EOS 1: EVOLUTION OF SUSTAINABILITY

ION THOMAS

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By
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Date

Contents:

Abstract

Human interaction is a real need fulfilled by simple communication, verbal or non verbal.

Individualism and congregation are part of everyday settings. The built environment has a large influence on how and when these interactions take place.

This thesis is focused on the redevelopment of downtown Houston. This community utilizes two undeveloped blocks in the "inner loop" on the border of the high-rise district, and the underdeveloped old industrial district, which was rezoned long ago. The project embraces both individuality and communal need through its integration of spaces though sound Architectural principles.

E.O.S. stands for "The Evolution of Stainability". The building of economical and sustainable communities, that can support a mixture of income levels and house the exchange of both goods and services, is crucial to the health of our future society.

EOS is also the name of a Greek Goddess: "Goddess of the dawn", which is appropriate because of the harvesting of natural light that drives the design of the project. The project includes residential living units, retail spaces, restaurants and cafes, and public use areas of both interior and exterior spaces.

Can Architecture serve as a means to guide a most basic social need, communal action?

Project Typology:

The typology of this thesis focuses on mixed use between residency and commercial space in an urban area, focusing on how people affect one another and the usefulness of having these necessities in combination with each other.

Theoretical Premise/Unifying Idea:

Claim:

Close interaction is part of good mental health, a necessity for human race. Places of correlation have been present throughout time. It hasn't been until relatively recent that these places have been considered Architecture. The need for daily interaction can be solved by the way the environment around us is dealt with.

Premises:

The built environment therefore dictates the settings in which interaction takes place.

-The actor is always influenced by his/her surroundings

-Interacting between one another happens within one's surroundings

-The built environment is the surrounding in which the actor and his/her actions take place. Therefore, the object is the claim.

-The manner of action can be changed by the setting in which the interaction takes place.

Conclusion:

Architecture must be the median in which interaction between people takes place.

Project Justification:

The communication and correspondence between one another will continue into the future, whether the path is good for us or not. In order to accommodate this human condition and to uphold the health of society as a whole, the built environment must mediate the interaction between people.

The Proposal

Narrative:

What happens when you mix an abandoned industrial area from the early 1900's with a currently high valued land in the heart of one of the largest cities in the United States? Nothing! This is precisely what has happened in the inner city of Houston since industrial was driven farther out of the city by high land values. It leaves the city with a very awkward area. The land is too expensive to build residential, and commercial can't thrive because people end up shopping between their place of work and their homes. These areas end up being demolished by the city because of health and safety issues and then are paved over for parking.

The need for human interaction is also an issue that needs to be dealt with. Now, people are driving anywhere from twenty minutes to two hours from their homes to go to work. This problem is fed by the way the American city grows. As big business grows larger in the heart of the city, the land value goes up, making the people that work there live farther and farther from the city center. This is exactly the wrong model for sustainability. If we can fix these issues and get people to live closer to where they sleep, shop, and work, our urban way of living can become much more sustainable.

This is also where interaction between people comes into play. As we conduct our daily living habits closer to one another, the neighborhood setting comes with. People think of neighborhoods as a place to safely raise children and visit with friendly neighbors around them. The feeling of security in a neighborhood almost always out-ways the feeling of security in a larger residential complex, condos, or apartments. This is a false assumption that we associate with larger complexes, and solving this problem is a must if we wish to get past these problems. This also goes along with the health and happiness of individuals. This model has been all but lost in our large cities like Houston, TX.

There is no doubt that American people love their space and individuality, but their lives are also driven by communal actions that they take part in during every day activities. Instead of trying to fight these two ideas against each other, why not combine the two, by building an environment that can facilitate these two different values harmoniously.

User/Client Description

Client

The clients for a project like this, is a team effort between housing developers, commercial developers, and the Houston Planning and Development Department. The developers are willing to take a significant financial risk in exploring a wide range of housing models in hopes of finding new community driven individuals that have a need for such housing and commercial developments. They hope to take this business venture exploration into other projects beyond this one. The Houston Planning and Development Department has a real need to address the underdeveloped area and are willing to give these developers a chance in hopes of improving the public image and bringing people and larger profits to the inner city.

Users

Like all neighborhood models, this development is meant to be used by the general public to become an interwoven part of the community. The project will be designed for the Houston inner city community with general access to the public.

The different users can be broken down into a few different categories:

Residents: Owners and Renters

The residents of this building will need all their daily living needs to be met. Spaces for sleeping, eating, bathing, and relaxing will be needed in their private quarters, along with secure access at all times of the day. This built environment will also house their other daily needs such as shopping, entertainment, and exercise. Spaces for interaction between other residents as well as the general public will also need to be met. A space for resident's private vehicles will be needed as well. The balance between public and private spaces will need to be handled delicately as to facilitate the sense of neighbor.

Tenants: Retail, Office, Business

Tenants for this building will need room to facilitate their businesses. These tenants are what makes this project possible. They are the users that bring in the funds to support the resident's good and services needs, and make it possible to bring the price of living for residence down to an acceptable level.

Some tenants will require street frontage while others will only require space for offices and areas to conduct business meetings between their cliental.

With some of these tenants, a loading dock with access to storage and their business will be required.

Tenants: Studio, Entrepreneurial

These tenants are more experimental, in that the space they require is smaller and will be inexpensive as possible. These spaces will be flexible enough to serve as a place to work with equipment and hand tools, to individuals conducting client meetings. The spaces must have the ability to facilitate young students in the need for creative studio spaces, to older generation's need of a place to concentrate and write books.

Public: Local

The general public must feel welcome for this project to be a successful community interwoven into the area. Whether they are brought in by the businesses that are included or just to relax, they need to have a reason to keep coming back. These needs can be facilitated by the public greenspace shared by residence, the use of the rentable hall, or the rentable tenant space. The main goal is for the public to feel welcome and have a place where spending money is not required to spend time here.

Public: Visiting

These people are very different than that of any of the other users. The first experience they have here dictates how successful they find it, and whether or not they will return or tell there friends and family about visiting. They are the users that are searching for something unique to see. They will visit only because they heard about it from somewhere else. They will be using the same spaces that the local public uses and hopefully, if these spaces are handled properly, their experiences will be positive.

With the complexity of the client and users, not all space are able to be defined at this time. With research and investigation I will decide what the correct and appropriate spaces will need to be for the finished project.

Defined Spaces

Dwellings:
Daily needs for the residents will be met with spaces suitable for sleeping, eating, bathing, relaxing, and entertainment. Areas that act as semi-private spaces, such as a traditional back yard, sidewalk, or front porch, will also be needed.

Private Parking:
Parking for residence and guests of residents will need to be handled on site with proximity to their dwellings and secure access at all times.

Public Parking:
Parking for tenants and the general public will be as minimal as possible because of public transportation and the amount of off-site parking available.

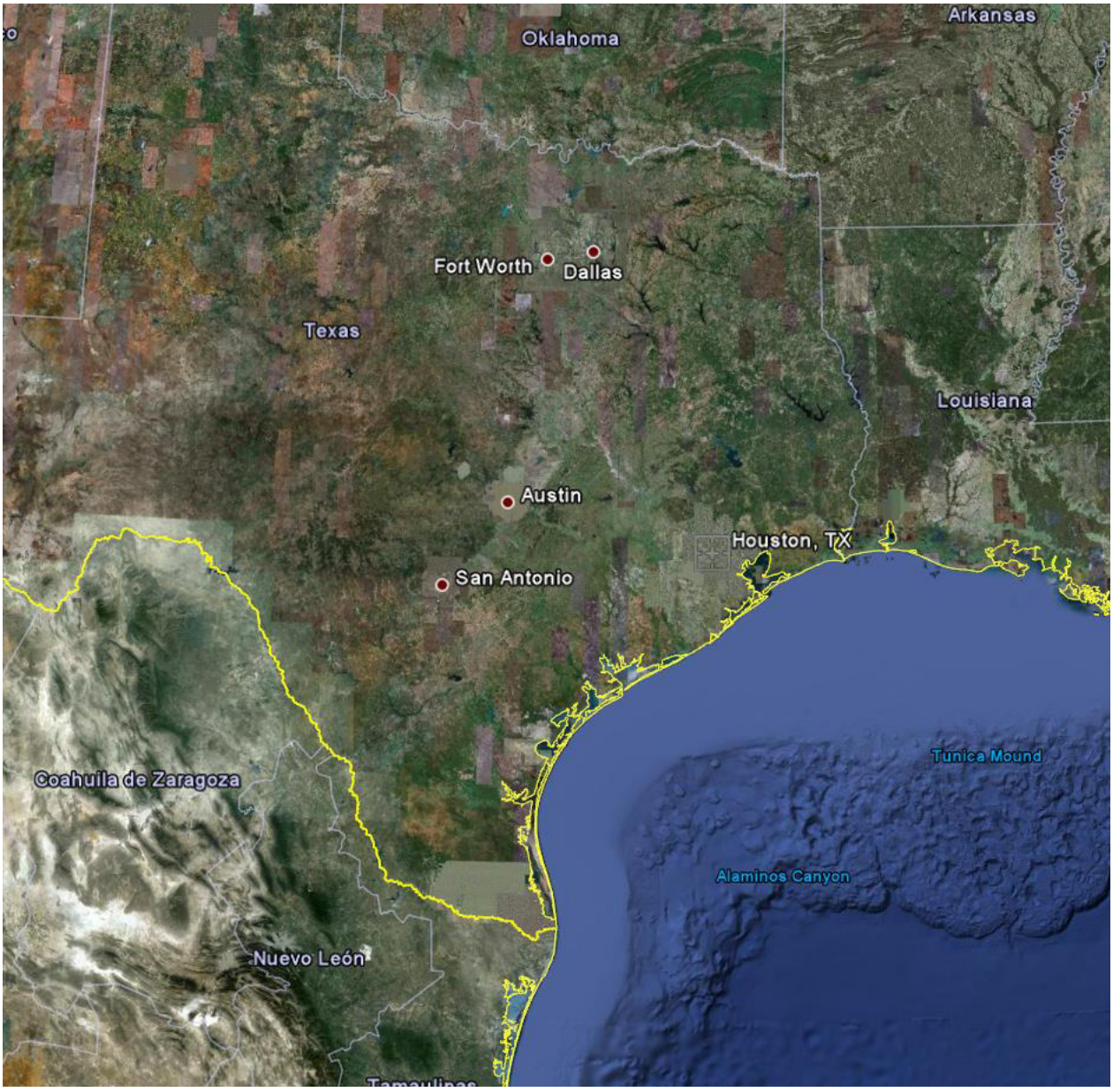
Auxiliary:
Space for such things as mechanical, storage, public toilets, tenant receiving, etc.

Tenant:
This is space suitable to house multiple functions. The spaces must have the ability to conduct business meetings or to sell products, from coffee to clothing. They are simply spaces to rent and some may need to have access to a loading and shipping area while others simply need a space to create art with ample day-light.

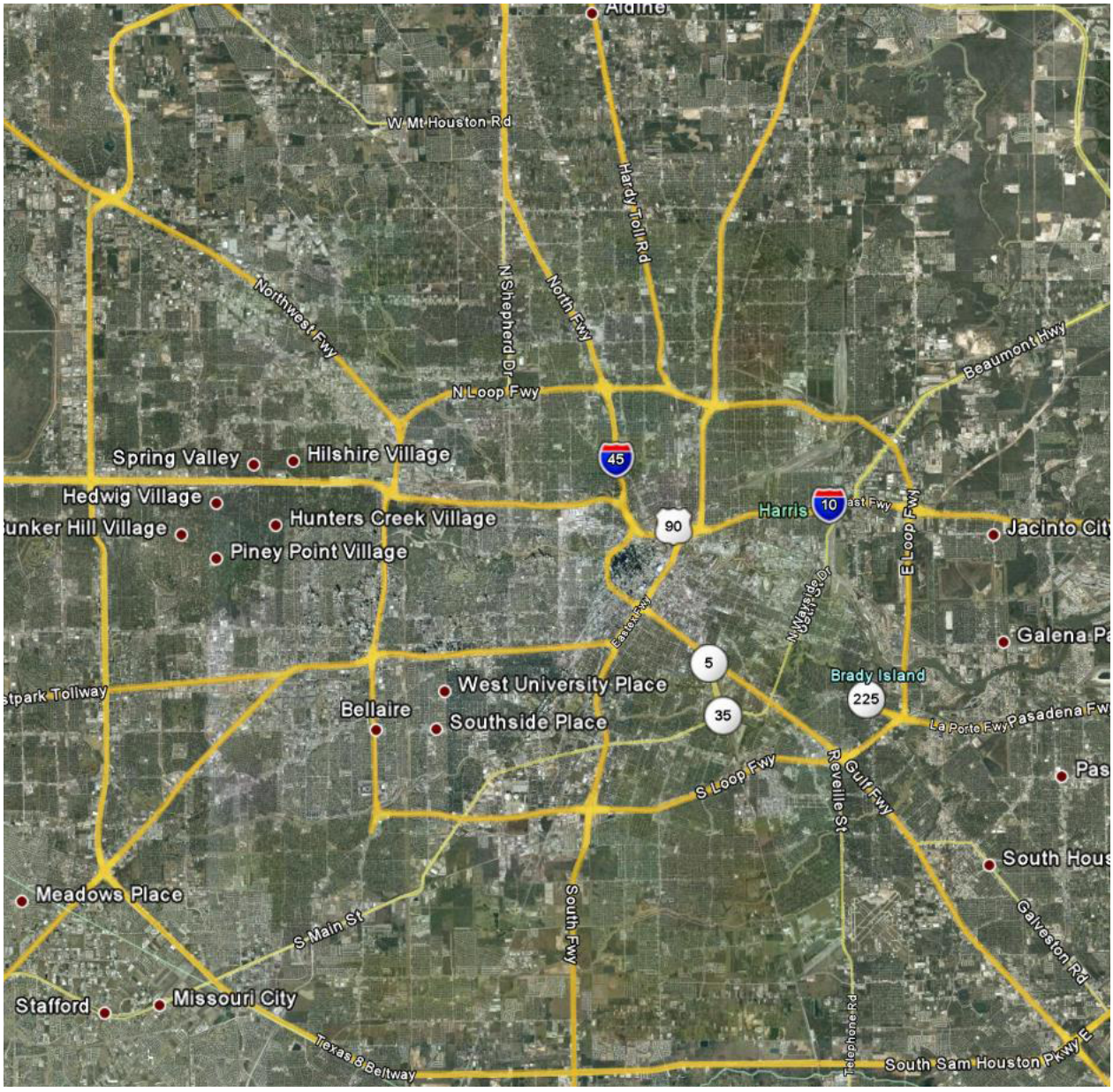
Public Hall:
This is simply space for anyone to rent and conduct whatever function that needs to be accessed by the public. Like most public halls, this space must be adaptable to big or small crowds alike and also have the ability to house multiple functions at once. This can also include the public green space on the property if the out-of-doors in required.

Public Green Space:
This space is available at anytime for the use of anyone. It is just that, public. It can used for whatever an individual sees fit. It must facilitate anything from a nap on the grass over lunch hour, to a game of catch by young children, to a rowdy game of chess in the shade by old men. The only requirements are that the space feel welcoming and safe.

Region: South Central United States



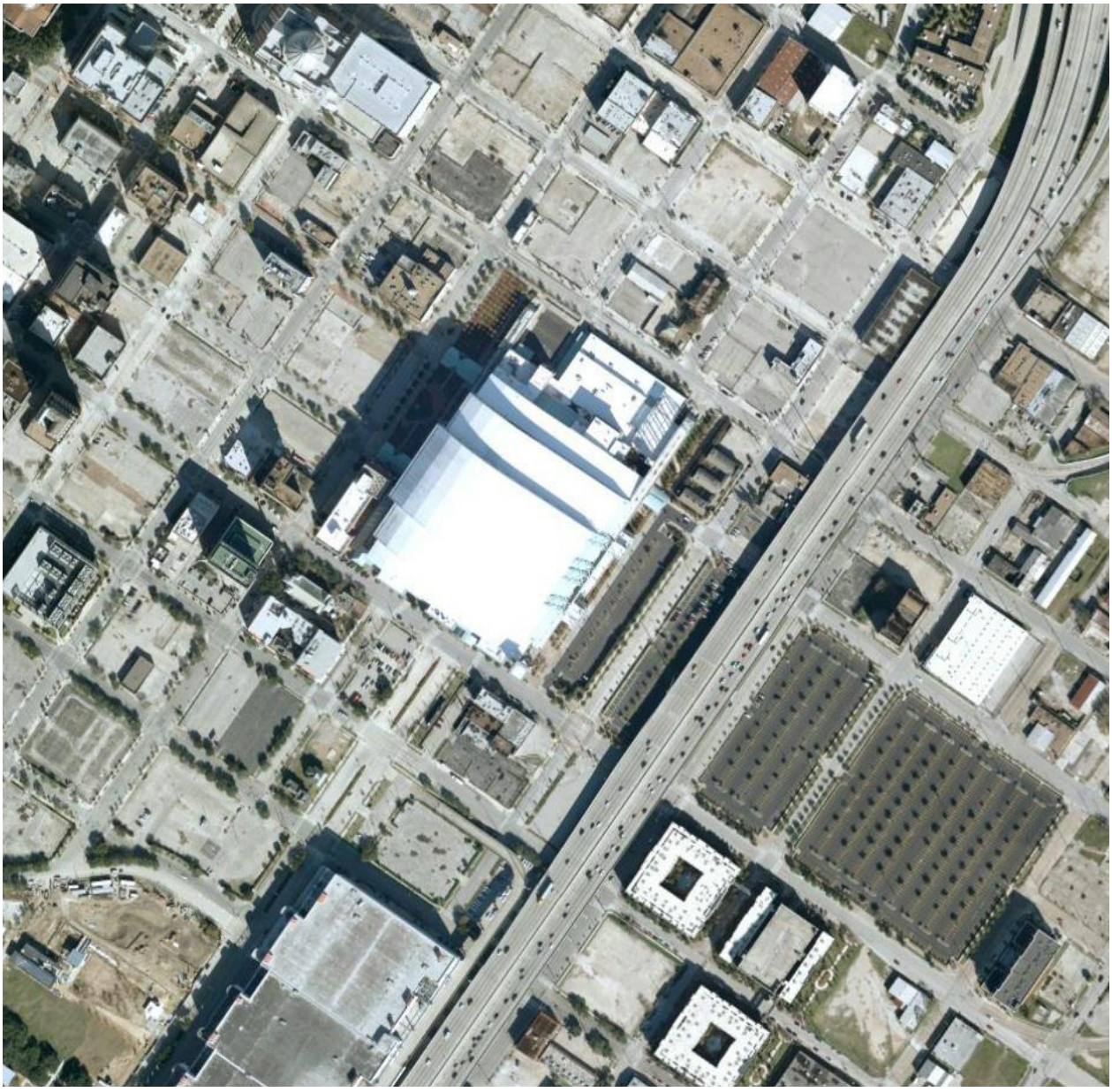
City: Houston TX



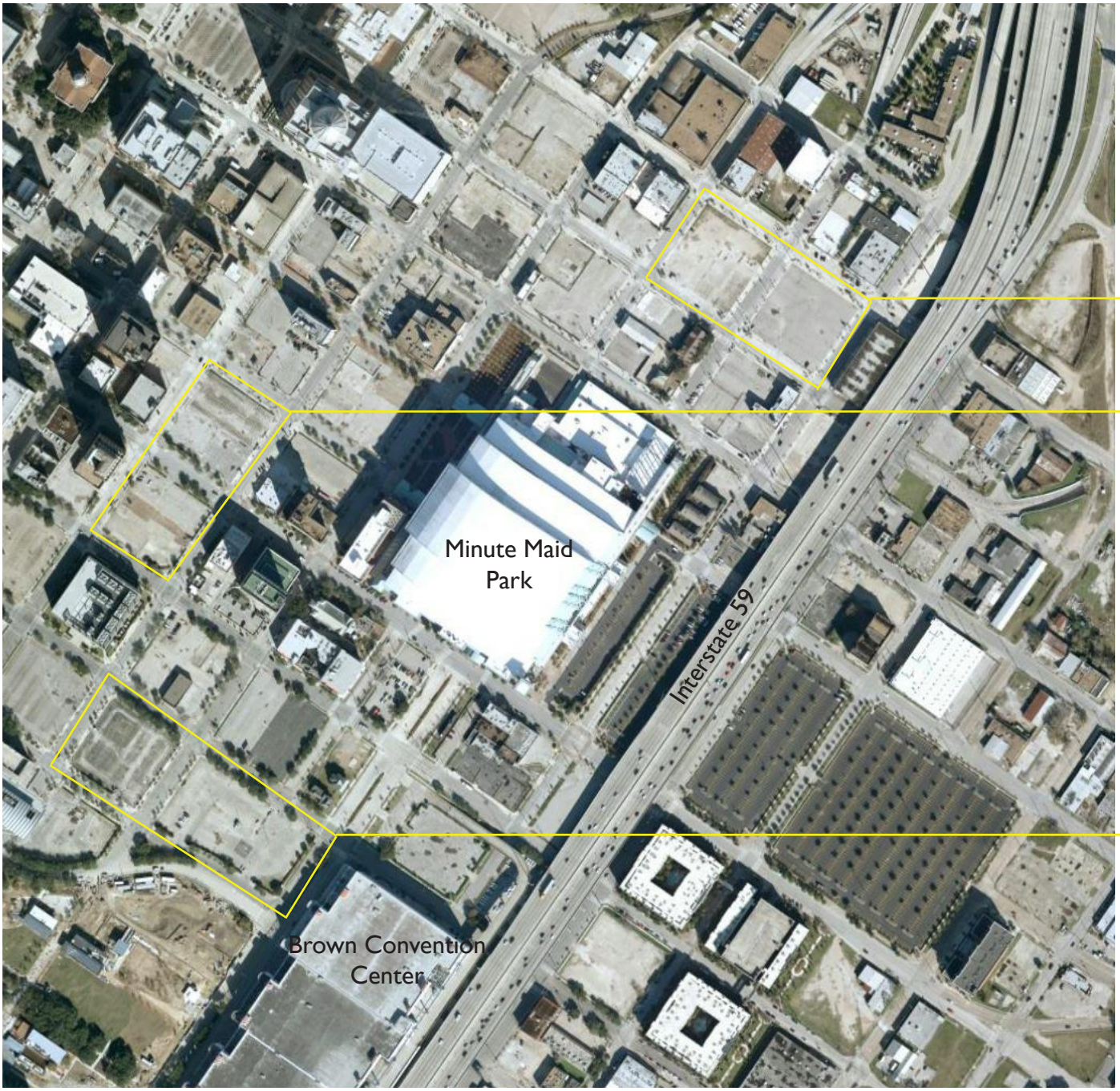
Site: Border of Inter-Loop, Downtown Houston

Formerly a busy industrial sector of Houston until the city grew large enough to push the industrial farther from the city center as all cities do when they grow.

As one can see, there are many open spots in this area that were turned into parking lots as the industrial buildings were torn down when their deterioration became a public health hazard.



Site Possibilities



These three locations have been chosen as possibilities because of their closeness to the city center, potential for nearby public transportation, their lack of residential, and the history of these sites being abandoned industrial areas.

~ 166,200 feet sq

~ 165,240 feet sq

Transportation in available by city bus on at least one corner of these locations. A new light rail is being expanded outward as we speak from the city center and runs through the city on Main Street, located between 4 and 6 blocks directly NW of these sites. Transportation by vehicle is readily available in the form of one-way only streets and their proximity to Interstate 45, 10, and 59, which make up the inner loop around Houston's inner city.

~ 206,820 feet sq

Views from these sites include the home of the Houston Astros Major League baseball team, Minute Maid Park. The sky scrapers that make up Houston's skyline to the north west. Industrial buildings that are either renovated or abandoned and used for storage that are from the early 1900's throughout the area. The James Brown Convention center to the south east. The rest is comprised of parking lots used for workers downtown during the work day, and overflow for game days and conventions.

Project Emphasis

This thesis project will emphasize the interaction between people and their daily environment. I will explore how combining residential needs with commercial needs affects the health and happiness of the users.

Starting the revival of the downtown Houston industrial area is a main goal, finding an answer to this problem must happen for this project to be successful. Bringing life and wealth back into the inner city at an affordable rate will be a very important aspect as well.

As always, sustainability is key, bringing people closer to where they work and gather daily human needs without having to drive an hour will start to improve sustainability. When looking at the history of this site, one can immediately understand that the problem comes directly from the areas buildings not being adaptable or sustainable. The industrial has already moved out; it is time to get the people back in.

This thesis will conduct research of areas described in the theoretical premises/ unifying idea and project topology. Other areas of research will include but are not limited to site history, cultural history, and programmatic requirements. This research will be conducted using a mixed method approach of qualitative and quantitative means.

The use of research, both qualitative and quantitative, will be used throughout the project in its entirety. Data will be recorded for informatory purposes along with thoughts and reactions to help sort through the information and to find its usefulness/appropriateness to the project.

Quantitative data may include, but will not be limited to, statistical data gathered either by local means or by remote archival means such as the architectural library.

Qualitative data my include, but will not be limited to, direct observation, direct interviews, or archival research conducted by myself.

Various means will be used to record this information including digital means such as digital photography, scanned images of sketches, digital models, and digital drawings. Non-digital means of information recording may be used as well such as hand drawings, journaling, and physical modeling.

Previous Studio Experience

Second Year - Fall Semester 2006
Professor - Darryl Booker

- Tea House Project, Red River

- Rowing Club, Minneapolis

- A Dwelling, Bear Lake, Colorado Mountains

Second Year - Spring Semester 2007
Professor - Joan Vordervruggen

- Waldorf Elementary School, Fargo

- Dance Academy, Fargo

Third Year - Fall Semester 2007
Professor - Steve Martens

- Inuit School, Pinington Alaska

- Pediatric Outpatient Center Competition,
  Sioux Falls South Dakota

Third Year - Spring Semester 2008
Professor - David Crutchfield

- Mixed Greens, Fargo

Fourth Year - Fall Semester 2008
Professor - Don Faulkner

- High Rise, San Francisco
  Undergraduate Capstone Project

Fourth Year - Spring Semester 2009
Barcelona, Spain Study Abroad
Professor - Steven Wischer

- High Speed Metro Station and Hotel
  Barcelona, Spain

Fifth Year - Fall Semester 2009
Professor - Mark Barnhouse

- Water Treatment/ Research Facility
  Missouri River, North Dakota

Introduction

Modern urban society has more contact and communication in it than any other society in human history. This is because of our industrial society that we are all living in today. In the past it would have been impossible to be in contact with so many people. Christopher Alexander writes much about this topic, he states that "as metropolitan areas grow, society will become even more differentiated, and the number and variety of contacts will increase even more" (Alexander. 1966 p.3). It seems that as time progresses, the amount of contacts an individual has is exponential.

Alexander also explains that "as the individual's world expands, the number of contacts increases, and the quality of contact goes down" (Alexander, 1966 p.3). People have more and more contacts, but the amount of time in a day has not changed. So, the amount of time spent with these contacts goes down until interaction between individuals has been reduced to texting and creeping on facebook.

Human interaction and social well being in an urban environment is the basis of this thesis project. As I have state previously in the theoretical premise and unifying idea, interaction between people is a necessity for human health. Having a place where these interactions can take place is an obvious need. Therefore, architecture as the built environment can facilitate these two requirements for human health and the wellbeing of society.

Evolution of Urbanism

For thousands of years, man lived in small rural communities. The reason that people lived in these intimate circumstances was driven by their surrounding environment. The land around them could only sustain so many people with the technology they had. In A.D. King's article on the study in environmental control, he calls this land-to-human requirement the "man-environment-relationship." King explains that "each culture establishes a relationship with its physical environment" and that through time man has expected more from the man-environment relationship. Specifically, higher returns were demanded which were to be measured in lower death rates and a higher concentration of people. (King, 1976 p. 8)

Many anthropologist like King believe that the change in the man-environment relationship was brought about by "diffusion of new forms of knowledge from developing metropolitan society. Here, a tradition of impractical investigation into natural phenomena, dating largely from the seventeenth century, had led to the development of various theories concerning the relationship of man to his physical environment, particularly where it related to his physical condition and state of health" (King, 1976 p.9). This meaning, that with the growth and higher concentration of people, came the acknowledgment that new technologies were needed to handle man made environmental systems. These new systems brought about the ability for urbanization in the eighteenth and early nineteenth centuries. King

writes that urbanization and the technologies in man-made environmental systems "resulted not only in higher expectations from the man-environment relationship but also in new criteria for the accommodation of urban populations. A new science-based technology was developed with which their criteria were met. In addition to this new technology - the provision of light, water, transportation, and waste disposal systems - also came new social technologies that had been evolved in the form of administrative and governmental organizations, and new social roles had been created" (King, 1976 p.9). So, with the increase in density, not only did we create new technologies to handle increased demands, but society actually created new roles to facilitate these new technologies.

The evolution of technology can solve many problems a growing society is faced with, but not all social problems can be solved by technology. These growing societies had a new need that has yet to be solved: the need for quality human contact in an urban environment setting.

Human Need for Social Interaction

In his essay "The City As A Mechanism For Sustaining Human Contact", Christopher Alexander explores the issues of human contact. He believes that the most important type of contact is that of intimate contact. He describes intimate contact as "close contact between two

individuals in which they reveal themselves in all their weakness, without fear" (Alexander, 1966 p.4). He goes on to talk about how the best friendships and marriages have this, and how without intimate contact in a persons life, one cannot be healthy. The problem is that in today's urban society, people have too many general contacts and not enough intimate contacts.

The problem of having too few intimate contacts is facilitated by our industrial society and how we live. The idea that man cannot live without primary groups has been studied by academics in the fields of anthropology and sociology for many years. Primary groups are defined as "a small group of people characterized by intimate face to face association and cooperation" (Alexander, 1966 p.5-6), according to Alexander. There are three main primary groups: the family group, the neighborhood group of elders, and the childrens play-group. Alexander explains that "these three primary groups have existed in virtually every human society, and they have been primary in forming the social nature and ideals of the individual" (Alexander, 1966 p.6). In our society today, we have lost the sense of group, especially in urban settings.

In George Holmans' book titled The Human Group, he states that, "In old Society, man was linked to man; in the new agglomeration --it cannot be called a society--he is alone" (Holmans, 1950 p.456-457). Holmans gets at the topic of human health and the development of future societies. He sates that, "All the evidence

of psychiatry shows that membership in group sustains a man, enables him to maintain his equilibrium under the ordinary shocks of life, and helps him to bring up children who will in turn be happy and resilient" (Holmans, 1950 p.456-457). He goes on to explain that if the group around him is shattered, or he leaves his group that he relates himself with, that the stress he is under will develop disorders of thought, feeling, and behavior. That his thinking will become obsessive, elaborated without accountability to reality, and that he will be angry, destructive to himself or others, compulsive, and be a lonely man. He will bring up children who have a lowered social capacity. Holmans also talks about how the loss of group membership in one generation may make an individual less capable of group membership in the next generation, leaving small group life undeveloped and individuals lonely and unhappy (Holmans, 1950 p.458).

Another academic, Ralph Linton, also talks about the lost of "group" and states "the sudden rise of the machine and of applied science has shattered Western civilization and reduced Western society to something approaching chaos" (Linton, 1936, p.232). This was written in 1936. We have advanced much further at an exponential rate than he could even fathom. He goes on to propose that unless history is wrong and that man doesn't need groups to survive, our society will reduce itself to order. These problems can be seen in society today. They have only become more apparent as we move into

denser urban developments (Linton, 1936 p.232).

After the time of Holmans and Linton writings, Architects and planners tried to recreate the local sense of group by creating an artificial sense of group that we know as "neighborhoods." after World War II, American society boomed with family growth. Young men and women wanted to have families and city life did not facilitate the room. As a result, American society created suburbia. Here, families were able to live outside the city, but were close enough to work there with the help of the automobile. It is strange how we went from thinking we needed to create these neighborhoods to gain a false sense of intimate group for the good of society, to now knowing that suburbia and urban sprawl is not only killing our society, but it is also choking our natural resources. We have done a complete turn around, and now we need to create a new model for living while still trying to solve old problems.

The American government saw a real problem with aging neighborhoods falling into slums and thought that they knew how to fix the problem. Their plan was to create multi-residential living units for public housing and that they could suppress the onset of slums. The result was catastrophic and ruined society's image of multi-residential living for years. Alexander explains that "these people are moving from a traditional place-based society into the larger urban society where place-based community means nothing" (Alexander, 1966 p.10). The people then lose their intimate contacts and, as history

shows, deconstructionism of individuals ruined these new developments and the project failed miserably.

Health of Individuals in Urban Settings

In studying individual health it his hard to find available evidence, and finding evidence for a societies health is even harder. The evidence of an individual or society's health is very indirect. What many have done to gather evidence that can be scientifically valuable is to use strictly scientific data. With these restrictions one can only measure health by examining very extreme versions of social pathologies like schizophrenia and delinquency. Luckily, several large scale studies do support this extreme form of hypothesis (Alexander, 1966, p.12).

As the urban environment became denser in American society, studying the distribution of mental disorders became a reasonable way to track the health of individuals. A man by the name of Faris Dunham studied the distribution of mental disorders in Chicago in the 1930's. By this time the urban setting in Chicago was similar to what we know today. He found that paranoid and hebephrenic schizophrenics had their highest rates of incidence among small apartment residents and hotel lodgers and among the people who live in the rooming house district of the city. "They are highest, in other words, among those people who are most alone" (Faris, 1939 p.83). This study scientifically showed

that there is a problem in residential situations in these urban settings. I support the belief that it is not the situation of having people reside in close proximity of each other that causes these disorders, but how their built environment is handled.

In Alexander Leighton's study on the effect of social disintegration on mental disorders, he stresses the fact that "people in a disintegrated society exist as isolated individuals, without any kind of emotional bonds between them" (Leighton, 1993 p.54). He calls the disintegrated society a collection. In a collection there are a number of individuals occupying the same geographical area, having non-patterned encounters with each other. "They have no personal contacts of any sort: they have no voluntary associations with one another - let alone any kind of intimate contact between households. They are suspicious about making friends, and try to keep clear of all involvements with people" (Leighton, 1993 p.54-55). His findings show that these people have substantially higher rates of psycho physiological, psychoneurotic, and sociopathic disorders, than people who live in a more intimate traditional community.

Another study done in New York was done by Langer and Michael in the 1960's. Their study on the incidence of metal disorders in Manhattan showed that "people who report less than four friends have a substantially higher chance of mental disorder that those who report more than four friends" (Langer, Michael, 1963 p.285).

What I found more interesting is that people in the lowest social economic groups tend to have fewer friends than the people in the highest social economic groups. The study showed that 12.7 percent in the lower socioeconomic group reported having no friends, where only 1.8 percent of people in the higher socioeconomic class reported having no friends. This may seem surprising to those who have an image of the lower social economic groups as urban villagers, with widespread webs of friendship and kinship. Although the people who live in depressed areas of cities do occasionally still have such a traditional society, this is in more of a neighborhood setting and slums instead of denser, urban residential. These people still lack intimate friends and it is very possible that these lack of intimate friends play a substantial part in the correlation between poverty and mental disorder. (Langer, Michael, 1963 p.286).

Langer and Michael therefore reinforce the notion that membership in formal organizations and clubs and that contact with neighbors have relatively little effect on mental health. Contacts must be intimate before they do much good. People must have intimate contacts in order to be mentally healthy.

Summary

When looking through the past into the issues of human health in urban settings, it is apparent that live situations do not have a positive effect on the people living in them. There are many problems society has been faced with in the past and many of them were solved with economic need instead of a human need. Yes, we needed to find a way to house the booming population after war, and yes we also needed to find a way to deal with public housing, but the way in which we solved these problems is not a long term answer, nor is it sustainable for future society.

Model for the Future

As we figured out that neighborhoods are better for human health, we realized that slums occur through the deterioration of them and they are not sustainable in the sense of environmental health as population grows. We started putting people in multi-residential settings without fulfilling the need for quality human contact. The people dwelling in these residential situations became unhealthy with the loss of their traditional settings. We solved one problem but created another. It is not that the entire model for multi-residential settings is wrong, it is that we need to recognize and include other aspects in the model beside the physical aspects.

We have also found that separating where we live from where we work may not be a good idea after all. Modernists thought that separating these two functions of daily living would be the answer to solving the problem of "group"

in the lives of people. What they created was a false sense of group. People that live around us in a neighborhood are not our neighbors just because we choose to live next to them, but that we choose our residence and the neighbors were already there. The only neighborly act they might fulfill is watching your house while you are gone. This does not fulfill the traditional sense of neighbor, one where you know them and see them on a daily basis and even have an intimate relationship with.

As our cities grow and land becomes scarce, our cities will be forced to become denser. At the same time, travel from residential areas to work will become more time consuming and pollution will increase as travel becomes more congested. I believe that we are going to have to solve these growing problems with what we know as the mixed-use model.

The problems we have with mental issues and human contact can be solved through good design. Creating places that are not private, but not completely public for the use of residence is a good start. So is opening the site up to the public where everyone can enjoy the setting. This is the problem with most residential sites in urban settings. The public is closed off completely and this sense of separation is strong.

We must create a place where the most private, and the most public can come together. This is where using commercial and public spaces can be useful. These spaces can bring a sense of openness between residential and public. There needs to be a permeable mesh between public and private where a sense of freedom and fungshui can exist harmoniously. This model for urban living can solve both the human need for consistency and society's growing need for density.

Name

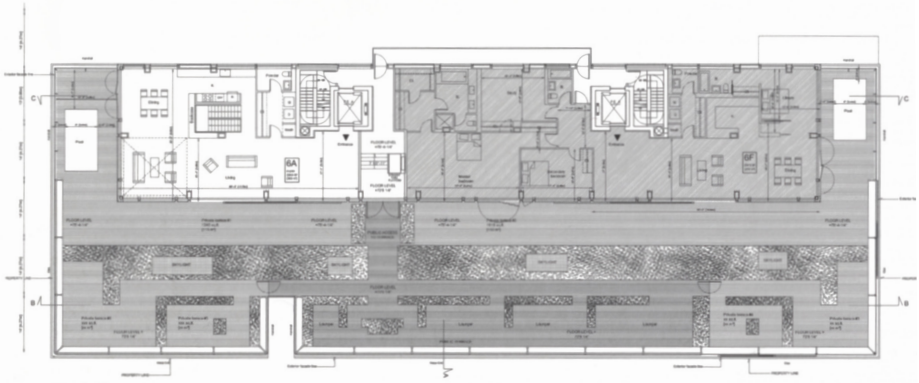
Jean Nouvel designed *40 Mercer Lodgements* in 2004. This 100,000 sq. ft. mixed-use building in New York consists of hotel, residential, and commercial retailers. On the first level of the building, Nouvel created an entry condition that residents and hotel guests can both utilize. The are five large retail spaces located on the first level as well. Levels two through five house the hotel space. Here, where the building is at its widest, each hotel room gets a view out and natural daylight. On top of the hotel space, the residential spaces get great views to both the north and the south from each unit. The residents also have a private green space on the hotels roof on the sixth floor.

This project is quite different from other buildings in the area in that three of its sides are left free, which is a rare opportunity in New York. Instead of leaning his new design against the neighboring building, Nouvel left room for green space for a mixture of occupants to use. The parking is handled nicely in that the entrance to the underground garage is well hidden from view, but is still easily accessible for the occupants.

Upward View of Exterior Louvers

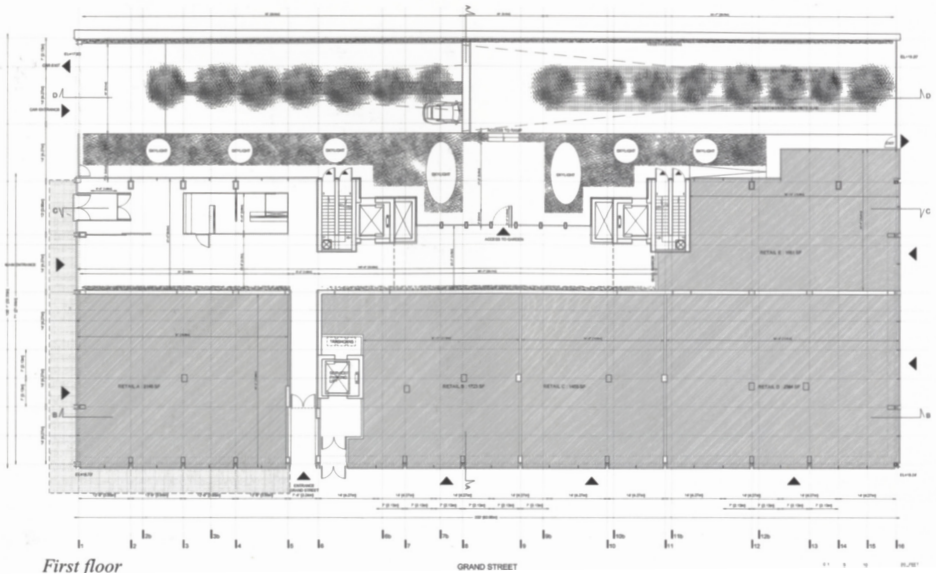
View from Broadway and Grand Street

Seventh floor



Sixth floor

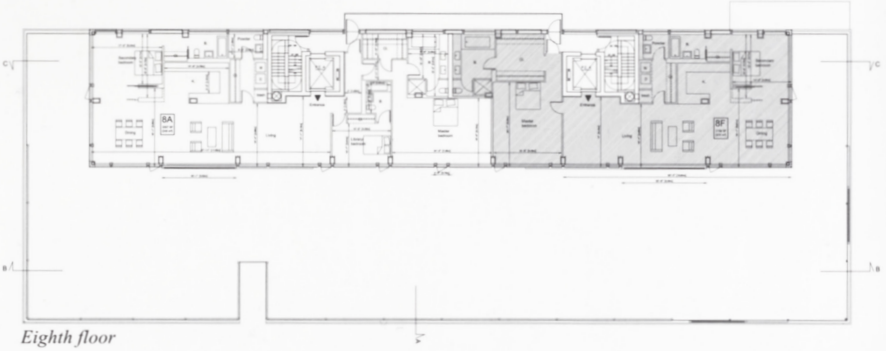
Fourth floor



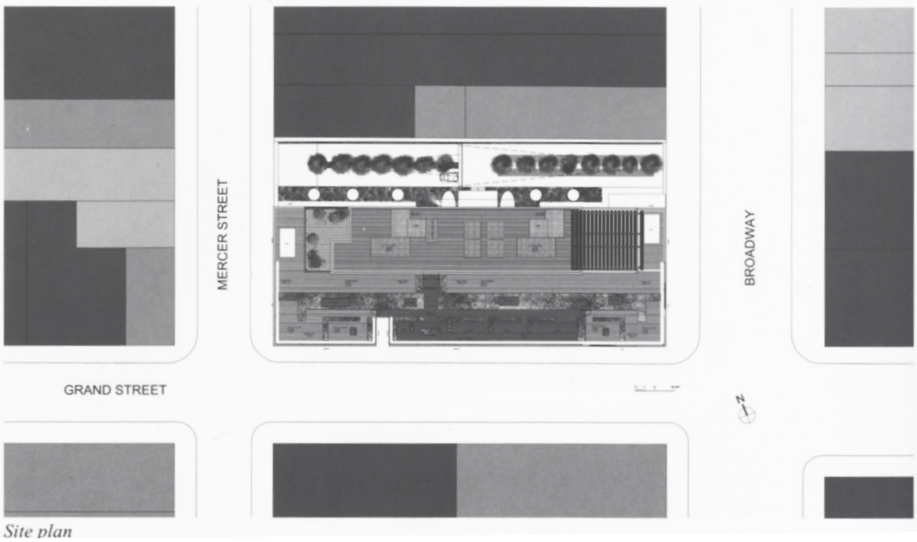
First floor

13th floor

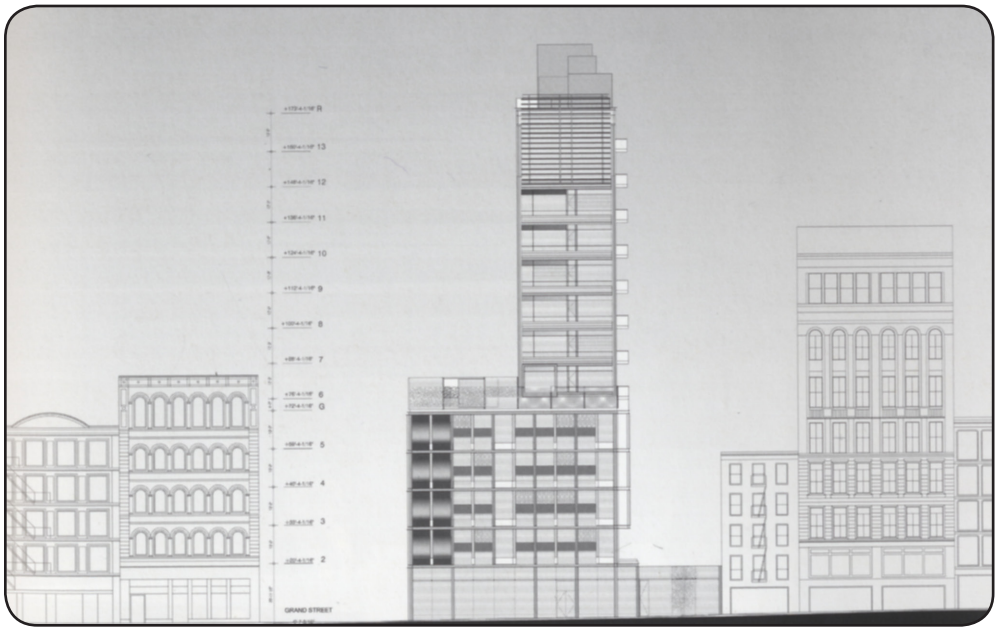
12th floor



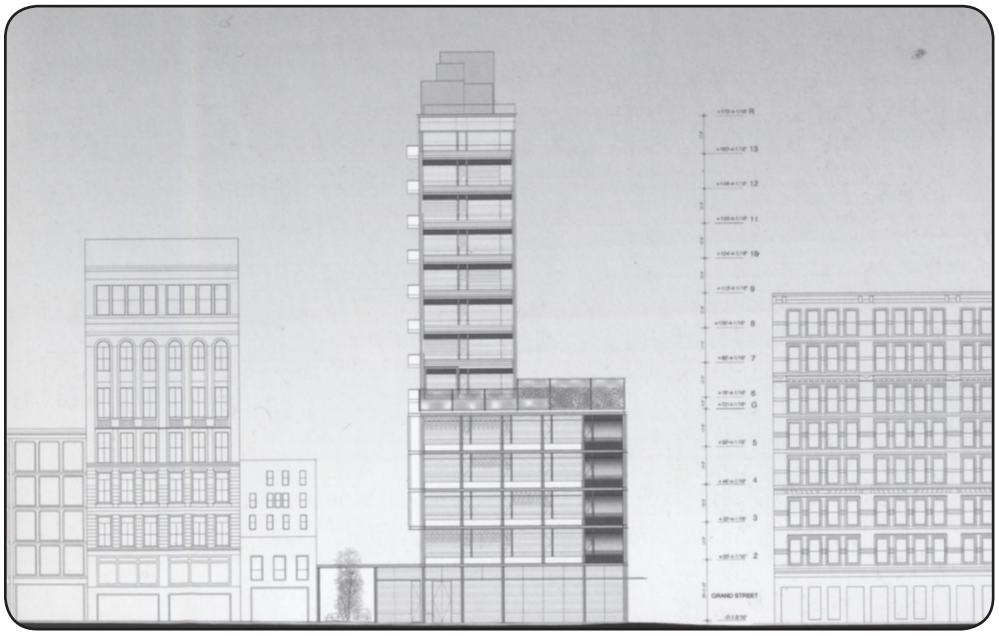
Eighth floor



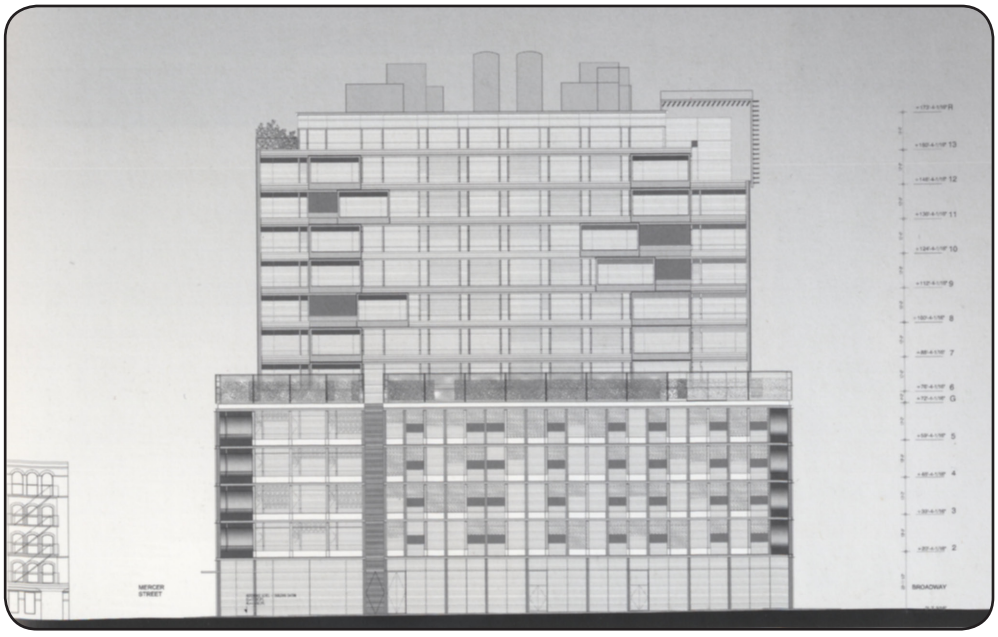
Site plan



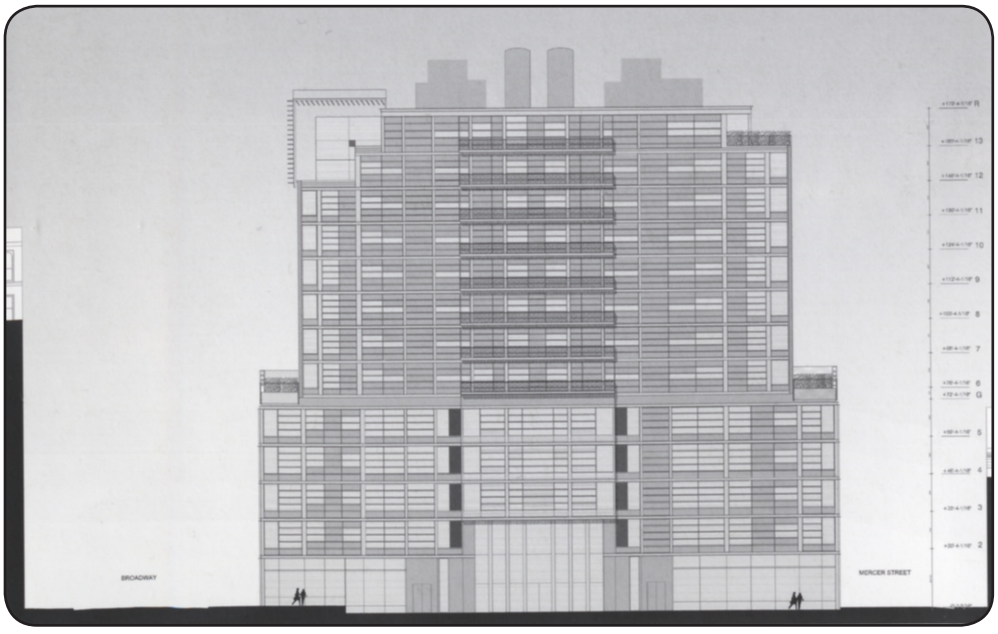
East Elevation



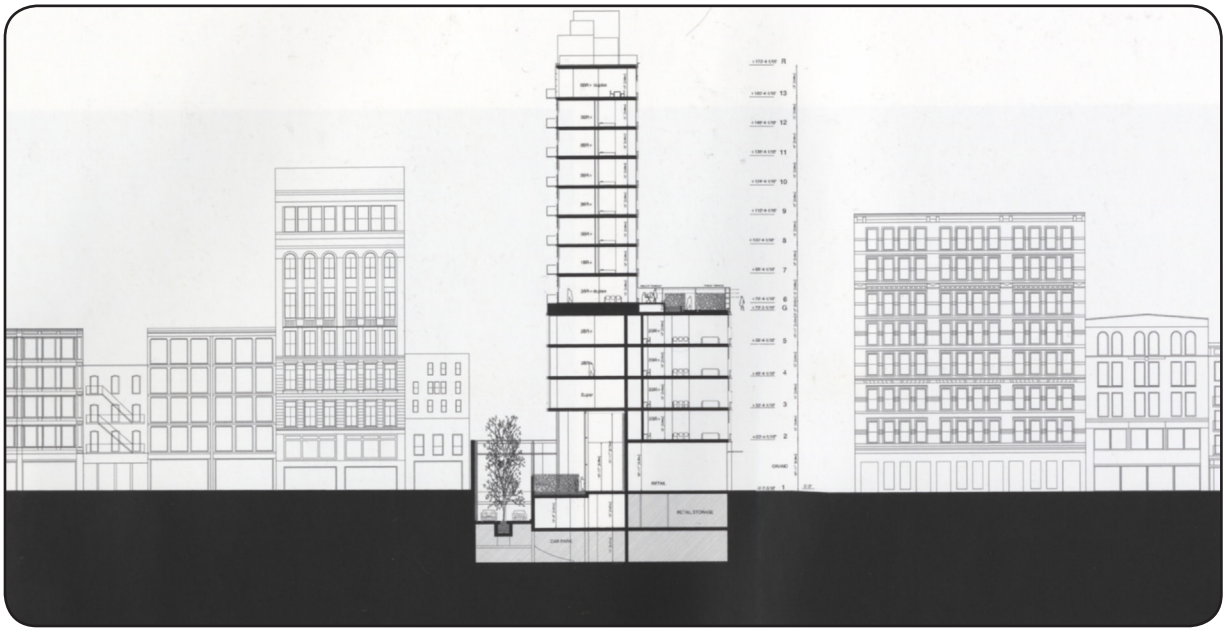
West Elevation



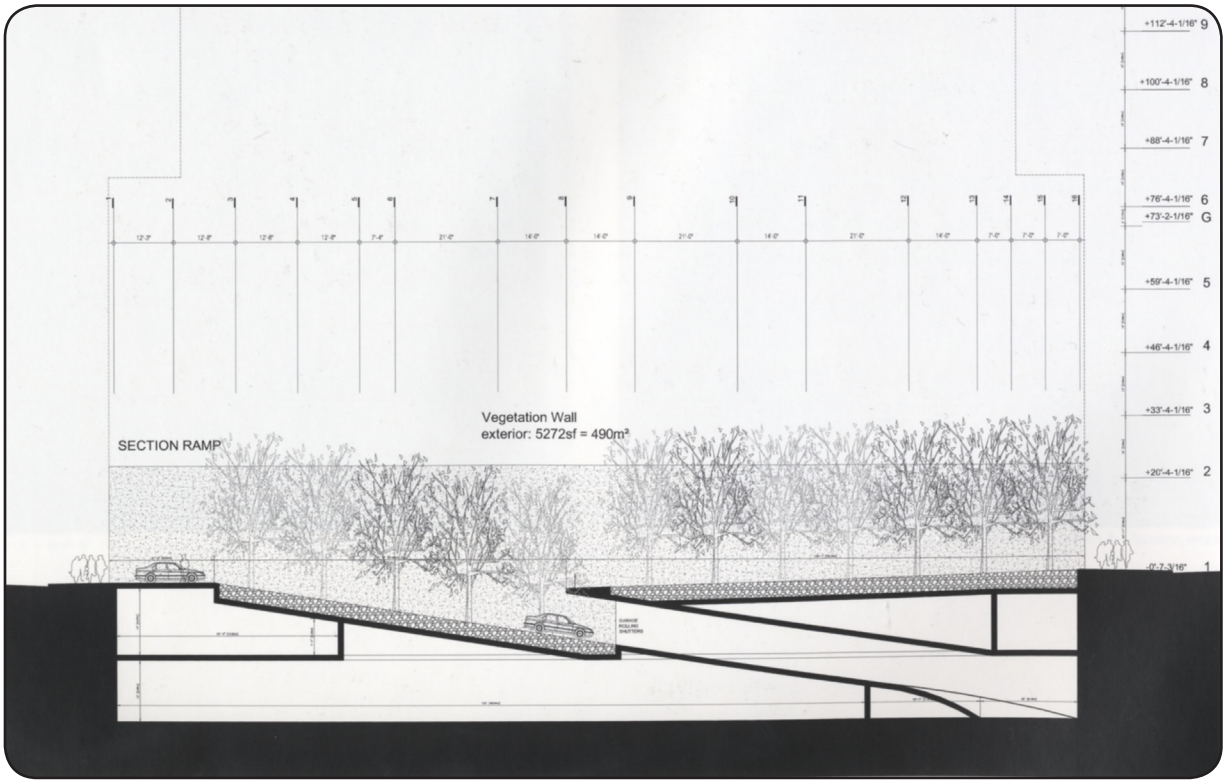
South Elevation



North Elevation



Site Section



Parking Section

Housing Unit: Bathroom

Housing Unit: Kitchen

Elevator Hallway

This is a smaller mid-rise mixed-use project that is very well done in respect to spacial layout and harmonious coexistence between multiple occupant types. It's different from many mixed-use buildings in that residential space is not just stacked above a commercial space. Nouvel does a good job giving a different character to the different occupancy types. It helps the user understand how the building functions.

The use of green space on multiple levels is quite effective. There should be a separation between the most private spaces and the most public spaces in a mixed-use project; here it is easily seen and understood.

What this project lacks is space for the general public. The program did not call for it and the site is too small to accommodate it, but I believe that for a mixed-use project to be truly successful, it must have space for locals and visitors to use as well.

Name

Morphosis Architects designed this mid to low income housing in Madrid, Spain, in 2005-2007. Their program was to build 141 two, three, and four bedroom units for the City of Madrid in the Carabanchel District. The multi-family residential project ended up being over 204,000 sq. ft. when completed.

As an alternative to towering blocks of faceless units, this project explores a much different social model that integrates landscape and village topologies. Borrowing the ideas commonly found in detached villas, the project achieved a multi-family living complex with properties such as green spaces, loggias, and small scaled massing that are not commonly found in large public housing.

The complex accommodates the occupant that walks or takes public transportation, as well as occupants that drive their own vehicle. The parking is all above ground, but not out in the open. It is hidden on the ground level where natural light is most scarce.

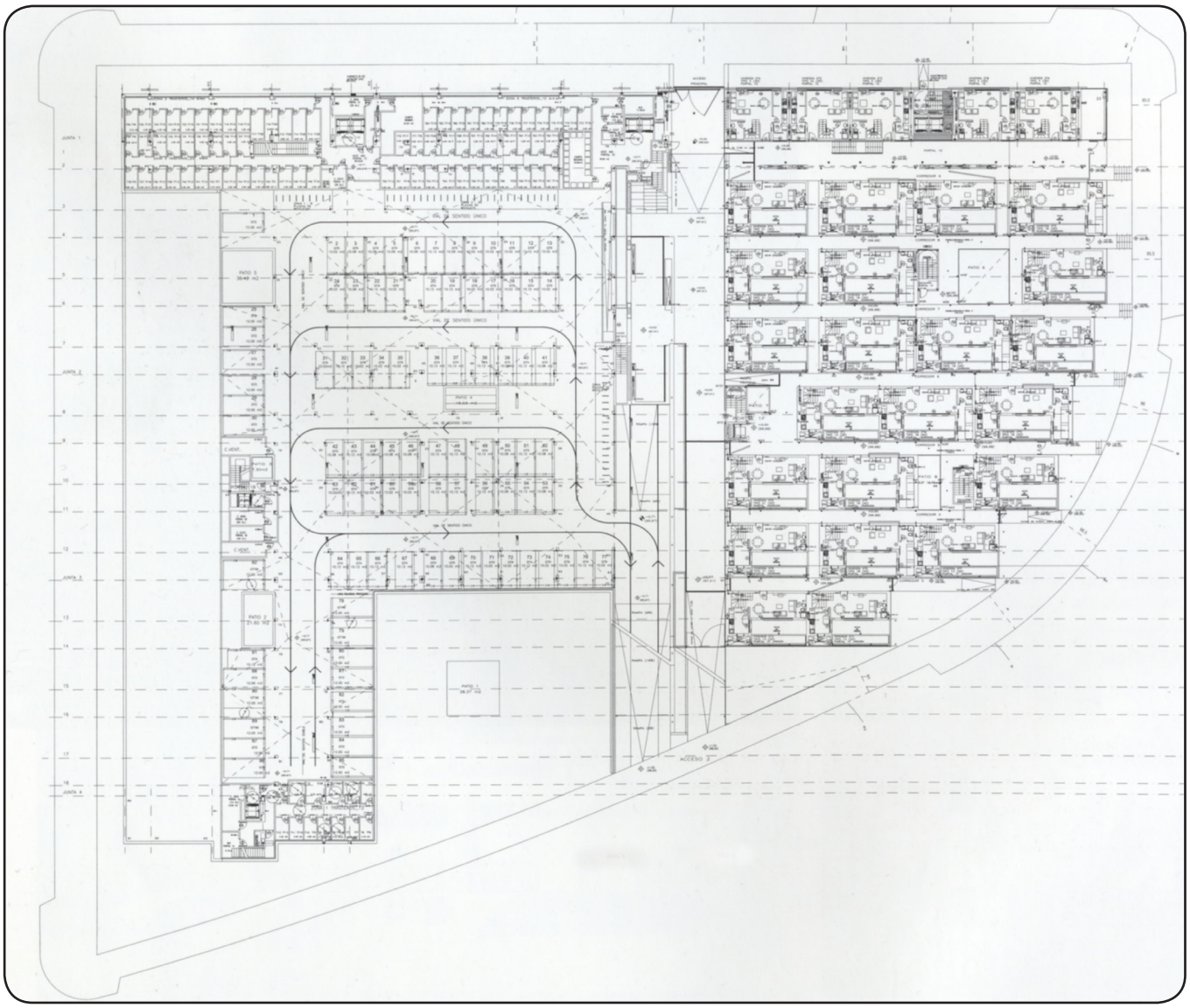
As you will see on the following pages, these units are not just in a big chunk of building separated by interior double loaded corridors. Instead, what the architects have done is allow the exterior to behave like hallways and create vertical movement. This allows natural daylight to get into the residences and provides a more neighborhood-like setting.

Where a main lobby would be in a traditional building, there is an open courtyard with vegetation where residents and visitors can gather.

Main Passage

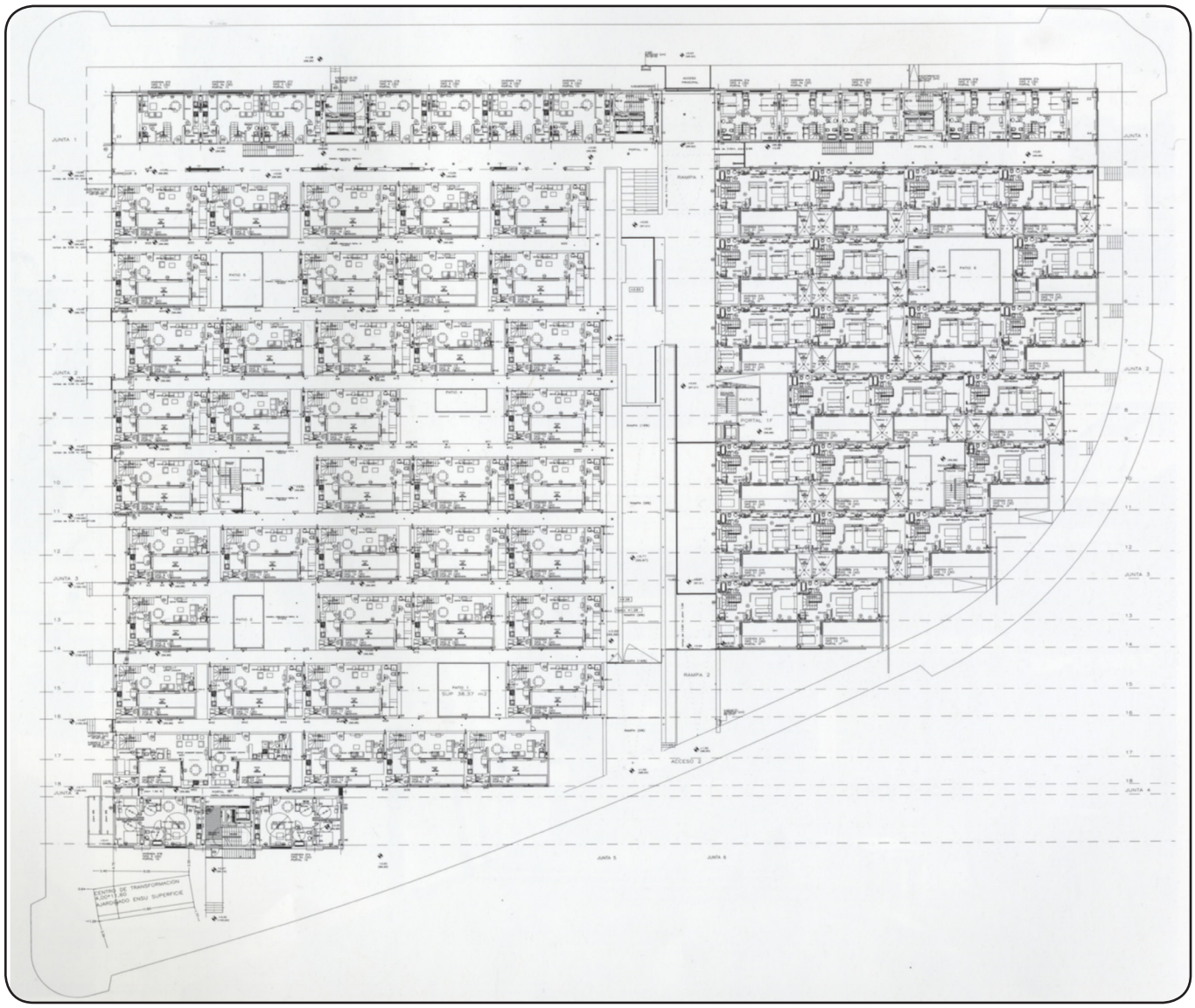
Northeast Corner

Case Study #2- *Morphosis- Madrid Social Housing*



Ground Level

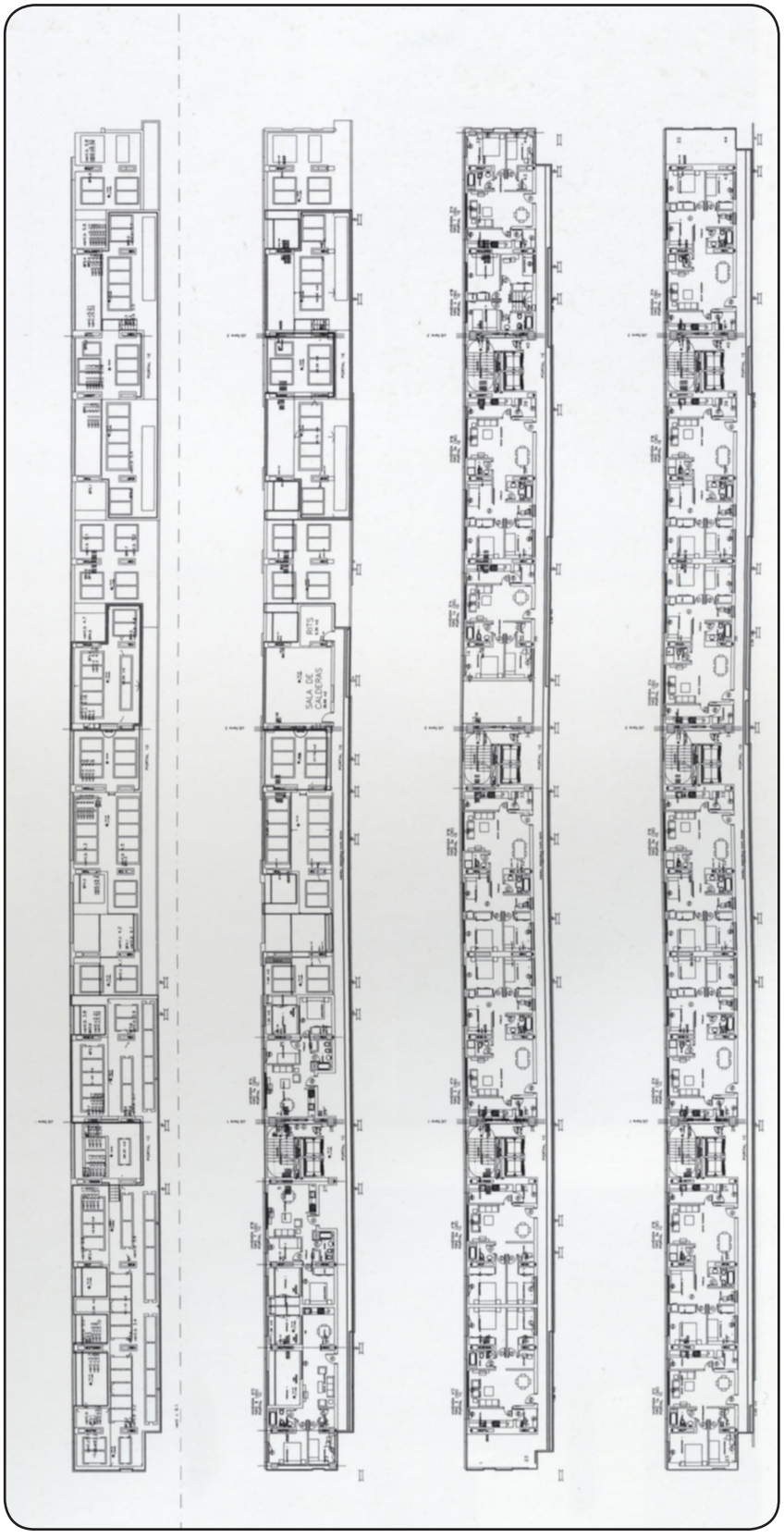
Section 1



Second Level

Section 2

Levels 3 - 8



View from East

This multi-family living complex does a great deal to bring good living conditions to a low income class that has experienced bad living conditions in the past. There are many aspects to this project that help make it successful. A layer of landscape is laid upon the plan in a series of open spaces and break down the institutional nature of a public project.

Open spaces occur on three different scales: small, domestic patios inside the individual residential units; mid-sized public

Corridor on 2nd Level

courtyards that puncture the low residential structure; and the large communal landscaped space that takes the place of a conventional interior lobby.

This new, ideological design brings open green space to the dense, urban surroundings. With this community oriented design, crime and social disorder should decline as the occupants act more like a community than strangers.

View in Corridor

Looking East in Passage

Case Study #3- *The Comtemporaine*

Architect Ralph Johnson of Perkins + Will in Chicago designed this high end multi-residential building and was opened in 2004. In the midst of dozens of new residential towers that are unremarkable or "downright dreadful" that have risen in downtown lots in Chicago since the end on the 1990's, this building has stood out as a well designed and accepted building by occupants and locals alike (Sullivan, 2005 p.54).

During the schematic design phase, Johnson conceived a 15 story building with around 52 units that would be a homage to Le Corbusier. The final design ended up with only 28 units as buyers wanted more space per unit. The entire structure is around 96,000 sq. ft. and cost 14 million dollars in 2005.

Chicago has a code that no less that twenty-five percent of the main level may be commercial. The parking garage is accessed by a door along Wells Street and the three levels of parking are the widest part of the structure. On top of the parking garage sits the residential units, and since they have a smaller footprint than the garage they sit upon, a patio occurs.

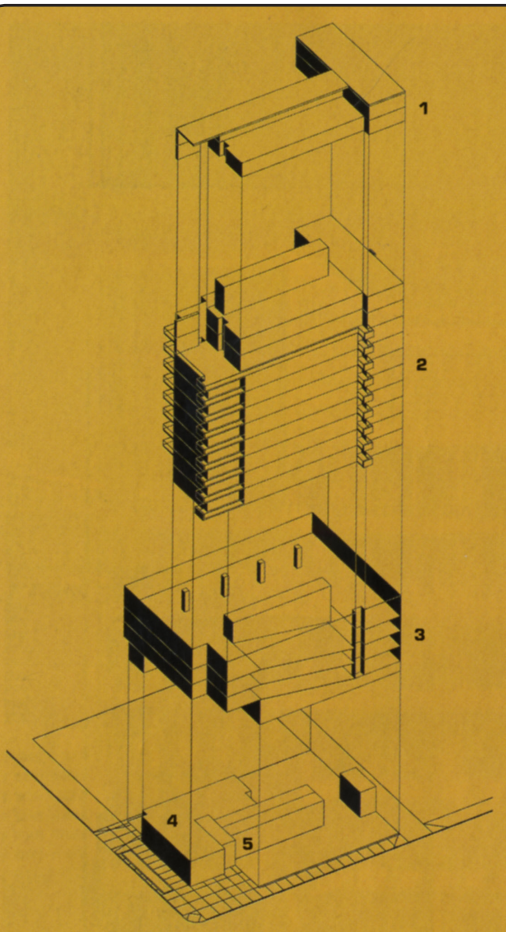
The building relies on large columns, deep slots, concrete slab edges, and protruding cantilever balconies to break up its mass.

View from Wells St.

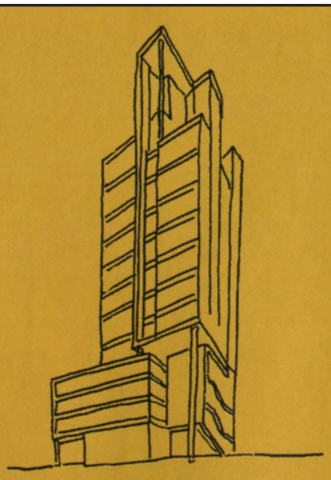
View From Grand Ave & Wells St.

Southwest Perspective

Site Plan and Isometric Perspective Drawings

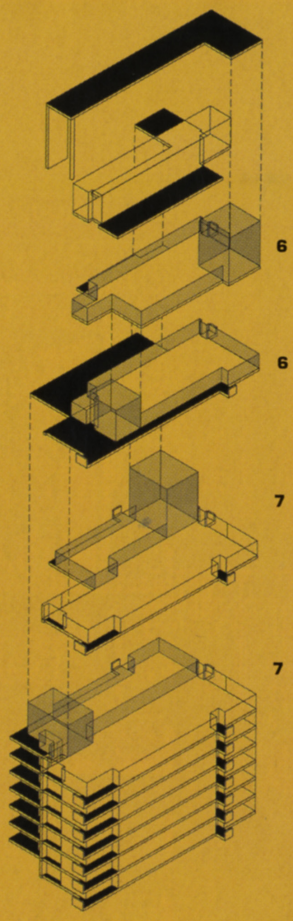


programmatic oblique ——— 35′

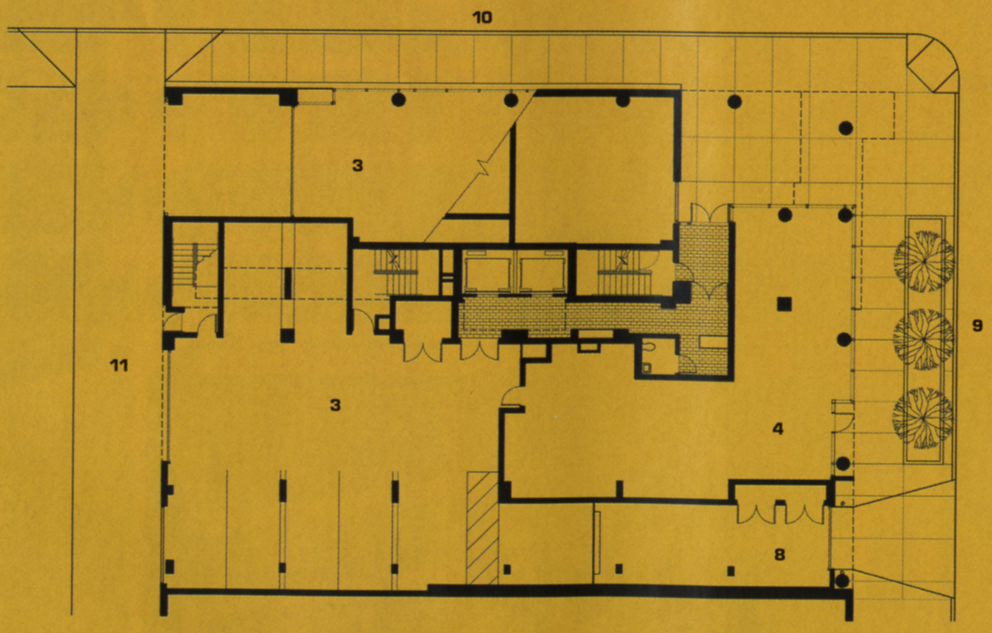


concept sketch

1 penthouse and mechanical
2 residences
3 parking and ramps
4 retail
5 entry
6 full-floor penthouse units
7 half-floor penthouse units
8 loading dock
9 Wells Street
10 Grand Avenue
11 alley



penthouse configurations ——— 45′



ground-floor plan ——— 12′

View from Across Grand Avenue

Case Study #3- *The Comtemporaine*

This multi-residential project is much different from the other case studies in several ways. First, it is a high end project. It does a good job of bringing a sense of it surroundings along with new design. In this way, it is successful. Second, it has little function for commercial to thrive. It has minimum retail space and seems unwelcoming to the public.

I believe that for this project to be more successful as a median between public and private, more commercial space and some type of public space needs to be implemented.

Penthouse Balcony

Typical Residence

View Across Wells St.

Conclusion to Research Findings

Since the use of buildings that employ the idea of mixing multi-residential, commercial, and public space is a fairly new practice, it is hard to find good case studies that implement all three uses. I have found the previous case studies and, have pulled different things from all three. I was looking for a project that showed good use of public space allocation, a project that succeeded in showing community in mid to low income housing, and a project that showed high design in a up-scale urban setting.

Besides the case studies on the previous pages, I have looked at a lot of other projects. Many good projects are out there that use mixed-use developments. The problem is that most of them are on a small scale and lack the sense of community. For many mixed-use projects I have looked at, they still have the same time-traditional problem of having commercial on the main floor and residential on the top with absolutely no integration between the two. In some, you can't even tell that the spaces are meant for two separate functions from the outside. I believe that the case studies that I have chosen, have a clear separation in geometry, in accordance to the use of the space, and that certain attention has been paid to the surroundings in which these buildings are placed.

As of my understandings on my theoretical premise/unifying idea, I believe that my research has only reinforced my findings in my case studies. From what I have learned from my research on human contact and what makes people unhealthy in urban settings, it seems that many designers

have chosen to acknowledge the need for people to share space in a way that allows for contact. I don't think that these architectural designs are quite there yet, but are on their way.

From my research on the theoretical premise/ unifying idea, I have concluded that for society to be healthy in urban environments, the individual must have intimate contact. My research also suggests that in order for our society to be sustainable in the long run we must be able to live closer to our places of work and gathering of necessities. The problem is shown through history to be that when people move into dense urban environments human contact goes down and the distance between work and residence has not gotten better. We need to enforce a model for living that allows for urban residents to have human contact, and increase the proximity to essential places of work and gathering.

The best example of creating a community that can share each other's traditional contact needs is that of the multi-family residential project in Madrid. There, the Architect has created a village, where people can live in the private, in the public, and anywhere in between. Not only is the community able to distinguish individuality, but it also allows the non dwellers to experience the space equally. The only downfall that I believe it has, is that it does not have any retail. If some commercial space was implemented the people there could live, work, and shop for necessities all in one area. This is the type of sustainability that I am striving for in this thesis.

Introduction

The use of multi-family housing, retail, and public space is a relatively new idea. It is true that many cities now require the ground level of new buildings to have a certain percentage of commercial space. It is also true that people used to live in the same structure that they kept their animals in, and shop keepers used to traditionally live above their stores, but the type of mixed-use that I am demonstrating for this thesis is quite different from these traditional mixed-use spaces.

In studying such a large and vague field of building typology, one must review all kinds of building types and the different trends society has followed throughout our history. Just for example, retail has changed a lot and had many trends that must be considered along with the different types of projects as well. The current day project types range from stand-alone stores that specialized in one particular market, to strip malls that house multiple specialized stores, to regional shopping centers with dozens of stores, to large scale urban mixed-use projects. These large scale urban mixed-use projects can range in type from high-end residential units to ice cream shops. Within all these project types there is also a broad range of uses, including movie theatres, restaurants, entertainment venues, corporate offices, and residential. A projects success is mostly dependant on the quality in which these uses come together.

There are other factors that also decide success of mixed-use projects. Stephen A. Kliment lists a few,including: "location, access, adjacent uses, the political environment, the consultant team, the

construction industry, leasing, economic timing, the insurance and banking industry, and the vision of the development team." He goes on to say that all these factors must work together to produce successful and profitable retail projects. It gets even more complicated when introducing residential buildings to the equation (Kliment, 2004 p.1).

Development of Mixed-Use

As people started to settle in what we know as villages/towns/cities, they developed as mixed-use environments. Walking was the primary way that people and goods moved about with the occasional assistance of animals such as horse, cattle, and mules. Most people dwelled in buildings that were places of work as well as domestic life, and made things or sold things from their homes. Most buildings were not divided by space functions on a room by room basis and most neighborhoods contained a diversity of uses, even if some districts developed a dominance of certain uses, such as metalworkers, or footwear, or clothing due to the social economic benefits of producing more that one good in a particular place.

People lived at very high densities because the amount of space required for daily living and movement between different activities was determined by walk-ability and the scale of the human body and its limits. It's shown to be particularly true in places that were populated densely enough to build multi-story buildings.

The ground floor of these buildings were often devoted to some sort of commercial or production use of some sort, with living quarters above them. There are different reasons for why this occurred. People use the paths between buildings for transportation in which is located on the ground level. It is easier for the transportation of goods and services to be located on ground level also. Most societies realized that living with animals caused disease and illness, so it became customary that animals lived on ground level and humans lived above. Even in places where stables were used for horses and other animals on ground level, servants sleeping quarters were traditionally kept away from them.

Beginnings of Industrialization

The historical application of mixed-use development declined dramatically with the onset of industrialization. During this period society experienced a change that was more dramatic than anything in human history. What happened with the onset of industrialization was large scale separation of manufacturing and residences in single function buildings. Not only were the uses separated into different buildings, but were separated by vast distances into separate districts where walking to ones work was impractical. This period saw massive migrations of people from rural areas to cities drawn by the mass amounts of work in factories and associated businesses that grew up around them. These

huge changes in number or workers needed to be accommodated and many new urban districts arose with domestic housing as their primary use. This is really where the separation of land uses became prevalent in areas that previously had multiple uses. What also ended up happening then was that many factories produced a lot of pollution of various kinds and a distance between residential and was required to minimize the impacts from things like noise, dirt, hazardous fumes, and dangerous substances.

Many factors had to be dealt with that had never been an issue before industrialization. These factors were important for the push of zoning and compartmentalization of land uses into similar functions. In Europe, people were attempting to think through these issues and propose improved ways to plan cities based on zoning areas so that conflicts between land uses would be minimized. Architects like Le Corbusier even had radical ideas about rethinking the way cities were designed. He even had the design planned for demolishing an entire center of a city and replacing it with towers in a park-type setting, with the industrial sites away from other uses. The plan never went through. Developers and city planners saw it as too radical; they thought citizens would never go along with it, but the design was well thought out nonetheless.

In New York City, the development of the skyscraper also changed the ideas on zoning. The fear of buildings blocking out the sun led many to call for zoning regulations. Regulations were first put into place in 1916 in New York City that not

only called for height limits, but for separation of land uses. The reason for concern and separation of land use was largely to keep people from living next to polluted industrial areas. The problem was that separation extended to commercial uses as well. This set up the conditions for what we know as suburbia and urban sprawl which is still infecting our American society today. With the implementation of mass transit systems, but especially the private automobile and cheap fuel, the ability to create dispersed, low-density cities where people could live long distances from their workplaces, shopping centres, and entertainment districts began to spread widely. Since World War II, the extreme nature of these instances have come to pass due to the decline in all other modes of urban transportation other than the automobile.

Working Towards Sustainability

In the late 20th century, it became apparent to many architects and urban planners that mixed-use development had many benefits and should be promoted once again. As western civilization began to slow its individualization, the need to separate residences from hazardous factories became less important. It also helped that remaining industries became cleaner as well. Completely separate zoning created isolated areas of each type of development. In many instances, the automobile had become a requirement for transportation between vast distances of residentially zoned housing and the separate commercial and office strips, creating issues of

dependency on the automobile for transportation. Jane Jacobs was one who fought for mixed-use to be used once again. In Jacobs' book *The Life and Death of Greta American Cities*, it was argued that "a mixture of uses is vital and necessary for a healthy urban area" (Jacobs, 1961 p.152). This problem was talked about as far back as the 1950's and now sixty years later, we still haven't got it figured out. American society had realized a problem but has done little to change things in the sense of mixed-use. Zoning laws have been revised accordingly and increasing attempts have been made to address problems by using mixed-use zoning.

As of late, these mixed-use guidelines often result in residential buildings with street front commercial spaces without any correspondence or acknowledgement between the two.

The Future of Mixed-Use?

We are now trying to solve problems with societies view on urban settings with zoning issues. The public sees these zoning parameters as restrictions and nuisances. The public needs to become educated on the topic of mixed-use, and use it to their benefit, before our economical and environmental situation gets worse.

What is happening is it we are falling into the same old grove that got us in trouble in the past. Using urban residential as a physical solution without taking into consideration the health and mental issues that the users will experience in these settings, setting these areas up for automatic failure.

Goals for the Thesis Project

- A thesis program document that is written in a straightforward manner and contains a comprehensive graphic structure.

- A clearly written theoretical premises/unifying idea research document that is informative and can be understood by others.

- A clear, high quality, thesis project that a graduate student must show to earn a Masters of Architecture here at NDSU.

- A project that I can look back upon and be proud to show anyone the things I accomplished at this point in my career as an Architect.

- A thesis that not only future students can utilize, but other academics as well.

- A clear understanding of the social economic forces at work in designing in an urban environment.

- A better understanding of the needs of downtown Houston and how bringing people back to the city center will affect its personality.

- A understanding of what it takes for a community in an urban setting to be enjoyed, not only by its residents, but by the general public as well.

- A understanding of the human condition of contact and reacting to it in an appropriate manner.

- A design collage that will encompass my design process from daily logging to taking photographs of design progress.

- A utilization of time on the project where smart planning and follow-through can lead to better overall design while not killing myself to achieve the level precision I expect of all my work.

Introduction

Living in downtown Houston, Texas, is a wonderful experience that I was fortunate enough to have first hand. From the beautiful skyline to the extremely friendly people, Houston has a wonderful character to it. I lived in the "inner-loop" of Houston for three months during the summer of 2009. It was then that I saw a problem that would work great for a thesis project. I couldn't help be feel weird when I first walked the streets there. It took me a while to understand what it was that made me feel uncomfortable. I realized it was the lack of people and animation in the streets. I had just gotten back from a study abroad semester in Barcelona, Spain where there are thousands of people on the streets at all times of the day and night. The lively character on the streets there was all but gone in downtown Houston.

At first I didn't understand the reason for the lack of people and abundance of parking lots that covered entire blocks, but as I soon found out, it was due to the high expense of living in the area. The problem is that when industrial was forced to move outward from the inner city, it left behind old, useless buildings that were abandoned by owners at times and left for the city to take care of. jhgjWhat happened then was the buildings were health and safety hazards and had to be torn down. Then the city paved them over for parking lots. The land is too expensive for developers to put housing projects, and commercial businesses can't thrive either because people end up shopping at super centers between their place

of work and home. At the end of the day, people who work in the downtown area are in a mad rush to get back to suburbia, almost all of whom drive personal vehicles.

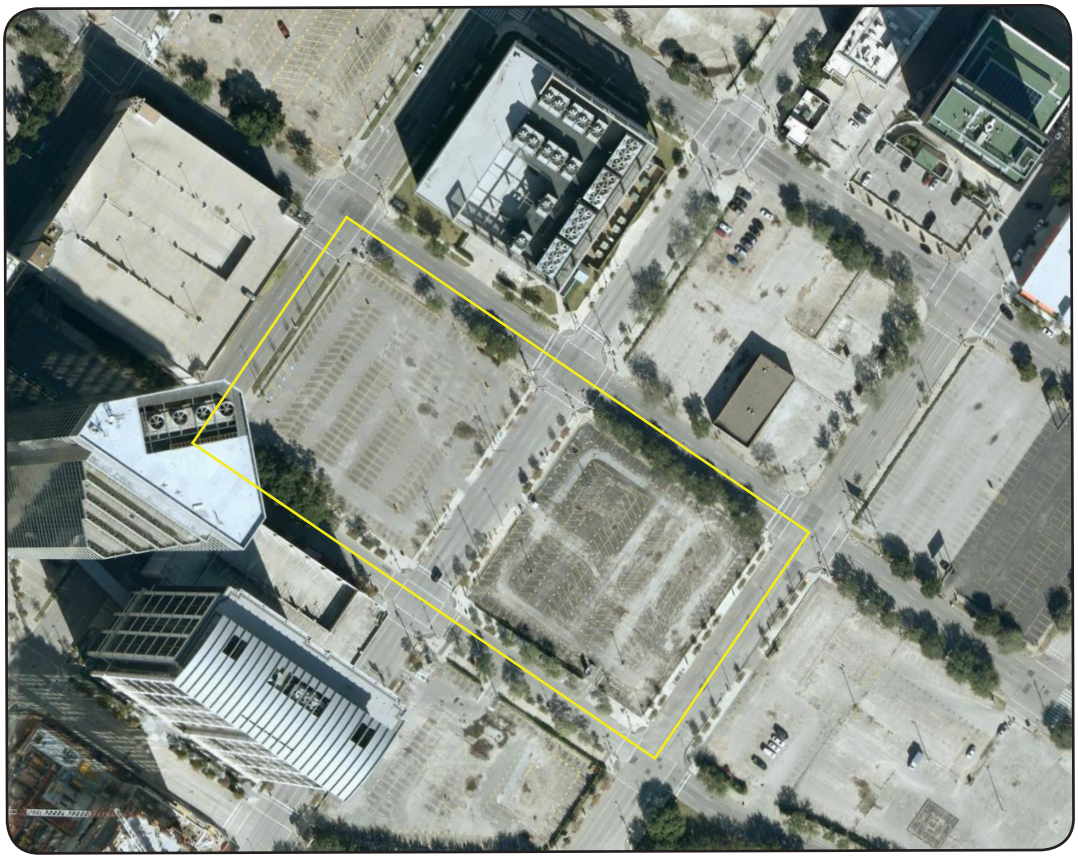
This is why I believe the problem can be solved by implementing true mixed-use development in the downtown area. Commercial spaces and the use of public spaces can supplement money issues developers have with affordable residences in this high land value area. The commercial businesses could then thrive because local residence would use them, and public space could be used by all in the area, even business folk that want to get out of a building over lunch hour.

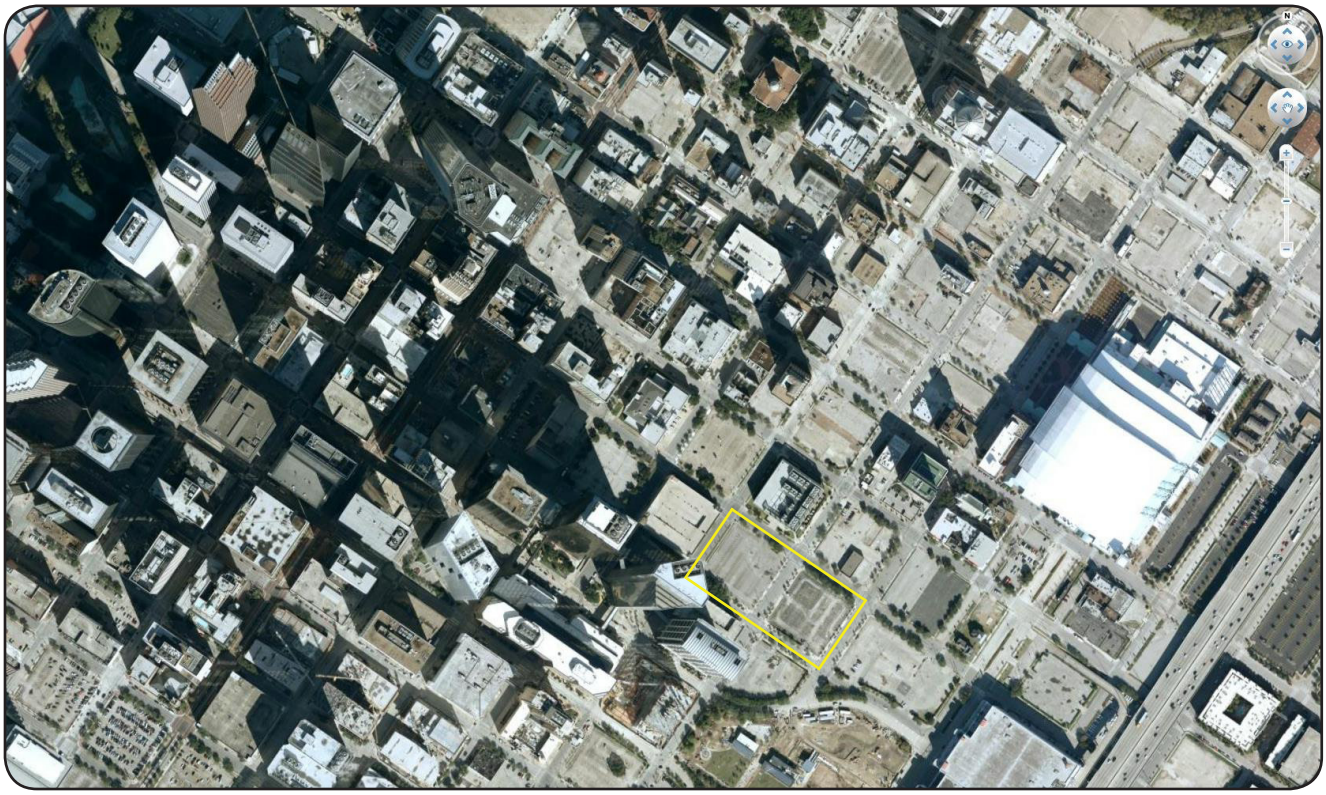
There are many sites that are suitable for such a project. They are all located southeast of the dense high-rises which use to be zoned for industrial. They have great reliable public transportation systems available such as city buses and a new electric rail system that runs right through downtown only a couple blocks away. Vehicle access is also incredible with fast, one-way streets along with four freeways that leave the inner city. The downtown is walk-able, which allows the opportunity for occupants to walk to work if they choose not to use public transport.

The site gets ample day-lighting since it is located south of the high-rise district and the land around it is either undeveloped or of low buildings.

Location

As seen in this aerial photograph, the site spans two blocks that are now currently areas for parking only. It is in good proximity to the high-rise district, but on the southern edge as to not be completely overshadows by it. The street that intersects it is of fairly low use, making the connection between the site strong enough if it is used for a single complex. I might actually propose closing the street for pedestrian access only and use it for public green space, depending on the final design intent.

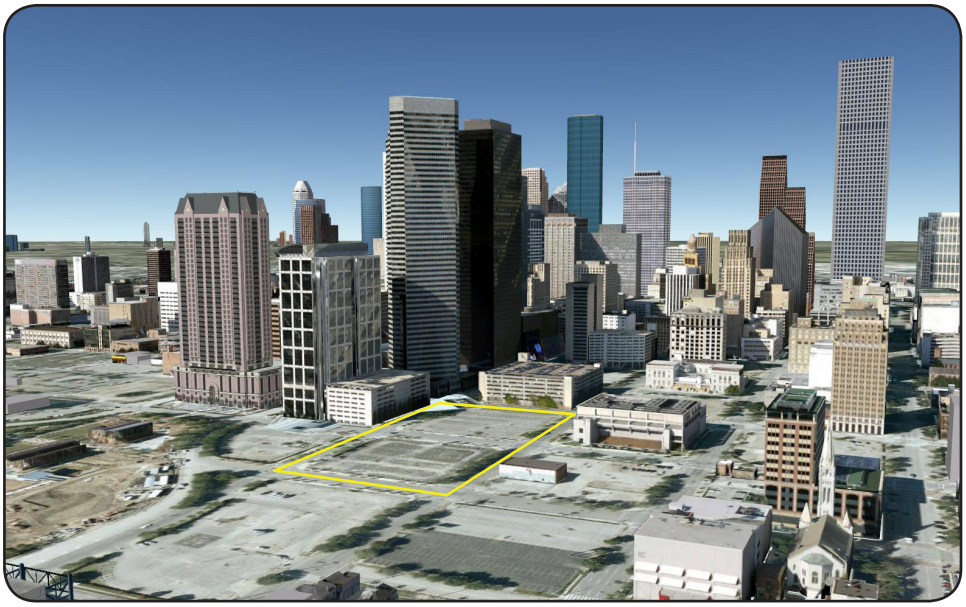




As can be seen in this larger area view, the site takes advantage of the high rises to the west of it as to block the harsh western sun in the afternoon. During the day, natural, direct light floods the site. I also have thought ahead in what can and will be developed around the site in the future. South of the site is a public park that has been created by the Convention Center for its users. To the east is a parking lot that is too small for a high-rise location and is used vigorously for parking by the Convention Center and Minute Maid Park. So, it seems that the site has a strong future in that it won't be cast in the shadow of a large office building high-rise structure.

Aerial Views From Around Site

From these views, it is easy to understand what kind of diversity in building height is present.



Views Towards the Site

Key for Site Photos

Top of Parking Garage Looking South East **1**

Walker & Austin looking East **2**

Walker & LaBranch looking North **3**

Views Towards the Site

La Branch & Capitol looking North West **4**

Austin & Capitol looking Norh West **5**

Crawford & Capitol looking Norh West **6**

Caroline & Rusk looking South **7**

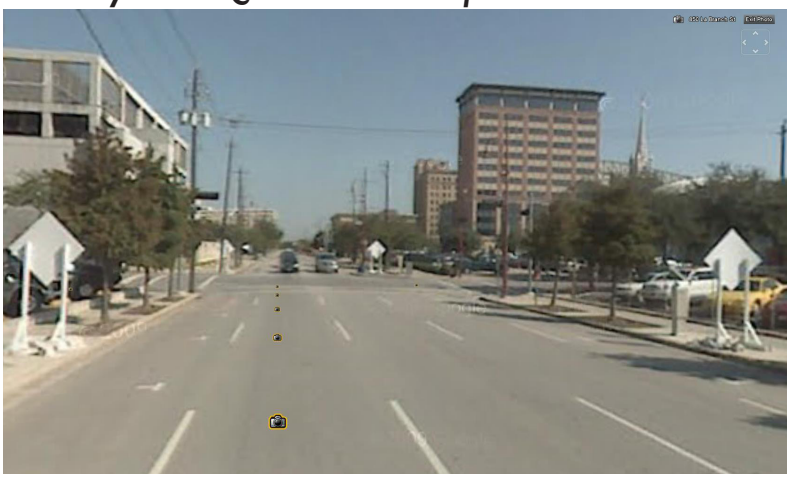
Views from the Site

Austin & Walker looking West **8**

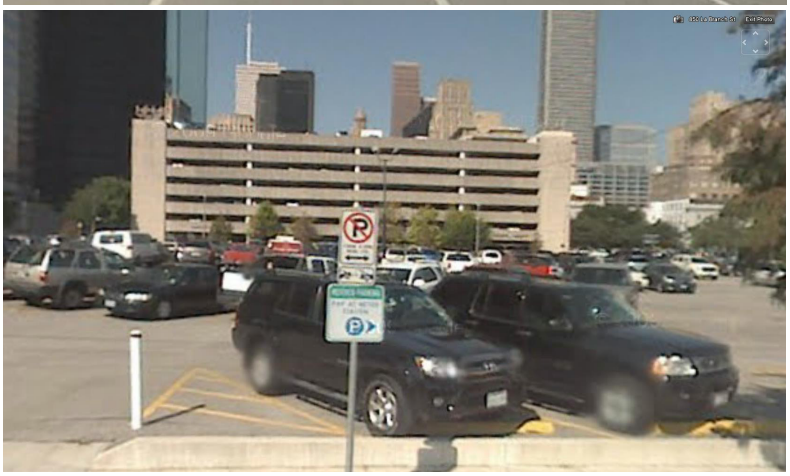
Austin & Capitol looking Norh West **9**

Walker & Crawford looking South East **11**

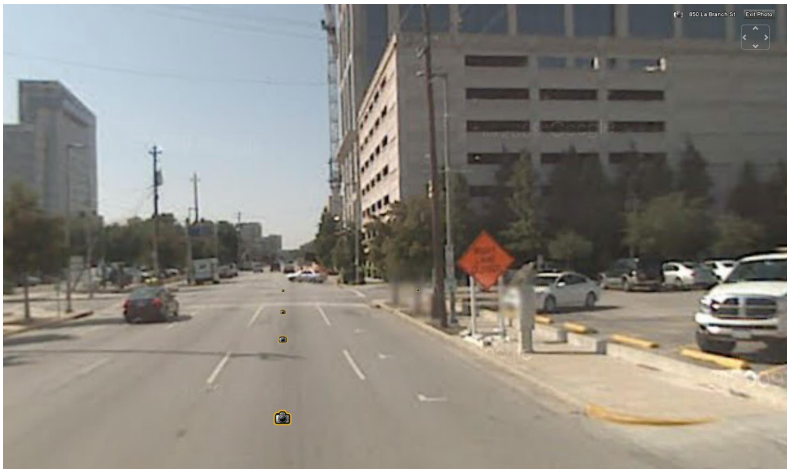
Walker & LaBranch looking North **10**



Northeast View

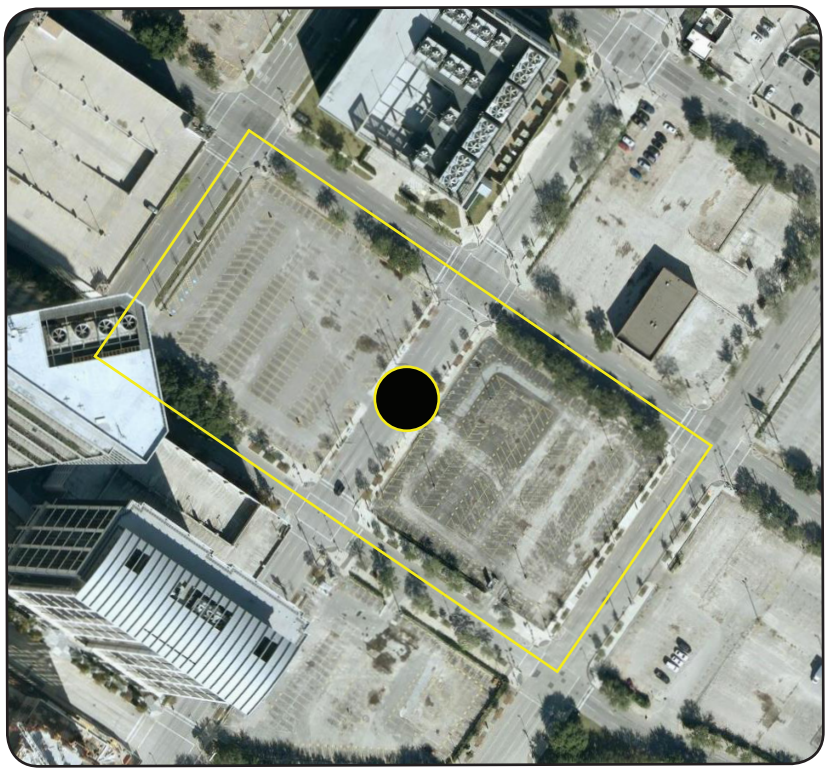


Northwest View



Southwest View

Southeast View



Introduction

Houston is located near the Gulf of Mexico and sprawls westward from the shores of Galveston Bay on the coastal prairie of eastern Texas. Houston's proximity to the ocean makes for a very humid climate.

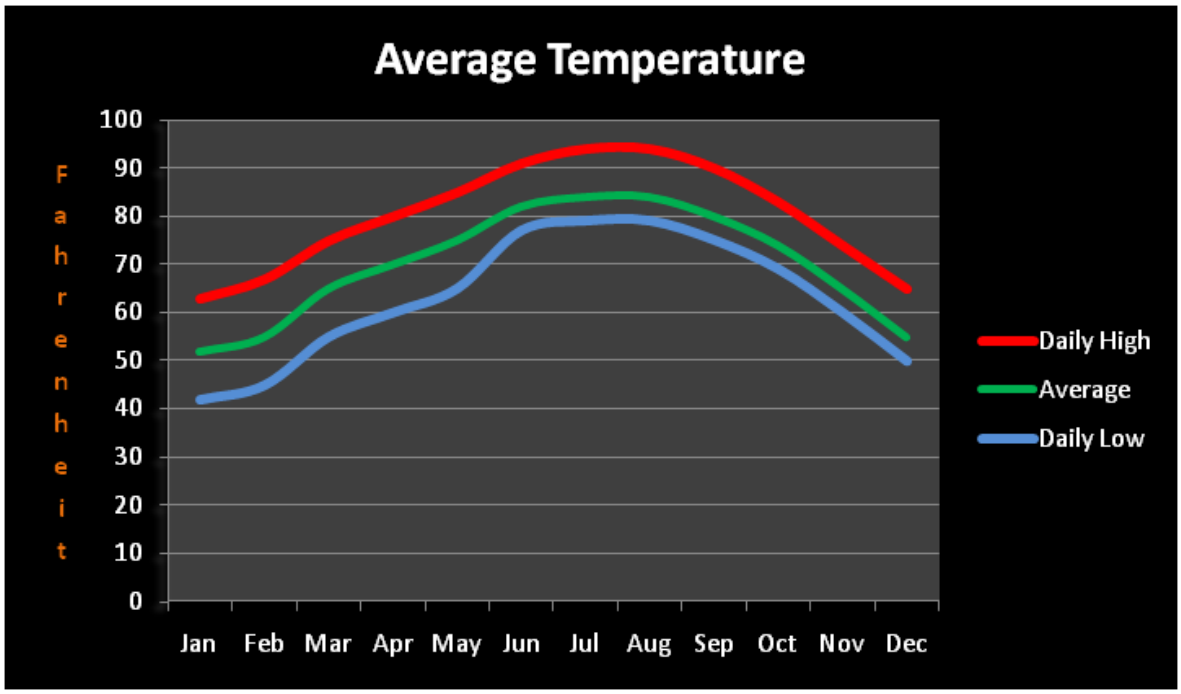
Major waterways through Houston include the San Jacinto River, part of which is encompassed by the man-made Houston Ship Channel, and a haphazard network of meandering creeks and bayous, the largest of which are Buffalo Bayou and Bray's Bayou.

The climate is humid and semitropical in the summertime with an average annual temperature of about 68.8 degrees. Houston's winters are mild, although freezing sometimes occurs, and its summers are hot. The average temperature in January is about 51.8 degrees, and in July is about 83.6 degrees. About 100 days out of the year the temperature reaches or succeeds 90 degrees.

The threat of severe weather is present, especially hurricanes that form when northern cold fronts collide with moisture filled Gulf coast weather systems.

The area that is considered Houston is about 2,000 square miles. The city rests at about 50 feet above sea level.

The average annual precipitation in Houston is 47.84 inches.


Average Temperature
Fahrenheit
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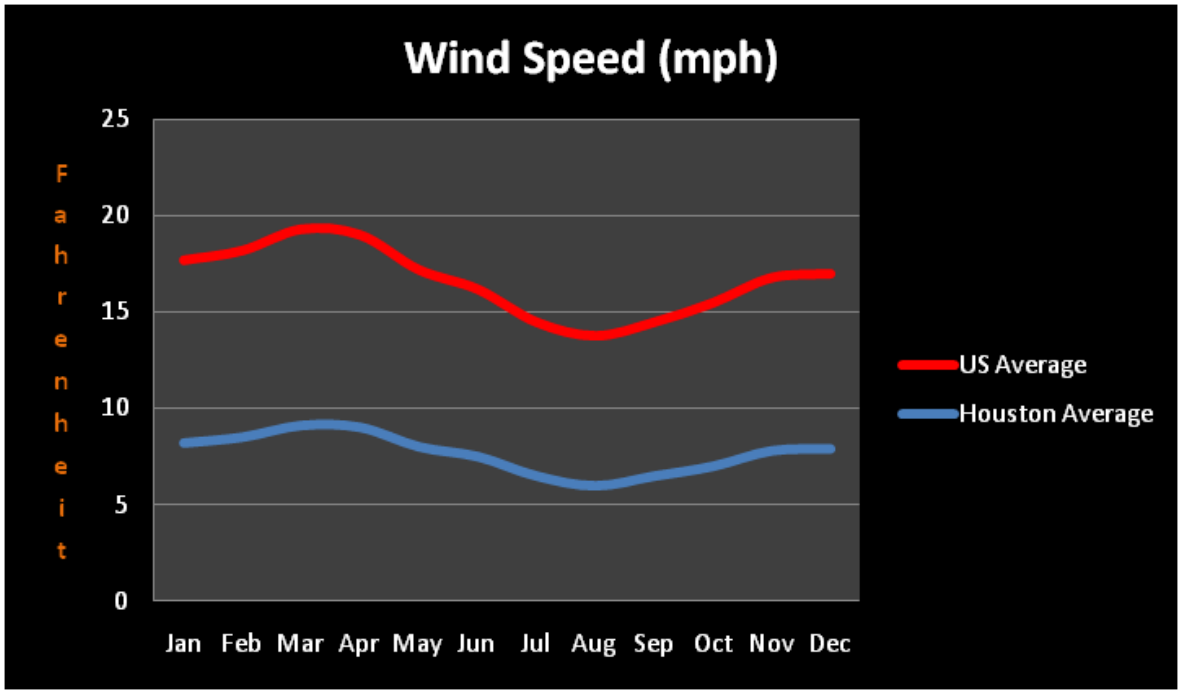
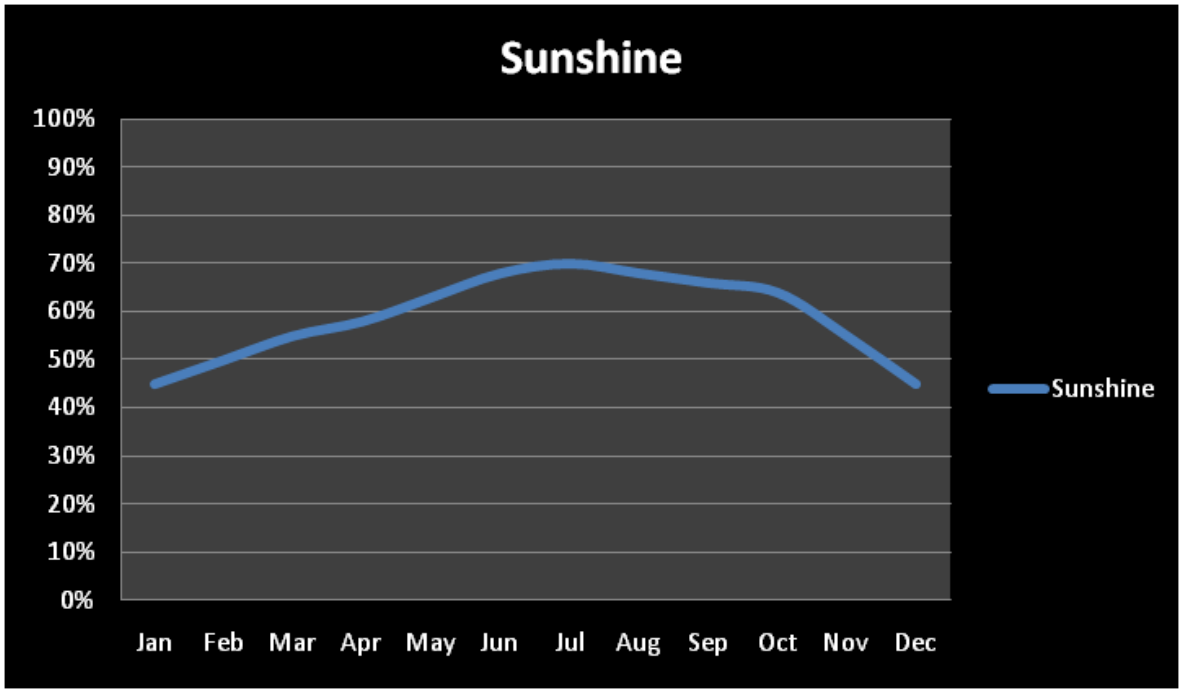
90
80
70
60
50
40
30
20
10
0
Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec
Daily High
Average
Daily Low


Wind Speed (mph)
Fahrenheit
25
20
15
10
5
0
Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec
US Average
Houston Average


Sunshine
100%
90%
80%
70%
60%
50%
40%
30%
20%
10%
0%
Jan
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Oct
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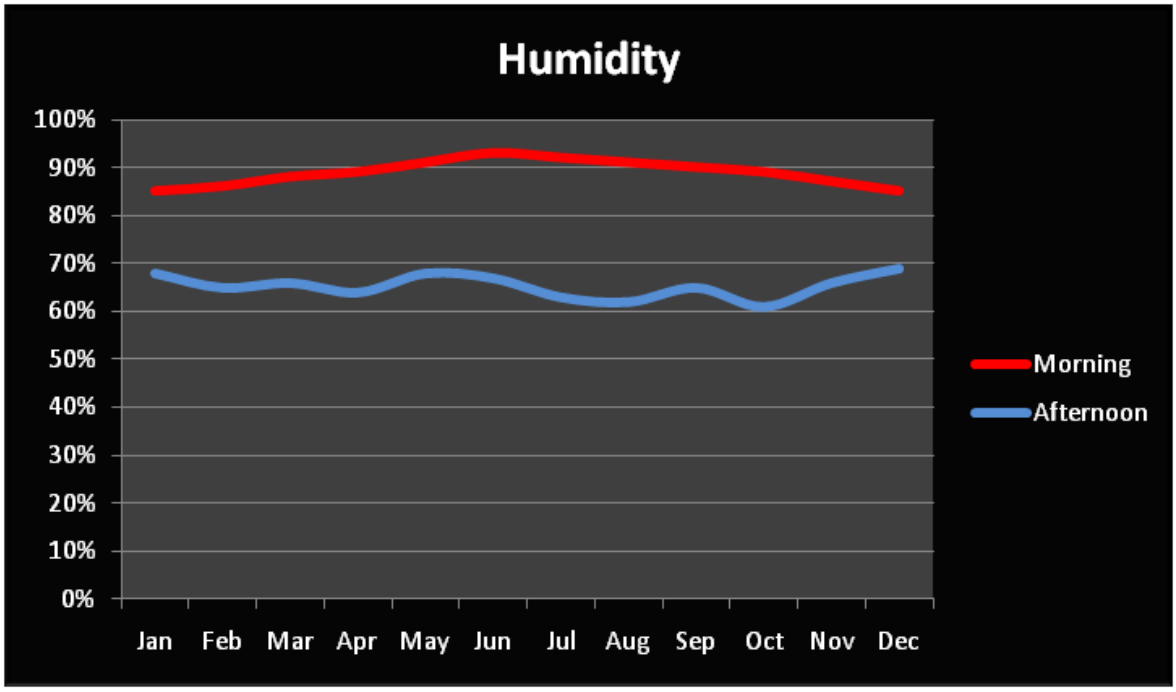
Dec
Sunshine


Humidity
100%
90%
80%
70%
60%
50%
40%
30%
20%
10%
0%
Jan
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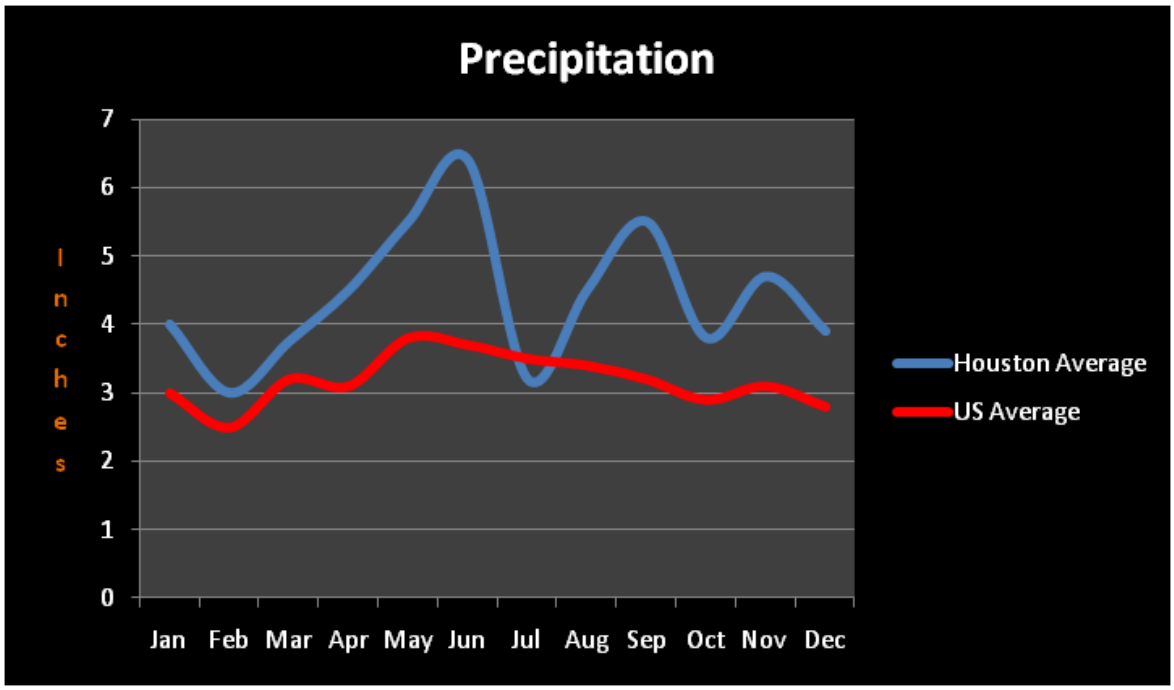
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec
Morning
Afternoon


Precipitation
Inches
7
6
5
4
3
2
1
0
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec
Houston Average
US Average

Defined Spaces

Dwellings:
Daily needs for the residents will be met with the spaces suitable for sleeping, eating, bathing, relaxing, and entertainment. Area that acts as a semi-private space such as a traditional back yard or front porch will also be needed.

~100 units of 1, 2 , and 3 bedrooms averaging 1,000 sq. ft. per unit

Private Parking:
Parking for residents and guests of residence will need to be handled on site with proximity to their dwellings and secure access at all times.

~75 parking spaces for residents due to promotion of public transportation.

Public Parking:
Parking for tenants and general public will be as minimal as possible because of public transportation and the amount of off-site parking available.

~ 25-40, may or may not be handled on site beside street-side parking.

Auxiliary:
Space for such things as mechanical, storage, public toilets, tenant receiving, etc.

~15% of total sq. ft. will be allocated for utility and other auxiliary spaces.

Tenant:
This is space suitable to house multiple functions. The spaces must have the ability to conduct business meetings or to sell products such as coffee to clothing. They are simply spaces to rent and some may need to have access to a loading and shipping area while others simply need a space to create art with ample day light.

~25-50 spaces ranging from 1,000 to 5,000 sq. ft.

Public Hall:
Simple space for anyone to rent to conduct whatever function that needs to be accessed by the public. Like most public halls, this space must be adaptable to big or small crowds alike and also have the ability to house multiple functions at once. This can also include the public green space around the property if the out-of-doors in required.

Large space of ~10,000 that can be broken down into smaller space.

Public Green Space:
This space is available at anytime for the use of anyone. It is just that: public. It can be used for whatever an individual sees fit. It must facilitate anything from a nap on the grass over lunch hour, to a game of catch by young children, to a rowdy game of chess in the shade by old men. The only requirements are that the space feel welcoming and safe.

Size and number will vary depending upon building footprint. Includes space around and in between buildings.

What Does A Thesis Project Do?

As I thought through what to do my thesis project on, I had to ask myself what a thesis project actually is.

What I believe a Masters of Architecture thesis project should do is to find a problem in our society and try to solve, or at least bring us closer to a solution, through an architectural design solution.

Searching My Experiences

When looking for a thesis topic I decided that one should search through their own experiences in order to have a better understanding of the problem at hand. After all, one can only truly understand through ones own experiences.

I thought about the things I had experienced and the places I had traveled in my life. I still couldn't come up with a topic I thought was strong enough, to base a masters thesis on.

In the spring semester of 2009, I traveled to Barcelona, Spain on a study abroad opportunity. I loved the atmosphere there and the freedom to go anywhere one wished with ease. Being submerged in a culture is so much different than just visiting a place. You get to live like the inhabitants do and experience the daily living of the place. When I got back from Barcelona I almost immediately moved to Houston, Texas where I spent the summer. Immediately upon arriving in Houston, I felt weird. Like there was

something missing. I lived right next to the inner city and the high rise district. Walking around experiencing the place just felt so different from that of other cities and especially Europe.

It wasn't until a month of living in Houston, that I realized what was missing: PEOPLE! Houston is the fourth largest city in the United States, and the sidewalks were nearly deserted. So many people travel to work in the city center, but when you walked around, no animation of the place was apparent.

Barcelona, Spain

Houston, Texas

Theoretical Premise / Unifying Idea

Finding the problem of the lack of pedestrian animation in downtown Houston, I decided that an exploration of human interaction was needed. I knew the difference I felt between Barcelona and Houston was significant to the way I lived, but did not know what kind of thesis project could solve such a problem.

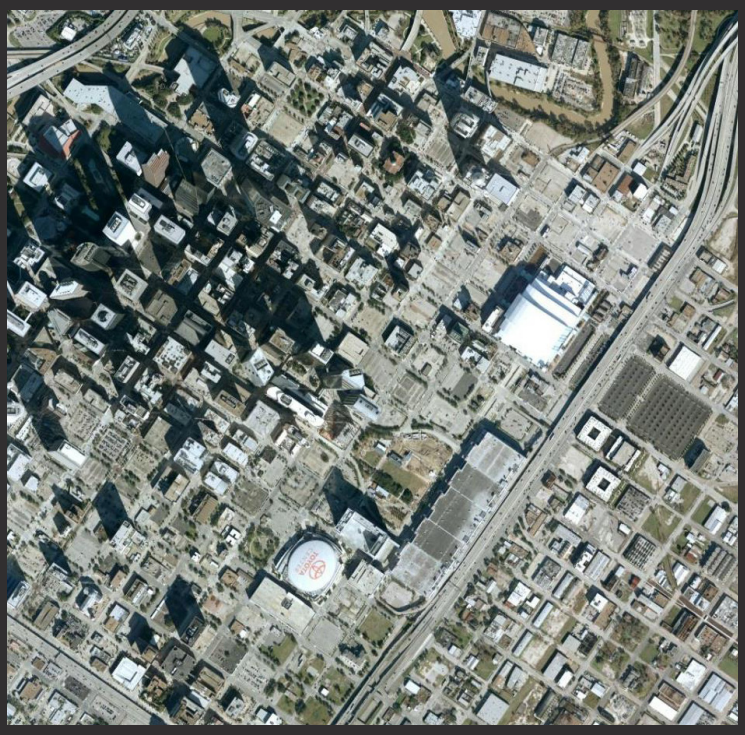
Starting to explore and research how human interaction affects people psychologically and physically was my first step. Understanding the problem was my main goal; not knowing what my architectural typology might be.

As my research grew, I realized that the interaction between people was dictated by their surroundings. All interaction between people takes place in some sort of space. The space facilitates the interaction of people. This told me that the designing of space can dictate interaction between people without them even being aware of it. This can obviously be done in a good or bad way. A space can either help or hinder a persons well being.

An Understanding

Having an understanding about human interaction, then took me back to Houston, and why there was such a lack of people on the streets in such a busy place. Looking back through the history of the city of Houston made the reason apparent. As the city grew larger, the industrial district was pushed further and further from the city center. This was due to increasing land prices and the unavailability of expansion.

As can be seen below, this left a large area to the south-west where industrial buildings have either been torn down and paved over for parking, or left as abandoned.

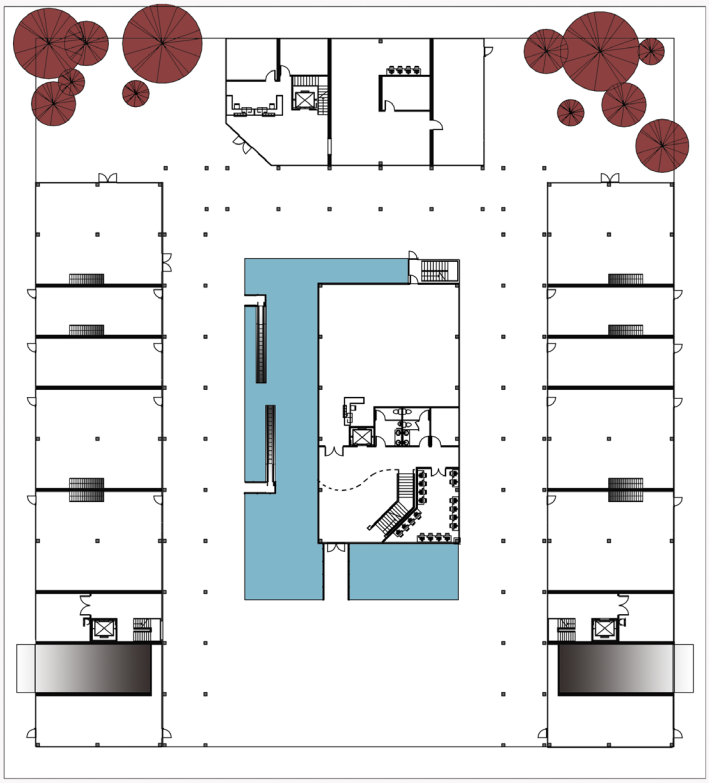


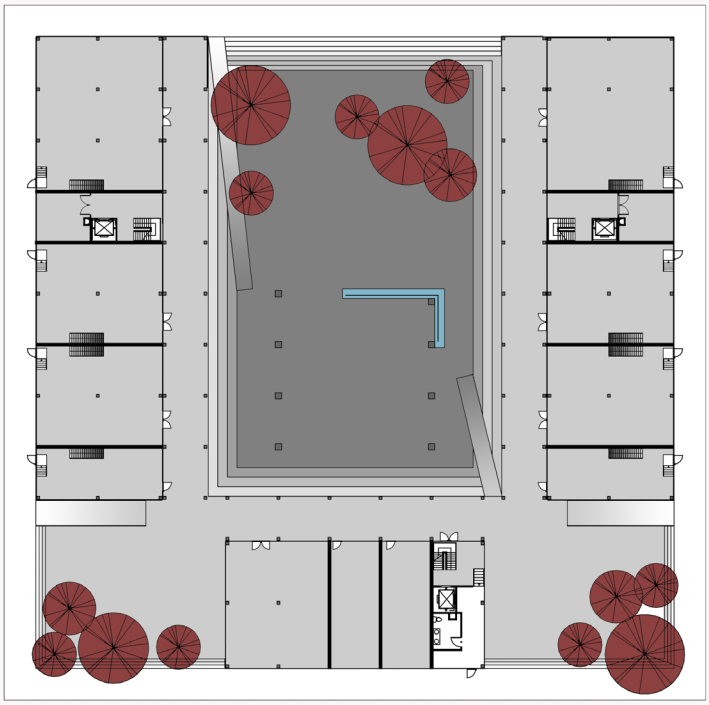
Justification for a Mixed-Use Residential Development

While it is great to say: yes, we will put people from all social classes together, put them closer to their place of work and general necessities, and this will be good for the sustainability of our urban environments in the future; one must realize that if the people that are responsible for developing urban places cannot profit from it, it will never be built or put into affect.

Developing a community in an area like this has a multitude of issues that need to be dealt with diligently in order to be successful. The first is the justification for a multi-level income residential project to be developed in such a high land value area. With a community development, such as this design, commercial spaces and rentable areas that occupy the ground level can supplement the cost of living for residents above. Also, with this type of structural precast and hollow core repetitive construction type, the initial cost and risk for developers is substantially lowered.

Ground Level





Justification for a Mixed-Use Residential Development

The second major issue is how can one propose for a residential project that houses multiple incomes? In this design, a multitude of square footages and spacial layouts are provided to suit different individual needs, even though there is a repetitive standardized construction type. These different units are distributed evenly throughout the design as to not alienate one social class from the other.

- Residential Unit Design

-Structural Precast Insulated Panels

- 8' x 16'

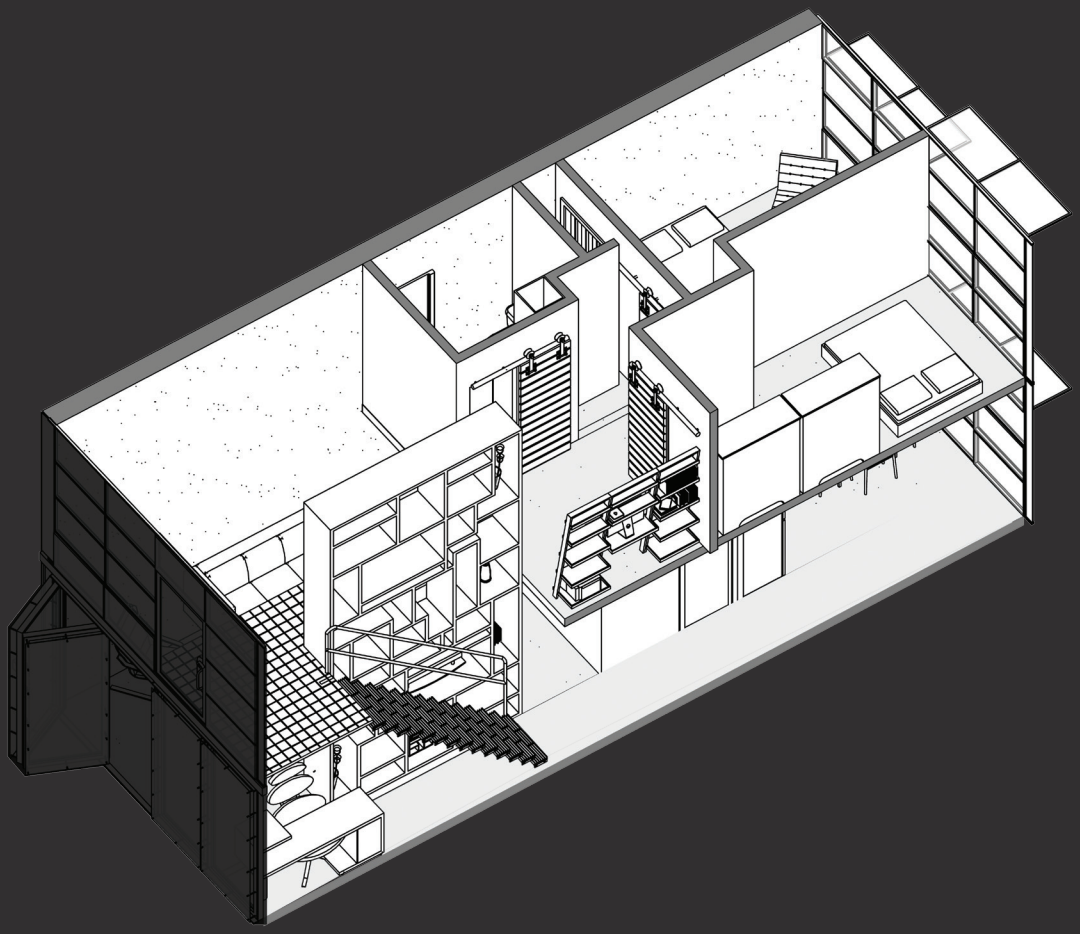
-Hollow Core Floor Slabs

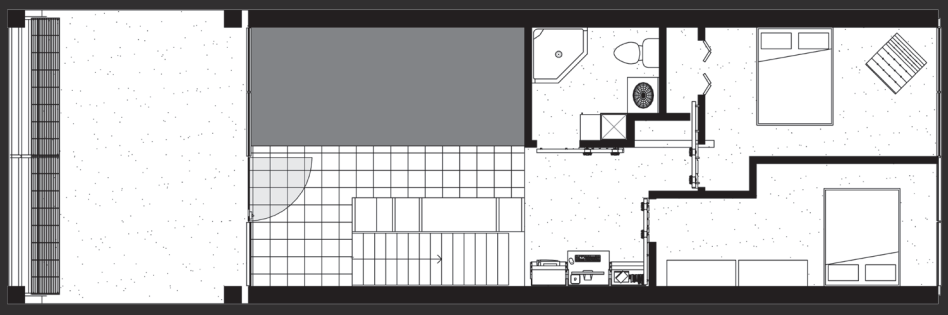
- 4' x 16'

-One Block of Units:

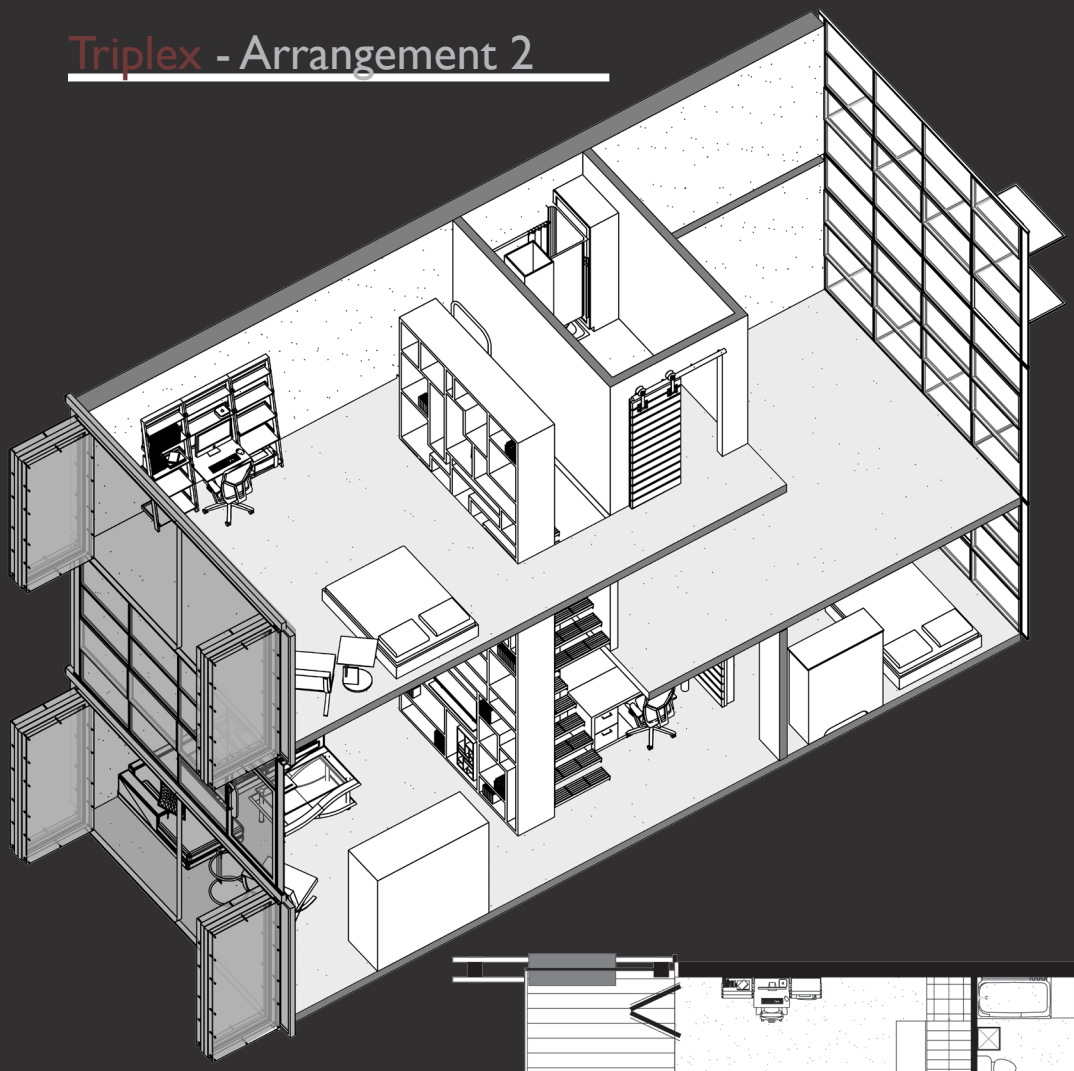
- 4 Units Wide x 4 Floors Tall

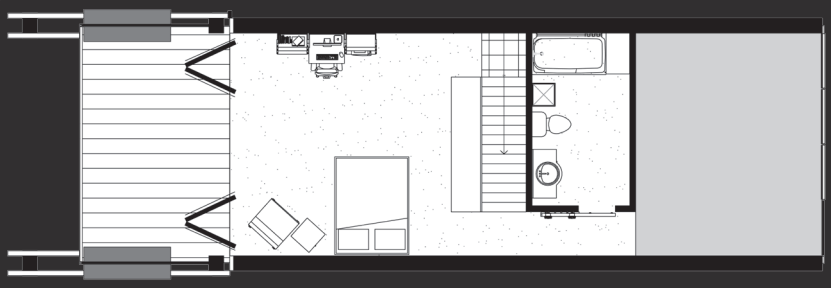
Duplex - Arrangement 2

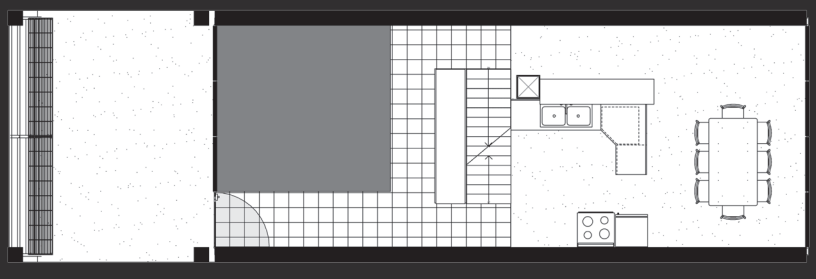




Triplex - Arrangement 2







Efficiency - Arrangement 1

What ends up happening is that the one block of units is repeated throughout the entire project. One side of the community is a mirror of the other and so on. This construction is extremely efficient, but still allows for the individual spacial requirements of different income levels while also providing different arrangements for personal tastes.

This plan on the opposite page is cut through the third level above grade. As is represented by the darker gray areas, there are units that are open to below along with units that are open to above. This allows for an intermingling of spaces and reinforces the idea of the intertwining of people and income levels.

Third Level

Justification for a Mixed-Use Residential Development

Thirdly, and maybe most importantly, the community must not exclude its surroundings. The residents must have a sense of place and security, but not turn its back to the outside. It must be inviting and open to nonresidents. This not only makes the community a welcoming place, but the community can then utilize the wealth that visitors bring in the exchanging of goods and services. Having commercial aspects to an area also helps to animate the space at all times of the day, which is key to sustainable urban design.

The following renderings show the range from public to private spaces.

Public Space

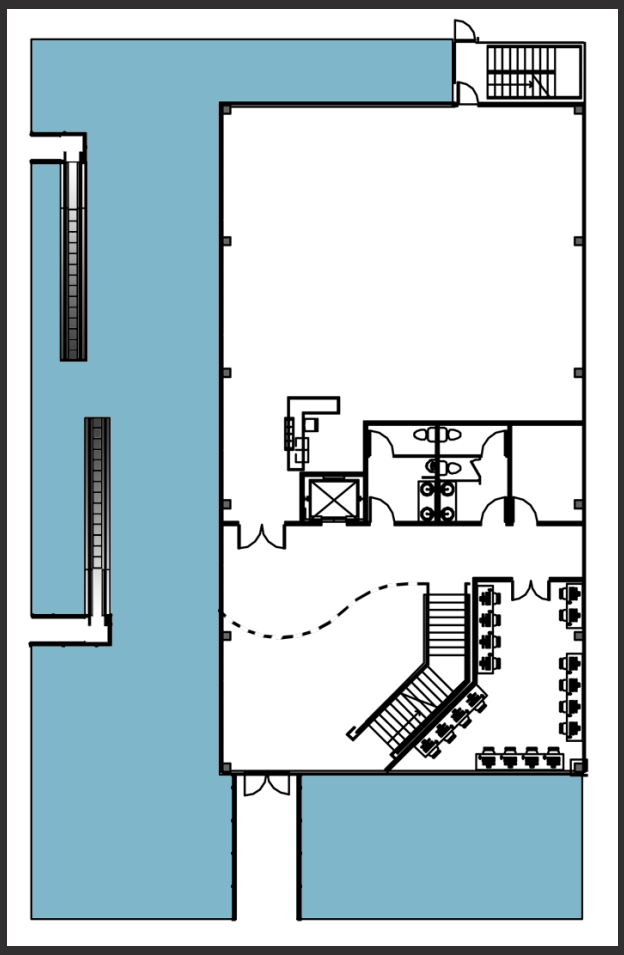
More Intimate Public Space

Semi-Private Space on Residential Walkway

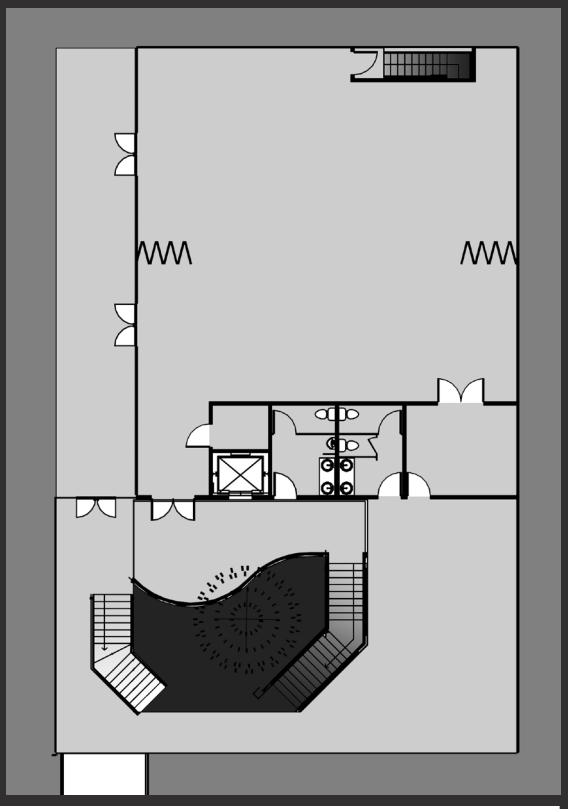
Private Terrace

The Heart of the Community

At the center of the development is the community center. It can be used in a multitude of ways. Visitors driving here can park in the underground garage and take the escalators up through the glass bottom reflecting pond. The light passing through the reflecting pond leads people up to ground level. On the first level is a library where residents and the general public can rent reading material. A digital means room where computers are set up are also available for use. The grand stairs in the main atrium lead you to the second floor where the gathering hall is located. The room can be separated into two smaller areas and can be accessed separately through a semi-outdoor patio area.



Ground Level



Second Level

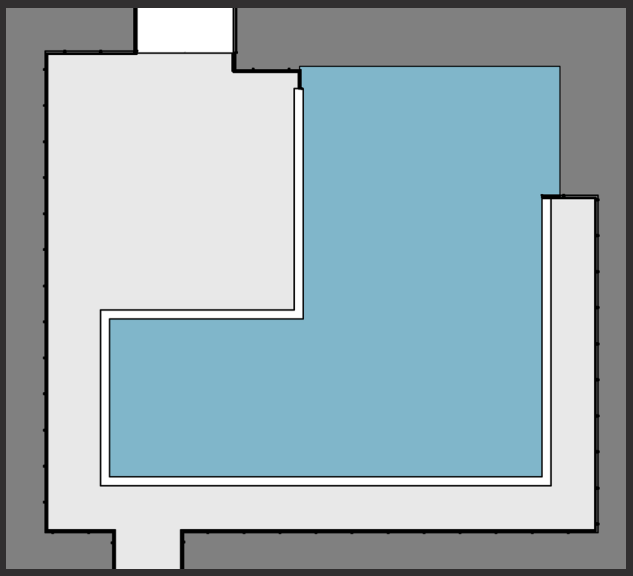
Glass Bottom Pool

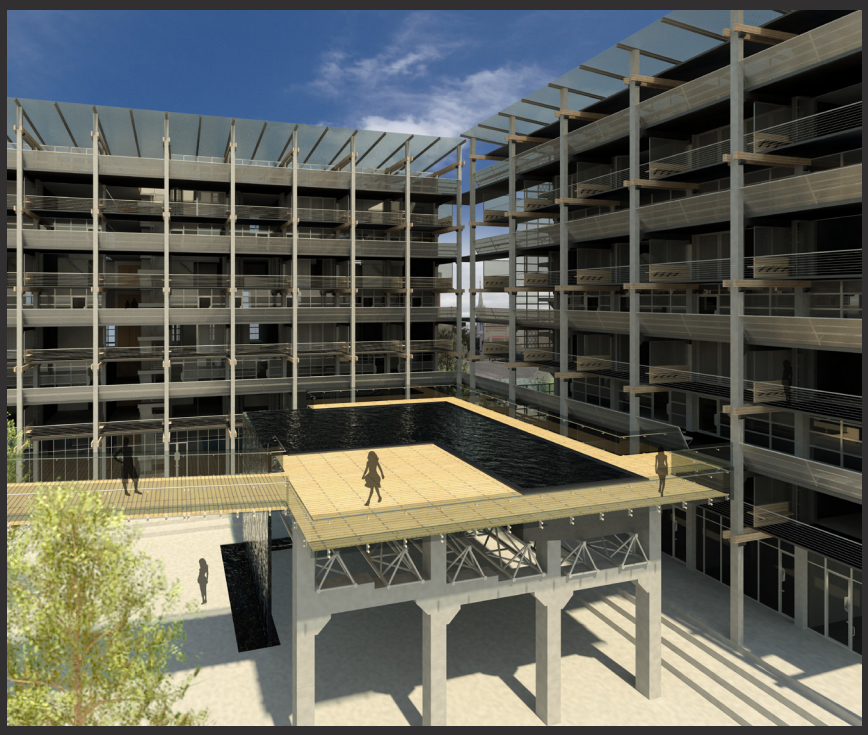
Continuing up through the community center's atrium will lead you to the third level where the public can pay to use the green roof and glass bottom pool. Changing rooms and bathrooms are available for use on this level along with access to the community center's roof. From the roof, one can walk across the viewing/suspension bridge that connects the community center to the pool.

As you walk towards the pool you are faced with an infinity pool edge that falls to the public space below. This water wall gives off ambient noise and serves as an evaporative cooling feature.

The space underneath the pool is the sunk-in area. This gives a good head space of about twenty foot, making the space below usable.

The bottom of the structure that hold the pool glass bottom is a series of space trusses. The top of the triangular trusses connects the glass sheets that make up the pools bottom. This allows light to diffuse through the water, through the glass, and through the structure to the public space underneath.

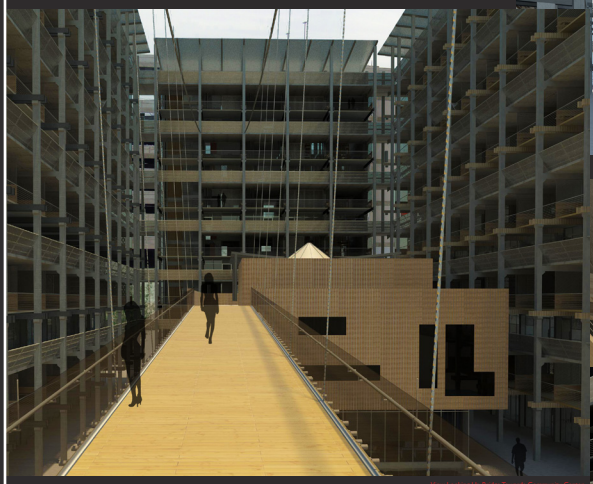




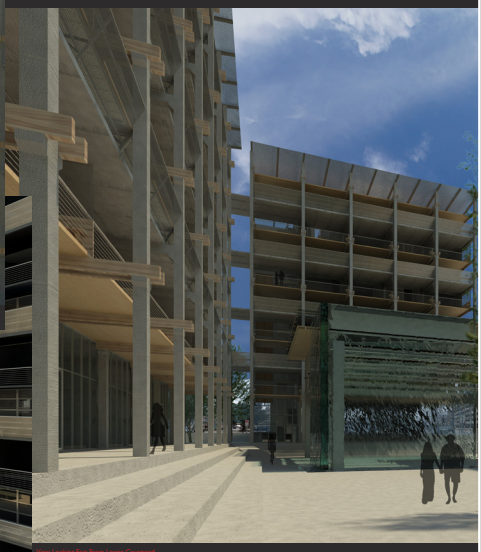
EOS I: Communal Redevelopment of Downtown Houston

View Looking East From Across Intersection

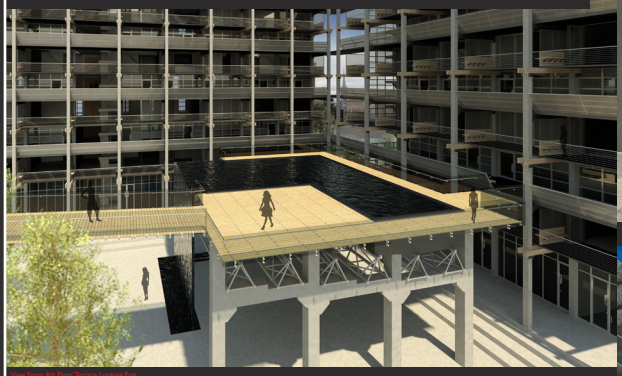
View Looking West From Ground Level



View Looking Up Bridge Towards Community Center



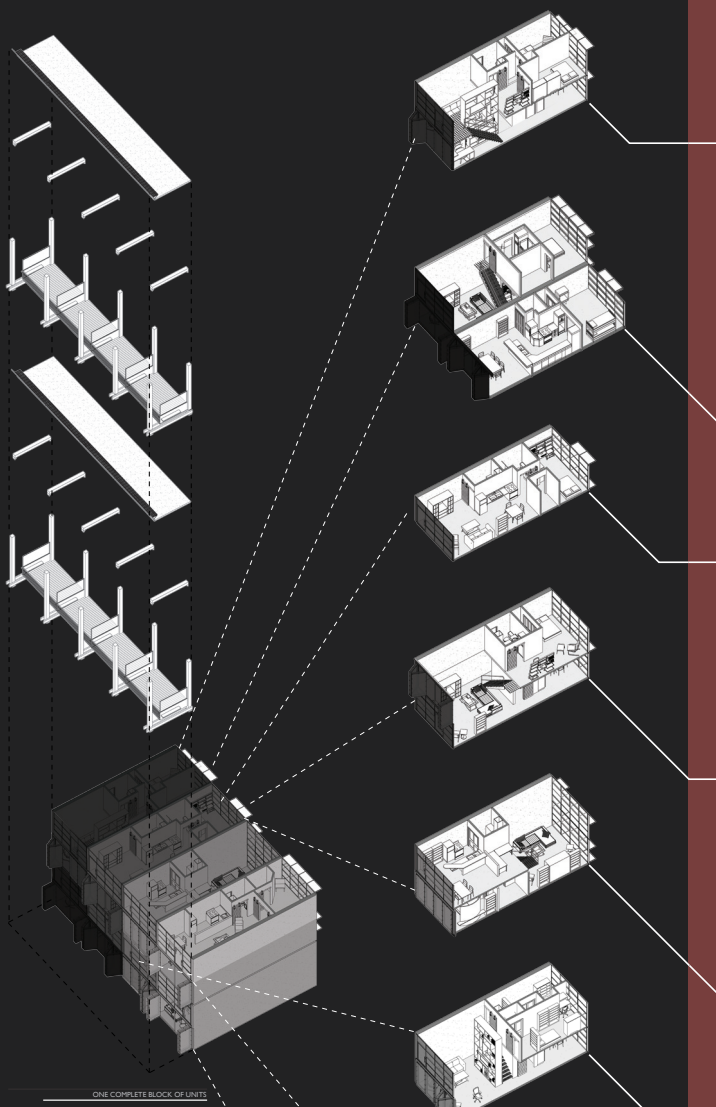
View Looking East From Lower Courtyard



View From 4th Floor Terrace Looking East

View On Bridge Looking Across Glass Bottom Pool

View Looking Down Pedestrian Walkway on Fifth Floor



ONE COMPLETE BLOCK OF UNITS

Duplex - Arrangement 1 - 1"=16'

TRIPLEX - ARRANGEMENT 1 - 1"=16'

EFFICIENCY - ARRANGEMENT 1 - 1"=16'

EFFICIENCY - ARRANGEMENT 1 - 1"=16'

DUPLEX - ARRANGEMENT 2 - 1"=16'

DUPLEX - ARRANGEMENT 3 - 1"=16'

EFFICIENCY - ARRANGEMENT 2 - 1"=16'

TRIPLEX - ARRANGEMENT 2 - 1"=16'

This isometric exploded view shows the progression of how the residential units are composed. From the eight different floor plans, to the four story by four bay block of units, to the full composition which is simply the repetition of one on theses blocks of units This allows for residents to choose the right residence for their particular income levels as well as a spacial layout of their liking. Being able to have this kind flexibility while also working within a very economical and sustainable building type is of the upmost importance for this project.

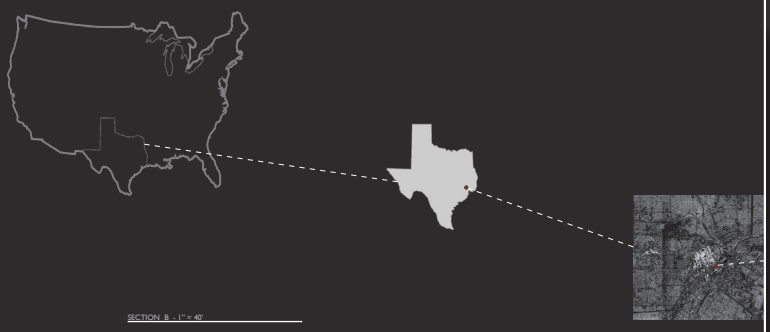
Exterior access to the residence on every other floor has a multitude of benefits. It minimizes cost of construction. It allows for the implementing of terraces, giving large usable space to the residents where interior and exterior can blend together in the temperate times of year, without charging renters more in square footage. It creates a diversity of units in providing the ability of multi level spaces. It also allows the mixing of levels of residents on the large walkways that act as a front yard and sidewalk where neighbors can visit or where children can enjoy the outdoors in the security of the community and still be close to their front door.

1- Living Area
2- Kitchen
3- Dinning
4- Bedroom
5- Bathroom
6- Storage
7- Terrace
8- Public Walkway
9- Open to Below

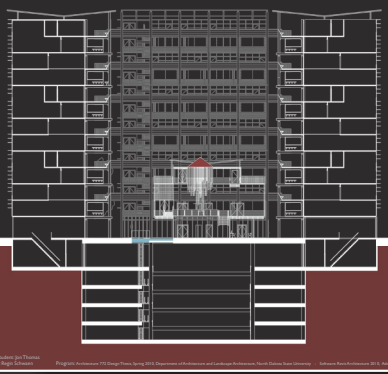
Final Design - *Boards*

EOS I is an open community that is designed to sustain a mixture of income levels in an urban environment. The goal to bring people closer to their place of work is key in the development of sustainable living. Houston is notorious for long commute times in trying to get to work in the downtown district. The sad thing is that the low to middle income level individuals who work there can't afford to live any closer because of the high land values, and the high income individuals choose to commute from places that accommodate their tastes.

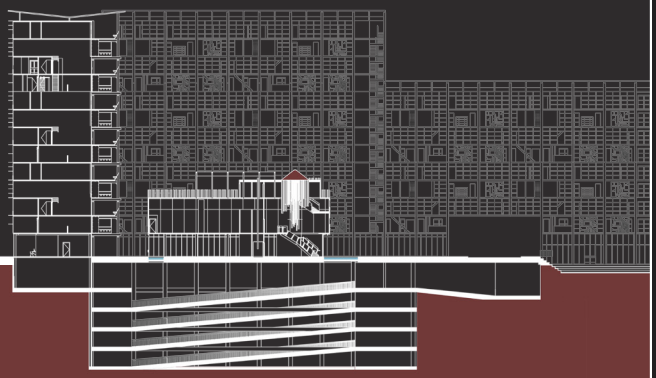
Developing a community in an area like this has a multitude of issues that need to be dealt with diligently in order to be successful. The first is the justification for a multi level income residential project to be developed in such a high land value area. With a community development, such as this design, commercial spaces and rentable areas that occupy the ground level can supplement the cost of living for residents above. Also, with this type of structural precast and hollow core repetitive construction type, the initial cost and risk for developers is substantially lowered. The second major issue is how can one propose for a residential project that houses multiple incomes. In this design, a multitude of square footages and spacial layouts are provided to suitae different individual needs, even though there is a repetitive standardized construction type. These different units are distributed evenly throughout the design as to not alienate one social class from the other. Thirdly, and maybe most importantly, the community must not exclude it's surroundings. The residents must have a sense of place and security, but not turn its back to the outside. It must be inviting and open to nonresidents. This not only makes the community a welcoming place, but the community can then utilize the wealth that visitors bring in the exchanging of goods and services. Having a commercial spacts to an area also helps to animate the space at all times of the day, which is key to sustainable urban design.



SECTION A - 1" = 40'

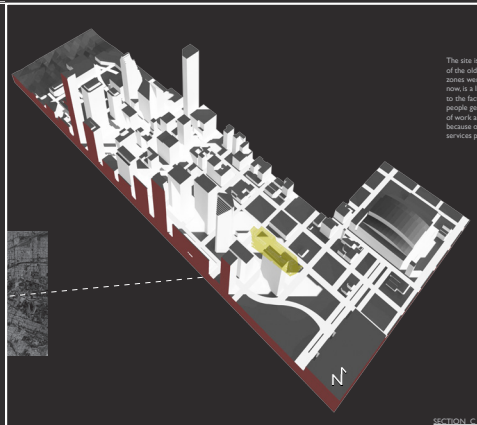


SECTION B - 1" = 40'



Masters Student: Jon Thomas
Professor: Regin Schwalm

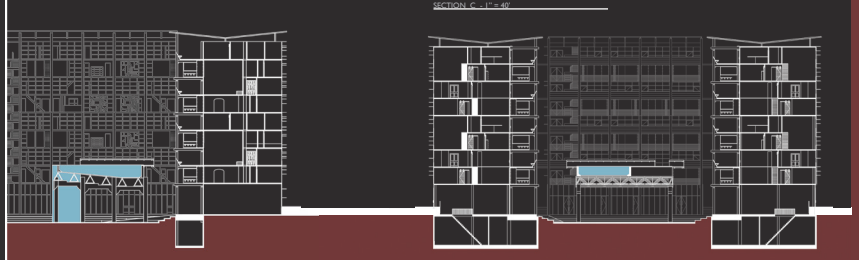
Program: Architecture 772 Design Thesis, Spring 2015. Department of Architecture and Landscape Architecture, North Dakota State University — Software: Revit Architecture 2015, Adobe Indesign, Photoshop, Illustrator



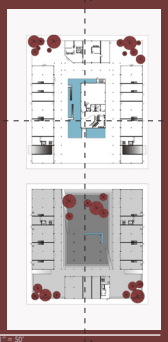
The site is located in the heart of Houston that was once part of the old industrial district. As the city grew larger, industrial zones were pushed out due to rising land values. What is left now, is a large area of land that is sparsely developed. This is due to the fact that commercial has a hard time thriving here since people generally shop for goods and services between their place of work and home. Residential development is even worse off because of the high cost of living and the scarcity of goods and services provided in the area.

These floor plans and sectional drawings are represented in the style of showing depth and elevation change by visual weight. Color is used sparingly to help orientate one in the project. Like the design of the residential units, the drawings are centered around the heart of the community, the public community center.

SECTION C - 1" = 40'



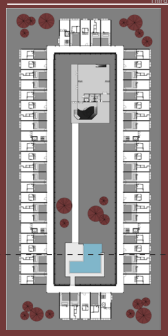
Section B



Section A

Ground Level Plan - 1" = 50'

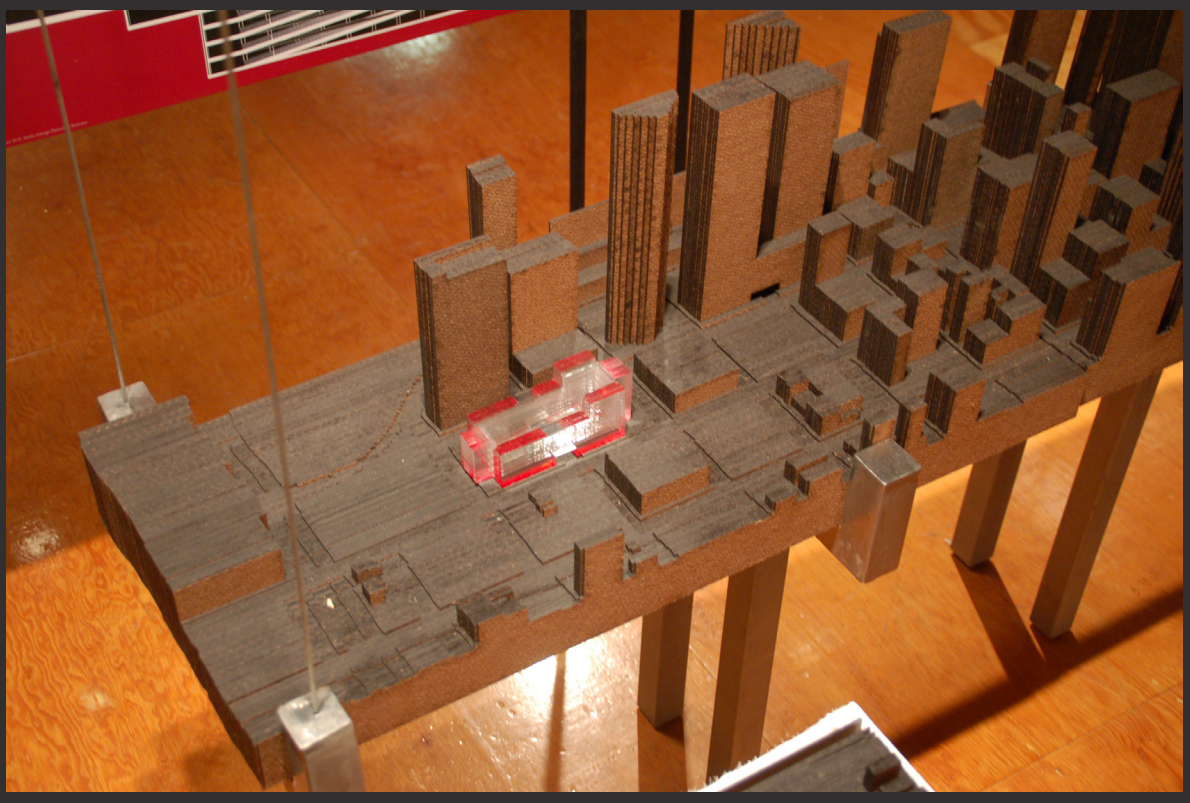
Third Level Plan - 1" = 50'

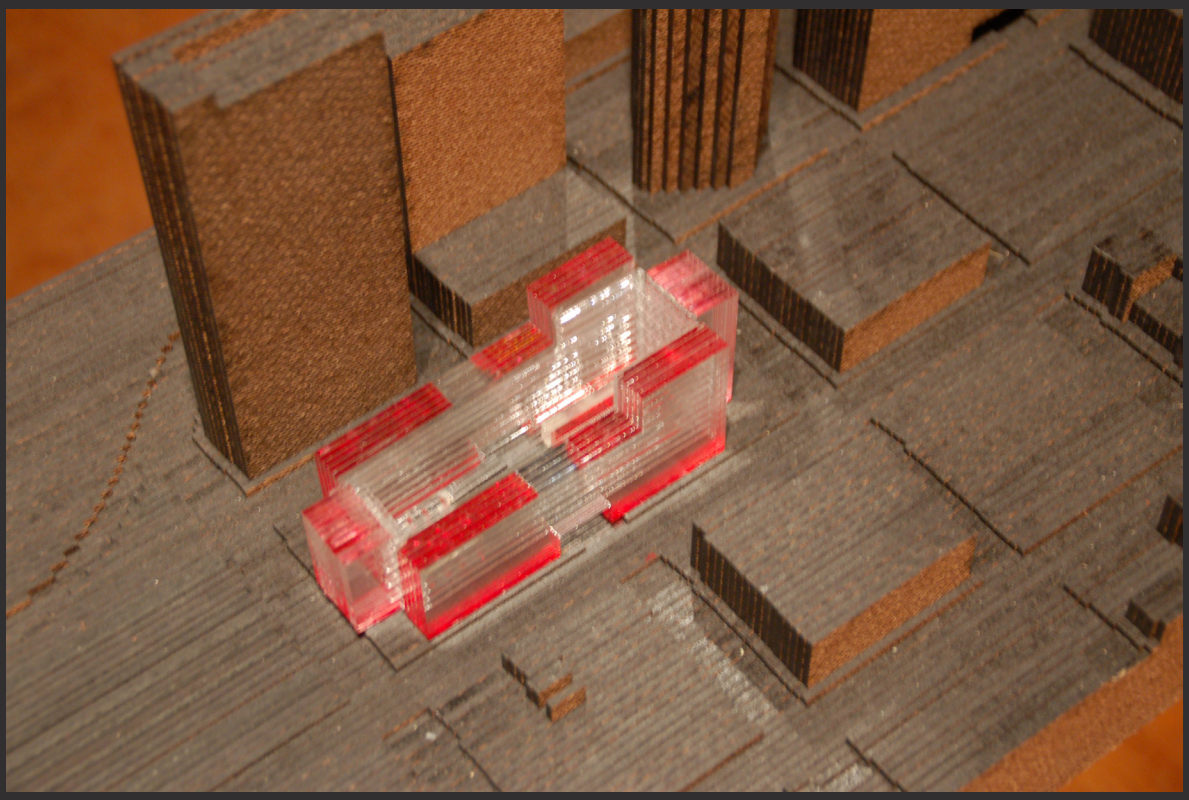


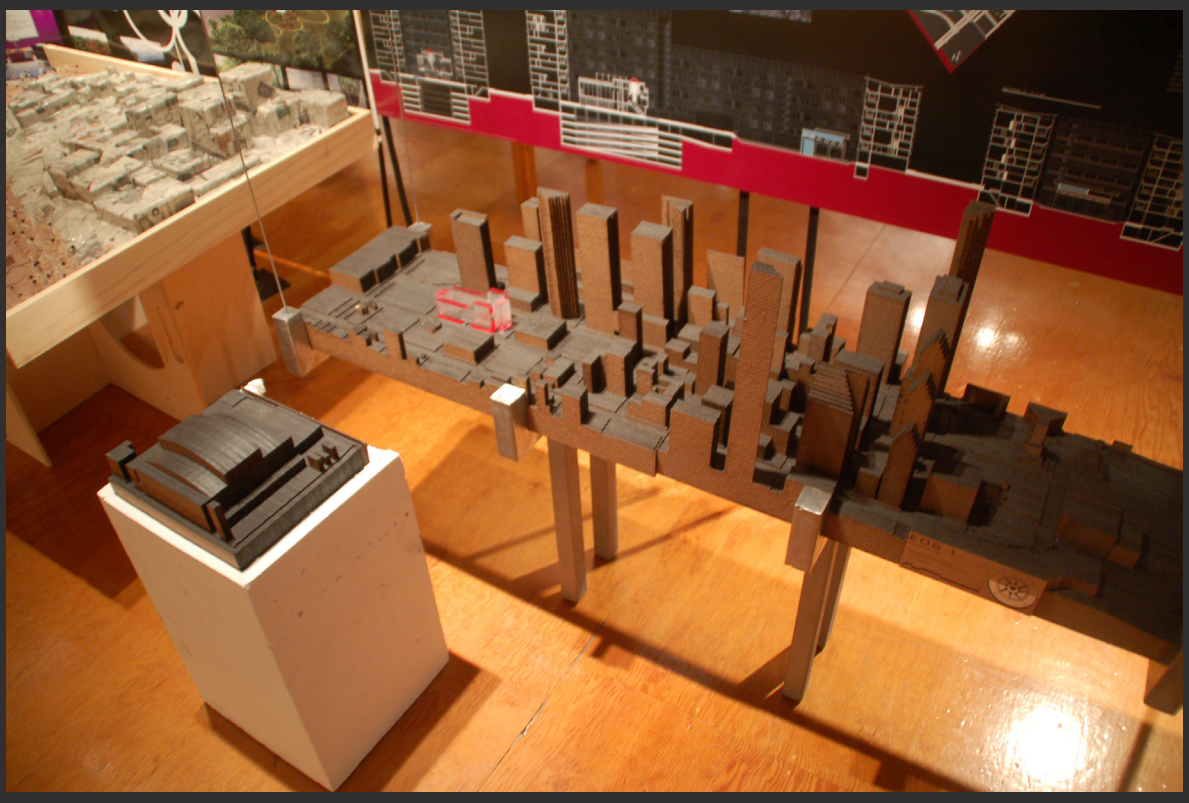
Section C

Final Design - *Installation*


EOS 1
HOUSTON, TX
MASTER OF ARCHITECTURE
THESIS PROJECT - SPRING 2010
JON THOMAS
SCALE: 1" = 80'







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Quote:

"If you can, why not?"