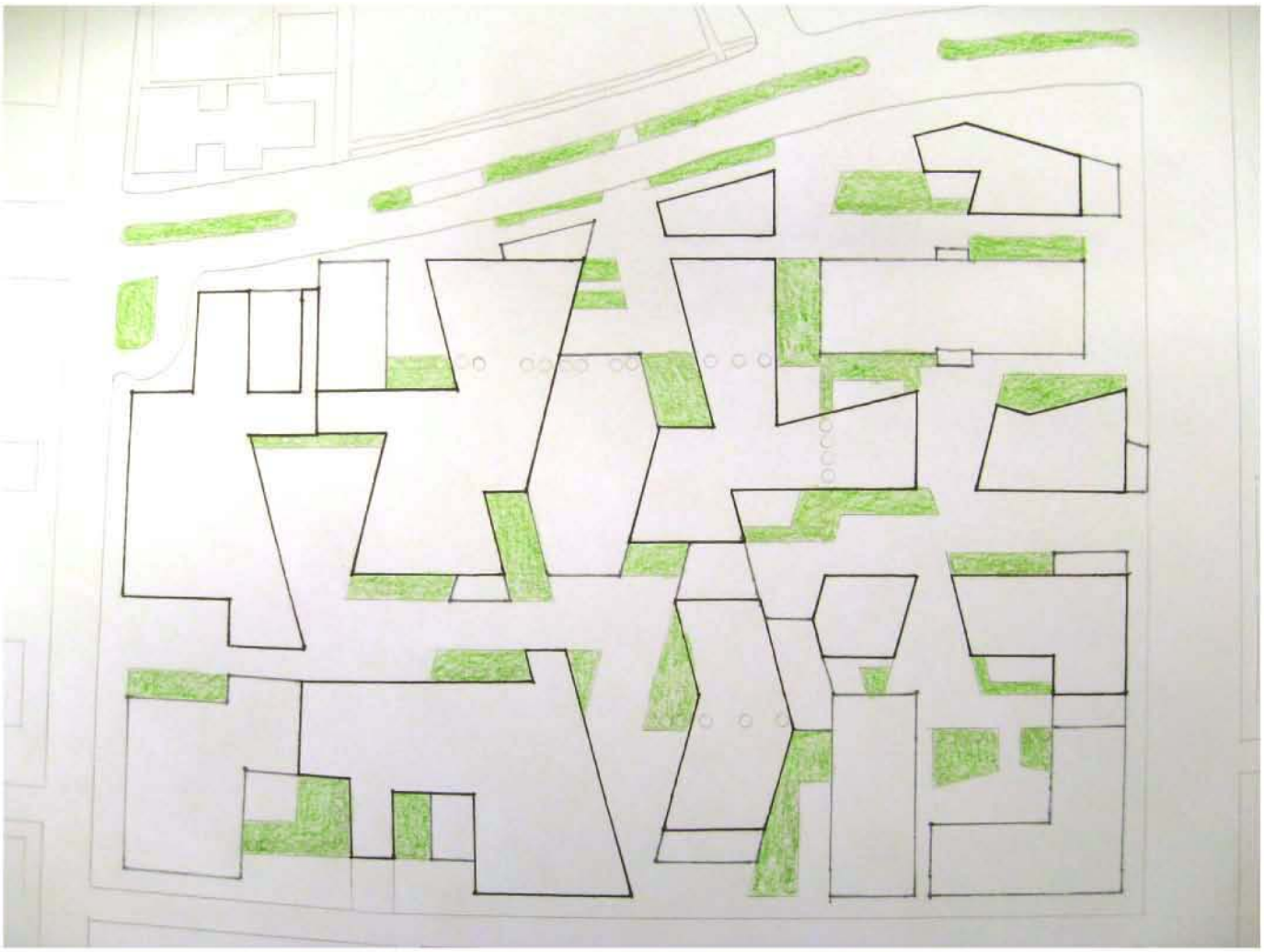
The Building Design Phase was a continuation of Schematic Design. Emphasis was placed on exploring new and final design techniques that would ultimately become the major foundation for the final product. The following design ideas intended to bring threshold and boundary conditions into a unifying system. Effort was used to break the disconnections that existed in the previous design phase. A new master plan scheme with interconnected architectural interventions coincided with designated outdoor spaces and facade details. Green spaces were designed on a more intimate level and related to the indoor function of the adjacent space. Wall layering systems were also studied and employed during this phase. A multi-dimensional wood and metal rain screen system created situations where one could walk on either side and experience multiple different threshold conditions. Generous circulation areas and new public winter gardens helped to strengthen the role of the urban landscape. These circulation paths were designed as a series of gentle ramps to help disrupt the typical flat ground of an urban environment.

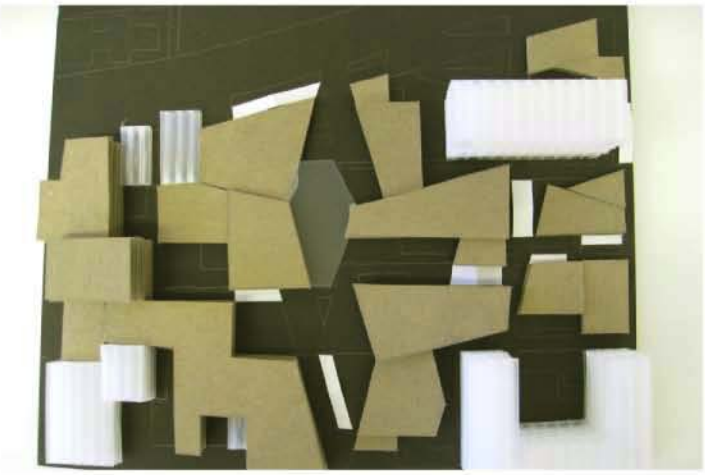


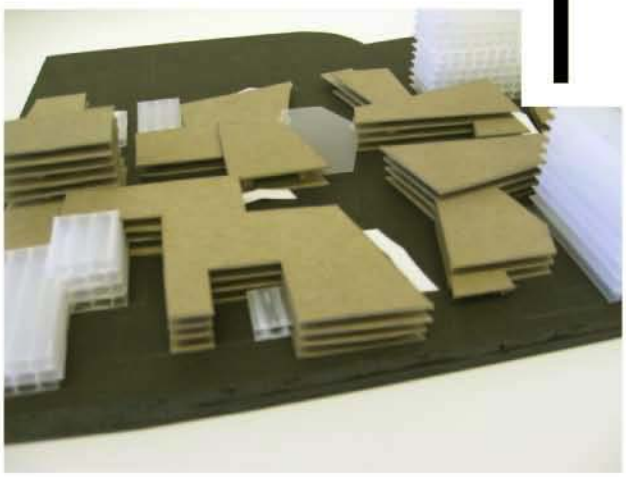
These drawings were among the first created after the schematic design critique. A resemblance to the final drawings in December, these drawings focused on creating a new set of building footprints that would form specific outdoor spaces. Within these outdoor spaces was the attempt to create both large and small scale spaces that could be gathering or more intimate areas. Large community spaces were included to help tie in existing buildings to the new interventions.

Eventually, these community spaces would become an elaborate system of winter gardens that would help to create numerous threshold experiences. They would help blend buildings together and create a staggering effect to the ground plane. Exterior green spaces would directly relate to what happened on the inside.

These drawings area a continuation from the previous page. Numerous master plan drawings were created to help work out criticism received in December to blend together contextual boundaries. Outdoor green space began to become more and more refined as new ideas arose.







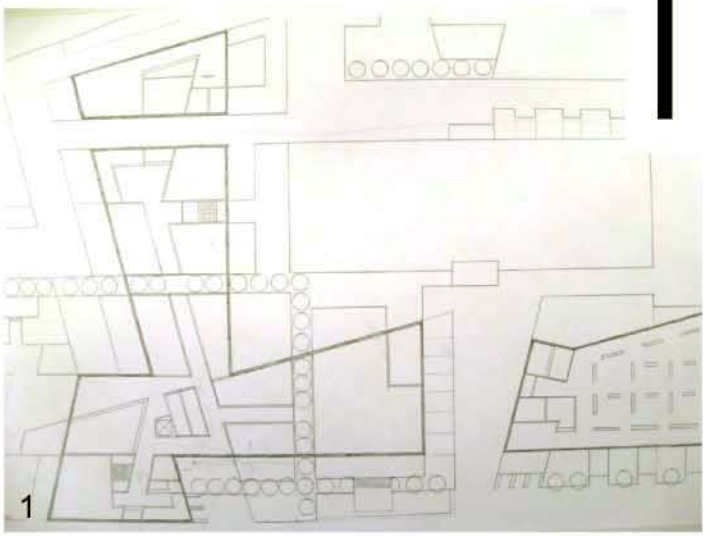
Models were built to give dimension to the master plan drawings. Staggering roof plan ideas and vertical scale were studied. The model at the bottom was a quick study model to test ideas on altering the ground plane. This model was also the first to fragment pedestrian circulation paths to create gentle ramping conditions that would ultimately continue to interior spaces of designated buildings.

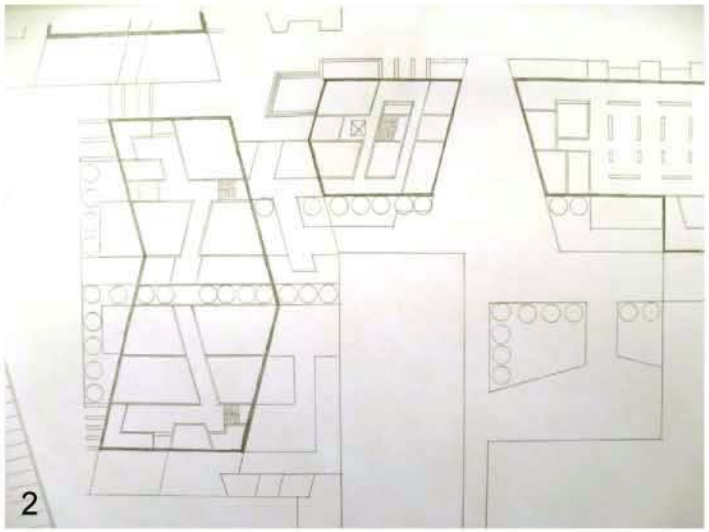
Detailed floor plans were drawn once the master plan was to a satisfying point. The floor plans began to create direct connections between inside and outside spaces. They also aimed at connecting to the surrounding buildings by using a complex system of multi-level green spaces. Outdoor rows of trees would penetrate the interior as to create a situation where one can't decipher whether they are inside or outside.

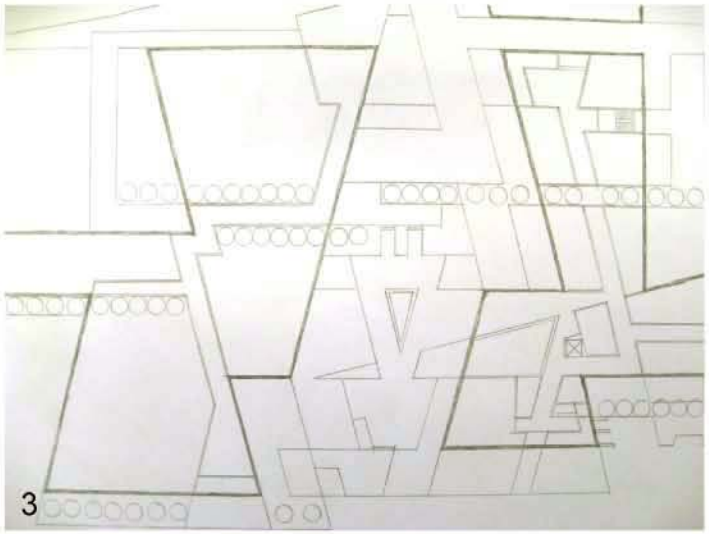
Drawing 1: Interactive Technology Learning / Research Center

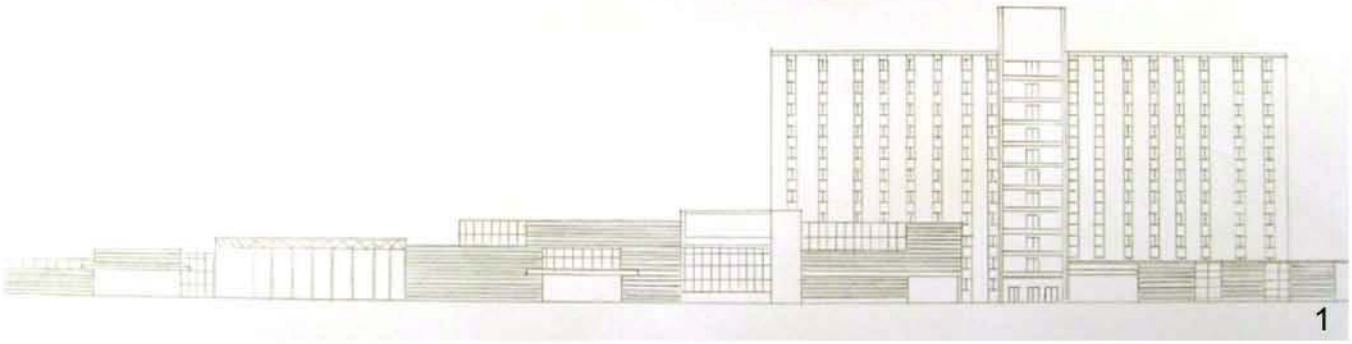
Drawing 2: Technology Business Incubator

Drawing 3: Convention Center and Winter Garden connecting to the Technology Center



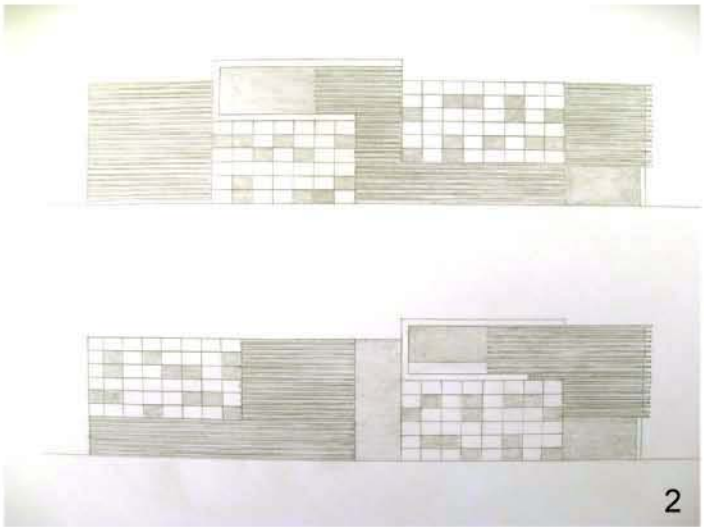




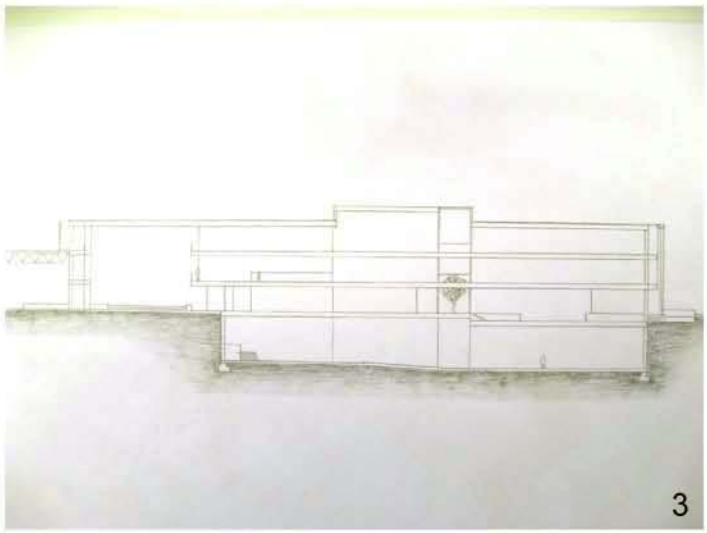


1

Wood and metal rain screen systems would give dimension to a typical wall and provide numerous areas for threshold experiences to occur. The wood rain screen would be horizontal on the south side and vertical on the east and west sides. The metal panel rain screen would have specific section of panels missing to create forced views and controlled natural lighting. Each of the systems would be set apart from the wall at different dimensions to create a network of circulation paths



2

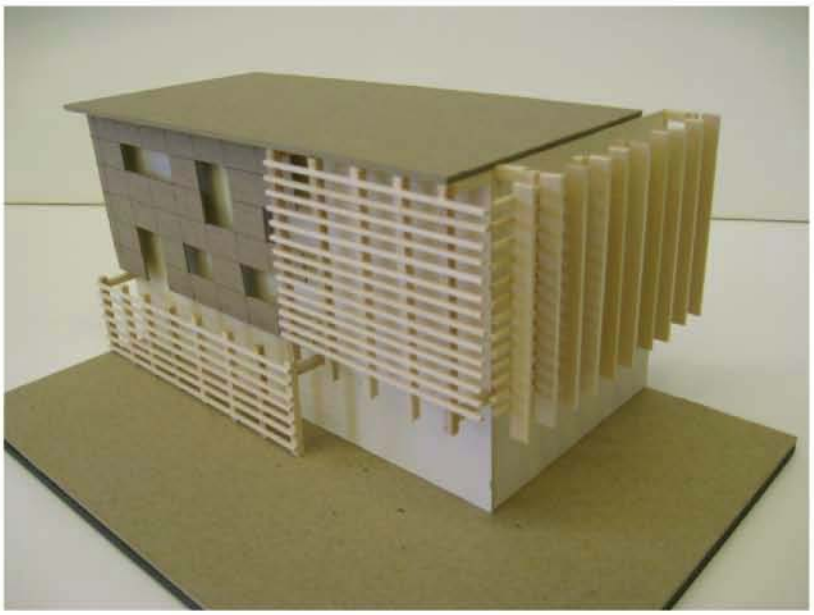


3

Drawing 1: South Elevation of Convention Center, Winter Garden, Technology Center, and Gallery

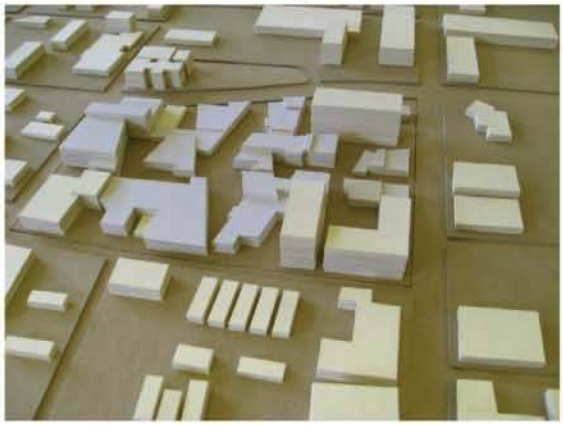
Drawing 2: Southern elevation studies for Technology Center

Drawing 3: Section through Technology Center

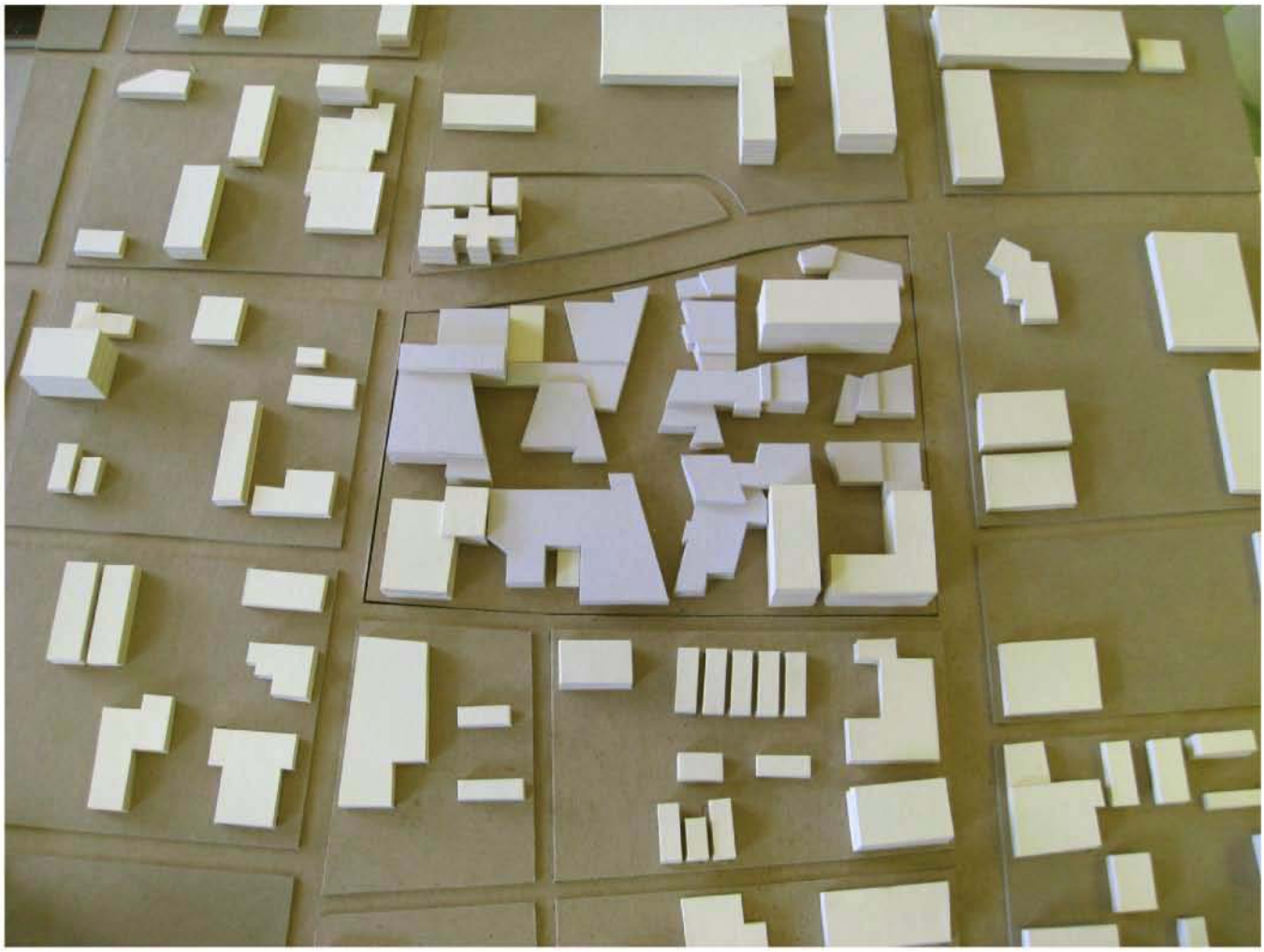


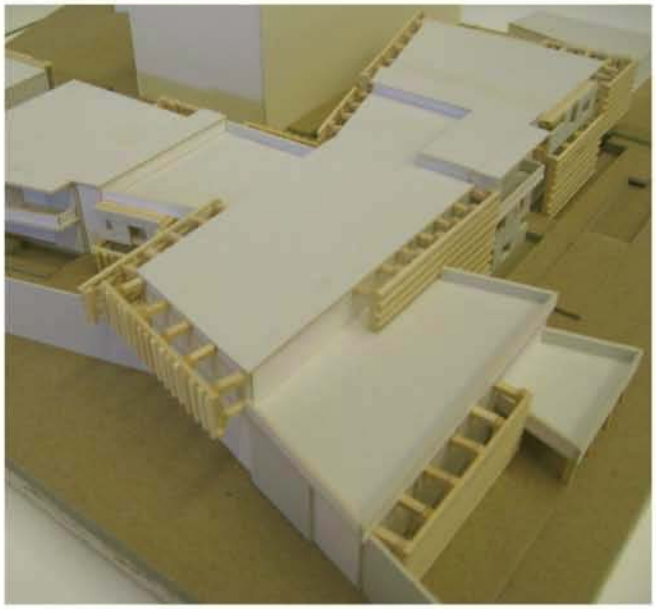
These two models studied the rain screen system described on the previous page. They were employed on the Technology Center which has received most of the design attention to date. The hope is that a system will be developed that can apply to all new interventions. The rain screen would also act as a solar shading device for all sides of the building.

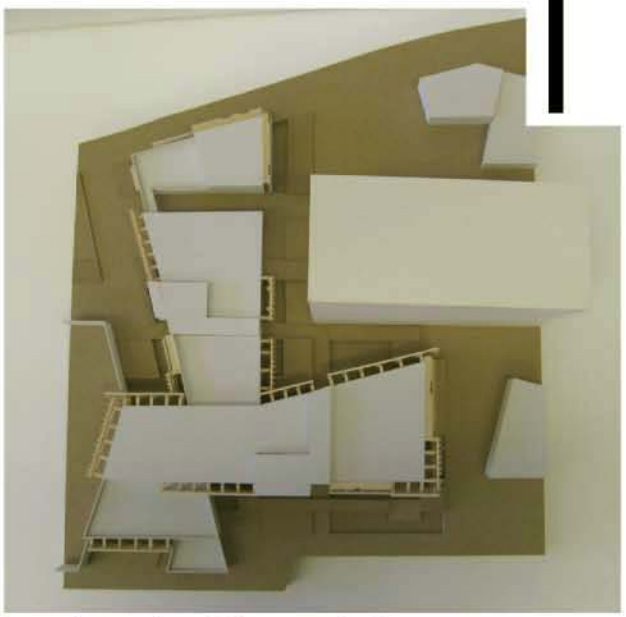
The following pages present the work that was shown at the Second Benchmark review. All of the building programs have been worked out and designed in plan. Vertical scale has also been designed and scaled appropriately to interior needs and exterior surrounding conditions. Exterior green spaces have been detailed to show where depressed and elevated areas occur.



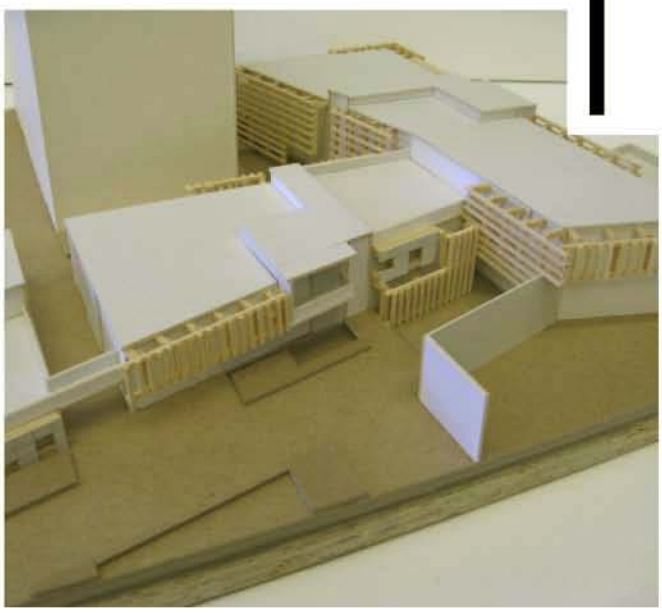
A large massing model and detailed model of the Interactive Technology Learning/Research Center were constructed. The majority of work had been conducted on this building. Plans, Sections, and elevations were drawn, showing different areas that threshold conditions were taking place. The model provided viewers with an example of the structure and materials that would be used for the construction of the facade.



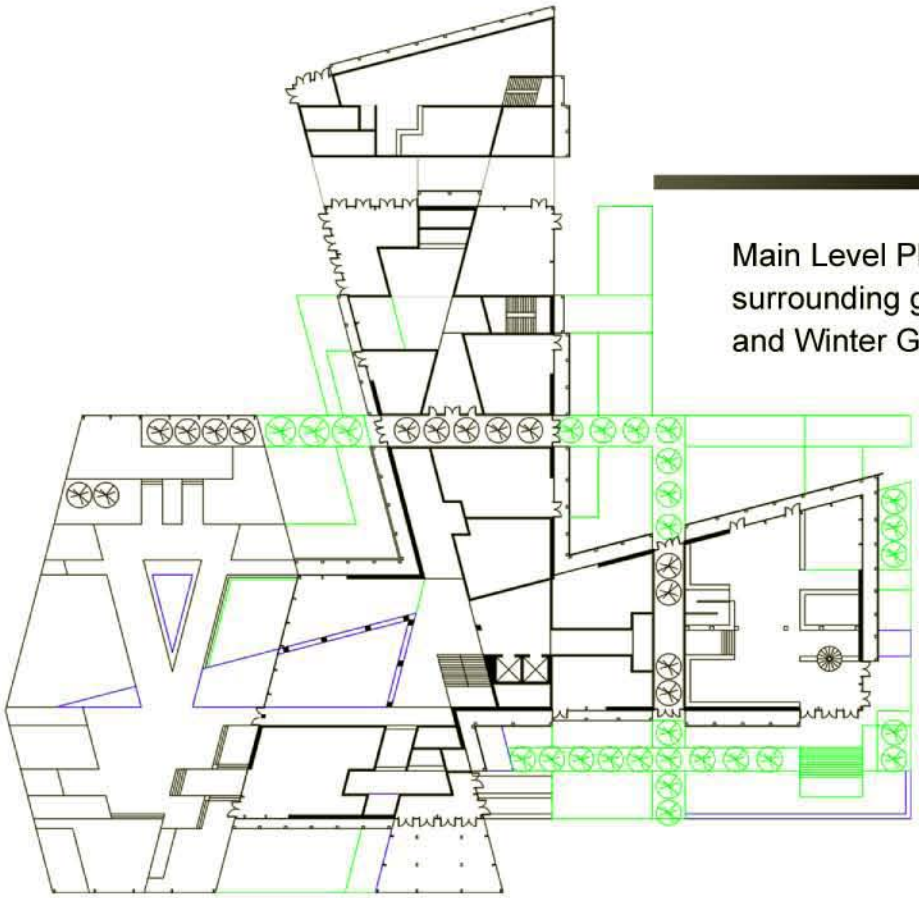




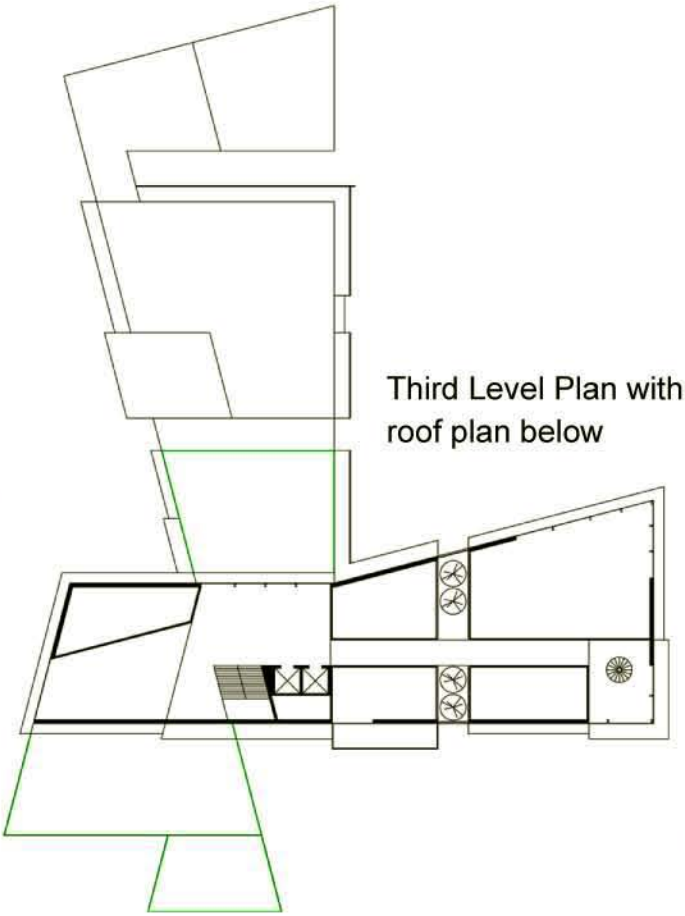
Detailed model of the Interactive Technology Learning / Research Center



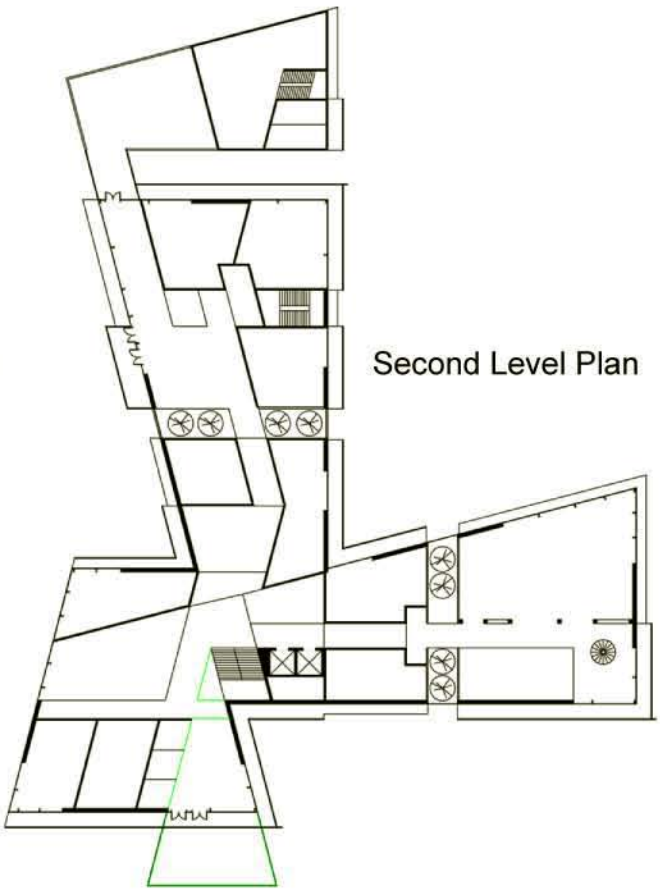
Detailed model of the Interactive Technology Learning / Research Center



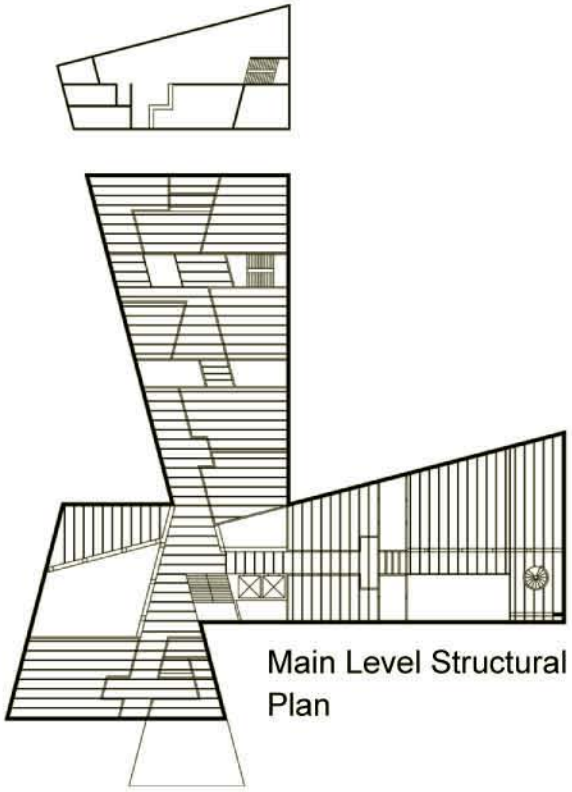
Main Level Plan showing surrounding greenscape and Winter Garden



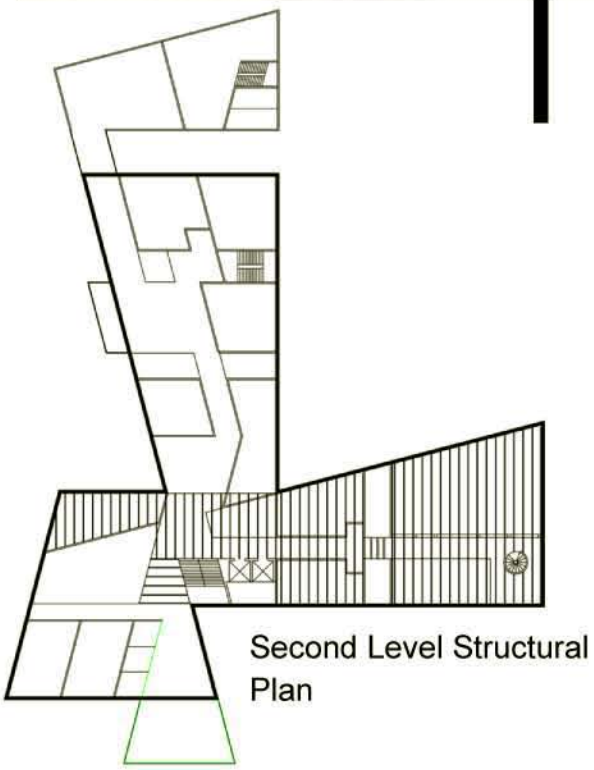
Third Level Plan with roof plan below



Second Level Plan

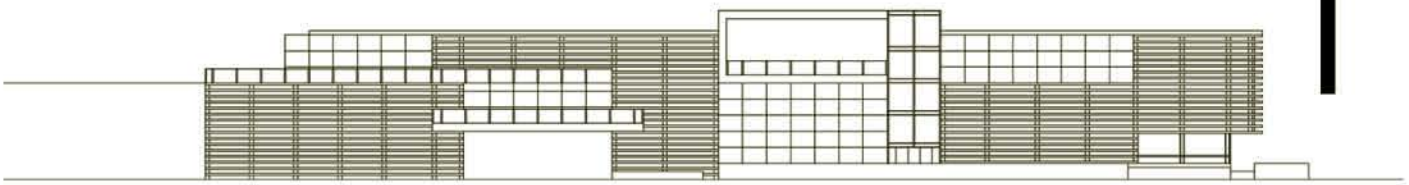


Main Level Structural Plan

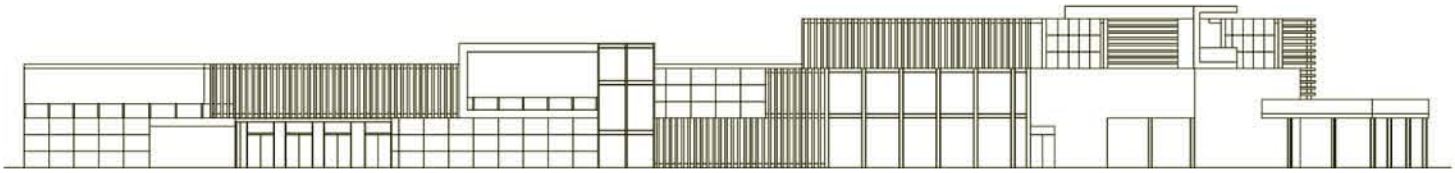


Second Level Structural Plan

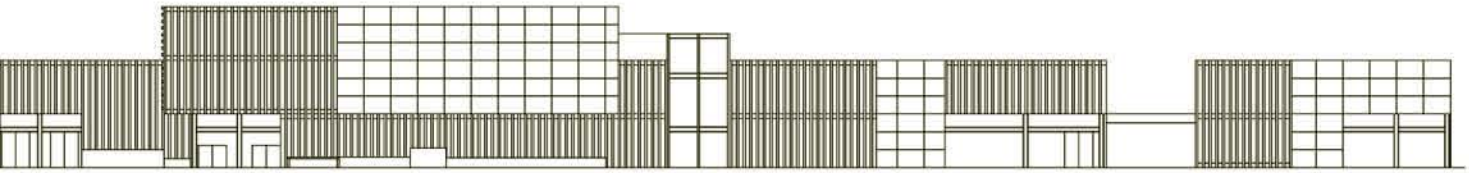
Site Plan



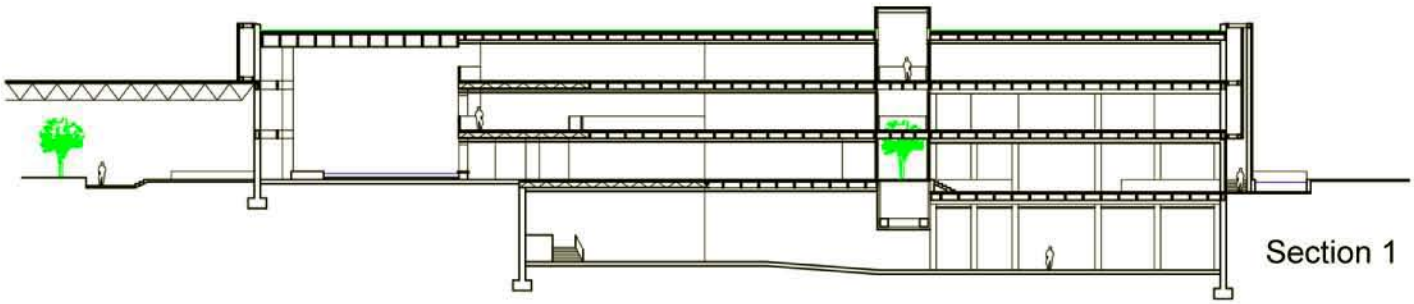
South Elevation



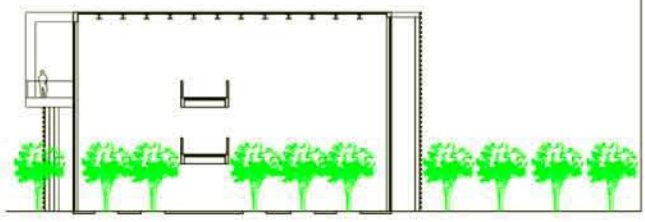
West Elevation



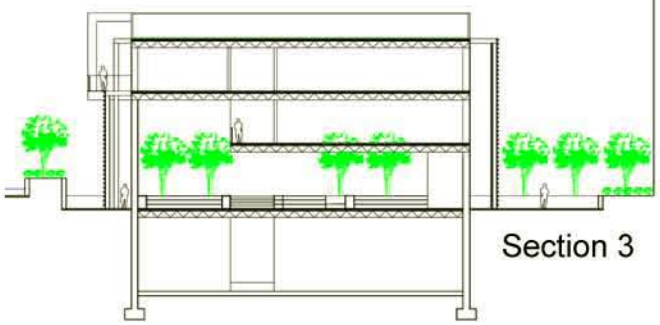
East Elevation



Section 1



Section 2

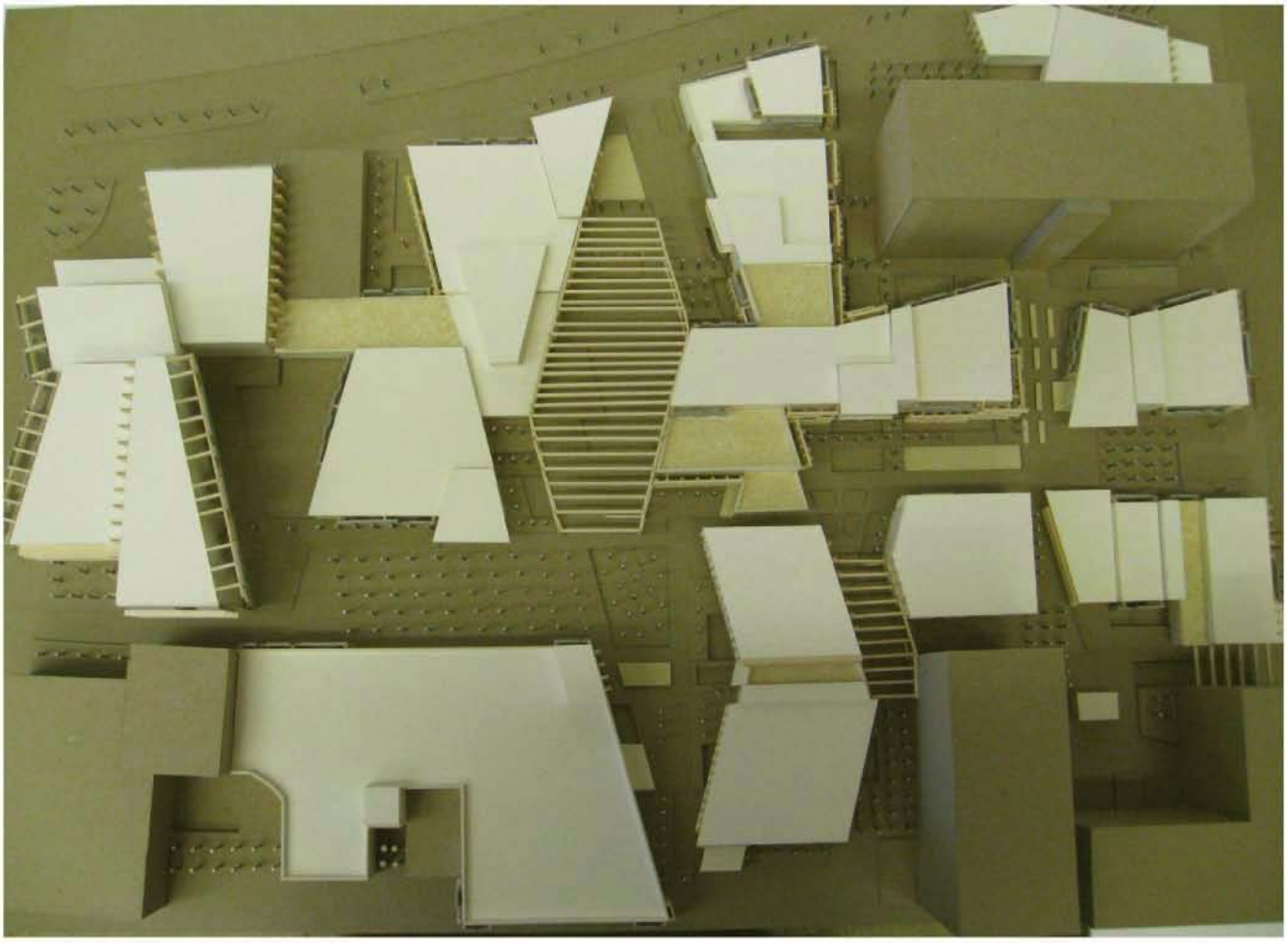


Section 3

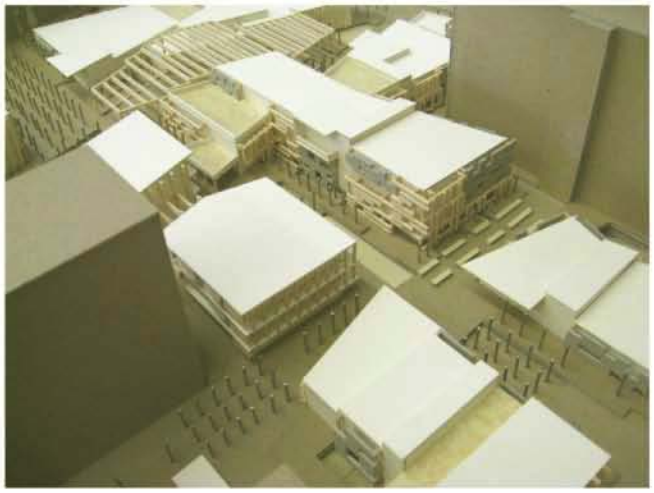
The Final Design phase represents the work that was presented for the final critique. The phase was a direct continuation from the Building Design Phase and included numerous tectonic expressions of built form, site diagrams, multiple elevations, experiential perspectives, and many others. This phase began with re-interpretations of how the overall site plan could re-work exterior vegetation. This in turn led to multiple intimate spaces that were adjacent to many large public areas. Lines of trees would create an orchard like setting with picturesque perspectives. The winter garden design was also finalized during this phase.

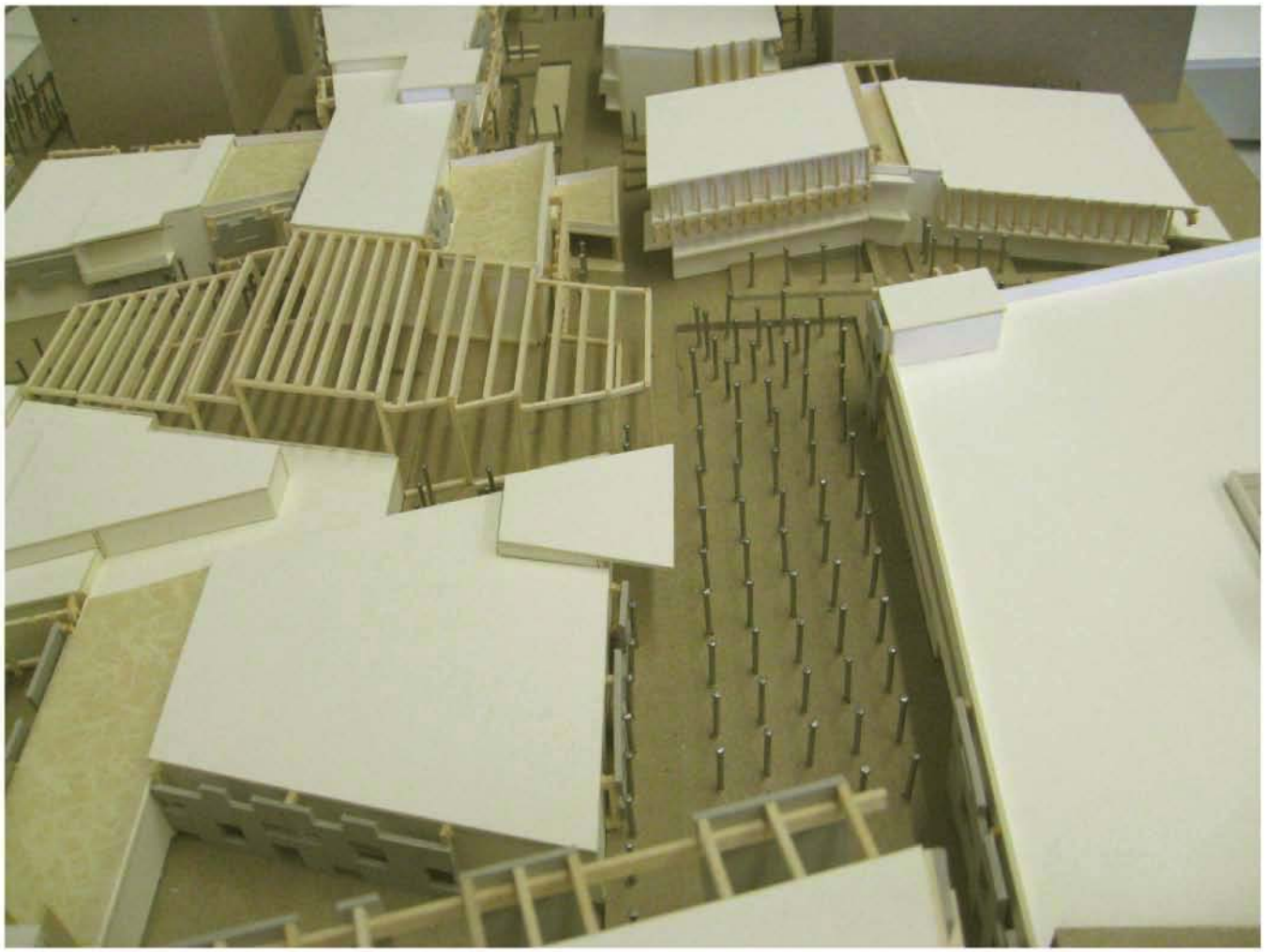
All building components were finalized and attributed a layered wall system, worked out primarily during the previous phase. This system creates a network of paths for pedestrians to travel and experience multiple threshold conditions.

The final design consisted of representations through drawings and models.
All were developed at a high level of detail to show multiple aspects that the thesis aimed at questioning (that of thresholds of boundaries). This model was created at 1" = 30' and represents everything occurring on the core site. The nails are locations of trees, which in themselves, represent many different species. The arrangement of elevated and depressed outdoor spaces are also shown through the layers of materials. This model helped to clarify the physical distinction between indoor and outdoor environments as the site and floor plans were successful in blending the two together. Rain screens and other wall layering aspects were represented to physically show how a pedestrian can interact within all of the new interventions. The structural framing (created in basswood) distinguishes the two winter gardens. These protected areas house an array of vegetation which meanders continuously and survive year 'round. The density created by the site design not only represents good urban design, but it forces people to engage the environment without the use of an automobile. (But, the buildings are close enough to provide shelter when needed from inclement weather).

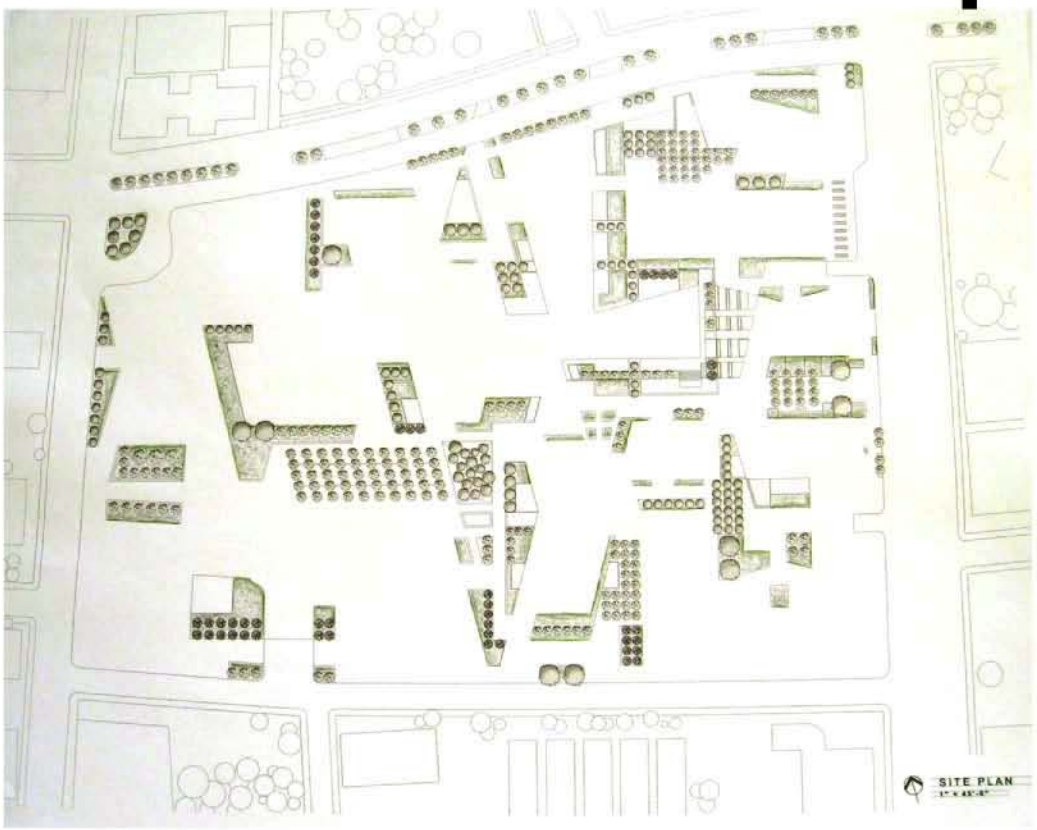


Final Site model
Scale: 1” = 30’-0”



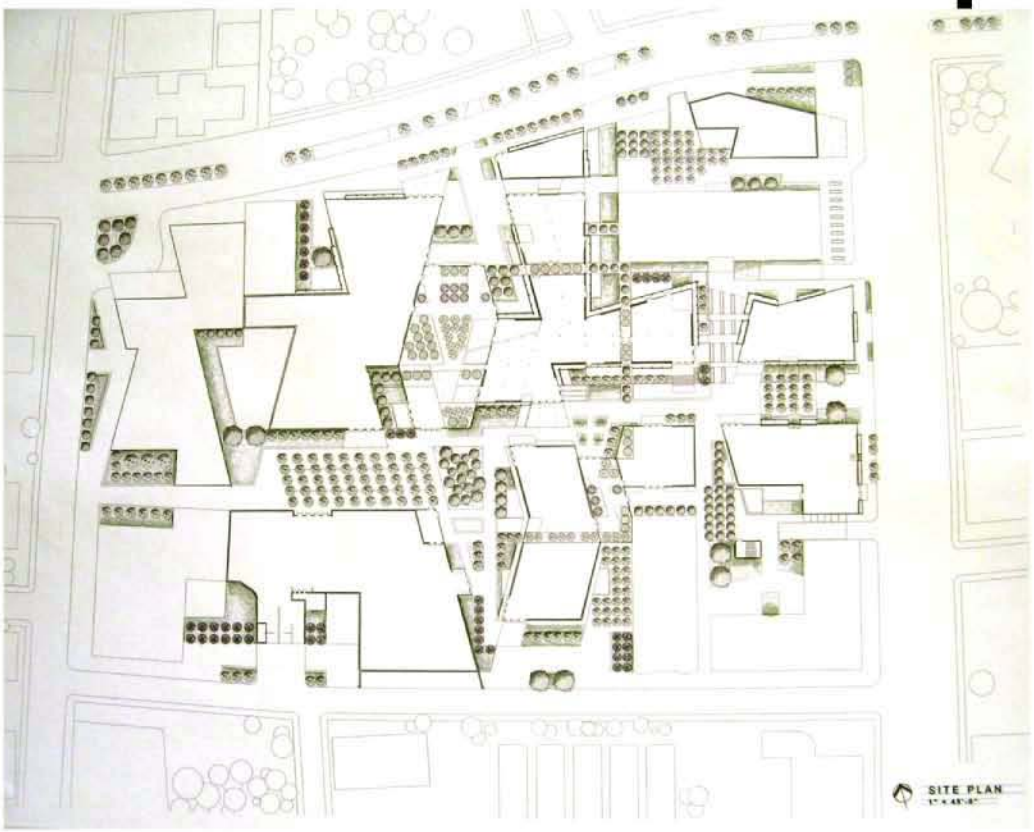


Final Site model
Scale: 1” = 30’-0”

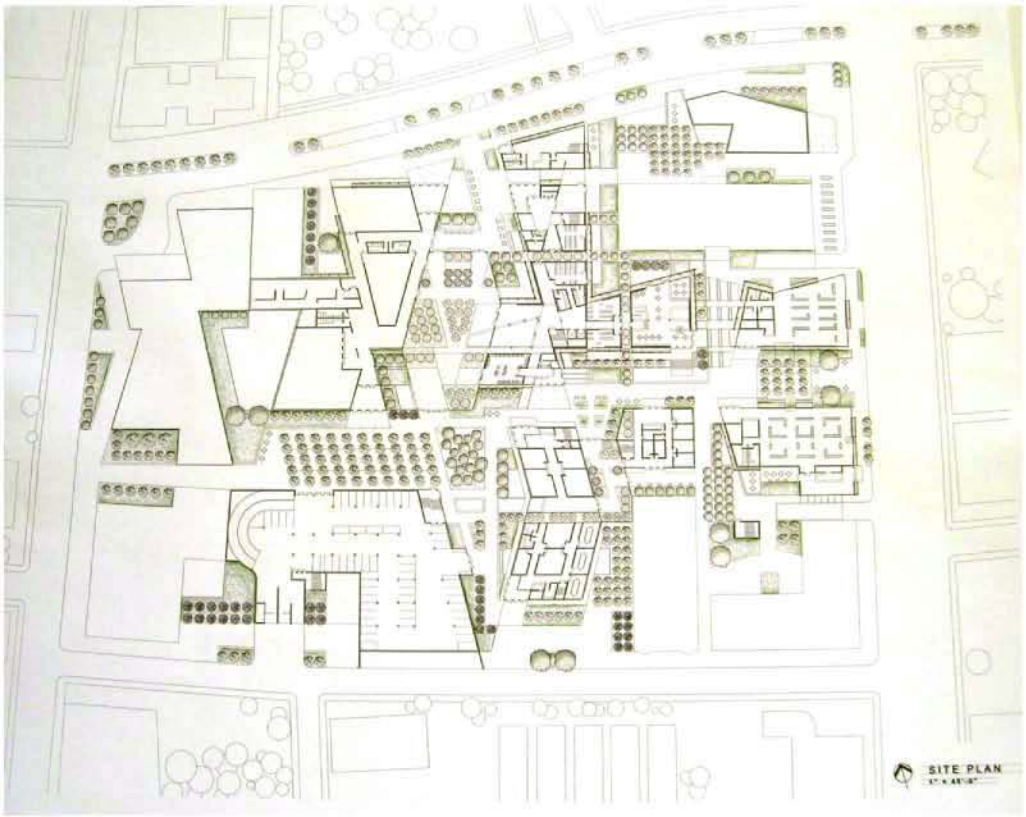


Site Plan Drawing
Diagram 1 of 5
Greenspace Only

Site Plan Drawing
Diagram 2 of 5
Building Interventions
Only

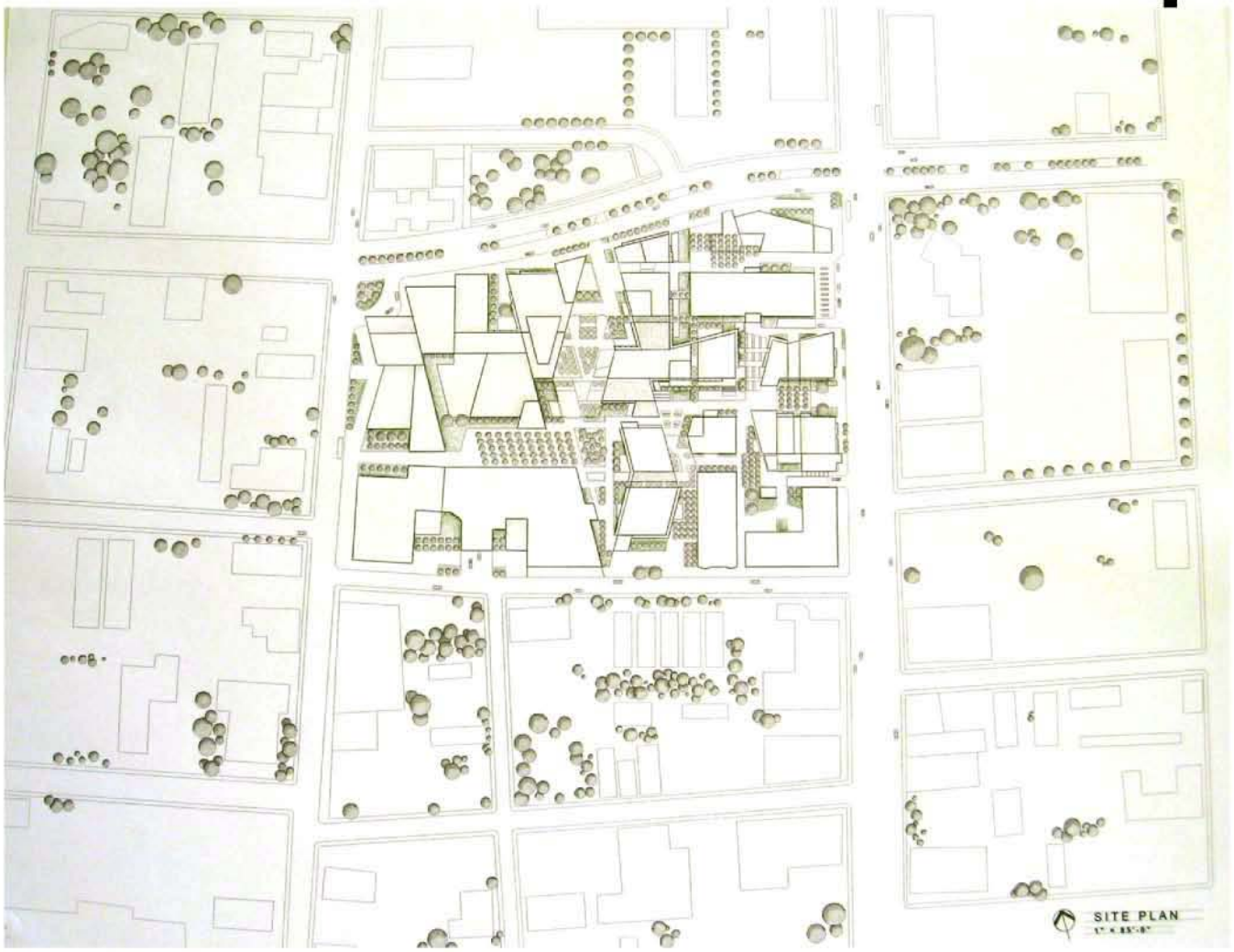


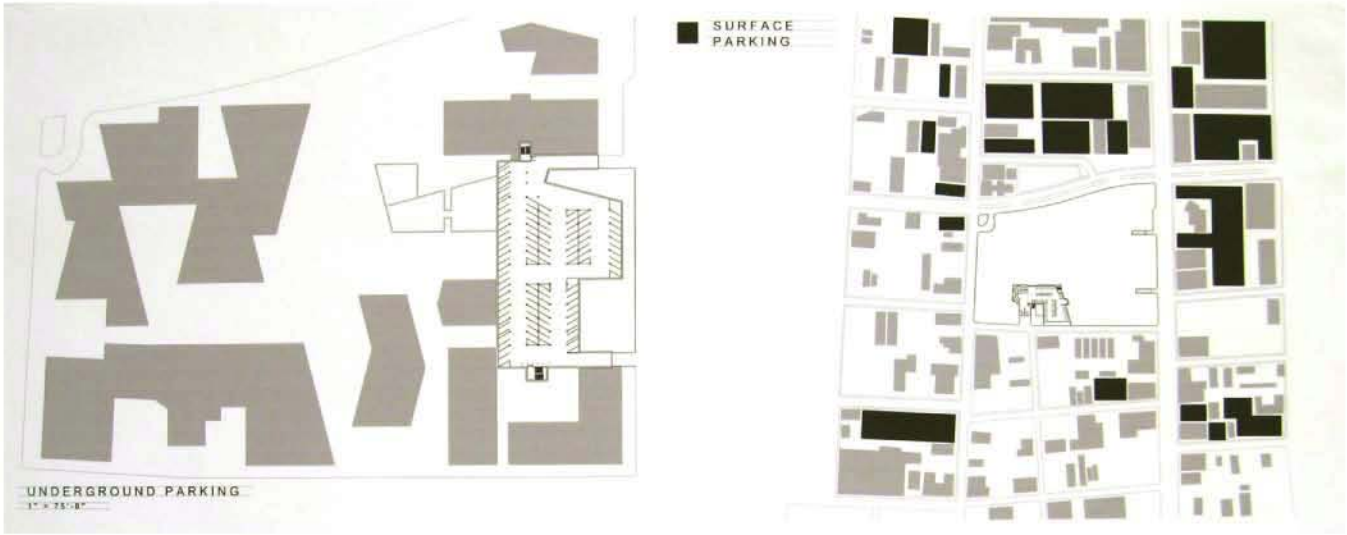
Site Plan Drawing
Diagram 3 of 5
Building Outline +
Greenspace



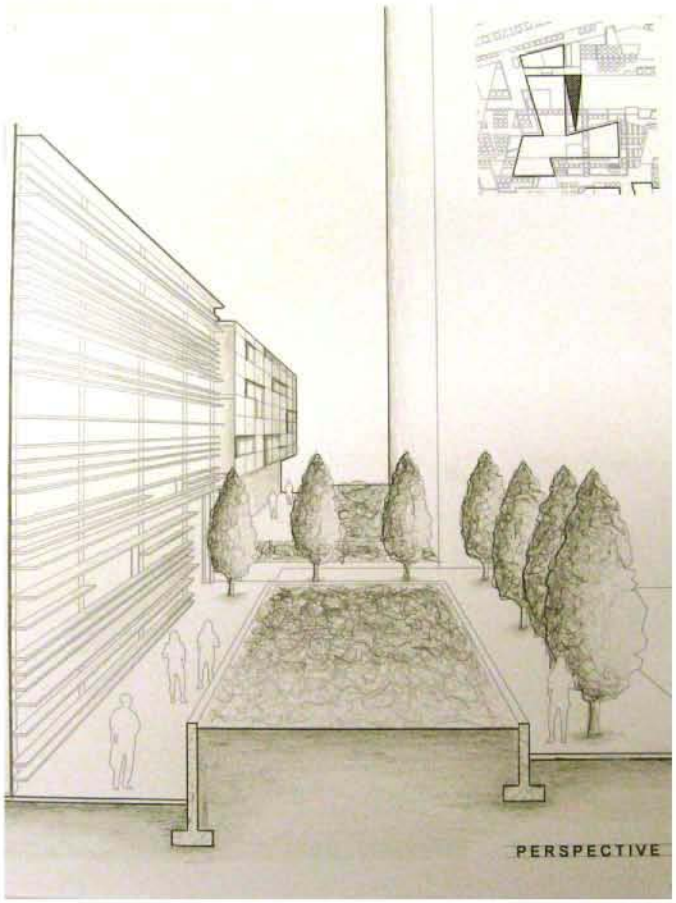
Site Plan Drawing
Diagram 4 of 5
Everything Combined
+ Interior Layouts

Site Plan Drawing
Diagram 5 of 5
Roof Plan + Context

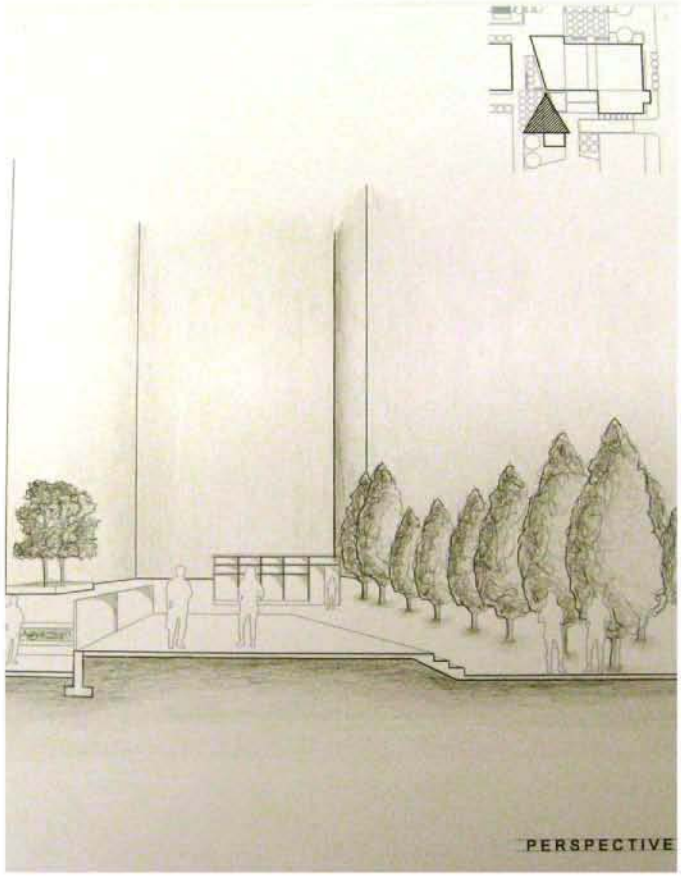


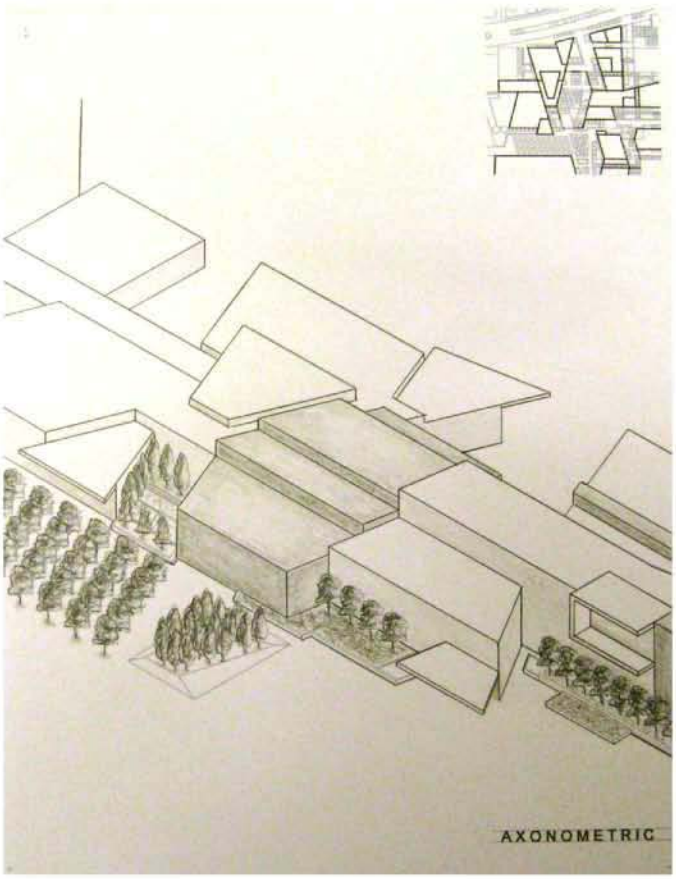


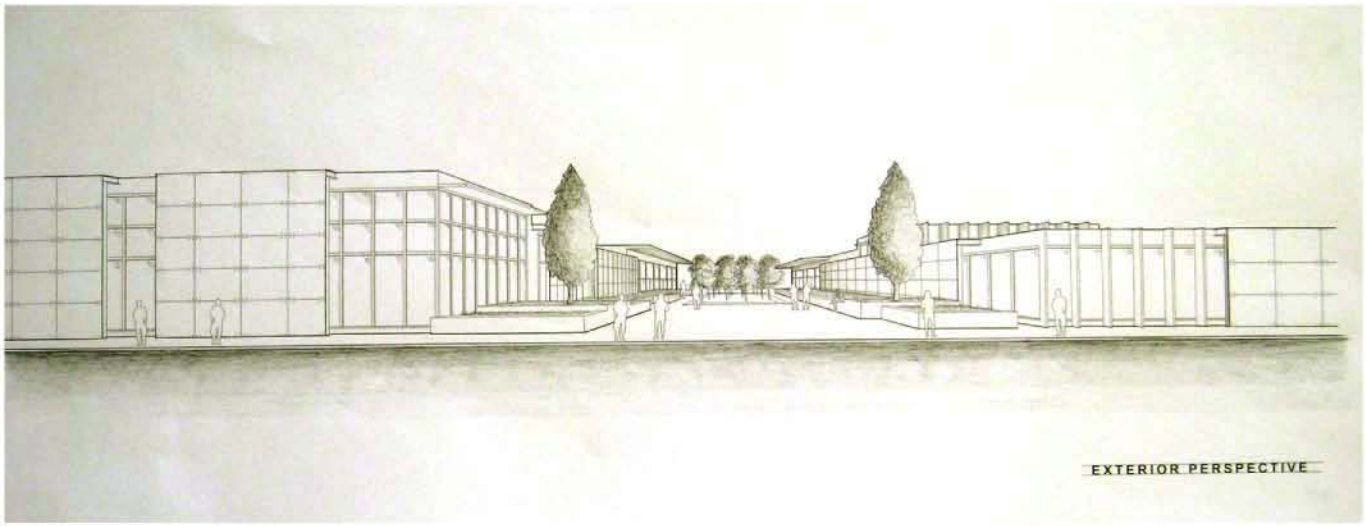
Parking Layouts
Existing + New



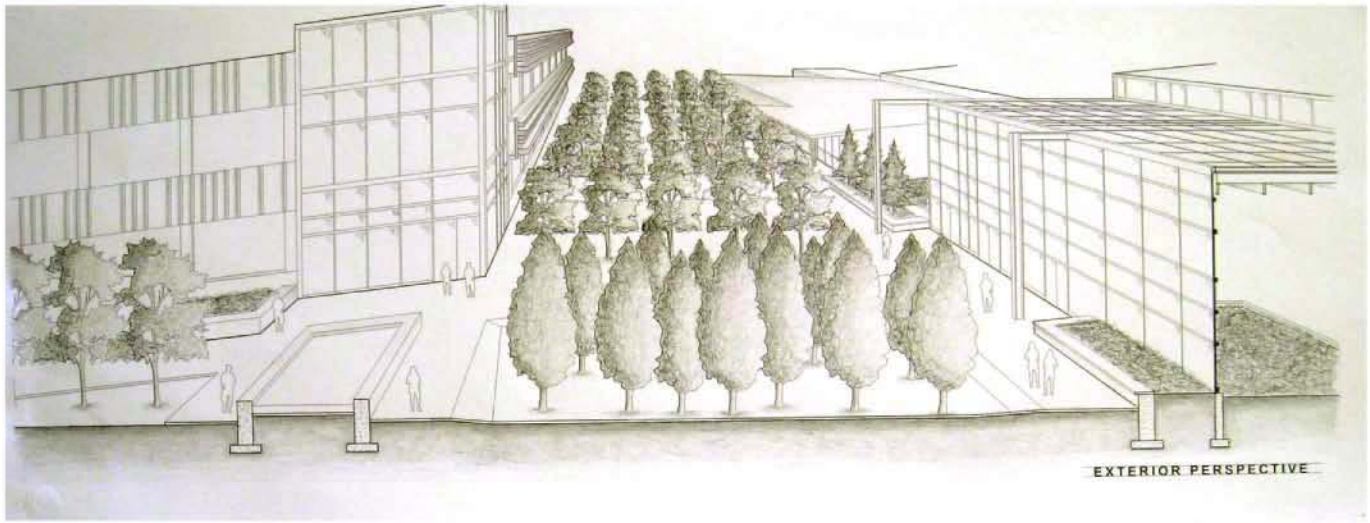
These hand rendered drawings illustrate what individuals would experience when traveling around the site. Changes in the ground plane level and thick vegetation provide many different feelings. A key plan was incorporated on each drawing that shows where one would be looking.







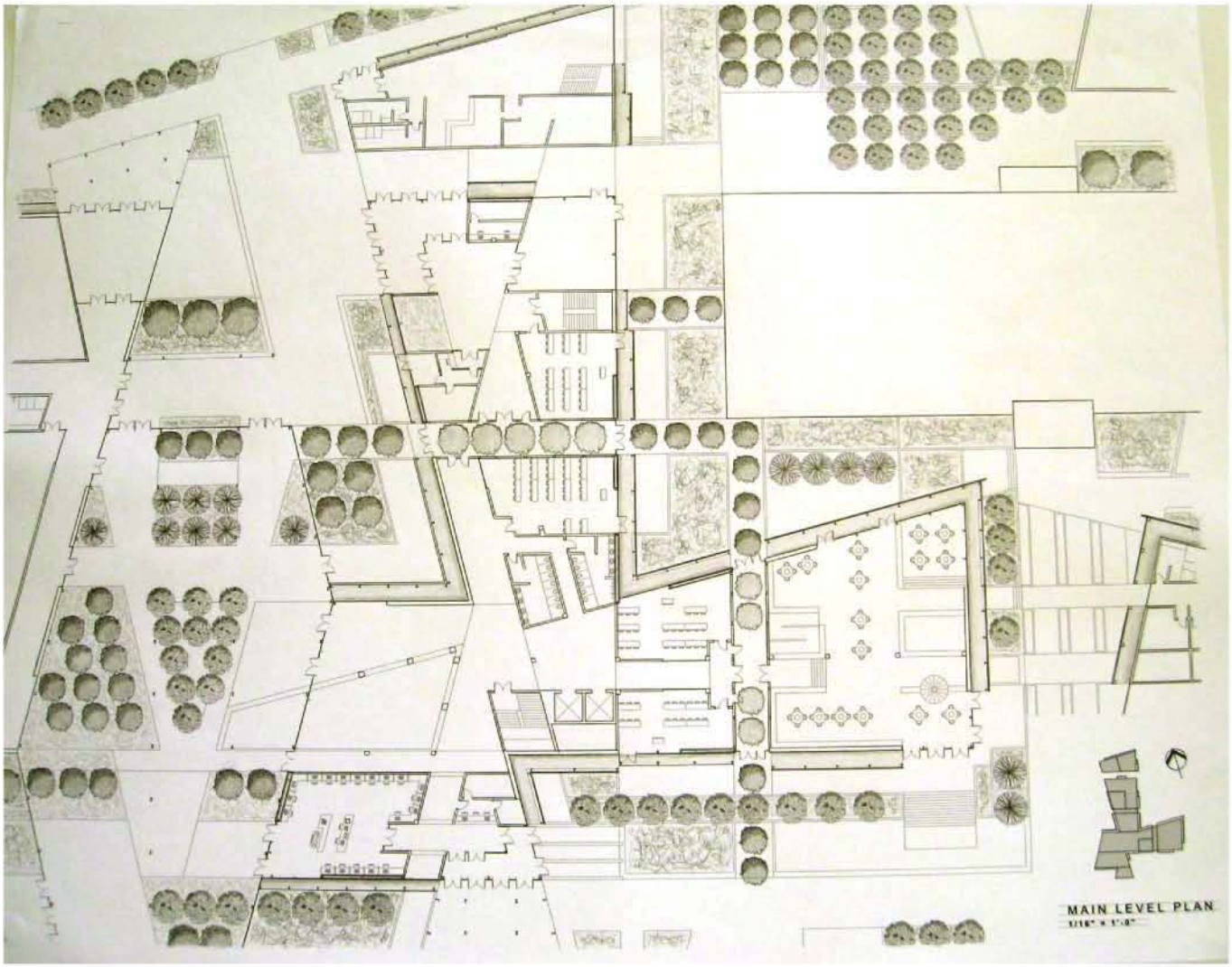
Site Perspective
Looking west from Woodward Avenue

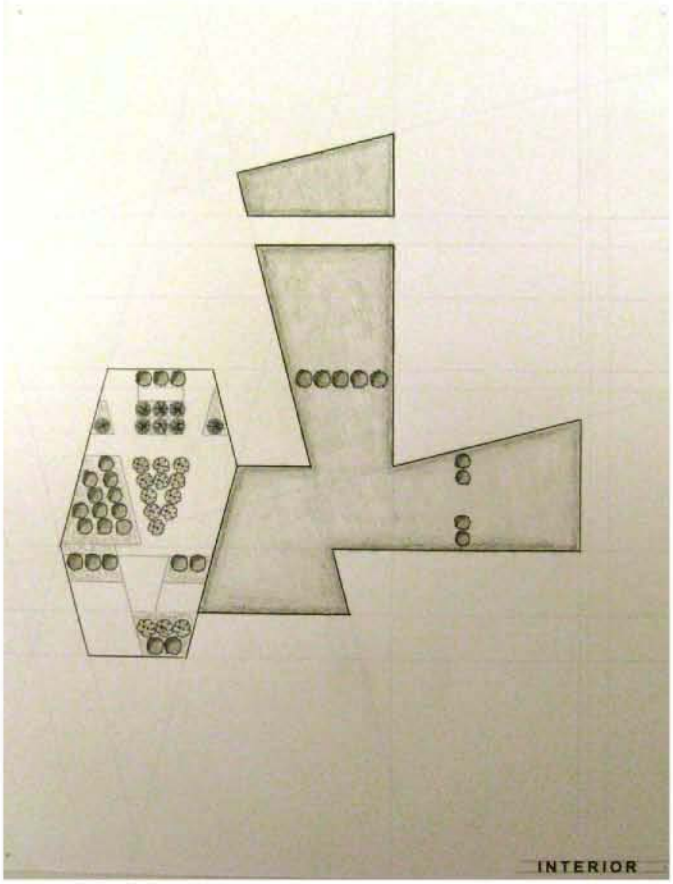


Site Perspective
Center of core site
View of public open space with tree orchard

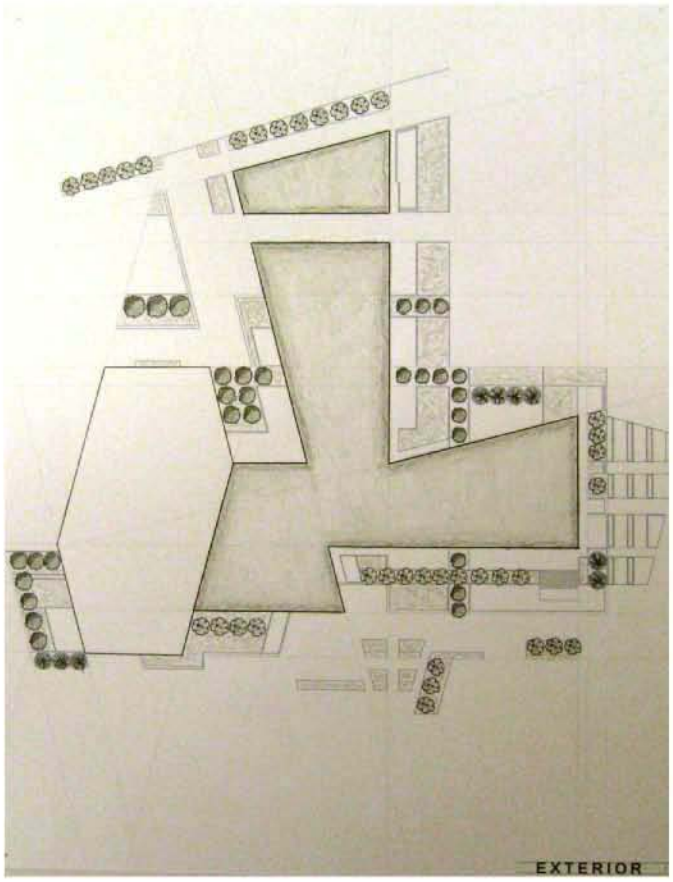
With a limited time frame, most design efforts during the final phase was completed on the Interactive Technology Learning and Research Center. The following multiple pages represent the detailed tectonic efforts and surrounding landscape design for this facility.

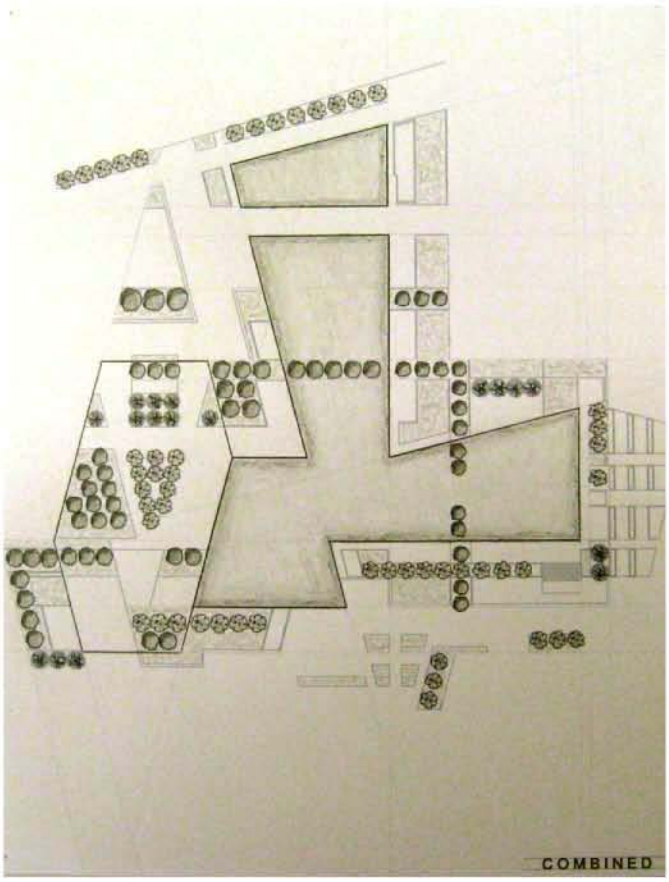
Below:
Main level plan showing surrounding context and room layouts. Means of egress are carried out in a fashion that exceeds minimum requirements. Structure consists of three distinct exterior wall types and a lightweight steel inner system. Blending the threshold between inside and outside can easily be seen in this drawing. It is difficult to distinguish what is actually inside and what is outside. This is one of the primary goals of this thesis.

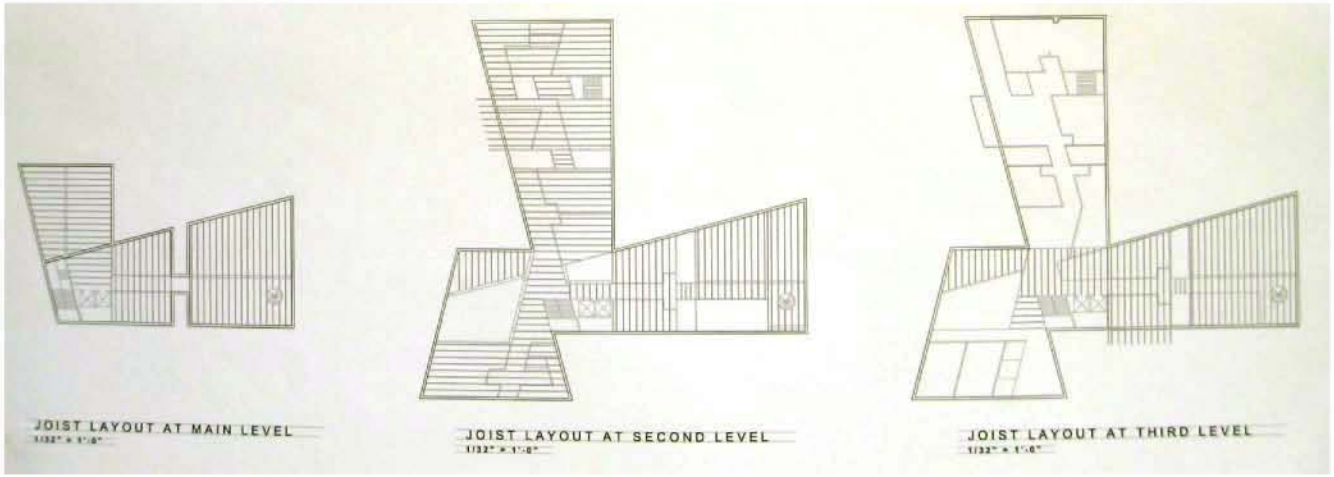


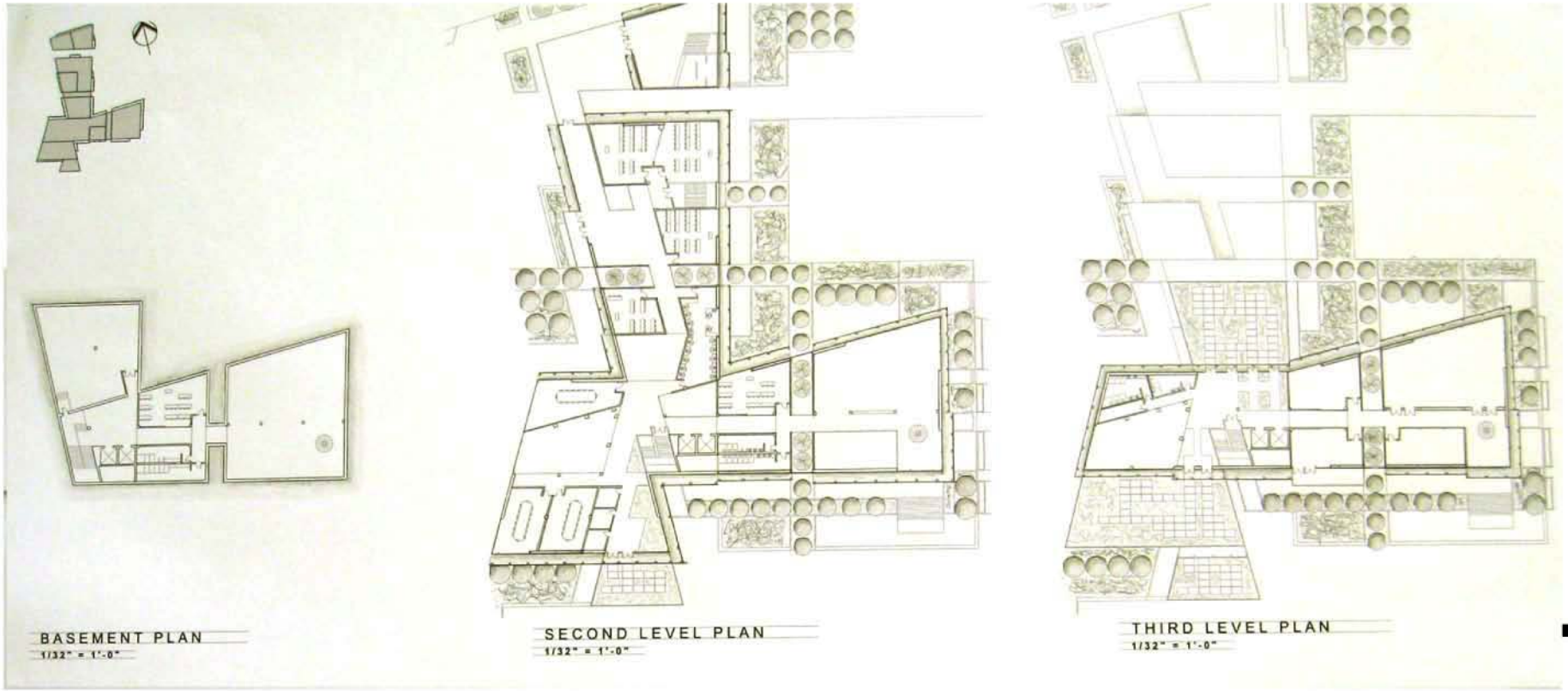


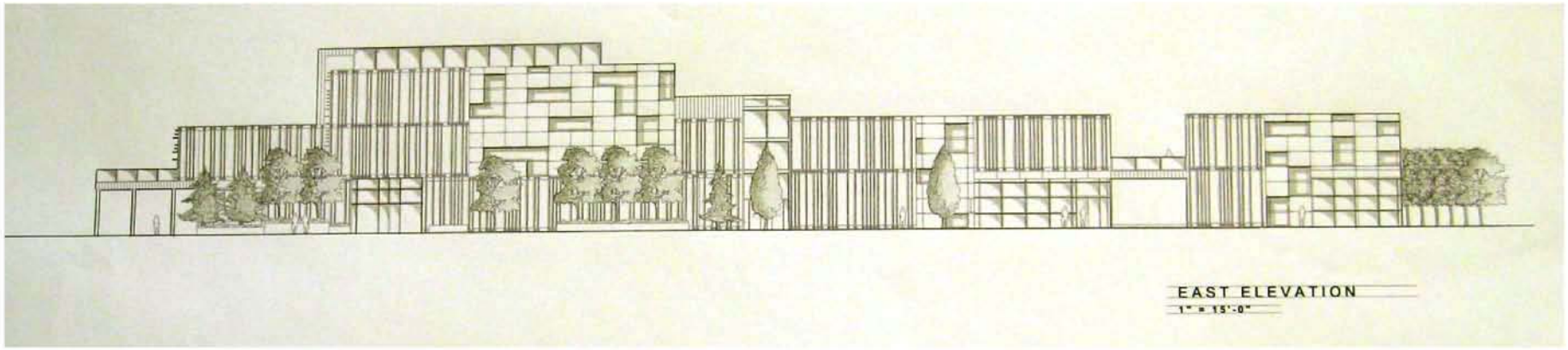
These hand rendered drawings are a diagrammatic representation of the Innovative Technology Learning and Research Center. Because most effort was placed on the design of this building and its surroundings, a diagram was developed to represent the different vegetative states on the inside and outside of the facility. A third diagram represents the combined condition .

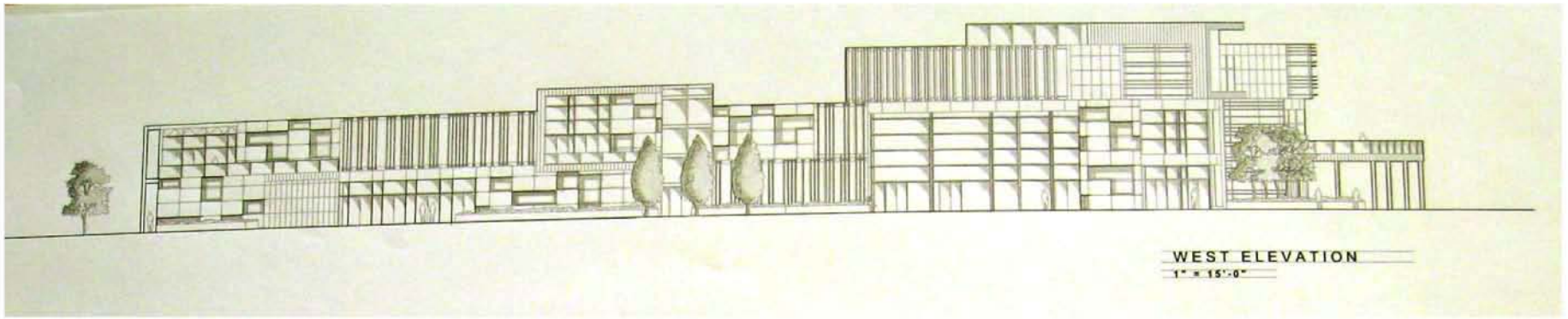


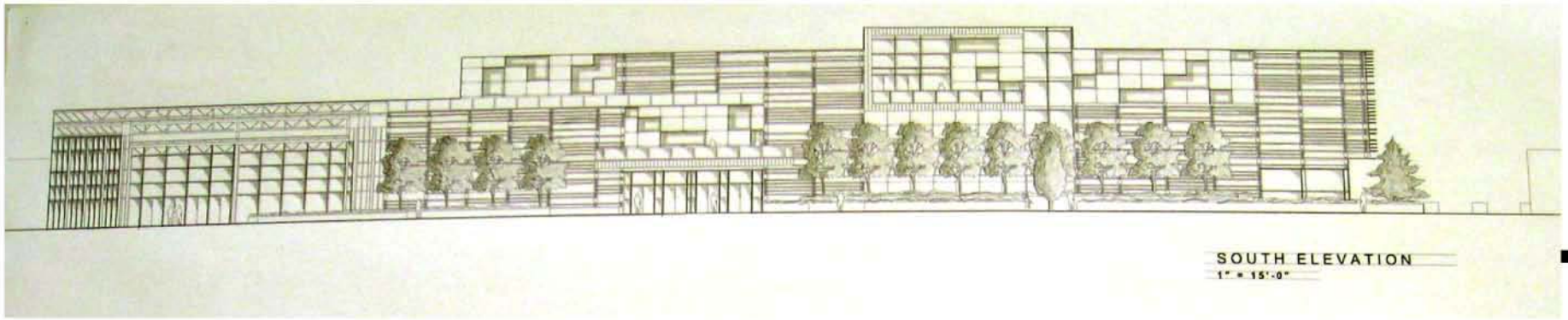



JOIST LAYOUT AT MAIN LEVEL
1/32" = 1'-0"
JOIST LAYOUT AT SECOND LEVEL
1/32" = 1'-0"
JOIST LAYOUT AT THIRD LEVEL
1/32" = 1'-0"


BASEMENT PLAN
1/32" = 1'-0"
SECOND LEVEL PLAN
1/32" = 1'-0"
THIRD LEVEL PLAN
1/32" = 1'-0"


EAST ELEVATION
1" = 15'-0"


WEST ELEVATION
1" = 15'-0"


SOUTH ELEVATION
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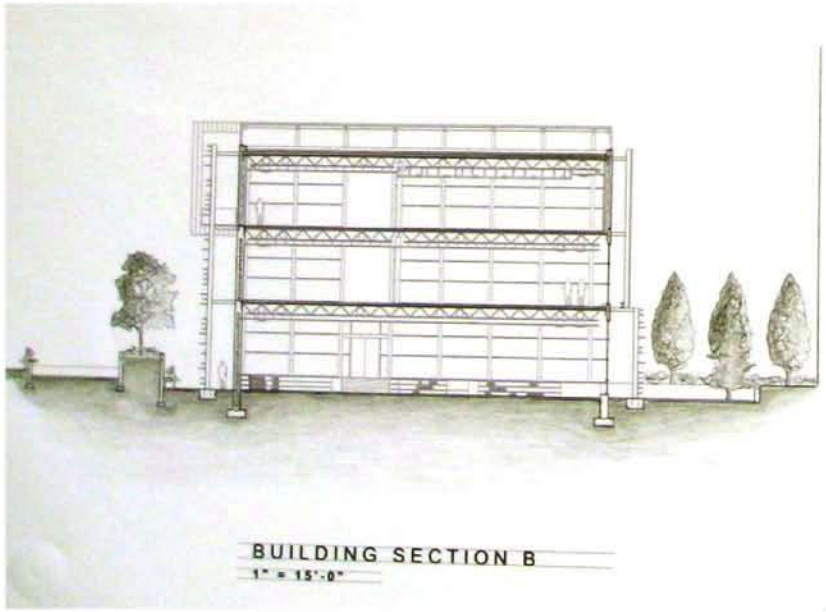
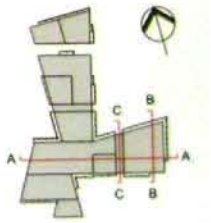
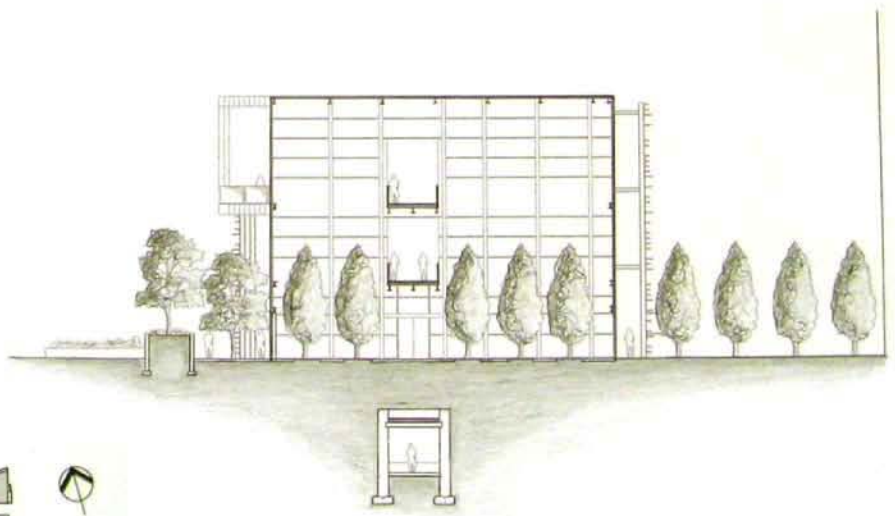
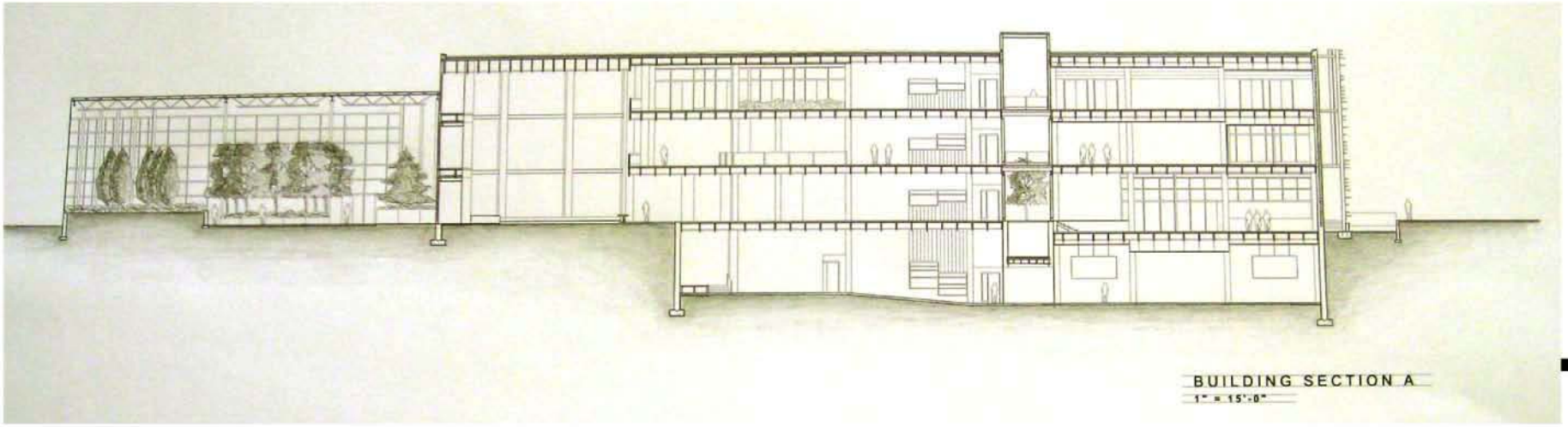


BUILDING SECTION B
1" = 15'-0"

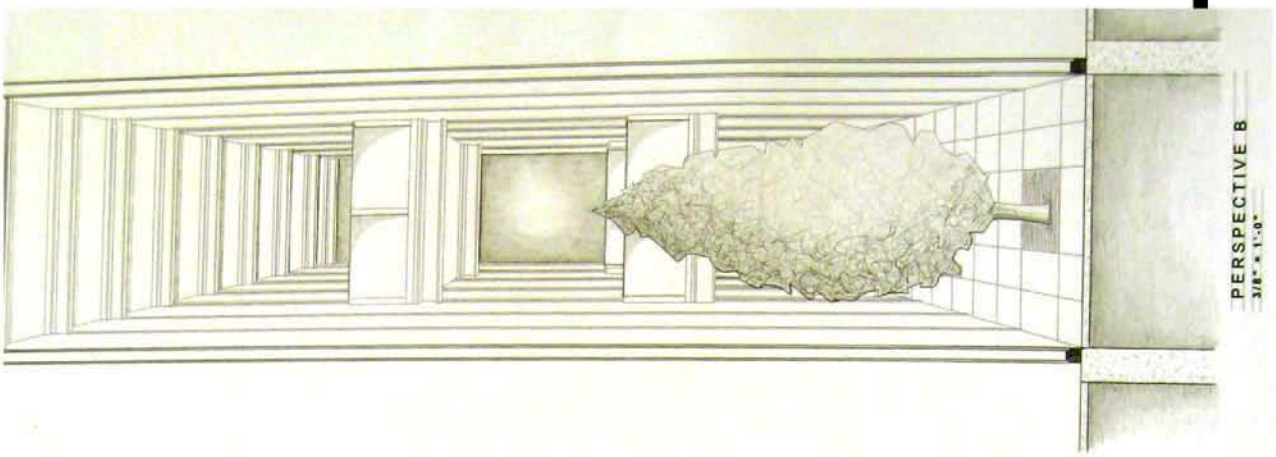


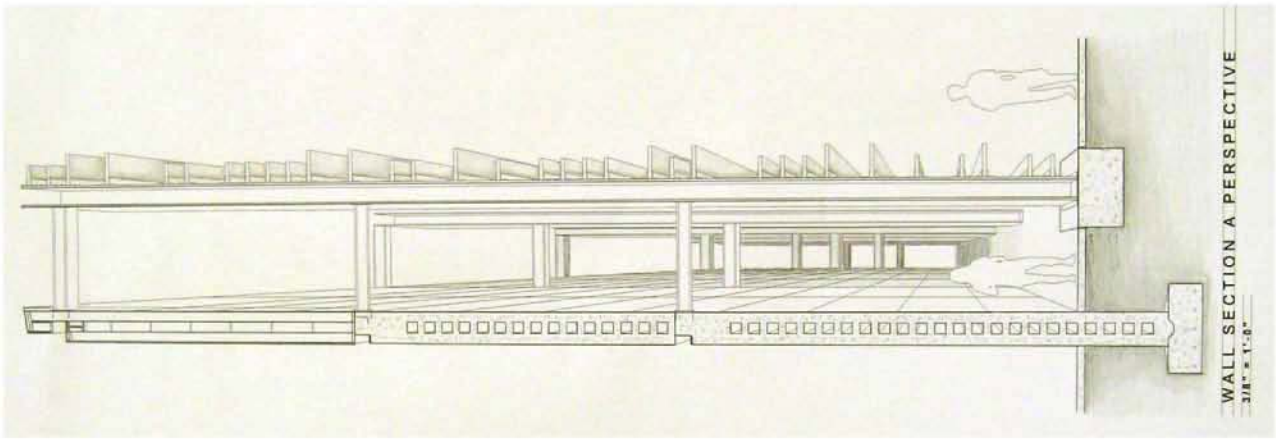


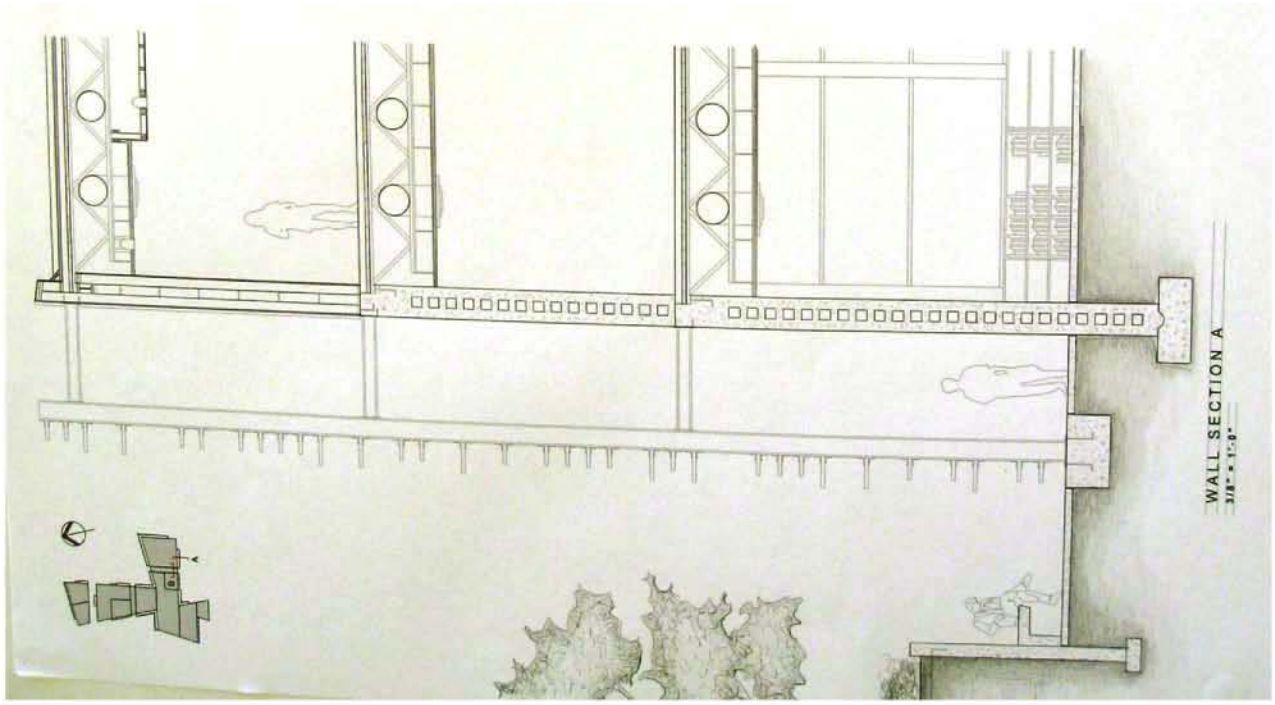
BUILDING SECTION C
1" = 15'-0"



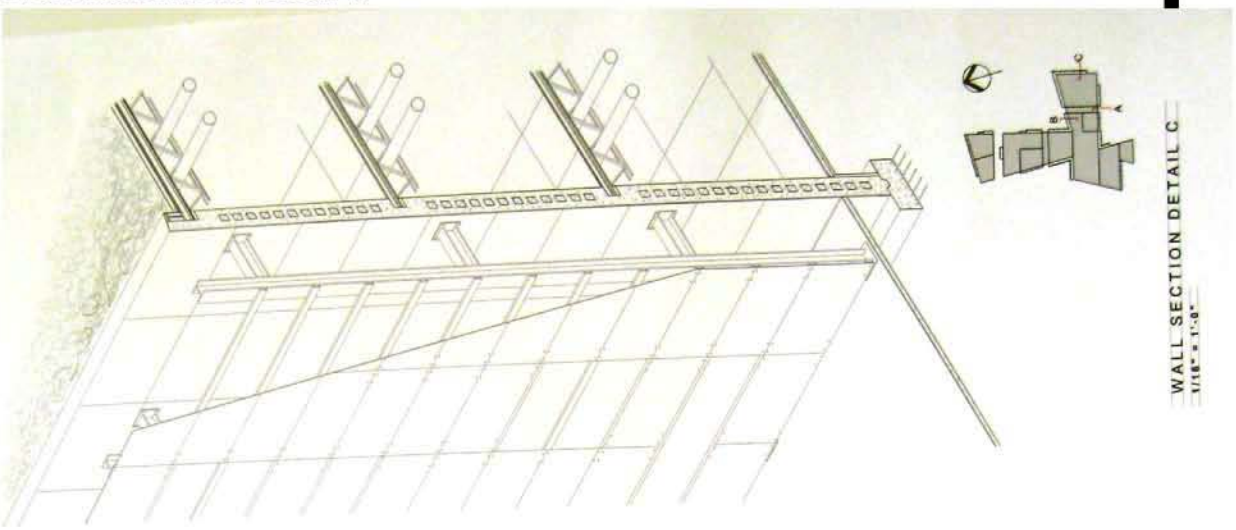
BUILDING SECTION A
1" = 15'-0"


PERSPECTIVE B

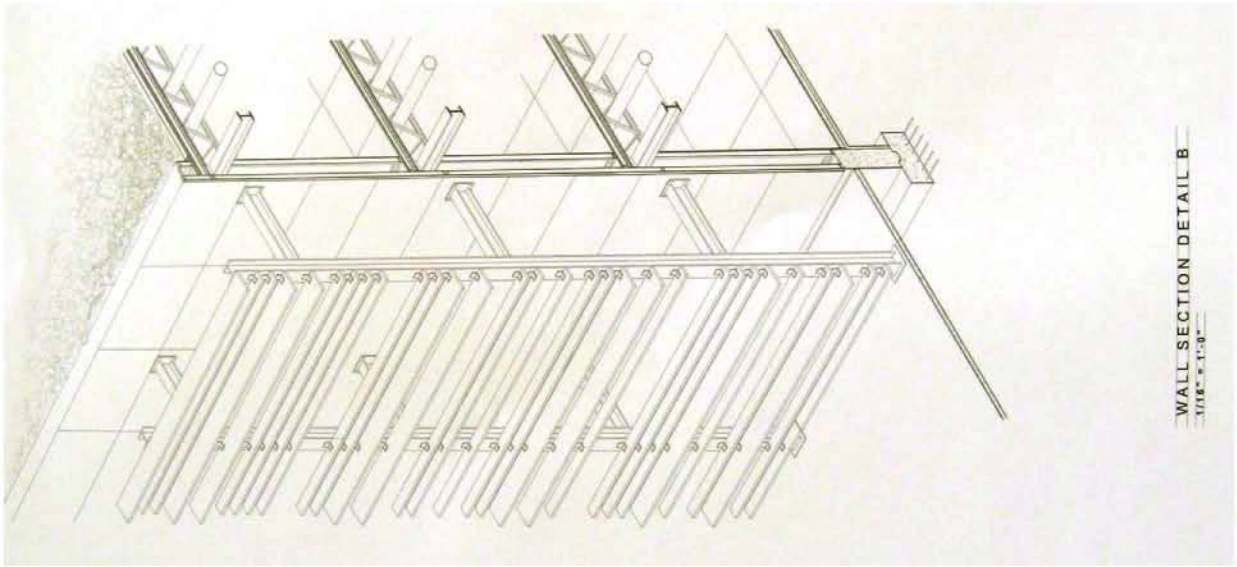

WALL SECTION A PERSPECTIVE


WALL SECTION A

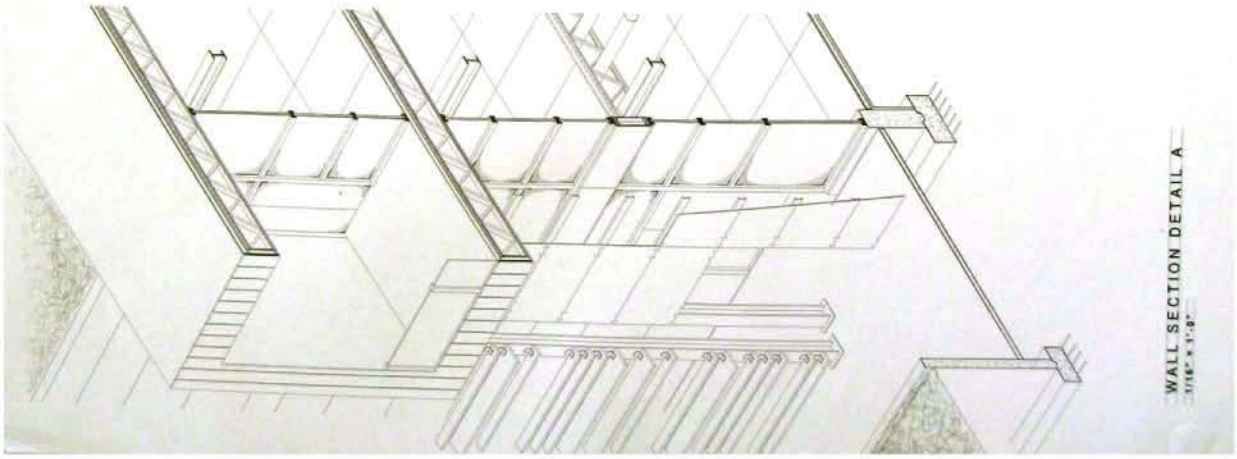
Wall Axonometric Detail 1

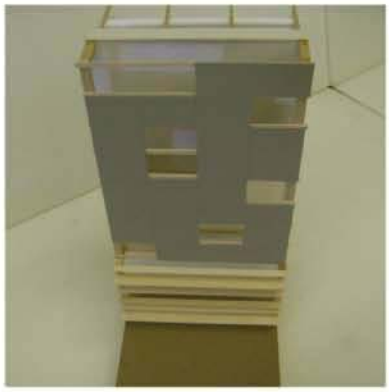
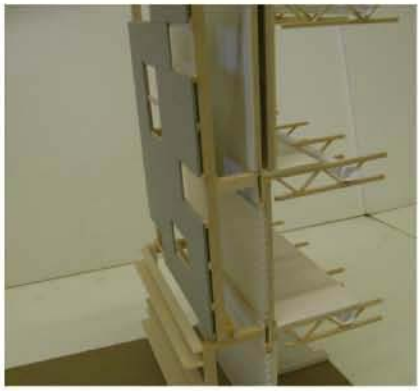
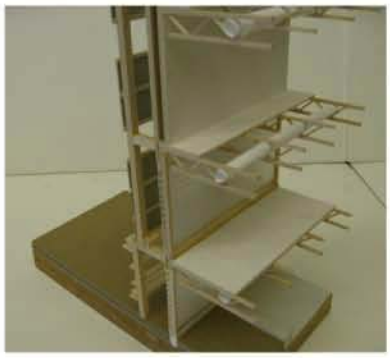


Wall Axonometric Detail 2

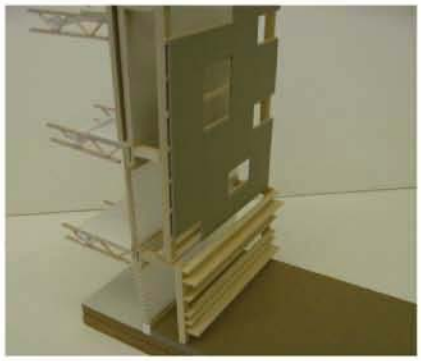


Wall Axonometric Detail 3

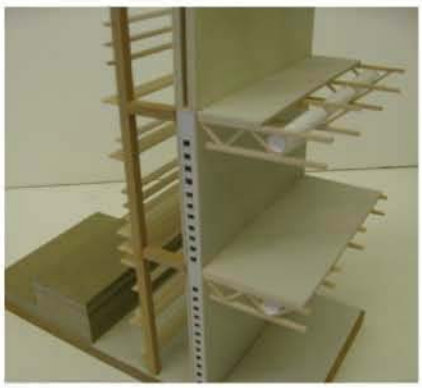
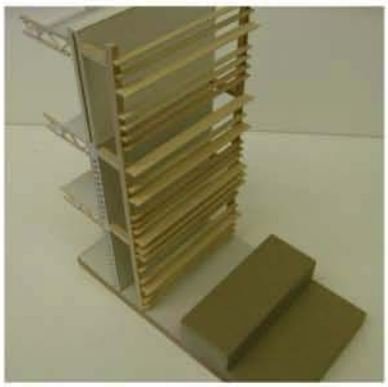


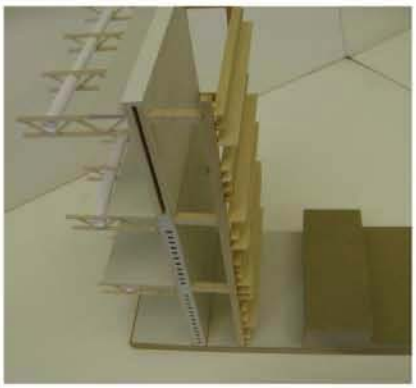





Wall Section Model
Wall Detail 1




Wall Section Model
Wall Detail 2

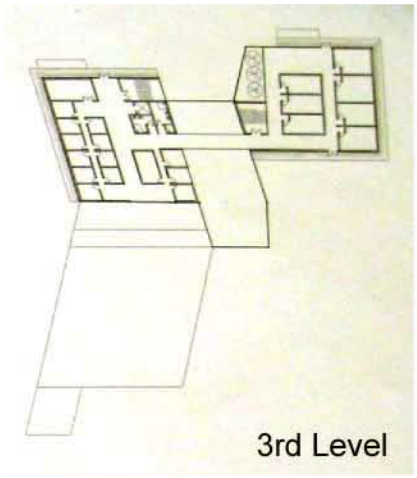





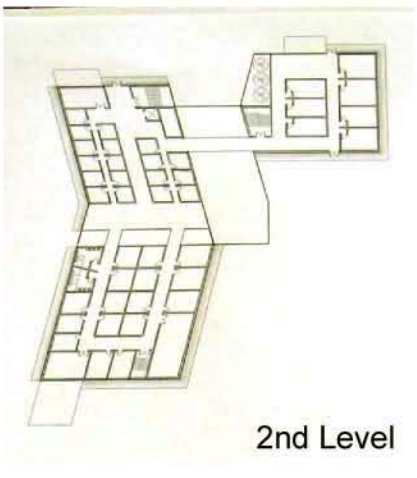
The Technology Business Incubator was the second architectural intervention to get designed. Though this building did not receive as much design attention as the Leaning and Research Center, the wall layering system was easily applied and altered to fit the necessary needs. This system actually got applied to all of the new facilities designed in this thesis project. It helped to unify the block and create numerous situations for interaction and threshold conditions to occur.

A winter garden separates the incubator into two spaces. Though the incubator is accessed only by proxy cards, wandering individuals have the freedom to engage multiple building within a very short distance through the indoor garden space. This winter garden also attaches itself to the existing multi-story residential complex to instigate interaction. Vegetation surrounds the entire building with multiple areas that permit a wandering into interior spaces.

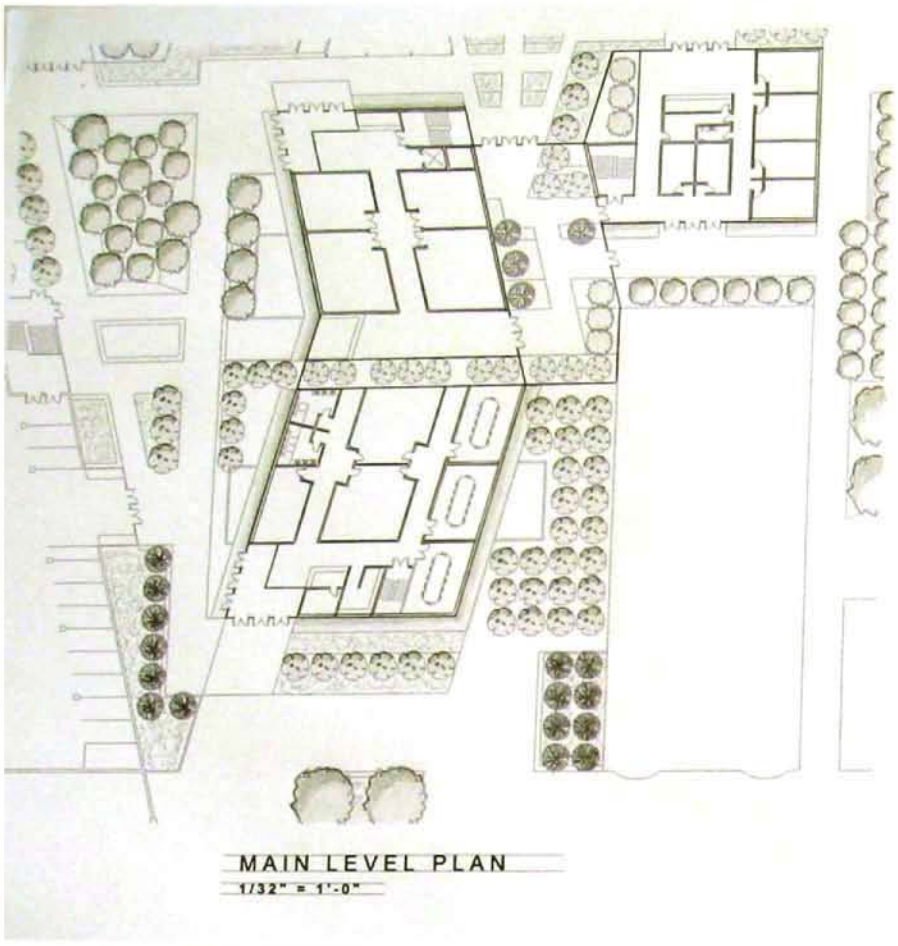
*The following page displays elevation details of the Technology Business Incubator

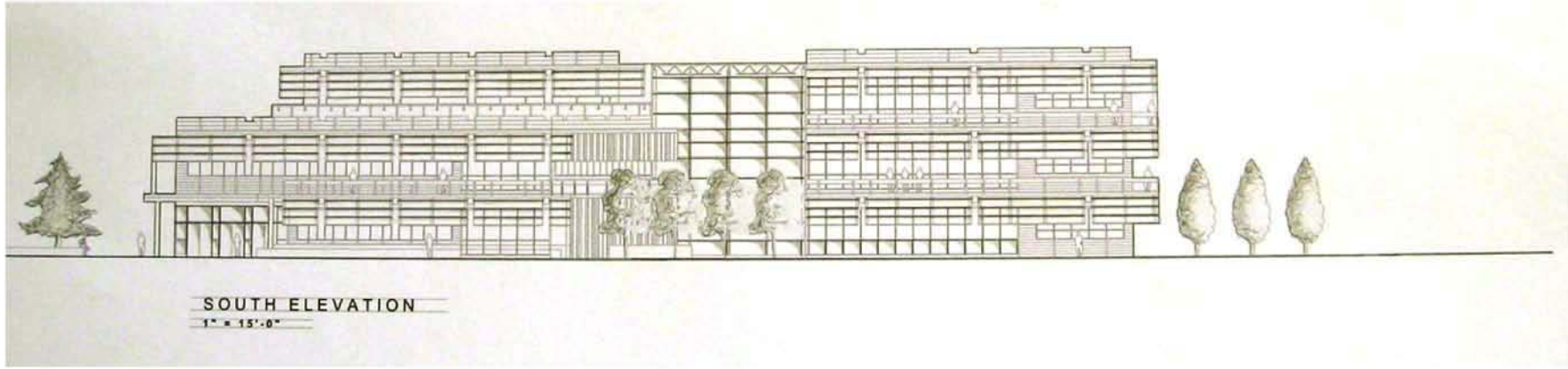


3rd Level

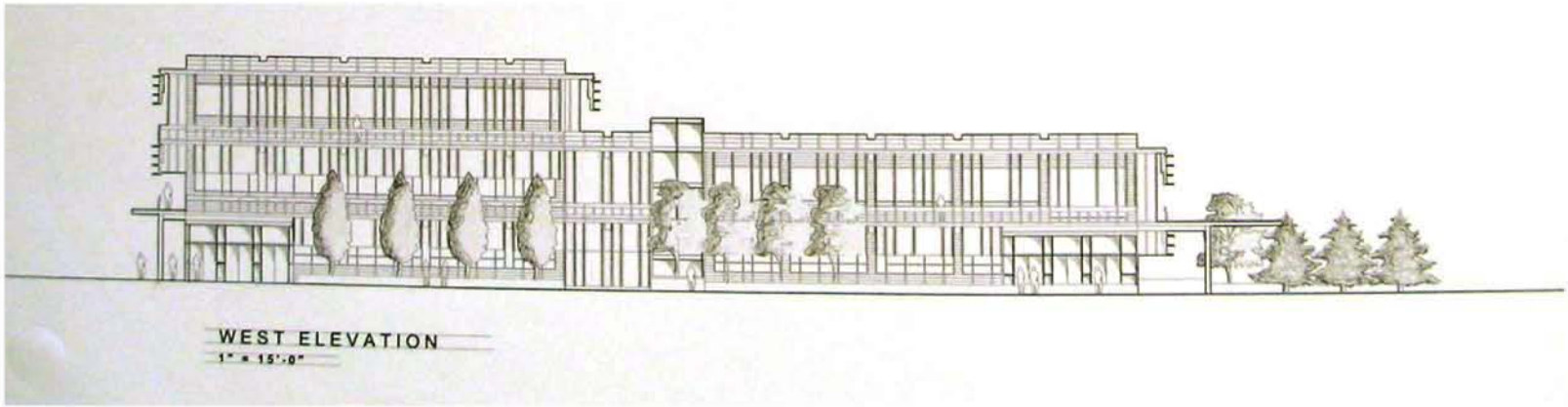


2nd Level

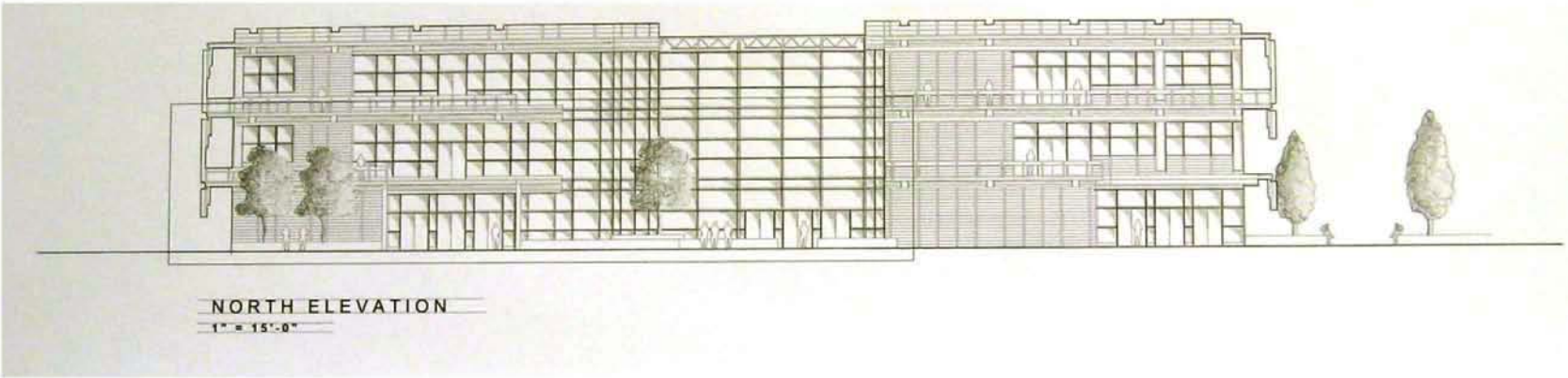




SOUTH ELEVATION
1" = 15'-0"



WEST ELEVATION
1" = 15'-0"



NORTH ELEVATION
1" = 15'-0"

This thesis investigation challenged numerous conventional design techniques. Thorough researching strategies and an array of study models and drawings provided many questions and answers on how to blend contextual boundaries and threshold conditions. The hope was to create numerous hierarchical spaces that permit individuals to an exploratory environment. This environment aimed at producing experiences where one would question whether they are inside or outside of an intervention. Meandering green spaces and water features circulate throughout the core site with specific changes to the ground plane occurring in strategic locations. These systems work in conjunction with one another and directly correlate to what occurs on the interior of new proposed architectural designs.

The beginning of this thesis study focused heavily on blending dozens of city blocks together in an effort to reclaim much of Detroit's vacant and abandoned property. With this strategy, new street fronts would be created to emphasize major road arteries leading into Detroit's downtown core. Woodward and Cass Avenue's would gain new street walls that would ultimately engage the surrounding communities and become icons of Detroit's "re-growth." The procession of time began to take a toll on this aspect. The project began to focus on what was really important to the thesis question, that of threshold conditions. Programmatic elements were invented through detailed research that would ultimately create an environment for today's technological culture. These elements were located on two city blocks and failed to engage what was studied earlier in the year. This lack of blending contextual boundaries could be answered through the phasing efforts of new architectural interventions that have a foundation in technology, but aim at creating spaces for interaction to occur. A meandering green space could tie multiple vacant and abandoned parcels together. Though the final design failed to represent this idea, it is important to discuss its future implementation and conditions.

The project was a great success through the mass quantity of studies created. Many stages were looked at and challenged to discover what benefits were achieved and what goals were being met. A persistent process, this thesis concluded with multiple forms of system integration, intimate perspectives, elaborate elevations, diagrammatic site plans, and many other representative forms.

A strong relationship between urbanistic, formal, and programmatic functions were blended together. Detailed problem solving aspects were used to answer these issues.

Culture, nature, and technology are important underlying principles that helped to create a site design that embraces both the user and the surrounding context. One major goal for the final design was to avoid the isolated and individualistic characteristics of conventional architecture and site design in hope for creating an engaging environment. All exterior space design was viewed as multiple moments that would permit people to interact and adapt to a space. They did this by promoting the use of that space through the creation of reasons for people to explore and physically use it. For instance, the Interactive Technology Learning and Research Center has multiple moments where the correlation between inside and outside creates private and more intimate spaces (as in the location of classrooms).

An overall critique of this project leads to many missed opportunities. Though the project was very successful with tectonic aspects, their was a lack of inventiveness in the design of the buildings. A more comfortable approach was taken in this aspect that prevented innovative techniques from questioning traditional design and conventional techniques. Another fairly weak aspect was the struggle to derive conclusions on many of the study models and drawings that were created. There was too much time spent "fishing" for possible direction to head in without any intention. Though many of these models were critical stages for the development of the thesis, many were failed attempts and rarely understood. This lack of hierarchy seemed to be an underlying issue throughout the entire process. To conclude, the thesis investigation was a very successful exploration of how to move people through space by permitting threshold and boundary conditions to be challenged. There are still many more steps that can be taken to further these relationships, but to come to a finite conclusion would be irrelevant as culture, nature, and technology are constantly changing the ecology of the human environment.

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Crossing Thresholds:

Blending Boundaries

Brian T. Hoehn

2008