2009

Vertical Communities: an Alternative to Suburban Sprawl

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Vertical Communities

An Alternative to Suburban Sprawl

Architecture Graduate Design Thesis

Masters in Architecture

Roger Williams University

School of Architecture, Art and Historic Preservation

2009

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Signature Authentication

Vertical Communities

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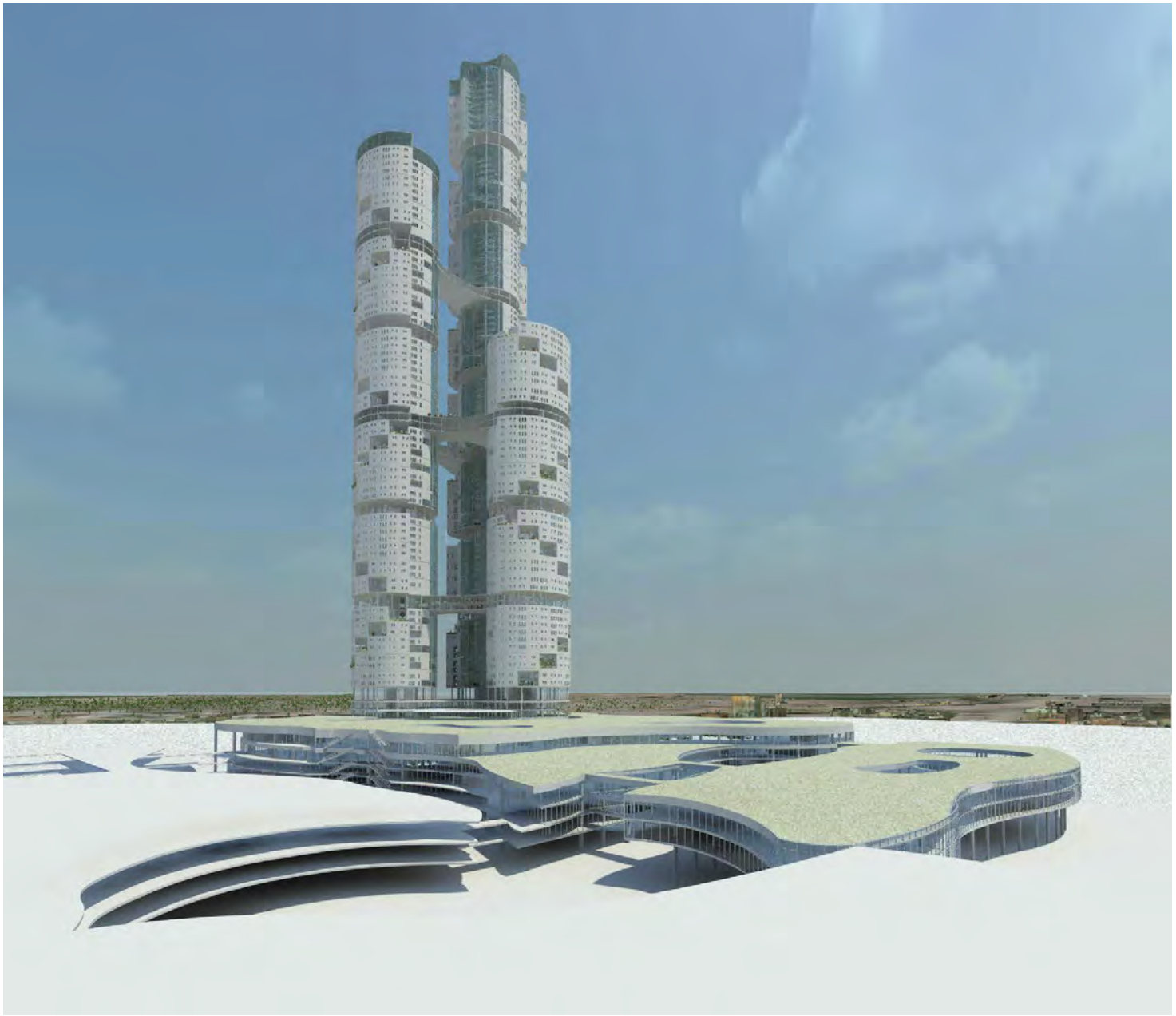

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Abstract

Manifesto on Architecture-

Architecture, in essence, is not an easy thing to fully understand. I like to think that it is a building: a house, or a room in which a function(s) take place which were planned for, analyzed and produced. However, it cannot be this simple, for architecture is much more than that. Yet, sometimes, it must be, and is, just simply that. It therefore becomes hard to try and define what the true meaning of "architecture" may be.

Architecture is the embodiment of all things physical, as well as theoretical, particularly, but not limited to, intention and purpose, regarding a place or space in which a series, or a single moment(s) may take place. It is the comprehension and realization toward the application of form to the physical environment, ideally with a practicality based intention. Although, "practicality" itself must be understood to therefore understand what is "architecturally" built if we take the previous statement as satisfactory in its definition. For example, was the first placement of sticks above ones head (as displayed by Laugier's Essay) an example of architecture verses that of a meticulously thought out house, hospital or stadium? Is it the act of intention, or necessity which proves/disproves whether or not a piece is architecturally worthy? Sticks were placed above ones head simply for protection, and therefore are practical and instinctual. However, was it in fact thought through, by knowledge of need, and therefore architecture, or if it is simply done, without thought, and therefore no longer constitutes an architectural move? I say that it must be intention which defines an Architectural move.

Although instinct and necessity might demand action which may produce a form, it is the act of thought and understanding, or rather the intellect, which distinguishes an architectural piece.

That being said, I bring to question: Is the curvature, mass and grandeur of St. Peters Basilica any more beautiful than that of a multitude of 2x10s and 2x12 nailed together to produce an single pitched roof? Or, rather, two 2x4s simply nailed together? Couldn't you break down and simplify or heighten and elevate the complexity in each either way until sunrise and sunset again? Is that an opinionated question/answer? And what does opinion matter in the holistic definition of Architecture? What makes a master architect's first iteration of an idea any more valid than that of a virgin thinker? How can a thought/concept/idea travel all the way from paper, to tangible model, flipped up-side-down, and now, somehow make more sense?

Relationships- or the physical "Play" within forms, both solid and permeable, negative and positive, vertical and horizontal. It can be the lack of a visual, metaphorical, or simply mental. It's the way a building "lies on its side" or "juts" upward toward the sky. Yet it has to be the embodiment of the gesture/relationship, for there inlies a statement made when physical is next to a 200 foot tall tree, or, alone in a field of grass, each potentially having their own perfectly sensible validation.

Architecture is the relationship between being and non-being. It is the relationships between what is brought to life, and what is subdued, both how and why. What comes from the physical change of a space when it is altered? Architecture defines itself in how it has manifested a truth about the space/place, or even presented a possible falsified occurrence.

Therefore, Architecture is not necessarily defined by the ability to house, nor shelter one from storm, but simply by its ability to invoke a sensitivity of place, whether fleeting or steadfast. It may present itself solely for that in and of itself, or for someone or something. It can provide deep personal belonging and conviction, just as it is capable to convey absent and distant misinterpretation. Whether for purpose, or demanded by necessity, completely awry, or meticulously placed, it embodies its own, in which, it has therefore become Architecture.

Laugier, Marc-Antoine()

Introduction-

In an age where space has become limited, resources are becoming both scarce and expensive, and populations grow with steadying pace, our definition of need must change. What we expect and understand to be normal will eventually change and evolve into something different. We must shape how we live in advance of such a change. We must accept a better way of life. We must produce a better way of life. The answer shall come from a higher density of living, where we will not have to give up privileges, but redefine them. It will have to be an exploration of Humanity within verticality. Verticality vs. sprawl. The need for “out” versus “up”. How can we include everything required in a prosperous life in a vertical organization? How can we involve residential, commercial, and business in a single entity while limiting waste?

Planet Earth from Space

Valley outside Denver

Sprawl outside Denver- www.prototype.conservationdevelopmenthub.org/phot...

Introduction

Abstract-

Picture this for a moment

You wake up looking at an expansive view of the Colorado Rockies. You walk downstairs to start a pot of coffee in your kitchen. Your wife comes down to join in a cup while you read the paper. She can now relax in the mornings because she no longer requires a driving commute to work. (Your office is located in the building, so there is never a need for a commute from you.) Realizing that you have no eggs, you hop down to the corner store to get some for your breakfast. When you get back, your children have awoken and are preparing for school. They too have an easy commute. They go to school in the Lower Levels, which requires simply "seeing them down", rather than your 35 minute drive you had last year. You also have all the amenities you need. You have access to the public library, your choice of gym, theater, recreational fields and pools. You have your own garden space where you grow a few veggies and herbs. You have the "Downtown" portion of the building providing shopping and business, a post office as well as Police and Fire stations. You also have a thriving "neighborhood". Both the owners of the café and the general store know you by name and are comfortable inquiring about your day. Their kids go to school with your kids, so it's easy conversation. Your barber is a few floors down, next to the florist and the burrito joint where you often stop for a bite. You know everyone on your floor plus most within the sandwiching levels. To add to that, many of your friends and colleagues have also made the move, and live within the building. All this, and you still live within the downtown city limits. You can simply hop on the rail, take a bus, which frequent every 5 minutes or so, bike, or even walk a few minutes, and you are at the heart Lower Downtown. Everything is within easy proximity. Everything.

You are living in the SKYbuilding in Downtown Denver, Colorado. It is an entire community within its own. The way it works is simple. Every 10 stories is set up as a neighborhood. Each neighborhood has a small variety of shops, such as a corner store, a few eateries/cafes etc. Public space is provided for various functions and activities throughout the neighborhood. Homeowners have the option of renting a variety of spaces such as Garden space or Office space within their own community. Each neighborhood has several living options ranging from multi-story, multi-bedroom apartments to single room and studio apartments. The “Downtown” portion of the building is openly available to the entirety of the neighborhoods encouraging bigger business, commerce and public entities to exist and live within the spaces. This, essentially allows for an actual extension to the existing downtown of Denver, in which the building exists. Although the building itself consists of neighborhoods and maintains a communal entity, it is still a big part of the greater downtown Denver community. The public transportation systems are directly connected to as well as facilitated and run by the city. You therefore have access to the railway, or the city bus through the transportation hub that it has created. This maintains a direct connection to anywhere in Downtown Denver, to the Denver International Airport, as well as the several existing surrounding towns. Your building is also a destination. Because of its facilities, and the amenities that it provides, it has become a major hot spot for the local establishments. The result is a fully integrated community within the downtown city limits which adds both socially and environmentally sustainable aspects to the city of Denver.

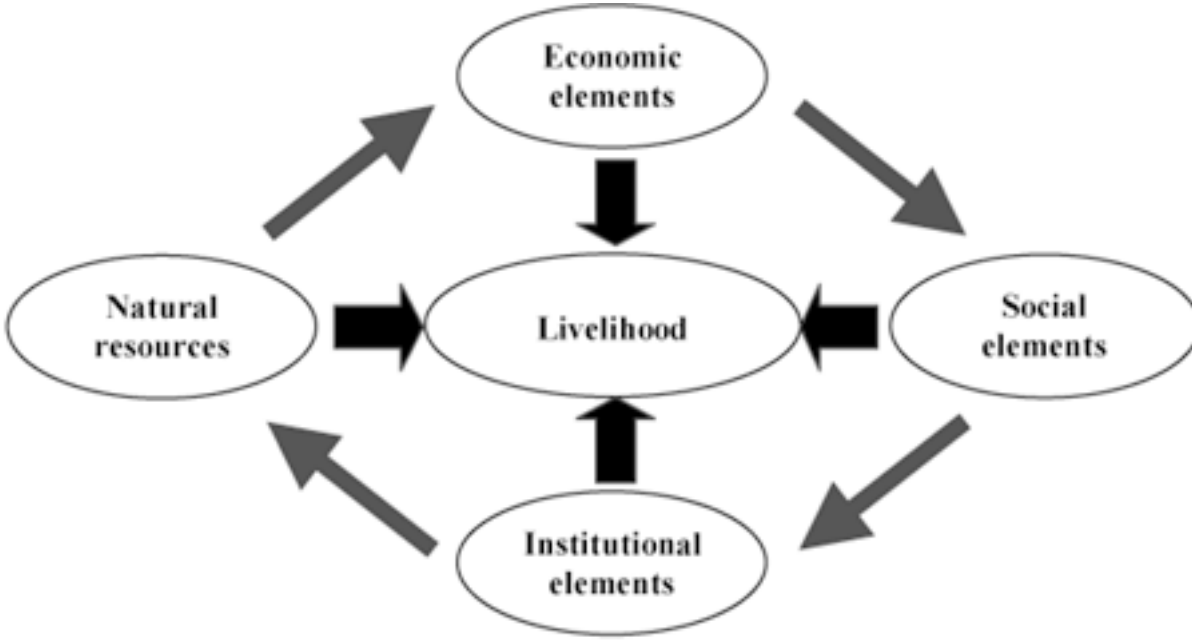
Project Statement-

I intend to design exemplary alternative living for the continuation and advancement of human livelihood. Through the study of verticality, I intend to redefine what we consider to be a neighborhood and a community. I want to focus the investigation on how to maintain a quality environment, rather than the misconstrued need for quantity, which we mistakenly hold on to most dearly. I intend to establish an environment that responds to human needs, in a vertical realization of space, rather than our horizontal examples before. I have chosen to build from an existing dense area. The Downtown City of Denver. The little space found available must therefore be manipulated into the space above to allow for the needed program. Although it will stand as a tower, like some of its neighbors, it will contain the necessary means for life, or livelihood, while the others only maintain space. Space for what we call work, or rest, or transit, or entertainment, but not all of the above. Where these fall short, this building must flourish. I plan to incorporate as many socially and environmentally sustainable aspects as I can in order to produce the highest quality environment. Although part of the intent is for the building to become its own entity, and maintain itself within its own right, it must also be interdependent on the existing surroundings. It will become ingrained in the inner fabric of the downtown area of the city, and like an additional organ, help provide continuous life and growth to the city. There needs to be a balance between the city and the building, which allow them to work together. Like the people who will live in this building, there needs to develop a symbiotic relationship between it and each entity it effects. If, and only if, we can understand how to be efficient in how we live, without losing our wants and desires, and still maintain our livelihood, then we begin on a path to a more wholesome life.

Program Outline and Areas-

I would like to include a multiple of differentiated housing options. Housing that will accommodate single person studio dwellings, double person dwellings, Single child families, as well as multi-child families. Inclusive also are the amenities within a variety of programmed uses. ie: residential, recreation, transportation, federal installations, and entertainment destinations. Public garden spaces, library installations, and educational programs must be included. Additionally, small business options and marketplaces must be considered as included in every community function.

The entire community enterprise must also serve as a transportation hub for inter-connection within the greater cityscape in which it resides. The culmination of the building would be sited to maintain itself as a major transportation hub as well as entertainment and business destinations. The entirety of the project must be experienced within a greater urban cityscape. As it provides additional housing and business within the city limits, it prevents the need for sprawl from the city core. This, in turn maintains the greater thesis of study. By providing the necessary means stability as well as for growth and personal advancement, ones livelihood can be maintained.



Source: Ratanakiri CBNRM project

Ken Yeang- Bioclimatic Skyscrapers

Themes of Exploration-

Within the study this thesis, the combination of themes must come together. As a true alternative to the suburban sprawl typology, many architectural theses can and must be considered. A first look and contemplation of Le Corbusier's "City for 3 Million" instantly spawns ideas. Whether I agree or strictly disagree with Corbusier's ideals, the thought process has been started.

Moshe Safdie's "Habitat 67" in Montreal, Canada, is another exemplary attempt at a new housing typology and alternative. Many of the struggles which Safdie went through, can be learned from if understood and considered. As he stretched the limits of a new living system, so must my project.

Growing ever-more bearing is the constant state of awareness of sustainability and environmental responsibility. This being said, there should be a thorough understanding of sustainability techniques. By understanding the parameters, which I would like to control, I can begin to develop schemes which enable me to do so.

Looking at example such as Ken Yeang and T.R. Hamzah's "Bioclimatic Skyscrapers", I can begin to grasp such boundaries. Furthermore, as I begin to explore such radical movements, I also need to study and understand suburban sprawl typologies and methodologies in and of itself. As I intend to submit an alternative to such a condition, I must fully understand the rationale.

For this direction I intend to explore Paul Lukez's "Suburban Transformations" in which he begins to conceptualize and actualize the necessary development and growth of such places.

As I too ,propose to drastically manipulate an existence, a full investigation is mandatory.

Paul Lukez, Suburban Transformations-

Program-

3 Housing Towers
3 Connection Bridges-

Tallest tower stands at 82 Stories@ 1,178'
3000 Residents
1300 Housing Units

Overall-

2 Olympic Pools-		1,000,000sf
2 Full Exercise Gym-		400,000sf
Spa		300,000sf
Recreation	-Full Track/Football/Soccer	1,500,000sf
Indoor Recreational		600,000sf
Transportation Hub/ Subway-	Internal Subway Station	300,000sf
Federal Installations-	-Judicial	400,000
	-Police/Courthouse	600,000sf
Entertainment- Destination	-Movie Theater -	1,000,000sf
	-Mall/Shopping-	1,600,000sf
	Total About ==	**7,400,000sf**

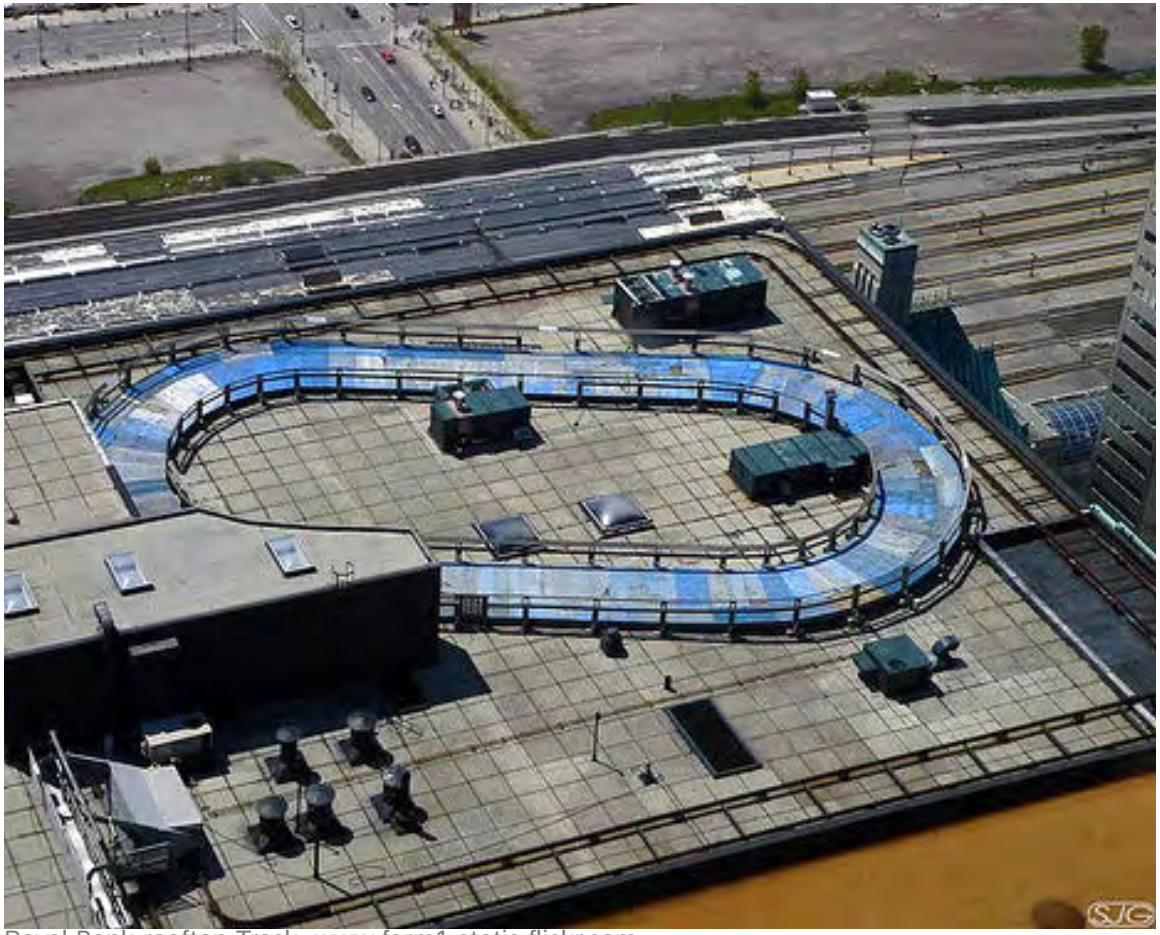
Every 10 Stories/Community Pod-

Community space-	4,000sf
Public play spaces -	1,000sf
Offices--Company/Multi-	4,000sf
- Entrepreneur/Singular-	2,000sf
Store/Merchandise-	5,000sf
Educational- Library-	2,500sf
Recreation-	2,500sf
Entertainment-	3,500sf
Postal Services-	500sf
	=25,000sf x18 Pods = 450,000sf

Living space-

Apartments-	500- Studio-1 Person -400 SF @ 20'x20' Kitchenette, Living/Bedroom, 1Full Bath	200,000sf
	360 -Single -2 Person -600 SF @ 30'x20' Full Kitchen, 1 Bedroom, Living room,1-2 Full Bath, Den	216,000sf
	180-Dbl/Tpl- 3-4 Person -1,600SF @ 40'x20'x 2 levels Full Kitchen, 2-3 Bedroom, Living room, 2-3 Full Bath	288,000sf
	60-Quad-4-5 Person- 2,400SF @ 40'x30'x 2 levels Full Kitchen, 3-4 Bedroom, Living room, Family Room, 2-3 Bathroom	144,000sf

Housing Total=2 Million Square Feet
Overall Project Total= 9.5 Million



Royal Bank rooftop Track- www.farm1.static.flickr.com

Rooftop Pool Facilities

Rooftop Track Facilities-
By using clever ways to incorporate needed program, space can be saved and preserved. By maximizing the utility of otherwise wasted space, overall square footage can be drastically reduced to become manageable. Although these systems such as rooftop tracks or rooftop pools may be clever, they do come with a price.

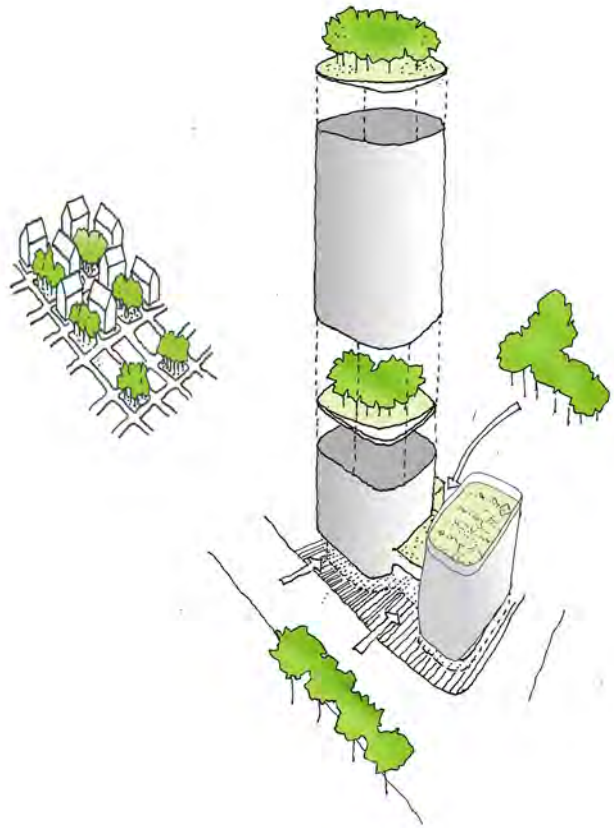
www.currycollege.edu/athletics

Multi-function Recreation space-
Having a variety of functions available within a recreation space allows for double-dipping of function. By including specialty spaces however, the quality of the space is insured.

Cafe and Social Spaces-
These spaces are dispersed throughout the building allowing for a healthy balance of social interaction within community members. Incorporating these facilities at different scales among the program further allows for correct injection socially sustainable spaces

Spa and Lounge-
Having relaxation spaces allow for a release from the stress of the hustle-and-bustle of everyday life. Making spaces for people to take the time to take care of themselves is crucial to the success of a culture.

Workout Facilities-

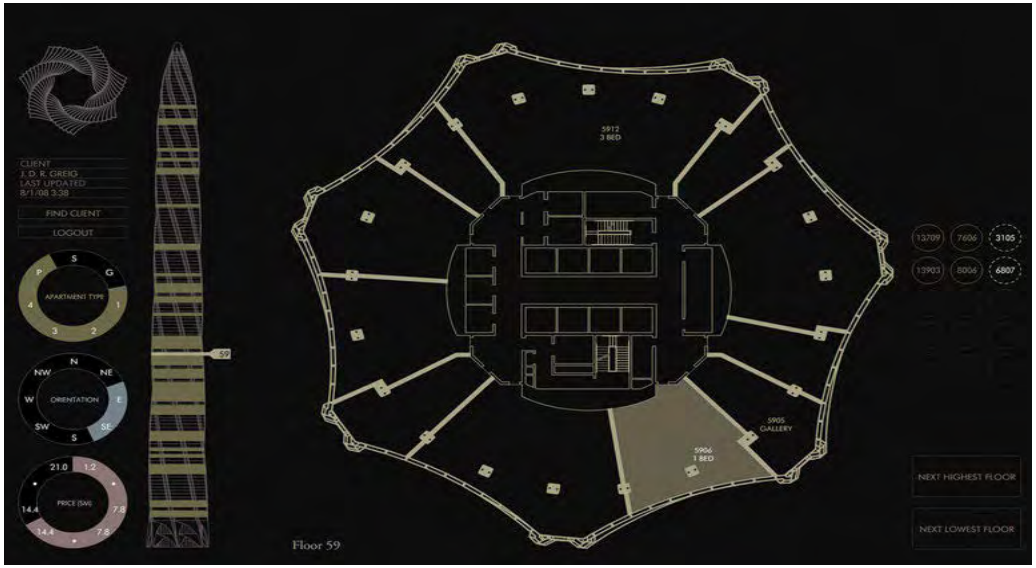


Proposed Green Spaces Throughout a Tower

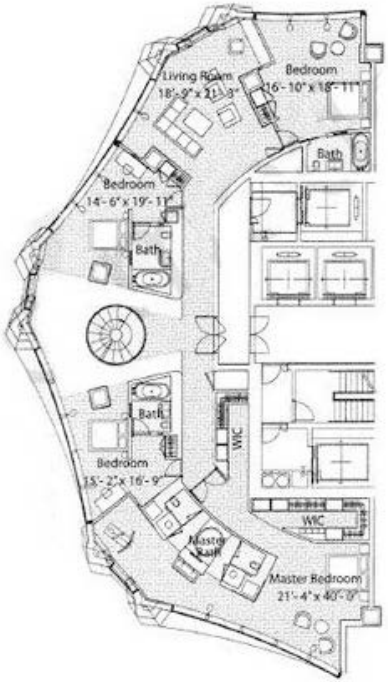
Natural Space-Gardens

Within a massive building, it is important to incorporate the natural world. With living plants, fresh oxygen is being pumped into the air constantly. Having program stack vertically means that there becomes increasingly limited access to natural spaces on the ground. By providing them in multiple aspects of program, a multitude of positive outcomes are produced. Increased productivity along maintained self-esteem as well as general increased moral are just some of the direct advantages proven.

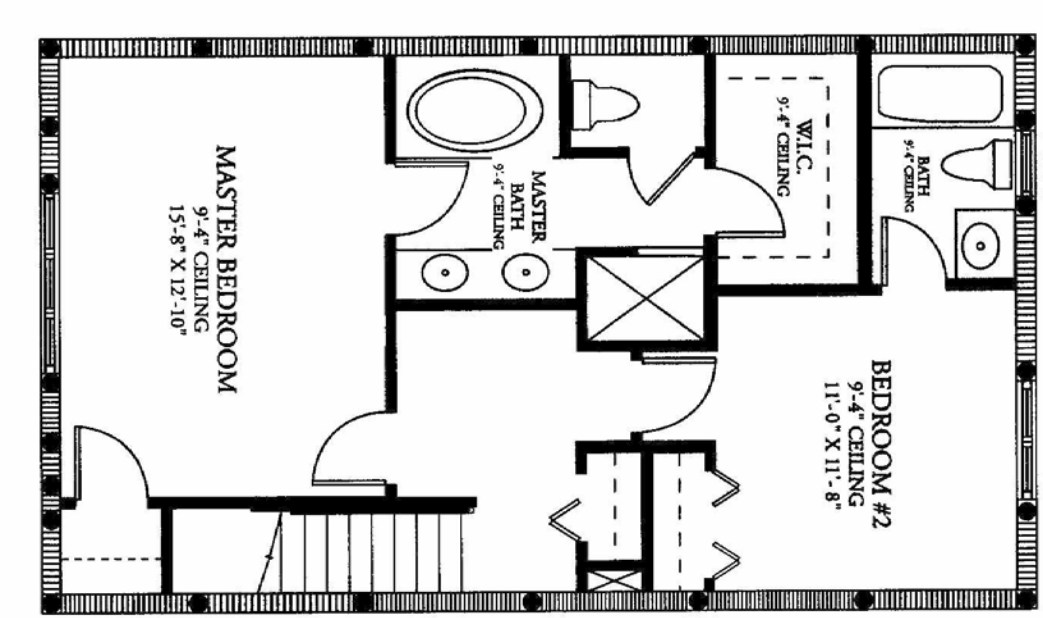
Botanical Garden-



Chicago Spire, Typical Floor Plan



Chicago Spire, Typical Room Plan

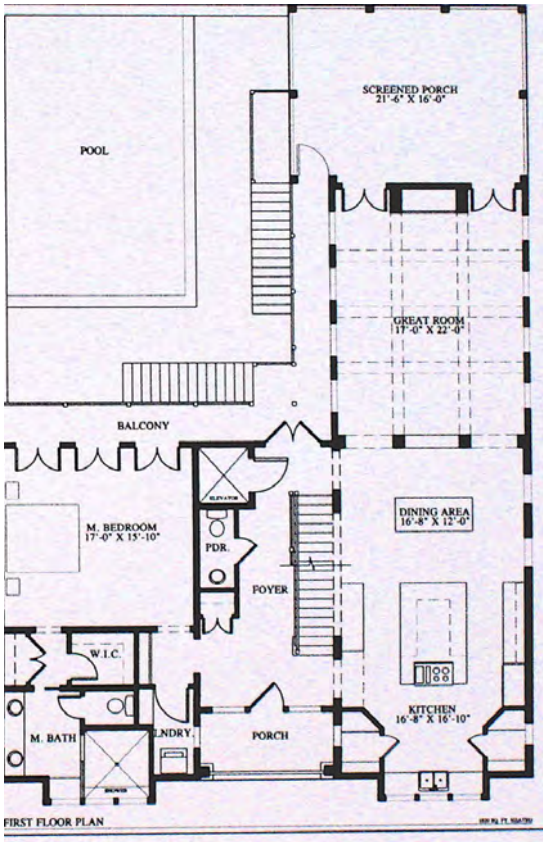


TownHouse Floor plans- Arpeick Lane, NY, NY

Example Home Interior- Ikea Catalogue

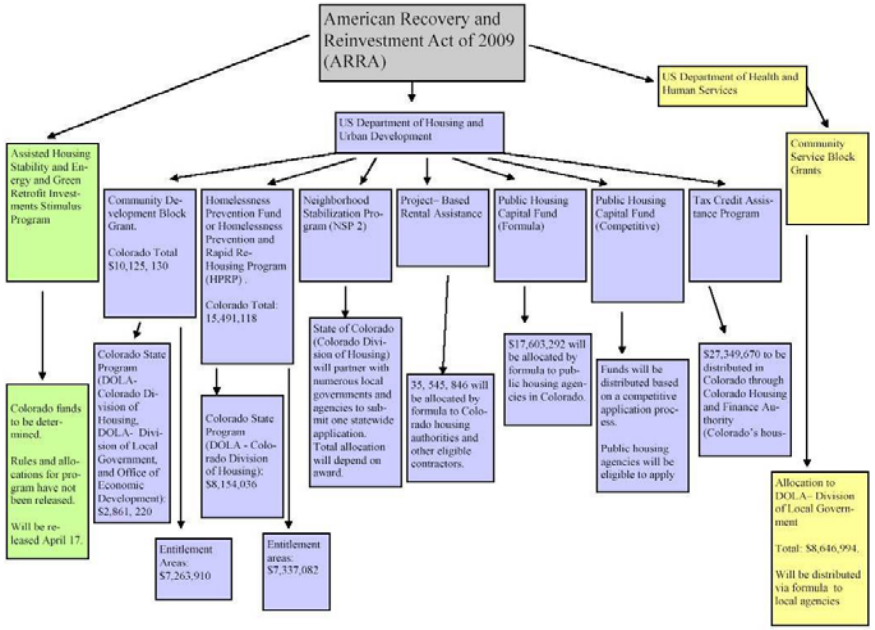
Known for minimizing space, while maximizing space utilization, companies like Ikea have set down an exemplary movement towards space conservation. By exploiting their techniques, programs that would otherwise impede upon each other, can develop a symbiotic relationship rather than clash with one-another.

By including a variety of housing typologies, a dynamic and ideally successful community is produced. This, however, depends on how successful each differentiated space is. By having a multitude of successful variations, a broader and more successful community can be achieved



Double Story Apartment- Dream Home Diaries

The 2009 American Recovery and Reinvestment Act is allocated to help stabilize the current economy crash. By having federal subsidizations within aspects of housing, the feasibility of housing projects and initiatives increases. “The American Recover and Reinvestment Act (ARRA)- Economic Stimulus - passed Congress and was signed by President Obama on February 17th in Denver. The $787 billion reinvestment includes approximately $68 million in housing assistance, $130 million in weatherization and energy efficiency and $178 million in emergency food assistance for Colorado.”-- Housing Colorado

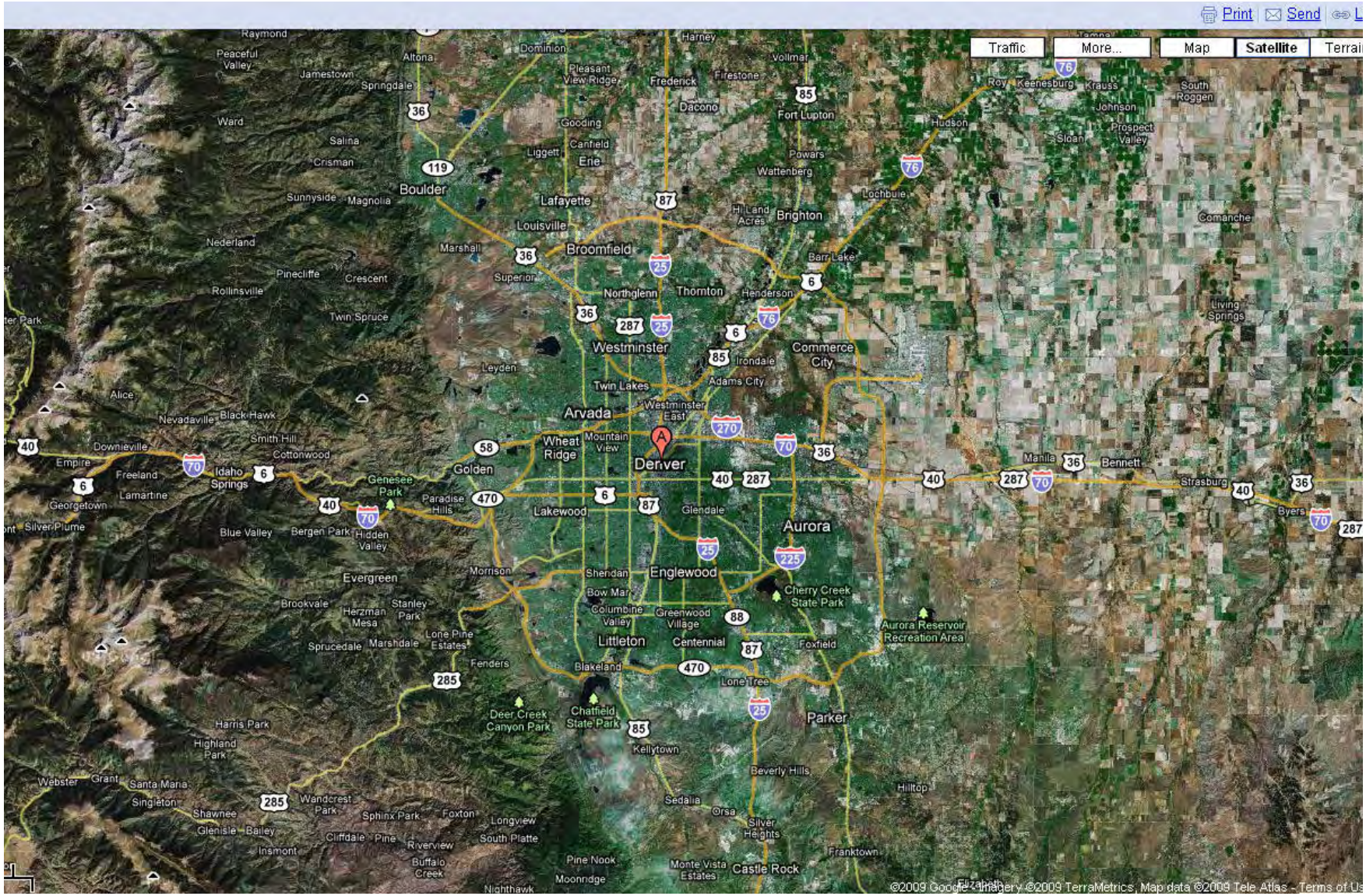


Achieving the sense of a community is the overall goal. What makes a community prosper is the overall feeling of safety, belonging and camaraderie amongst its members. In order to achieve this, a sense of direction must be thought-out and then followed. By keeping within pre-determined parameters, that direction should not get lost. In listing out the mandatory needs of such a desired community, the application of fulfilling those needs can then take place, step by step.

Site Identification

Denver Colorado at Night

Site- Denver, Colorado



Denver Satellite view- googlemaps.com

Denver, Colorado

Site Selection

In choosing the site for this project, a multitude of considerations had to take place. By understanding that this project was a direct response to the suburban sprawl that is seen outside every greater metropolitan and city area, the site location had to echo the underlaying theses ideals. This project is to serve as an alternative to the typical "landscraping" that takes place as urban densities tend to spill out of the surrounding areas of cities. With solely this example, almost any city seems to "Fit-the-bill: From here focus was put on cities such as Chicago, and New York. As one might determine that these two, being the best examples of vertical expansion in, not just the early years of the Verticality movement, and Birth of the skyscraper, but still, as we see them today, the forefront for Vertical expansion. As well, both have substantial examples of suburban sprawl throughout the years which would prove to be a promising site proposal. This being said, because of the vast density of development, and the lack of existing buildable space, radical, and sometimes, impossible movements must be made in order to realize such a project in the Downtown areas of these two cities. From this moment on, the realization that the project prove itself within a realistic setting. A place where the space exists, and the project could, without overbearing radicalism, be imagined there. This narrowed the discussion down to medium city type with vast amounts of space, and still existing and progressing sprawl. As it is that suburban sprawl is the antithesis of of this project, it only makes sense to directly compete where such a factor is apparent. As the project describes itself, it intends to demonstrate a new way of urbanization. It wants to be its own forefront of building typology, and therefore needs a site that echoes that calling.

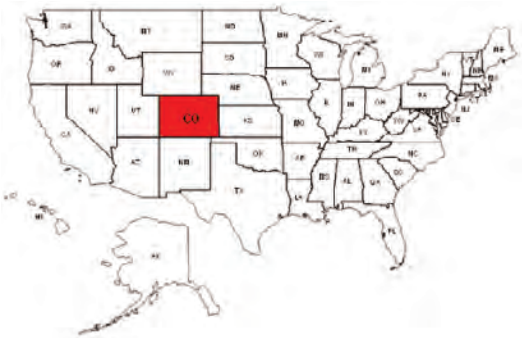
Denver, Colorado presents itself in many manners as the ideal position for this thesis. Denver is a still growing and expanding city. As it was years ago, it still continues to be the frontier for expansion. Denver has been and still is a destination city. Geographically it sits on the edge of the continental divide, which runs along its Western edge. It also sits central to the state maintaining itself as a focal destination. It is surrounded by expansive views of valley and open space. Simply put, it has the space and potential for a needed site. Secondly, Denver is a very progressive city which is encouraging new and alternative commercial, residential, and business installments. With massive preparation for future expansion and growth, the city is ripe with opportunity.

Denver, City Map

"LoDo", Financial District, Old Denver- Runs NE-SW

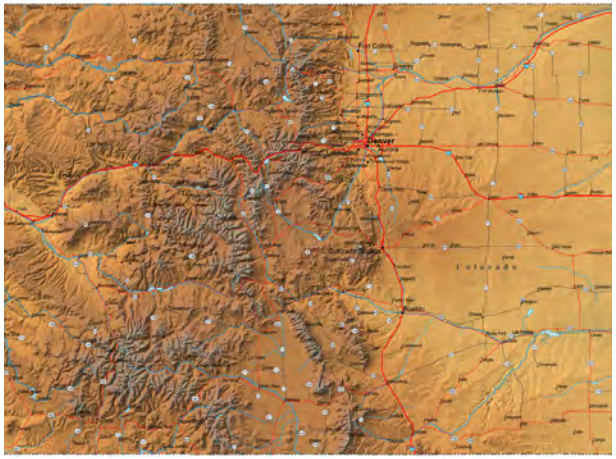
Denver- Gridded System- Runs N-S

Denver- Disintegration of the Grid



The United States of America

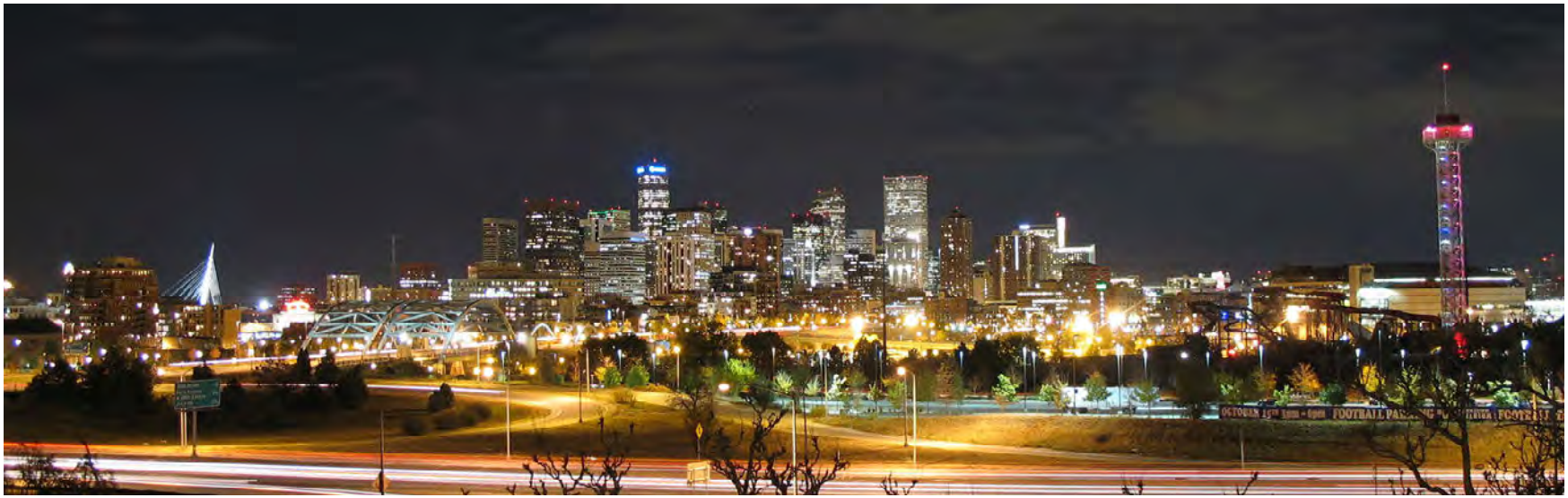
Colorado State Map



Colorado State Map Terrain- Continental Divide

Denver Colorado, 1898- Looking down 16th street- wikipedia.com

Colorado Rockies- Wikipedia.com



Denver Skyline at Midnight- wikipedia.com

Denver, Colorado-

Denver is the capital and the most populous city of the state of Colorado, in the United States. Denver is a consolidated city-county located in the South Platte River Valley on the High Plains just east of the Front Range of the Rocky Mountains. The Denver downtown district is located immediately east of the confluence of Cherry Creek with the South Platte River, approximately 15 miles (24 km) east of the foothills of the Rocky Mountains. Denver is nicknamed the Mile-High City because its official elevation is exactly one mile, or 5,280 feet (1,609 m) above sea level. The 105th meridian west of Greenwich passes through Union Station, making it the reference point for the Mountain Time Zone.

The United States Census Bureau estimates that the population of the City and County of Denver was 598,707 in 2008, making it the 27th most populous U.S. city.[8]The 5-county Denver-Aurora Metropolitan Statistical Area had an estimated 2008 population of 2,506,626 and ranked as the 21st most populous U.S. metropolitan statistical area and the 12-county Denver-Aurora- Boulder Combined Statistical Area had an estimated 2008 population of 3,049,562 and ranked as the 16th most populous U.S. metropolitan area. The 18-county Front Range Urban Corridor had an estimated 2007 population of 4,166,855.[11] It is also the second largest city in the Mountain West after Phoenix. The city has the 10th largest central business district in the United States.

History-

Denver City was founded on November 1858 as a mining town during the Pikes Peak Gold Rush in western Kansas Territory. That summer, a group of gold prospectors from Lawrence, Kansas, arrived and established Montana City on the banks of the South Platte River. This was the first settlement in what was later to become the city of Denver. The site faded quickly, however, and was abandoned in favor of Auraria (named after the gold-mining town of Auraria, Georgia) and St. Charles City by the summer of 1859. The Montana City site is now Grant-Frontier Park and includes mining equipment and a log cabin replica.

On November 22, 1858, General William Larimer, a land speculator from eastern Kansas, placed cottonwood logs to stake a claim on the hill overlooking the confluence of the South Platte River and Cherry Creek, across the creek from the existing mining settlement of Auraria. Larimer named the town site Denver City to curry favor with Kansas Territorial Governor James W. Denver. Larimer hoped that the town's name would help make it the county seat of Arapaho County, but ironically Governor Denver had already resigned from office. The location was accessible to existing trails and was across the South Platte River from the site of seasonal encampments of the Cheyenne and Arapaho. The site of these first towns is now the site of Confluence Park in downtown Denver. Larimer, along with associates in the St. Charles City Land Company, sold parcels in the town to merchants and miners, with the intention of creating a major city that would cater to new emigrants.

denvergov.org

Denver City was a frontier town, with an economy based on servicing local miners with gambling, saloons, livestock and goods trading. In the early years, land parcels were often traded for grubstakes or gambled away by miners in Auraria.

The Colorado Territory was created on February 28, 1861, Arapahoe County was formed on November 1, 1861, and Denver City was incorporated on November 7, 1861. Denver City served as the Arapahoe County Seat from 1861 until consolidation in 1902. In 1865, Denver City became the Territorial Capital.
With its new-found importance, Denver City shortened its name to just Denver. On August 1, 1876, Denver became the State Capital when Colorado was admitted to the Union.

Between 1880-1895 the city experienced a huge rise in city corruption, as crime bosses, such as Soapy Smith, worked side-by-side with elected officials and the police to control the elections, gambling, and the bunko gangs. In 1887, the precursor to the international charity United Way was formed in Denver by local religious leaders who raised funds and coordinated various charities to help Denver's poor. By 1890, Denver had grown to be the second largest city west of Omaha, but by 1900 it had dropped to third place behind San Francisco and Los Angeles.

In 1901 the Colorado General Assembly voted to split Arapahoe County into three parts: a new consolidated City and County of Denver, a new Adams County, and the remainder of the Arapahoe County to be renamed South Arapahoe County.

Denver History: the Golden Gamble- denvergove.org

South Arapahoe County. A ruling by the Colorado Supreme Court, subsequent legislation, and a referendum delayed the creation of the City and County of Denver until November 15, 1902. Denver has hosted the Democratic National Convention twice, during the years of 1908, and again in 2008, taking the opportunity to promote the city's status on the national, political, and socioeconomic stage. Early in the 20th century, Denver, like many other cities, was home to a pioneering brass age automobile company; Colburn was copied from the contemporary Renault.

Denver was selected in 1970 to host the 1976 Winter Olympics to coincide with Colorado's centennial celebration, but in November 1972 Colorado voters struck down ballot initiatives allocating public funds to pay for the high costs of the games, so the games were moved to Innsbruck, Austria. The notoriety of becoming the only city ever to decline to host an Olympiad after being selected has made subsequent bids difficult. The movement against hosting the games was based largely on environmental issues and was led by then State Representative Richard Lamm, who was subsequently elected to three terms (1974-86) as Colorado governor.

Denver has also been known historically as the Queen City of the Plains because of its important role in the agricultural industry of the plains regions along the foothills of the Colorado Front Range. Several US Navy ships have been named USS Denver in honor of the city.

United States Population History

Demographics-

The United States Census Bureau estimates that, in 2008, the population of the City and County of Denver was 598,707, making it the 26th most populous U.S. city. The Denver-Aurora Metropolitan Statistical Area had an estimated 2006 population of 2,464,866 and ranked as the 21st most populous U.S. metropolitan statistical area,[38] and the larger Denver-Aurora- Boulder Combined Statistical Area had an estimated 2006 population of 2,927,911 and ranked as the 17th most populous U.S. metropolitan area.
Denver is the most populous city within a radius centered in the city and of 550 miles (885 km) magnitude. Denverites is a term used for residents of Denver (city or county).

According to census estimates, the City and County of Denver contains approximately 566,974 people (2006) and 239,235 households (2000). The population density is 3,698/sq mi (1,428/km²). There are 268,540 housing units (2005) at an average density of 1,751/sq mi (676/km²). However, the average density throughout most Denver neighborhoods tends to be higher. Without the 80249 zip code (47.3 sq mi, 8,407 residents) near the airport, the average density increases to around 5,470/sq mi.

According to the 2005-2007 American Community Survey, the city's population was 74.5% White (50.5% non-Hispanic-White alone), 10.8% Black or African American, 1.9% American Indian and Alaska Native, 3.7% Asian, 0.2% Native Hawaiian and Other Pacific Islander, 11.6% from some other race and 2.4% from two or more races. 34.2% of the total population were Hispanic or Latino of any race . 69.9% of the city's population spoke only English at home and 23.9% spoke Spanish. 37.7% of Denver's population had a Bachelor's degree or higher.

There are 250,906 households, out of which 23.2% have children under the age of 18 living with them, 34.7% are married couples living together, 10.8% have a female householder with no husband present, and 50.1% are non-families. 39.3% of all households are made up of individuals and 9.4% have someone living alone who is 65 years of age or older. The average household size is 2.27 and the average family size is 3.14.

In the city, the population is spread out with 22.0% under the age of 18, 10.7% from 18 to 24, 36.1% from 25 to 44, 20.0% from 45 to 64, and 11.3% who are 65 years of age or older. The median age is 33 years. For every 100 females there are 102.1 males.

The median income for a household in the city is $41,767, and the median income for a family is $48,195. Males have a median income of $36,232 versus $33,768 for females. The per capita income for the city is $24,101. 14.3% of the population and 10.6% of families are below the poverty line. Out of the total population, 20.3% of those under the age of 18 and 9.7% of those 65 and older are living below the poverty line.

United Census Bureau
Wikipedia.com

Downtown Denver-

Downtown Denver is organize in a typical grid system. The grids are aligned in the four cardinal directions, running the long direction N-S and the squat direction, E-W. The city is broken into a quadrant by two artery streets, Broadway (running N-S) and Ellsworth Avenue (running E-W).

There is also an older downtown grid system that was designed to be parallel to the South Platte River and Cherry Creek. Most of the streets downtown and in “LoDo” run northeast-southwest and northwest-southeast. This system has an unplanned benefit for snow removal; if the streets were in a normal N-S/E-W grid, only the N-S streets would receive sunlight. With the grid oriented to the diagonal directions, the NW-SE streets receive sunlight to melt snow in the morning and the NE-SW streets receive it in the afternoon. 16th Street Mall is a known pedestrian oriented street which runs NW-SW in the LoDo.

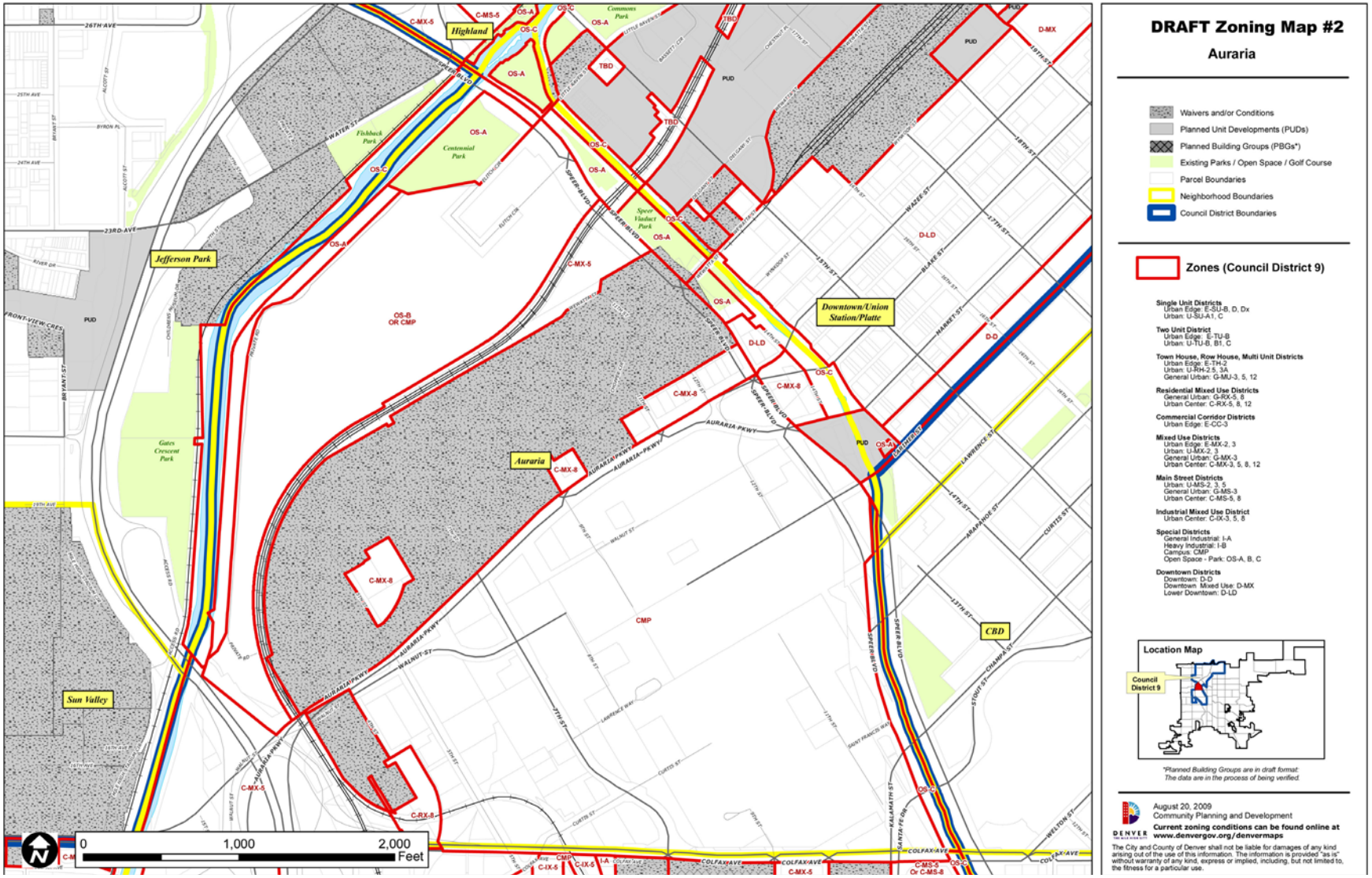
The NW-SE streets are numbered, while the NE-SW streets are named. The named streets start at the intersection of Colfax Avenue and Broadway with the block-long Cheyenne Place. The numbered streets start underneath the Colfax and I-25 viaducts. There are 27 named and 44 numbered streets on this grid. There are also a few vestiges of the old grid system in the normal grid, such as Park Avenue, Morrison Road, and Speer Boulevard. Larimer Street, named after William Larimer, Jr., the founder of Denver, which is located in the heart of “LoDo”, is the oldest street in Denver.

Central Denver- Google Earth

Denver-By Air-"Air Water and Sea"

16th Street, Denver at Night- citydata.com

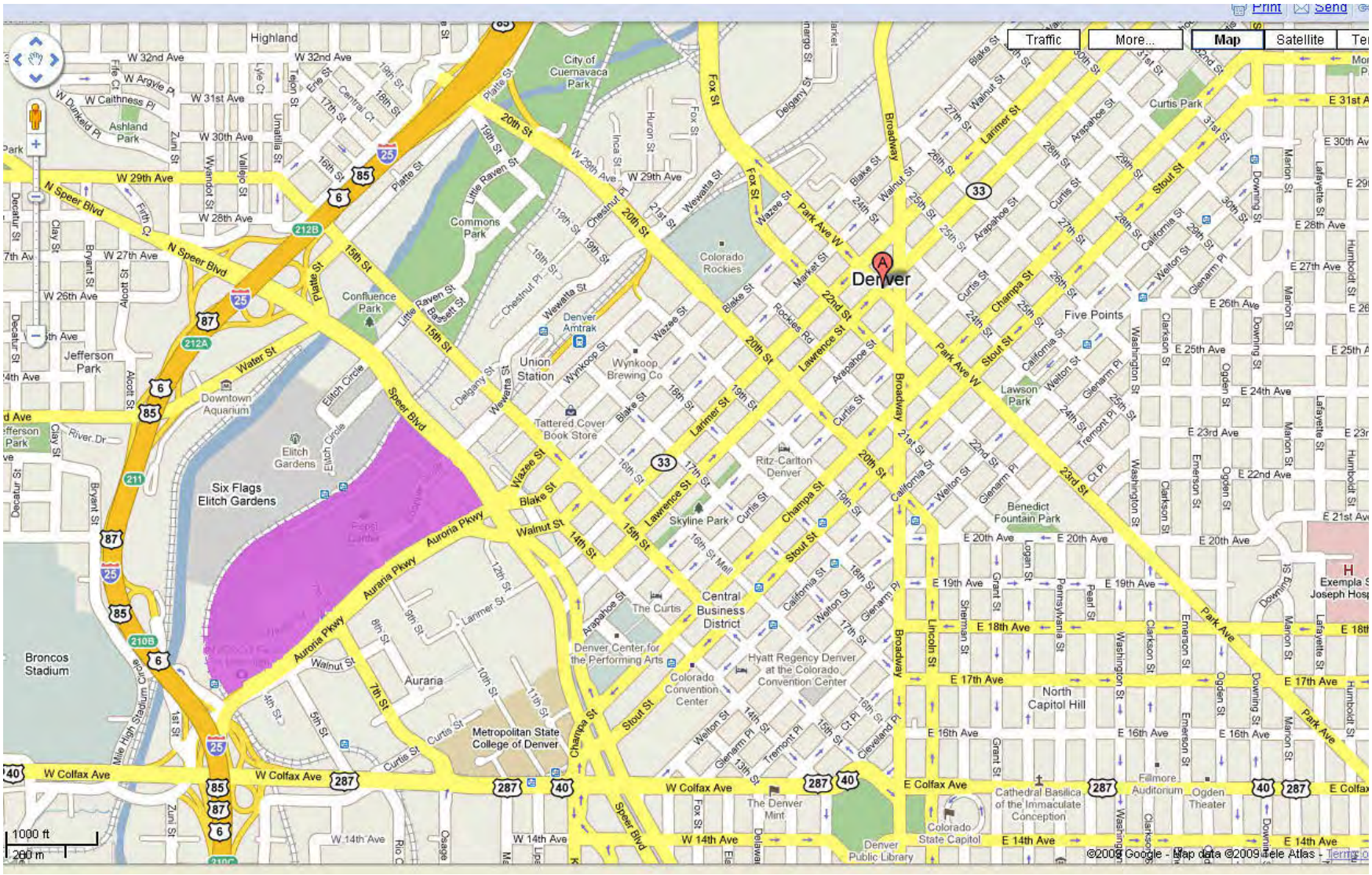
16th Street Mall- Denver- Citydata.com



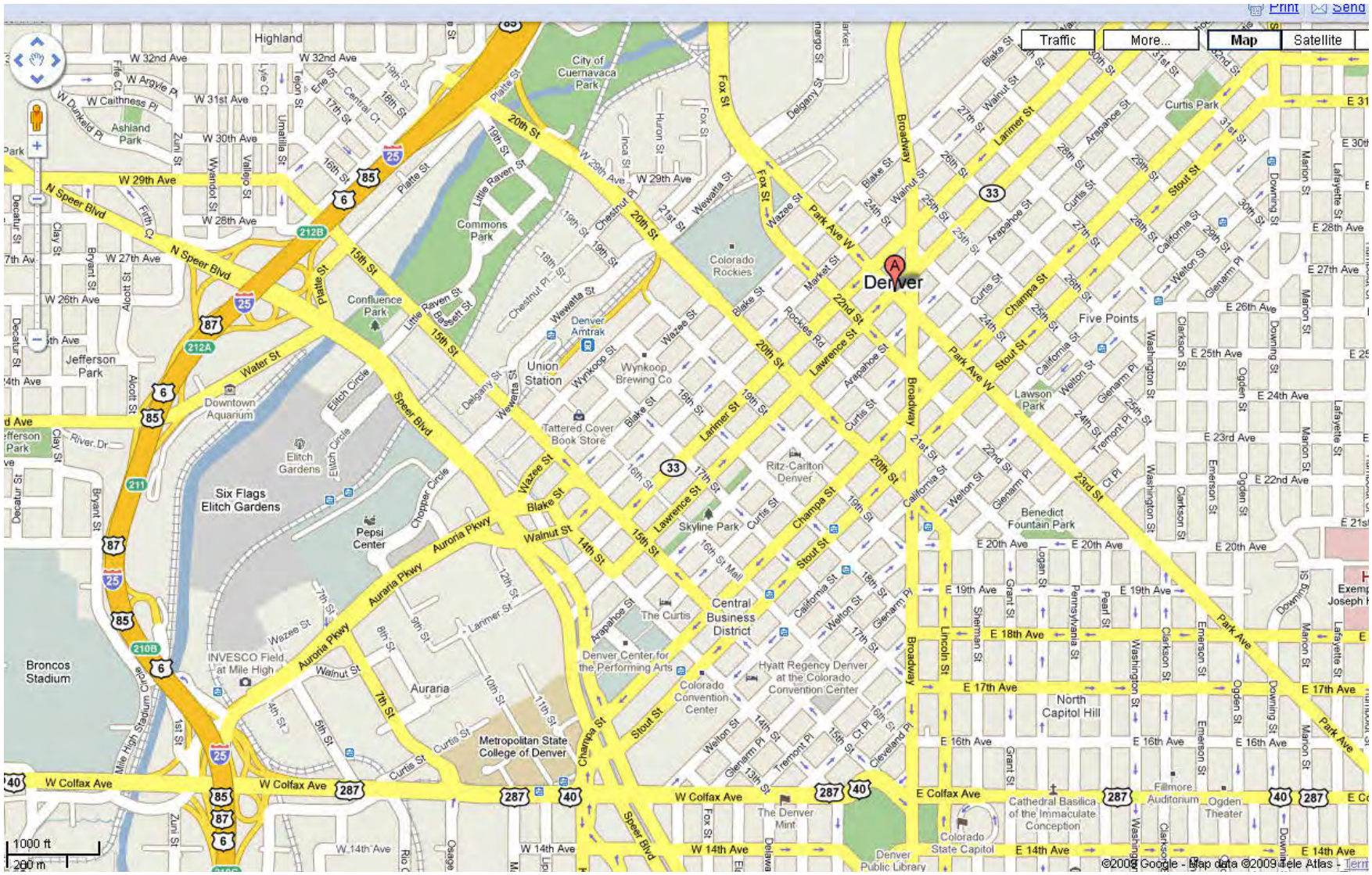
Site, Auraria District- Denver.com

The Site-

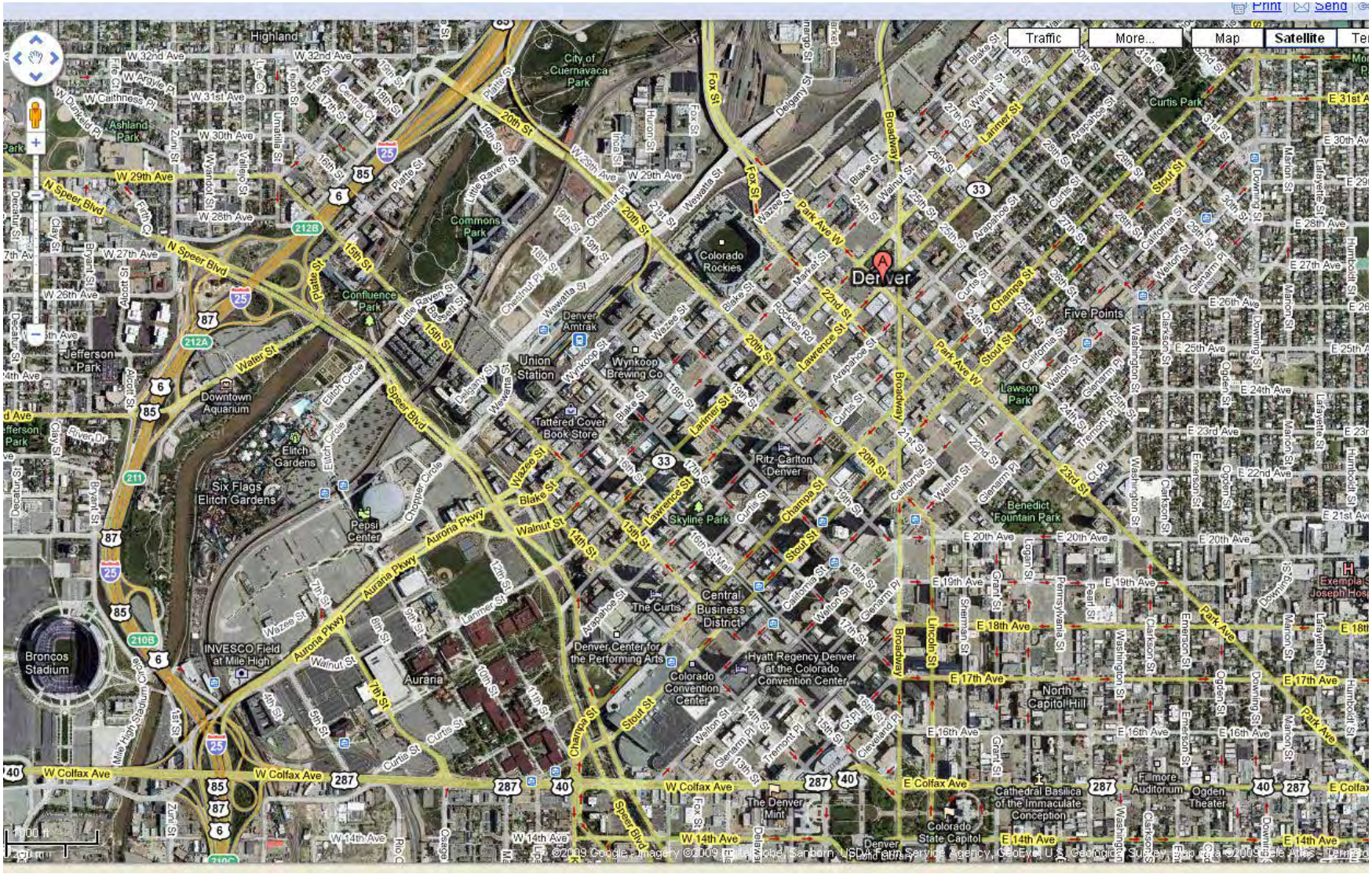
By locating the Site on an existing parking lot, continued use is brought to an otherwise seasonal, or event-determined vacancy. Not only is there no serious de-construction required (or removal of existing program) but there becomes possibility for an established link between one side of the highway and the other, where there used to be a considerable void.



Site- Auraria District, Denver



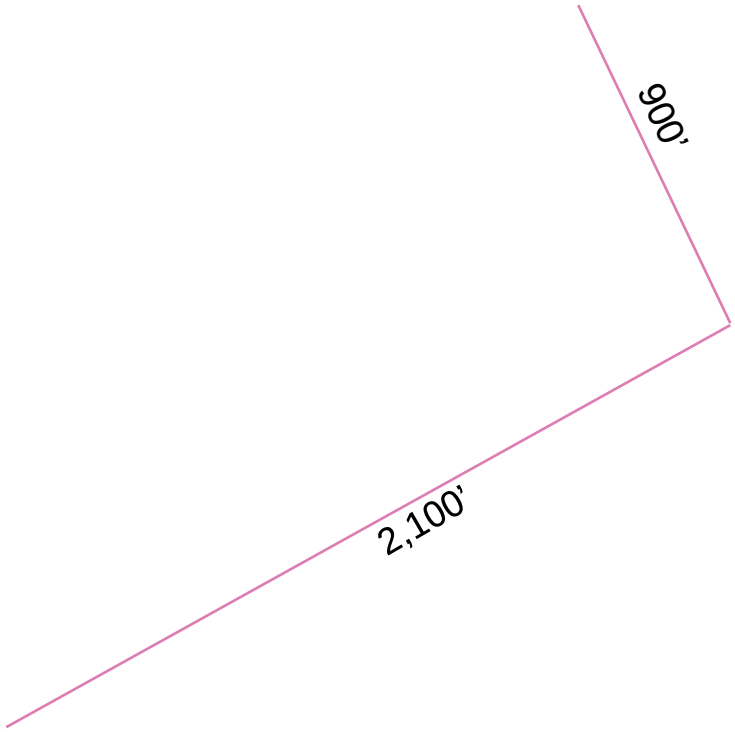
Site, Central Denver Area- Road Map-Googlemaps.com



Site, Central Denver Area, Satellite Image-Googlemaps

Site Identification/Analysis

An Alternative to Suburban Sprawl



Site Size-

900'x2100' = 1,890,000 ft^2

One acre has 43,560 ft^2
1,890,000/43,560 = 43.4 Acres

One Square Mile has 640 Acres
42.4/640 = .0678 = 6.7% of a Square Mile

Typical Denver City Block 270' x Varying Lng.

LoDo-
270'x 400' = 108,000 ft^2
108,000/43,560 = 2.5 Acres

East of LoDo-
270'x500' = 135,000 ft^2
135,000/43,560 = 3 Acres

South of LoDo-
270'x570' = 153,900 ft^2
153,900/43,560 = 3.5 Acres

West of LoDo-
270'x600' = 162,000 ft^2
162,000/43,560 = 3.7 Acres

Northwest of LoDo-
250'x360' = 90,000 ft^2
90,000/43,560 = 2 Acres

Average = 3 Acres Per City Block

43.4/3 = 14.5 City Blocks.

Site- Parking Lot outside the Pepsi Center, Adjacent from Elitch Six Flags,

The Site-

The site sits in the Auraria District of Downtown, Denver, in the midst of the very active urban fabric of the City.

Elitch Six Flags-

Elitch Six Flags theme park sits directly adjacent to the site. Running directly between the two parcels, runs one of Denver's Light Rail trans. (the orange C-line and the Purple E-line) The Theme park has its own considerable amount of parking provided North of Denver's Pepsi Center. The northernmost natural boarder is the Platte River which eventually runs south of the site.

Site- Adjacent to Elitch Six Flags

Site- Adjacent to Denver's Pepsi Center

Pepsi Center-

Residing in the Northeastern corner of the site sits Denver's Pepsi Center. It is home of the Denver's Professional Basketball team the Nuggets and Hockey Team, the Avalanche. When not used for games it becomes multi-use space for a variety of venues.

University of Colorado Denver-

Located directly South of the building site is the University of Colorado Denver Campus. The state university enrolls more than 27,000 students, both graduate and undergraduate study. The school also has another satellite campus in nearby Aurora. With more than 12,200 Coloradan employees, the school is one of Denver's top employers.

Site- Adjacent to University of Colorado Denver

Invesco Field at Mile High-

Home of the Denver Broncos and the Colorado Rapids, the Invesco field is the new Mile High stadium. With a seating capacity of about 80,000 persons, a sold out venue attracts quite the crowd. The nearby railway and highway have easy-on easy-off station and exits to accommodate for the mass capacity. Other than professional sports, the stadium also holds concerts when crowds are expected over 100,000.

Site- Adjacent to Invesco Field

Site- Adjacent to I-25

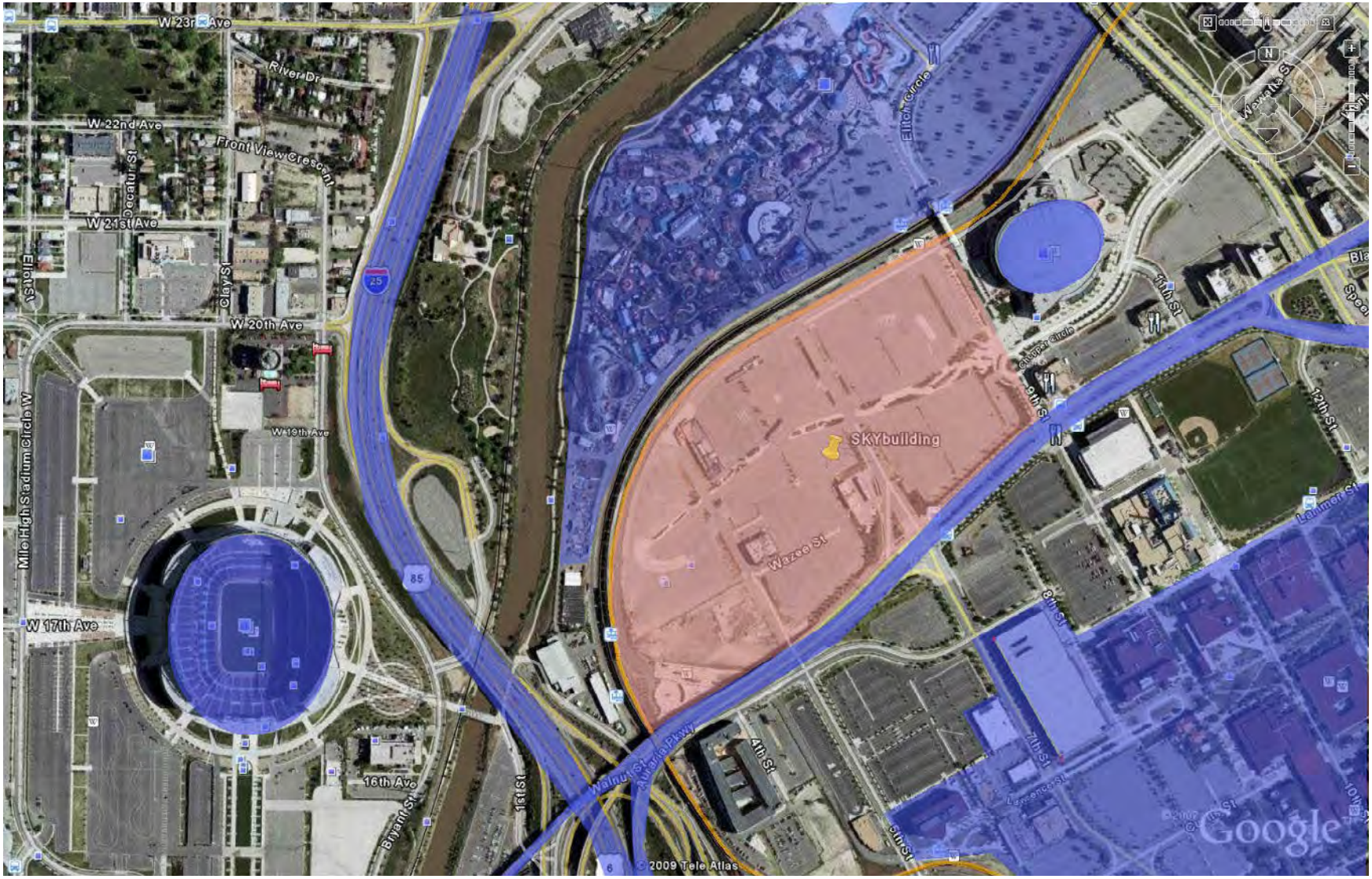
I-25-

I-25 is one of the major Interstate systems which runs through the major city area. Running North to South, it flanks most of Denver's Downtown on the Left. To the North, I-70, another major Interstate, intersects.

Auroria Parkway-

Although Auroria Parkway is a rather short road, it maintains a heavy flow of traffic. It directs the traffic coming from either I-25 or rt 287 towards LoDo. Like the rest of LoDo it runs NE-SW. It travels directly alongside the site, being the major access to the parking area. Auroria Parkway ends when it intersects Speer Blvd, which runs Crosswise from NW-SE along the LoDo block system.

Site- Auraria Parkway



Site- Parking Lot outside the Pepsi Center, Adjacent from Elitch Six Flags,

Site and the Surroundings-

The site is encompassed by a multitude of High-traffic road systems, rail systems and Event Destinations. These being Six Flags, Mile High stadium, The University, or the Pepsi Center. All of which, is located one block of LoDo Denver, and very much part of the Urban Fabric of the city.

Site Identification/Analysis

An Alternative to Suburban Sprawl

Expanded Site View- Downtown Denver

Elitch Six Flags-

Elitch Six Flags theme park sits directly North of the building site.

Site- Adjacent to Elitch Six Flags

Site- Adjacent to Denver's Pepsi Center

Pepsi Center-

The Pepsi Center is located Northeast of the building site

University of Colorado Denver-

In the midst of greater Downtown, The University of Colorado Denver sits south of the building site.

Site- Adjacent to University of Colorado Denver

Site- Adjacent to I-25

Interstate 25-

Running North to South within the Western United States, I-25 runs directly West of the site.

Invesco Field-

Also Known as Mile High, is located directly West of the building site.

Site- Adjacent to Invesco Field

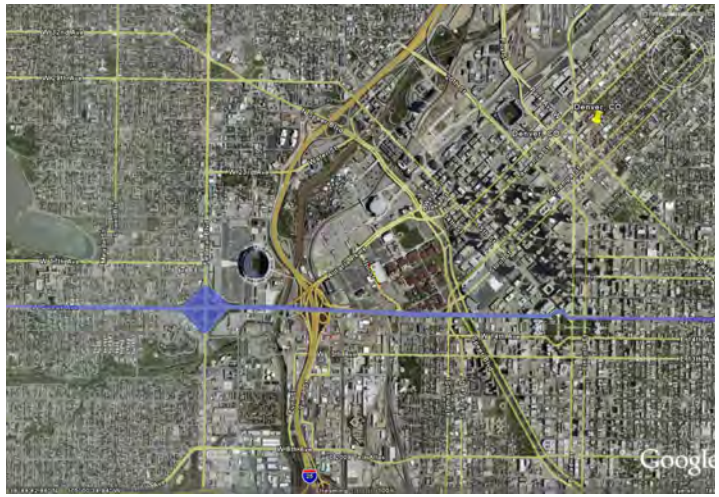
Rt 287-

Running West-East, the highly traveled rout 287, also known as Colfax Avenue, exists as one of the major axis which organize the greater downtown of the city.

Site- Adjacent to Coors Field

Coors Field-

Home of the Colorado Rockies, Denver's Professional Baseball team, Coors Field, Stadium is located Northeast of the site. It stands on the other side of LoDo, about 6 blocks away. It is, however located the Light Rail Line which intersects the amtrack system running by Mile High, Six Flags, the Pepsi Center, Union Station and the Site.



Site- Rout 287

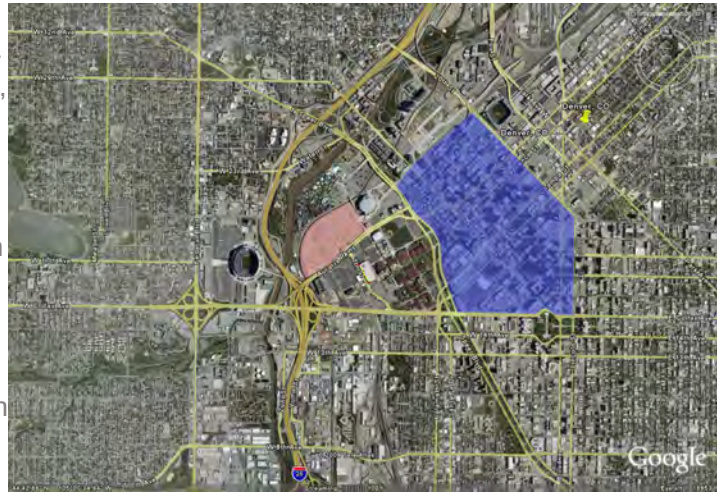
Site- Proximity to City Hall and State Capitol

City Hall and State Capitol-

Denver's Civic Center Park, home of the City Hall and State Capitol, is located at the southern tip of LoDo. With a few turns of streets, the site is located less than 1 mile north-east from the Civic Center.

Old Downtown-

Or Lower Downtown Denver, also known as "LoDo", is slightly tilted on axis then the rest of the city. Originated from the direction of the nearby Platte River, the older downtown area consists of both Named and Numbered Streets for organization. It has been becoming more and more pedestrian friendly with its Skyline Park on Arapahoe St. and 16th St. Pedestrian Mall



Site- Adjacent to LoDo

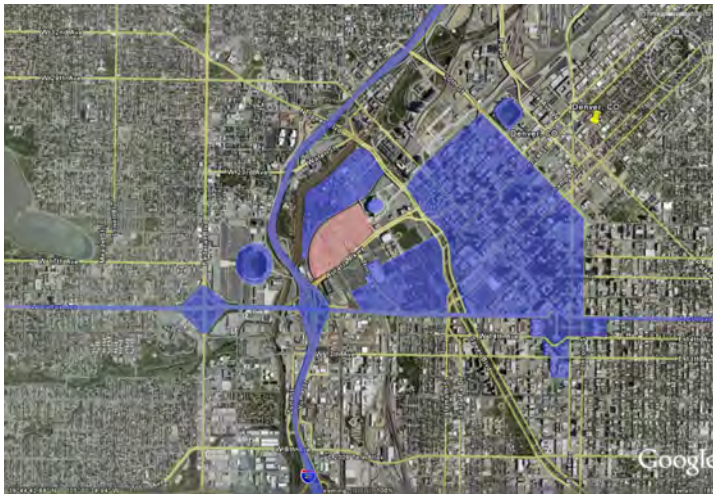
Entire Surroundings-

Surrounded by a multitude of active sites which bring every type of user to the heart of the city, the proposed site sits nicely in the thick of things, becoming a tie between the otherwise split entities of the city.

Site- Adjacent to Museum of Art

Denver Museum of Art-

The Denver Museum of Art is located Directly South of the Civic Center Park, maintaining a 1 Mile distance from the site. Denver, as a city, has an agenda to increase its public usability/interest through its both its existing and its proposal for new civic and cultural installments.



Site- Surrounding Areas


Surrounding Site- Denver Valley


Surrounding Site- Denver Valley at Night

Site Aspects

Known for its expansive Valley, The Mile High City of Denver, often produces breathtaking panoramas of our natural world, and our inhabitants within.


Surrounding Site- Denver Sky

Colorado State Capitol- Civic Center Park

Denver Museum of Art- Daniel Libskind

Union Station with Rockie's Purple lighting

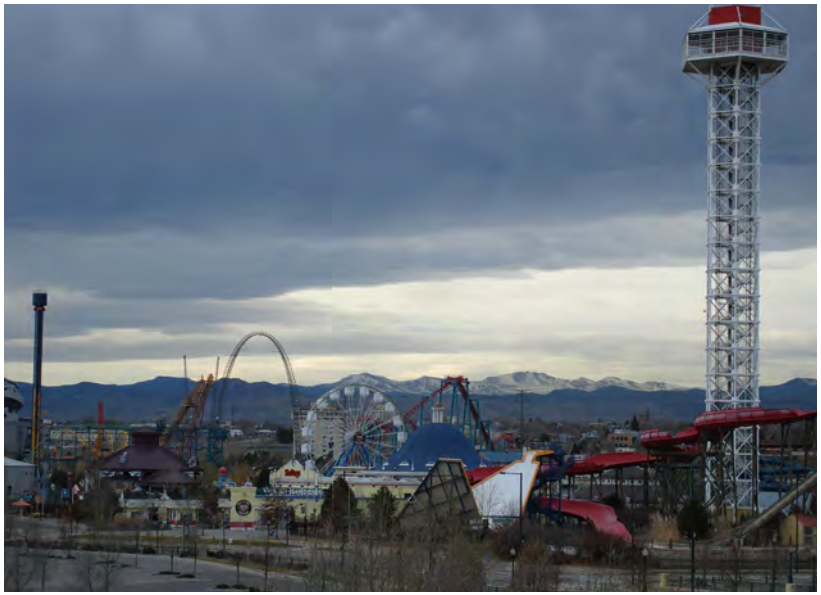
16th Street Pedestrian Mall- DNC public Radio

Denver City Hall and Courthouse- Civic Center Park

Denver Convention Center

Colorado Rockie's Coors Field

Denver's Downtown Aquarium



Elitch Gardens- Six Flags

Invesco Field- Denver Broncos Stadium

The Pepsi Center- Denver Nuggets Stadium

University of Colorado at Denver Campus

Site Connections-

The city of Denver is going through massive transformations. Their newly developed growth plan has instituted multiple fundamental aspects in which this project can merge with and take advantage of. Such goals include:

- Increased densification of the downtown area.
-Energizing and exciting the existing commercial core of the city.
-Establishing more, better, faster and cleaner railway systems throughout the city and its outskirts.
-Emphasis on pedestrian ways and walking.
-Additional bicycle routs and paths.
-Family oriented gathering spaces/functions
-Embracing Adjacent Neighborhoods.
-Maintain an International point of Destination

The following pages are parts of that document provided by the State and City Planning Commission of Denver Colorado.

For full document- see appendix 1

iii. plan strategies and projects

Success of the Downtown Area Plan depends on the implementation of high impact strategies and projects throughout the city center. This chapter outlines the action plan for Downtown.

Strategies and projects are organized according to the five vision elements that support the overarching vision of a vibrant Downtown:

A. A **Prosperous** City
B. A **Walkable** City
C. A **Diverse** City
D. A **Distinctive** City
E. A **Green** City

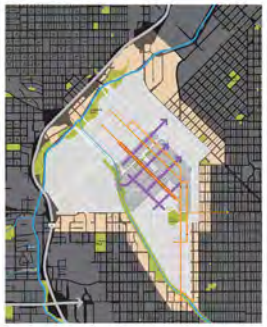
Within the 19 strategies and projects, seven transformative projects are highlighted for extra emphasis. While all 19 strategy elements are essential to achieving the Plan vision, seven of them are highlighted as transformative projects because without early and concerted effort in these areas, the other elements of the plan will not be as successful. These projects are listed below and indicated on the following pages by orange bars.

A2. Energizing the Commercial Core
B2. Building on Transit
B5. Grand Boulevards
C3. Embracing Adjacent Neighborhoods
D2. Connecting Auraria
D3. Downtown's New Neighborhood: Arapahoe Square
E2. A Rejuvenated Civic Center

Plan Strategies and Projects 15

Denver Planning Commission

A2. Energizing the Commercial Core



Strategy Diagram: Energizing the Commercial Core

The 16th Street Mall is a nationally-recognized symbol of Downtown Denver's vitality.

THEATRE AND VISITOR DISTRICTS

Establishment of new destination districts is a key element of energizing the Commercial Core. The Theatre District, with a central axis along Curtis Street that connects the 16th Street Mall, Denver Performing Arts Complex and Auraria, will have enhanced signage, venues for outdoor cultural events, and arts-related commercial activities. The Visitor District, with a central axis along California Street, will connect the Colorado Convention Center to the 16th Street Mall and 17th Street hotels. It will contain a mix of authentic and unique urban retail that serves both locals and visitors (see Development Concept on page 11 for district locations).

GOAL

Invigorate the Commercial Core by enhancing the pedestrian and transit experiences and creating an economically thriving district for business, retail and tourism.

WHY IT'S IMPORTANT

As the city center's defining district, a vital and vibrant Commercial Core is critical to the overall real and perceived success of the Downtown.

POLICIES, PROJECTS AND PROGRAMS

A2a. Design the Downtown Circulator to provide high frequency, high quality transit service that enhances the economic development and transit benefits of the investment

A2b. Establish a Business Opportunity District and the Larimer Mixed-Use District to capitalize on transit investments and rebalance Downtown economic activity

- Market the area along the Downtown Circulator to employers and developers
- Use the new Larimer transit line to strengthen economic activity and identity in the Larimer Mixed-Use District.
- Evaluate development potential on vacant sites to assure that current regulations result in desired building forms and street character

A2c. Strengthen the vitality of the 16th Street Mall

- Create and enhance recognized sub-districts along the Mall, including Theatre and Visitor districts
- Create and implement a Mall activities strategy
- Develop a balanced retail strategy that includes entertainment, dining and specialty retailers
- Conduct a study of Mall infrastructure to assess needs and reconstruct to meet the goals of sustainability, usability and respect for the existing design
- Re-evaluate 16th Street Mall transit service in light of the Downtown Circulator frequency, operation, and technology

A2d. Create distinct identities along named streets through physical improvements

- Visitor District along California
- Theatre District along Curtis

A2e. Build 14th Street as envisioned in the 14th Street Initiative; establish it as a model sustainable streetscape

The streetscape of the Commercial Core, shown here at 18th and Tremont (left), can be enhanced to create a more attractive environment that will help re-energize the Commercial Core (right).

Denver Planning Commission pg A2

B2. Building On Transit

GOAL

Reinforce Downtown as the region's largest and most convenient transit district with local, regional, statewide and national connections.

WHY IT'S IMPORTANT

In an era of decreasing resources and increasingly consumptive lifestyles, transportation alternatives will provide competitive advantages for urban centers. The development of both FasTracks and a complementary local transit system will make transit-based living possible in Downtown. Furthermore, transit stops and stations are appropriate locations for nodes of higher intensity uses.

POLICIES, PROJECTS AND PROGRAMS

B2a. Reinforce Denver Union Station as the regional transit hub and Civic Center Station as the local transit hub

- Advocate for development of Denver Union Station as conveyed in the vision, goals and principles of the Denver Union Station Master Plan
- Ensure that the Downtown Circulator is constructed as an attractive, high-quality, high frequency transit connection between Union Station, Civic Center Station, and the Cultural Complex, as described in the Downtown Multimodal Access Plan and FasTracks Plan
- Complete a study of the multi-modal access to Civic Center Station and address potential conflicts between pedestrians, cyclists, motorists and transit vehicles
- Support studies of high-frequency fixed guideway transit on East Colfax, Broadway and Broadway/Speer/1st Avenue as the first components of the Denver focused transit system

B2b. Create a free fare zone within Downtown

B2c. Introduce car sharing services (such as Zip Car or Flex Car) as an alternative to private vehicles

B2d. Expand bus connections between Downtown and adjacent neighborhoods; explore high-frequency circulator service similar to the Hop, Skip and Jump in Boulder

B2e. Provide cross-town transit on Larimer and/or Lawrence to connect Auraria West Station with Ballpark and Arapahoe Square

B2f. Change regulations to improve taxi service, especially for short-distance trips, in the Downtown area.

Streetcars can provide quick, efficient and attractive Intra-Downtown transit connections.

Strategy Diagram: Building on Transit

Denver Union Station and Civic Center Station will work in concert as hubs of regional and local transit.

Strengthening transit will increase opportunities for transit-oriented development, such as this mixed-use housing project in San Francisco, CA.

Civic Center Station will be strengthened as the local transit hub, with improved connections throughout Downtown and to the surrounding neighborhoods.

Denver Planning Commission pg B2

D2. Connecting Auraria

Strategy Diagram: Connecting Auraria

GOAL

Fully integrate the Auraria Campus and the Downtown core through strong physical, social, economic and programmatic connections.

WHY IT'S IMPORTANT

With three college campuses, Auraria is a critical educational amenity that can fortify Downtown's economy by providing educational, employment, and knowledge transfer opportunities for students, workers and businesses. Coordinate closely with the Auraria Campus Master Plan (2007) to accomplish the goals of both plans.

POLICIES, PROJECTS AND PROGRAMS

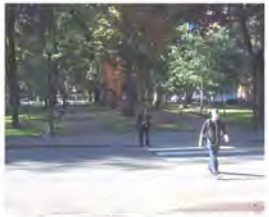
D2a. Enhance Speer Boulevard between Arapahoe and Wewatta as an urban gateway to better connect Auraria to the adjacent districts and by bringing buildings closer to the street; expanding sidewalk areas, augmenting landscaping and improving access to Cherry Creek

D2b. Promote a public-private development project on campus that connects to the Commercial Core and LoDo to boost Downtown vitality

D2c. Establish programmatic, economic and cultural links between Downtown and Auraria

- Market Downtown retail to students, faculty and staff
- Develop employee training and student internship programs
- Market continuing education programs to the Downtown community
- Develop a knowledge and technology transfer program
- Market campus cultural, sports and recreational events and facilities to the Downtown community

D2d. Connect Auraria and Auraria West Station and Downtown with the Larimer/Lawrence transit line



Portland State University in Portland, OR, seamlessly connects with the downtown along a green street.

The physical and perceptual gap between Downtown and Auraria must be closed (above). The Larimer Street connection, among others, should be improved with wider sidewalks, distinctive paving and crosswalks, and development that comes to the edge of Speer Boulevard (as depicted in the simulation at right).

34 Plan Strategies and Projects

Denver Planning Commission

Site Connections-

Page D2 of the Planning Commission's Revitalization plan of downtown Denver pertains directly to my site. By situating the site in such a way which can satisfy both the needs of the intended program, as well as the City of Denver's agenda, a win-win development agreement can be achieved. Many of the aspects which are intended in the thesis project are congruent to that of the Planning Commissions own vision of downtown Denver.

-Enhance Speer Boulevard Between Arapahoe and Wewatta for better connection to Auraria Districts.

-Promote a public-private development project connecting to LoDo.

-Establish programmatic, economic and cultural links between downtown and Auraria

-Connect Auraria and Auraria West Station and Downtown with other transit lines

D3. Downtown's New Neighborhood: Arapahoe Square

GOAL

Redevelop Arapahoe Square as a cutting edge, densely populated, mixed-use area that provides a range of housing types and a center for innovative businesses.

WHY IT'S IMPORTANT

Arapahoe Square affords great opportunity for another distinct district to develop in Downtown. The relatively large amount of underutilized land presents an opportunity to intensify that is unique within the core.

POLICIES, PROJECTS AND PROGRAMS

D3a. Reinforce neighborhood character by restoring the landscaped tree lawns (the area between the sidewalk and curb) and converting selected one-way streets to two-way

D3b. Improve Broadway and Park Avenue streetscapes

D3c. Revise land use regulations to implement the Plan

D3d. Provide building space and amenities to attract innovative businesses

D3e. Complete a small area plan for Ballpark and Arapahoe Square as a cutting edge, mixed-use district that has an exciting intensity of residential development and innovative businesses

- Issues for Arapahoe Square include zoning and design guidelines, protection of historic buildings, retail needs, local transit connections, and street design for the Grand Boulevards – Park Avenue and Broadway
- Examine zoning and create and adopt design guidelines for the Ballpark District to reinforce historic character through compatible infill development

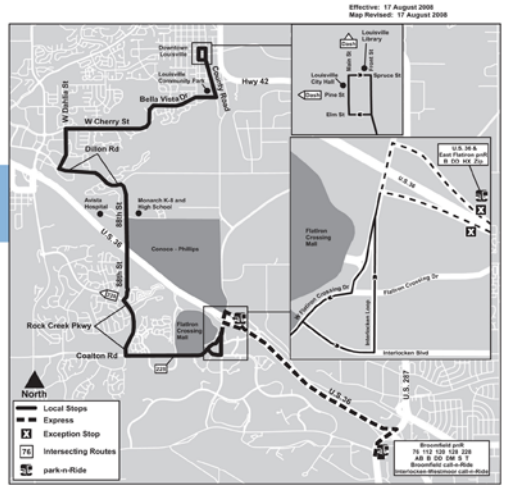
Strategy Diagram: Downtown's New Neighborhood - Arapahoe Square

Vibrant urban districts like Yaletown in Vancouver, BC are models for future redevelopment of Arapahoe Square.

The simulation at left illustrates some of the building types that will someday replace the area's existing surface parking lots and underutilized properties (above). Proposed concepts include slender residential towers, cutting-edge space for innovative businesses, mid-rise mixed-use buildings, ground floor active uses, and new open spaces.

Lynx CONNECTS

Route LYNX: Louisville/Broomfield



See appendix -2

SOUTH Louisville to Broomfield p-n-R

Monday/Friday						Saturday					
Spruce St - Main St (Downtown Louisville)	W Dahlia St - W Cherry St	88th St - Campus Dr (Monarch School Campus)	Coalton Rd - Summit Blvd	U.S. 36 & Flatiron Circle East park-n-Ride (Flatiron Crossing Mall)	Broomfield park-n-Ride - Gate C (W 120th Ave - Wadsworth Pkwy)	Spruce St - Main St (Downtown Louisville)	W Dahlia St - W Cherry St	88th St - Campus Dr (Monarch School Campus)	Coalton Rd - Summit Blvd	U.S. 36 & Flatiron Circle East park-n-Ride (Flatiron Crossing Mall)	Broomfield park-n-Ride - Gate C (W 120th Ave - Wadsworth Pkwy)
603A	611	617	622	625	630	903A	911	917	920	925	930
633	641	647	652	655	700	1003	1011	1017	1020	1025	1030
703	711	717	722	725	730	1103	1111	1117	1120	1125	1130
733	741	747	752	755	800	1203P	1211	1217	1220	1225	1230
803	811	817	822	825	830	103	111	117	120	125	130
833	841	847	852	855	900	203	211	217	220	225	230
903	911	917	922	925	930	303	311	317	320	325	330
933	941	947	952	955	1000	403	411	417	420	425	430
1003	1011	1017	1022	1025	1030	503	511	517	520	525	530
1103	1111	1117	1122	1125	1130	603	611	617	620	625	630
1203P	1211	1217	1222	1225	1230	703	711	717	720	725	730
103	111	117	122	125	130	803	811	817	820	825	830
203	211	217	222	225	230	903	911	917	920	925	930
233	241	247	252	255	300						
303	311	317	322	325	330						
333	341	347	352	355	400						
403	411	417	422	425	430						
433	441	447	452	455	500						
503	511	517	522	525	530						
533	541	547	552	555	600						
603	611	617	622	625	630						
703	711	717	722	725	730						
803	811	817	822	825	830						
903	911	917	922	925	930						

For information call: 303.299.6000 or RTD-Denver.com

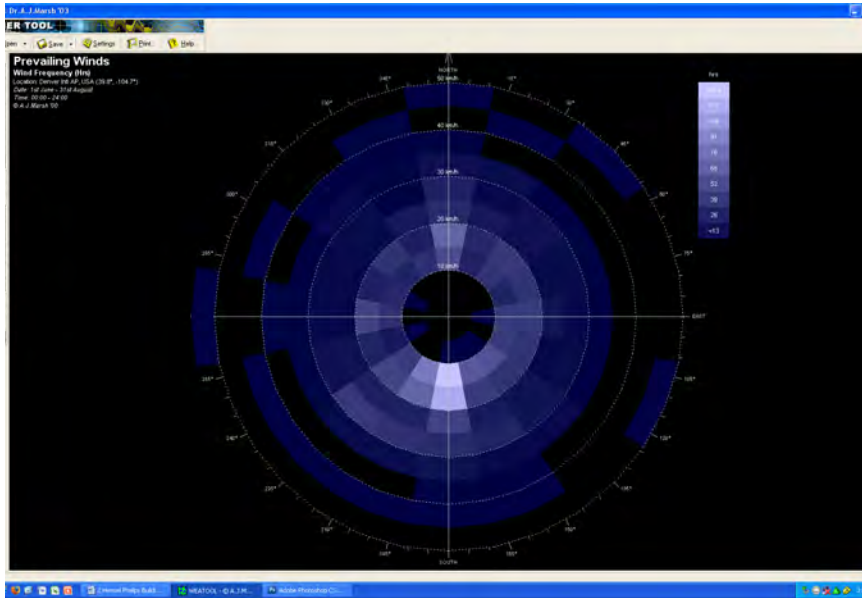
NORTH Broomfield p-n-R to Louisville

Monday/Friday						Saturday					
Broomfield park-n-Ride - Gate C (W 120th Ave - Wadsworth Pkwy)	U.S. 36 & Flatiron Circle East park-n-Ride (Flatiron Crossing Mall)	Coalton Rd - West Flatiron Crossing Circle	88th St - Campus Dr (Monarch School Campus)	W Cherry St - W Dahlia St	Spruce St - Main St (Downtown Louisville)	Broomfield park-n-Ride - Gate C (W 120th Ave - Wadsworth Pkwy)	U.S. 36 & Flatiron Circle East park-n-Ride (Flatiron Crossing Mall)	Coalton Rd - West Flatiron Crossing Circle	88th St - Campus Dr (Monarch School Campus)	W Cherry St - W Dahlia St	Spruce St - Main St (Downtown Louisville)
635A	639	643	648	653	701	935A	939	943	948	953	1001
705	709	713	718	723	731	1035	1039	1043	1048	1053	1101
735	739	743	748	753	801	1135	1139	1143	1148	1153	1201P
805	809	813	818	823	831	1235P	1239	1243	1248	1253	101
835	839	843	848	853	901	135	139	143	148	153	201
905	909	913	918	923	931	235	239	243	248	253	301
935	939	943	948	953	1001	335	339	343	348	353	401
1035	1039	1043	1048	1053	1101	435	439	443	448	453	501
1135	1139	1143	1148	1153	1201P	535	539	543	548	553	601
1235P	1239	1243	1248	1253	101	635	639	643	648	653	701
135	139	143	148	153	201	735	739	743	748	753	801
235	239	243	248	253	301	835	839	843	848	853	901
305	309	313	318	323	331	935	939	943	948	953	1001
335	339	343	348	353	401						
405	410	414	419	424	432						
435	440	444	449	454	502						
505	510	514	519	524	532						
535	540	544	549	554	602						
605	609	613	618	623	631						
635	639	643	648	653	701						
735	739	743	748	753	801						
835	839	843	848	853	901						
935	939	943	948	953	1001						

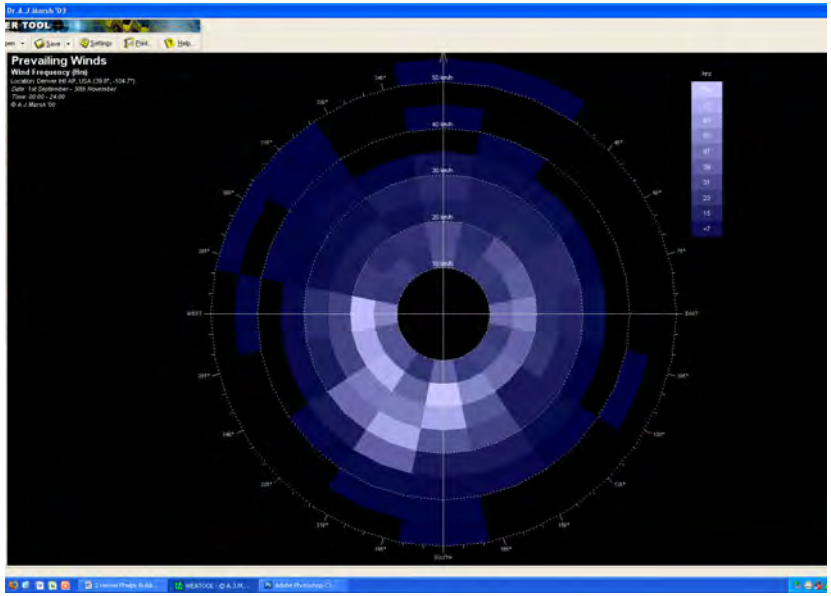
For information call: 303.299.6000 or RTD-Denver.com

Site Connections-

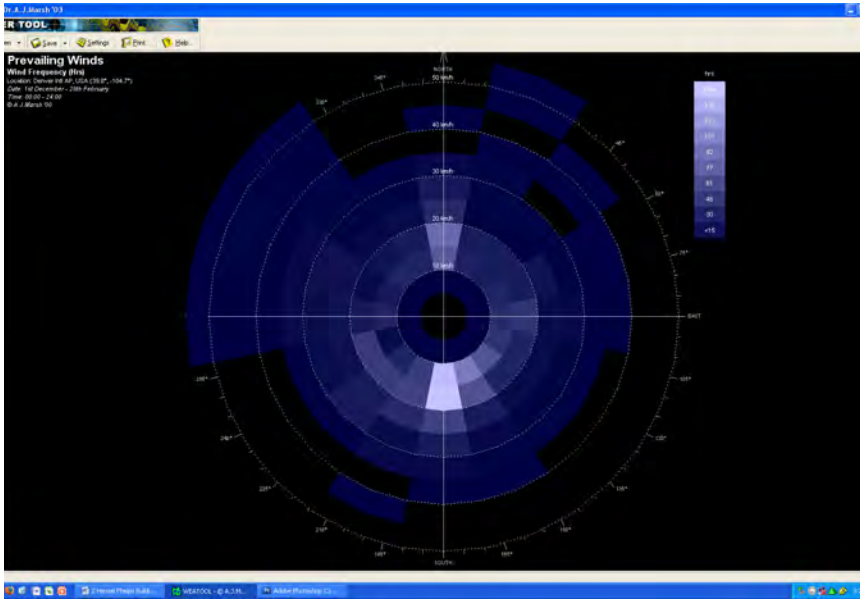
By incorporating the existing bus lines and train lines within a greater system, a broader advantage can and will take place. These systems are those of which go outside the central downtown area to service the existing suburban sectors of Denver. Through investigation, the correct lines will get the added boost allowing for a more fully integrated public transportation system throughout the greater downtown Denver and its neighboring towns.



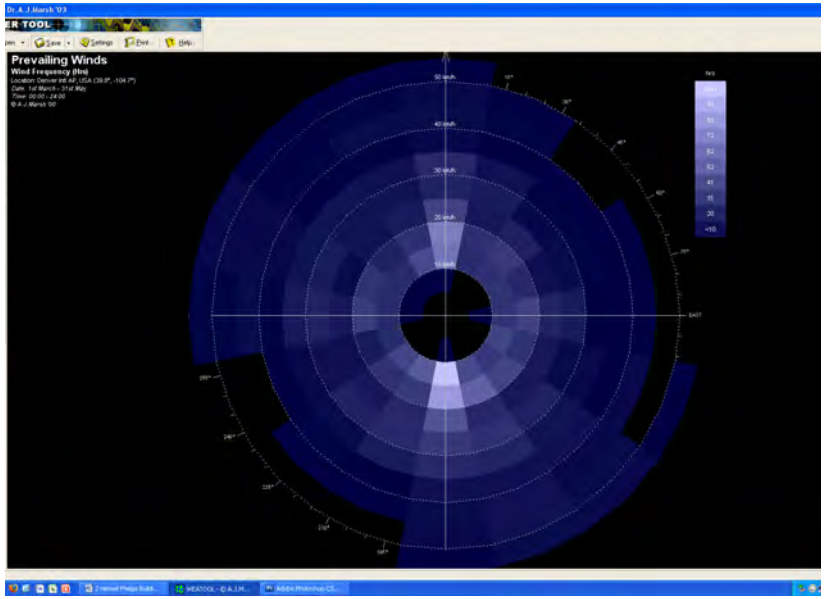
Surrounding Site- Denver, Summer Wind Rose



Surrounding Site- Denver, Autumn Wind Rose

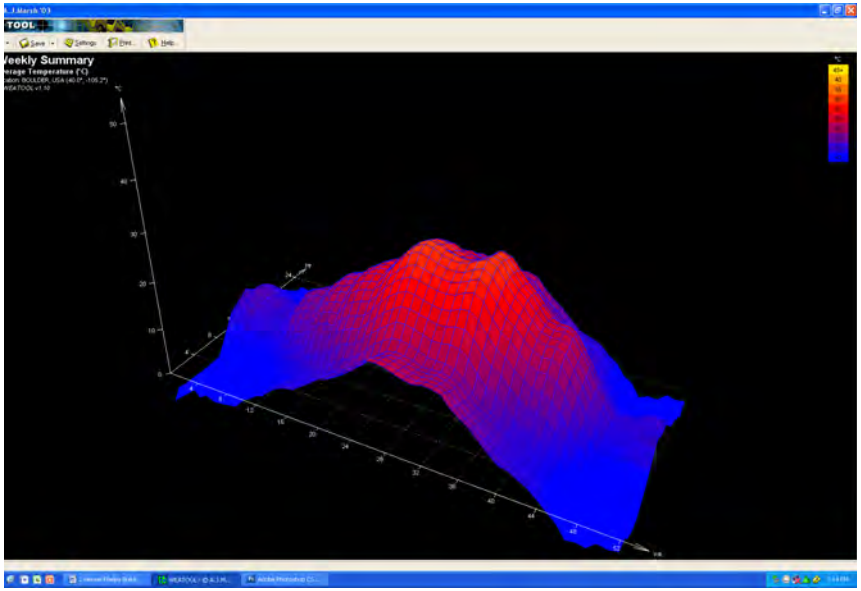


Surrounding Site- Denver, Winter Wind Rose

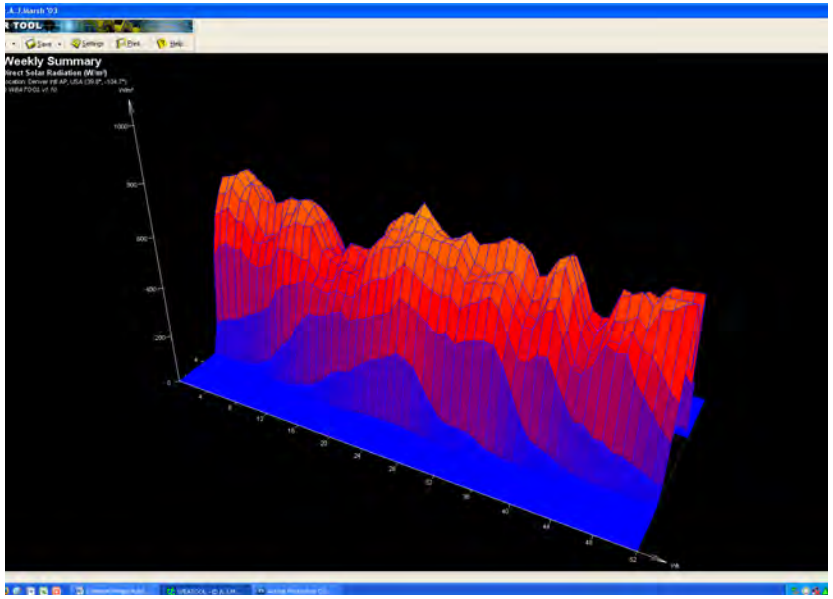


Surrounding Site- Denver, Spring Wind Rose

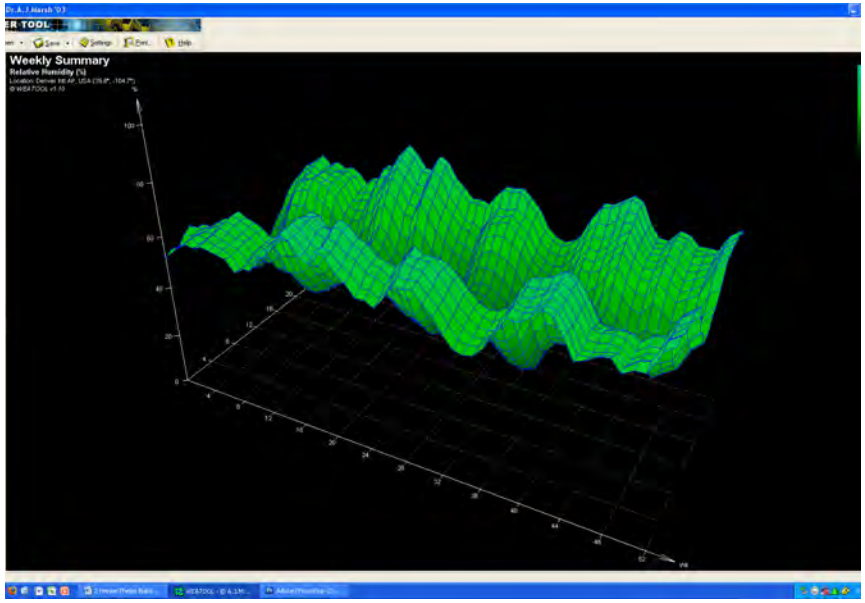
Denver Weather Conditions



Surrounding Site- Denver, Average Temperature

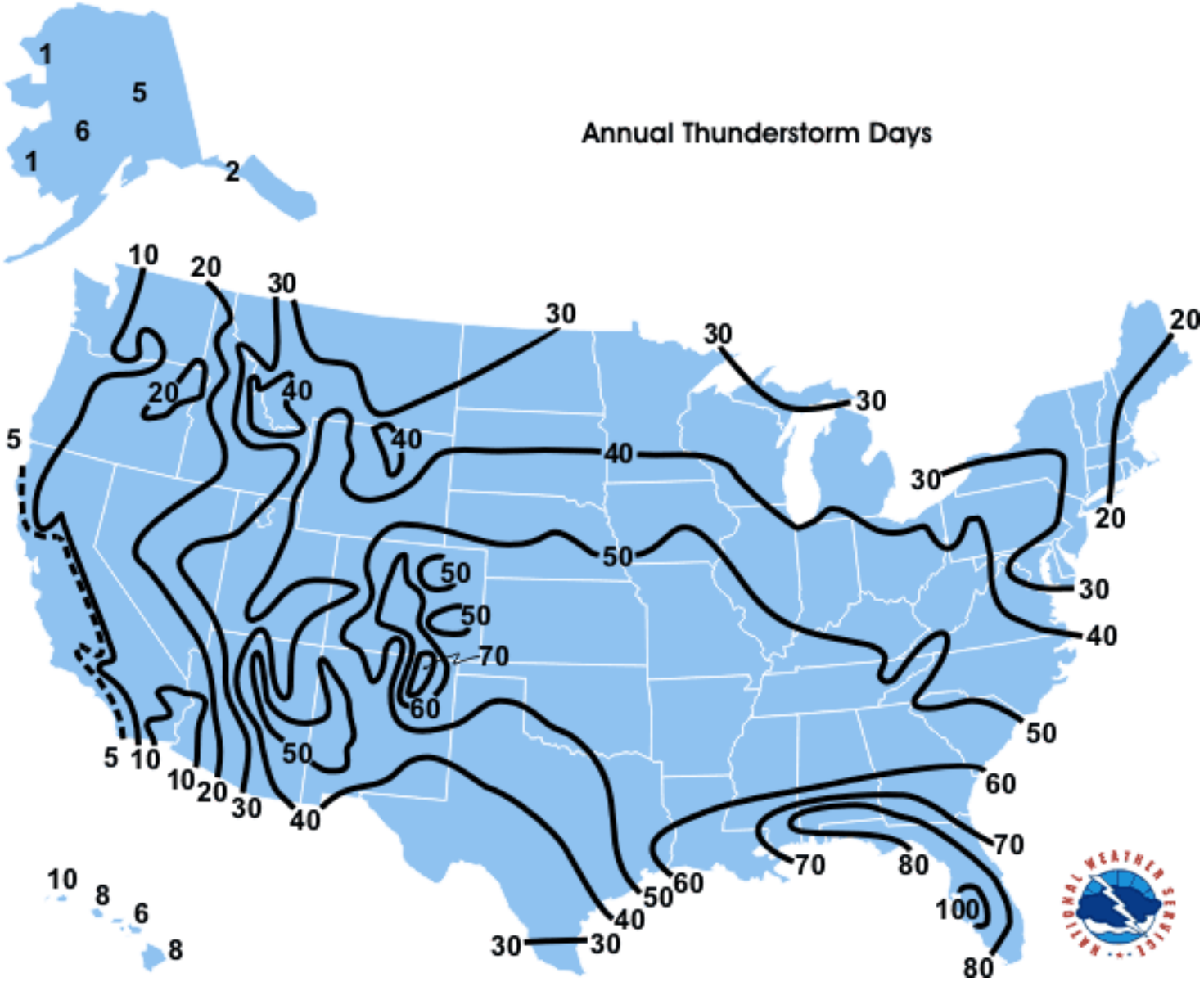


Surrounding Site- Denver, Direct Solar Radiation



Surrounding Site- Denver, Relative humidity

Surrounding Site- Denver, Neighborhoods


Annual Thunderstorm Days
1
5
6
1
2
10
20
30
30
30
30
20
20
40
40
40
5
30
20
50
50
50
30
40
70
60
50
5
10
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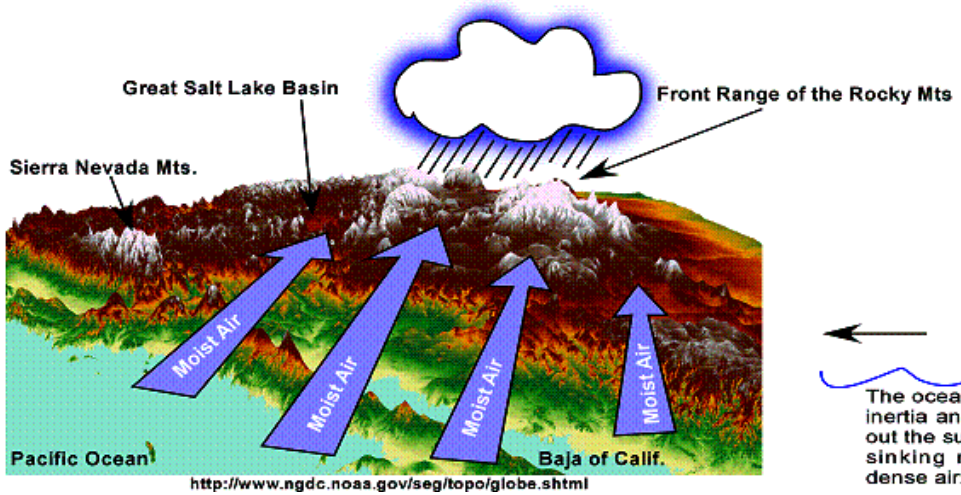
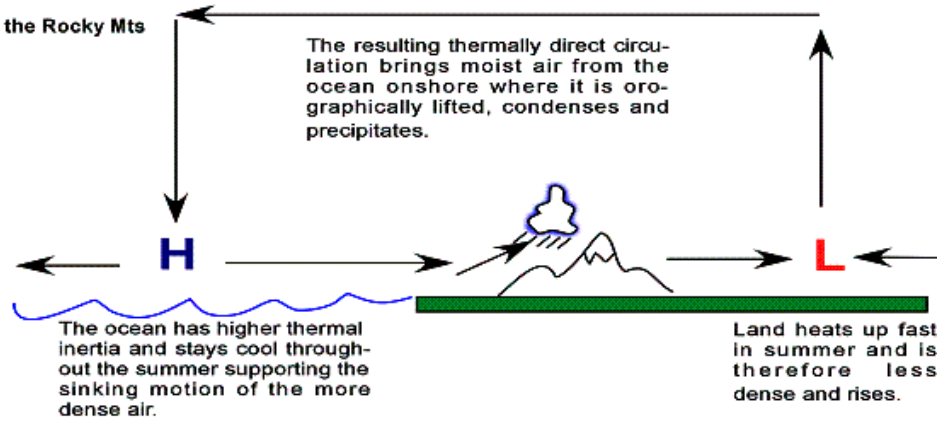
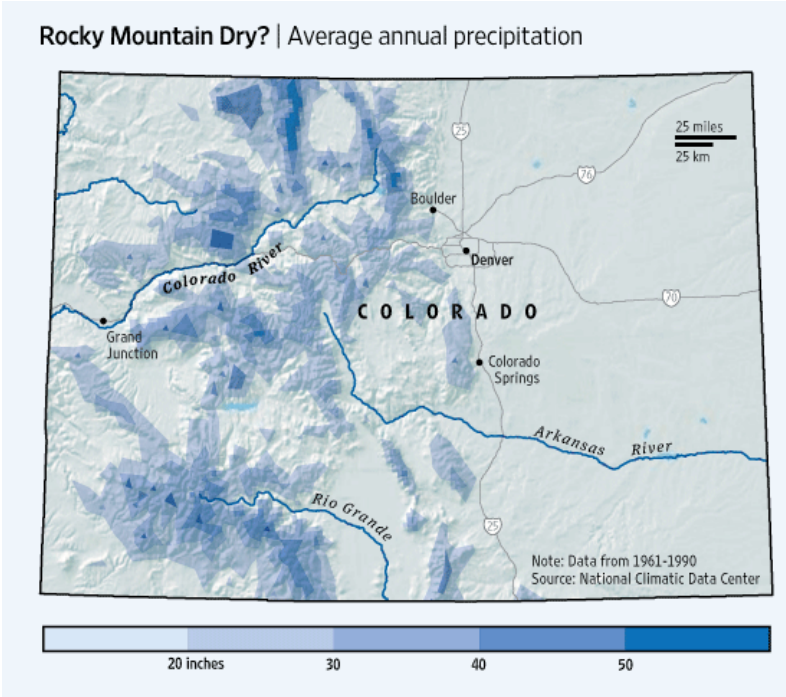
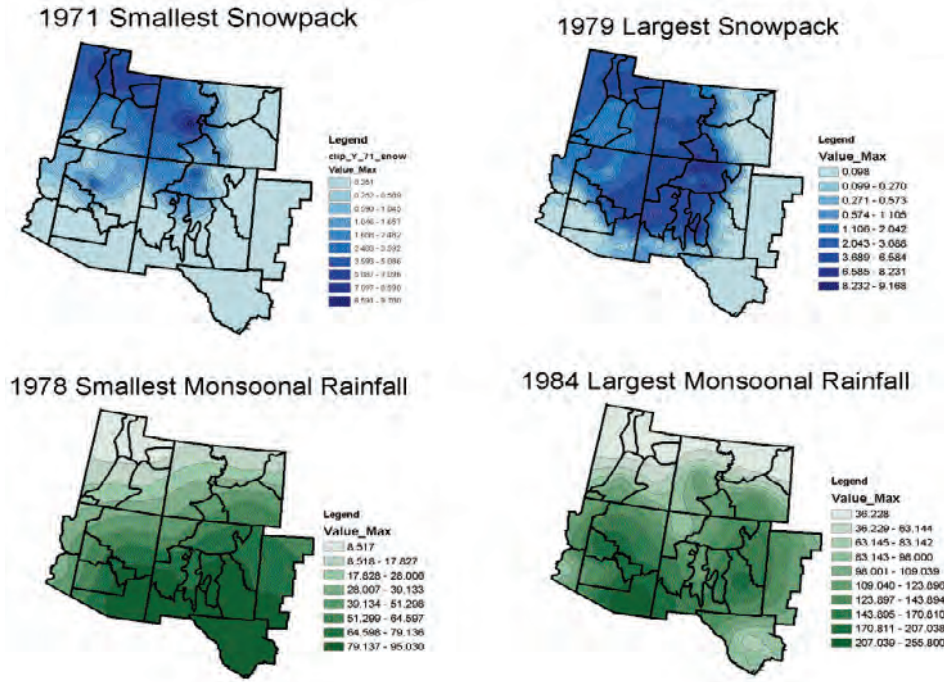
100
80
60
50
40
30
30
10
8
6
8

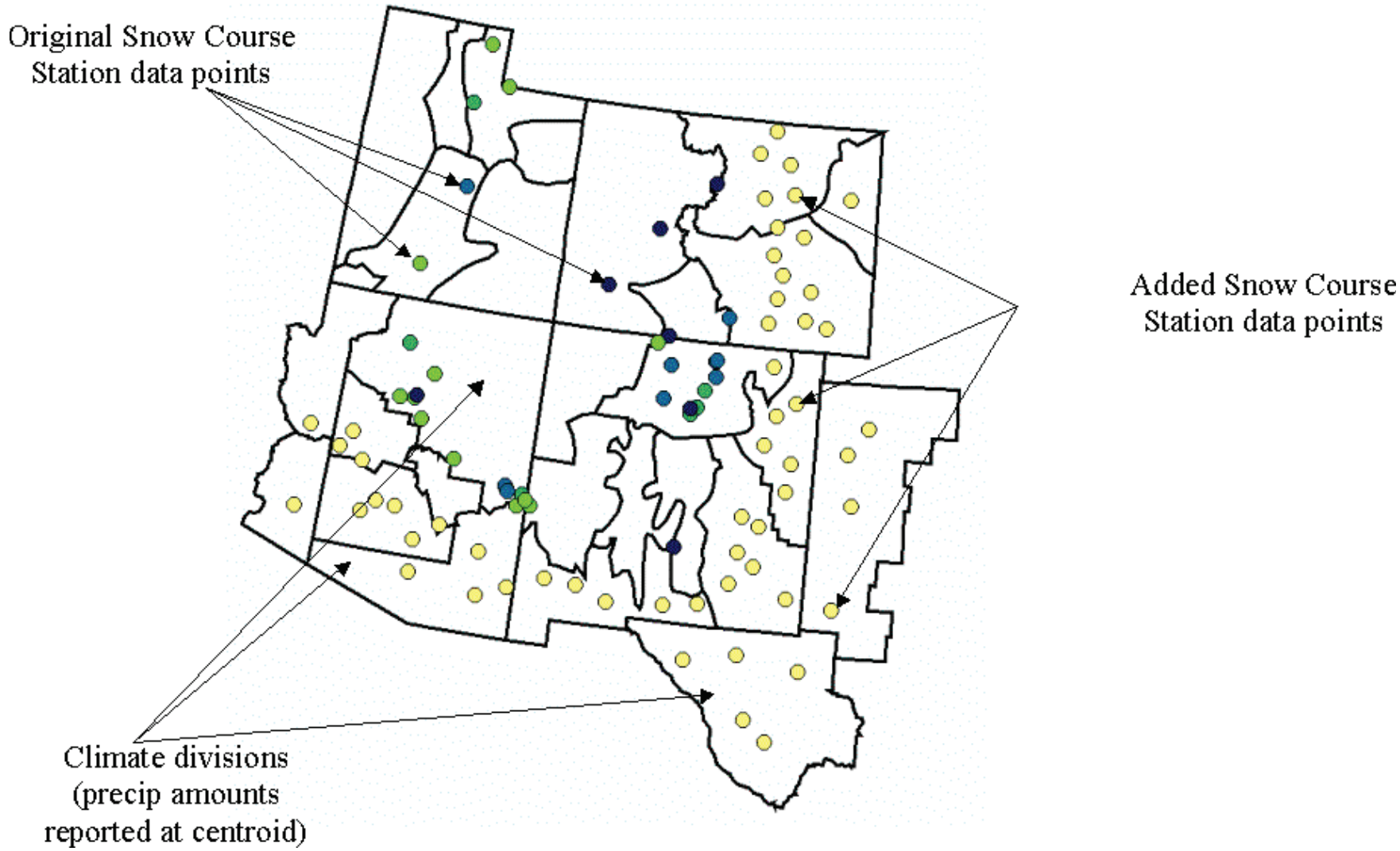


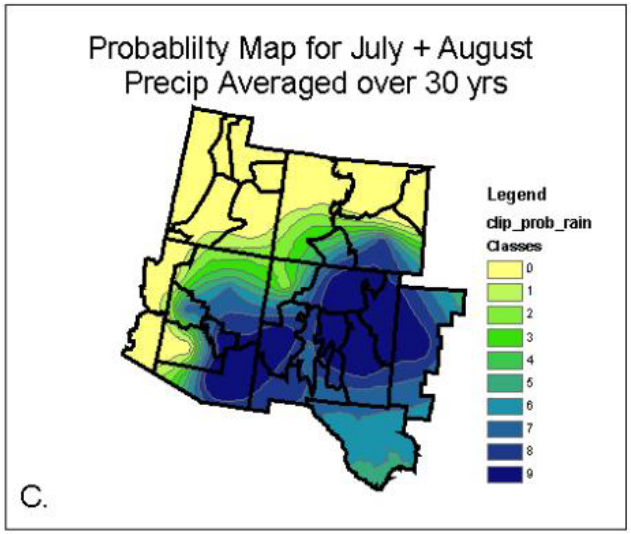
http://www.ngdc.noaa.gov/seg/topo/globe.shtml

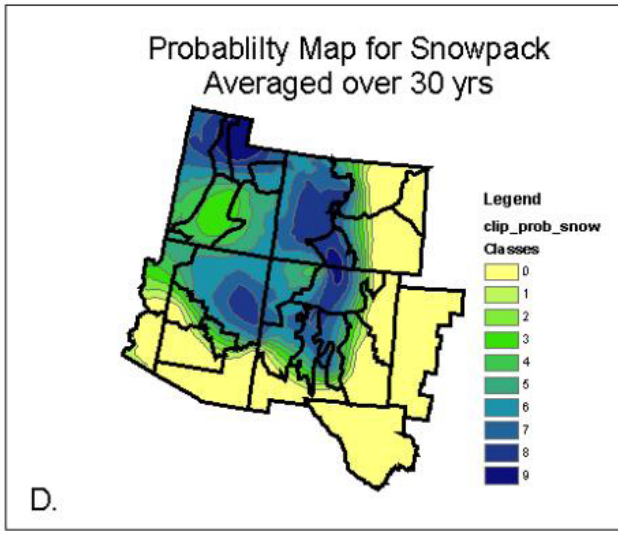


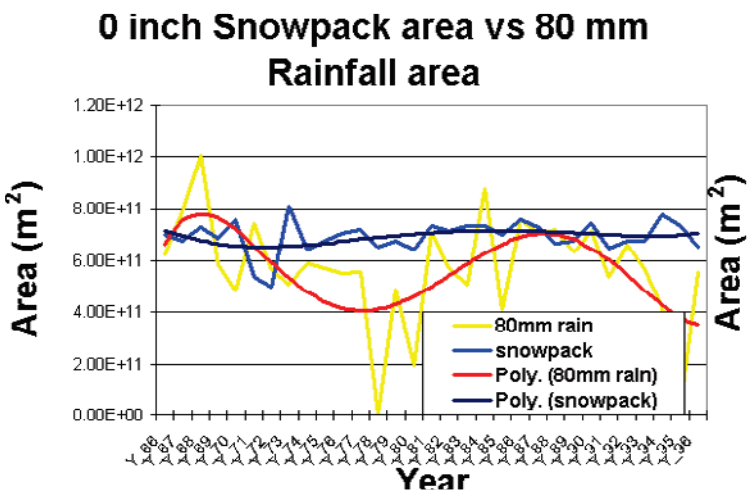


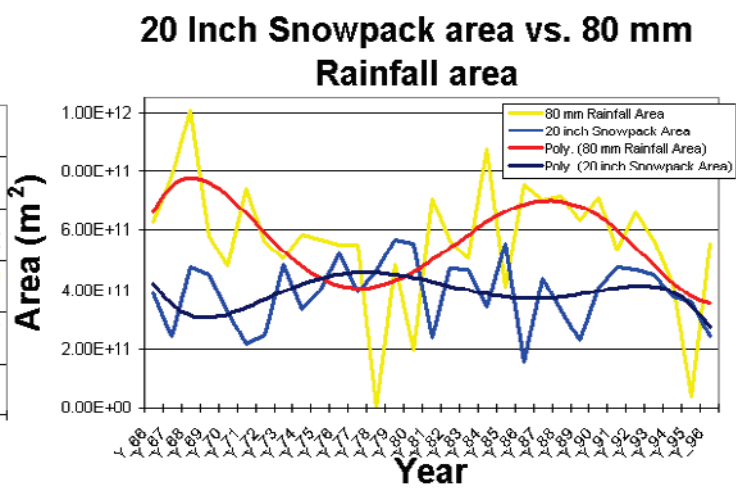


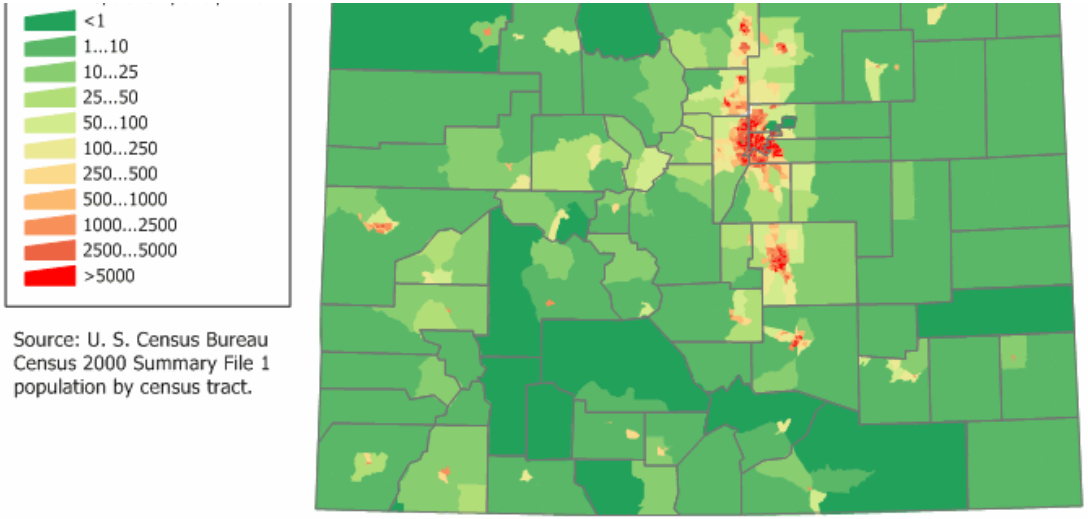

Original Snow Course
Station data points
Added Snow Course
Station data points
Climate divisions
(precip amounts
reported at centroid)


Probablilty Map for July + August
Precip Averaged over 30 yrs
Legend
clip_prob_rain
Classes
0
1
2
3
4
5
6
7
8
9
C.


Probablilty Map for Snowpack
Averaged over 30 yrs
Legend
clip_prob_snow
Classes
0
1
2
3
4
5
6
7
8
9
D.


0 inch Snowpack area vs 80 mm Rainfall area
Area (m2)
1.20E+12
1.00E+12
8.00E+11
6.00E+11
4.00E+11
2.00E+11
0.00E+00
80mm rain
snowpack
Poly. (80mm rain)
Poly. (snowpack)
Year


20 Inch Snowpack area vs. 80 mm Rainfall area
Area (m2)
1.00E+12
0.00E+11
6.00E+11
4.00E+11
2.00E+11
0.00E+00
80 mm Rainfall Area
20 inch Snowpack Area
Poly. (80 mm Rainfall Area)
Poly. (20 inch Snowpack Area)
Year



Colorado State, Population Density

Superior, Colorado- Suburban Housing- Boulderhousing.com

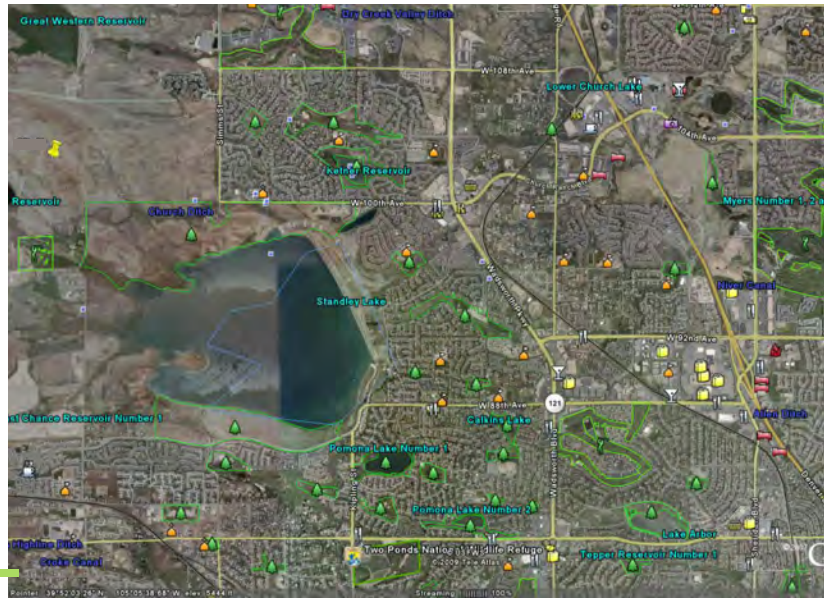
Housing-

The surrounding Housing typology is consistently suburban style, non-linear sprawl. The town of Superior is developed along the two major axis and roads that run through the town- “Rout 121” and the “Denver Boulder Turnpike”

Superior, Colorado- Sunset- googleearth.com

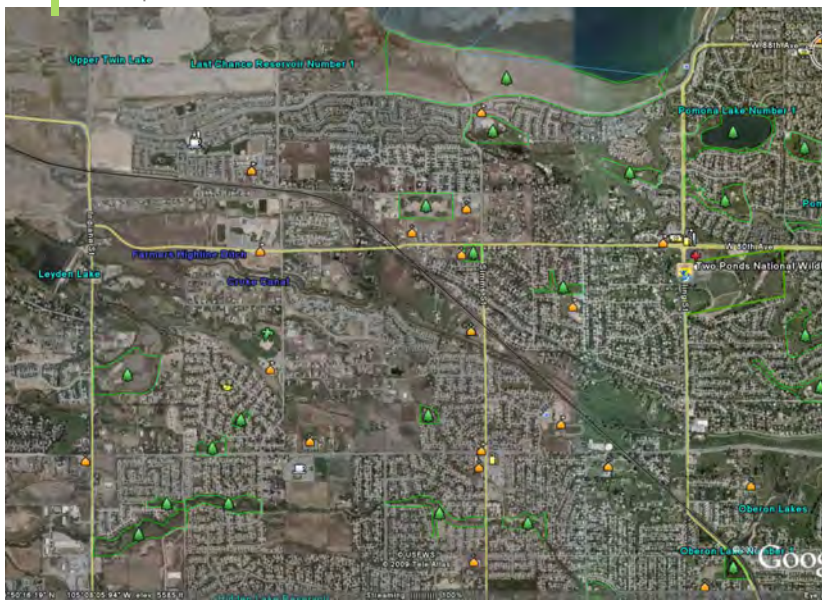
Superior, Colorado- Aerial View

North Superior



East Superior

West Superior



South Superior

Superior, Colorado-

Superior is located within Boulder and Jefferson counties in the U.S. state of Colorado. According to United States Census Bureau estimates, the population of the city was 10,308 on 2005-07-01.

Demographics-

Average Family Size
3.20
Average Household Size
2.67

As of the census[7] of 2000, there were 9,011 people, 3,381 households, and 2,285 families residing in the town. The population density was 2,279.2 people per square mile (880.8/km²). There were 3,754 housing units at an average density of 949.5/sq mi (366.9/km²). The racial makeup of the town was 86.84% White, 1.27% African American, 0.34% Native American, 7.48% Asian, 0.02% Pacific Islander, 1.93% from other races, and 2.12% from two or more races. Hispanic or Latino of any race were 4.86% of the population.

There were 3,381 households out of which 42.6% had children under the age of 18 living with them, 59.7% were married couples living together, 5.2% had a female householder with no husband present, and 32.4% were non-families. 21.4% of all households were made up of individuals and 0.5% had someone living alone who was 65 years of age or older. The average household size was 2.67 and the average family size was 3.20.

In the town the population was spread out with 29.4% under the age of 18, 9.2% from 18 to 24, 44.4% from 25 to 44, 15.4% from 45 to 64, and 1.5% who were 65 years of age or older. The median age was 31 years. For every 100 females there were 106.1 males. For every 100 females age 18 and over, there were 107.3 males.

The median income for a household in the town was $82,079, and the median income for a family was $92,543. Males had a median income of $66,265 versus $37,108 for females. The per capita income for the town was $36,326. About 2.5% of families and 3.8% of the population were below the poverty line, including 1.7% of those under age 18 and none of those age 65 or over.

Geography and Climate-

Superior is located at 39°55′45″N 105°09′18″W (39.934718, -105.162786)[6]. According to the United States Census Bureau, the town has a total area of 4.0 square miles (10.3 km²), of which, 4.0 square miles (10.2 km²) of it is land and 0.04 square miles (0.1 km²) of it (0.50%) is water.

Brief History-

The town is known for its coal industry. Found in the late 1800's the "superior quality" of its coal is what gave the town its name. Founded in 1896, it was incorporated in 1904.

Mining was the major force in Superior's history until the Industrial Mine closed in 1945. Subsequently, many people moved out of the area and the Town evolved into a quiet ranching and farming community. The Town's population hovered around 250 until recently.

Transportation

Superior is a participant of the Denver metro-area bus and light rail system under the Regional Transportation District or RTD. Buses run along between Superior and Louisville, with connections to other area communities. There is an RTD Park-n-Ride area located just off U.S. 36 and McCaslin Boulevard.
There is also a Superior call-n-Ride that is designed to supplement existing RTD service and make it easy for commuters, school children, and others to get where they need to go. The Superior call-n-Ride takes you directly from your door to your destination.

The new LYNX route connects Downtown Louisville to the U.S. 36 corridor and serves the FlatIron Mall, Avista Hospital, Monarch K-8, Monarch High School, the U.S. 36 and East Flatiron Circle park-n-Ride and the Broomfield park-n-Ride. Use it for service to Superior, the Rock Creek neighborhood and Interlocken. It's a sleek new way to stay connected along U.S. 36, with easy access to work, school, shopping and entertainment.

United States Census Bureau

United States Census Bureau
Wikipedia.com

Sales & Use Tax

Sales Tax

The Town of Superior levies sales tax on tangible personal property or taxable services that are purchased, sold, leased, or rented in the Town. The term “in the Town” includes any tangible personal property or taxable service that is provided or delivered to the purchaser within the Town of Superior limits. Superior’s current sales tax rate is 3.46% of the retail purchase price of the tangible personal property or taxable services being purchased, sold, leased, rented, or otherwise consumed. Each separate and distinct sale is considered a taxable transaction. Sales tax is legally charged at the point of sale-which is where ownership changes. Therefore, if you purchase an item in an incorporated area, you will be charged tax for the Town in which you are purchasing the item. Sales tax is collected by the State of Colorado and distributed to the Town.

There is an exception to the general rule of taxation at point of ownership. Automotive vehicles, mobile machinery and self propelled construction equipment are typically based on location of residency.

Use Tax

Use tax is a complement to sales tax. When Town sales tax is not charged to the purchaser of tangible property or taxable services that the purchaser will use, store or consume in Superior, the unpaid sales tax is imposed on the purchaser as a use tax.

State Government History”. State of Colorado, Department of Person

Local Businesses

Dealerships-

Land Rover Flatirons

Restaurants-

Abo’s Pizza
Arby’s
Bruno’s Pizza
Buffalo Wild Wings Grill & Bar
Chuck E. Cheese
Colorado Wok
IHOP
Old Chicago
Panda Express
Panera Bread
Subway
Super Joe Speciality Coffee
Sushi Yoshi
Wendy’s

Retail-

Banfield, the Pet Hospital of Superior
Blockbuster Video
Conoco
Costco Wholesale
Dina’s Bridal & Tux
Game Stop
General Nutrition Center (GNC)
Grandrabbit’s Toy Shoppe
J. Albrecht Fine Jewelry
Mattress King
Michael’s Arts & Crafts
Office Max
Petsmart
Rock Creek Wine and Spirits
Ross
Safeway Food & Drug
Sally Beauty Supply
Sports Authority
Superior Liquor Mart
SuperTarget
T.J. Maxx
Whole Foods

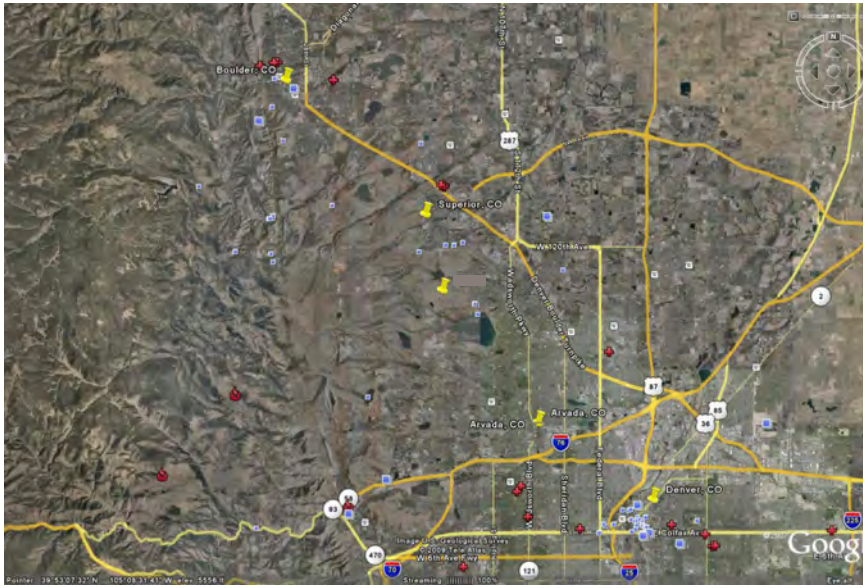
Services

Bank of the West
Bodies in Motion Chiropractic
Brakes Plus
Costco Wholesale
Curves for Women
Dry Cleaning Station
Flatirons Dental & Orthodontics
Form and Function
Grand Nails
Great Clips for Hair
John’s Cleaners
La Vie Salon and Spa
Liberty Savings Bank
Lollilocks
Marketplace Dental Group
Portrait Inovations
Qualex Photo Service (in Costco)
Rock Creek Chiropractic
Scientific Cleaners
State Farm
Supercuts
Superior Self Storage & Uhaul
Superior Veterinary Clinic
T & C Nails
Target Optical Shop
The Studio at Target
UPS Store
Wholesale
Costco Wholesale

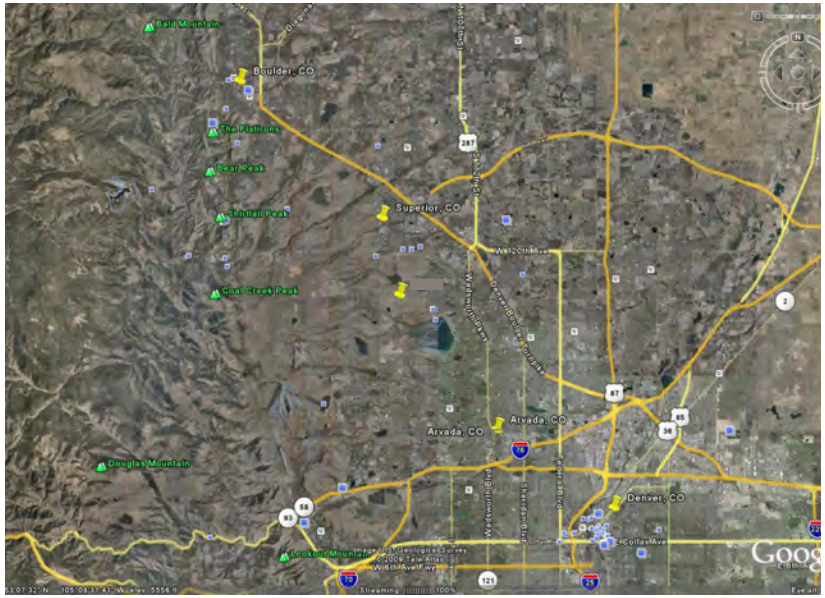
Superior Colorado-

Compared to the dense and organized downtown Denver, Superior is sprawled out and expansive. Although it maintains itself as one of the major surrounding towns, not much is offered within the town. Say for a few smaller businesses, most of the town depends on Denver and Boulder for well-being.

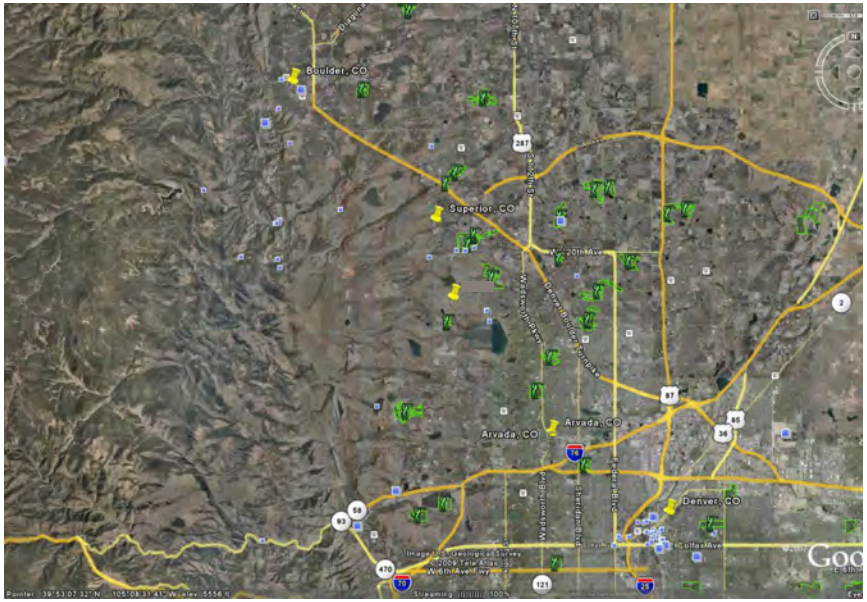
Aerial View of Suburban Superior Colorado



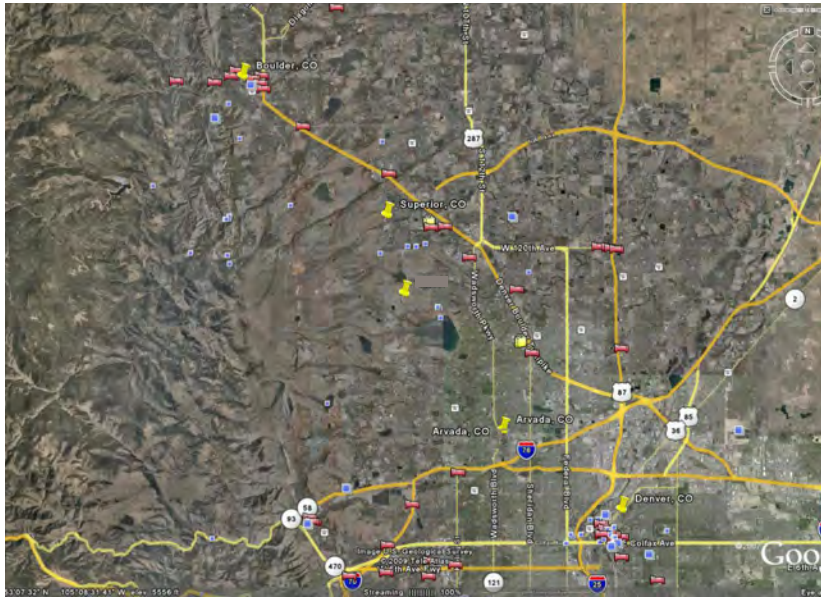
Fire and Hospital Adjacencies



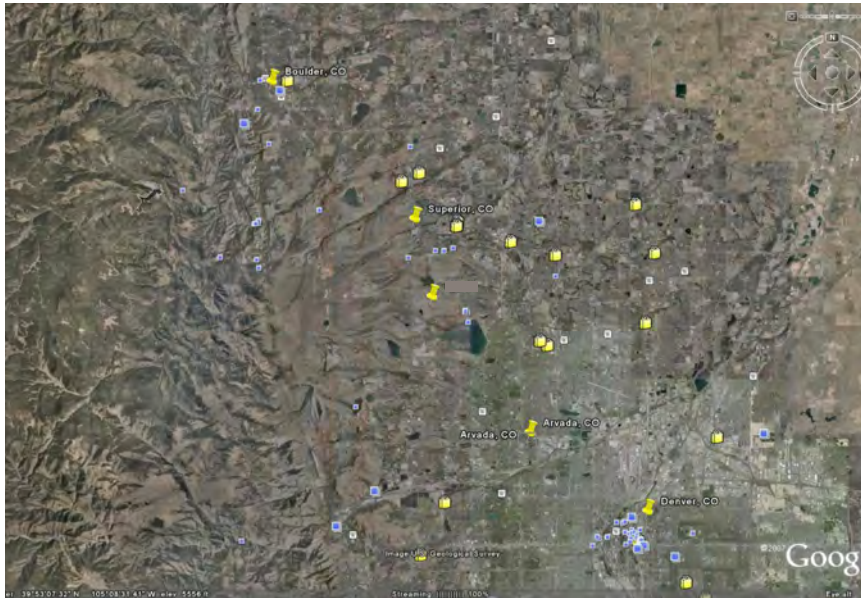
Geographic Features



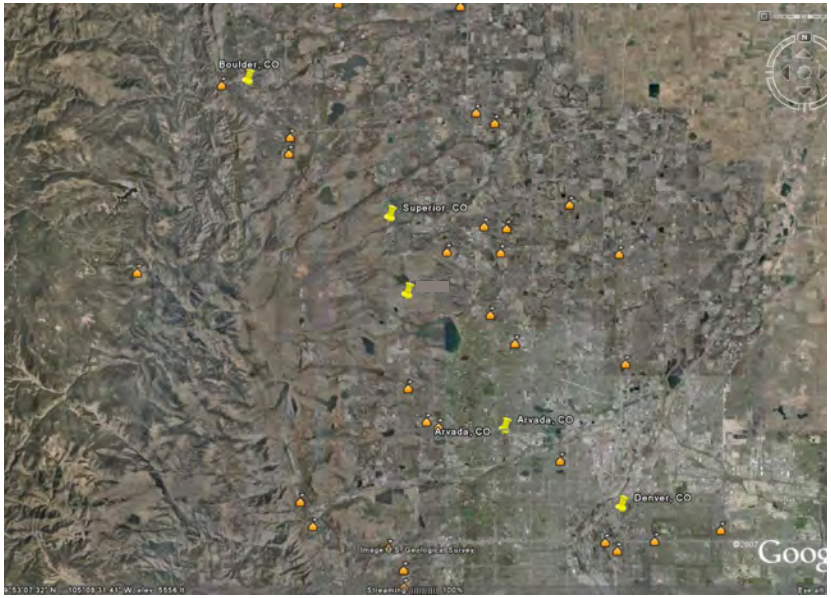
Golf Courses



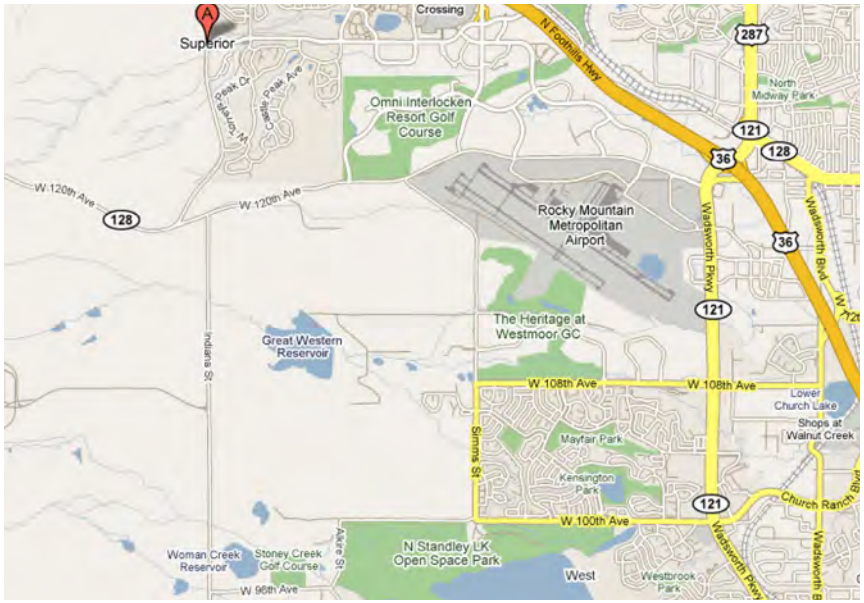
Lodging



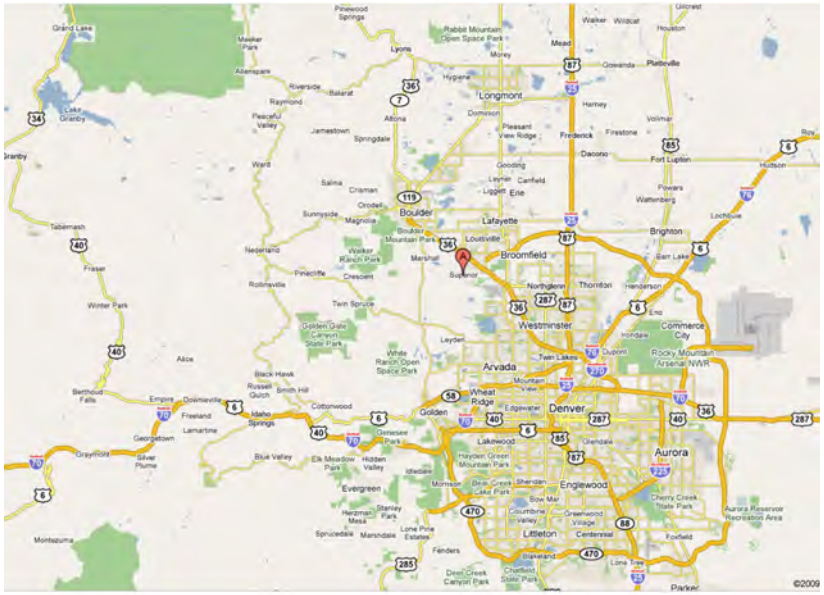
Major Retail



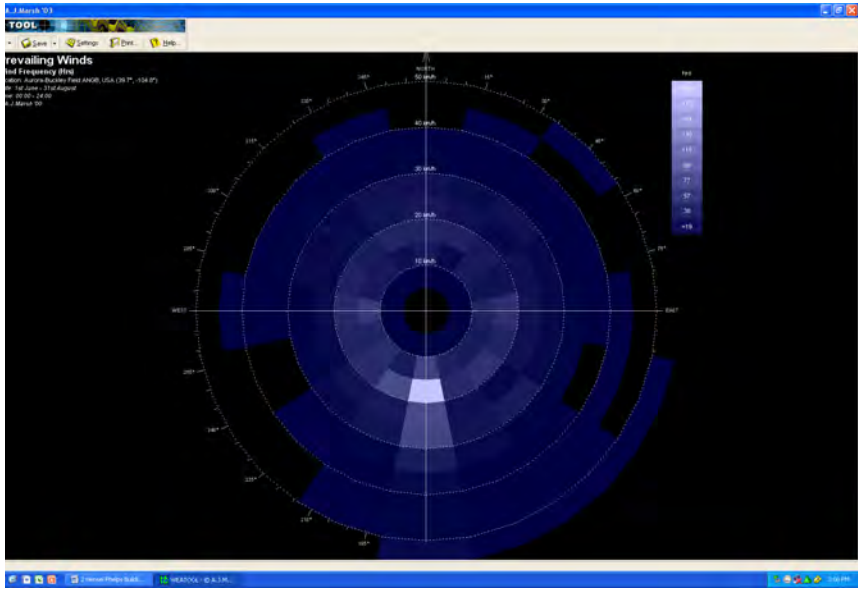
Schools and Colleges



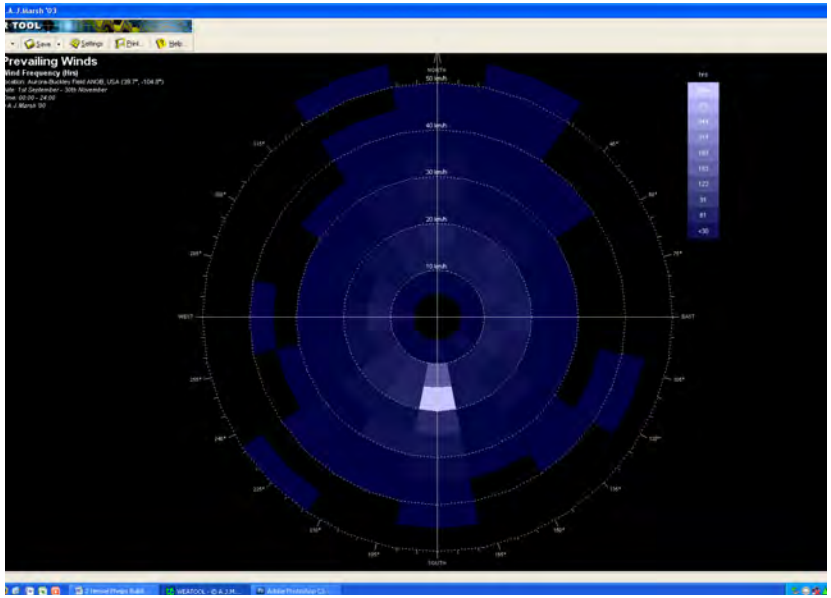
Site Conditions- Map1



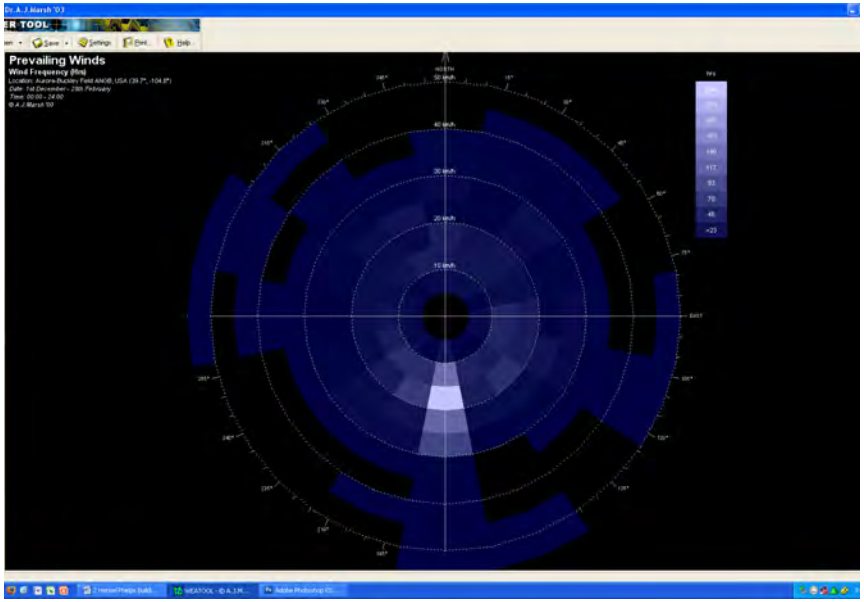
Site conditions- Map 2



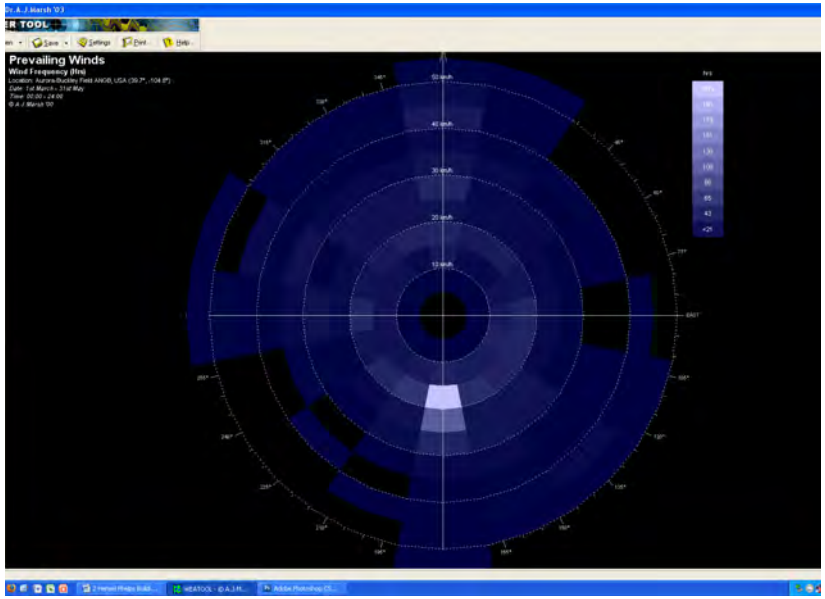
Surrounding Site- Aurora, Summer Wind Rose



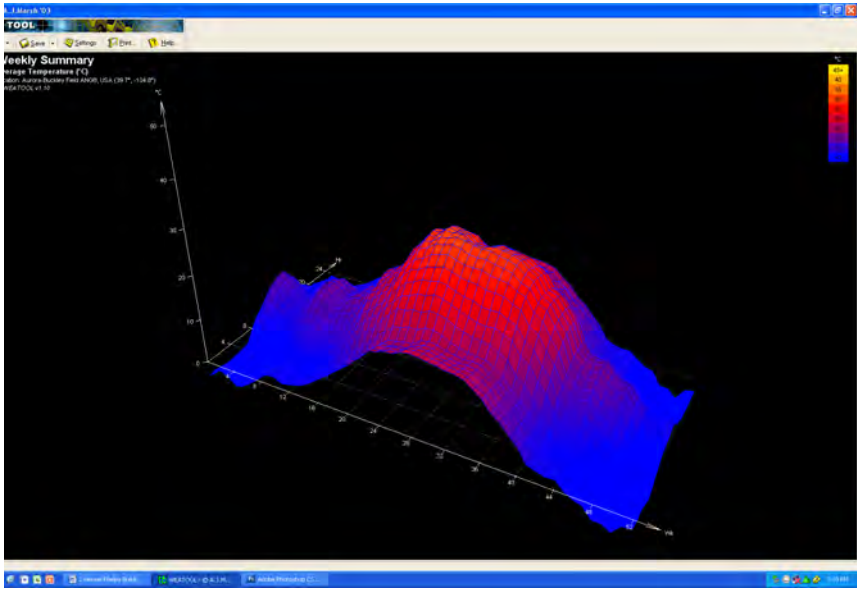
Surrounding Site- Aurora, Autumn Wind Rose



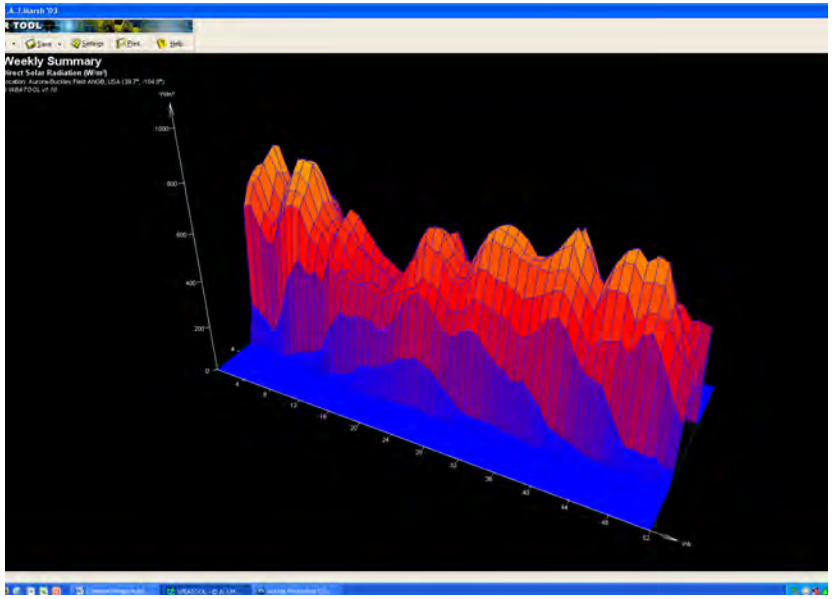
Surrounding Site- Aurora, Winter Wind Rose



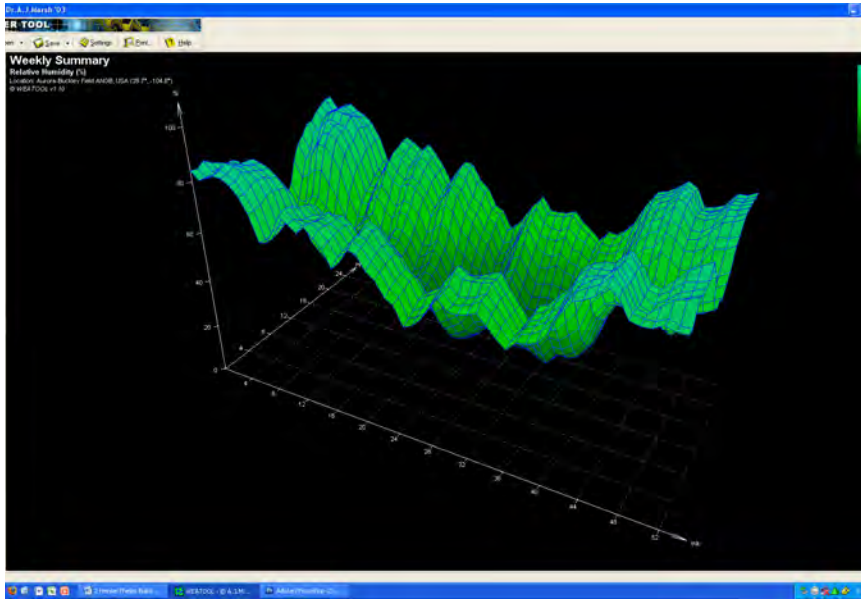
Surrounding Site- Aurora, Spring Wind Rose



Surrounding Site- Aurora, Average Temperature



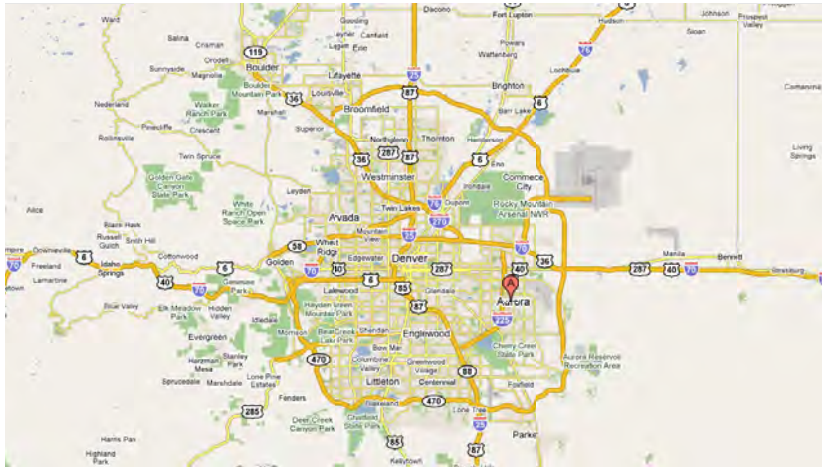
Surrounding Site- Aurora, Direct Solar Radiation



Surrounding Site- Aurora, Relative humidity

lorado - Google Maps http://maps.google.com/maps?hl=en&q=aurora+

Google Maps Address



Aurora map- Southeast of Denver

Boulder, Colorado

Boulder is the 11th most populous city in the state of Colorado. The United States Census Bureau estimates that in 2005 The population of the city of Boulder was 91,685, while the population of the Boulder Metropolitan Statistical Area was 280,440. Boulder is the home of the main campus of the University of Colorado, the state's largest university, and Naropa University, one of two accredited Buddhist-inspired universities in the United States. Boulder is located in the foothills of the Rocky Mountains, only 25 miles (40 km) northwest of Denver, at an elevation of 5,430 feet (1,655 m).

Demographics-

As of the census of 2000, there are 94,673 people, 39,596 households, and 16,788 families residing in the city. The population density is 1,499.9/km² (3,884.1/sq mi), making Boulder's population density higher than Denver's and among the highest in the state; of Colorado's twenty-one largest cities, only Englewood and Northglenn (two close-in Denver suburbs) have greater population densities. There are 40,726 housing units at an average density of 1,670.8/sq mi (645.2/km²). The racial makeup of the city is 88.33% White, 1.22% Black or African American, 0.48% Native American, 4.02% Asian, 0.05% Pacific Islander, 3.50% from other races, and 2.40% from two or more races. 8.9% of the population are Hispanic or Latino/Latina of any race.

There are 39,596 households out of which 20.0% have children under the age of 18 living With them, 33.3% are married couples living together, 6.5% have a female householder with no husband present, and 57.6% are non-families. 33.7% of all households are made up of individuals and 6.2% have someone living alone who is 65 years of age or older. The average household size is 2.20 and the average family size is 2.84.

Boulder's population is younger than the national average, largely due to the presence of university students. The median age is 29 years compared to the U.S. median of 35.1 years. In Boulder, 14.8% of the residents are under the age of 18, 25.9% from 18 to 24, 33.0% from 25 to 44, 18.4% from 45 to 64, and 7.8% are 65 years of age or older. For every 100 females there are 106.8 males. For every 100 females age 18 and older, there are 107.4 males.

According to a 2007 estimate, the median household income in Boulder is $50,209, and the median family income is $85,807. Males have a median income of $41,829 versus $32,100 for females. The per capita income for the city is $31,539. 17.4% of the population and 6.4% of families are below the poverty line. Out of the total population, 10.4% of those under the age of 18 and 6.5% of those 65 and older are living below the poverty line. The higher population poverty line is due to the large number of college students living in the area. Boulder housing tends to be priced higher than surrounding areas. For the 2nd quarter of 2006, the median single family home in Boulder sold for $548,000 and the median attached dwelling (condo or town home) sold for $262,000.

According to that National Association of Realtors, during the same period the median value of single family homes nationwide was $227,500.

United States Census Bureau
Wikipedia.com

Historical populations

Census	Pop.	%±
1870	343	—
1880	3,069	794.8%
1890	3,330	8.5%
1900	6,150	84.7%
1910	9,539	55.1%
1920	11,066	16.0%
1930	11,223	1.4%
1940	12,958	15.5%
1950	19,999	54.3%
1960	37,718	88.6%
1970	66,870	77.3%
1980	76,685	14.7%
1990	83,312	8.6%
2000	94,673	13.6%
Est. 2007	93,552	−1.2%

Geography and Climate-

The City of Boulder is in Boulder Valley where the Rocky Mountains meet the Great Plains. Just west of the city are imposing slabs of sedimentary stone tilted up on the foothills, known as the Flatirons. The Flatirons are a widely recognized symbol of Boulder. The primary water flow through the city is Boulder Creek. The creek was named well ahead of the city's founding, for all of the large granite boulders that have cascaded into the creek over the eons. It is from Boulder Creek that Boulder City and hence Boulder is believed to have taken its name. Boulder Creek has significant water flow, derived primarily from snow melt and minor springs west of the city. The creek is a tributary of the South Platte River.

According to the United States Census Bureau, the city has a total area of 25.4 square miles (65.7 km²). 24.4 square miles (63.1 km²) of it is land and 1.0 square miles (2.6 km²) of it (3.94%) is water.

The 40th parallel (40 degrees north latitude) runs through Boulder and can be easily recognized as Baseline Road today.

Boulder lies in a wide basin beneath Flagstaff Mountain just a few miles east of the continental divide and about 30 miles northwest of Denver. Arapahoe glacier provides water for the city, along with Boulder Creek, which flows through the center of the city. The climate in Boulder is typically mild with dry, moderate summers and relatively comfortable winters.

The city boasts more than 300 sunny or mostly sunny days each year. Nearby mountains shield Boulder from the most severe winter storms. Most precipitation occurs during the winter and spring months, with snowfall averaging 83.1 inches.

Boulder's winters are quite mild, and although large amounts of snow can fall, the effects of orographic lift usually dry out the air passing over the Front Range, shadowing the city from precipitation for much of the season. Temperatures during the winter generally average between 45°F (7°C) to 50°F (10°C) for the daytime highs, and overnight the temperatures plunge to typically settle between 17°F (-8°C) and 23°F (-5°C). These rather cold temperatures that occur overnight are mostly due to Boulder's "High-Desert" climate. Additionally, warm chinook winds occur as air passing over the mountains heats as it descends, in addition to the sunshine, quickly melting snow accumulations and making Boulder's winters relatively mild.

The summer months in Boulder are warm, with daytime highs averaging between 80°F (27°C) and 90°F (32°C), and occasional days reaching 95°F (35°C) not uncommon. Lows in the summer are in the 50°F (10°C) - 60°F (16°C) range; rather cold due to Boulder's altitude and wind patterns.

The all time highest recorded temperature in Boulder of 104°F (40°C) occurred on June 23 and July 11, 1954. The lowest temperature ever recorded in Boulder was -24°F (-31°C), which occurred on February 5, 1989, and December 22, 1990.

Brief History-

In the early to mid 1800s, the nomadic Southern Arapaho Native American tribe frequently wintered at the base of the foothills in the Boulder area. Chief Niwot and his band called the site their home. Other nomadic tribes included the Utes, Cheyennes, Comanches, and Sioux.

The first recorded European settlers in the area were gold prospectors who arrived in 1858, when Boulder was part of the Nebraska Territory (The former boundary between Nebraska and Kansas territories is the present Baseline Road in Boulder). The "Boulder City Town Company" was founded on February 10, 1859. Boulder's first school house was built in 1860, followed by the creation of the Colorado Territory in 1861. In 1871 then 'Boulder City' was incorporated. In 1873 the railroad was extended to Boulder and, in 1890, the Boulder Railroad Depot was constructed to serve as a station for the Union Pacific Railroad. In 1876 Colorado was granted statehood, and in that same year the University of Colorado at Boulder opened.

Annual Estimates of the Population for All Incorporated Places in Colorado

Wikipedia.com

Surrounding Site- Cu Boulder, Flatiron Mountains Backdrop

Surrounding Site- CU Boulder, Function on the Green- www.colorado.edu

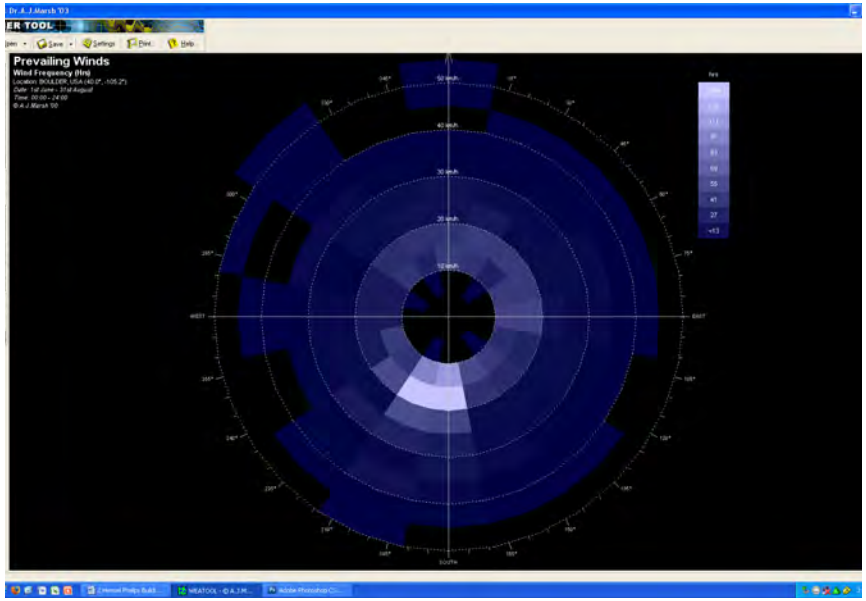
Site Aspects

Sitting at the base of the Flatiron Mountain Range, the city of Boulder has breathtaking views which surrounds its buildings. The town is very much effected by the some 27,000 University of Colorado at Boulder students that attend each year.

CU Boulder, Engineering Building

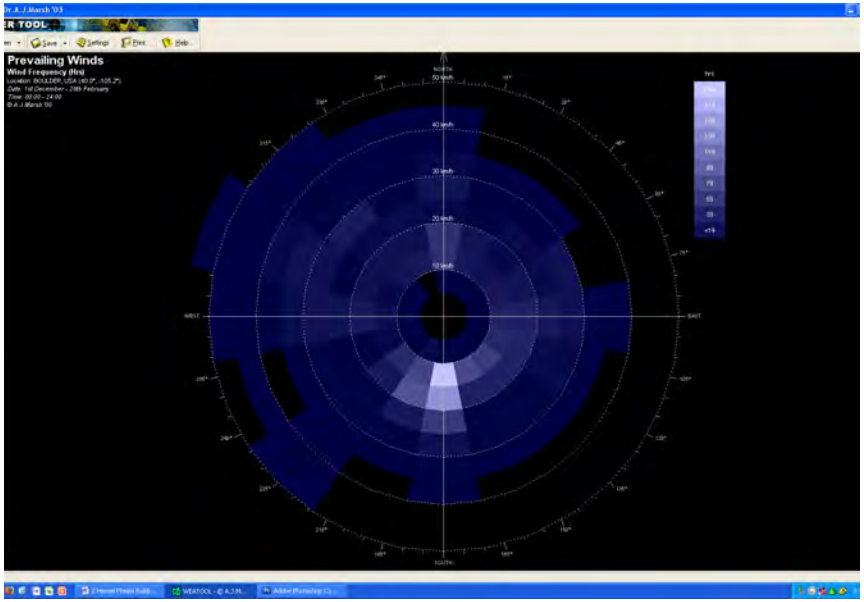
CU Boulder Department for Computer Engineering- Fitting to the landscape

Pearl Street, Boulder, CO

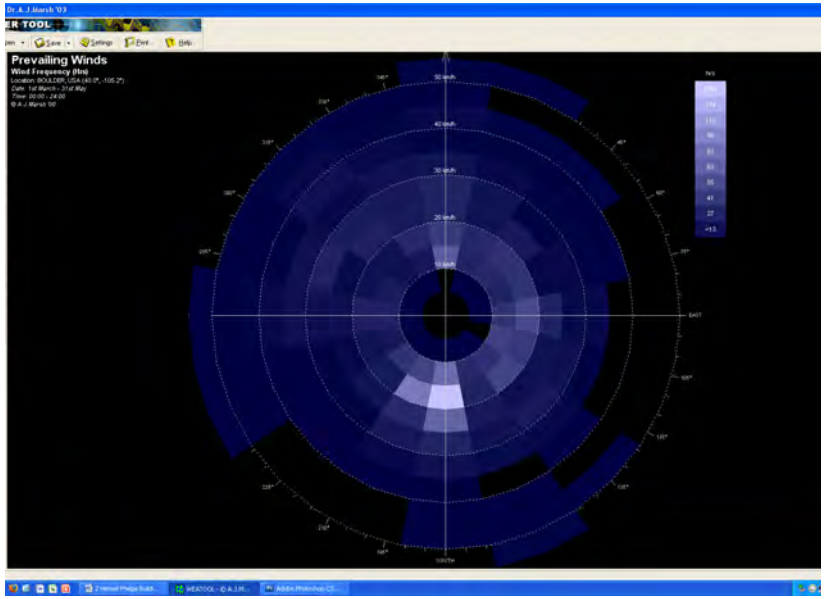


Surrounding Site- Boulder, Summer Wind Rose

Surrounding Site- Boulder, Autumn Wind Rose

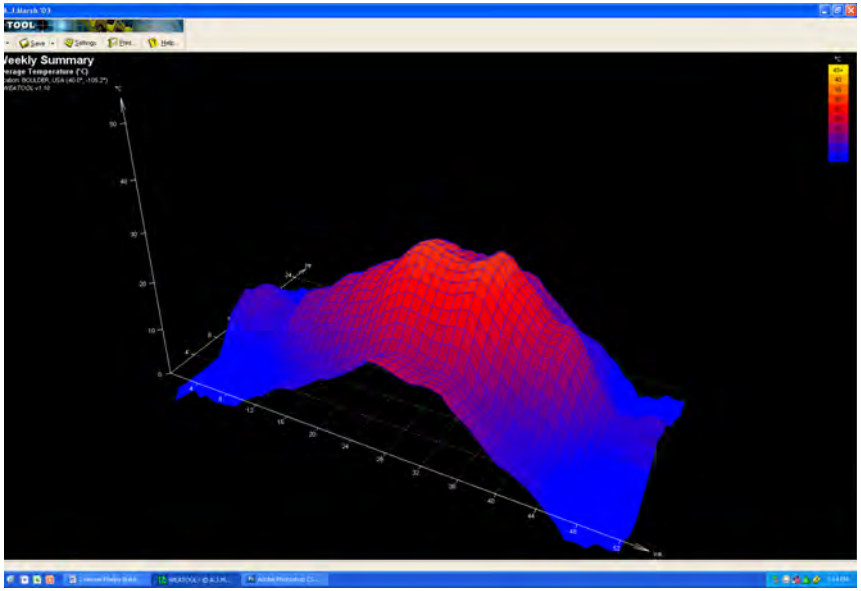


Surrounding Site- Boulder, Winter Wind Rose

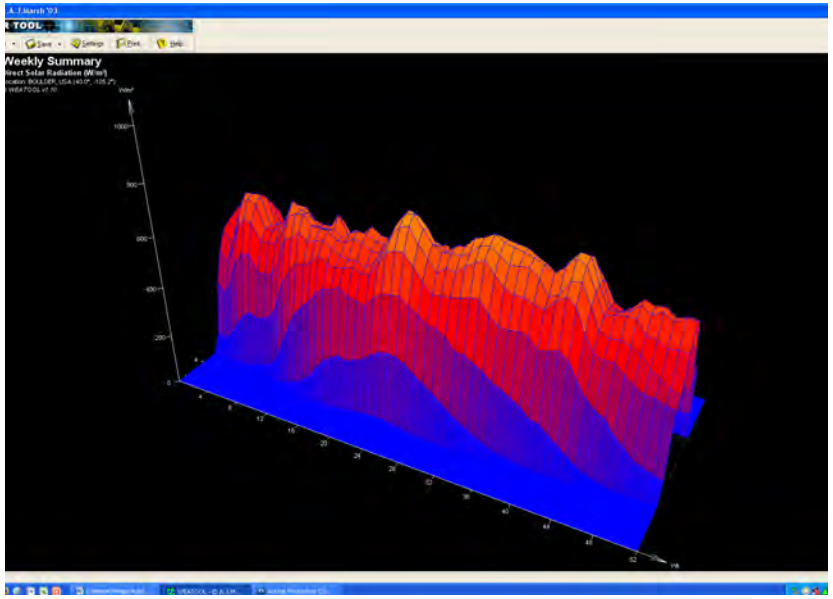


Surrounding Site- Boulder, Spring Wind Rose

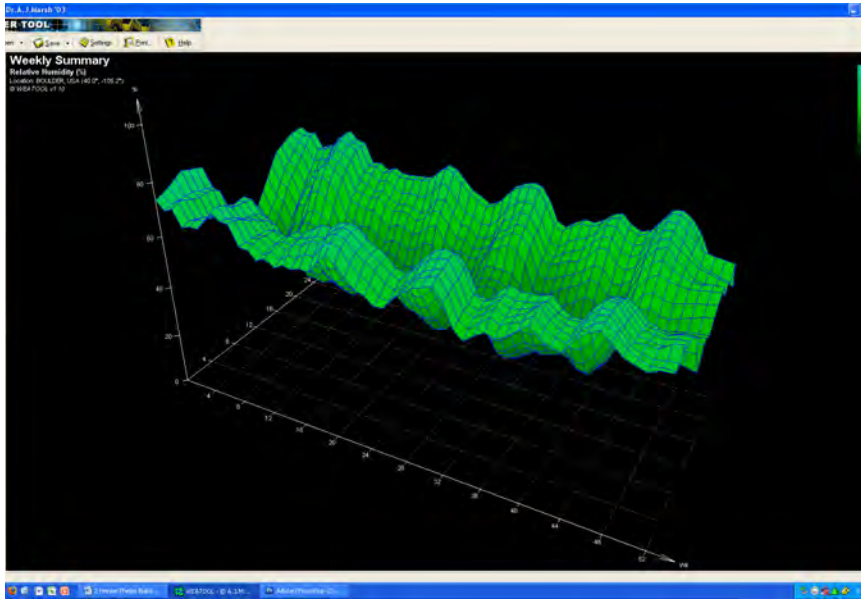
Boulder Weather Conditions



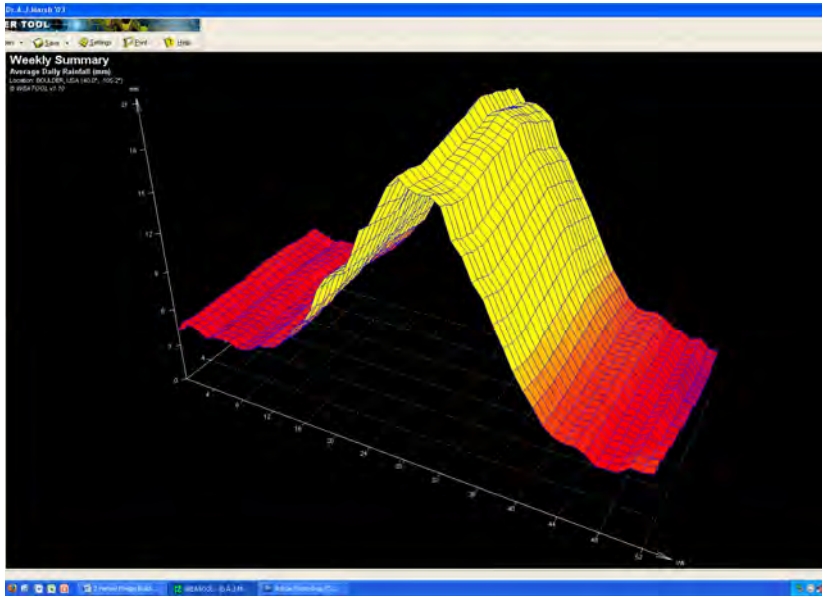
Surrounding Site- Boulder, Average Temperature



Surrounding Site- Boulder, Direct Solar Radiation



Surrounding Site- Boulder, Relative humidity



Surrounding Site- Boulder, Average Rainfall

Regulatory Environment

AIA

U.S. GREEN BUILDING COUNCIL
USGBC

THE NEW ZONING CODE
PUTTING BLUEPRINT DENVER TO WORK

We are pleased to present *Public Review Draft #2* of the New Denver Zoning Code.

Please read this memo before reviewing the draft. It provides an overview of the major revisions to the previous public review draft of the New Code, explanation of notations found throughout the draft document and a summary of the overall approach and organization.

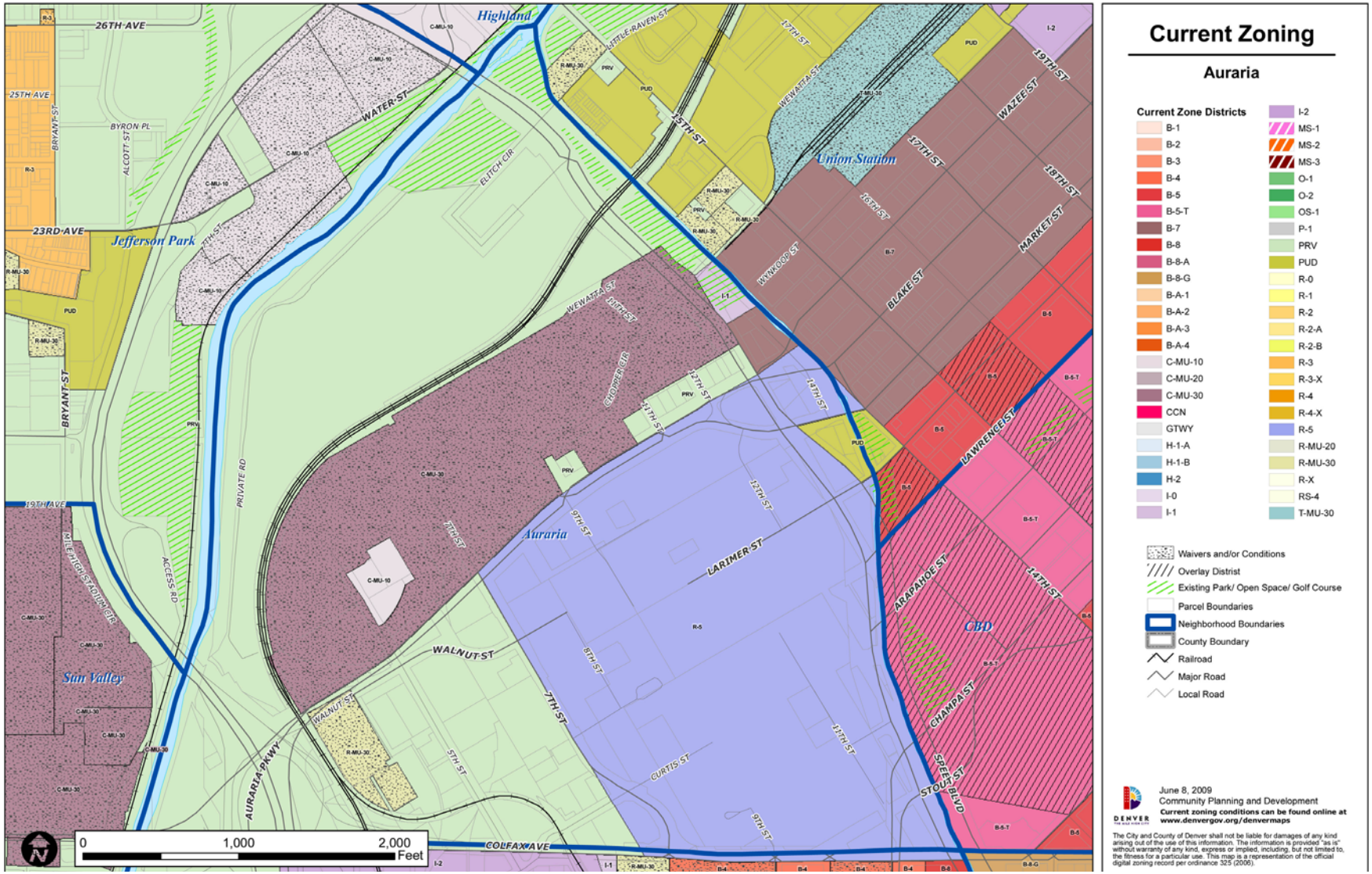
Major Revisions in Public Review Draft #2
The *Public Review Draft #2* was informed by public input from City Council district workshops, City Council offices, meetings with organizations such as the Denver Board of Realtors and comments received through the website (www.newcodedenver.org). City staff from multiple departments also continued its review and testing of the New Code standards since the release of Public Review Draft #1, which is an important and ongoing source of code revisions. The following is a summary of the major revisions.

Topic	Description
Naming Convention of Zone Districts	Revised Single Unit (SU) and Two Unit (TU) naming convention to align last letter in district name (-A, -B, -C, etc.) aligns with same minimum lot size across all contexts. For example, the "D" in *S*-SU-D and *E*-SU-D correspond to the same minimum 6,000 square foot lot size.
Building Form Graphics	Revised layout and organization of the building form graphics and tables; see Suburban and Urban House forms in Articles 3, 4, and 5 for example of new layout. Remaining forms will be updated in next round of revisions.
New Zone Districts	S-MX-2, U-RH-2.5 (revision of previous U-RH-3), C-MX-16, C-MS-12 and DIA Influence Area Overlay
Zone Districts Revised	Campus Master Plan (CMP) district and DIA zone districts
Urban House and Suburban House Form Standards in Suburban, Urban Edge, and Urban SU Zone Districts	Based on city staff testing of actual residential building plans, revised building form standards, including changes to lot width, building coverage, parking coverage, building height
New Building Forms	Placeholders inserted; revised building form standards to follow in next public review draft ○ "Urban Sideyard House" form added to allow 1-story building in rear yard in Urban Edge, Urban and General Urban Contexts ○ "Podium/Tower" form added to guide development and design of large scale buildings in the Urban Center Context

Zoning and Codes-

Due to the current agenda of redeveloping several areas of the downtown city area, many of the old zoning and regulations are being brought up to date. Some have been wavered upon as long as the terms meet the new planning commissions vision. Although the codes and zones are still somewhat maintained, negotiations and variances are widely accepted.

See Appendix -3
To see the entire code Visit newcodedenver.org



Auraria Zoning Map

See Appendix -4

DENVER
THE MILE HIGH CITY

THE NEW ZONING CODE

PUTTING BLUEPRINT DENVER TO WORK

Summary of Draft Zone Districts from Public Review Draft #2

Naming Convention:
The initial letter designates the neighborhood context:
S=Suburban; E=Urban Edge; U=Urban; G=General Urban; C=Urban Center; D=Downtown

The second pair designates the dominate use and form:
SU=Single Unit; TU=Two Unit; TH=Townhouse; RH=Rowhouse; MU=Multi Unit; CC=Commercial Corridor; MX=Mixed Use; RX=Residential Mixed Use; MS=Main Street

The final letter designates the minimum lot size OR the final number indicates the maximum height in stories:
A=3,000; B=4,500; C=5,500; D=6,000; E=7,000; F=8,500; G=9,000; H=10,000; I=12,000

Suburban (S-) Neighborhood Context

S-SU-A - Single Unit A (3,000 sq ft)
S-SU-D - Single Unit D (6,000 sq ft)
S-SU-F - Single Unit F (8,500 sq ft)
S-SU-F1 – Single Unit F1 (8,500 sq ft) See note 3
S-SU-I - Single Unit I (12,000 sq ft)
S-SU-I1 - Single Unit I1 (12,000 sq ft) See note 3
S-TH-2 - Town House 2
S-MU-3 - Multi Unit 3
S-CC-3 - Commercial Corridor 3
S-CC-5 - Commercial Corridor 5
S-MX-3 - Mixed Use 3
S-MX-5 - Mixed Use 5
S-MX-8 - Mixed Use 8
S-MX-12 - Mixed Use 12
S-MS-3 - Main Street 3
S-MS-5 - Main Street 5

Urban Edge (E-) Neighborhood Context

E-SU-A - Single Unit A (3,000 sq ft)
E-SU-B - Single Unit B (4,500 sq ft)
E-SU-D - Single Unit D (6,000 sq ft)
E-SU-D1 - Single Unit D1 (6,000 sq ft) See note 1
E-SU-Dx - Single Unit Dx (6,000 sq ft)
E-SU-D1x - Single Unit D1x (6,000 sq ft) See note 1
E-SU-G - Single Unit G (9,000 sq ft)
E-SU-G1 - Single Unit G1 (9,000 sq ft) See note 1
E-TU-B - Two Unit B (4,500 sq ft)
E-TU-C - Two Unit C (5,500 sq ft)
E-TH-2 - Town House 2 (4,500 sq ft)
E-CC-3 - Commercial Corridor 3
E-MX-2 - Mixed Use 2
E-MX-3 - Mixed Use 3
E-RX-5 - Residential Mixed Use 5
E-MS-2 - Main Street 2
E-MS-3 - Main Street 3
E-MS-5 - Main Street 5

Urban (U-) Neighborhood Context

U-SU-A - Single Unit A (3,000 sq ft)
U-SU-A1 - Single Unit A1 (3,000 sq ft) See note 1
U-SU-A2 - Single Unit A2 (3,000 sq ft) See note 2
U-SU-B - Single Unit B (4,500 sq ft)
U-SU-B1 - Single Unit B1 (4,500 sq ft) See note 1
U-SU-B2 - Single Unit B2 (4,500 sq ft) See note 2
U-SU-C - Single Unit C (5,500 sq ft)
U-SU-C1 - Single Unit C1 (5,500 sq ft) See note 1
U-SU-C2 - Single Unit C2 (5,500 sq ft) See note 2
U-SU-E - Single Unit E(7,000 sq ft)
U-SU-E1 - Single Unit E1 (7,000 sq ft) See note 1
U-SU-H - Single Unit H (10,000 sq ft)
U-SU-H1 - Single Unit H1 (10,000 sq ft) See note
U-TU-B - Two Unit B (4,500 sq ft)
U-TU-B1 - Two Unit B1 (4,500 sq ft) See note 4
U-TU-C - Two Unit C (5,500 sq ft)
U-RH-2.5 - Row House 2.5
U-RH-3A - Row House 3A See note 5
U-MX-2 - Mixed Use 2
U-MX-3 - Mixed Use 3
U-RX-5 - Residential Mixed Use 5
U-MS-2 - Main Street 2
U-MS-3 - Main Street 3
U-MS-5 - Main Street 5

Notes:
1 ADU (Accessory Dwelling Unit) allowed on all lots
2 ADU, Duplex or Tandem House allowed on corner zone lots where one intersecting street is an arterial or collector
3 ADU or Tandem House allowed on zone lots with a lot depth of at least 150 feet
4 Row House allowed on corner zone lots where one intersecting street is an arterial or collector
5 Mansion Apartment or Neighborhood Apartment allowed on corner zone lots where one intersecting street is an arterial or collec

General Urban (G-) Neighborhood Context

G-RH-3 - Row House 3
G-MU-3 - Multi Unit 3
G-MU-5 - Multi Unit 5
G-MU-8 - Multi Unit 8
G-MU-12 - Multi Unit 12
G-MU-20 - Multi Unit 20
G-MX-3 - Mixed Use 3
G-RX-5 - Residential Mixed Use 5
G-RX-8 - Residential Mixed Use 8
G-MS-3 - Main Street 3
G-MS-5 - Main Street 5

Urban Center (C-) Neighborhood Context

C-MX-3 - Mixed Use 3
C-MX-5 - Mixed Use 5
C-MX-8 - Mixed Use 8
C-MX-12 - Mixed Use 12
C-MX-16 – Mixed Use 16
C-MX-20 - Mixed Use 20
C-RX-5 - Residential Mixed Use 5
C-RX-8 - Residential Mixed Use 8
C-RX-12 - Residential Mixed Use 12
C-IX-3 - Industrial Mixed Use 3
C-IX-5 - Industrial Mixed Use 5
C-IX-8 - Industrial Mixed Use 8
C-MS-5 - Main Street 5
C-MS-8 - Main Street 8
C-MS-12 – Main Street 12
CCN – Cherry Creek North

Downtown (D-) Neighborhood Context

D-D - Downtown
D-DT - Downtown Theater
D-LD – Lower Downtown
D-CIV – Civic

SPECIAL CONTEXTS

Industrial: I-A – Industrial/Commercial **I-B** – General Industrial

Campus: CMP - Campus Master Plan Zone District

Open Space: OS-A – Open Space Public Parks **OS-B** – Open Space Recreation **OS-C** – Open Space Conse

Airport: DIA - Denver International Airport District

Neighborhood Conservation: NC - Neighborhood Conservation Overlay Zone District

Planned Unit Development: PUD - Planned Unit Development Zone District

Sustainability Recommendations		
Category	**Description**	**Comments**
Buildings, Land Use & Neighborhoods – Create and preserve walkable, complete neighborhoods	**Strategies Existing In Current Code That Continue**	
	▪ Detached and attached Accessory Dwelling Units (ADUs) allowed in Mixed Use Zone Districts ▪ Inclusionary Housing Ordinance ▪ Variety of home occupations allowed ▪ Minimum building height required in MS-3 zone ▪ Variety of "light" industrial uses allowed in same district as residential uses	
	New Strategies To Include In The New Code	
	Density – Transit Oriented Development	▪ When adopted plans support ▪ Residential development on lots smaller than 6,000 s.f. allowed
	Housing – Diversity, accessory units, private outdoor space	▪ ADUs when consistent with established or desired neighborhood character; maximum 1 detached ADU for each primary single-family house.
	Commercial – mixed uses, walkable, community spaces	▪ Consistent with ZCU approach
	Mix of uses – daily retail, services, civic convenient to most households	▪ Consistent with ZCU approach and mapping to implement Blueprint Denver
	Jobs – variety within close proximity to residential, home occupations, eco-industrial	▪ Small-scale, low-impact industrial uses already mixed with residential in C-MU-30 zoning – will be part of revised industrial districts
	Walkability – creation of walkable blocks during site planning, connections, building orientation	▪ Good recommendations for PBGs ▪ Street-closing prohibition to Public Works
	New Strategies That Will Be Incorporated If Confirmed By Further Study	
	Minimum densities within a walkable neighborhood to support neighborhood commercial and transit	▪ Consistent with Blueprint Denver growth management objectives to concentrate growth and mix uses to improve quality of life.
	Adaptable – accessible (universal) housing	▪ Mayor's Task Force on Aging is investigating housing needs for an aging population, including accessible housing. ▪ Some universal design provisions, such as no-step home entries, may conflict with context sensitive building form standards.
	Continuous backyard space	▪ Consider when review context and building form standards; incorporate when consistent with established or desired neighborhood character.
	Strategies CPD Recommends Not Be Included In The New Code	

2

Codes and Sustainability-

Zoning Code Task Force and Community Planning and Development-
Sustainability Recommendations

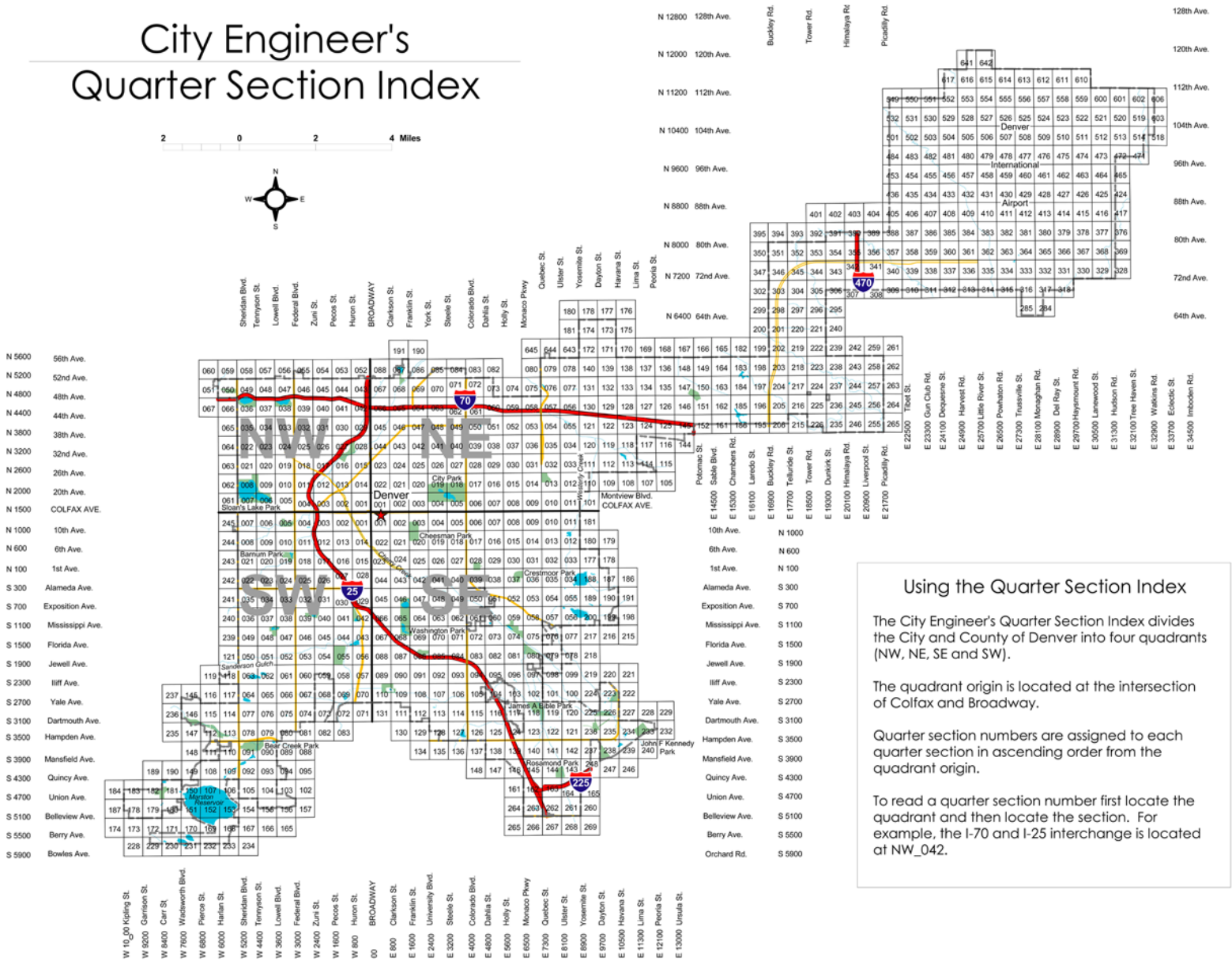
In 2008 a zoning code Task Force was commissioned to do a sustainability audit. By evaluating recommendations for a sustainabilty objective which the city of Denver has put in place, the committee was able to come up with such recommendations. The Sustainability recommendations are to be eventually put into code barring further review, however, the land use regulations and recommendations are provided to new and up-coming establishments within the city limits to abide by and govern building and development projects.

"The New Code Approach Supports Sustainability The New Code is a context-based and form-based approach which promotes sustainability by directing growth to "areas of change" and preserving the valued characteristics, such as existing buildings, in "areas of stability." Blueprint Denver, our land use and transportation plan, identifies areas of change and areas of stability, and The New Code implements these policies."

-Pg. 1

See Appendix 5

City Engineer's Quarter Section Index



Using the Quarter Section Index

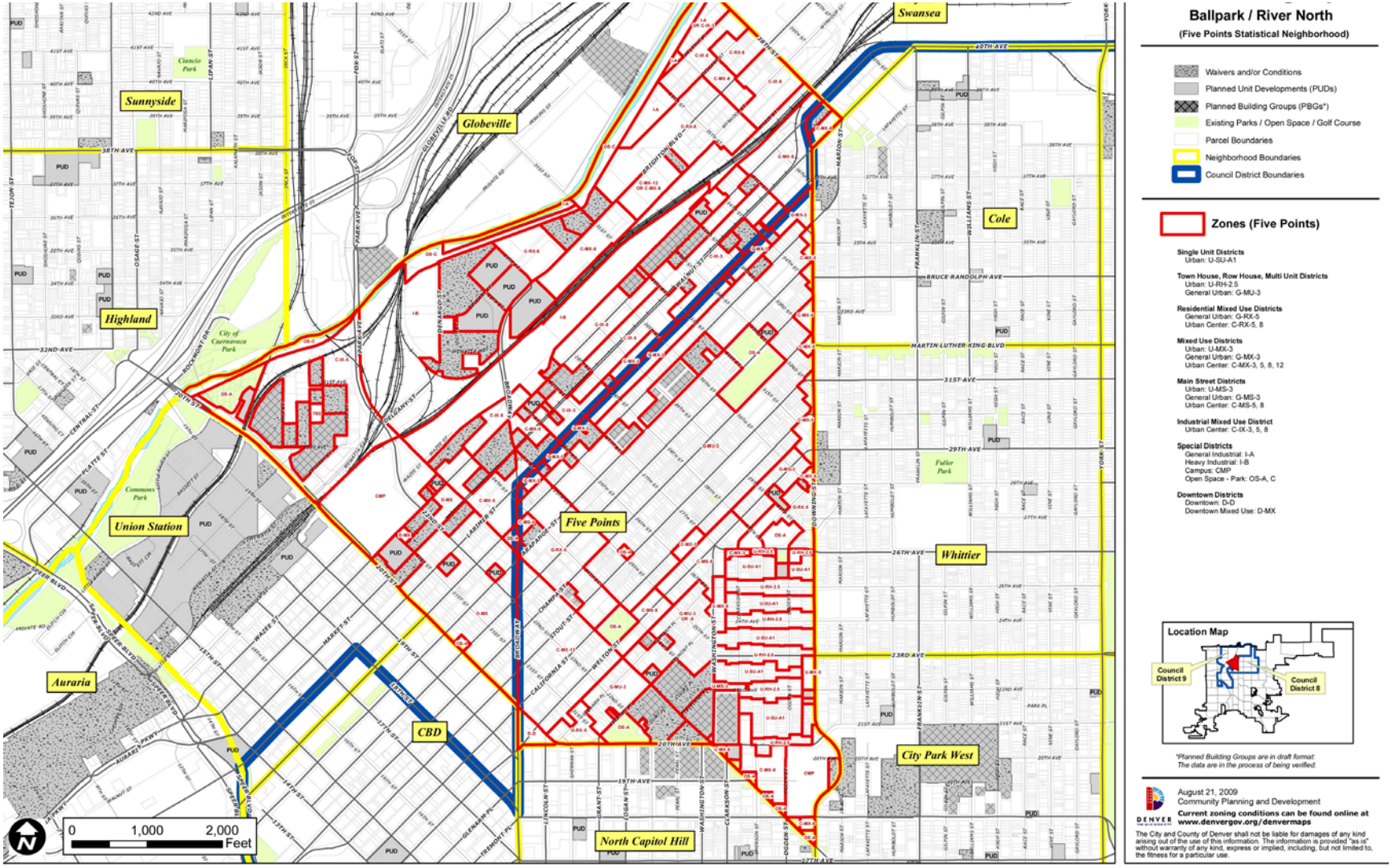
The City Engineer's Quarter Section Index divides the City and County of Denver into four quadrants (NW, NE, SE and SW).

The quadrant origin is located at the intersection of Colfax and Broadway.

Quarter section numbers are assigned to each quarter section in ascending order from the quadrant origin.

To read a quarter section number first locate the quadrant and then locate the section. For example, the I-70 and I-25 interchange is located at NW_042.

Quarterly Map describing Denver and its Zones- See Appendix -6



Zoning of the Five Points District- Denver.Com

A. Civic

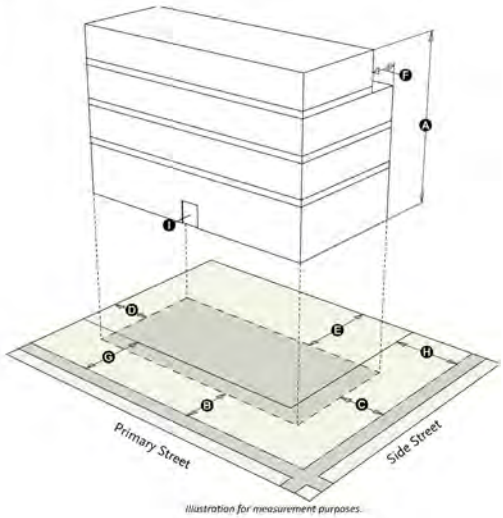


Illustration for measurement purposes.

CIVIC

	HEIGHT	D-CV
A	Stories (min/max)	1/20
A	Feet, pitched or flat roof (max)	

	SITING	D-CV
	ZONE LOT	
	Zone Lot Size (min)	
	Zone Lot Width (min)	
	Permitted Uses	Civic only
	SETBACKS	
B	Primary Street (min)	0'
C	Side Street (min)	0'
D	Side, interior (min)	5'
E	Rear (min)	5'
F	Rear Setback above 3 Stories or 45' Abutting Residential Zone Lot (min)	25'
	PARKING	
G	Primary Street Setback (min)	30'
H	Side Street Setback (min)	10'
	Setback Abutting Res. Zone District (min)	5'

	DESIGN ELEMENTS	D-CV
	ENTRY FEATURES	
I	Entry Feature, Primary Street (see 7.3.2)	(1) Door; (2) Canopy; (3) Gallery; (4) Recessed Entry; or (5) Corner Entrance

Regulatory- Civic Buildings in the Downtown

See Appendix -7

A. Row House

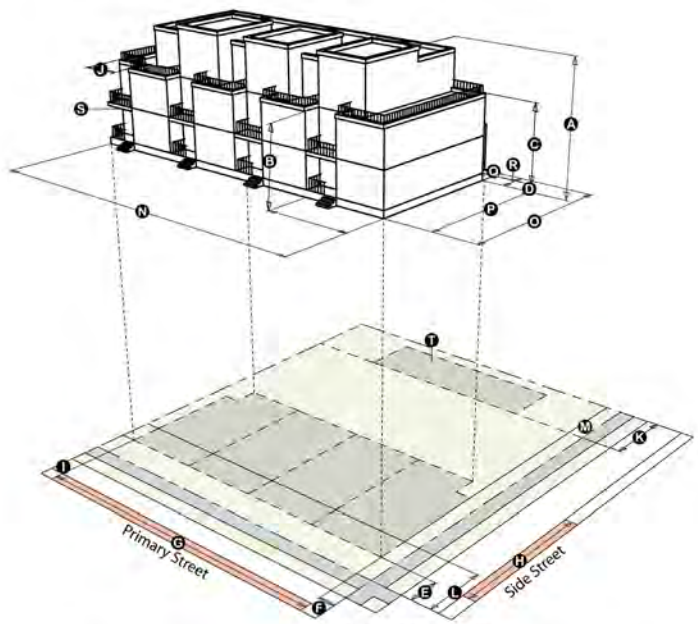
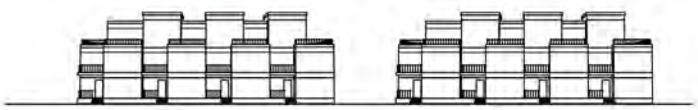


Illustration for measurement purposes.



Range of alternative building forms (not all potential outcomes).

ROW HOUSE

HEIGHT	D-MX
A Stories (min/max)	3/4
Feet, pitched roof (max)	
A Feet, flat roof (max)	
B Front Wall Plate Height (max)	
C Side Wall Plate Height (max)	
D Finished Ground Floor Height (min/max)	1' / 4'

SITING	D-MX
ZONE LOT	
Zone Lot Size (min)	
Zone Lot Width (min)	
Allowed Number of Dwelling Units (min/max)	
SETBACKS	
E Primary Street (min/max)	0'/10'
F Side Street (min/max)	0'/ 10'
I Side, interior (min)	5'
J Side Setback Above 2 Stories or 22' (min)	5'
K Rear, 75' lot depth, and less as a % of lot depth (min)	25%
K Rear, greater than 75' lot depth, as a % of lot depth (min)	25%
REQUIRED STREET FRONTAGE	
G Primary Street (min)	80%
H Side Street (min)	40%
PARKING	
L Primary Street Setback (min)	30'
M Side Street Setback (min)	5'
Setback Abutting Res. Zone District (min)	5'
ACCESSORY STRUCTURES	
T Detached Accessory Structures Allowed (see Sec. 8.5.1.4)	Detached Garage and Detached Utility Building

DESIGN ELEMENTS	D-MX
CONFIGURATION	
N Overall Structure Width, Primary Street (max)	165'
O Overall Structure Length, Side Street (max)	110'
P Side Wall Length Without Offset (min)	50'
Q Wall Offset Depth (min)	3'
R Wall Offset Width (min)	5'
ENTRY FEATURES	
S Required Entry Features, Primary Street (see Sec. 8.5.1.3)	(1) Front Porch, (2) Stoop;

Regulatory- Row houses in the Downtown

B. Apartment

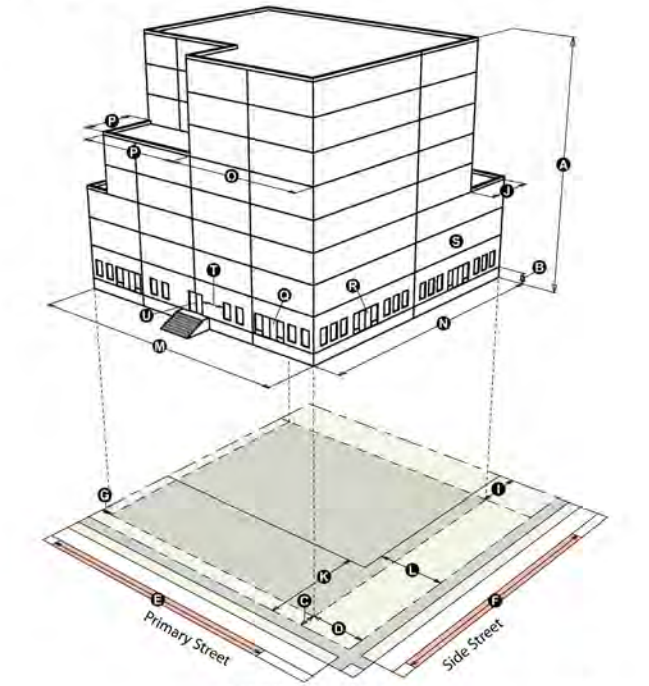
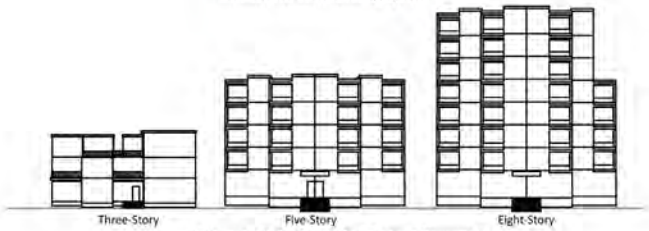


Illustration for measurement purposes.



Range of alternative building forms (not all potential outcomes).

APARTMENT

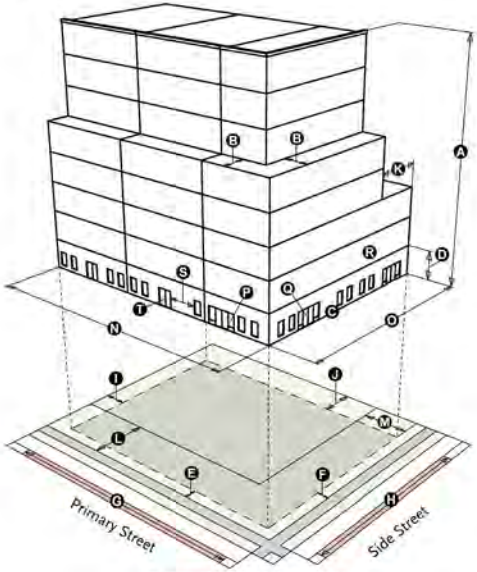
HEIGHT	D-MX
A Stories (min/max)	3/20
A Feet, pitched or flat roof (max)	7
B Finished Ground Floor Height (min/max)	1'/ 4'

SITING	D-MX
ZONE LOT	
Zone Lot Size (min)	
Zone Lot Width (min)	
Dwelling Units per Primary Structure (min)	3
SETBACKS	
C Primary Street (min/max)	0'/10'
D Side Street (min/max)	0'/10'
G Side, Interior (min)	5'
I Rear (min)	5'
J Rear, above 3 stories or 40' when abutting 2 or 3 story district, as % of lot depth (min)	10'
REQUIRED STREET FRONTAGE	
E Primary Street (min)	80%
F Side Street (min)	40%
PARKING	
K Primary Street Setback (min)	30'
L Side Street Setback (min)	15'
Setback Abutting Res. Zone District (min)	5'

DESIGN ELEMENTS	D-MX
CONFIGURATION	
M Overall Structure Width, Primary Street (max)	150'
N Overall Structure Length, Side Street (max)	150'
O Front Wall Width without stepback above 5 stories or 65' (max)	na
P Stepback above 5 stories or 65' (max width/depth)	na
Tower Floor Plate Above 8 Stories (max)	na
Separation of Tower Elements (min)	na
TRANSPARENCY	
Q Ground Story, Primary Street (min)	30%
R Ground Story, Side Street (min)	25%
S Upper Stories (min)	20%
T Length of Blank Wall, Primary/Side Street, All Floors (max)	40'
ENTRY FEATURES	
U Required Entry Features, Primary Street (see Sec. 8.5.1.3)	(1) Stoop; or (2) Canopy

Regulatory- Apartment in the Downtown

C. General



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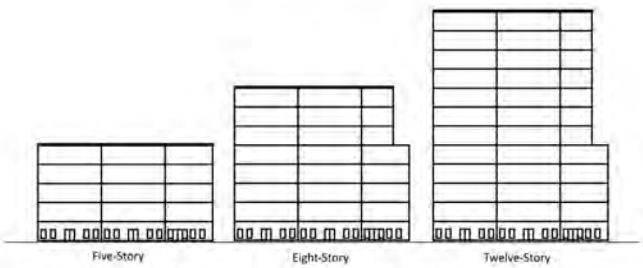


Range of alternative building forms (not all potential outcomes).

GENERAL

	HEIGHT	D-MX
A	Stories (min/max)	3/20
A	Feet, pitched or flat roof (max)	70'
B	Stepback above 5 stories or 70' (min)	na
C	Finished Ground Floor Height	0'
D	Ground Floor Story Height, floor to floor (min)	11'

	SITING	D-MX
	ZONE LOT	
	Zone Lot Size (min)	
	Zone Lot Width (min)	
	SETBACKS	
E	Primary Street (min/max)	0'/10'
F	Side Street (min/max)	0'/10'
I	Side, Interior (min)	5'
J	Rear (min)	5'
K	Rear Setback above 3 Stories or 45' Abutting Residential Zone Lot (min)	25'
	REQUIRED STREET FRONTAGE	
G	Primary Street (min)	80%
H	Side Street (min)	40%
	PARKING	
L	Primary Street Setback (min)	30'
M	Side Street Setback (min)	10'
	Setback Abutting Res. Zone District (min)	5'

	DESIGN ELEMENTS	D-MX
	CONFIGURATION	
N	Overall Structure Width, Primary Street (max)	250'
O	Overall Structure Length, Side Street (max)	250'
	TRANSPARENCY	
P	Ground Story, Primary Street (min)	40%
Q	Ground Story, Side Street (min)	30%
R	Upper Stories (min)	20%
S	Length of Blank Wall, Primary/Side Street (max)	40'
	ENTRY FEATURES	
T	Required Entry Features, Primary Street (see Sec. 8.5.7.3)	(1) Door; (2) Canopy; (3) Gallery; (4) Recessed Entry; or (5) Corner Entrance

D. Shopfront

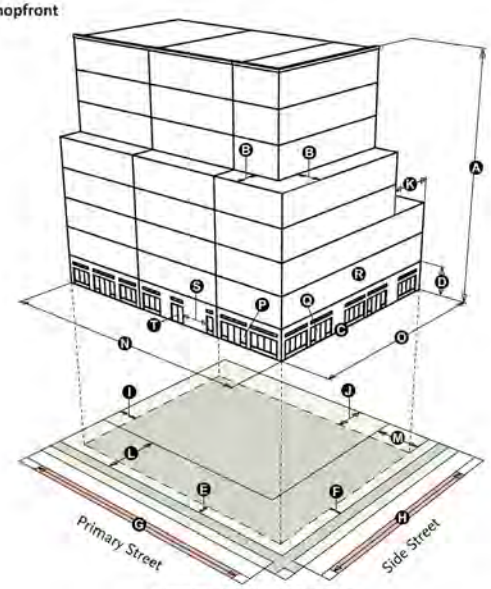
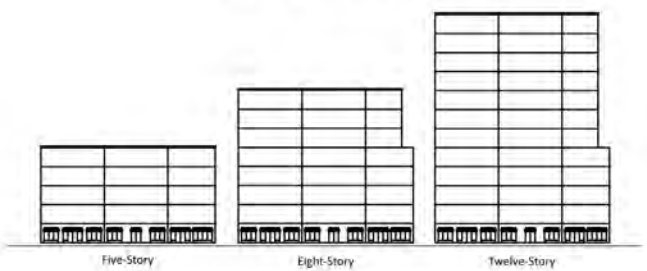


Illustration for measurement purposes.



Range of alternative building forms (not all potential outcomes).

SHOPFRONT

	HEIGHT	D-MX
A	Stories (min/max)	3/20
A	Feet, pitched or flat roof (max)	
B	Stepback above 5 stories or 70' (min)	na
C	Finished Ground Floor Height	0'
D	Ground Floor Story Height, floor to floor (min)	14'

	SITING	D-MX
	ZONE LOT	
	Zone Lot Size (min)	
	Zone Lot Width (min)	
	SETBACKS	
E	Primary Street (min/max)	0'/5'
F	Side Street (min/max)	0'/5'
I	Side, interior (min)	5'
A	Rear, (min)	5'
K	Rear Setback above 3 Stories or 45' Abutting Residential Zone Lot (min)	na
	REQUIRED STREET FRONTAGE	
G	Primary Street (min)	80%
H	Side Street (min)	40%
	PARKING	
L	Primary Street Setback (min)	30'
M	Side Street Setback (min)	10'
	Setback Abutting Res. Zone District (min)	5'

	DESIGN ELEMENTS	D-MX
	CONFIGURATION	
N	Overall Structure Width, Primary Street (max)	250'
O	Overall Structure Length, Side Street (max)	250'
	TRANSPARENCY	
P	Ground Story, Primary Street (min)	70%
Q	Ground Story, Side Street (min)	40%
R	Upper Stories (min)	20%
S	Length of Blank Wall, Primary/Side Street, All Floors (max)	30'
	ENTRY FEATURES	
T	Required Entry Features, Primary Street (see Sec. 8.5.1.3)	(1) Door; (2) Canopy; (3) Gallery; (4) Recessed Entry; or (5) Corner Entrance

Regulatory-Storefront Mixed Use in Downtown

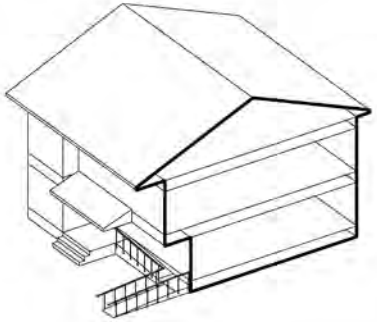
8.7.1.3 Entry Features

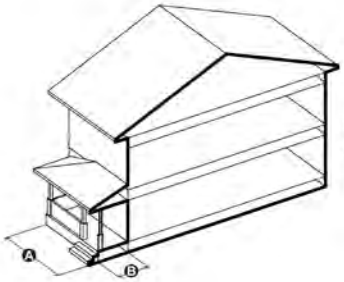
A. When Required

When required for a specific building form, a single entry feature from the required list must be located at the primary street-facing building entry. The required entry feature must meet the design standards for one entry feature as defined below. A required entry feature may encroach into the front setback area and may receive building coverage credit.

B. Accessibility

An access ramp may be added to any required or optional entry feature. Such ramps may exceed the maximum permitted width for an entry feature and may encroach into the front setback without limit.

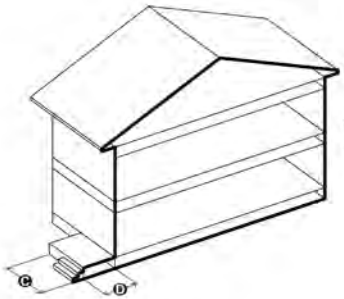




C. Front Porch

A one or two-story structure attached to a building to shelter and entrance or to serve as a semi-enclosed space, roofed and open-sided.

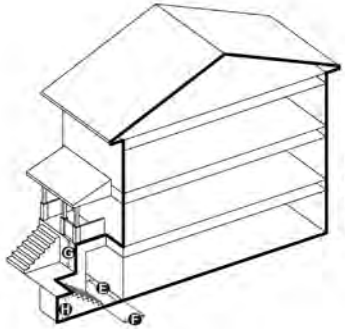
PORCH CONFIGURATION	
A Width (min)	8'
B Depth (min)	6'
Encroachment into Front Setback (max including steps and eaves)	9'
Encroachment into Street Facing Side Setback (max including steps and eaves)	4'
Sloped Roof Height (max)	35'
Flat Roof Height (max)	30'



D. Stoop

A stoop is an uncovered set of steps and a landing at an entrance to a building. A stoop may be covered or uncovered.

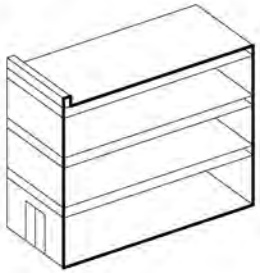
STOOP CONFIGURATION	
C Width (min)	5'
D Depth (min)	5'
Encroachment into Front Setback (max including steps)	8'



E. Sunken Courtyard

An element where the primary entry to a building is raised above grade and separated from the street by a sunken patio or courtyard area that may provide access to building units that are partially below grade.

SUNKEN COURTYARD CONFIGURATION	
E Width for Lower Terrace (min)	10'
F Depth (min)	5'
G Floor Height for Upper Terrace (min/max)	1'/4'
H Floor Depth Below Grade for Lower Terrace (max)	4'
Encroachment into Front Setback (max including steps)	8'



F. Door

A door is the entrance (the space in a wall) through which you enter or leave a building.

DOOR CONFIGURATION

Precedent Studies

Ken Yeang- Fusionopolis- Singapore -inhabitat.com

-Publisher and Editorial Director

Bryan Welch writes--

The Ultimate Riddle-

As far as we know, there is only one species in the universe capable of conceptualizing its impact on its habitat. That's us.
If we are defined by our capacity for objective thought, then we are now living in one of the definitive moments in human history. Our ability to conceptualize our own role in nature helps define us as human beings. Our capacity for creating solutions to complex problems is the primary factor in our success as a species.

Today we face the challenge of solving the definitive human riddle. We are aware that we have an impact on the environment. We are aware that our population has been growing exponentially. We are aware that no species can expand infinitely on this finite planet. With this awareness comes responsibility...

See Appendix -8

Alaxander Jean- London Press

"A tower of unprecedented scale conceived not as a building so much as a vertical extrusion of the city..."-

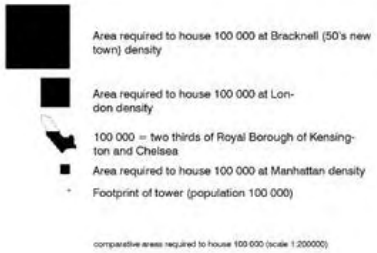
It is estimated that London will need to provide housing for almost 100 000 new people every year up to 2016[1].
This is the result not only of migration (internal and global) but also the need to replace existing housing stock that is reaching the end of its life cycle.

The preferred method of dealing with housing need, and the one most likely to be employed in the near future, is to build low density commuter towns outside the metropolis. This method takes up a tremendous amount of valuable greenbelt or agricultural land and seems ever more inappropriate in the context of the need for a sustainable society.

This is in spite of London being actually one of the least dense major cities in the world. London's population density is five times less than Paris, half as much as New York and only marginally greater than that of Los Angeles. In fact just 13.5% of land in London is covered by buildings.

These statistics prompt the idea of a new and perhaps more radical solution to the housing crisis: could 100 000 be housed within a single structure? A tower of unprecedented scale conceived not as a building so much as a vertical extrusion of the city - a new town in the sky complete with parks, public squares, schools and hospitals

At 1500 meters high (the average level of cloud cover), the tower would create a new and completely different scale to the existing city forming a separate layer superimposed above London's ancient and idiosyncratic street plan.

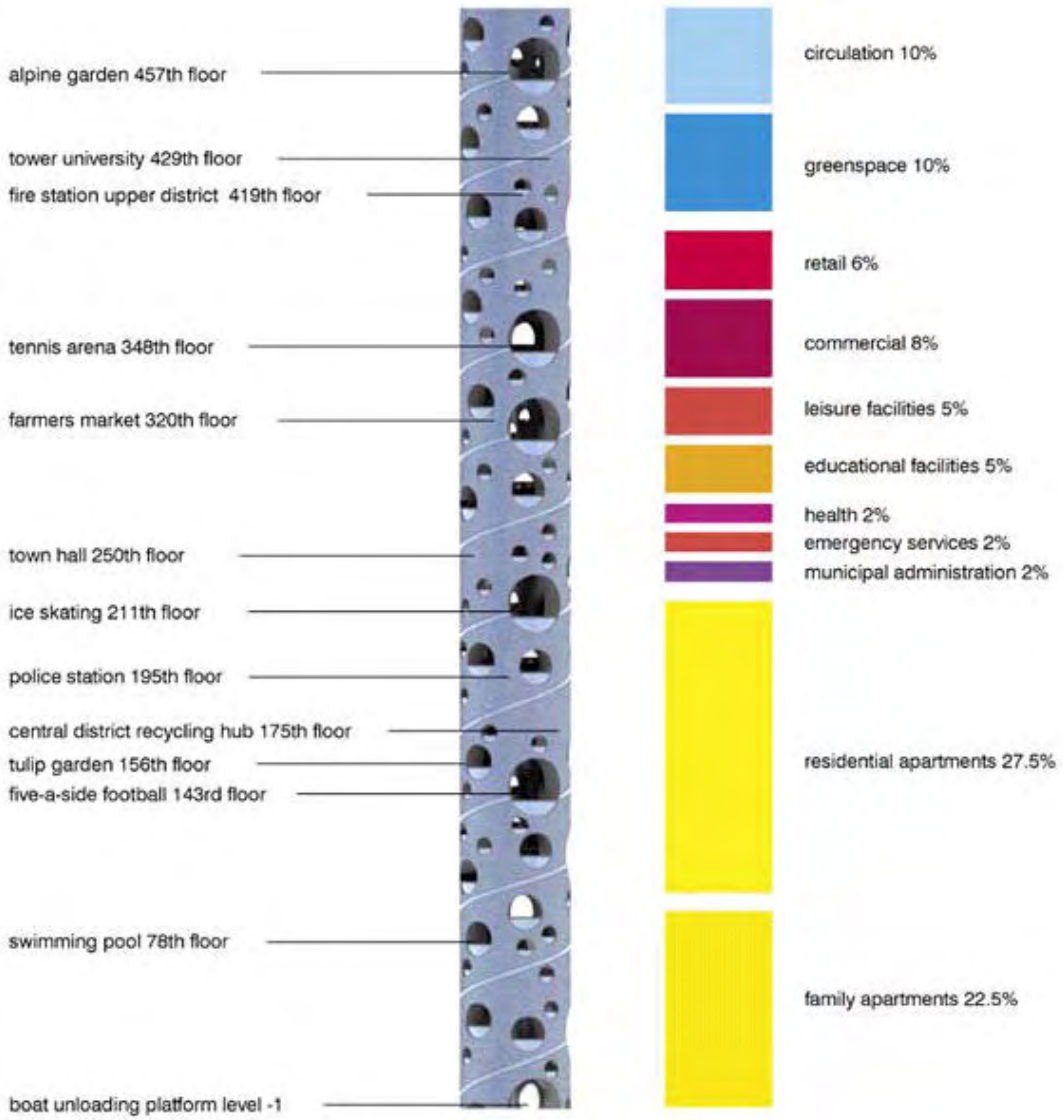


The tower allows a massive intensification of the city without the need for dramatic alteration of London's existing fabric. Thus the gardens, parks and open spaces of London are preserved but its insatiable appetite for development is satisfied.

Community-
The tower is broken up into a hierarchy of municipal areas. The smallest; the neighborhood occupies a single floor - approximately 600 people, the next; the village covers 20 floors and approximately 6000 people. The tower is finally divided into three super-districts; upper, mid and lower of 33,000 people each.
All these divisions would have democratically elected representatives at local government. The tower as a whole would have an MP sitting in the houses of parliament. In this way, the tower mimics the city both politically and in the idea of a hierarchy of communities.

Structure-
The facade is conceived as the load-bearing core for the tower, transferring load through the internal and external faces and allowing the formation of large circular openings which provide the communal spaces for the residents. By releasing the centre from a structural role, vast internal voids are created bringing light and air to the centre of the building.

Openings-
The tower is punctuated by a number of circular openings. These function as the gardens, parks and outdoor spaces for the tower's citizens. The larger of these openings each offer a unique and specialized function from an ice rink to a botanic garden, an open-air theatre to a tennis court. These large openings are linked by a continuous public spiral that runs around the edge of the tower - a continuation of the street.



tower elevation and program breakdown

Voids-
The vast internal void allows each apartment to have dual aspect. Every 20 floors, this void is broken by a floor that spans right across. This floor provides the public square and civic centre for each village. It also has openings that allow a visual and environmental connection through the entire tower.

Circulation-
The tower has 5 circulation cores. One of these cores contains the mass vertical transport units. These massive elevators, comparable to a London underground train , carry large numbers of people to the village floors where smaller lifts then take passengers to their individual floors or neighborhood.

Energy-
The tower seeks to reduce movement across the city by condensing facilities - living, working and entertainment within a single location . Its position near to existing transport infrastructure would allow goods to be delivered more easily and the proximity of public transport links would reduce the need for car travel between work and home. Water and household waste would be recycled within the tower to reduce the energy required to replace it with fresh water from the ground. Fresh water could be harvested and filtered from the clouds that would envelop the top of the tower on overcast days.

Construction-
The tower will be constructed in stages of 20 storeys meaning that it can be inhabited as it is being built. The final height of 1500 would only be the final stage of a phased construction program.

Heritage-
The tower would allow London to expand and develop without putting strain on its historic fabric by condensing all new development within a small footprint."

Alaxander Jean- London Press

Since 1892, the Sierra Club has been working to protect communities, wild places, and the planet itself. It is the oldest, largest, and most influential environmental organization in the United States.
Randal O'Toole- Vanishing Automobile
http://www.ti.org/vaupdate17.html

How Dense Is Dense Enough?-

How dense is dense enough for smart growth? Smart-growth advocates in the Twin Cities (average density: 1,800 people per square mile) say the Twin Cities needs to be as dense as Portland (average density: 3,000 people per square mile).
Smart-growth advocates in Portland say that Portland needs to be as dense as Los Angeles (average density: 5,600 per square mile). Smart-growth advocates in Los Angeles say that Los Angeles needs to be as dense as Chicago (average density: 12,000 people per square mile).
Smart-growth advocates in Chicago say Chicago should be as dense as San Francisco (average density: 16,000 people per square mile). Smart-growth advocates in San Francisco want the City to be even denser still. Where will it all end?

Fortunately for a puzzled nation, the Sierra Club answered this question in a web page that supposedly calculates the environmental impacts of density. You enter your preferred density in households per acre along with your idea of average automobile fuel efficiency (miles per gallon) and the price of gasoline. The Sierra Club then projects the environmental and social impacts of your density. For comparison, it includes the environmental and social impacts of the "efficient urban density" and a "sprawl density."

When originally posted on June 18, the web site indicated that the efficient urban density is 500 households per acre. Since the U.S. has an average of 2.4 people per household, this represents 1,200 people per acre or 768,000 people per square mile.

This indicates that Manhattan, at only 52,000 people per square mile, has a ways to go before it reaches smart-growth perfection.
Demographer Wendell Cox points out that this is denser that the densest parts of Mumbai (Bombay) and Hong Kong. In fact, Cox adds, at this density everyone in the United States could fit into an area a little larger than Portland, Oregon's urban-growth boundary.

Perhaps in response to Cox's comments, on June 20 the Sierra Club modified the web page to compare four different densities:

* Dense urban, which is 400 households per acre or slightly less than the "efficient urban" of the day before;
* Efficient urban, which is "only" 100 households per acre;
* Efficient suburban, which is 10 households per acre; and
* Sprawl, which the Sierra Club defines as one household per acre.

Even the efficient urban density is incredibly dense compared to what most people are used to. One hundred households per acre is 153,600 people per square mile, or three times the density of Manhattan. The "dense urban" 400 households per acre is 614,400 people per square mile, or nearly twelve times as dense as Manhattan.

Of course, 400 housing units could fit on an acre in a twenty-story building, each story containing twenty apartments averaging a little over 2,000 square feet.

Add four or five more stories for shops and offices and some underground parking and you have a nice dense city of twenty-five-story buildings. But few cities have large areas of twenty-five-story apartment/mixed-use buildings. Even in Manhattan, most residences are in four- to ten-story buildings.

But the so-called efficient density of 100 households per acre is scary enough. At that density, the population of the United States could fit in the Los Angeles urbanized area -- call it "Sierra Club City." The entire population of the world would fit into the state of Virginia.

The Sierra Club assumes that all or nearly all office and retail establishments would be mixed in with the residential areas. It calculates that the efficient density would provide 48 "shopping opportunities per acre," whatever that means, as opposed to just 0.65 opportunities per acre at sprawl densities.

To be fair, some additional land would be needed for factories, warehouses, and other industrial areas. But that would still leave most of the rest of the world for farms, parks, and wilderness, which of course is the Sierra Club's goal.

How much land would Sierra Club City save? At the present time, U.S. cities, towns, and other urbanized areas occupy about 109,000 square miles of land. Roughly a third of that is industrial.

If Sierra Club City replaced the other two-thirds, that would allow the restoration of about 72,000 square miles of land to farms, forests, or nature preserves. That sounds like a lot, but it amounts to just 2 percent of the land area of the United States.

Of course, if Sierra Club City stacks industry in twenty-five-story buildings too, then up to 3 percent of the nation's land could revert from urban uses to open space. Whether saving 2 or 3 percent is worthwhile depends on the costs of high-density living.

Start with congestion. The Sierra Club says that people living in sprawl densities of one household per acre would drive more than 32,000 miles per year. But at the efficient densities, says the club, they would drive only 7,600 miles per year, less than a fourth as much. Of course, with 100 times as many people per square mile, that means that total driving would be nearly 24 times more per square mile in Sierra Club City than in sprawl.

Urban Americans drive an average of 40,000 miles per square mile of urbanized land each day. As the highest density urban area, Los Angeles also has the highest density of driving: 124,000 miles per square mile of land.

But residents in the Sierra Club's efficient city would drive 1.3 million miles per day for each square mile of residential area. That's 33 times more than in the average urban area and 10 times more than in Los Angeles.

Curiously, no matter what the population density, the Sierra Club model dedicates 93 acres of land per square mile to roads and sidewalks. It is not clear whether this is included in household per acre densities or is in addition. Assuming that it is in addition, then it represents about 13 percent of the land area, which is about right for suburban areas but is far lower than the percentage of high-density urban areas that is devoted to streets.

Ninety-three acres divided into twelve-foot lanes with three-foot sidewalks represents about 50 lane-miles of roadway. To handle 1.3 million miles of vehicle travel per day, each lane-mile of road would have to carry 1,100 vehicles per hour, twenty-four hours a day, seven days a week. Non-freeway arterial lanes can handle just that number, while freeway lanes can handle twice this amount, and lesser streets (collectors and locals) do less.

Thus, Sierra Club City will be about as congested as Manhattan during rush hour -- only congestion in Sierra Club city will be 24/7. The Sierra Club's "dense urban" density of 400 households per acre, of course, will be even worse: The club predicts that people will drive more miles per lane mile than the best freeways can handle.

With this much traffic concentrated in a small area, Sierra Club City will be one of the most polluted cities in the history of humanity. The city will produce less pollution per capita than in a sprawling city, but it will be far more concentrated -- and the health effects of automotive air pollution depend largely on its concentration.

Typically, the Sierra Club model crudely assumes that pollution is directly proportional to fuel consumption. The web site asks you to enter the average fuel efficiency you imagine for your city and it calculates the pounds of hydrocarbons (volatile organic compounds), nitrogen oxides, particulates (PM10), and carbon dioxide that will be produced. The Sierra Club doesn't estimate carbon monoxide emissions, but autos tend to produce about ten times as much CO as hydrocarbons.

The Sierra Club presents pollution in terms of pounds emitted per household each year. For carbon dioxide, which is implicated with global warming, total emissions may be crucial. But for many of the other pollutants, the problem is not total emissions but the concentration of emissions. Concentrations of carbon monoxide and particulates, for example, pose extremely serious health risks, while low levels can be tolerated and ignored by most people.

Sierra Club City will produce extremely dangerous levels of these toxic pollutants. Based on the Sierra Club's numbers, automobiles in sprawl emit about 100 pounds of hydrocarbons, a half ton of carbon monoxide, and 680 tons of particulates per square mile per day. But Sierra Club City will produce 2,340 pounds of hydrocarbons, nearly 12 tons of carbon monoxide, and more than 16,000 pounds of particulates per square mile per day.

Since the Sierra Club model assumes that emissions are proportional to fuel consumption, all pollutants will be twenty-four times as concentrated in Sierra Club City than in sprawl. But in fact, cars pollute more in stop-and-go traffic, and the extra congestion in Sierra Club City will make it even more polluted than the Sierra Club numbers indicate.

The Sierra Club model also claims that high densities will produce less water pollution. “When more than 20% of the watershed is paved over and developed,” says the club, “water pollution skyrockets.”

But a suburban neighborhood of one household per acre will have much less than 20 percent of its area paved over, while an urban jungle of 100 households per acre will be nearly all paved over. Thus, we can expect the most pollution from the urban area. The Sierra Club’s model is optimistic about the effects of density on driving. The model assumes that, at any density, doubling density reduces per capita driving by 20 percent. This is about four times greater than can be observed by looking at U.S. urban areas. However, it is about the amount generated by studies that looked at driving habits of residents of individual neighborhoods of various densities.

The problem with such studies is that they usually fail to control for family size, income level, and other factors that influence driving. A disproportionate number of people in high-density areas are either poor or have no children. They either can’t afford to drive or have decided they would prefer to use transit. But this doesn’t mean that forcing a middle-class family of four to live in high densities will lead them to drive significantly less.

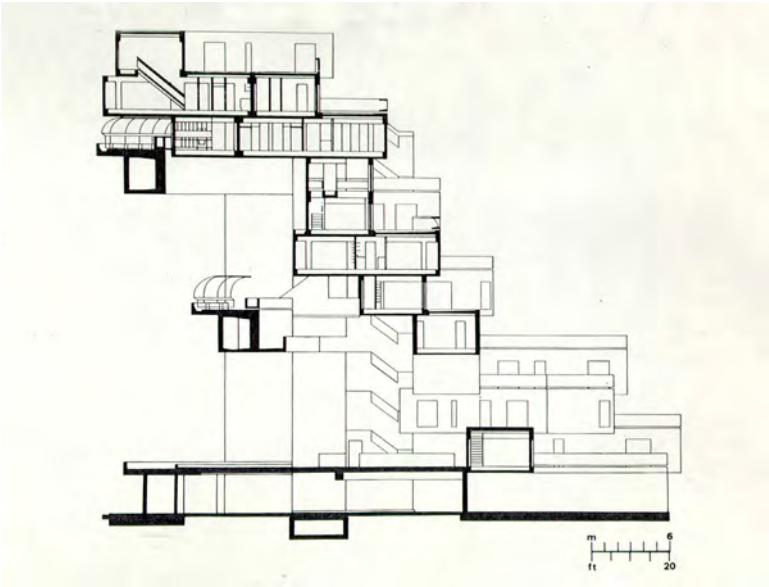
Even without this error, Sierra Club City -- a permanently congested and dangerously polluted area -- will be far less attractive to most Americans than sprawl. But smart-growth advocates will nevertheless press for increasing densities in virtually every U.S. city.

Supplemental Note-
In response to the above report, the Sierra Club modified its web site again to include the following statement:
The densities labeled ‘efficient’ provide transportation, living, and work choices for residents and workers but do not represent a Sierra Club endorsement of a specific density level. That should ultimately be decided by the communities themselves. The denser neighborhoods in Paris and Manhattan are shown for comparison.
What does the Sierra Club mean by “communities”? Communities don’t make decisions; decisions are made by individuals. It is most likely that the Sierra Club would like to see urban planners and other appointed and elected officials made decisions that everyone else will have to live with. That is what has happened in Portland, Oregon, a city whose planning is endorsed by the Sierra Club.
Rather than let city planners make decisions for other, the Thoreau Institute’s position is that densities should be decided by the individuals living in those areas. That means initially letting builders build for the market and letting individual homeowners maintain their neighborhood densities through covenants protected by small (perhaps 100 to 400 homes) neighborhood associations.

-Thoreau Institute in partnership with the Sierra Club
-Randal O’Toole

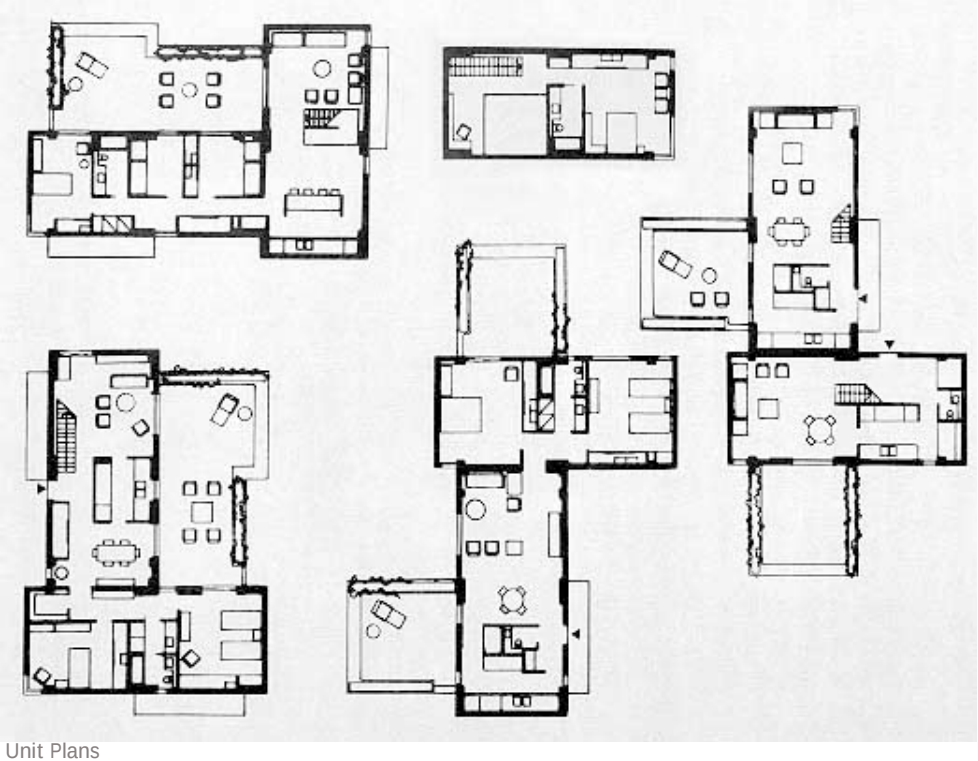
Habitat '67- Moshe Safdie, Montreal, Canada

Habitat '67- Moshe Safdie



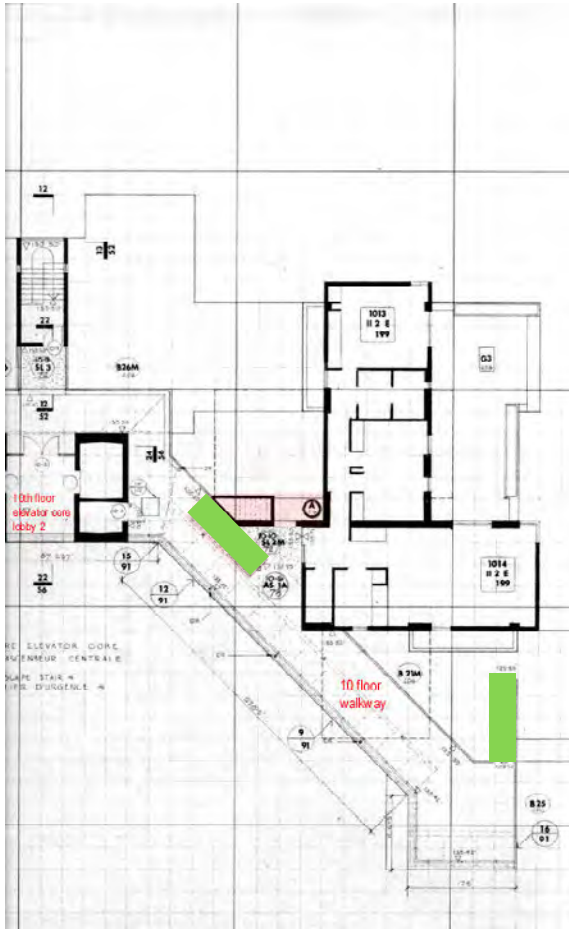
Partial Section

Courtyard Perspective

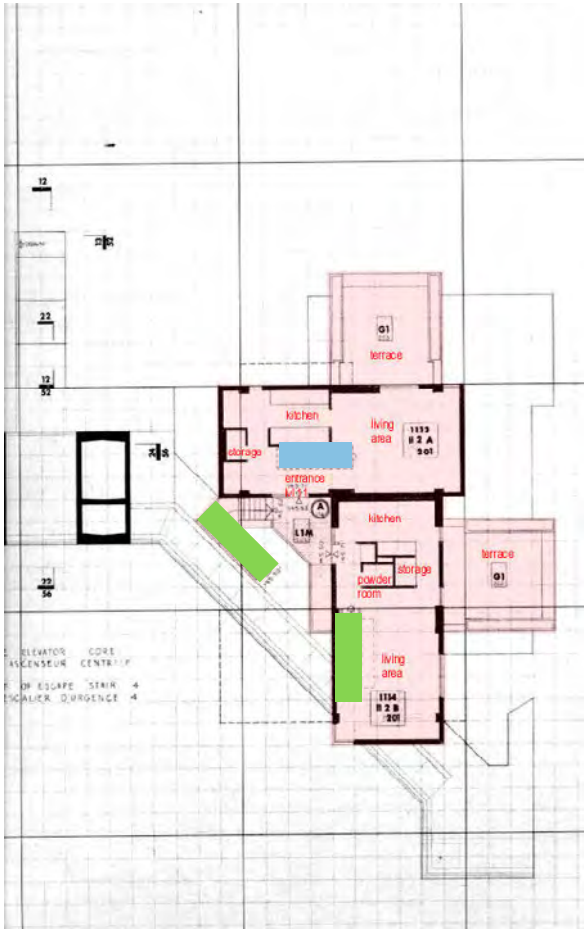


Unit Plans

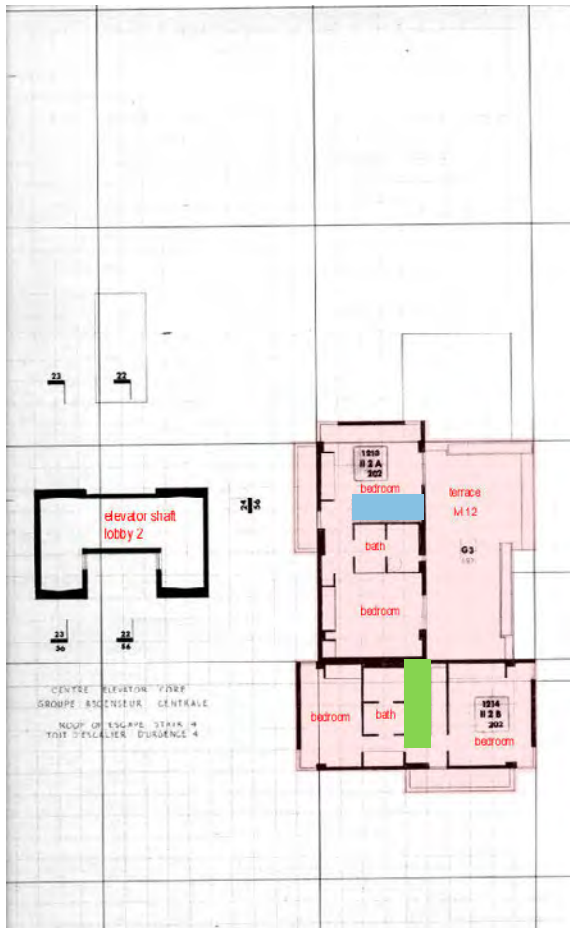
Habitat '67



Unit Plans- Bottom Floor



Unit Plans- Middle Floors

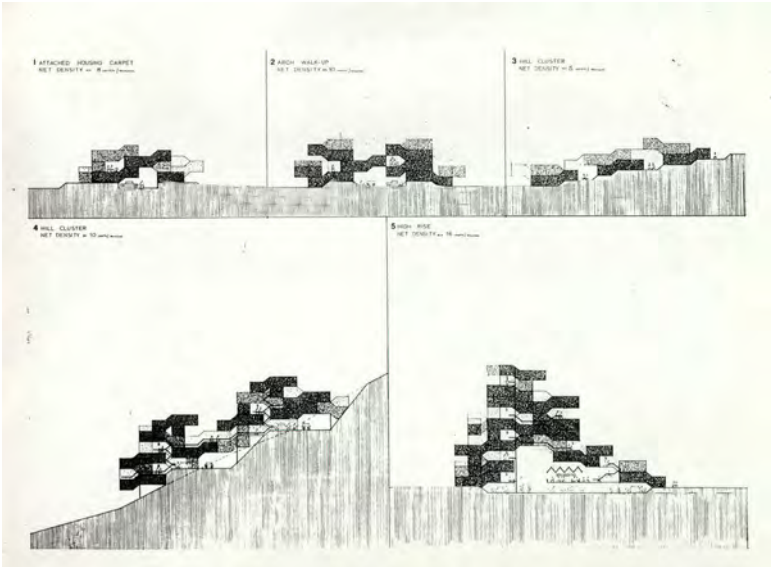


Unit Plans- upper Floors

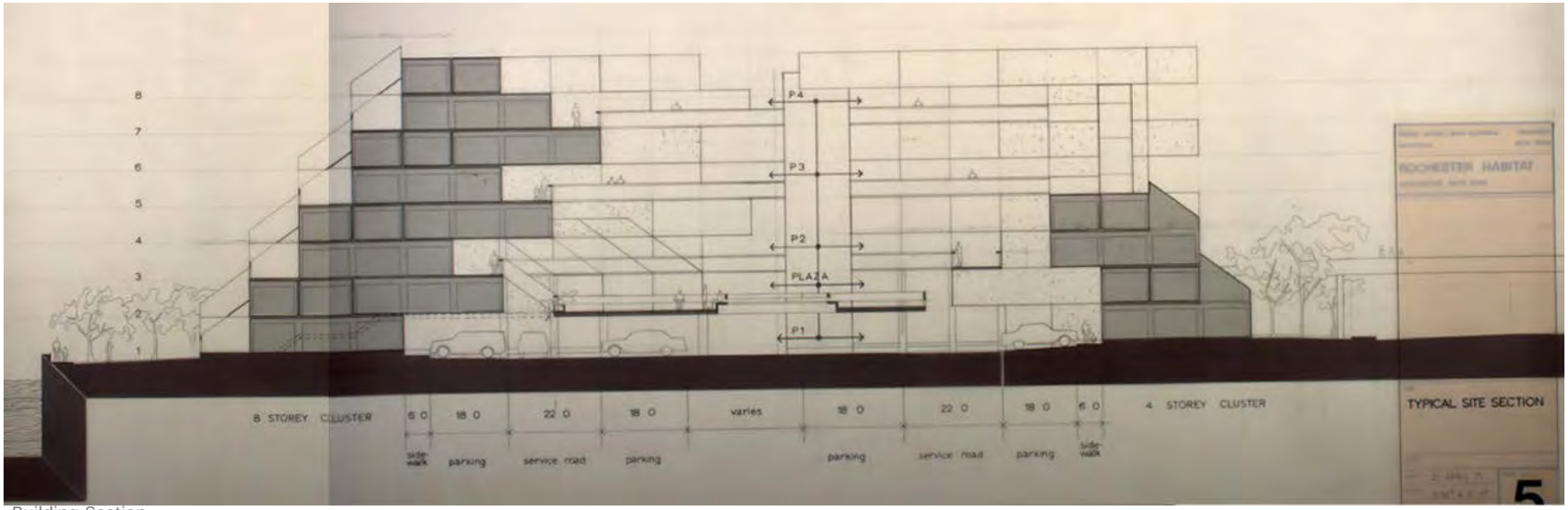
Movement and Circulation-

Because of the constant shifting of plan and volume, the vertical circulation only remains in the same position for only two floors at a time. After the two floors, the circulation begins in a different location which then proceeds upward likewise. The idea behind Moshe Safdie's design is to give "Unique" position and views to the otherwise modulated space. Although the volumes are indeed modulated, because of the construction methods chosen and positioning given, many slight changes occur from dwelling to dwelling, rendering each one slightly different. As one can see from the frontal view of the structure, it becomes evident that many logistical problems might occur with such a structure. This in turn, made the ideally "easy modular construction" a very expensive and troublesome building project.

Frontal Perspective

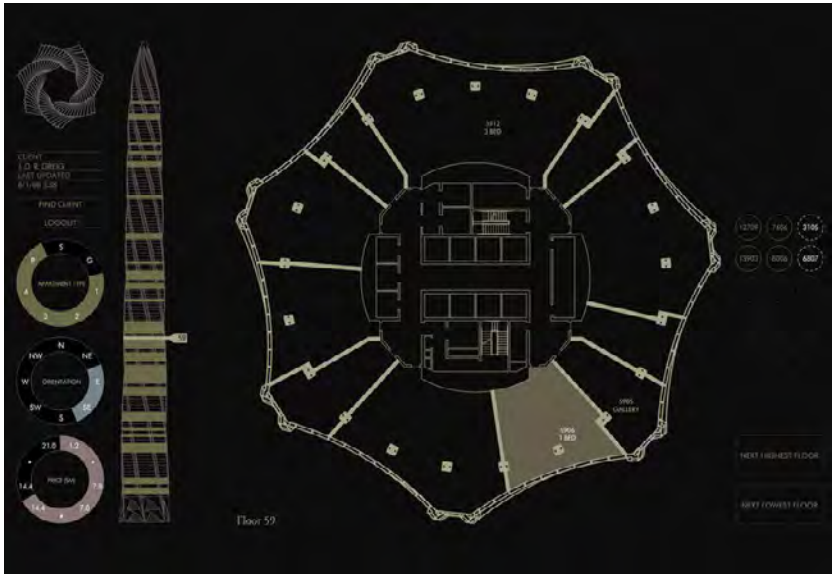


Sectional Quality Studies



Building Section

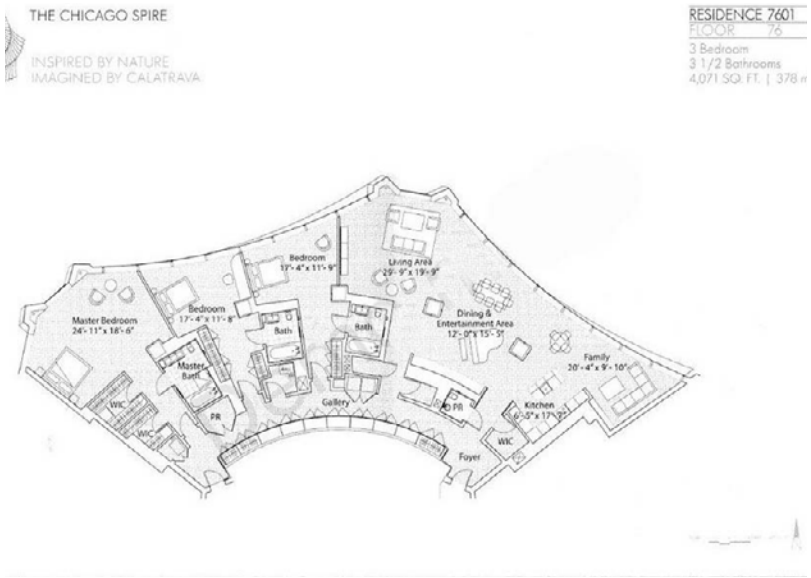
Chicago Spire- thechicagospire.com



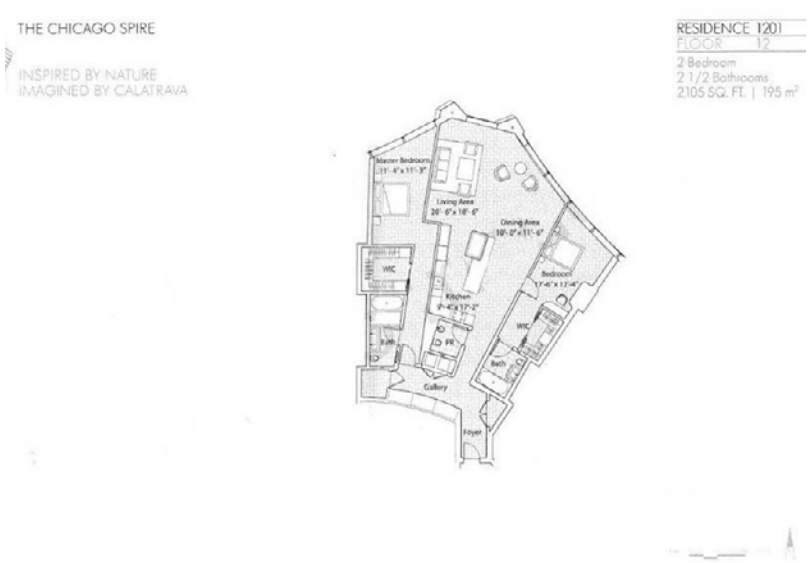
Designed By Santiago Calatrava-
The Chicago tower is the proposal for the newest, highest purely residential tower in the world. With 150 stories, it rises a massive 2000', standing tall in the skyline. Currently under construction, it has halted because of economic downturns, and is expected to pick up soon. The turning of the building facade is just as functional as it is aesthetic, reducing wind loads to a minimum.

Chicago Spire
Santiago Calatrava

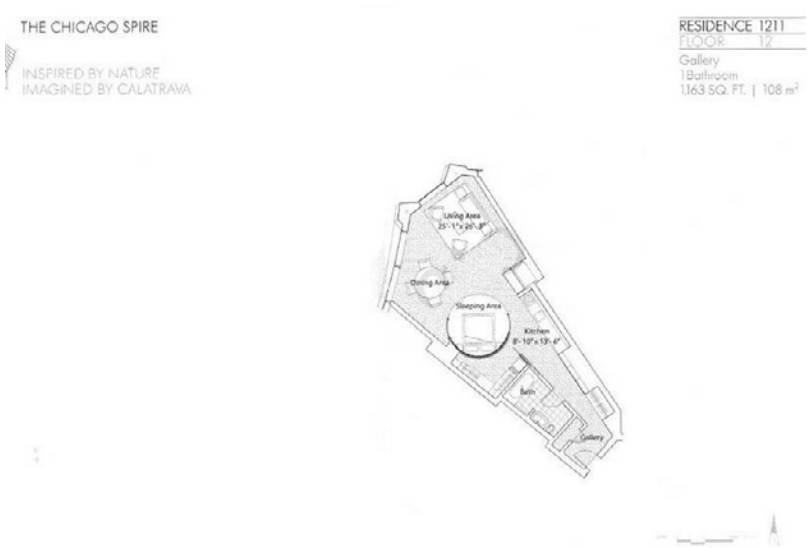
Chicago Spire



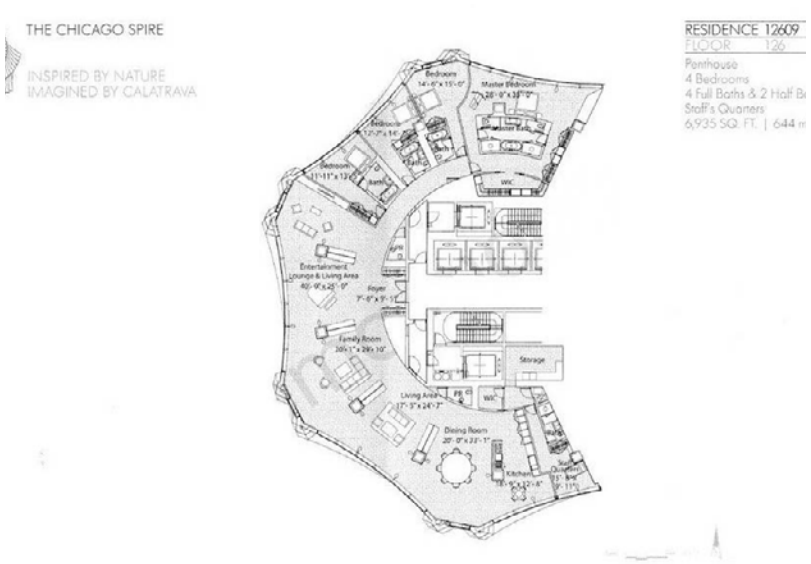
Floor Plan- Floor 76



Floor plan- Floor 12

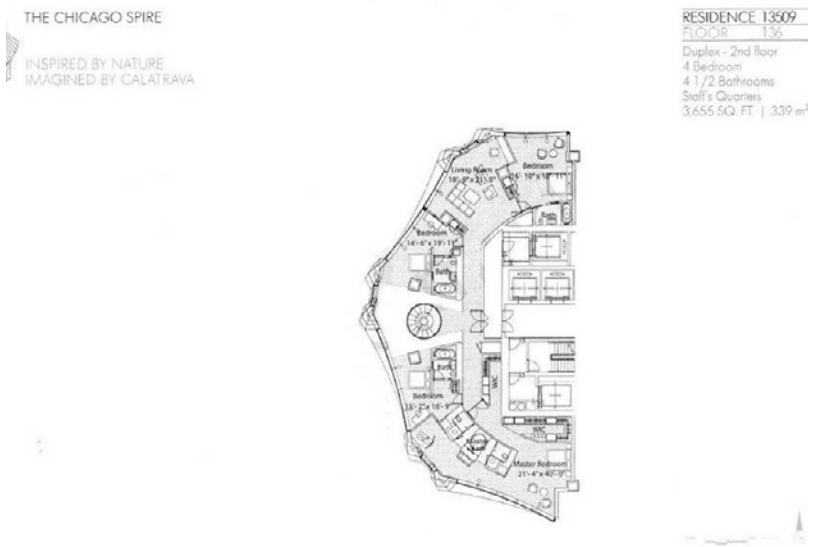


Floor Plan- Floor 12

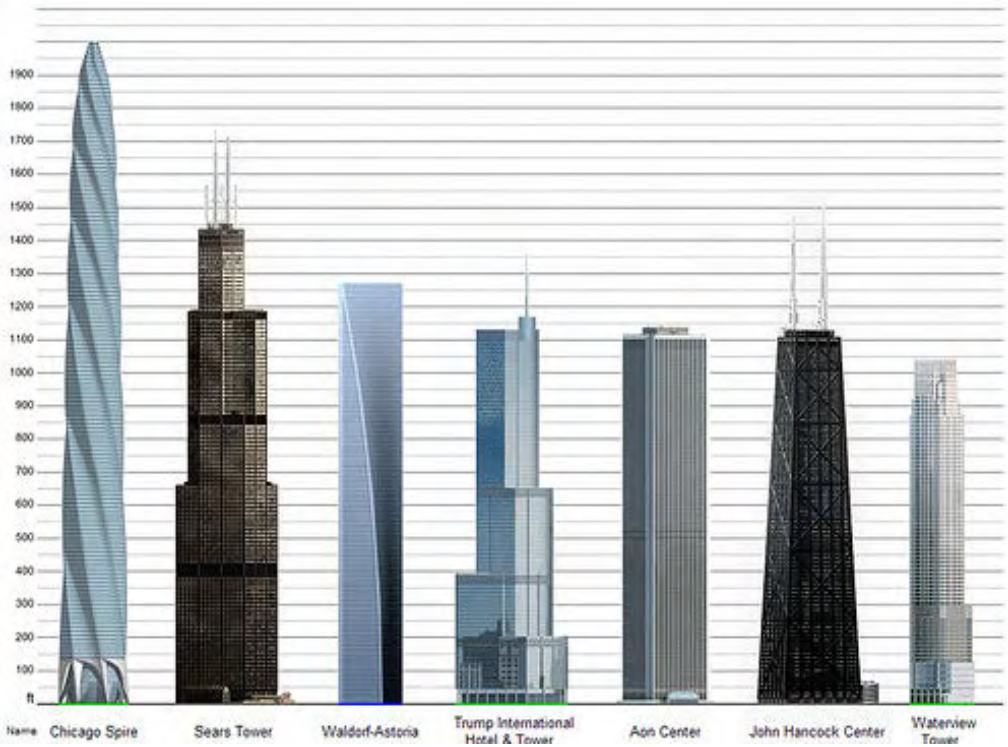


Floor plan- floor 126

Floor Plan- Floor 135



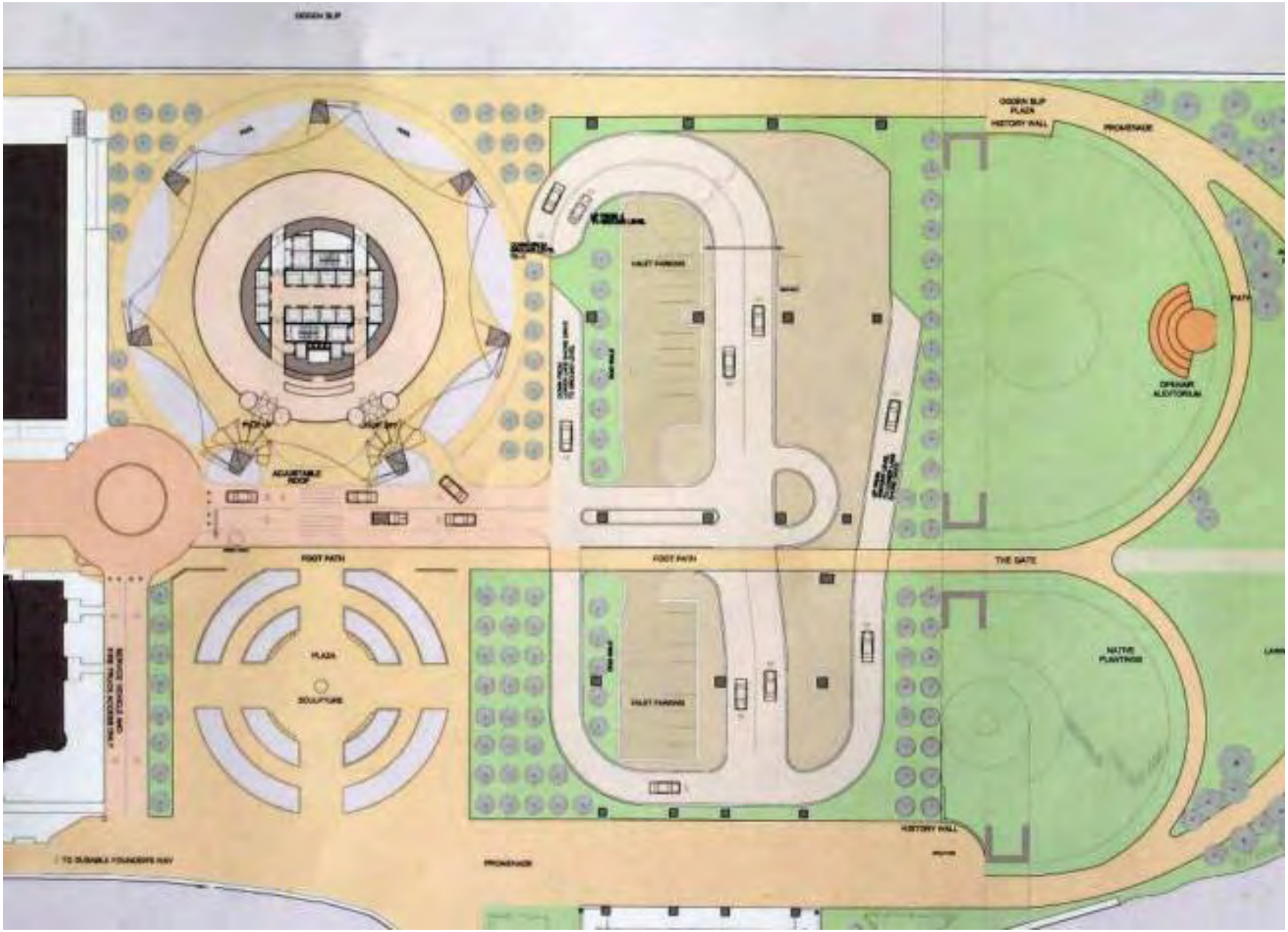
Floor plan- floor 136



Chicago Spire in Relationship to World Tall towers

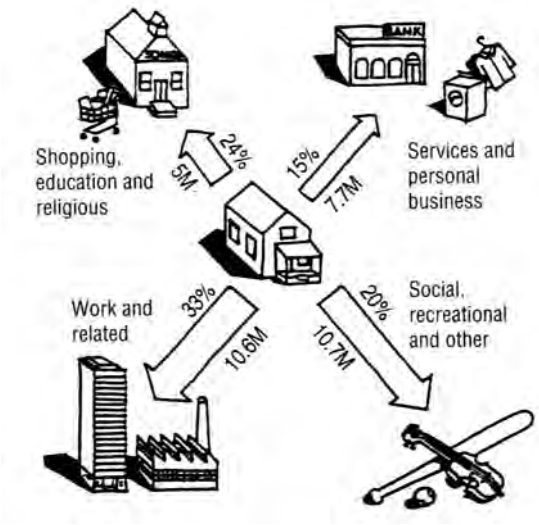
Interior Perspective

Floor Plate Axon


OGDEN SLIP
OGDEN SLIP PLAZA
HISTORY WALL
PROMENADE
VALET PARKING
OPENAIR AUDITORIUM
PATH
ADJUSTABLE ROOF
FOOT PATH
FOOT PATH
THE GATE
PLAZA
SOLUTURE
VALET PARKING
NATIVE PLANTINGS
HISTORY WALL
PROMENADE

Site Plan

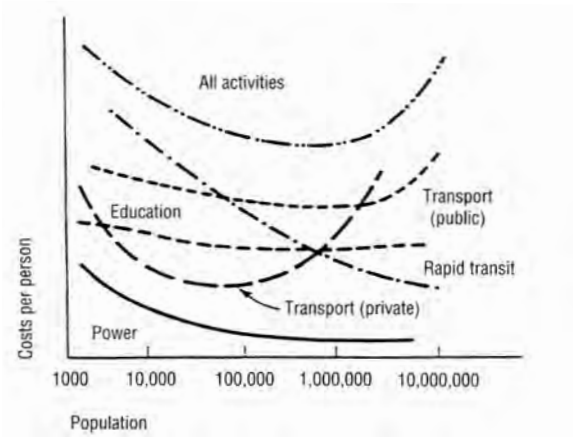
Frontal Perspective



Commuting Calculations

Ken Yeang's "Green Tower"

From Hamzah Ken Yeang's- "Bioclimatic Skyscrapers"



Urban Density Thresholds

Green Walkway Perspective

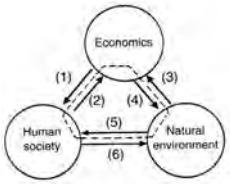
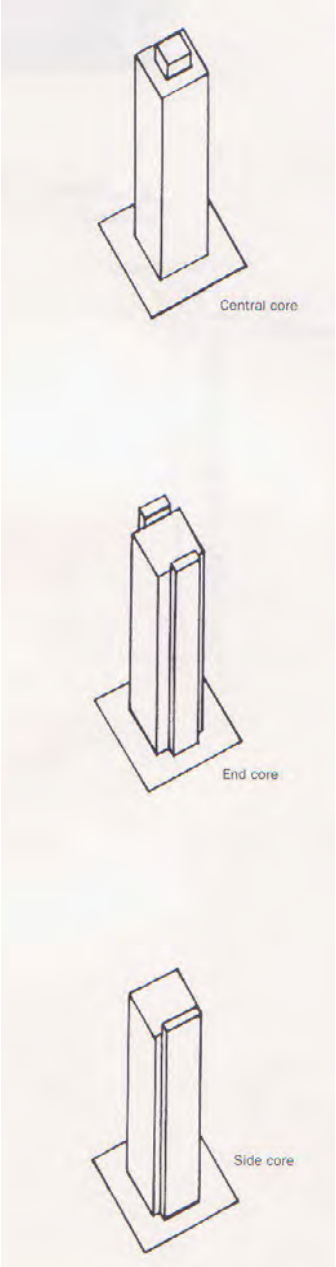


Fig. 21 Conceptual diagram of man-environment relationship (Source: Takeuchi, Kazuhiko (ed.), 1995)

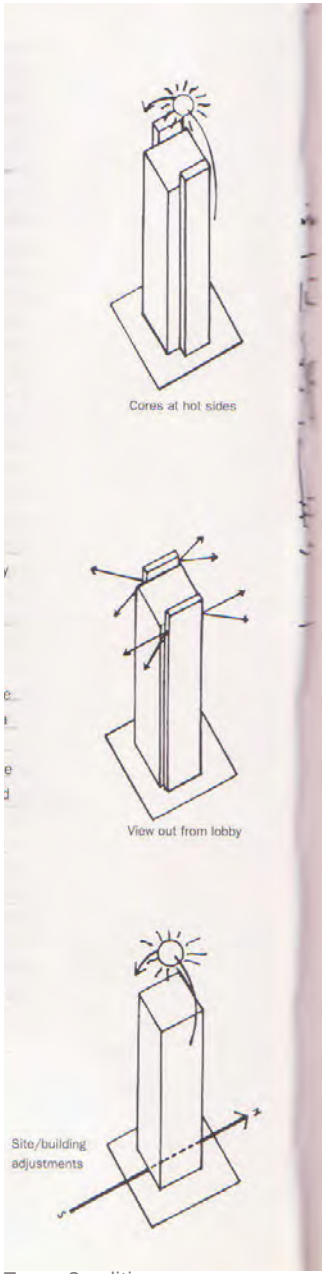
(1) Increasing income (living standards)
(2) Higher consumption
(3) Effective use of resources (energy efficiency, recycling, etc.)
(4) Availability of resources
(5) Maintenance and nurturing of the natural environment
(6) Provision of amenities (leisure, comfort, contact with nature, etc.)

Man-Environment Relationship Diagram

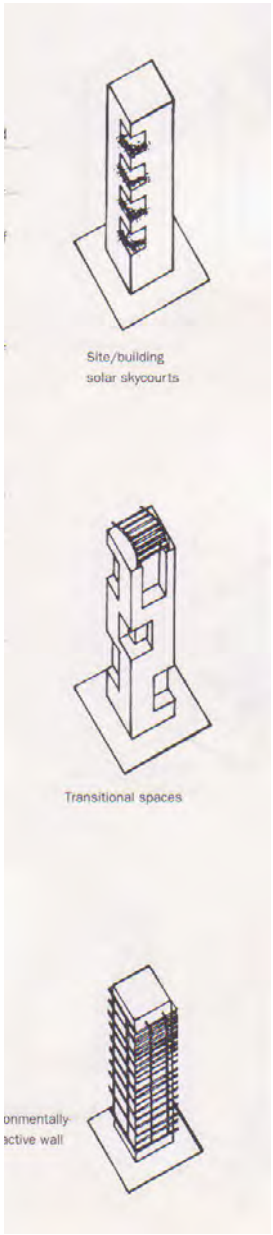


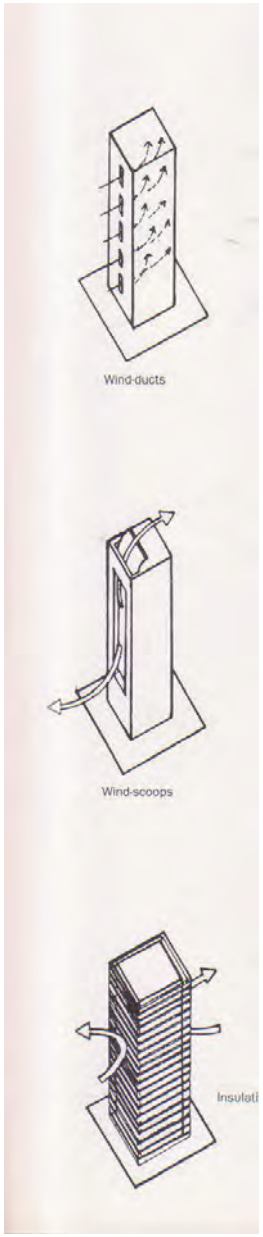
Tower Conditions- Ken Yeang

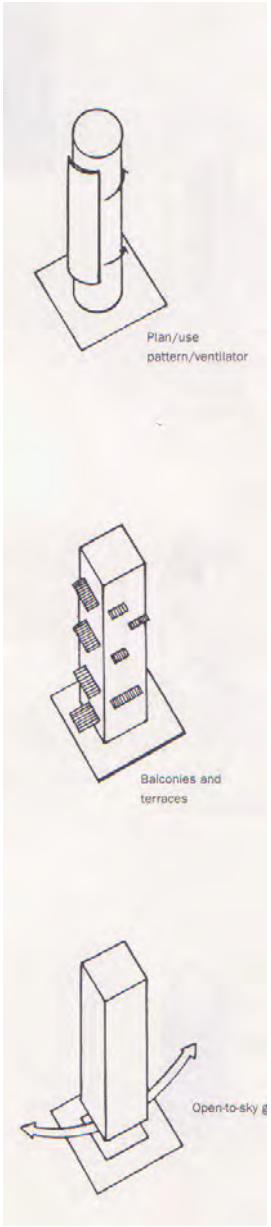
Conceptual Plan

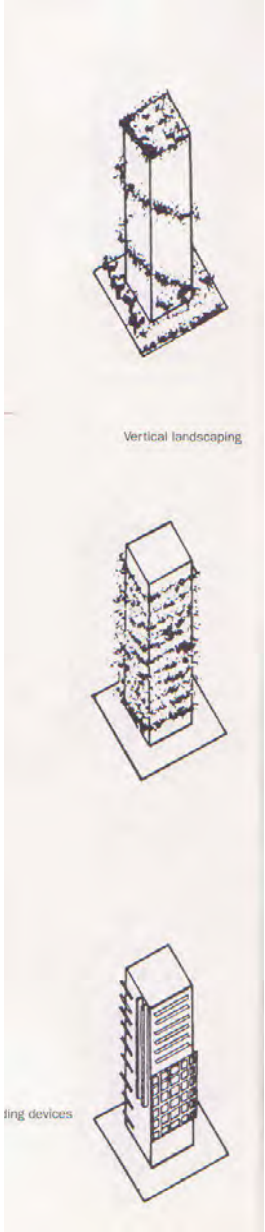


Tower Conditions









Tower Conditions

Night View- JetsonGreen.com

View of Model- JetsonGreen.com

Daniel Libeskind
Sky Garden- NY,NY

From JetsonGreen.com
A Blogspot.

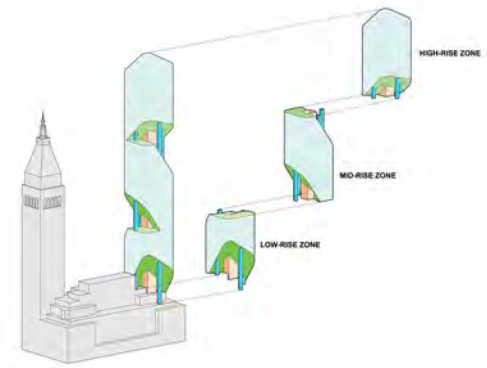
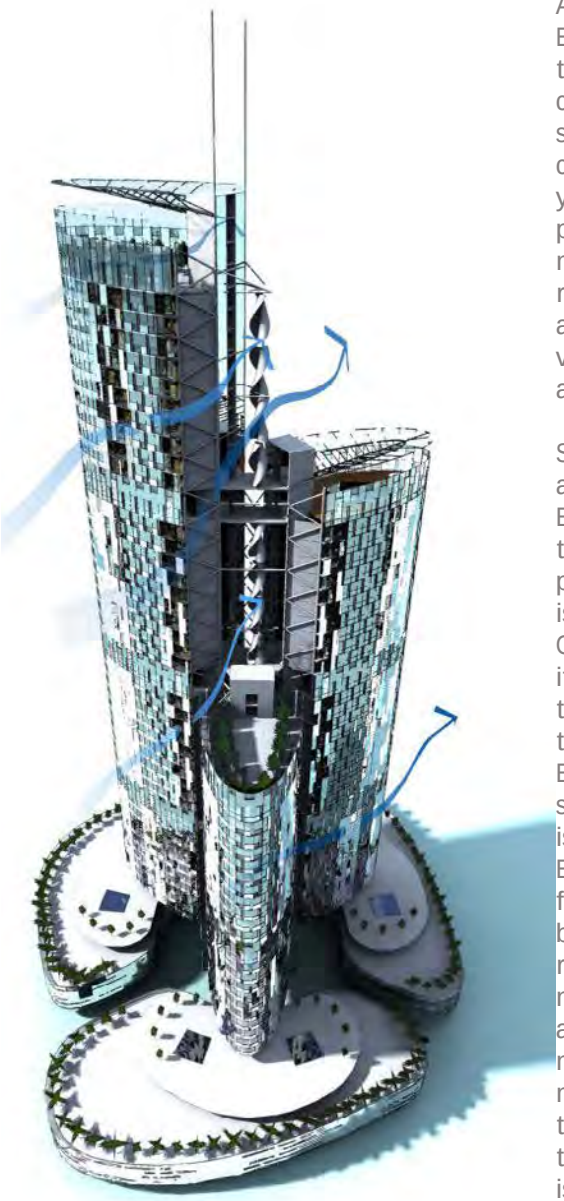


Diagram- Archicental.com/Llbeskind/sky.garden11

Rendering of Garden- JetsonGreen.com



WindTower- Bernard Lynch- Weburbanist.com

Village Living-

Ah, village living. You can't beat it. It's the English dream. There's the corner shop, there's the post office, there's the pub, there's the local school and doctor's surgery. Unlike so many small communities, they are all present and correct. Everything you need is a short walk from your front door. People stop and chat as they pass to and fro. This village is alive, a real community. It's a bit different, though. Not too many rural settlements boast their own swimming pool and gym, let alone a crèche. And hang on - the village green - who put that 300 feet up in the air?

Such is the demand that in some areas homes are taking over from offices up in the air. Even Birmingham's famous 1960s Rotunda office tower, right next to the rebuilt Bull Ring shopping centre with its new space-fungus Selfridges, is being converted to flats by young architect Glenn Howells. It's typical, when you think about it: while the South agonizes about living high, the North just gets on and does it. The Beetham tower in Manchester will be 98 feet taller than Britain's previous highest residential towers, the sought-after Barbican in London. So the south is playing catch-up, but it's upping the stakes: Brighton and Hove has plans for a cluster of four extraordinary sculpted apartment towers by American iconoclast Frank Gehry, to be built right on the waterfront. Meanwhile, increasing numbers of once-despised council tower blocks are getting spruced up as everyone realizes that most of the problems with them were to do with management, not design. The elegant blade of the early 1970s Trellick tower in west London, by the wonderfully-named architect Erno Goldfinger, is now one of London's most admired buildings, is officially listed as architecturally important, and is about to undergo a multi-million pound refit.

Some of the earlier, better office towers are now pretty well thought of, too. Centre Point at the eastern end of London's Oxford Street, by architect Richard Seifert, was the focus of early anti-capitalist protests in the 1970s as it stood empty for years, a colossal tax dodge on the part of its developer. But today, it is not only fully occupied but fully integrated into the life of the capital. Its distinctive profile - a clever honeycomb concrete structure - is also listed. Not too many years ago, this would have been inconceivable.

So the stage is set for a big revival of vertical buildings. The most spectacular crop of new towers in the near future is going to be in the heart of the capital: in the City of London, where the money is. The skyline of the City had remained largely frozen since the 600 foot NatWest Tower, a 1970s design, was opened in 1981. Younger-generation commercial palaces - even those as grand as Richard Rogers' high-tech Lloyd's of London, designed in 1978 and opened in 1986 - kept relatively low and squat, hunkering down. Lloyd's is high at 312 feet, but not skyscraper-high. Many others literally dug themselves into the ground. Leftover tower plans from an earlier era were ceremoniously torn up. It was the era of the groundscraper, the football-pitch-sized City dealing floor. Despite occasional publicity-seeking plans for great towers in other British cities, these also came to nothing. In London as in Paris, tall commercial buildings were pushed to the perimeter - in our case, eastwards to Canary Wharf in the abandoned former docklands, where unbridled market forces combined with irresistible tax breaks showed what commerce really wanted: tall, prestige, readily-identifiable buildings of the kind the City had given up trying to provide. There things rested. Until the arrival of the Gherkin.

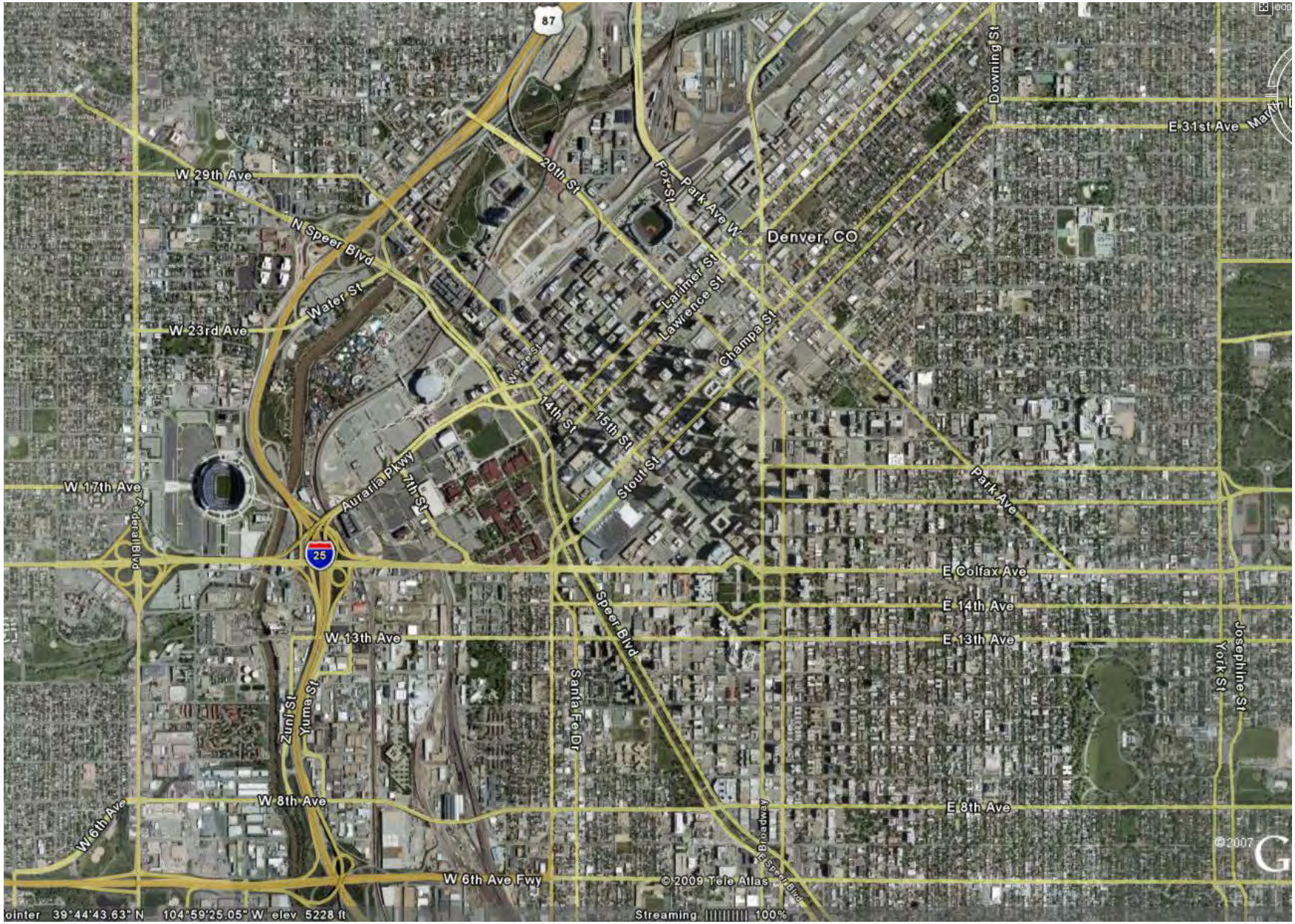
Officially known as 30 St Mary Axe, this sleek tapering circular office tower, designed by architect Lord Foster, was, like the redevelopment of Central Manchester, made possible by the previous attentions of the I.R.A. The huge terrorist bomb blast that took place on an April evening in 1992 had devastated a vast swathe of the City, largely destroying the old shipping brokerage, the Baltic Exchange. The relatively tight site of the Exchange, right at the medieval crossroads of London, demanded a response that was different from usual. No squat groundscraper would fit here - and firms had abandoned vast dealing floors anyway. Other buildings hemmed it in closely. Foster's first attempt here was a 1996 scheme for a skyscraper like an enormous pronged stick of celery rising to 1,076 feet (the prongs being apartments above a lower section of offices, on the American model). That was too much, too soon, for Britain. Nor was it Foster's most convincing design.

So the site was sold on to Swiss Reinsurance, an outfit with high architectural standards. Foster and his team engaged with reality, went straight back to the drawing board in 1997, and sketched out an idea that was brilliantly simple: a tall building, but at 590 feet not too tall, and moreover one that sat lightly in its socket. One that tapered towards the bottom as well as the top, so allowing a public square around the base. One that was circular, so that the wind slipped round it rather than bouncing down the façade and blowing people off their feet. One with an external diamond latticework structure and a delicate glass nose cone. And one that, placed where it was, would be seen from all directions right across the capital. A lynchpin for London. They started building it in 2001, and it is just finished. It works. Just about everybody loves the Gherkin. And it changed everything.

Peter Noel- Retired Press

Project Design

Project Design Analysis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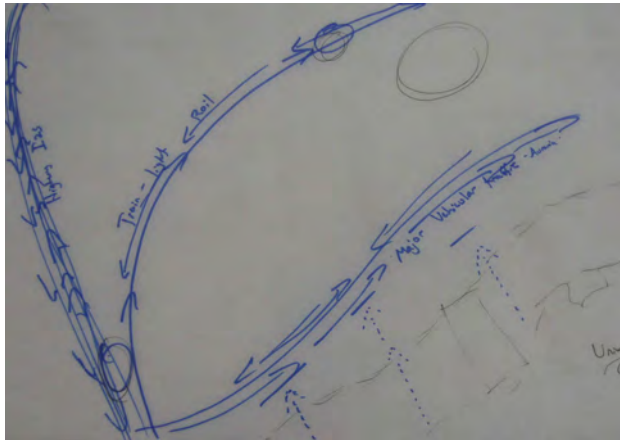
W 29th Ave
N Speer Blvd
Water St
W 23rd Ave
20th St
Fox St
Park Ave W
Denver, CO
Larimer St
Lawrence St
Champa St
Downing St
E 31st Ave
14th St
15th St
Stout St
Auraria Pkwy
7th St
W 17th Ave
Federal Blvd
25
Park Ave
E Colfax Ave
E 14th Ave
E 13th Ave
Speer Blvd
W 13th Ave
Zuni St
Yuma St
Santa Fe Dr
York St
Josephine St
W 8th Ave
W 6th Ave
E 8th Ave
Broadway
W 6th Ave Fwy
© 2009 Tele Atlas
©2007
Pointer 39°44'43.63" N 104°59'25.05" W elev 5228 ft
Streaming 100%

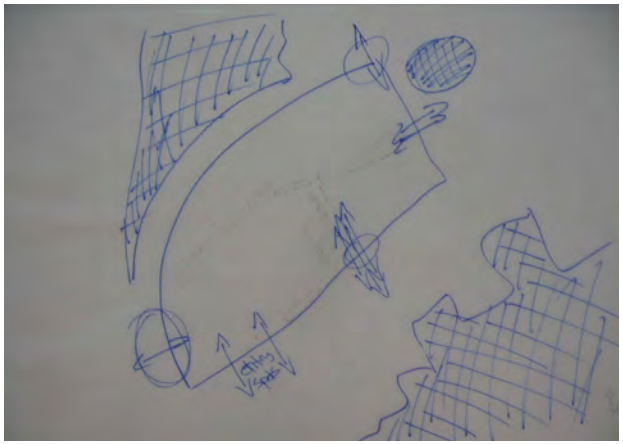
Project Design Approach: Site-

The first thing I started looking at was the size and the shape and the overall “fit” of the site within its immediate surroundings. An overall contextual understanding of how the immediate site works with the neighboring parcels of land is crucial in developing the correct design decisions. Additionally, the coexistence of a project into the larger contextual atmosphere is the essential foundation which will hold up a design project in its emergence into its surroundings.

From this point, the underlying web of the city life must be examined. Everything from the overall fabric of the pedestrian patterns, the placement of banks, markets, and even ATM depositories can be mapped into an array of information which help determine principal organizational patterns for a potential design.

By then inter laying the connection patterns and flow paths of the urban fabric across the site, additional patterns arise within the given formable area. Noticing the developed nodal points and intersections of movements, grants information about natural occurring activities.



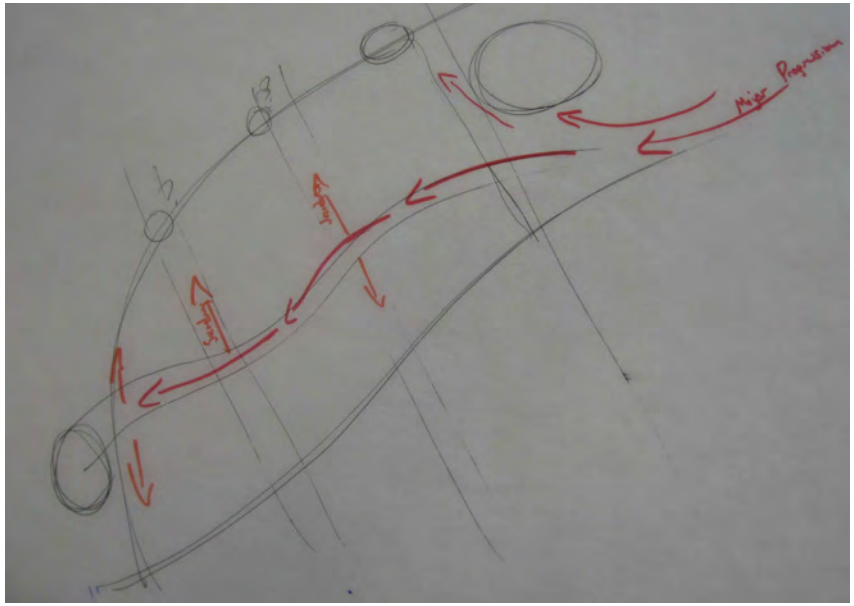


Movement-

The immediate site conditions which relate to the edges of the proposed site needed to be analyzed in order to understand how to react respectively within the boundaries. As shown in the original site analysis, most of this has already been thought about. However, as I move forward with my design, I must reestablish these conditions within my approach. Here, the major traffic patterns of both vehicular traffic as well as a light rail system is depicted in blue. The slight entrances from the side street to the main street along the southern edge of the site are also indicated by dotted lines.

Environment-

Because of the vast size of the site, there are endless possibilities when relating to the environmental aspects of the site. Being an oblong shape, there exists longer and shorter sides to the site. In this case, the longer side spreads along the East/West line exposing a generous ability for solar gain to the south. Additionally, the primary wind forces also originate from the Southeast with allow for utilization of both the solar and wind power from the south to a significant advantage. This allows some respective hints as to possible positioning, possible forms and orientations of the different aspects of the project.

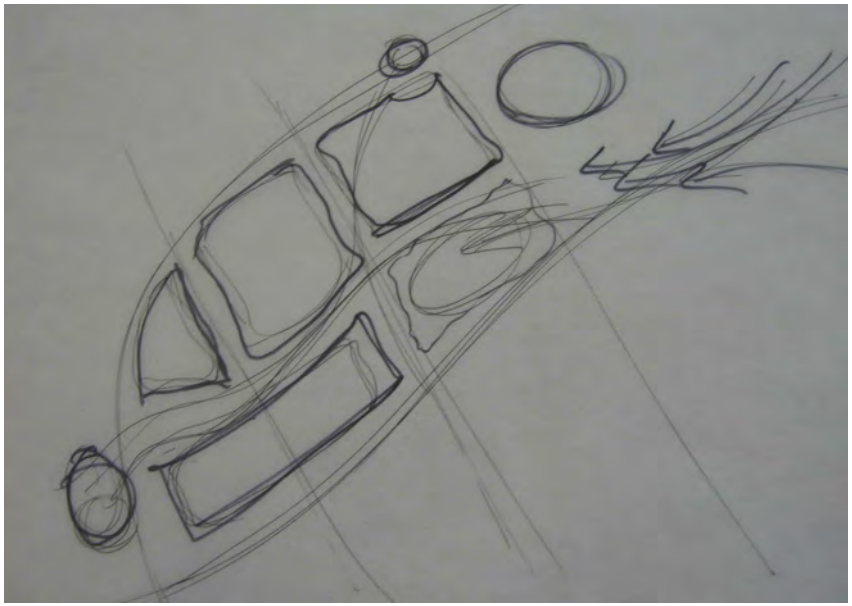


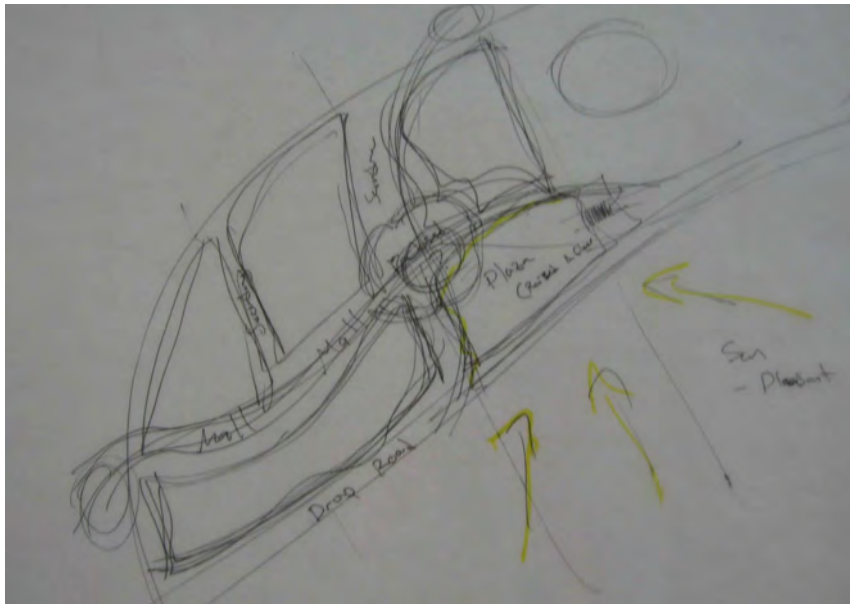
Pathways-

The main population of the major downtown district exists to the northeast of the site. There also exist major points of interest along the parameter of the site as well. The Pepsi Center is located at the closest corner towards LoDo and attracts a lot of people during Basketball and Hockey games. On the opposite end of the site, there is the Invesco Field which hold Denver Bronco games which also attract thousands through the site. Additionally, many students attend the academic campus south of the site, who also traverse the site in order to use the light rail system which runs along the Northern rim of the site.

Central Node-

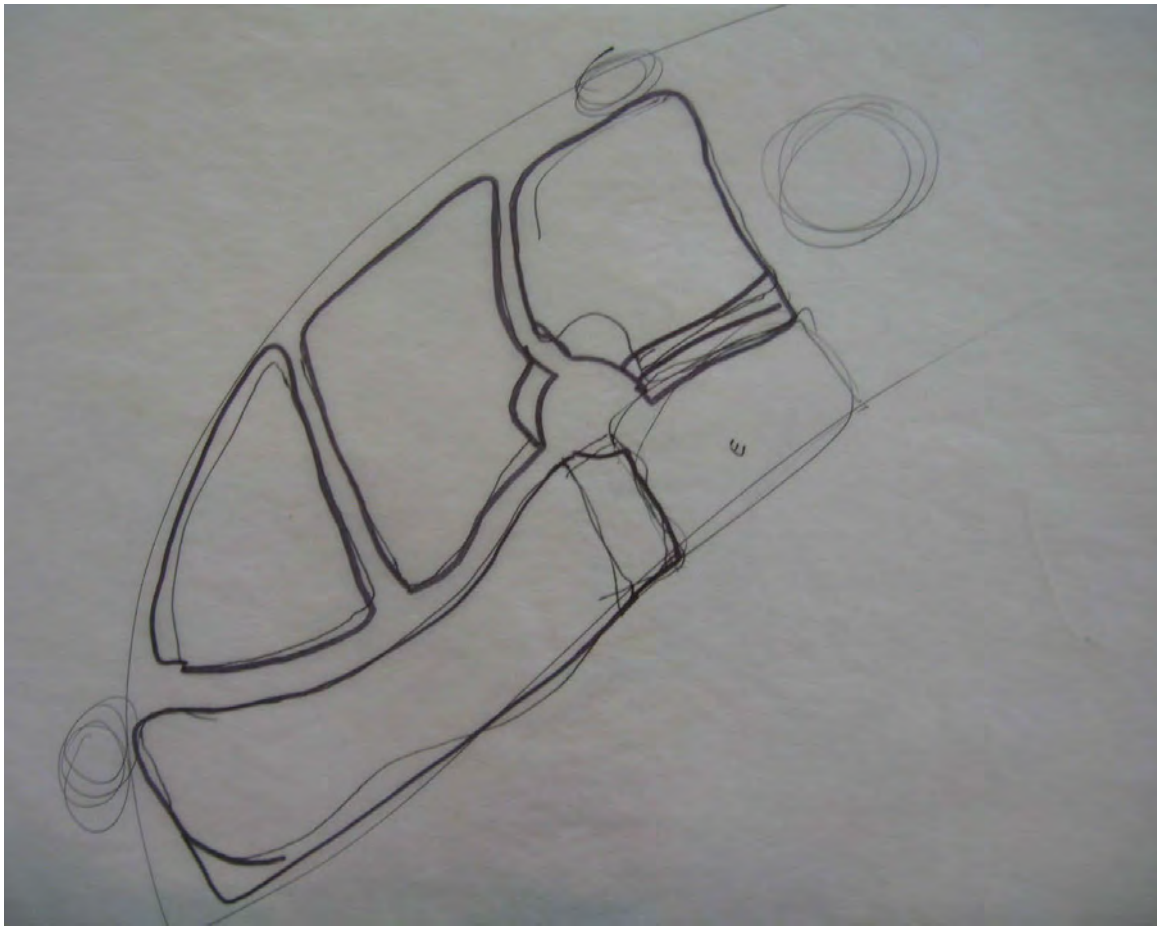
With the site being a major passageway for multiple crowd-getting events, there exists a major need to maintain and encourage the natural paths and use of the site. Only clashes could result if I tried to fight such natural pathway flow. Therefore, the two must coexist in a symbiotic relationship helping the two things to function correctly and fluidly. Keeping these paths in mind, I have diagrammatically split the spaces up into the resulting portions. The result is a central node where the two primary paths meet. the other paths follow an abstraction of the existing city grid as they lay across the site.





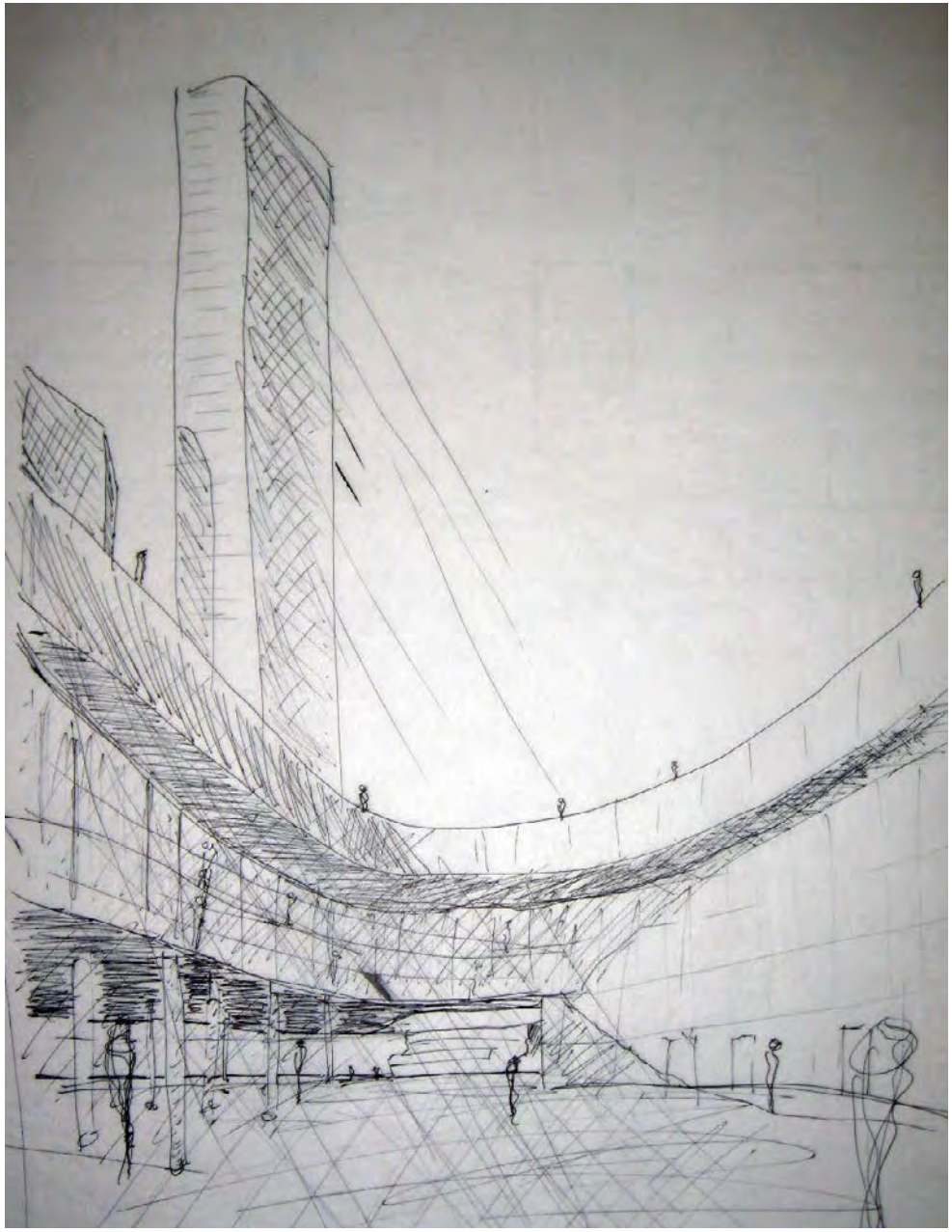
Open to the City-

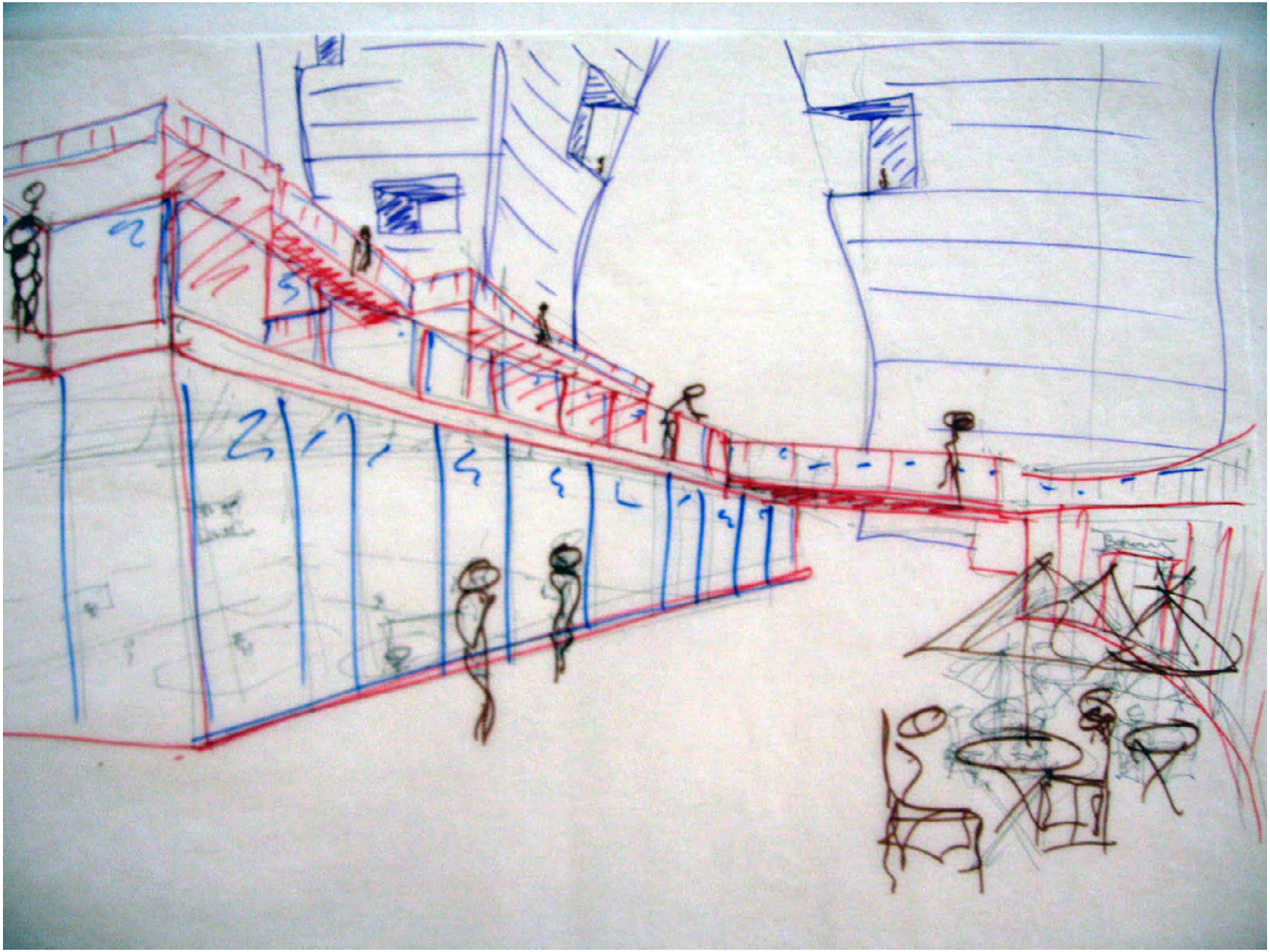
Most of the population of the site inhabitants will be approaching the site via foot, bicycle, or rail. They will also most commonly be involved within the inner workings of Lower Downtown (LoDo). Therefore, an open and welcoming space directed to the reception of these users would be ideal. Also, having an open space which looks outward towards the city, as it balances its cooperation to the internal spaces, is essential in the overall connection to the greater community operations within the site as well as the larger urban fabric.



Form-

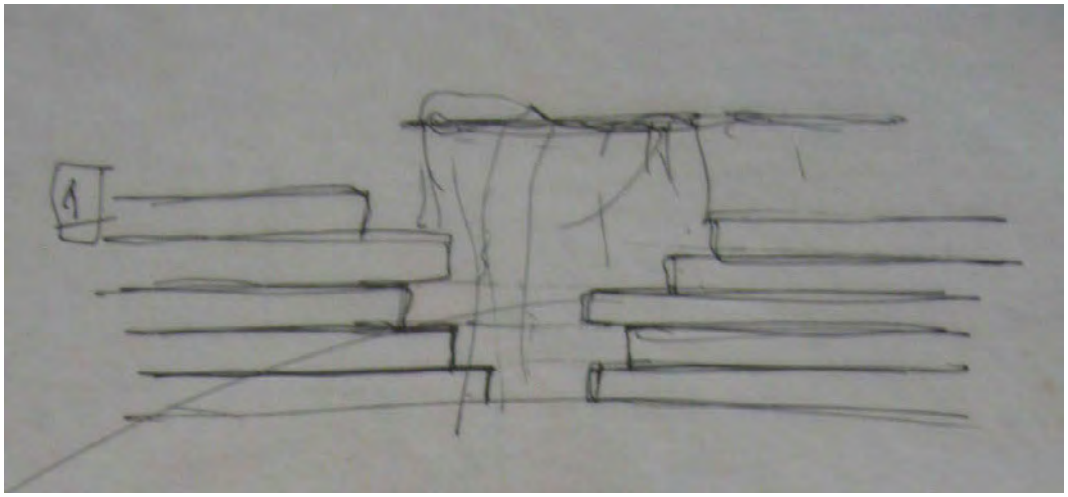
As a result of layering natural pathways through, around, and into the site, I was able to get a sense of what pockets of space were left relatively untouched. This allowed me to split the remaining pieces into abstracted forms. Based solely on what patterns which interact with the greater site aspects, I felt that these are the most natural way to start thinking of reshaping and building form. From this point, I started contemplating ideas as to what would happen as these shapes were then abstracted in the third dimension. What kind of spaces might be born? What spaces were left where the movement and flow of the existing passageways and focal points were cut out? What did these spaces feel like? What type of building section would result? How did I want it to feel? Look? I started to play with these possibilities and go back and fourth between the vertical and horizontal arrangements of space, paying particular attention to the availability of space, form, shape and movement.

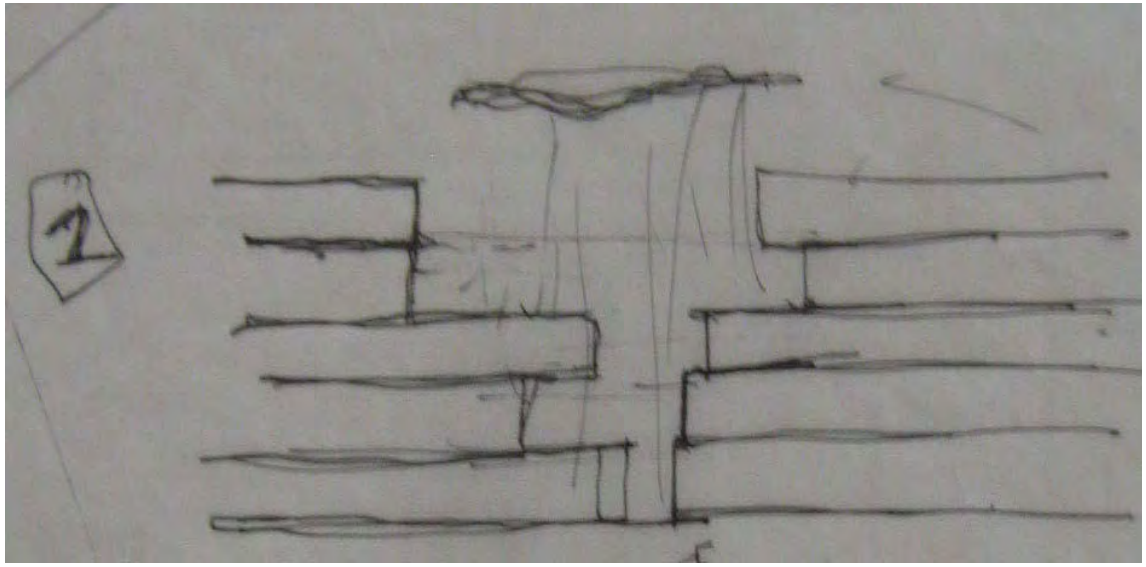




Formation of space.-

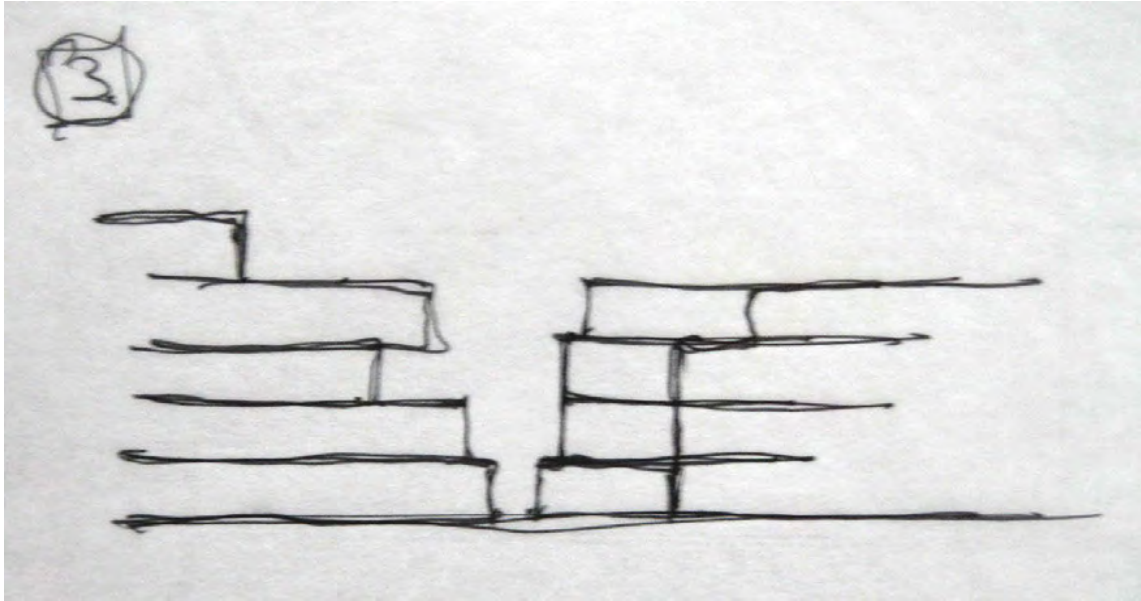
As the main concept of how the basic forms should eventually lay, and the establishment of how to correctly treat the general spaces within, a closer study of spacial usage must be conducted. By playing off of these recently established patterns, and communicating an overall idealistic vision within the confines of such spaces, additional studies can be performed to further progress ideas. Because these ideas are introduced with a basis of the previous knowledge, they can help progress the overall design forward.





Thinking Openly-

These sketches are prime examples of the initial thinking of space as it arises. As before, I was establishing some organizing factors of space and spacial usage on a 2-dementional plane. I can now continue that exploration, however, with a 3-dementional mind-set. While the overall implications of such moves have not yet been thoroughly studied, the ideas are sketched as purely expressive idealisms of what the future space could/might one day look like. By maintaining limited detail, and keeping everything conceptual, different ideas are able to be expressed without too much effort or time lost or gained throughout the exploration. This allows for a multitude of possibilities, without limitation.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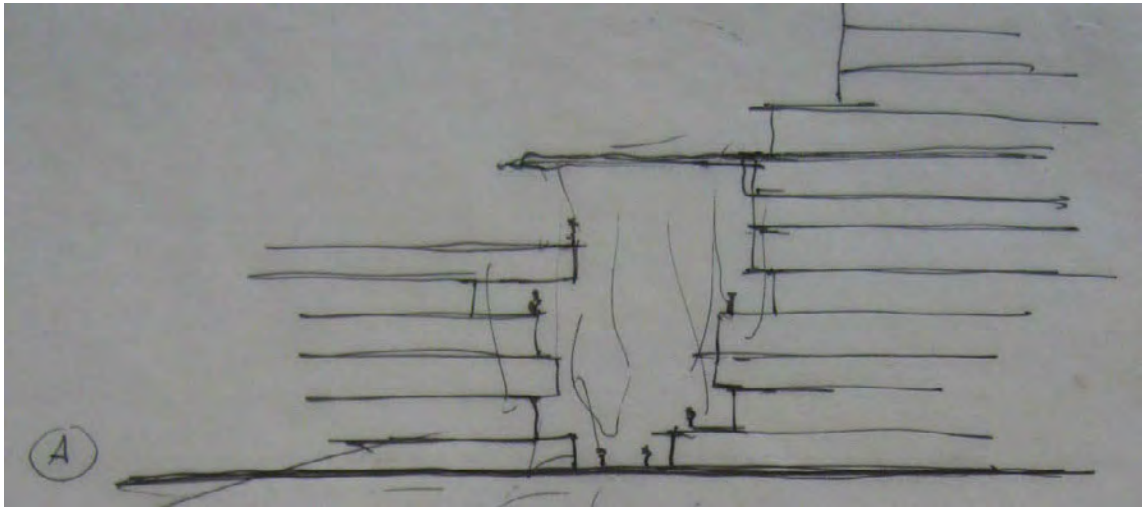
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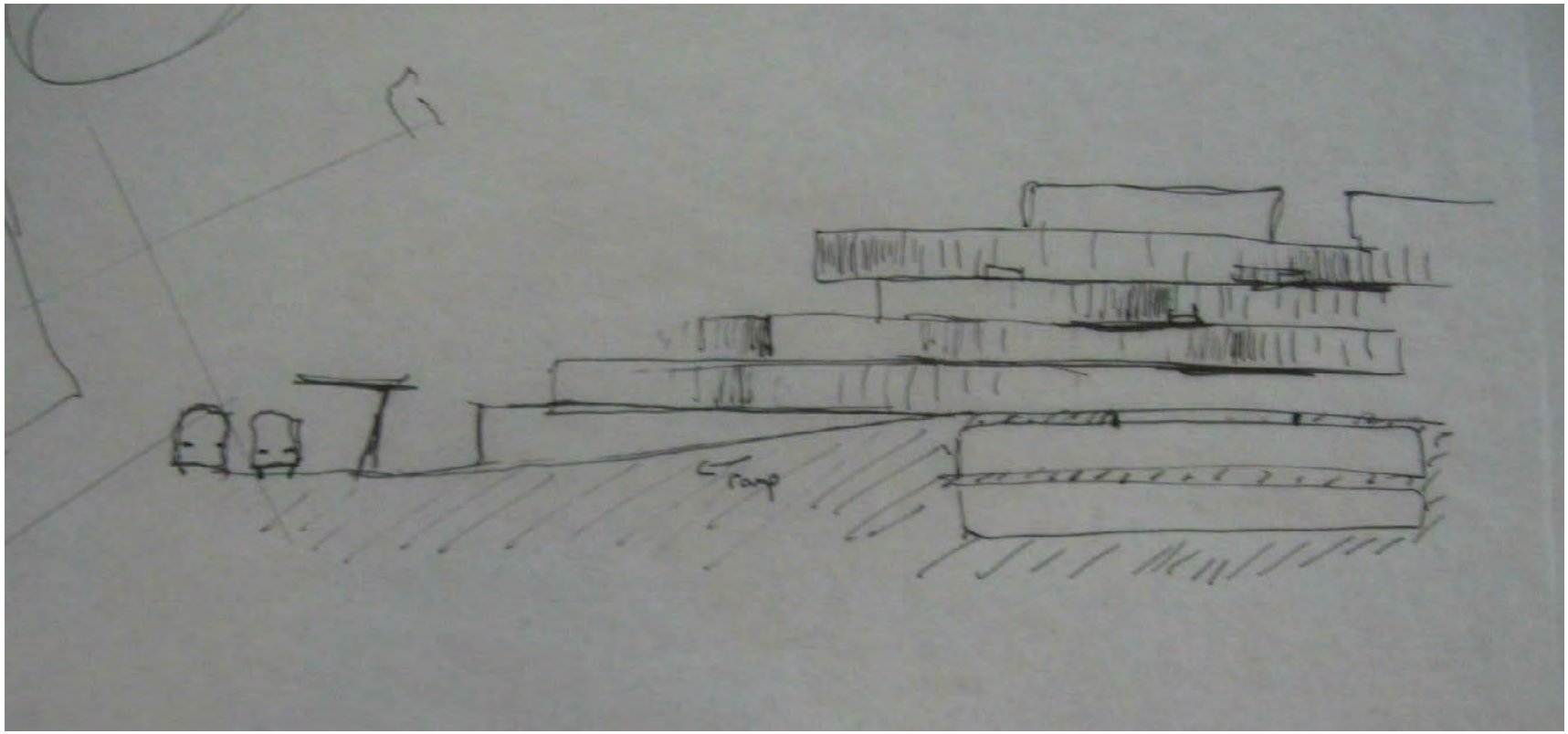
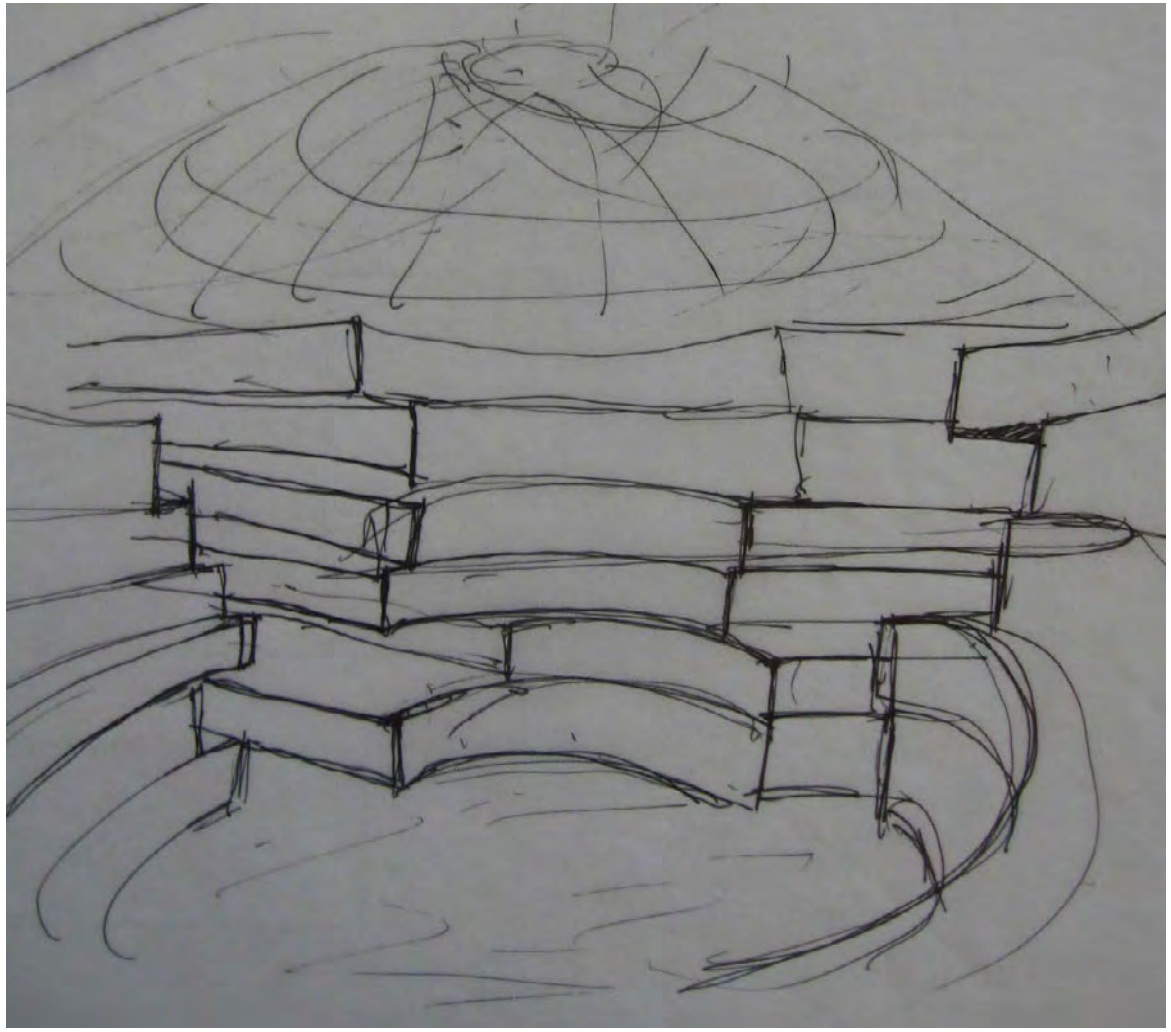
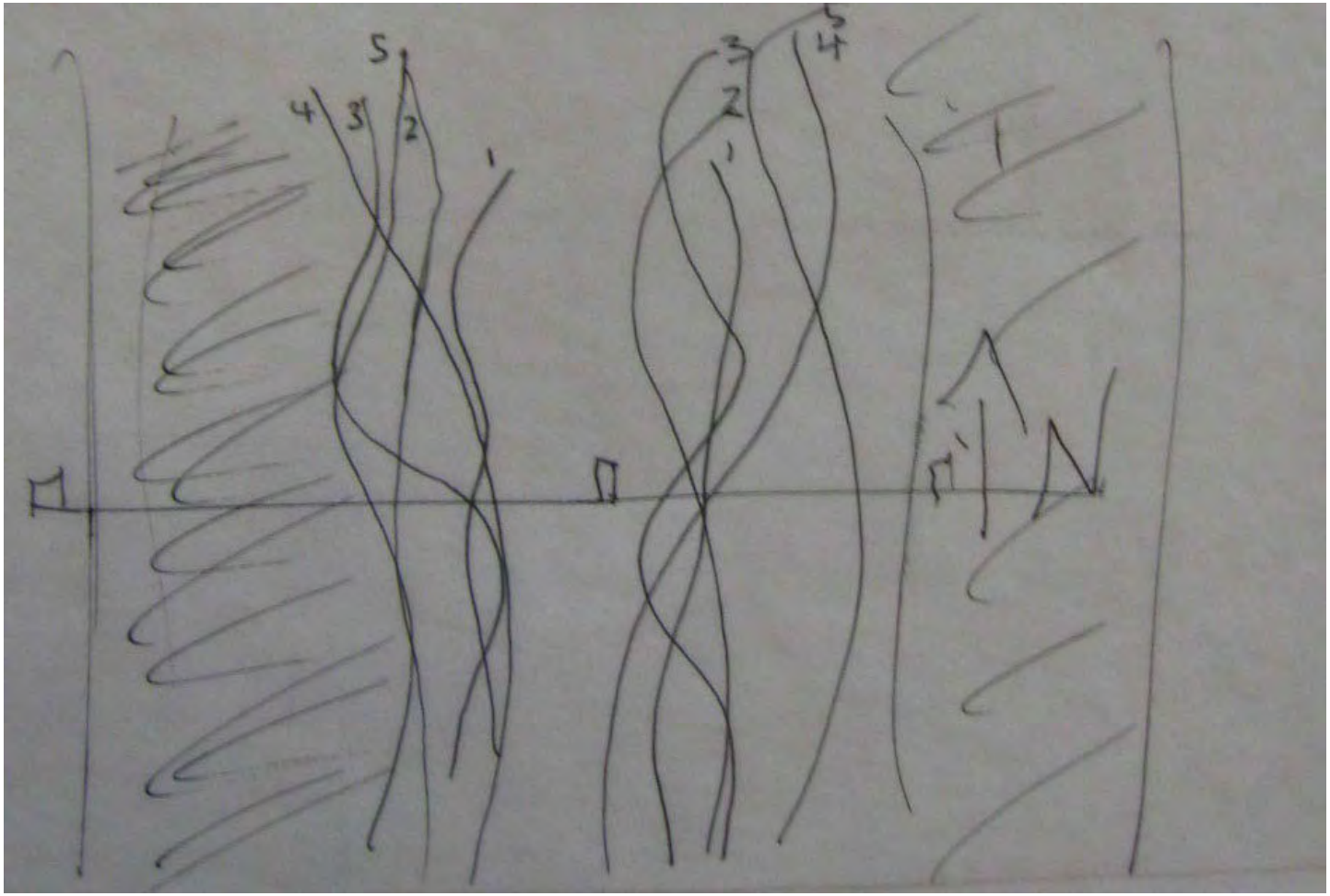


Open Pathways-

As these sectional drawings suggest, the natural pathways which move through the site are flanked by shifting plates. As a visitor moves through these openings, the plates meander back and forth on levels both above and below. This allows for a differentiated walking space on each level, adding a dynamic physical and psychological connection between levels. As far as the main gathering spaces, the central node allows for a large interactive space. This should be both open to the exterior entrances to the site spaces, as well as to the other veins of circulation within the interior of the structure.

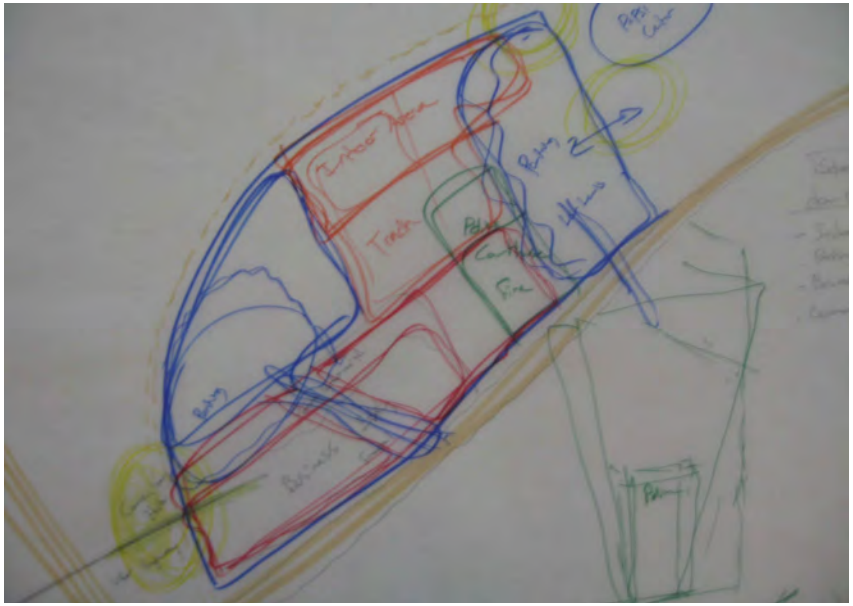


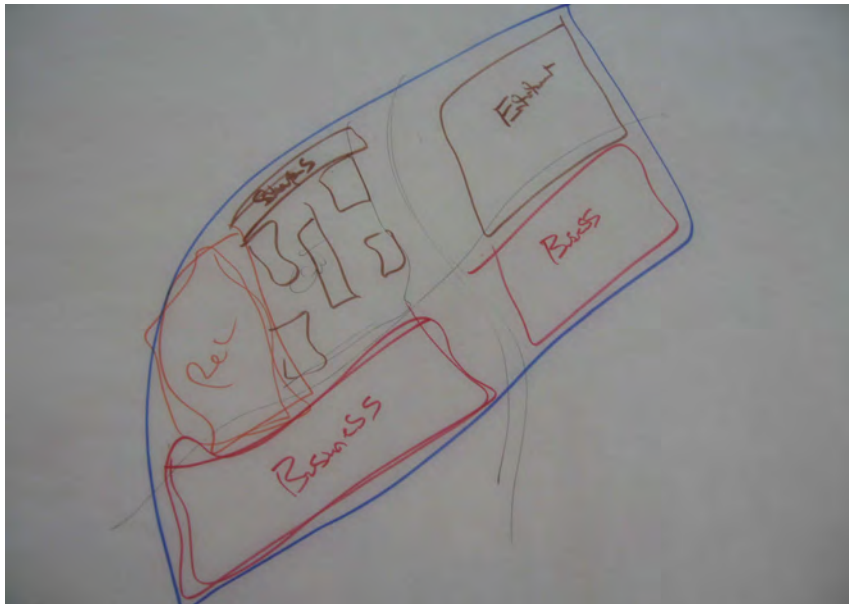
Sketch showing the possible central node of the Lower Plinth-



Waves-

Looking at this pattern from an aerial view, we can distinguish a wave-like pattern. As each plate moves in and out, we get different coverings, overlooks, and movement patterns. By then taking this idea, and starting to lightly introduce programmatically requirements within the system, we can start to progress the overall concept with the functionality of the building. By now constantly shifting from grand conceptual sketches, programmatic requirements, as well as 3-dementional studies, we can start to make decisions based on both aesthetic as functional requirements.

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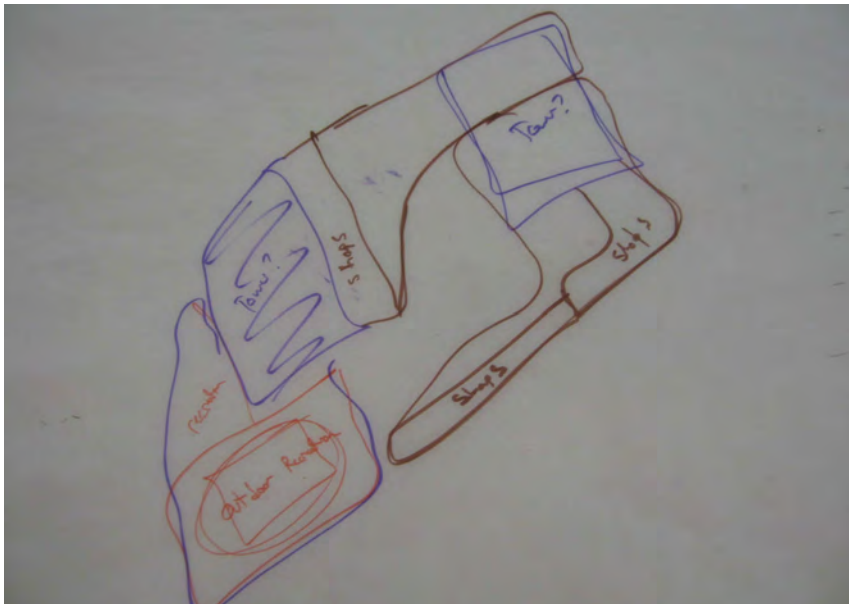
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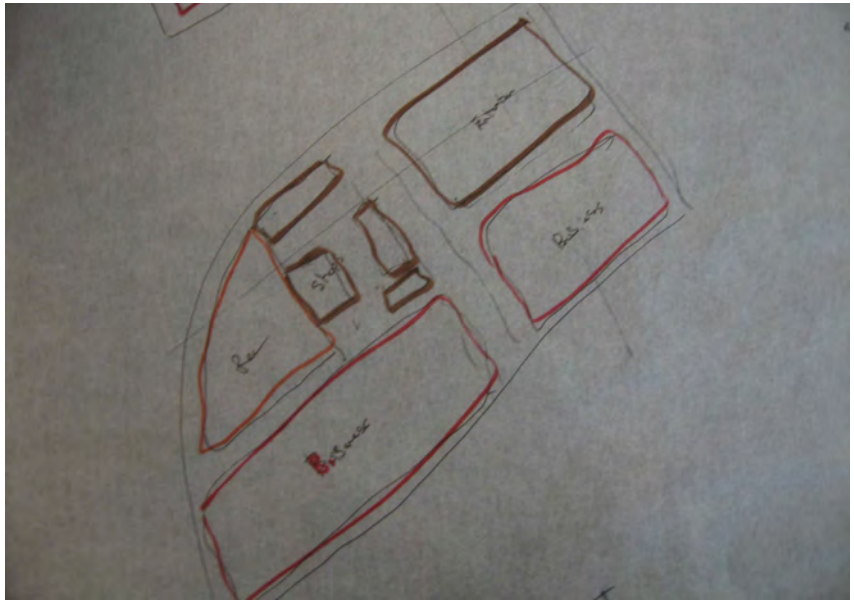
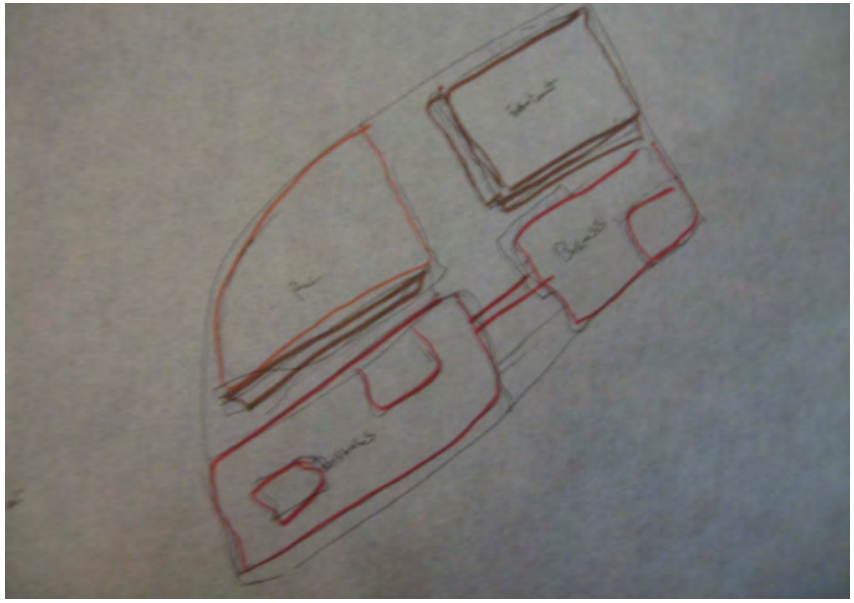
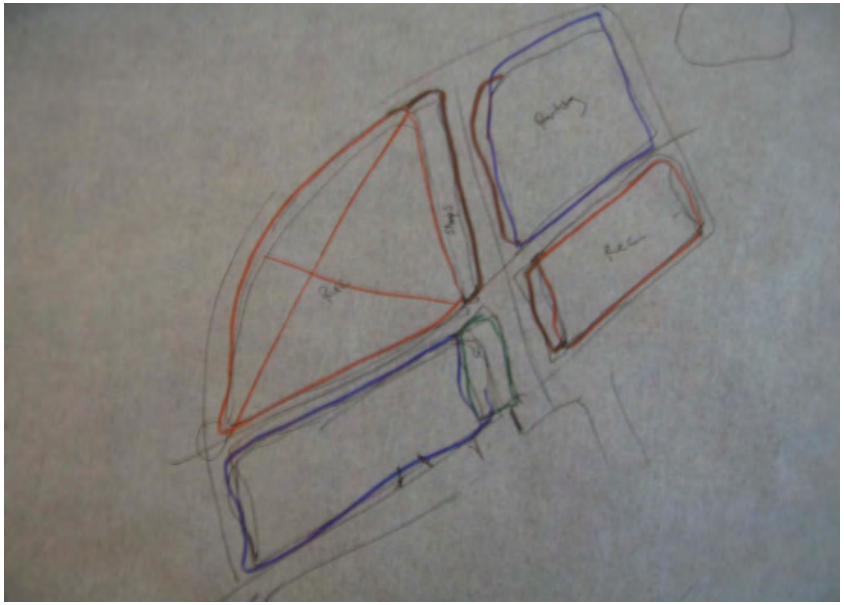
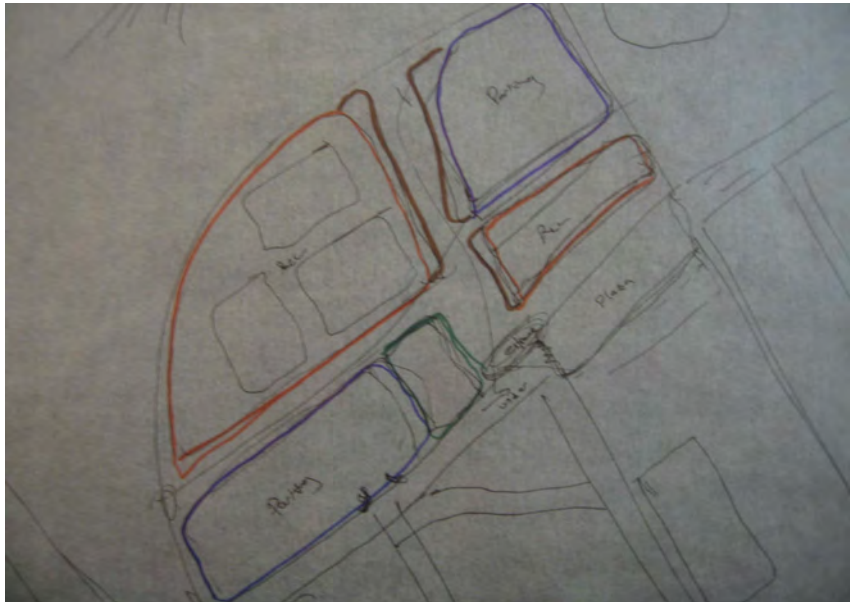


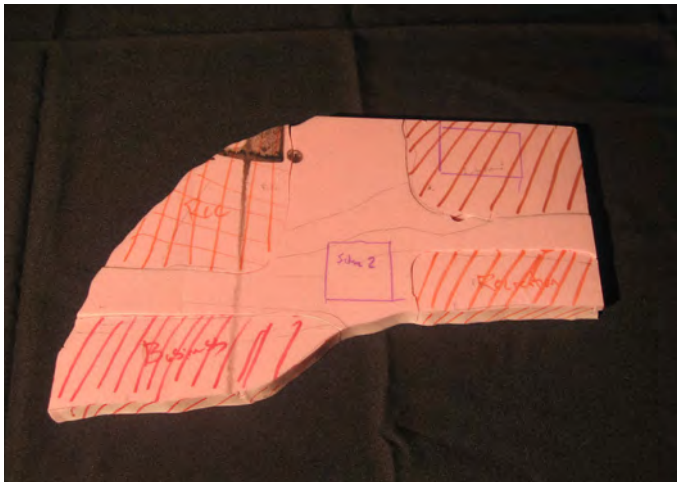


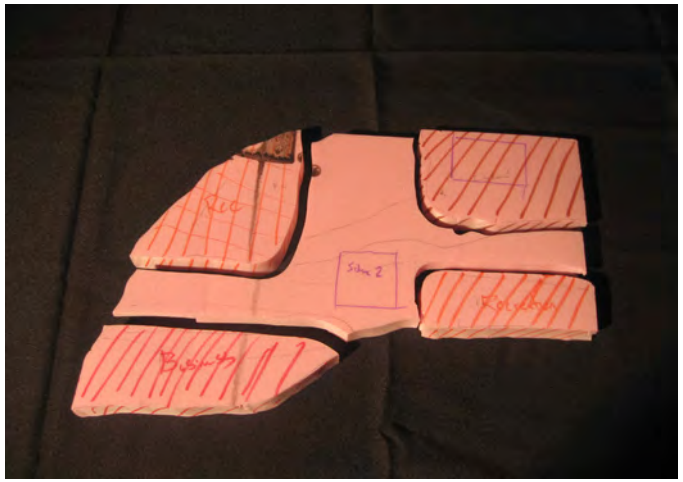




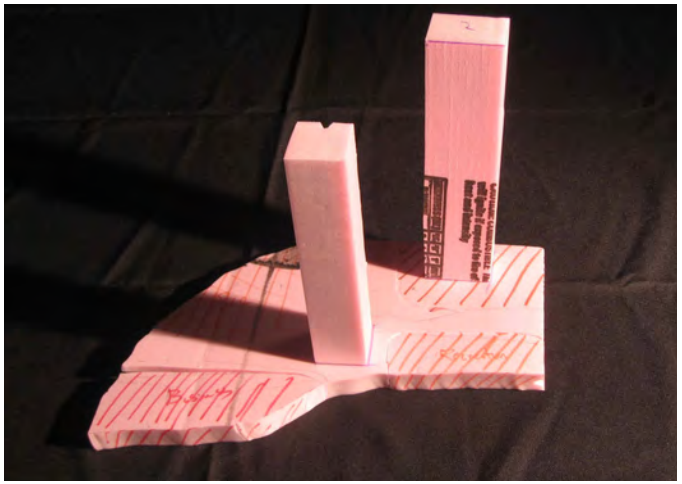
Form and Function-

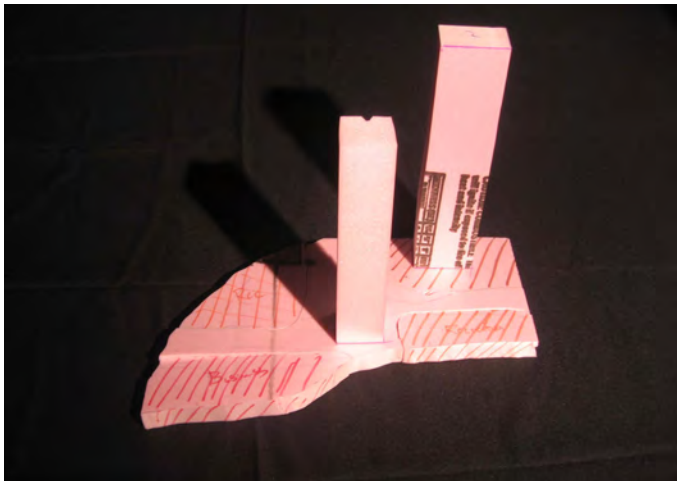
I started to draw several programmatic arrangements over and over again, trying to find what I would consider a good solution. Each set of drawings was considered a scheme. I had eventually 5 or 6 schemes, which I could either pick the best of, or combine the parts I liked from each scheme.
I also wanted to involve the possibilities of not only the existing program on the lower parts of the site, but also propose ideas as to what the residential towers may indeed look/act like above.





This particular scheme is based on a 4-quadrant model. The idea is that there exists a central core which goes from South-North, as well as intersecting East-West. The resulting portions of the site are 4 untouched parcels. These are then split up into the primary portions of program. In this scheme, there are two towers. One of them is placed on the central node, and the other is in the Northeastern portion of program.



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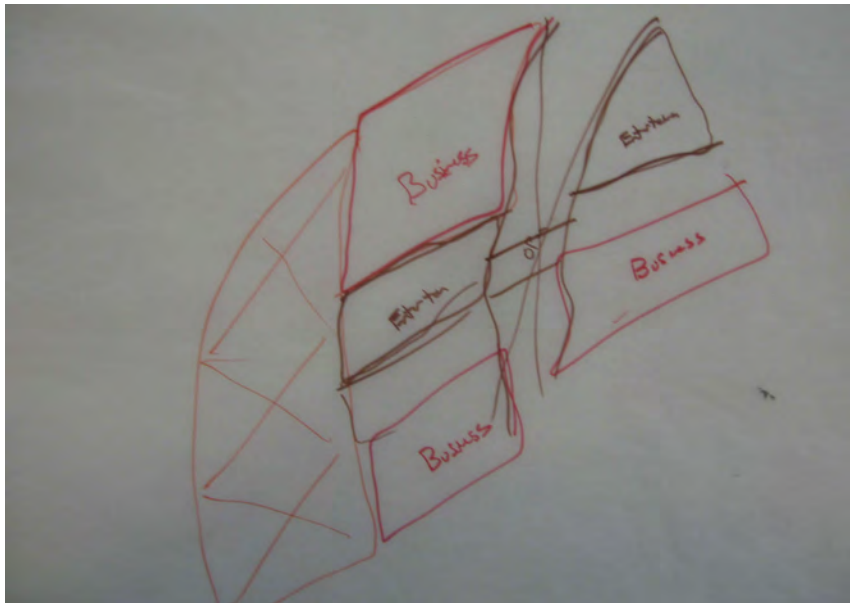
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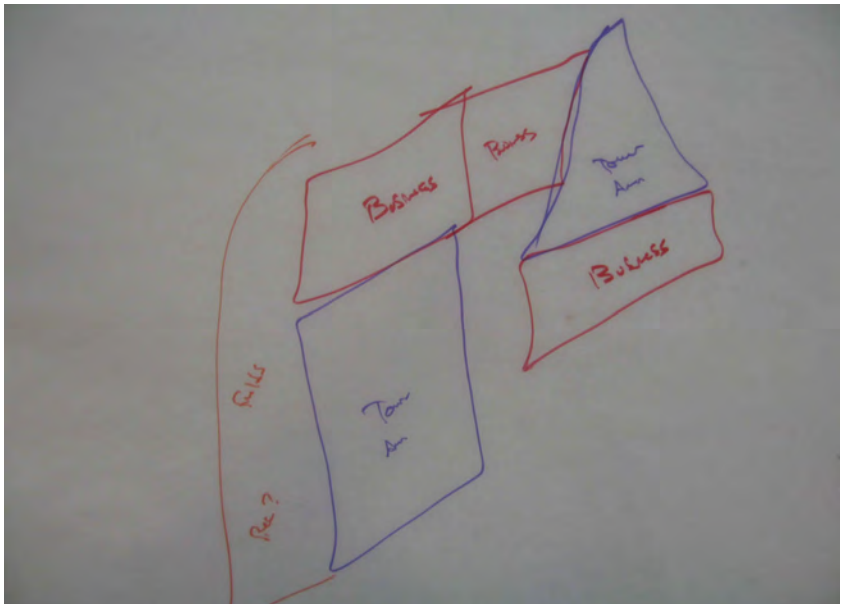
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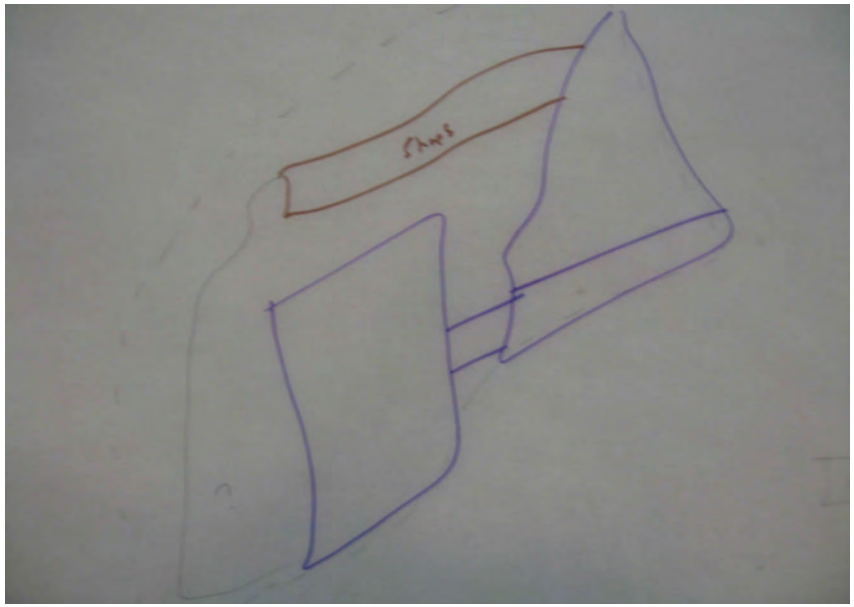
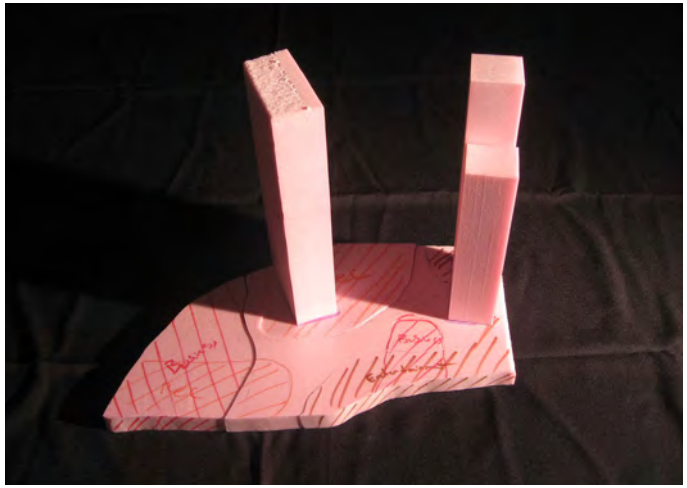


This following scheme provides for a much less equal split of the lower plinth. The division permeates from the Northeastern portion of the site, and flows down to the southern edge. The resulting pieces do exist as if 4 left-over pieces, however, they are much less spatially congruent with one another and hold no reoccurring patterns. Each space is significantly different from the next.

The tower placement in this scheme is also very different from the previous one. Here, again, exists two self-standing towers. These towers are significantly larger than the previous scheme as well. In fact, they are twice the size. These are also located with a much different relationship to the lower portion of the plinth. There the towers exist on the northernmost edge of the site, allowing for every part of the site maximum southern exposure. The only shadow cast which would effect site would be extreme evening or morning.

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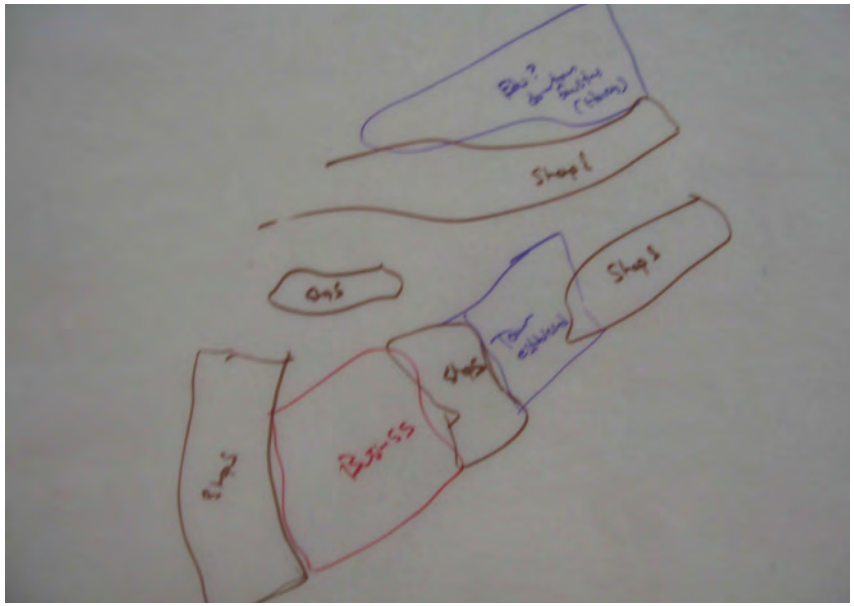
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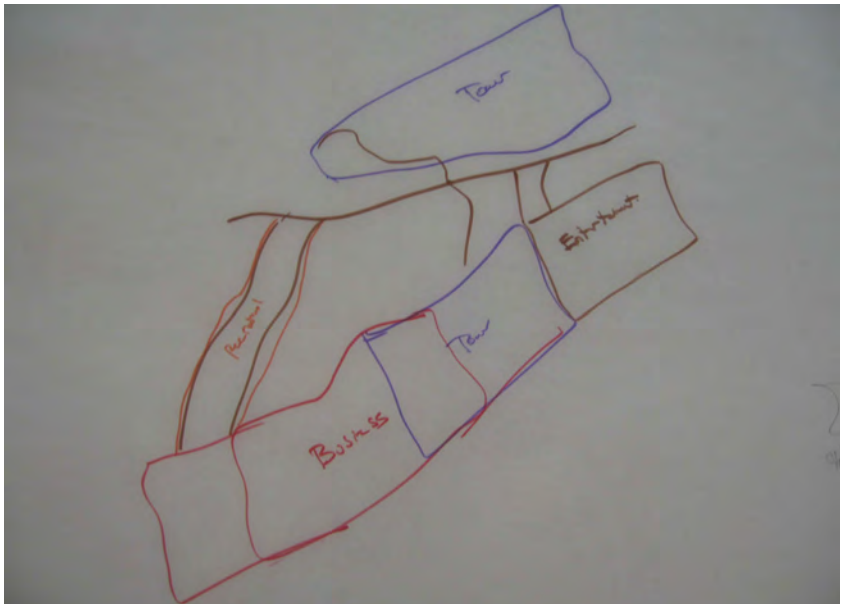
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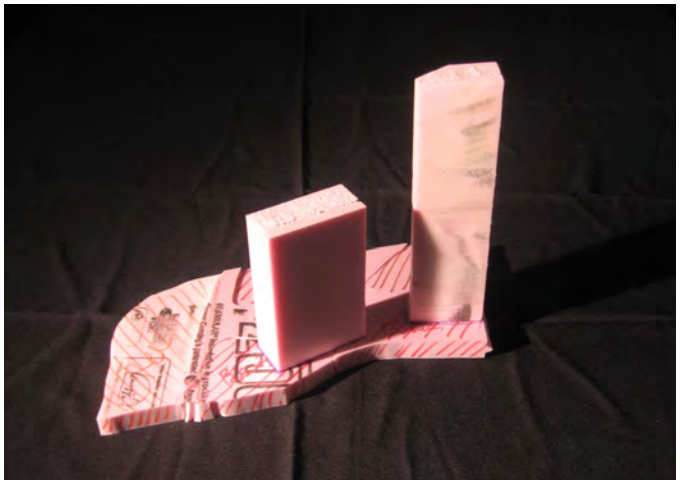
Rec

Next, we have a 5-way split of general program in the lower plinth. Here the ameoba-like central path terminates at the western portion of the plinth. The movement or flow of the path does not continue out to the edge as other schemes had suggested. This also splits some of the general program into smaller pieces, sometimes creating a duplication of programmatic function. Although the overall amount of program is not changed, the combination of such does not follow previous patterns.

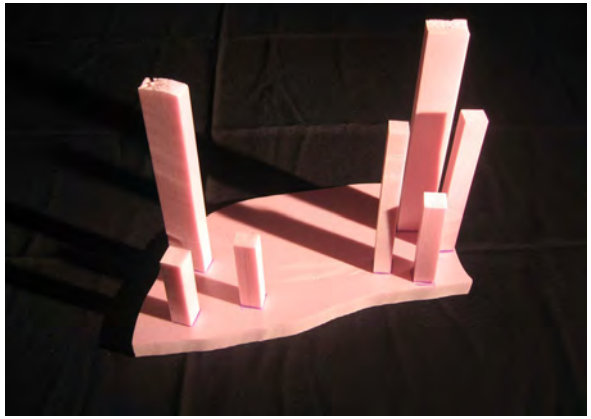
This scheme differs significantly from the previous two. There are two towers again, however, there is a much larger, and squat tower in a centralized location, as well as a much larger, and taller tower in the eastern location of the site. The placement of these towers are on the southern edge of the plinth, which creates a much different effect among the lower portions of the design. The resulting factors of this is a much longer and apparent shadow-cast across the site through all hours of the day.

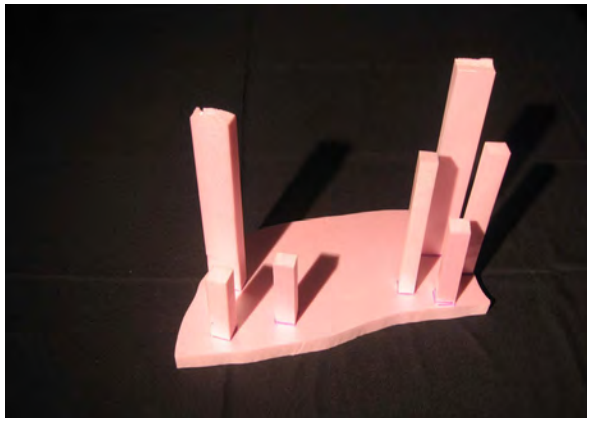


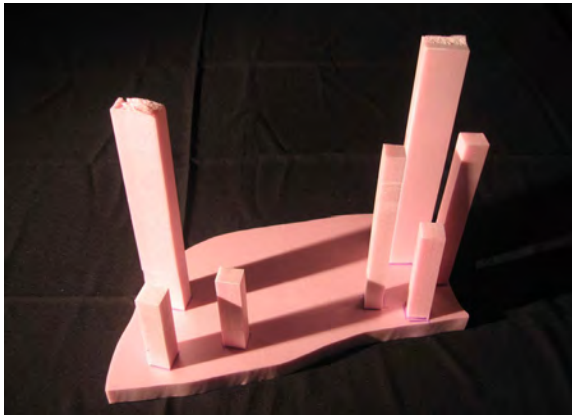
More Options-

The following model takes a look at a further study of tower possibilities. Where the previous schemes consist of only two towers, this scheme incorporates the ideas of several smaller towers. This adds a significant dynamic as to how they relate to one-another, as well as the plinth programing below. As a decision as to how many towers might be appropriate, their size, their height, and configuration also must be taken into consideration. The relationships between each individual tower greatly effects the scheme in on of itself. Several additional scheme studies can be performed in just looking at the interrelations between the towers. Besides the actual placements of each tower, the coinciding footprint as well as height need to be analyzed for optimum placement. Extremely significant in this study is also the cast of shadows which directly effects daylighting techniques, solar-gain issues, which in tern effect heating and cooling loads. As each of these towers can then become either respectively taller in height, or larger in breadth, or significantly different in shape, the scheme subsequently also changes. While this may start to be a quick general study, it also needs to be seriously considered as a plausible option. It also needs to be explored thoroughly enough to either rule it our, or continue efforts in refining it.

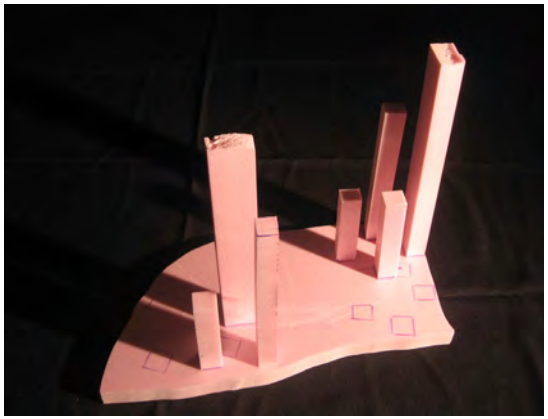
Multiple Towers-Southern Edge

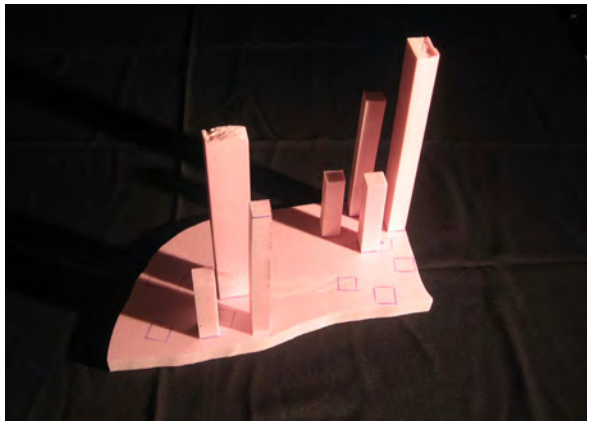


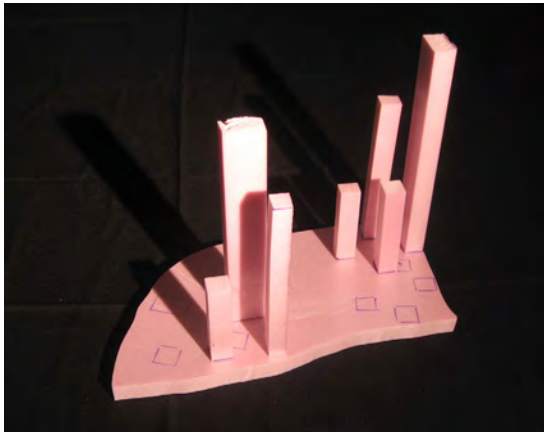


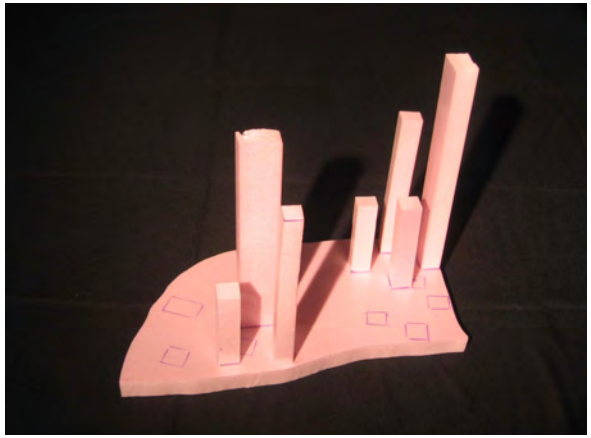


Multiple Towers-Northeast Corner







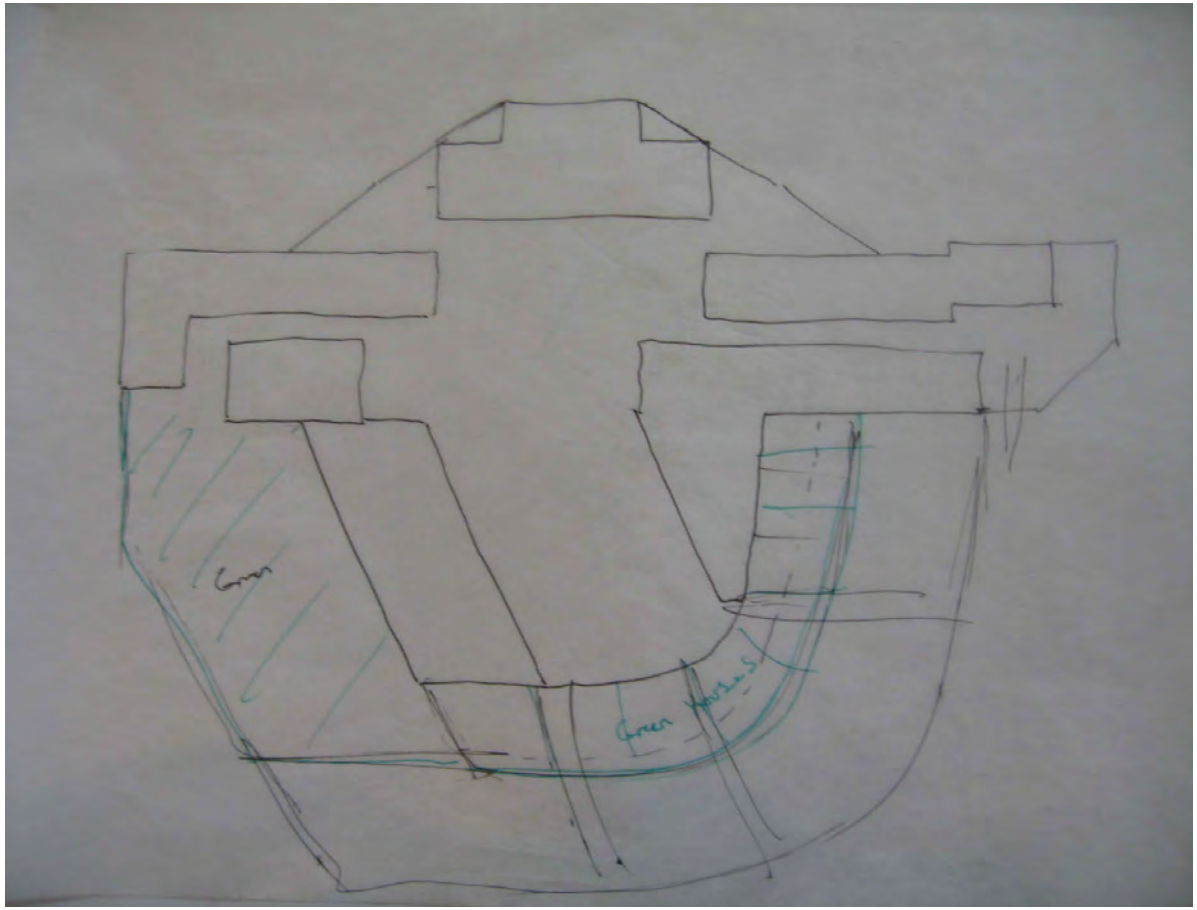


More Options-

This is a variation of the previous page. It has a similar number of towers, however, arranged differently on the plinth below. The three towers on the Southwestern portion of the site only move slightly. One of the two short towers has been replaced by a much taller one. The threesome has also been shifted to the East. Because of this shift, a significant difference in shadowcasting occurs upon the largest tower of this group. Additionally, the four-tower group has also changed. The entire hive has been repositioned to the Northeastern corner of the site. While the two medium sized towers originally flanked the larger one, they now sit to the west. This also makes a significant difference in not only the views of each tower, but the possible shadow-casting upon each other. Also, as the “hive” has been moved to the North, they now eliminate most of the shadow-cast upon the rest of the site. While the shadows will indeed still exist, they no longer will fall upon other possible plinth program. However, as depth is added between the two hives, there is the additional possibilities of one hive casting shadows onto the other. This means, that the southern group of towers, may cast shadows which work within each other, they may create a negative effect on the Northernmost group of towers.

Investigating the Tower-

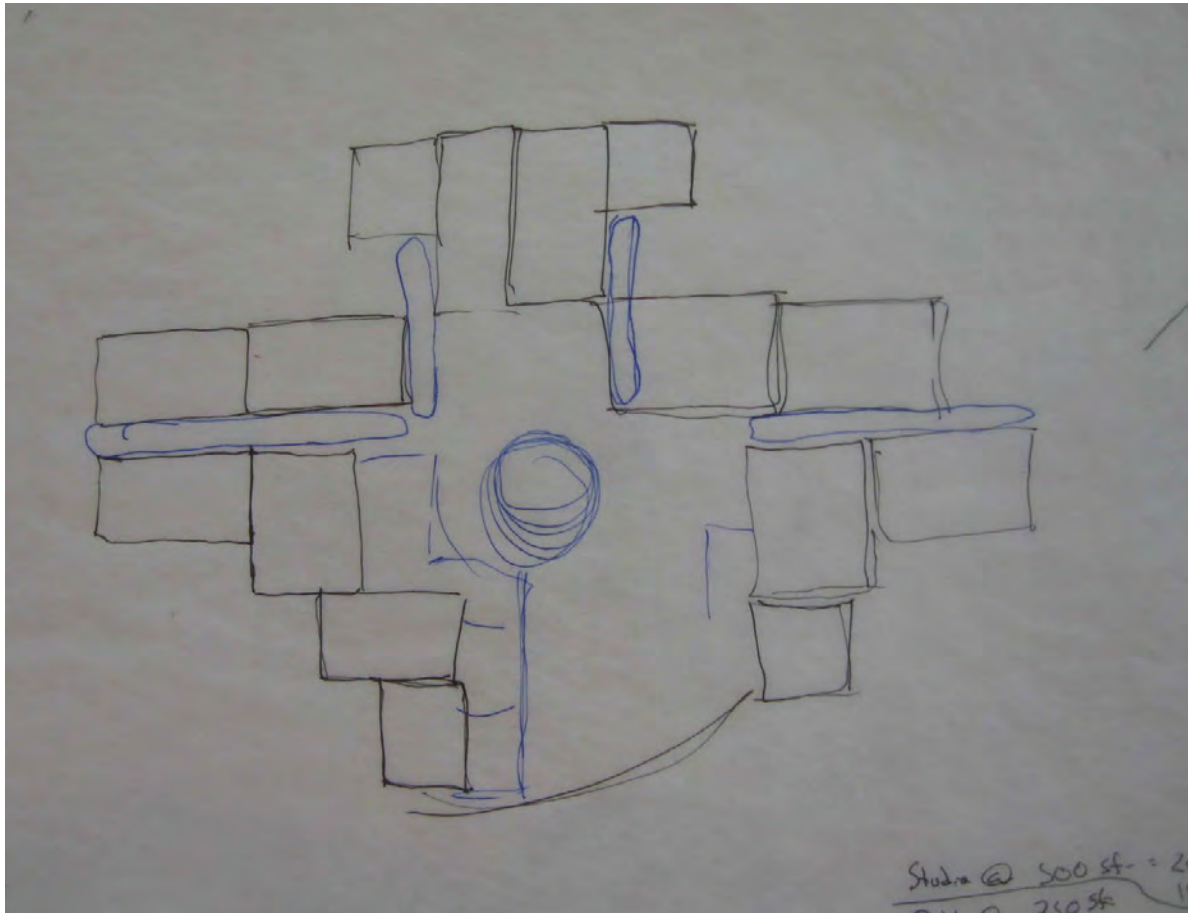
As I had stated before, there are so many variations to this scheme which may be taken into consideration. That being said, I needed to start to look at how I wanted my housing towers to perform. By starting these steps, I could then combine my previous quantity, height, orientation and location studies accordingly to some of the visions I develop in my tower. I started off very basic. I wanted a very central circulation space, where each "pod" (10 story community) would be entered from. This would then branch out into four different directions, while still maintaining the central organizational feel. I also wanted to instill a very public and accessible larger atrium which spanned the entire 10 stories of each housing pod. This would allow for a very public, and very open general community feel between each floor of the given pod. This would connect each level visually, as well as physically to one-another. This would also allow for an open atrium which could then incorporate many interior environmental control techniques such as stack-effect exhaustion, solar gain, solar diffusion, solar collection etc.



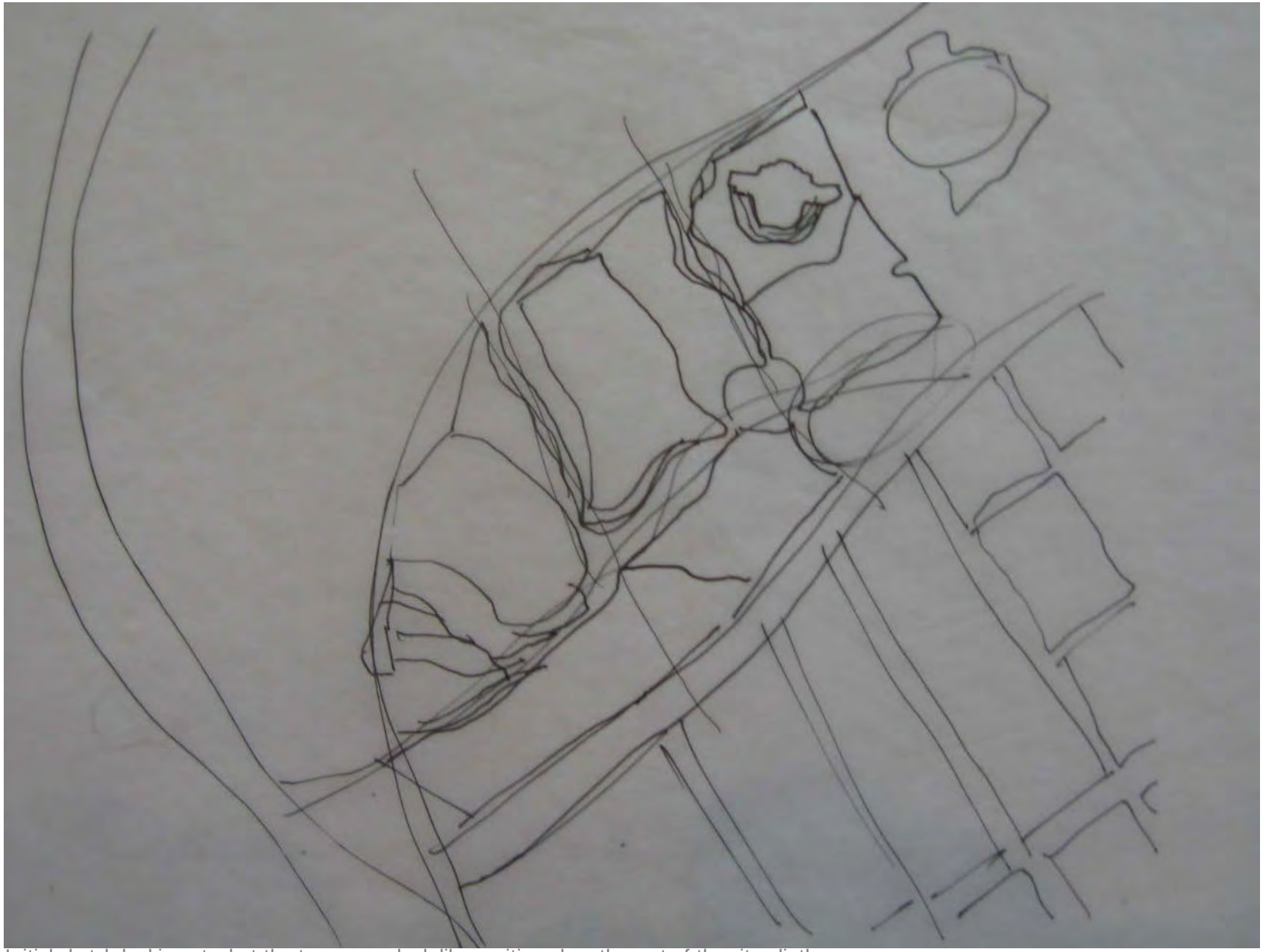
Sketch exploring possible unit organization and relations-

Playing with Size and Form-

As I play with the form and shape of the building, manipulate the public versus private spaces, and start to communicate possible unit plots and orientations, I begin to establish a size for the tower. Although this is only an early conceptual play with the forms program within the tower, it starts to inform certain requirements of such spaces which must be included or designed for. As the investigation continues on, I respectively must constantly move between the macro and the micro aspects of the entire project. This meaning that, although I am simply boxing out plausible units, I must also consider entry, accessibility, escape, as well as views, internal usage, as well as ability of repetition versus that of customization. This is particularly important as the number of units increase. I also wanted my units to be relatively repetitious in their organization, or at least conform to a determined number of possibilities. Within these units, of course, less extensive customizations are sure to take place. By thinking of these such situations beforehand, it helps me determine weather or not a space seems mistakenly placed, or inconsistent with certain rules which I instill. As I had said, while this sketch is a very initial attempt at putting thoughts to paper as to how I envisioned spaces to connect to one-another, each and every aspect of the entire project must also be at least in the back of my mind as I shift, push, and pull portions of program around.

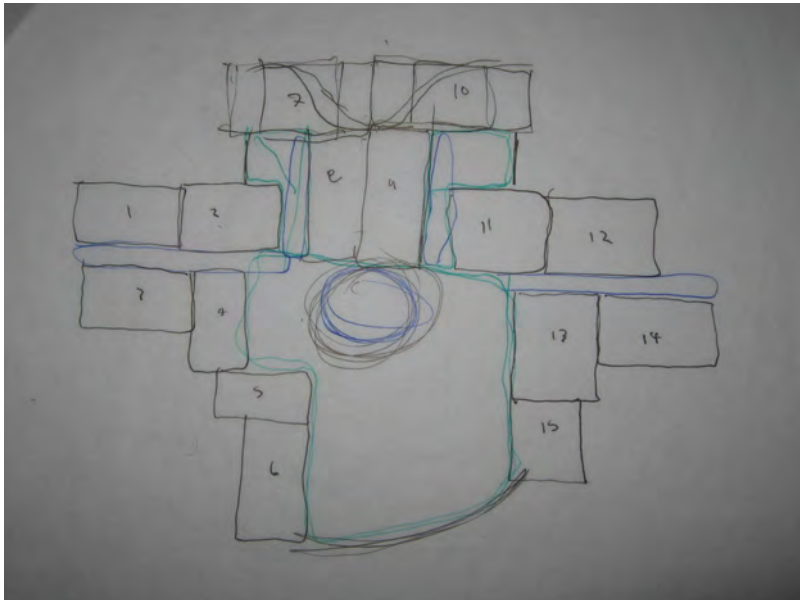


Sketch exploring possible unit organization and relations-



Initial sketch looking at what the tower may look like positioned on the rest of the site plinth-

Process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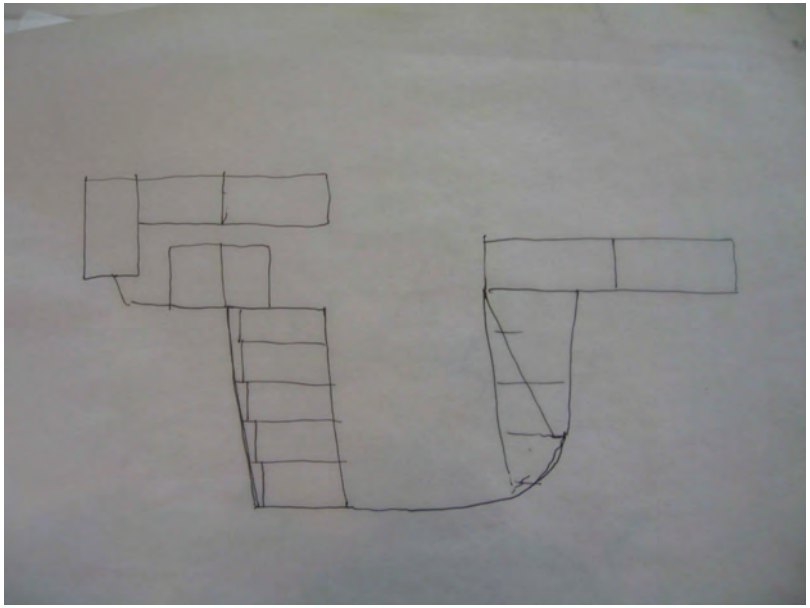

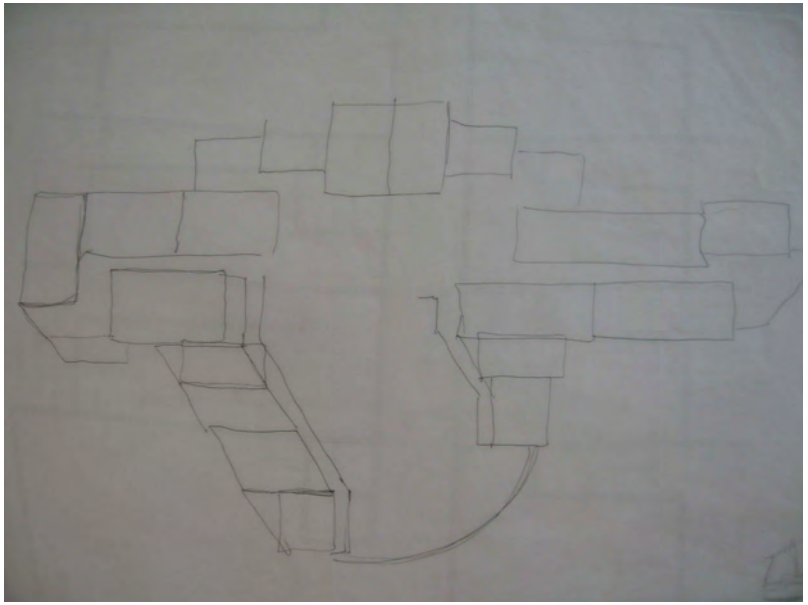

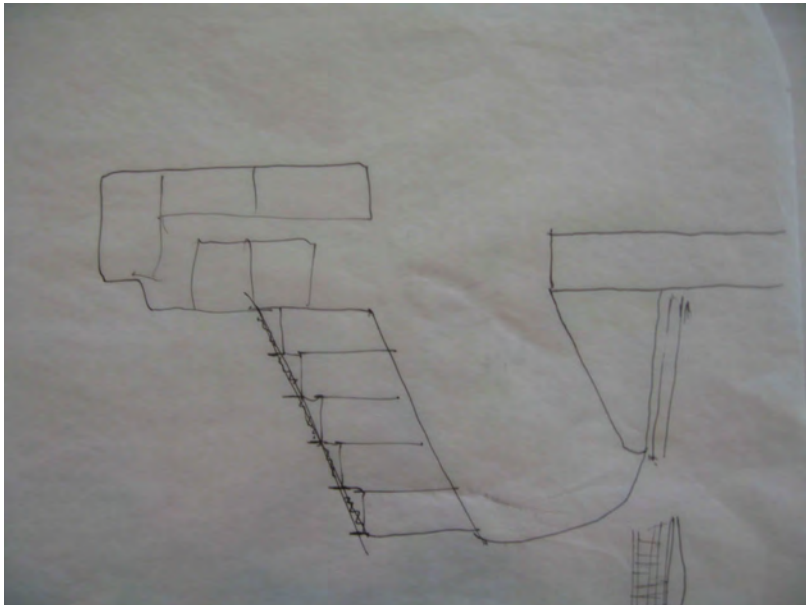

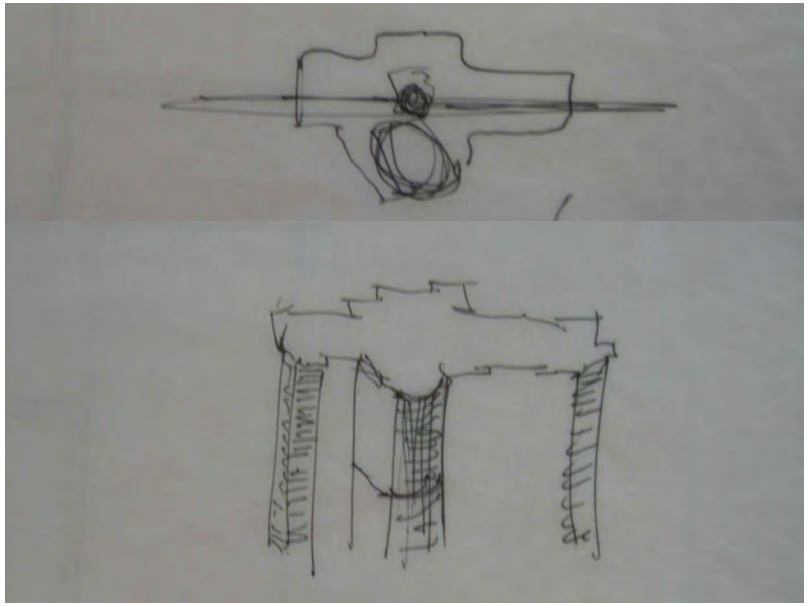

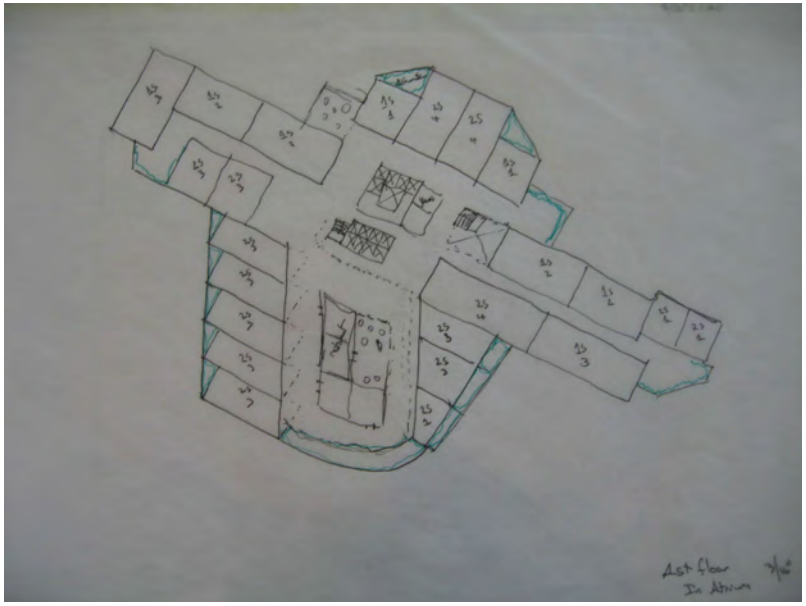
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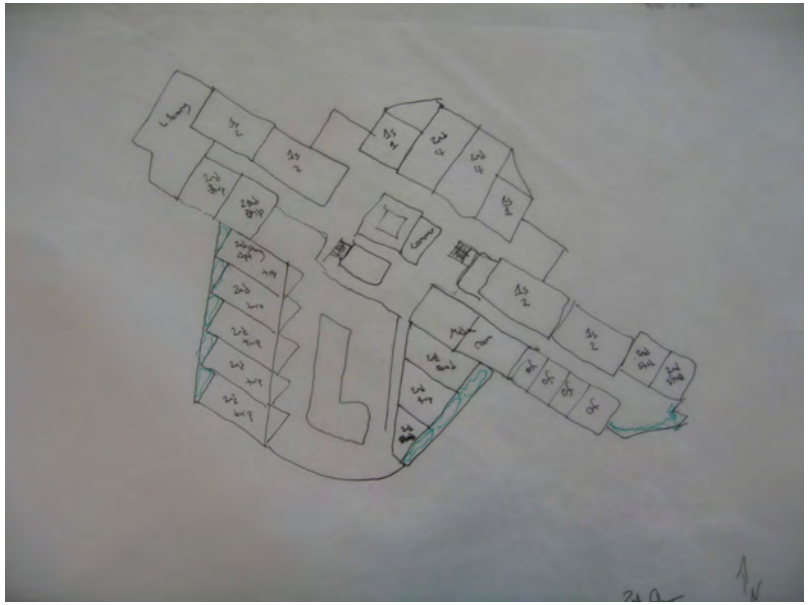
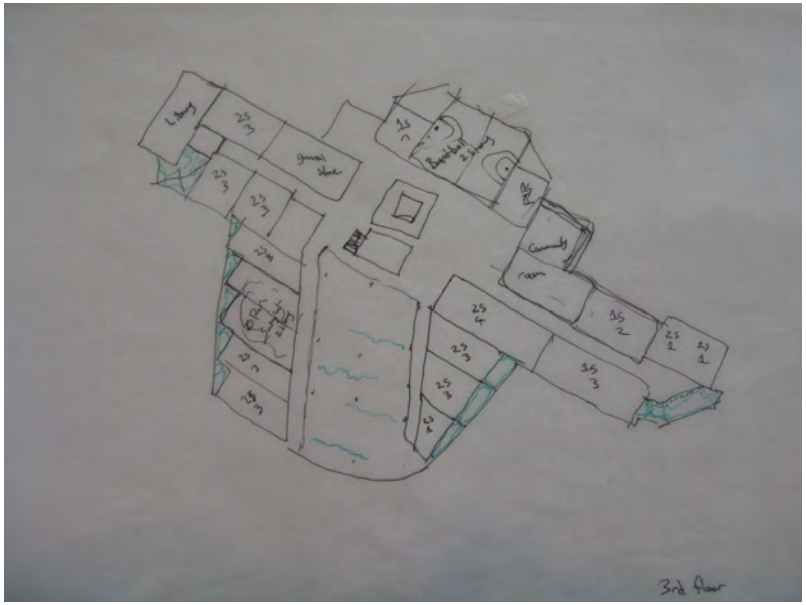
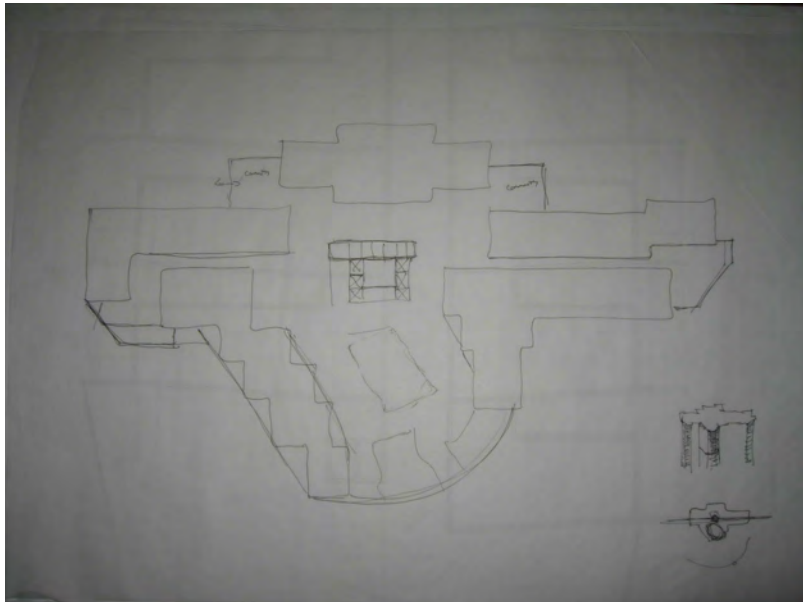
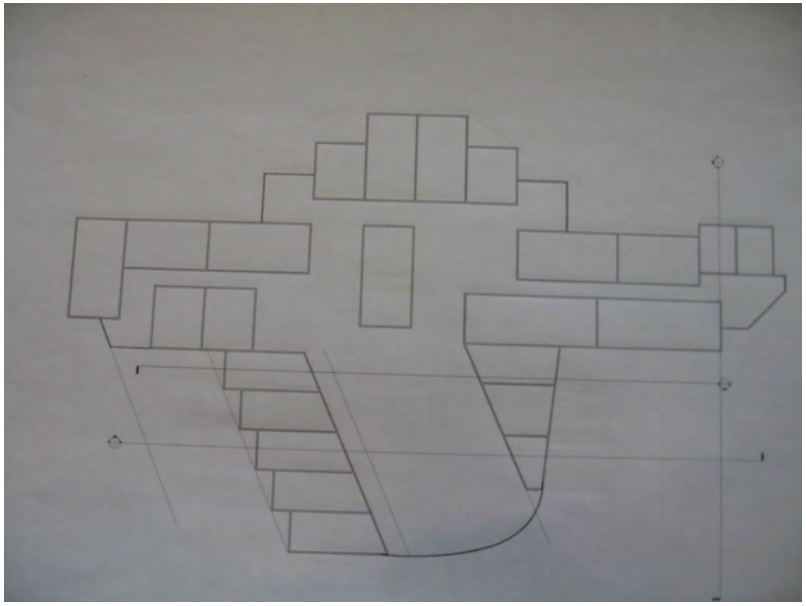
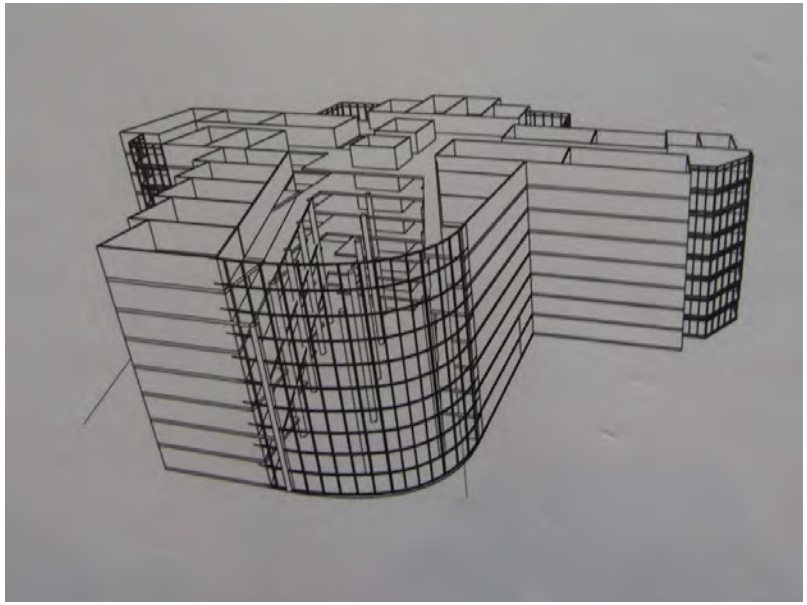
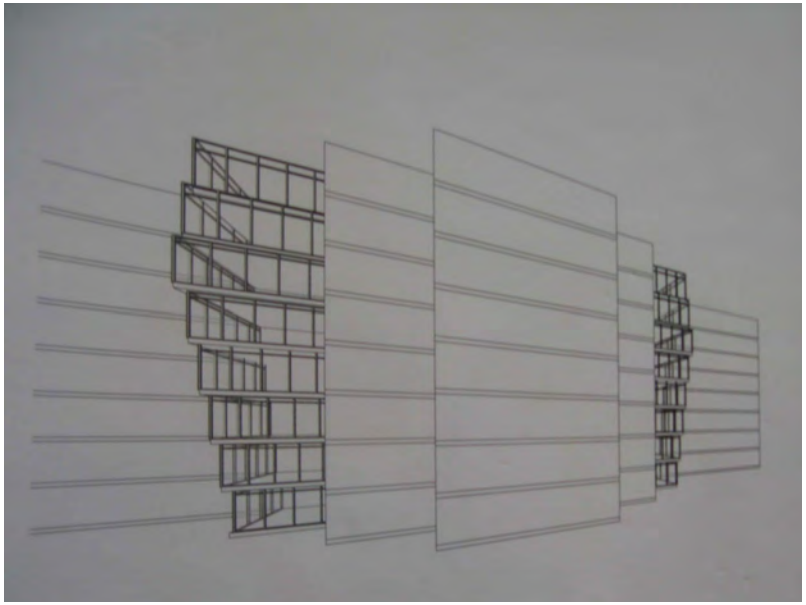


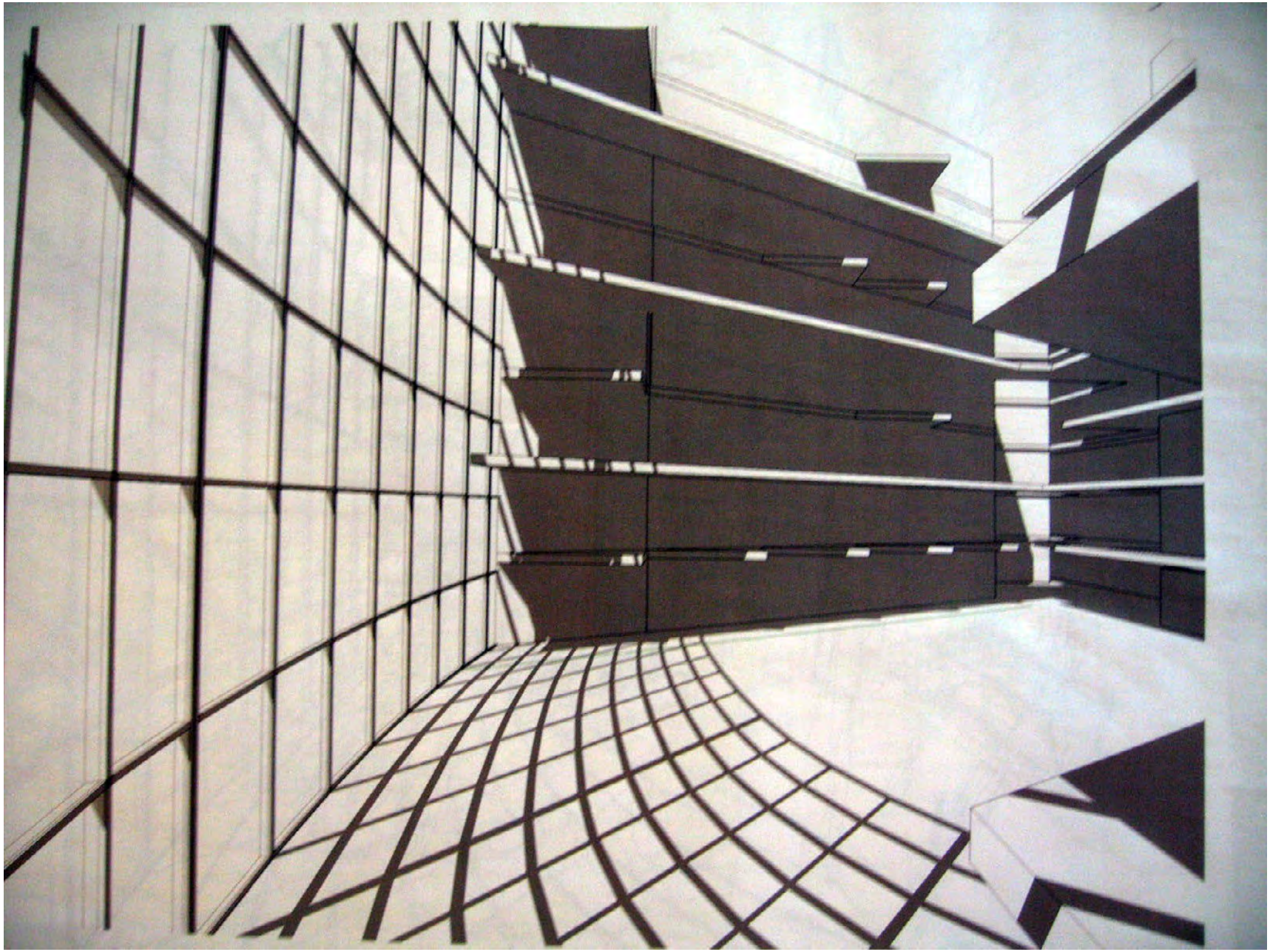

3rd floor

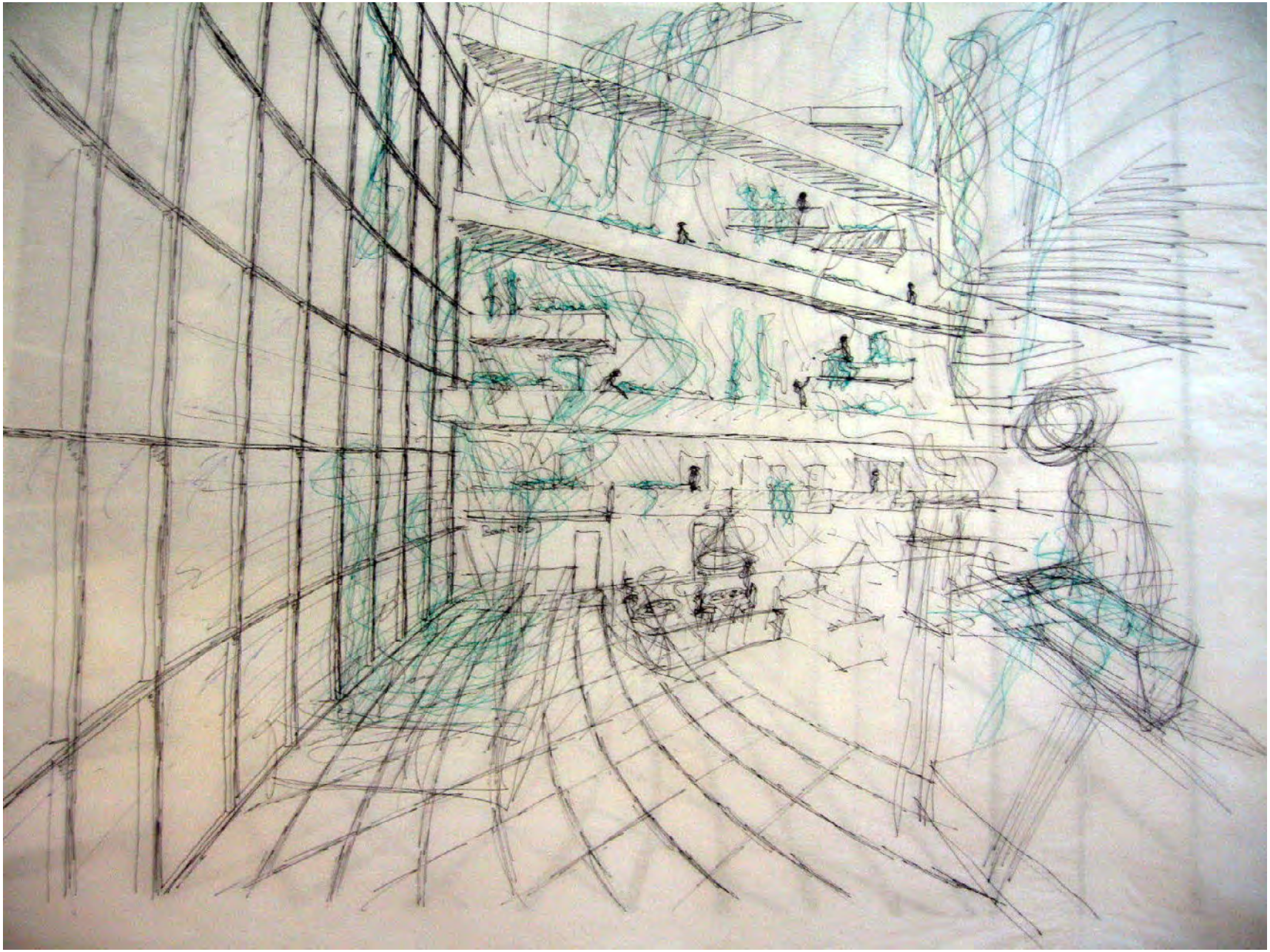


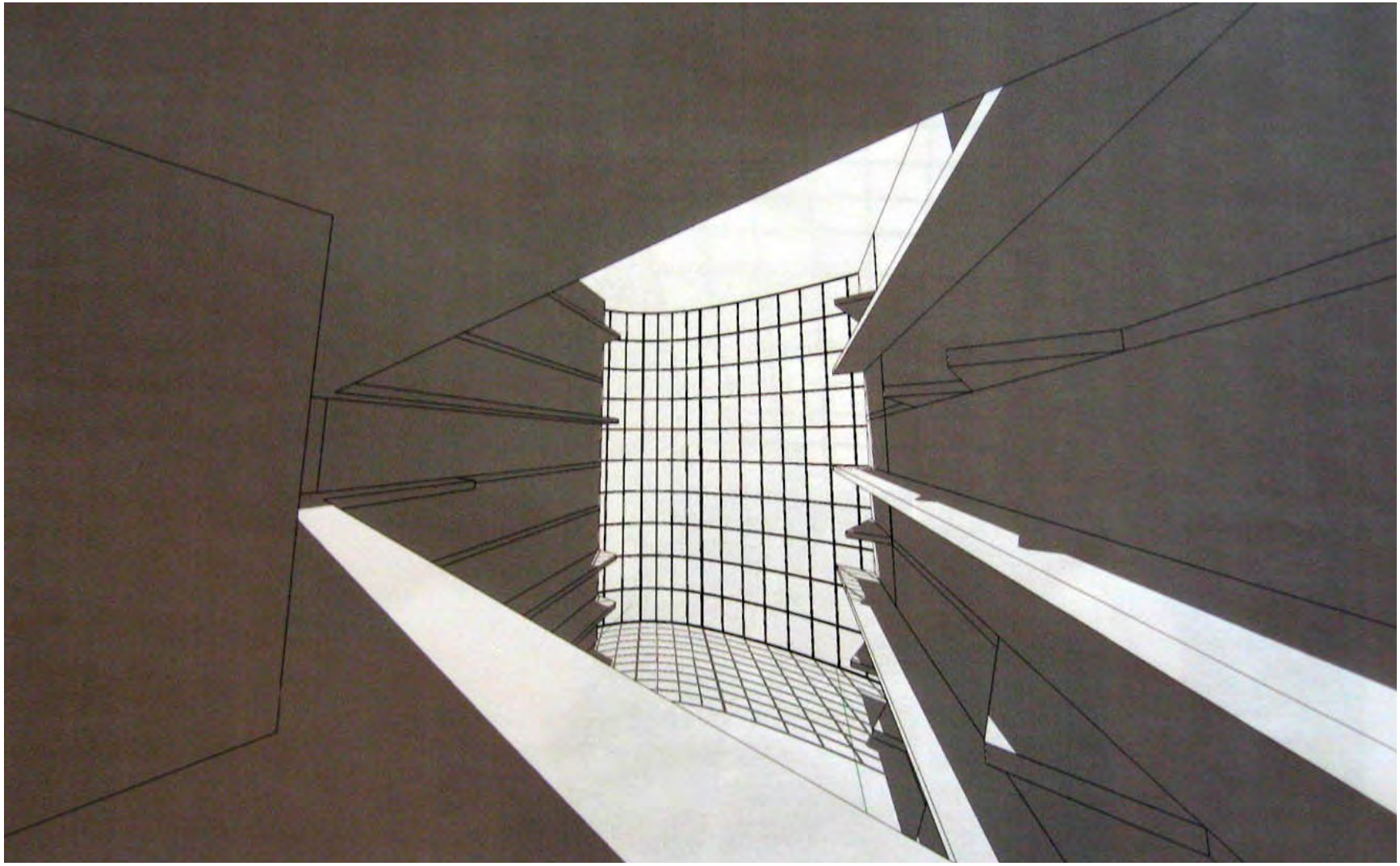








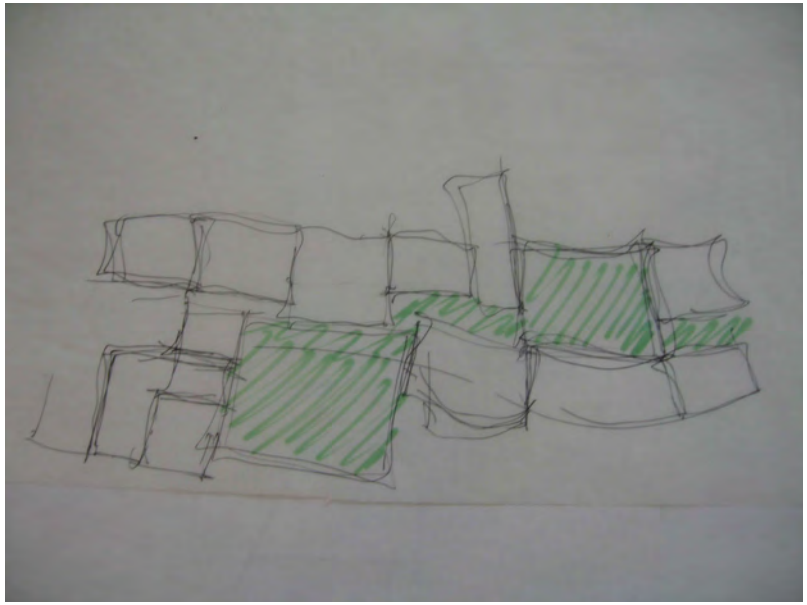


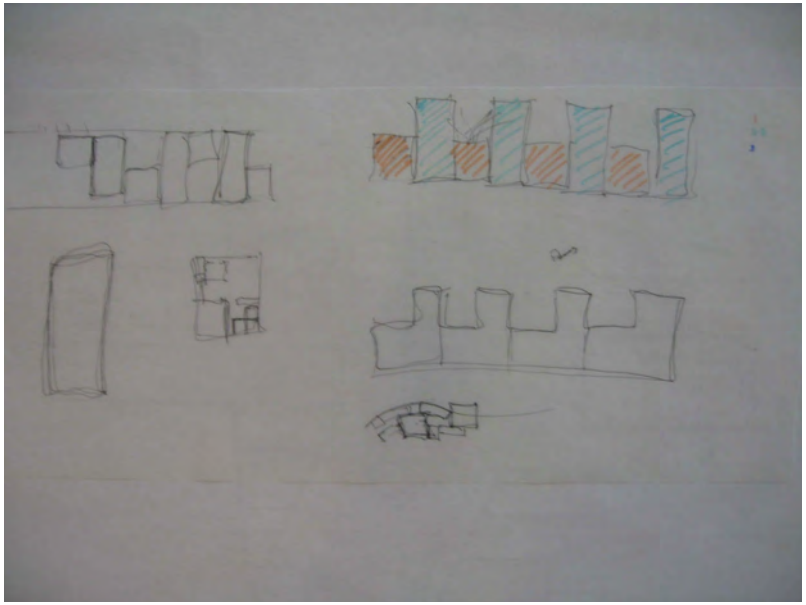


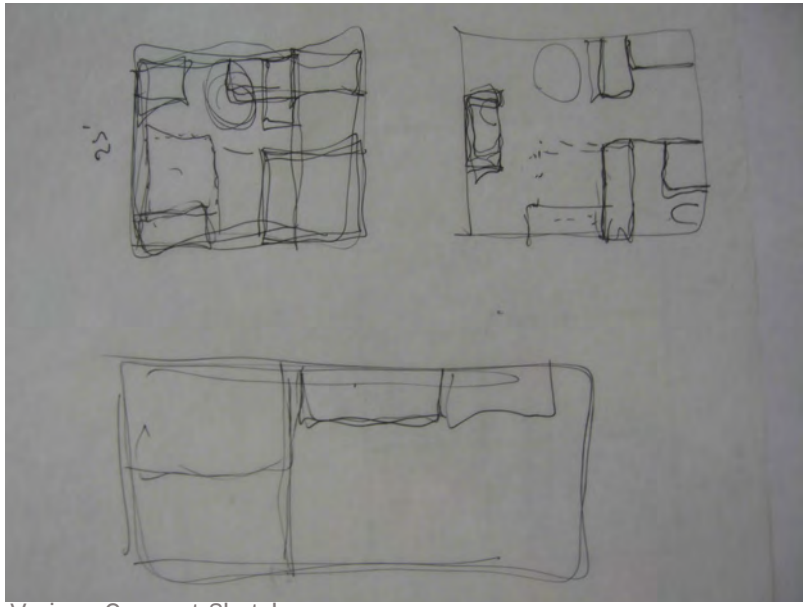
Perspective looking into the atrium from the central core-

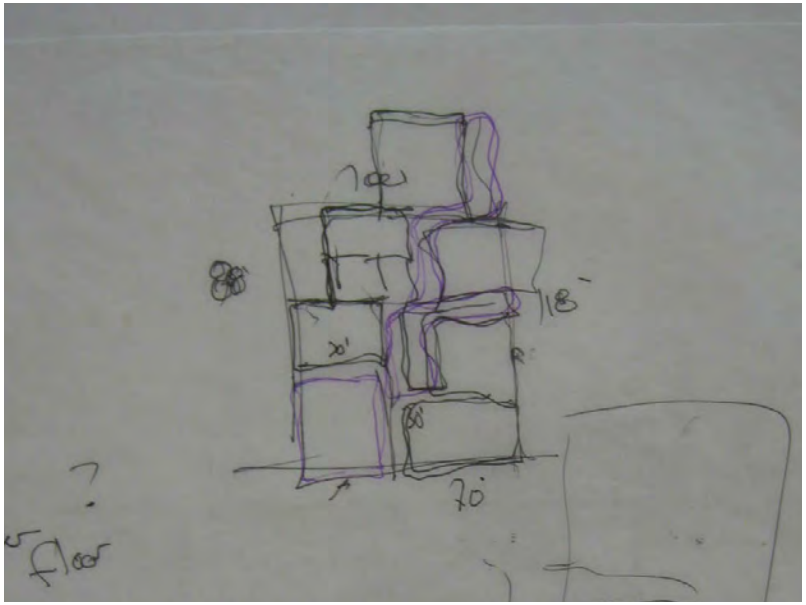
Spaces- Public and Private-

When I continued refining my original conceptual studies, I eventually come to a point where I can generate some perspectival imagery of what the spaces my feel like. By looking at several variations of form and shape and configuration, and putting them together in various ways, I can sift through my sketches and start either eliminating things I feel that don't work, or expanding on issues which I feel are successful, or exemplify my vision.







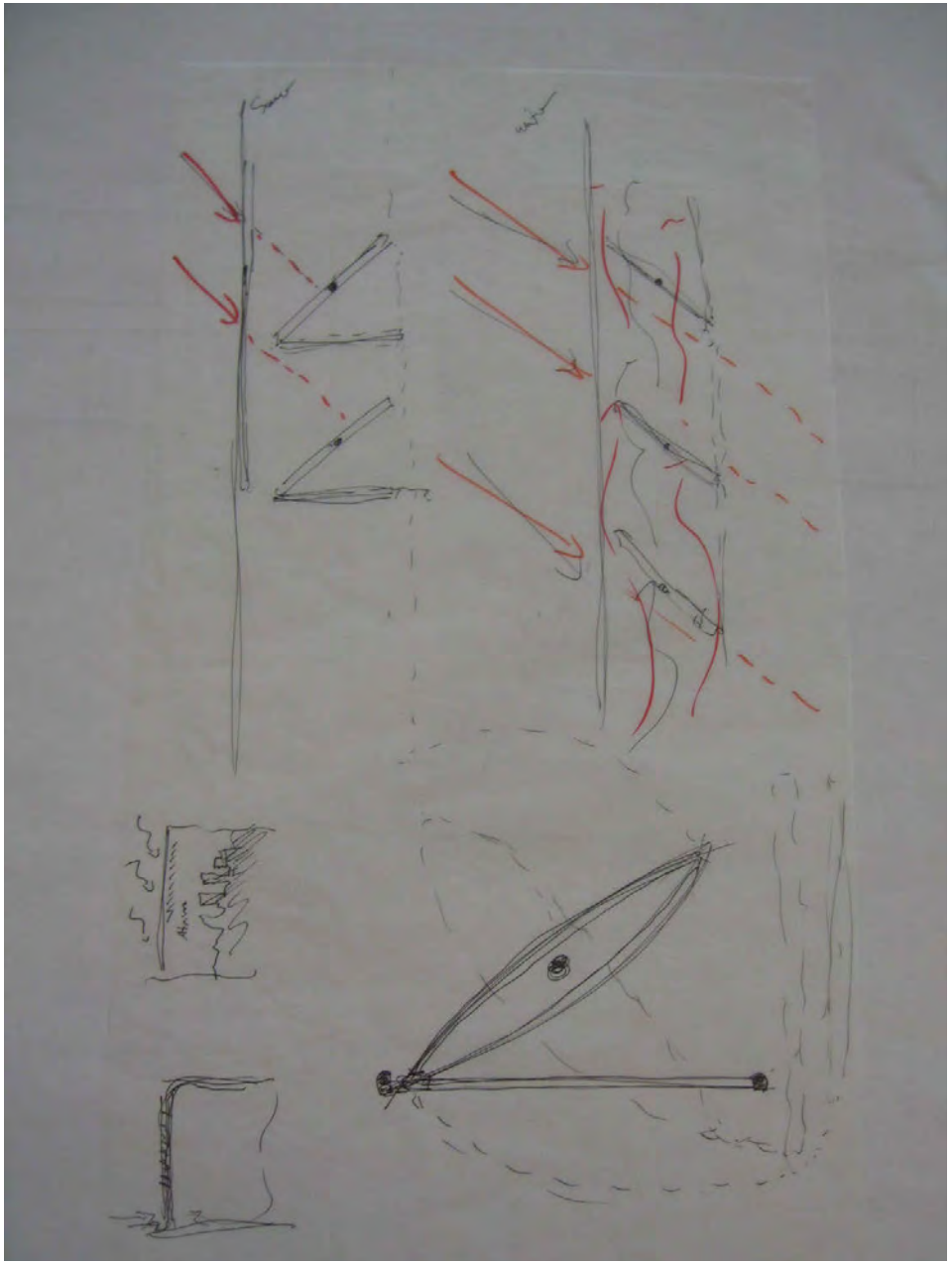


Various Concept Sketches

Refining Ideas-

Although I had been looking at things on a grander scale, I needed to also incorporate the smaller ideas which I would mesh together to make the grand scheme work. By thinking on all levels of detail, I start to develop each space to as ideas come to thought. As the atrium would hopefully be a place where people gather, socialize, as well as pass-through, it needs to be a place that is also appropriate for those such activities. It also has to be designed to combat any/all conflicting environmental aspects that my threaten its purpose. Here are attempts at dealing with extreme sun exposure. The method is trying to use the solar gain for a positive collection input, as well as defending the interior environment from overheating as the sun might penetrate the space. As these ideas are surely to be dealt with at a much later date, they must be incorporated throughout the process in order to ensure their existence with the ending result.

The atrium skin must assist in the maintenance of the space it protects. This sketch plays with the ideas of rotating louvers to respond to exterior conditions.-



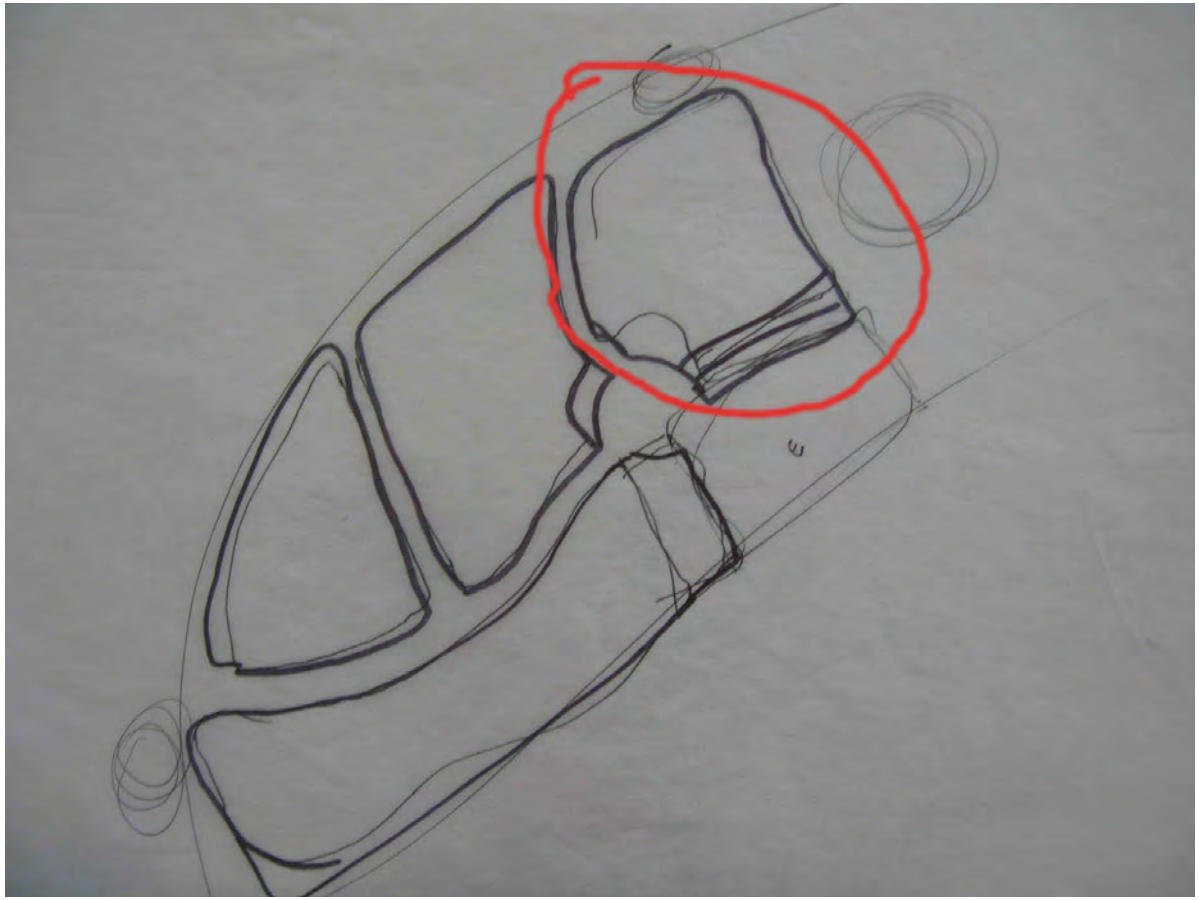
Technical Solutions-

These are perfect examples of how technical solutions are incorporated within the initial design from the start. By integrating this kind of thought at the beginning of the design process, it maintains the cohesion of the project and all of its components. This eliminates the “afterthought” notion often seen on buildings or projects which do not seem to be an integrated part of design, but rather a tacked on solution to a problem later discovered. Although these types of issues might not always be averted, they can be refined to a different level of detail when they are consistently incorporated into the design palette.

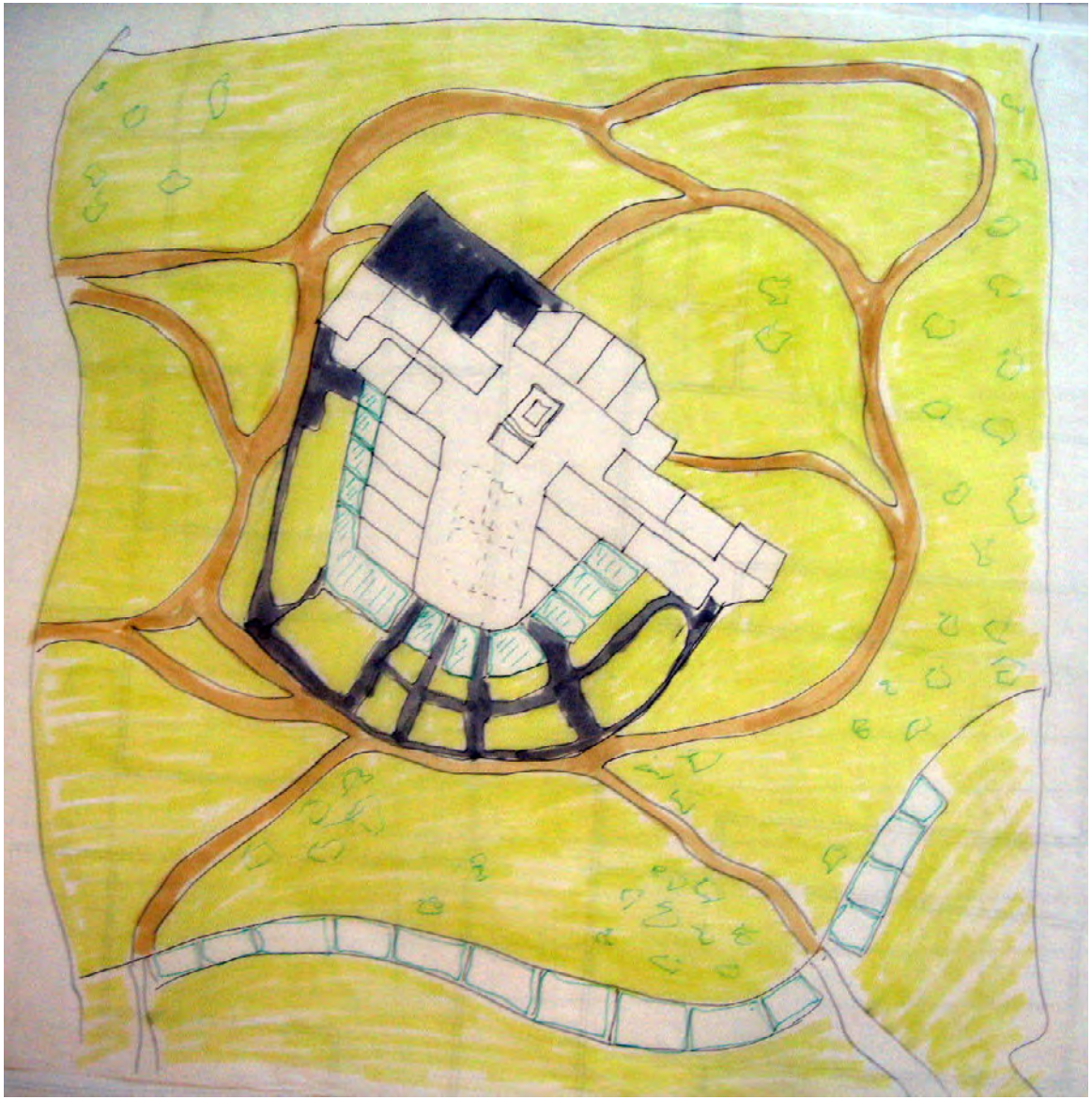
These sketches are an exploration of an interactive louver system, which will rotate respectively to the sun conditions exterior to the system. Also playing with the idea of a possible double skin construction to act as a flue for excessive heat to be exhausted or reused.

Grounding the Connections-

The previous images are all great examples of how I began thinking about the towers themselves. But, as I have said many times previous, we must continuously move back and fourth between the micro and macro pieces of this project. I began looking at this scheme's connection with the plinth itself, as the towers could hypothetically meet on this level. Weather it be a singular tower, or several reproductions of itself, how might it fit, and how might they be oriented within the constraints of the site? I had decided that the best place for my tower locations existed on the Northeastern portion of the site. This is therefore where I start to explore how they meet the gourd, and they pathways of circulation which might exist in getting there, both on top of the plinth, as well as under and through.



This shows the targeted area for the towers. I have left open the idea that other sets or "hives" of towers may exist elsewhere on the site, whether to be constructed in a hypothetical future or at the same junction of these is still undecided-

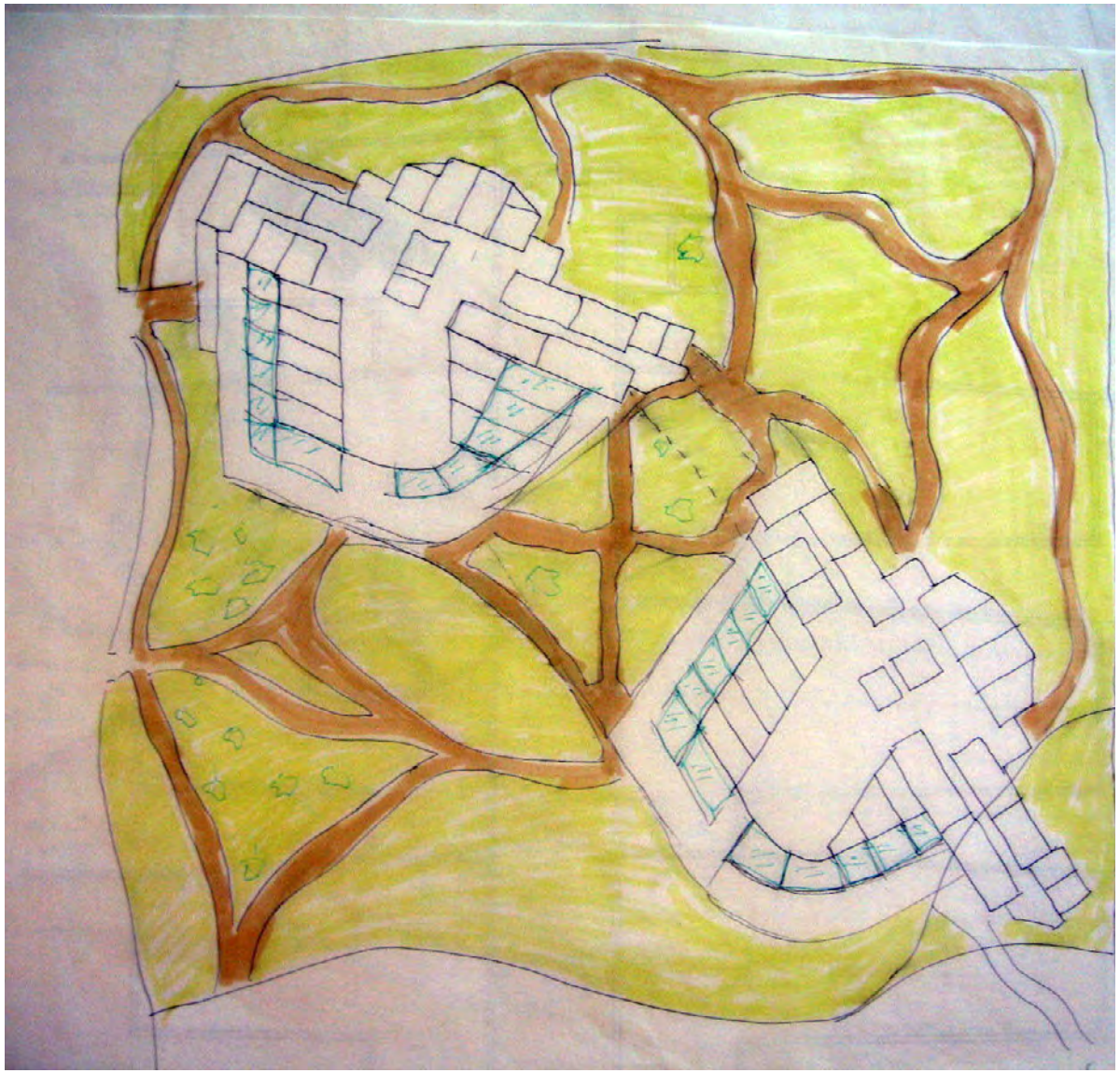


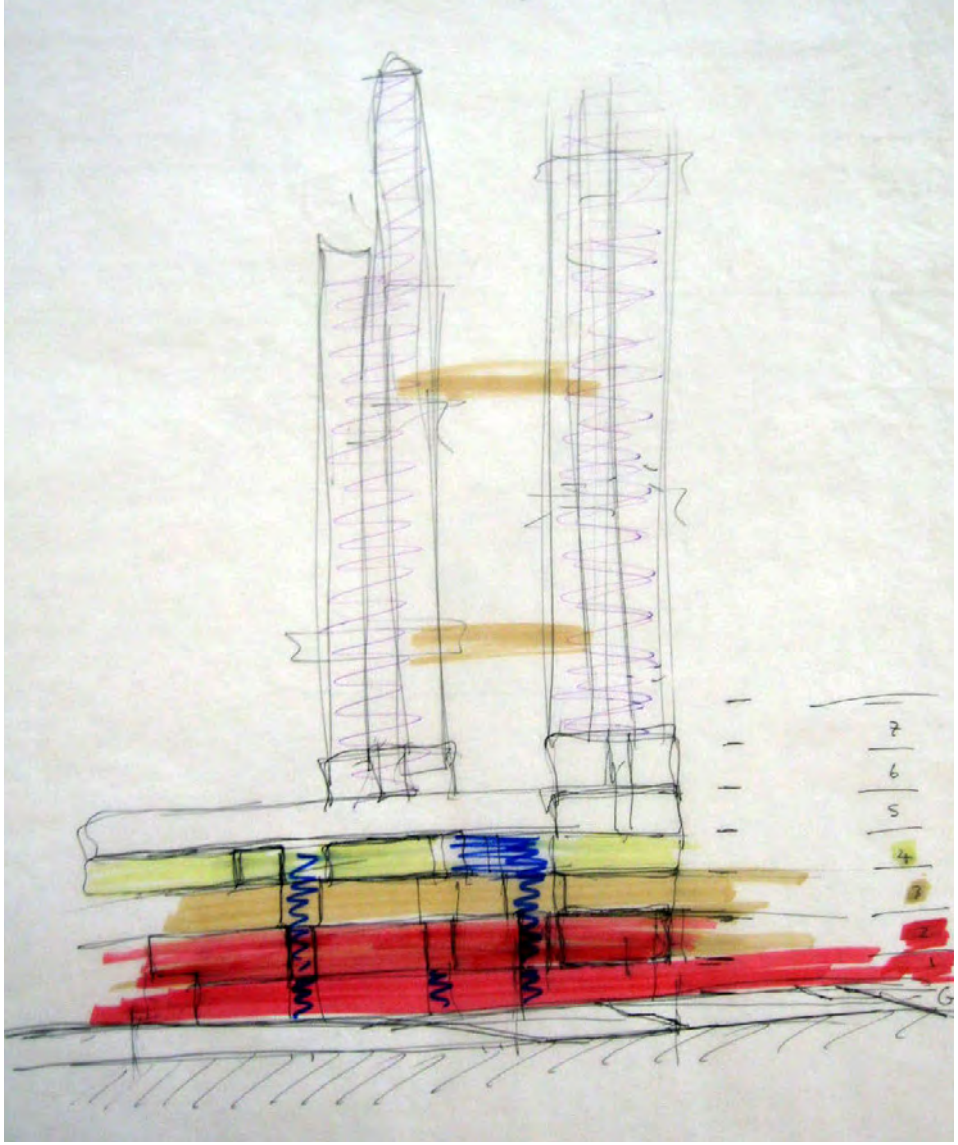
Urban Parks-

Whether the plinth lays home to a single tower or multiple, I want it to stand as a living and growing park. This means, I would like it to be flush with trees, have dirt pathways, and primarily a greenscape which can be used in the manner that one might use a park. As Denverites pride themselves as being the fittest population of any major city in the United States, they often enjoy exercise to its extreme, and consider space to do so a necessity. Therefore, not only as a personal expectation of where I might want to live, I believe that a significant amount of space must be considered for exterior play. As for the execution of how the space is laid out, I must toy with the placement of the buildings, the pathways and connections which grant you access to the lower levels, as well as hardscapes and softscapes and any in-between.

The site plan is an exploration of possible softscapes versus hardscapes which might exist on the surface of the plinth. There needs to be a continuous loop around the tower so that anyone can both cross the grounds, as well as walk, bike or jog around the entirety of the structure.

With an added tower structure, the circulation at the plinth level becomes more complicated. While I still want to maintain a loop around the buildings, it might take on a partial form. This image shows simply two identical plans next to one-another and how they may reside.-

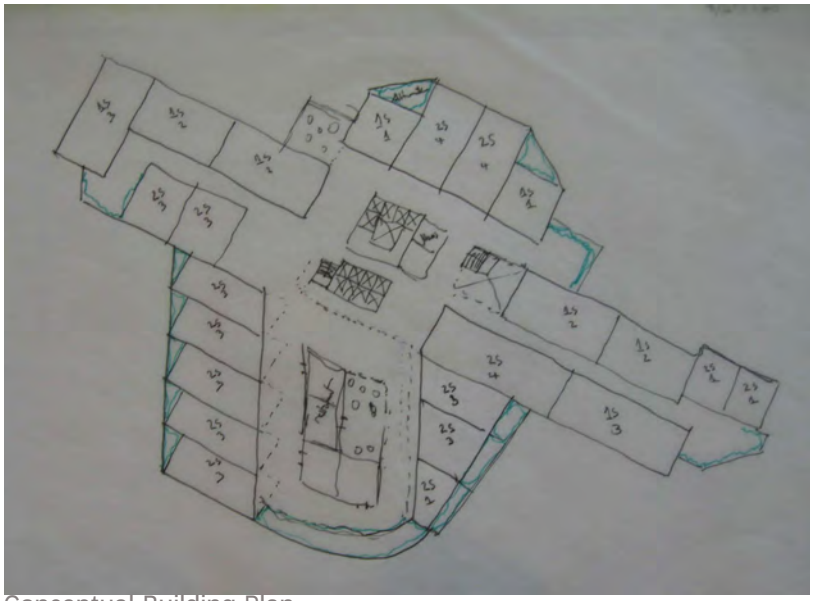




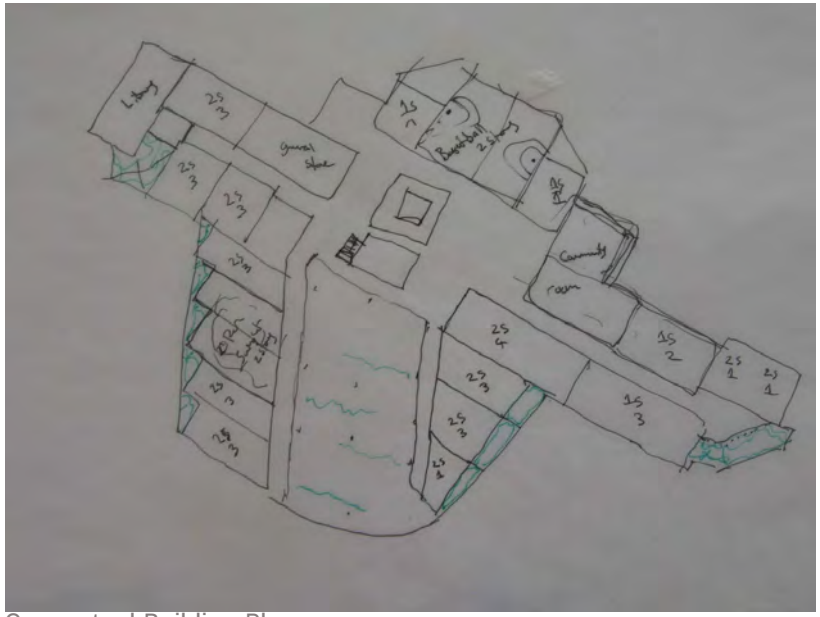
A quick sketch can tell you a lot about what you need to accomplish and what you might want. By averting too much thought, the ideas flow out quickly and bluntly. Here describes several towers connecting with one-another at multiple levels. It also starts to describe what may exist below the towers, and how the progression from ground-level entry to residential tower.

Re-Thinking Space-

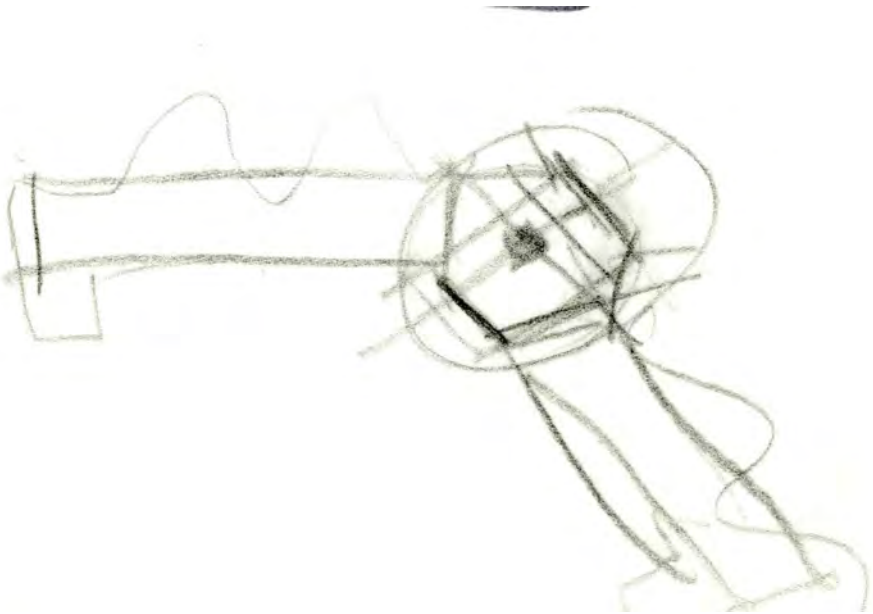
These images, which were shown previously, show pretty well the spaces allocated for both public and private space. Unfortunately, the amount of space each one of these towers will take up is significantly too large in relation to the amount of units which they can produce. This is a result of wasted circulation space as well as incorrect arrangements of units and their relationships to one-another. As a result, a different rout must be taken in order to achieve a desired number of units (therefore people) per the overall size of the tower.



Conceptual Building Plan

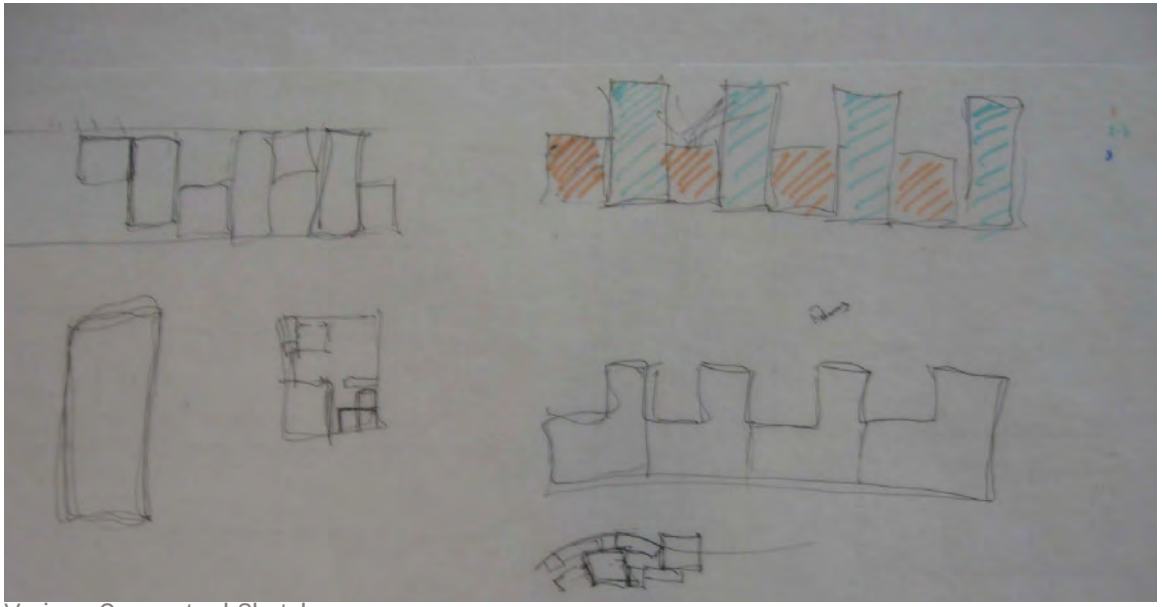


Conceptual Building Plan

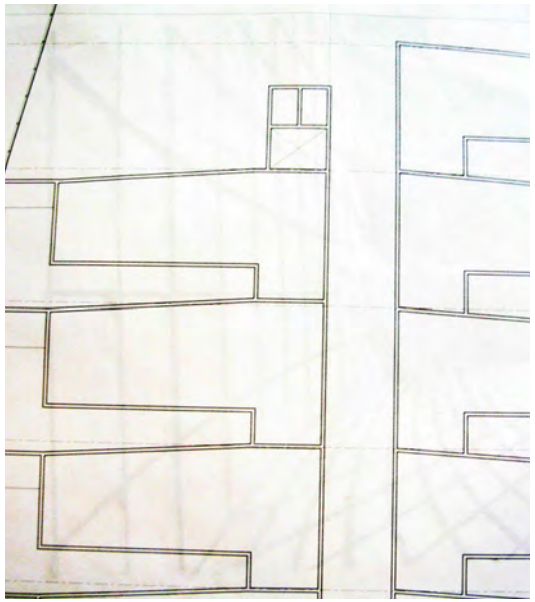


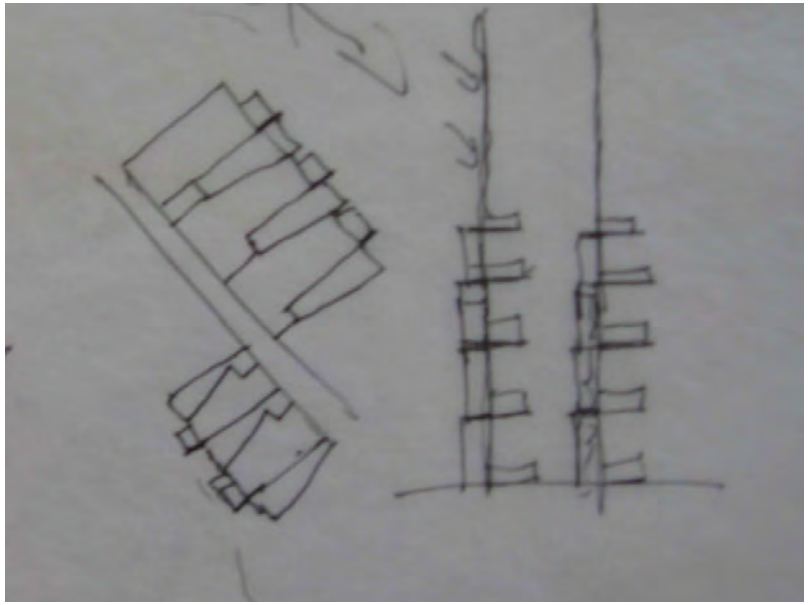
Elongating Arms-

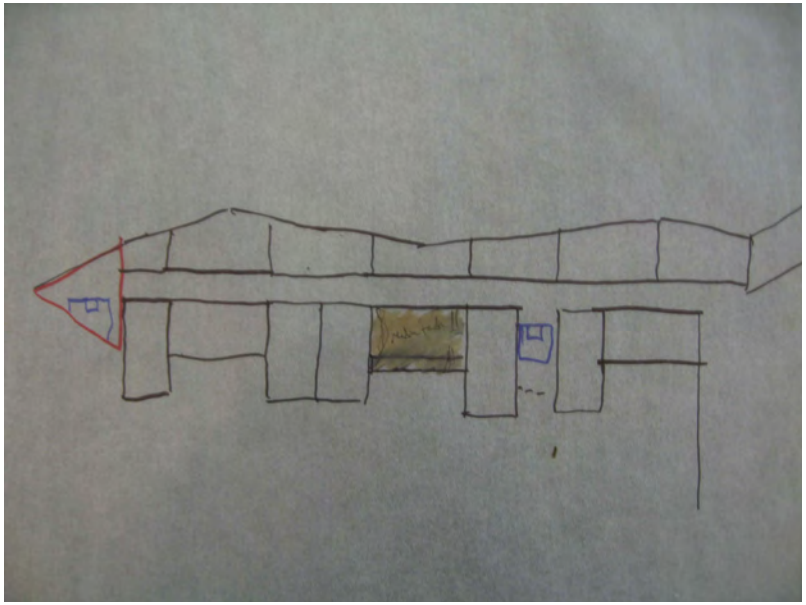
As a result, the option was to keep some of the general principals of the original idea, however, perhaps elongating the arms of the building. This would spread out the space, allowing for more exposure to sun/ light, while allowing for a longer double-loaded corridor which can maintain a higher yield of number of units per overall used space.

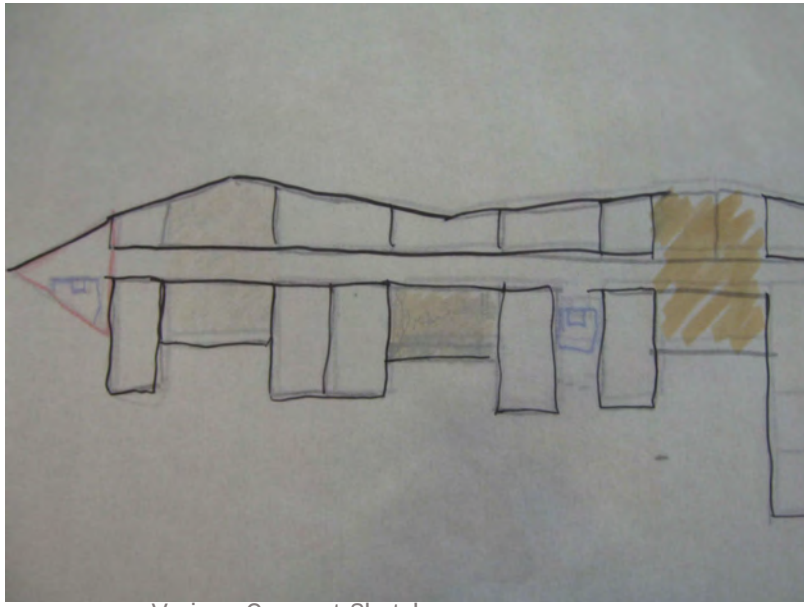


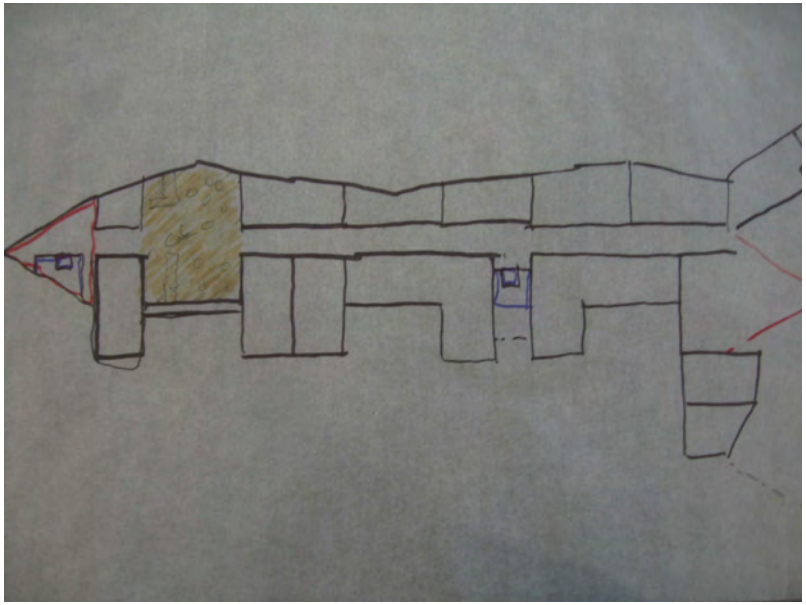
Various Conceptual Sketches



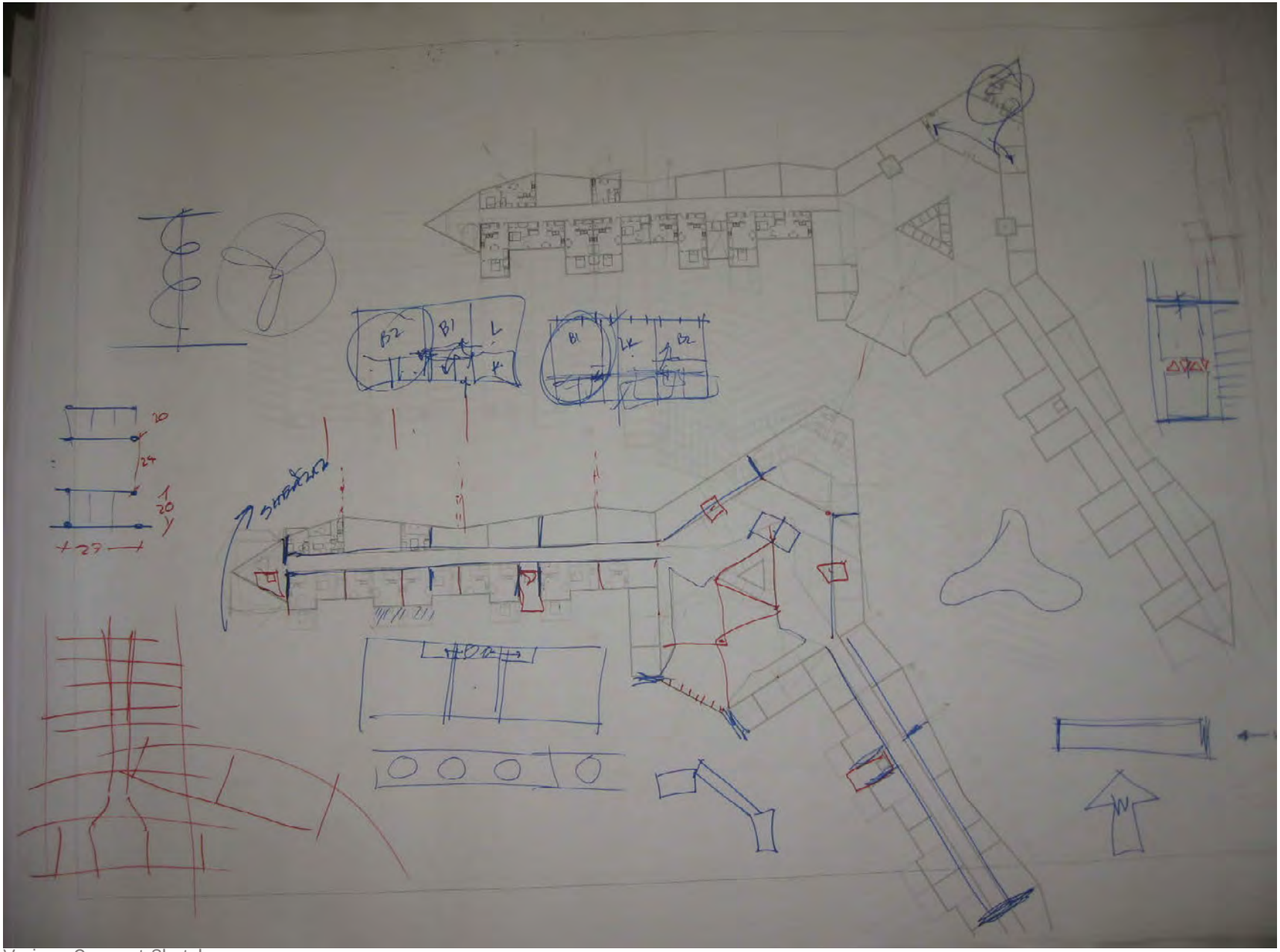




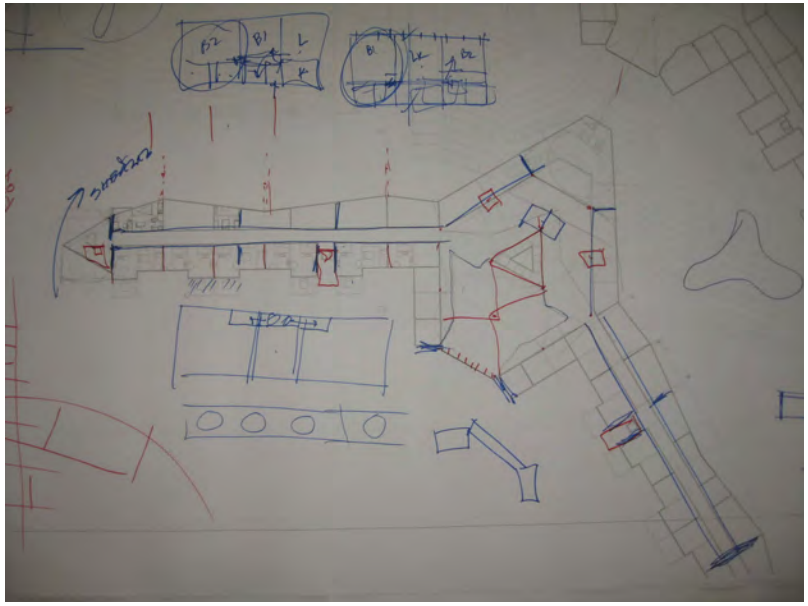


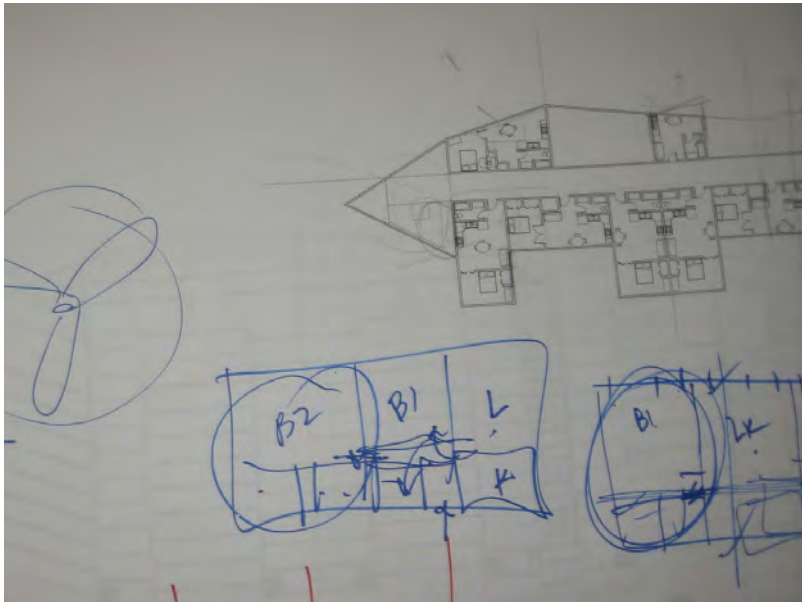


Various Concept Sketches



Various Concept Sketches

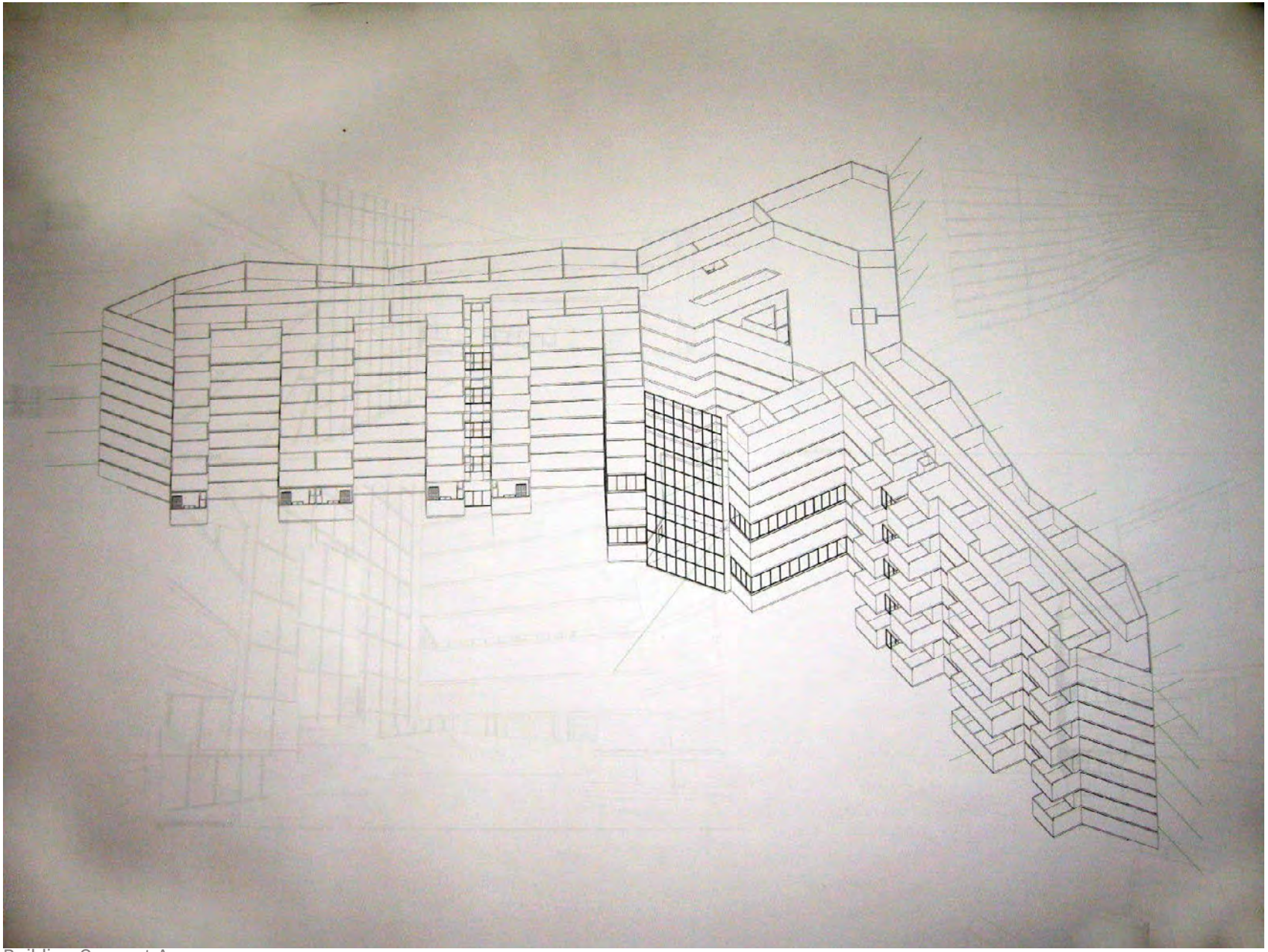




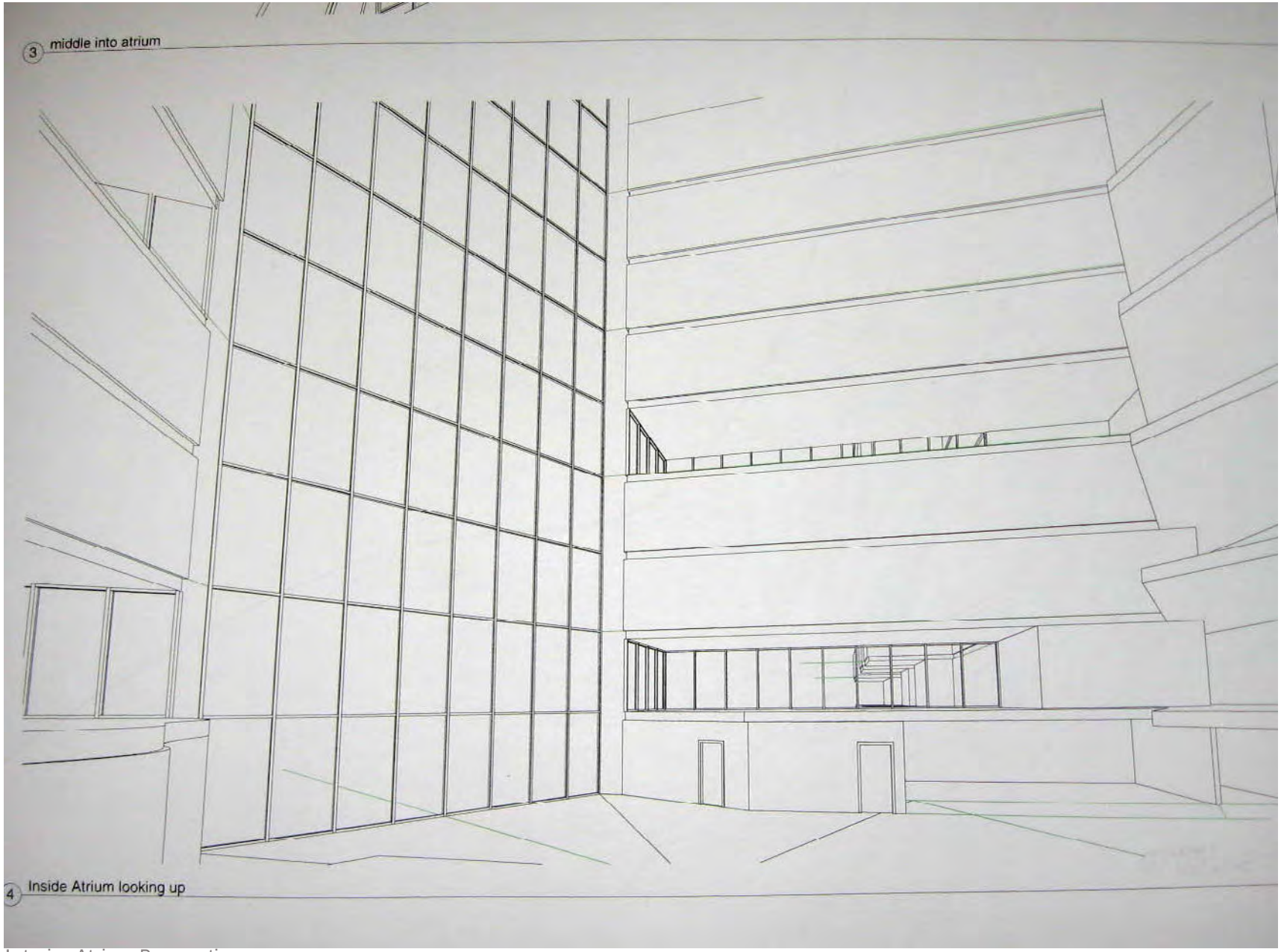
Various Concept Sketches

Double Wing-

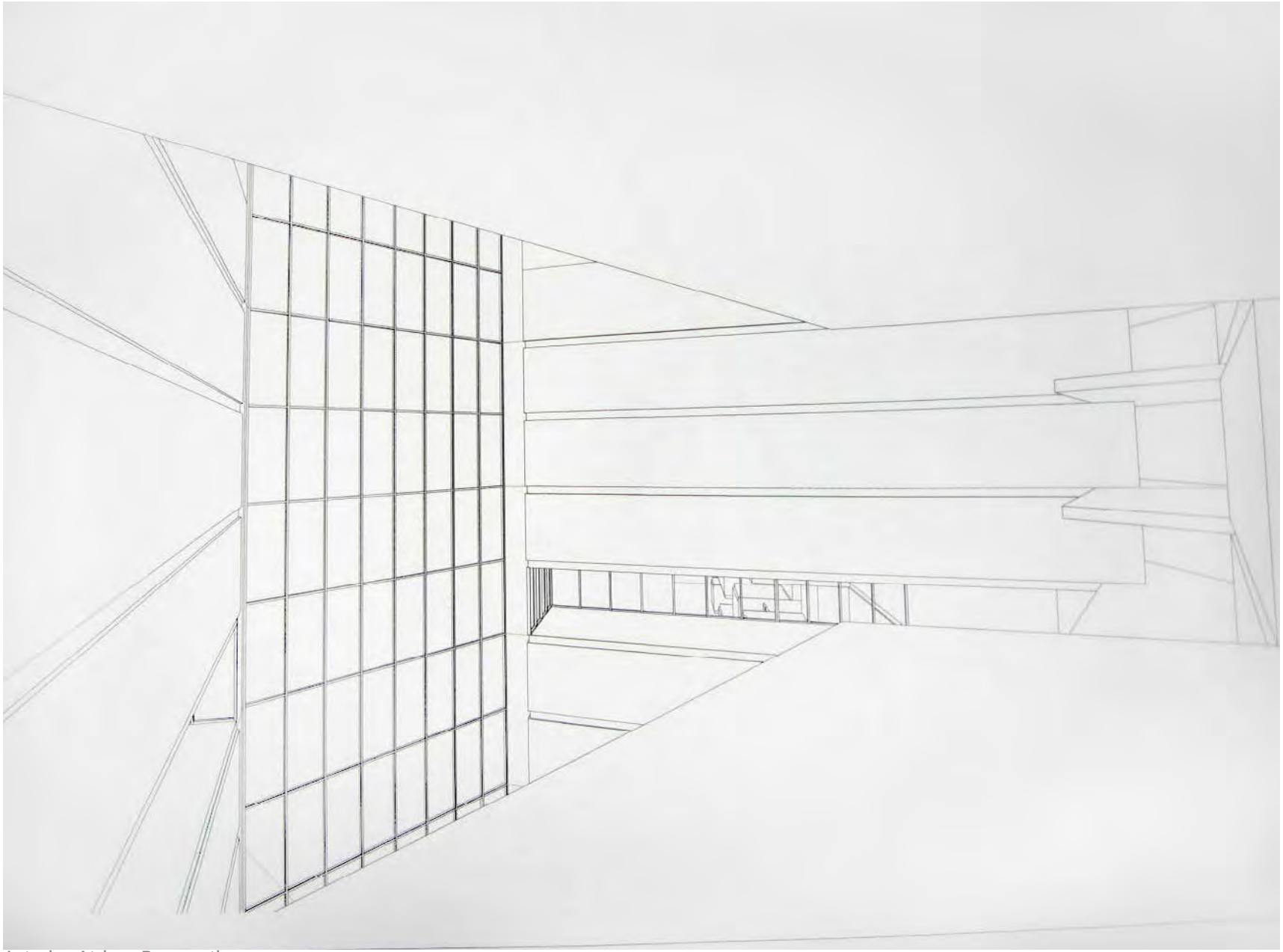
What is depicted here is the resulting form from the previous studies. This is a much elongated, dual-wing system which allows for a significantly larger amount of units to be obtained. This figure is indeed larger overall, however, it is much slimmer and has a higher unit to total sq/ft yield. While several condensing studies have occurred to get to this point, there are still several issues with this design which cause problems. While each unit now has a significantly large amount of “facial” value, as they each possess a major exterior wall, it makes the overall scheme significantly longer in overall length. By now trying to incorporate multiple towers together will become increasingly difficult. I now need to consider how large is large enough for a single tower, while how large do I continue to make one “super” tower rather than several smaller components. This scheme maintains simple and rectangular units to the south, while angular and differentiating units to the north. The idea behind this is that the much larger exposed facades would be facing diffused light, while the smaller and tighter faces of the southern unit would be granted the direct piercing light of the sun. The angles, which are admittingly somewhat arbitrary, are intended to mimic the angular and jagged language of the Rockie Mountain Range directly to the West.



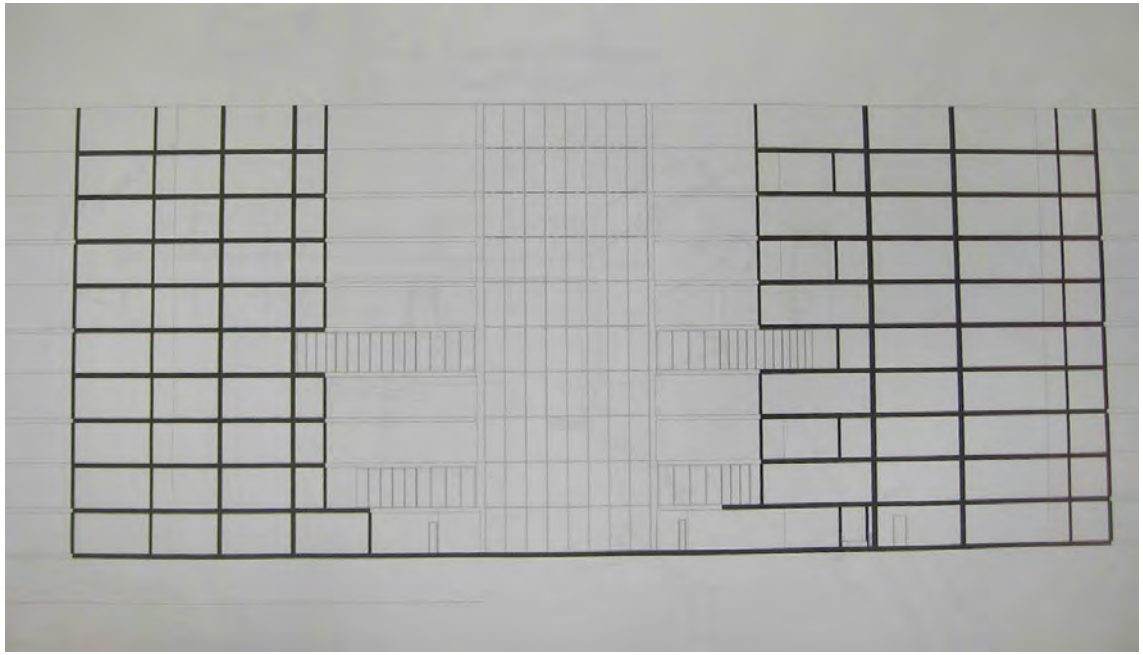
Building Concept Axon



Interior Atrium Perspective

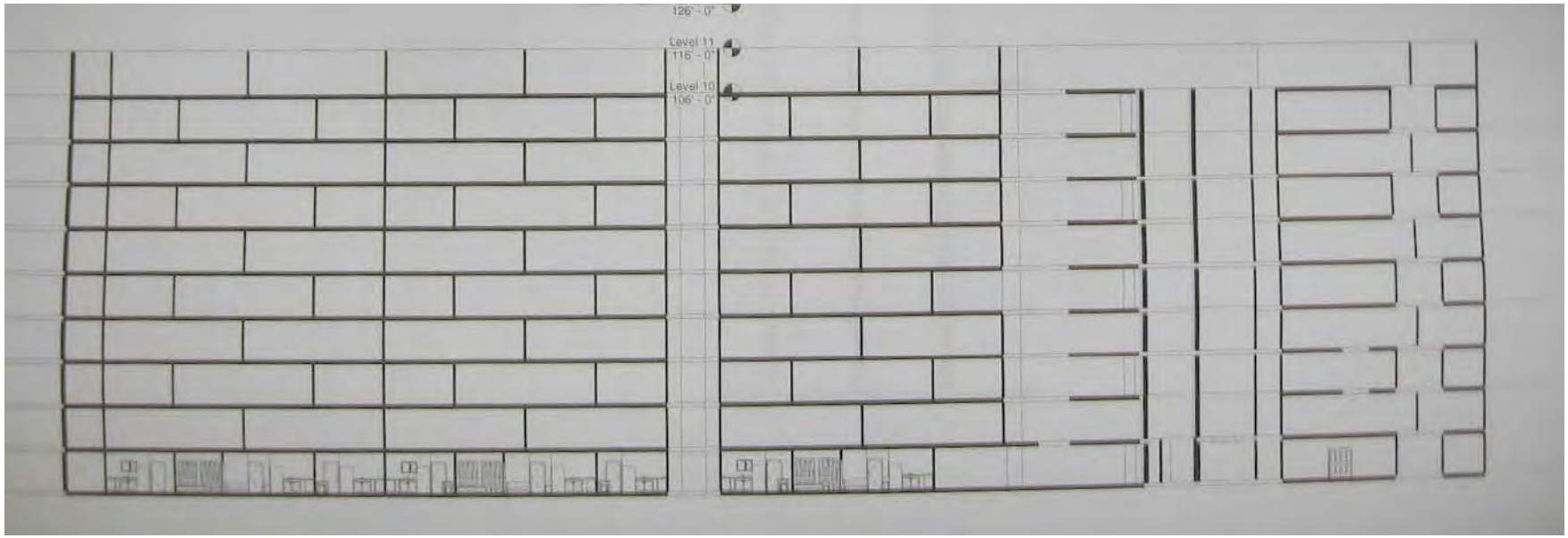


Interior Atrium Perspective

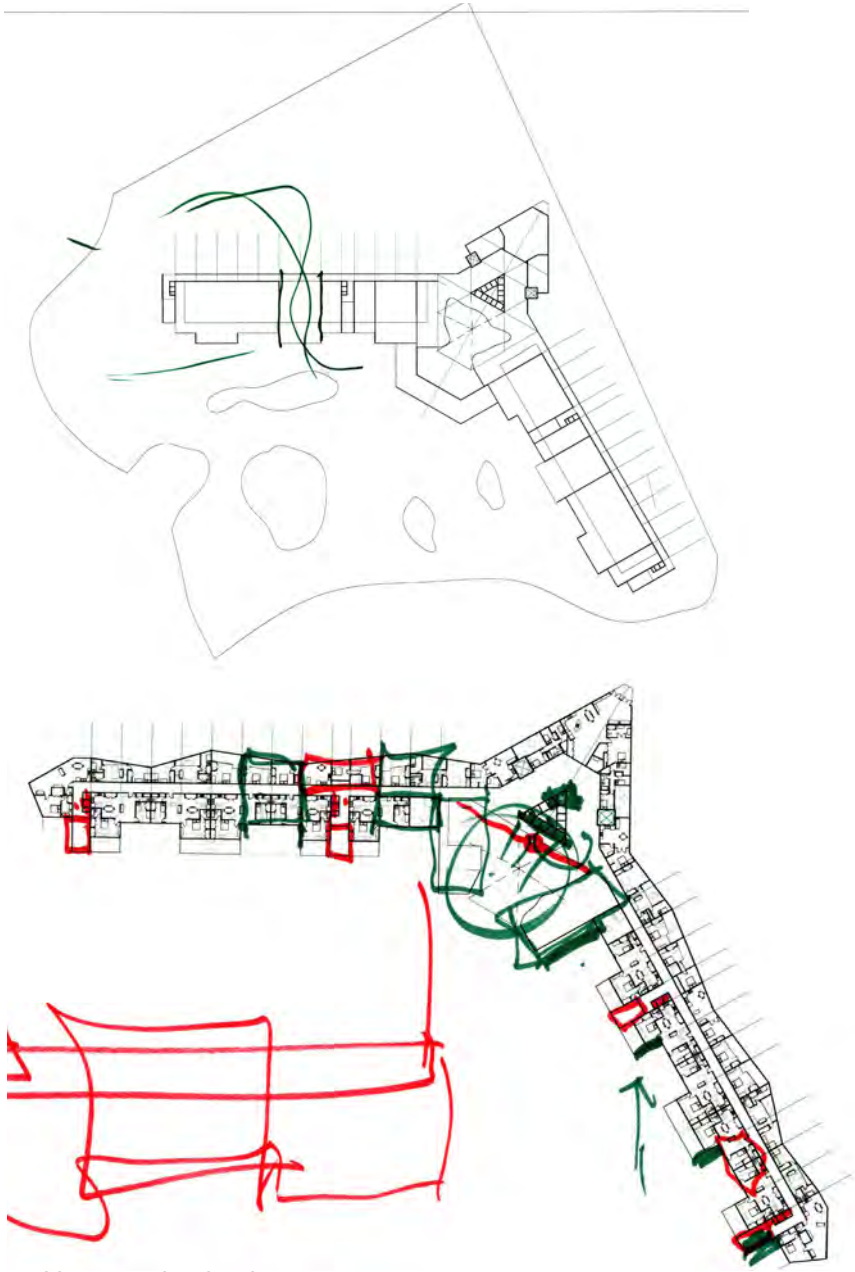


Continuing Elements-

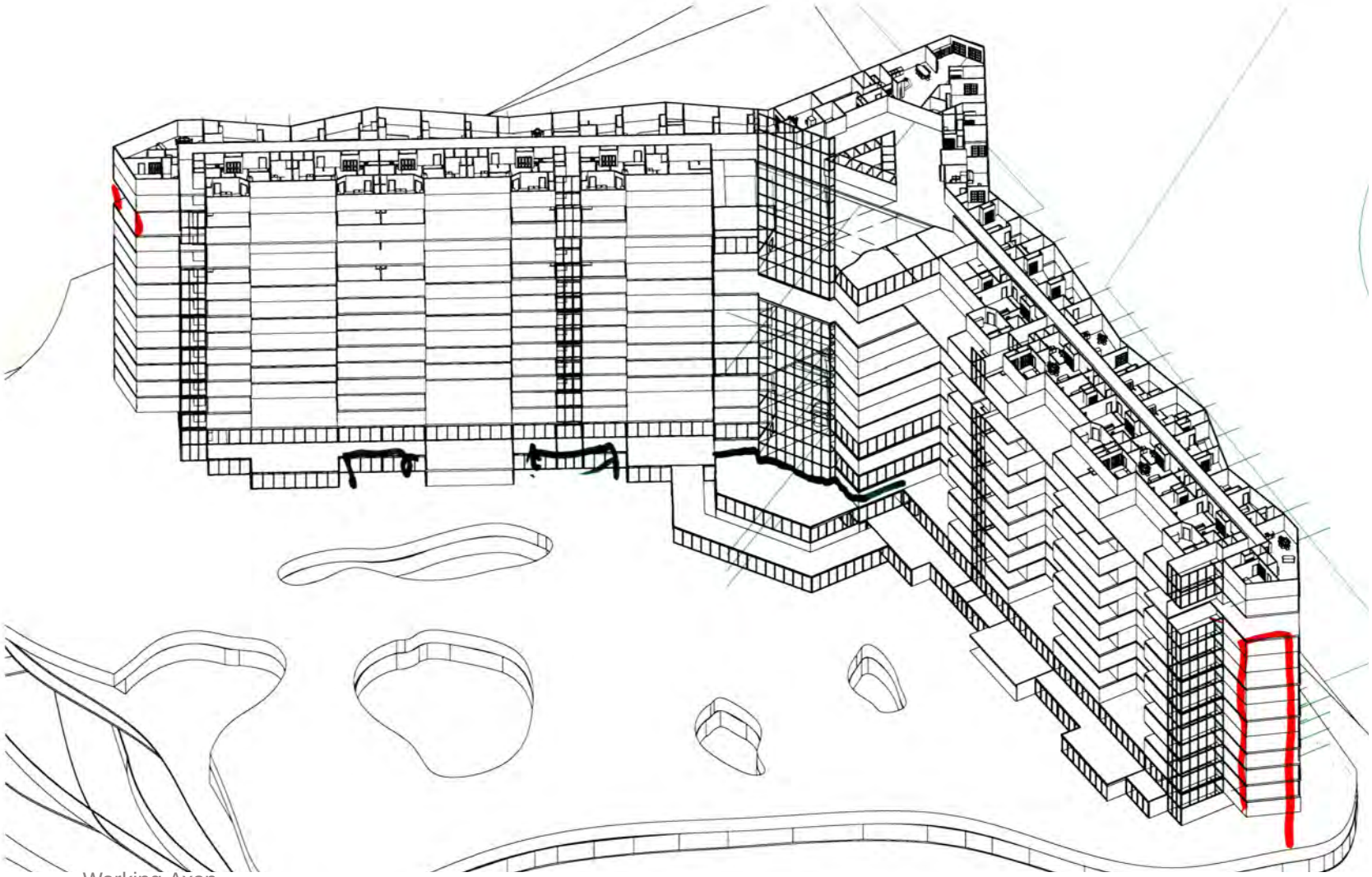
While the form as significantly changed from that of the previous scheme, the ideals are still consistent. The atrium, which is carried from the first floor to the top floor of the pod, is still the primary gathering space. While the arms are now longer, they consist of many more units. The distance has now become significantly more, and that creates a new set of issues. As for public spaces, they are dispersed throughout the arms in alternating patterns. Each space is either an exterior green space, or a public usage space, or a commercial space. These consist of gardens, basketball courts, computer labs, game-rooms, libraries, lecture rooms, to cafe's, bakeries, newsstands, and restaurants. These sections illustrate the existence of the atrium, as well as showing the now extended length of the tower.



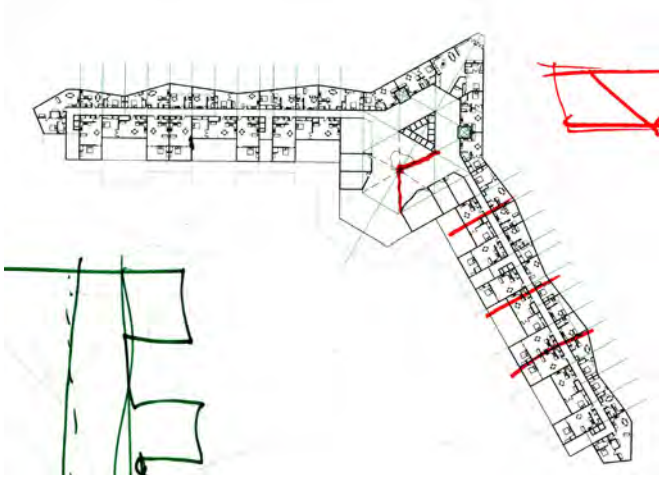
Site Plan

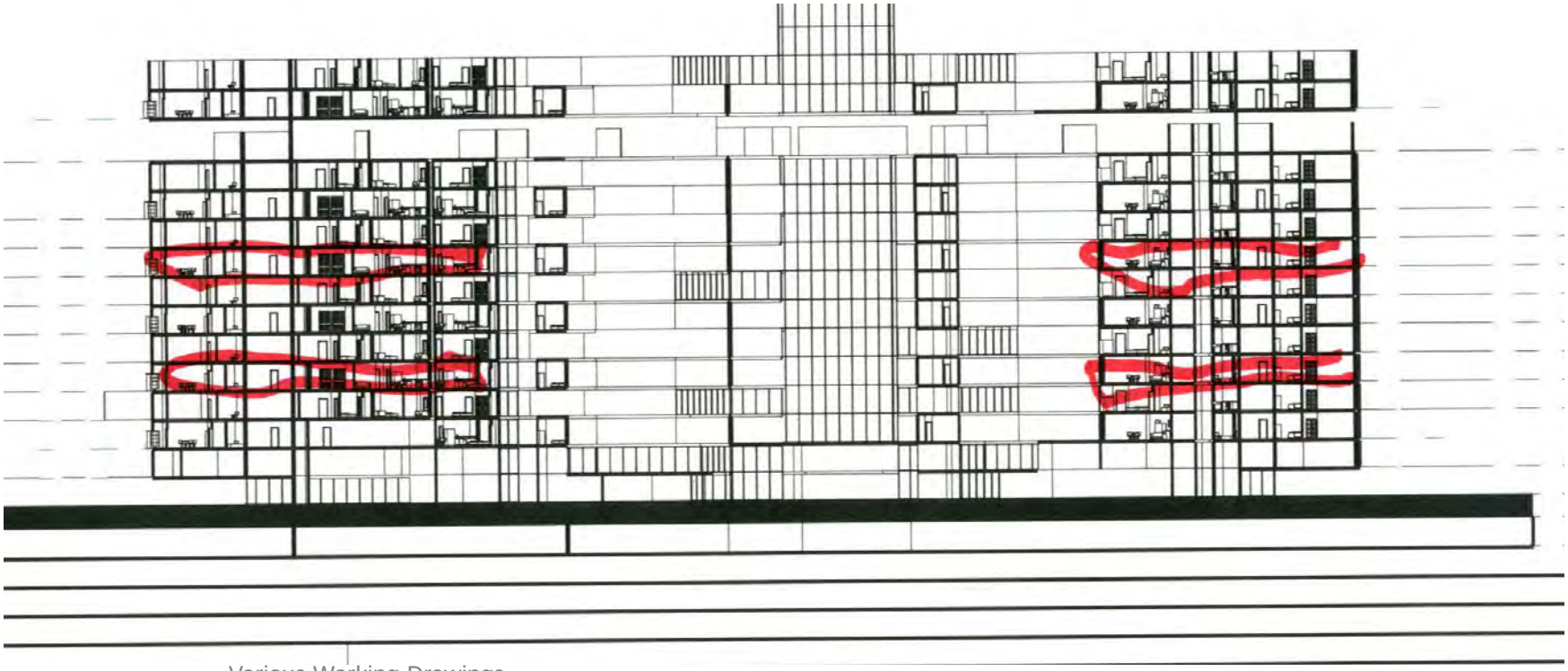


Working Drawing in Plan



Working Axon





Various Working Drawings

Midterm-Critique

As the double winged scheme progresses, these images are developed to convey some of the thought process of what the spaces might look like. This image shows the large atrium which looks upon the entire first pod. Its large space provides views from every level as well as locations for possible sustainable energy production techniques. At the midterm, it is our chance to fully display our current thought process and progression of ideals to a panel of professionals and peers. This chance often lays questions which make you re-think your proposed solutions, and helps direct your design towards a cleaner and mores successful product.


Business


Light Rail Stops


Pathways of Existing Grid

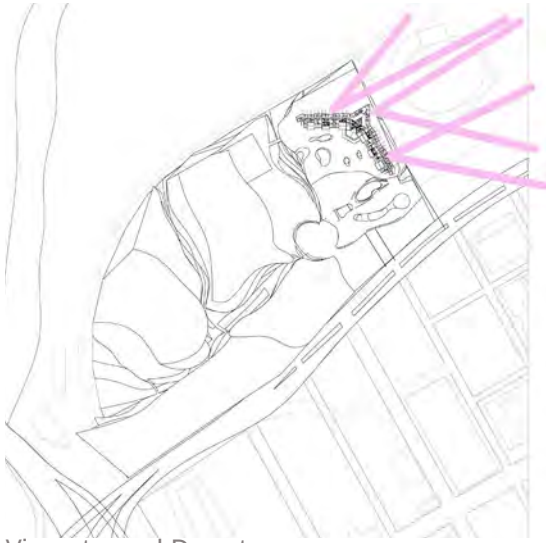

Wind Direction


Views to the Mountains


Parking

Plinth Organization

These several images depict the organization and orientation choices of this scheme. They show methods and means in which this design reacts to its overall site connection, action, and interaction.

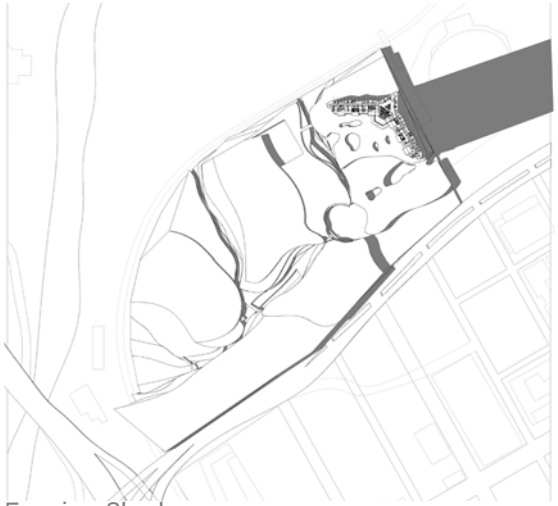

Views toward Downtown


Recreation


Solar Direction


Education


Entertainment


Evening Shadows

Plinth Organization

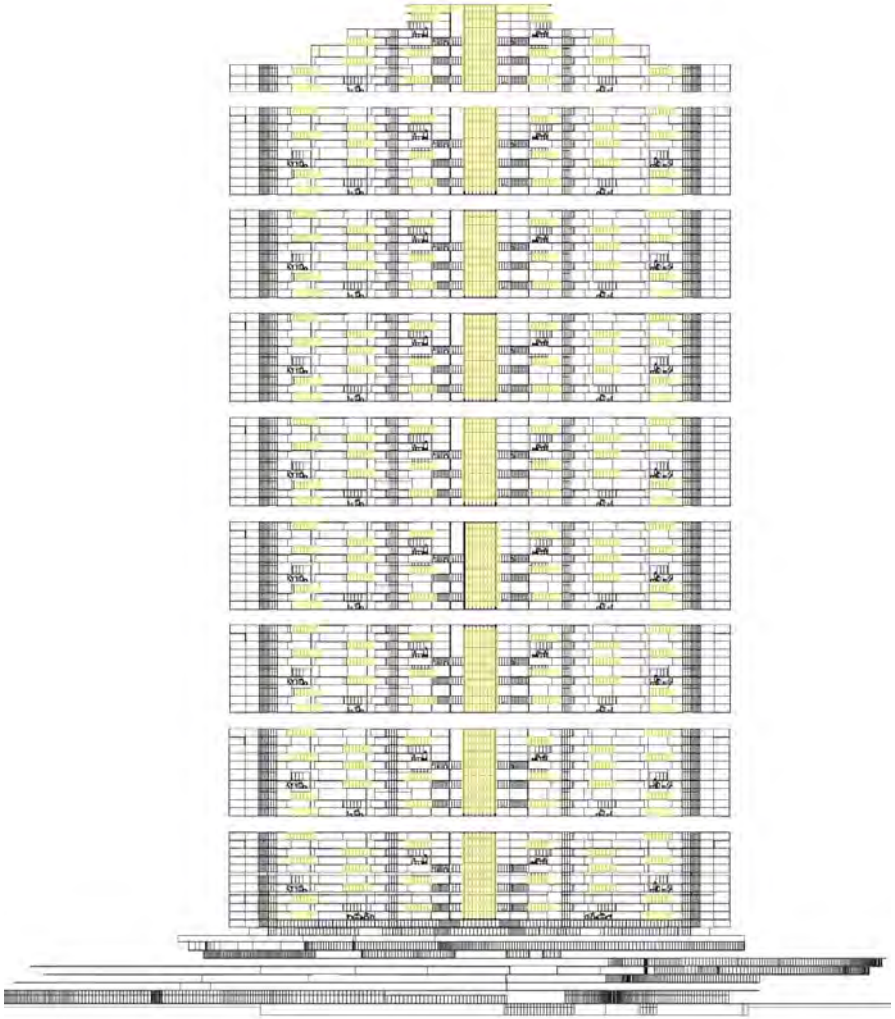
These several images depict the organization and orientation choices of this scheme. They show methods and means in which this design reacts to its overall site connection, action, and interaction.

Evening Shadows

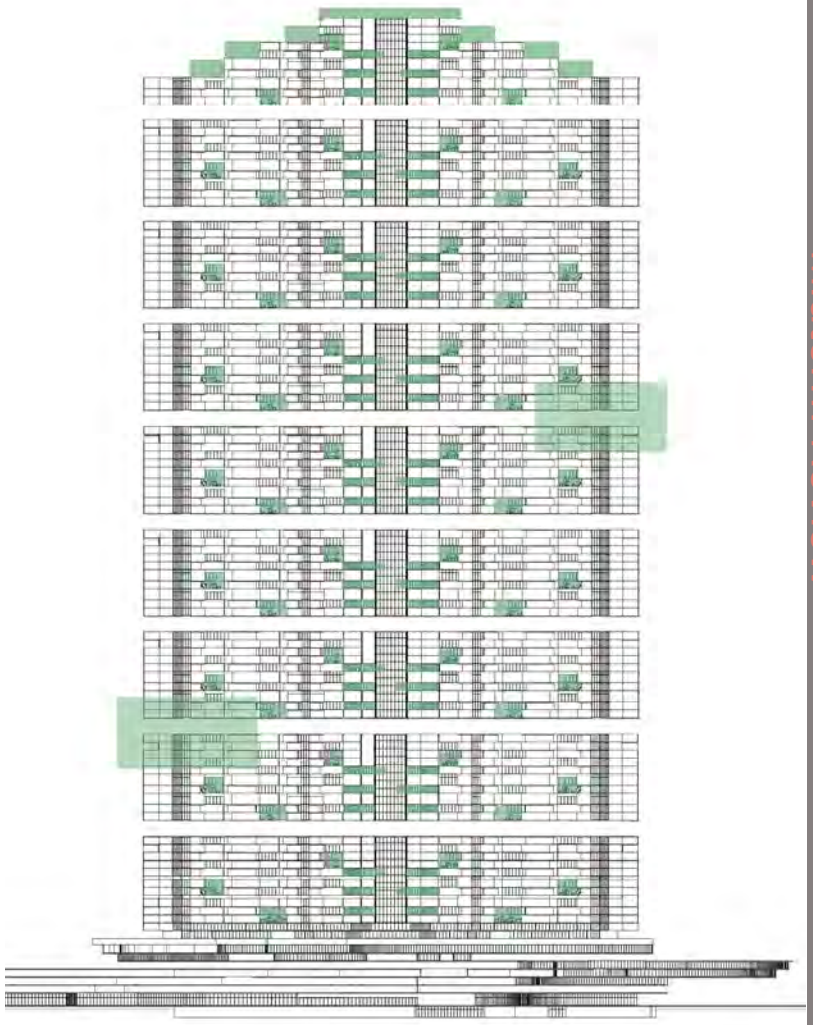
Building Orientation

Tower and Plinth

This looks at the entire project from elevation. This diagram shows the different uses in both the plinth and the tower pods. The activities within the plinth are a mixture of every type of use, while the tower, consists of singularly residential activities.

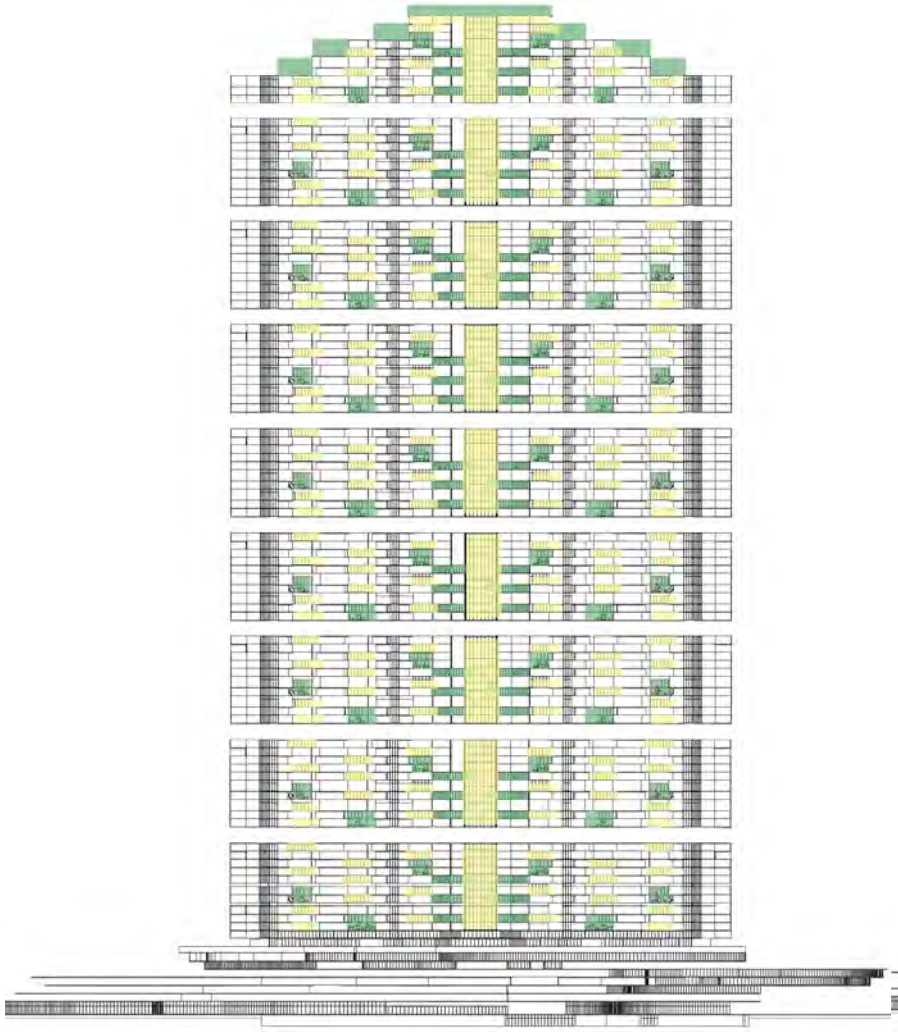


Public Zones within Pods

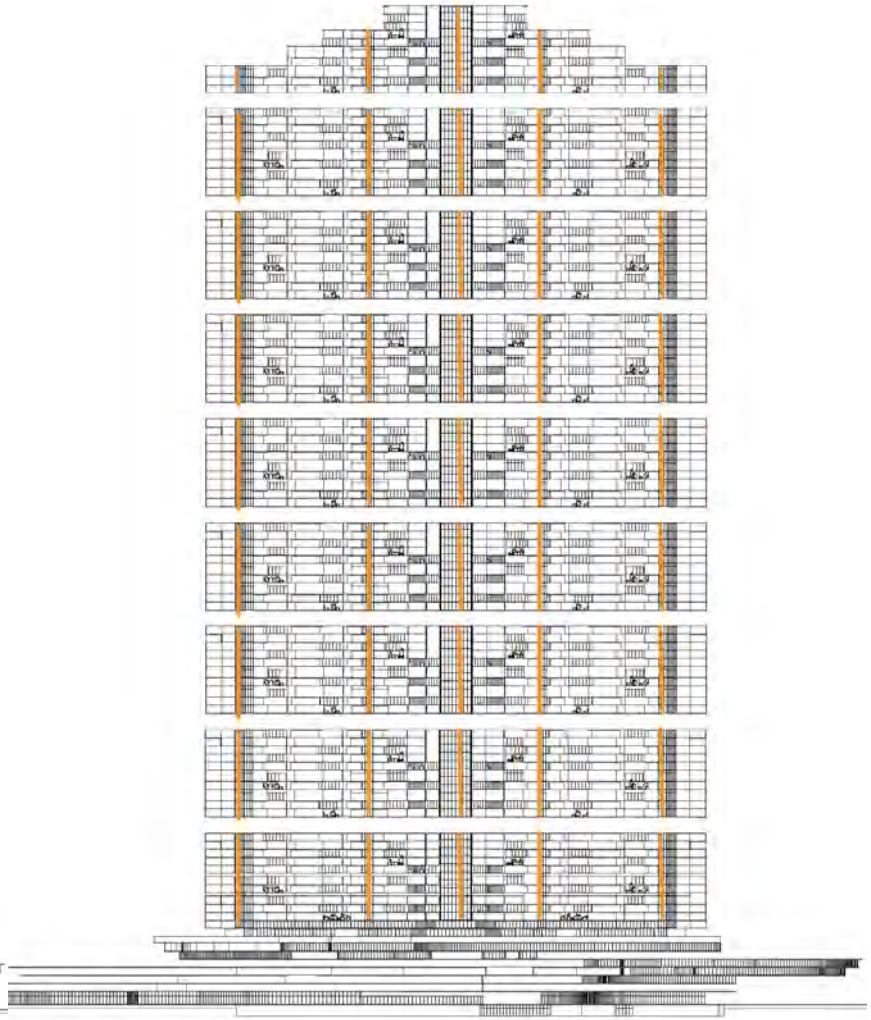


Green and Exterior Zones within Pods

Building Organization



Public and Green Zones within Pods



Vertical Circulation Within Pods

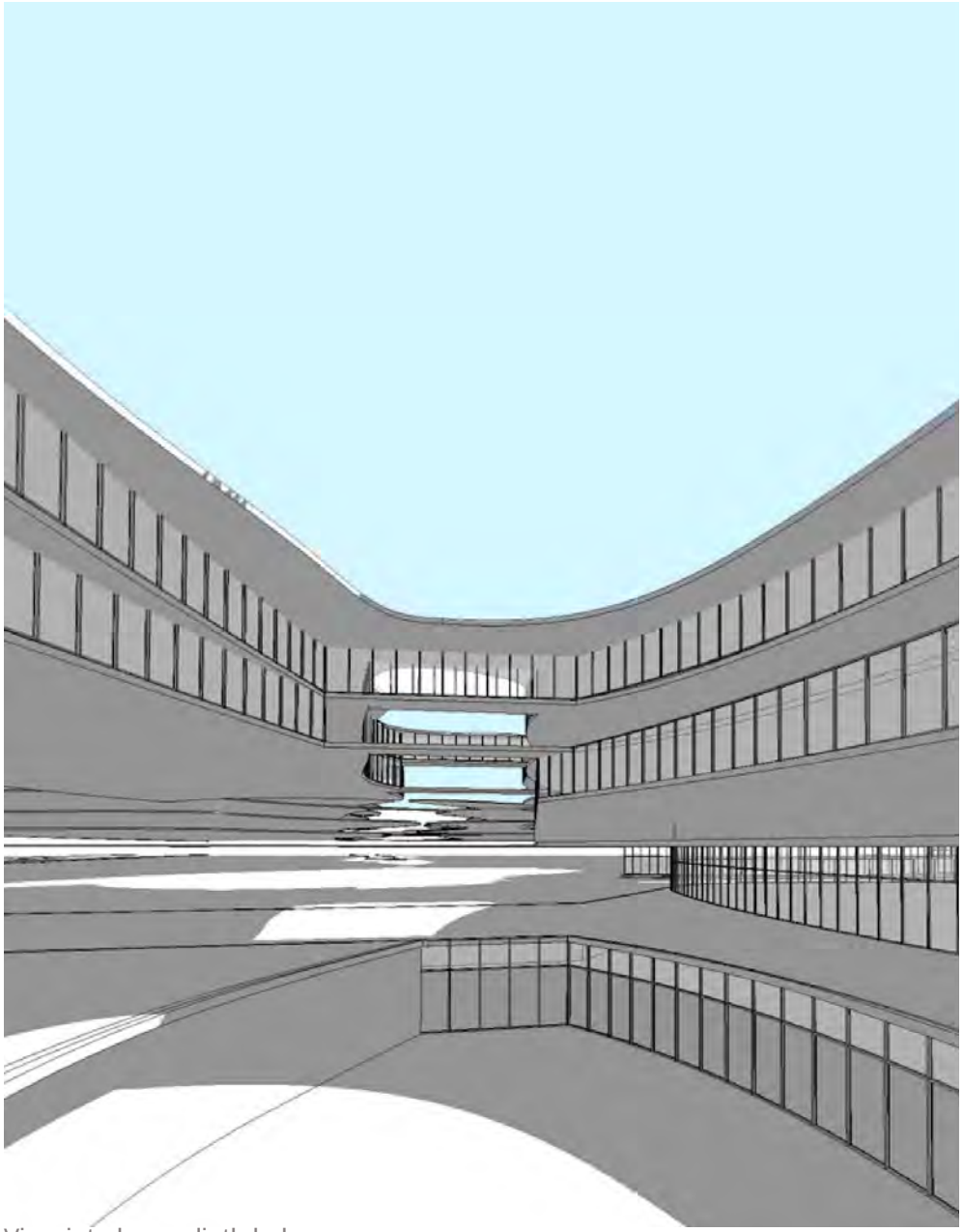
Building Organization

Vertical Circulation Between Pods

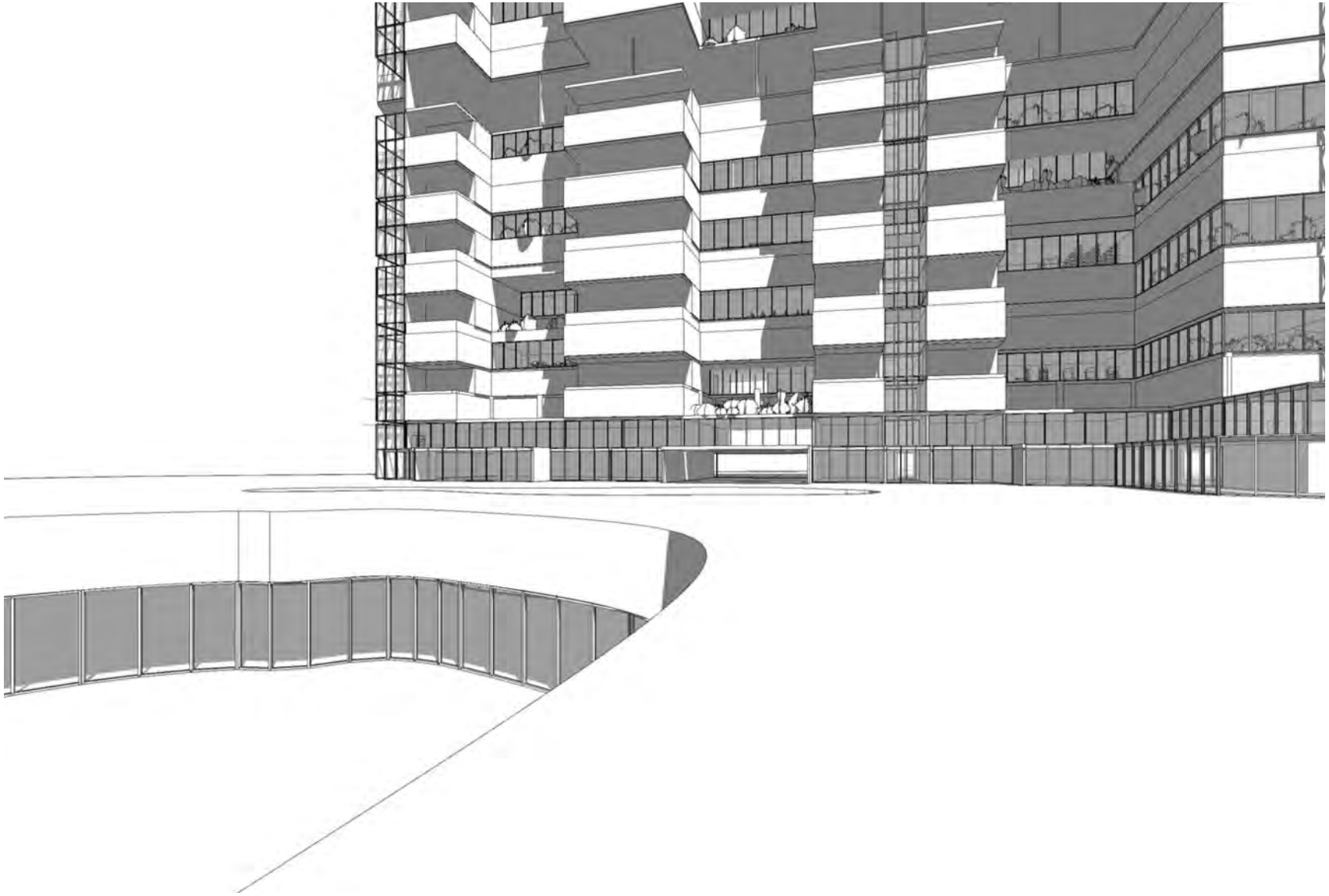
All Vertical Circulation

Tower Dynamics

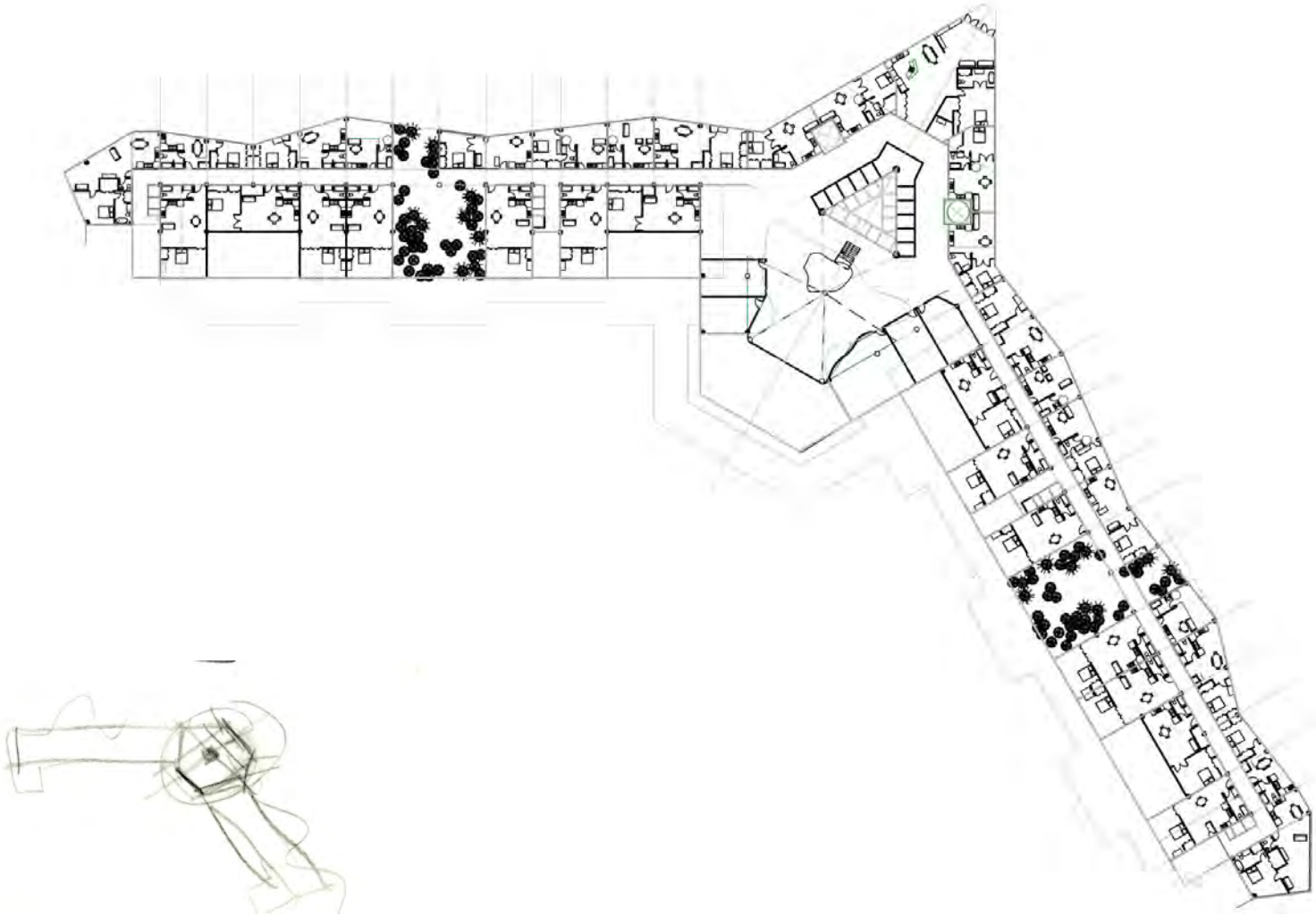
This image depicts some of the Wind and Solar dynamics of the building. As the primary face of the building faces south, most of the sun rays hit the surface. The predominant wind forces also strike the faces, however, flow through between the pods themselves activating the wind harnessing turbines



View into large plinth hole



Perspective towards lower building



Floor Plan Organization

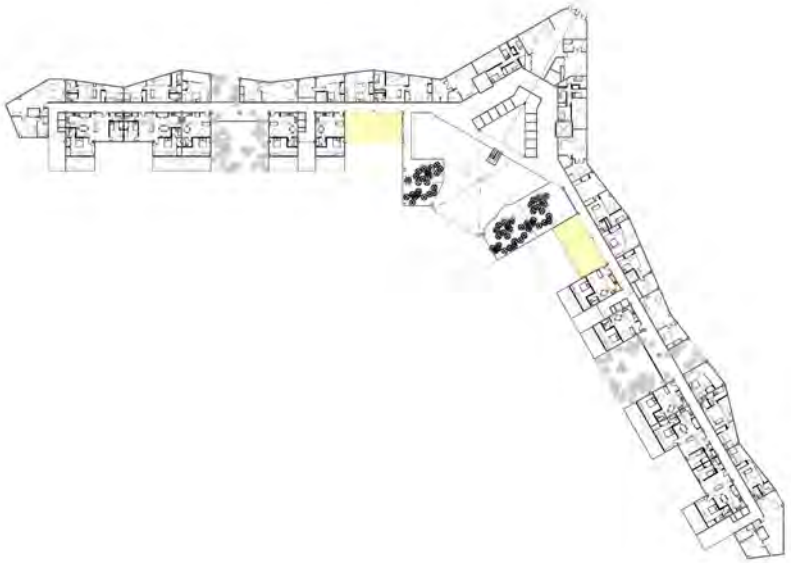
The floor plan is organized with two long wings. Within those wings there consists units which rotate from parallel to the hallway to perpendicular to it on the southern faces, as well as a string of angular units flanking the hallway on the Northern side. These units range from 2, 3, 4, and 5 person units. The plan also consists a major core section which both wings meet at. This is where the primary atrium exists and continues upward for the entire 10 floors of the each pod.

Level 1 Green Spaces

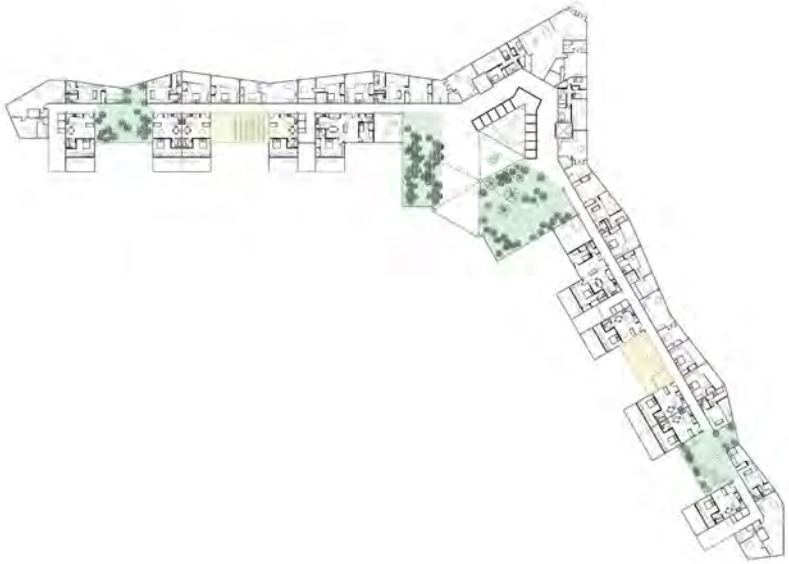
Level 2 Green Spaces

Green Space

Incorporated into each wing exists exterior public green spaces consisting of either gardens, trees, patio furniture and recreational equipment. These spaces are double height, and penetrate completely through the wing allowing for complete visual break and continued natural air flow. These spaces alternate from three main positions along the wing as they move upward in plan. This allows for variation amongst each space, as well as respectively the spaces related to that particular floor plan. This also allows for a greater variation of alternative locations for other public spaces also located within the floor plan. This adds to the greater dynamic of the pods as well as the building as a whole.



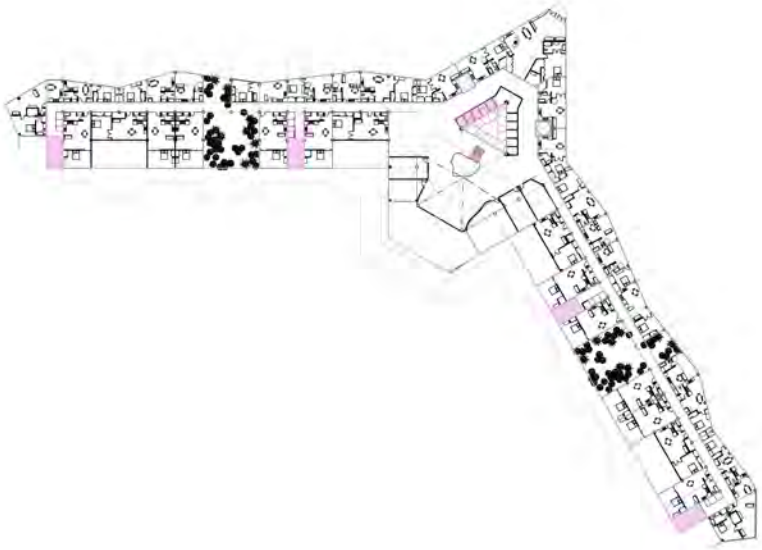
Level 1 Public Space



Level 2 Public and Green Space

Public Usage Space

As each green space alternates positions throughout the pod levels, so does the general/special usage public spaces which are enclosed. These similarly alternate location respectively with the exterior green spaces. These images show an example of the public spaces on the first level, and how it alternates as you move up in plan.

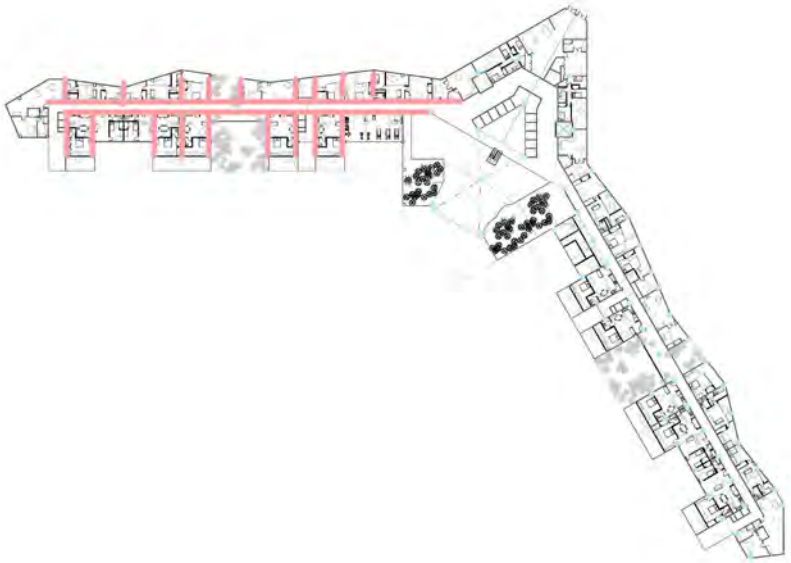


Building Vertical Circulation

Pod Vertical Circulation

Circulation

Circulation within the building becomes more complicated because of the aspect of separate Pods of communities. However, there also must exists a continued circulation for egress requirements in case of emergency. This circulation is denoted by two separate functioning vertical outlets. Within the building, a set of elevators stops at each Pod base floor at which point they enter the main atrium. This meaning that the general community of the pod has a general entry in which each resident enters through this point. Afterword, a secondary circulation is entered which stops at each level within this pod community. There is a centrally used general circulation space located just off of the main atrium, however, there also exists secondary circulation point along each wing.



Wing Structure

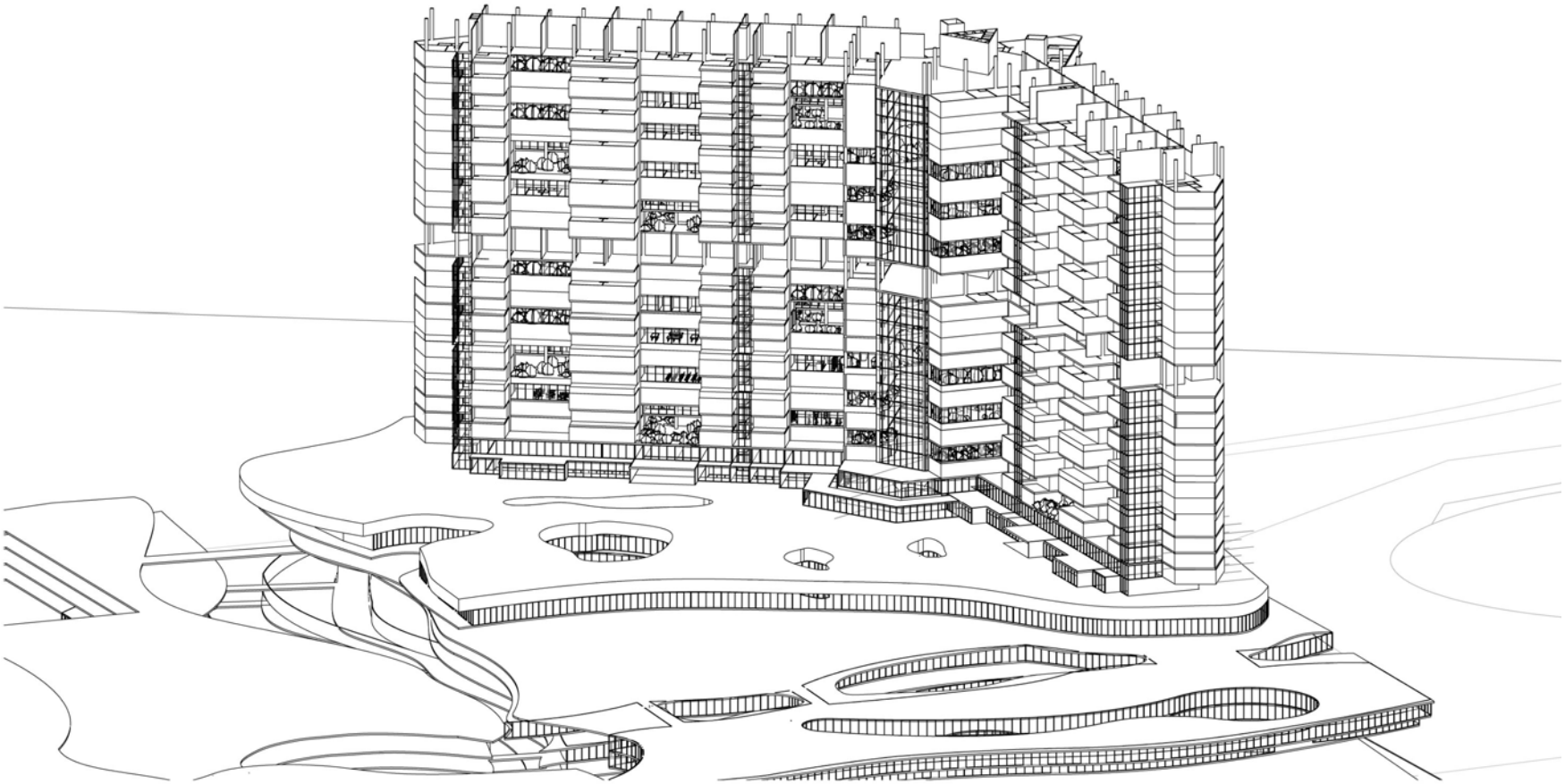
Typical level 4 and 6 Floor Plan

Structure and organization

AS each wing is very large, and will take on considerable wind loads as well as general mass loads, the structure must be able to withstand these in a safe yet effective way. By creating a spine, with bearing walls acting as flanges to respond to additional torsional and shear forces, the entire wing reacts as a single structural unit. These are then tied into the central core with its octagonal organization of columns and shear walls.

Level 4 Perspective-Garden Atrium

Level 6 Patio Deck Perspective



Axon looking at the bottom two pods

Garden Level Perspective

Frontal Axon

Midterm Critique

One of the main critiques of the building was the overall sense of mass of the building being extremely overwhelming. The scale of it was not really conceivable from the proportions. By being a potentially 80 story building, there was no sense of it reaching upward, no sense of it being tall, and certainly, no sense of elegance as it might sit in a skyline or amongst neighboring buildings.

Another key issue was the extremely large distance from when end of the building to the other. The hallways were double loaded corridors, with lacking specialty to them, as well as daunting and closed inward feeling. The circulation was also very problematic, and seemed like there was too many entrances or exits to really feel connected as an entire community pod. Additionally, each wing was relatively closed off from one another, not physically, but mentally, as they were so far apart.

Also, the atrium space, although very large and airy, had several access and usage issues which made it a hard place to enjoy. As for the units themselves, there seemed to be an extreme amount of cross-views into one another, and very little focus as to what might indeed be the primary view. Also, because of the overall shape, almost every unit which might look south or west, looked upon the entire other wing of units, either stifling their possible views of the downtown city, or of the mountains.

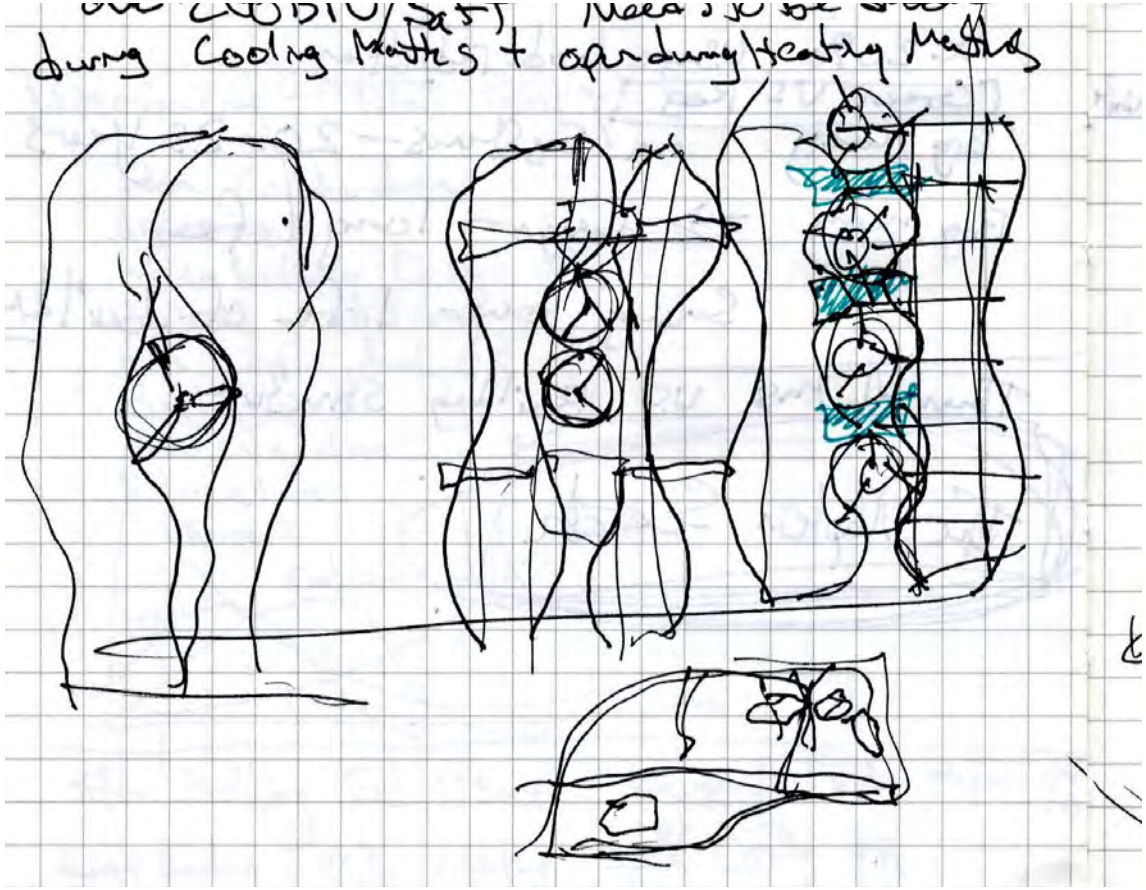
The shape of the building overall seemed to be rather arbitrary. Also the angles on the Northern and Western facades seemed to be particularly random, and not fit with the rest of the scheme. There was also a lacking of connection with the Northern point of the core area, and the other wings of the building. Even more so, the central circulation spaces/stairwell and elevators seemed to be very problematic and lacking a cohesion to the rest of the scheme. The idea of having such a large building may have been causing the issues which are so very apparent within this scheme.

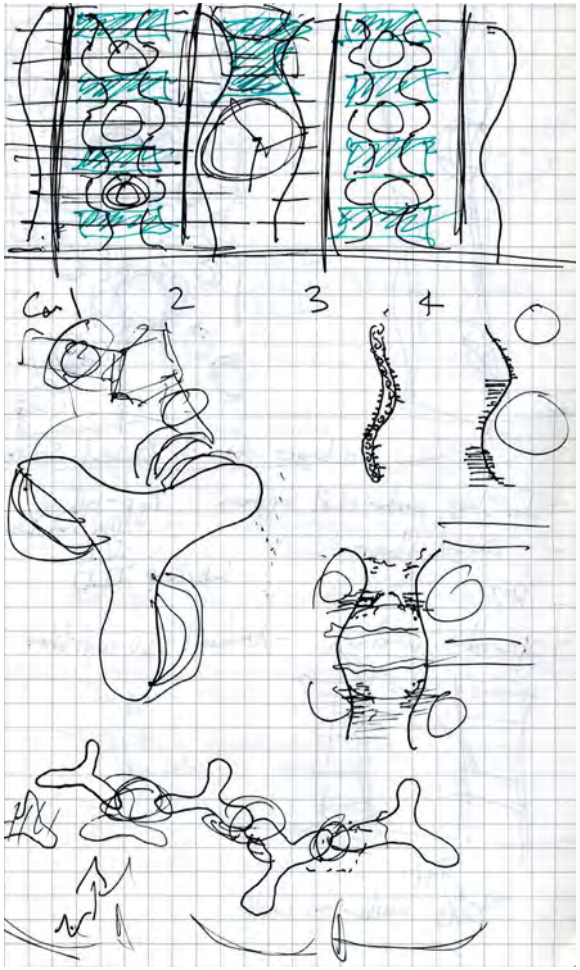
The units themselves seemed to be significantly lacking in organization as well. Although I indeed produced and exemplified several variations, many of them seemed extremely too small, difficult to maneuver within, and forced when spaces became necessary. Additionally, the angled units on both the North and West facing facades seemed very problematic in overall space as well as shape. The seemingly arbitrary angles of the walls provided too many specialization of spacial planing that made a repetition of units impossible. This would, in the end, add to a significantly larger and more time consuming design job.

As for the greater connection to the lower plinth, there seemed to be a gap. The wavy and slowing movement of the program below seemed to be completely foreign to that of the building above. Therefore, a much greater connection between the two needed to take place. The scheme in its entirety needed to be feel like a cohesive design, and not pieced together. Therefore, a greater understanding of connectivity between the spaces below and the spaces above needed to be taken into account. By further thinking of the pathways from the very bottom level, and parking levels, and then upwards towards the very top floors, would help that connection become real. Also, how members entered, and gained access to the top gardens of the plinth, and then entered the building on that level needed to be established. As those quirks get worked out, so then does the scheme become more interwoven from the lower portion towards the top.

Lastly, the program within the plinth really needed to be worked out. With very little progress as to the actual layout, entrances, points of interest, and division of spaces, it is very difficult to establish form and how it reacts with its function. As each are guaranteed to therefore effect the other, this program needed to be worked out. By having this at the same level as the building itself, then certain design moves may be taken into account as they effect the building in its entirety rather than simply in pieces.

All in all, the mid-crit went very well in producing the questions which had yet to be answered, as well as exposing the amount of unfinished thinking which followed the project. As each and every move was well intentioned and obviously thought out, the re-examination of these problems with fresh perspective and ideas significantly aided to ironing out the wrinkles within the thought process. This allowed me to make simple, direct, and to-the-point decisions as to what the design really needed, what aspects were crucial, and, although morphed, stay throughout the project, and what aspects will significantly change or be dropped

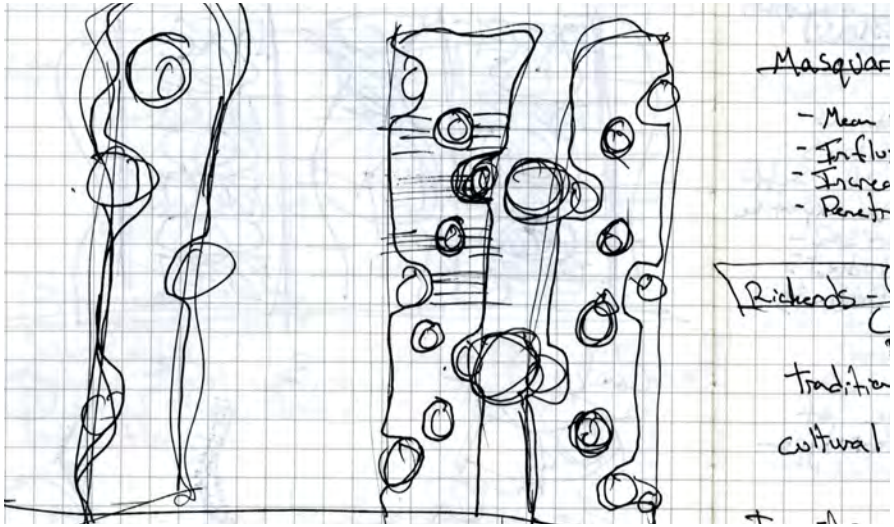


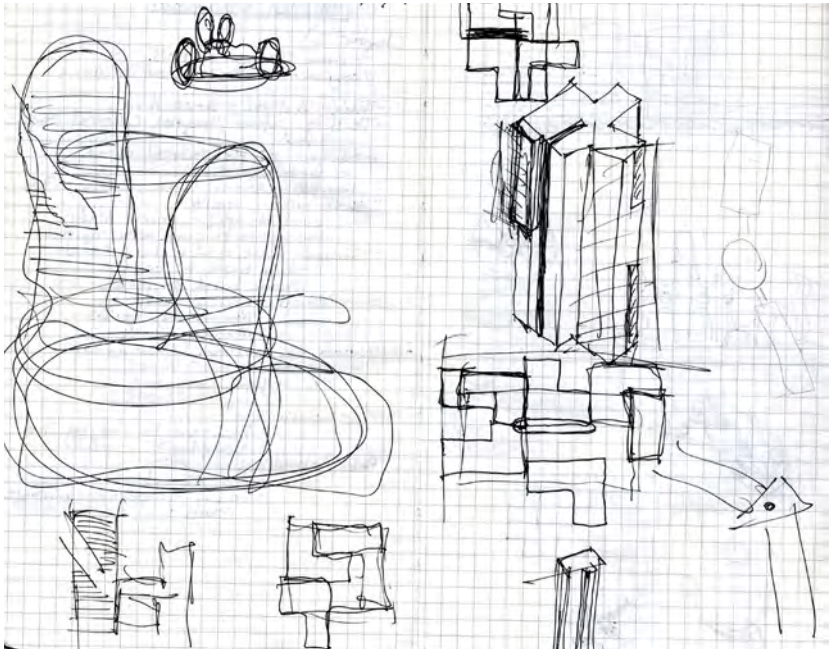


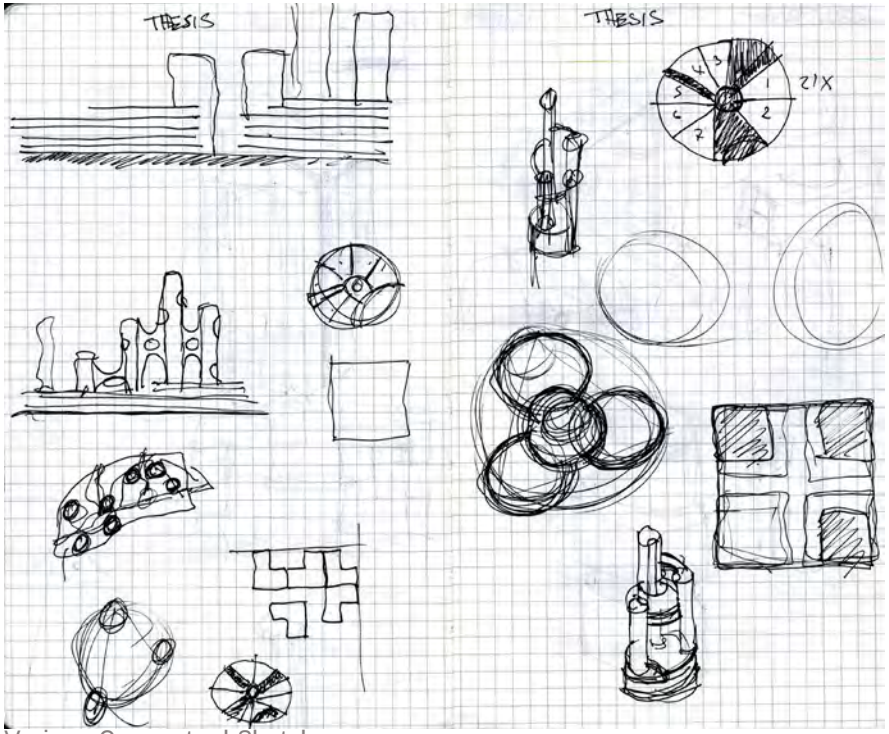
Various Sketches

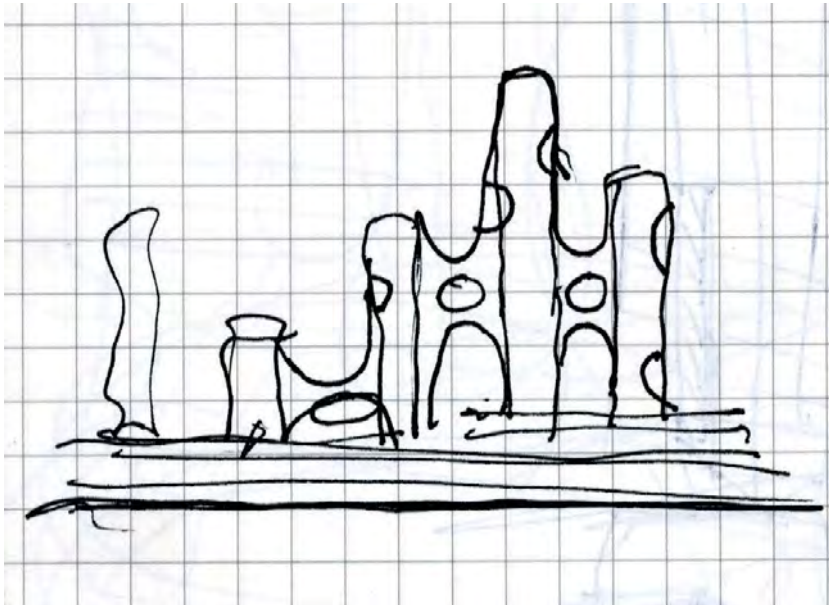
Matching Language

With a fresh way of re-thinking my ideas, I was able to start revisiting some of my original concepts. While my previous scheme was indeed worked out to a certain degree, it significantly lacked some of the formal qualities that I had originally envisioned the project as being. At this point, I started going back to some of my quick, expressive drawings. With manipulation of form and shape, I wanted to start to connect the language of my lower plinth with the rest of the building. With new exploitative sketches, I was able to start new visions of space and movement, and connection between the bottom, the residences, as well as public, semi-public and private spaces within the greater context of the project. Also, a growing overall scheme of form, and shape, and integrated function was starting to emerge from some of my sketches. While these were simply a spilling of ideas, in fast limited-thought moves, they held promise for existing progress.

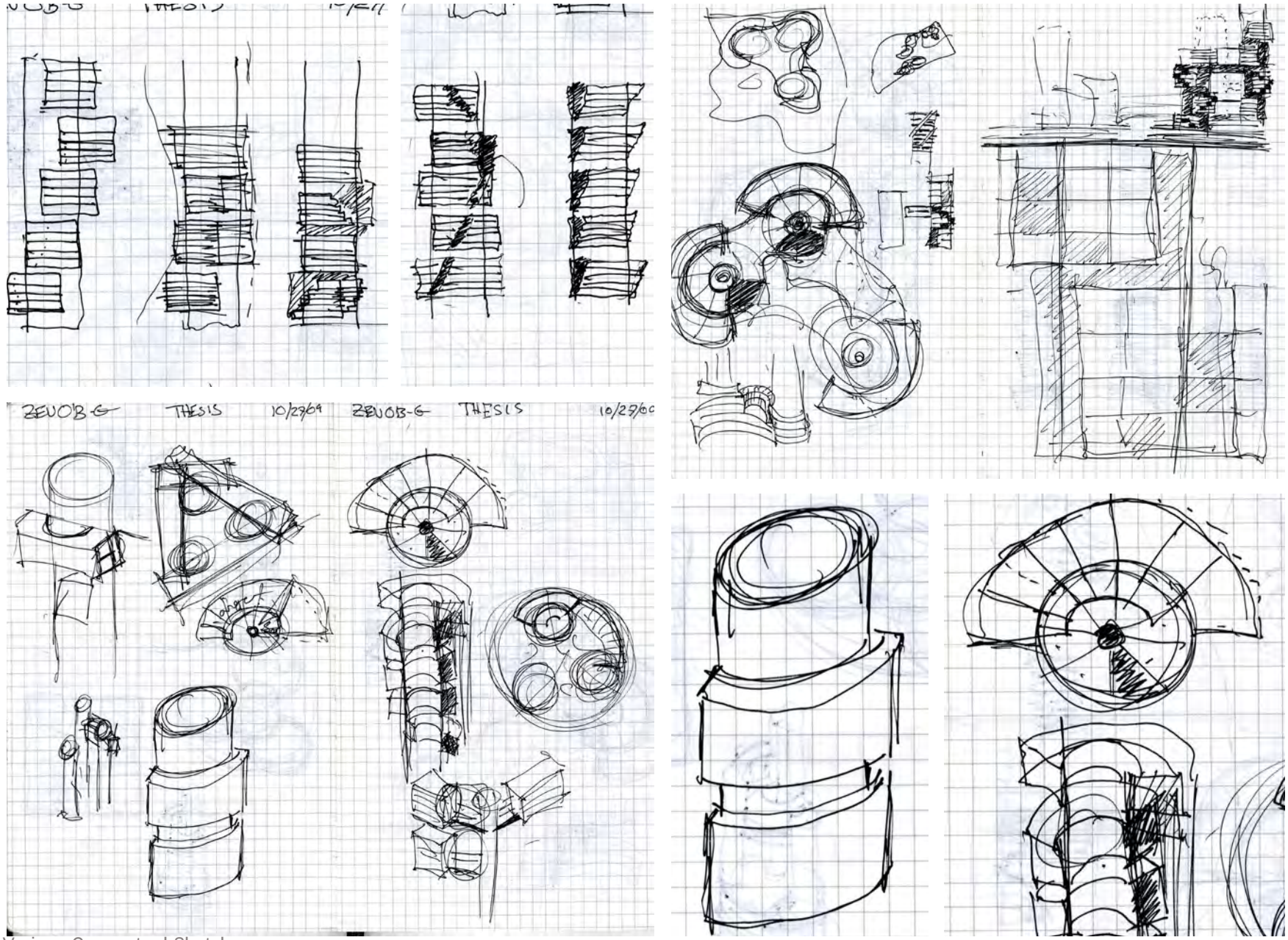






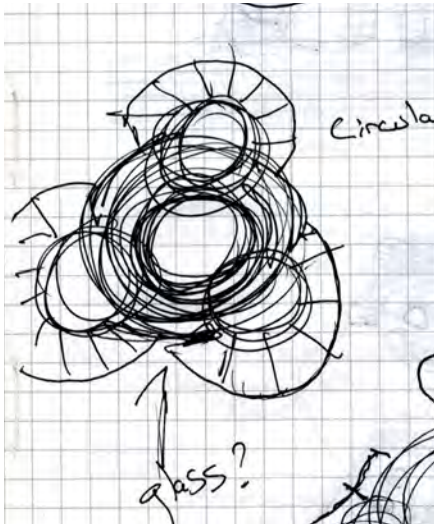


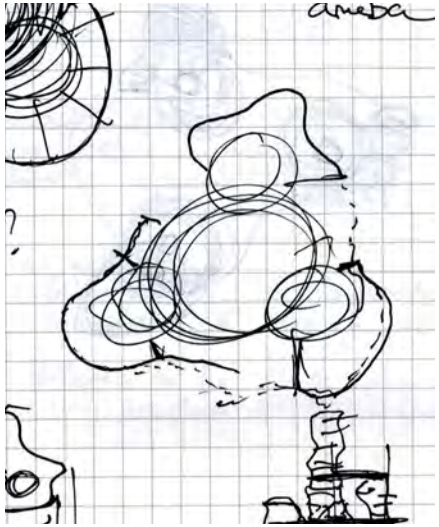
Various Conceptual Sketches

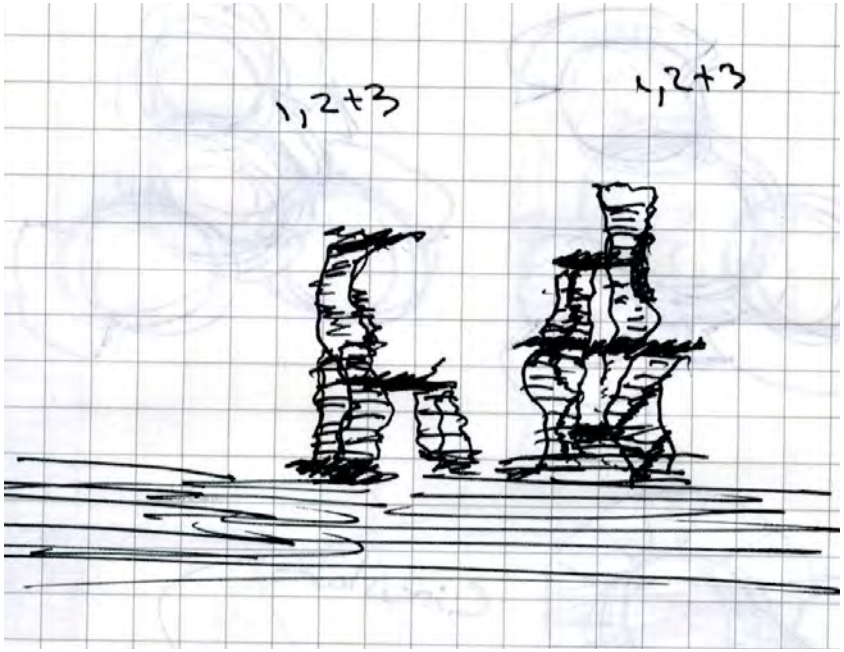


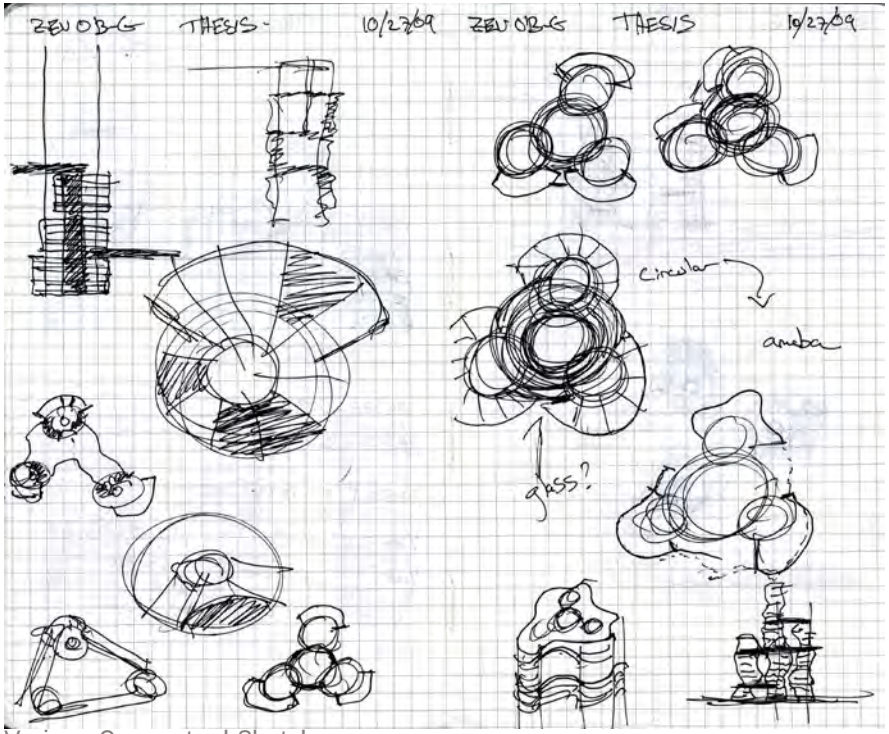
Various Conceptual Sketches

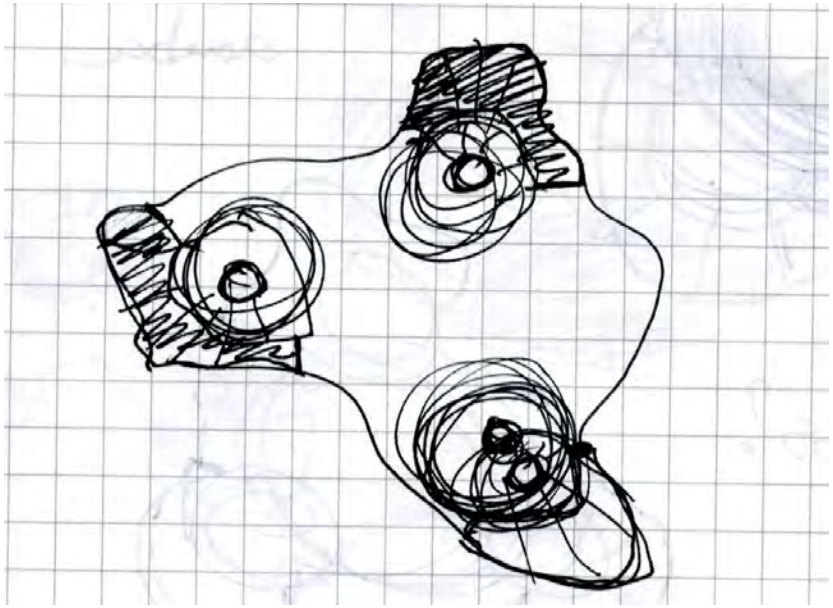
Sketching New Thoughts



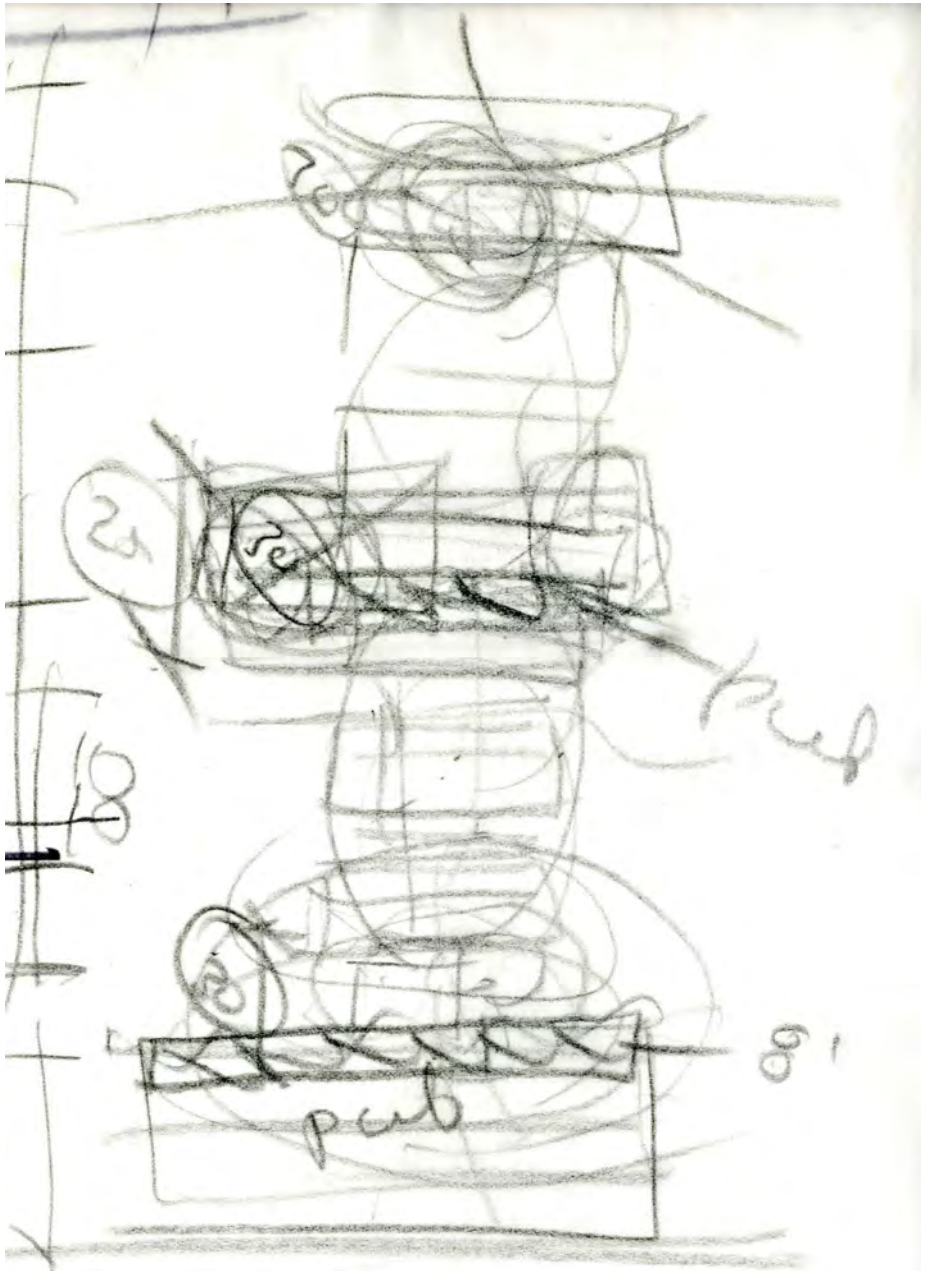


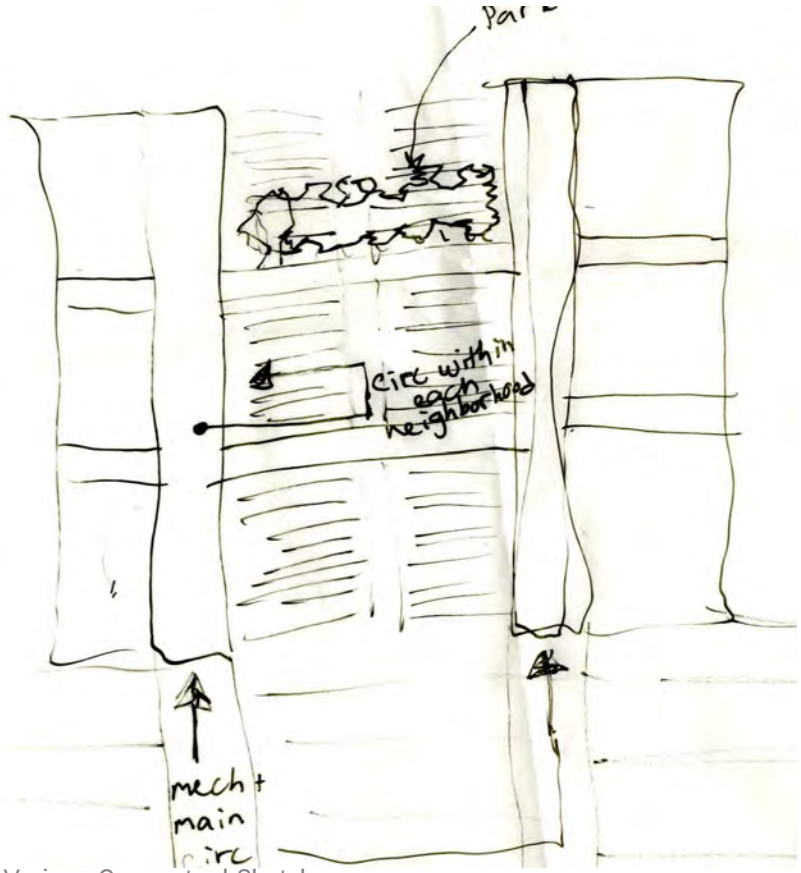






Various Conceptual Sketches

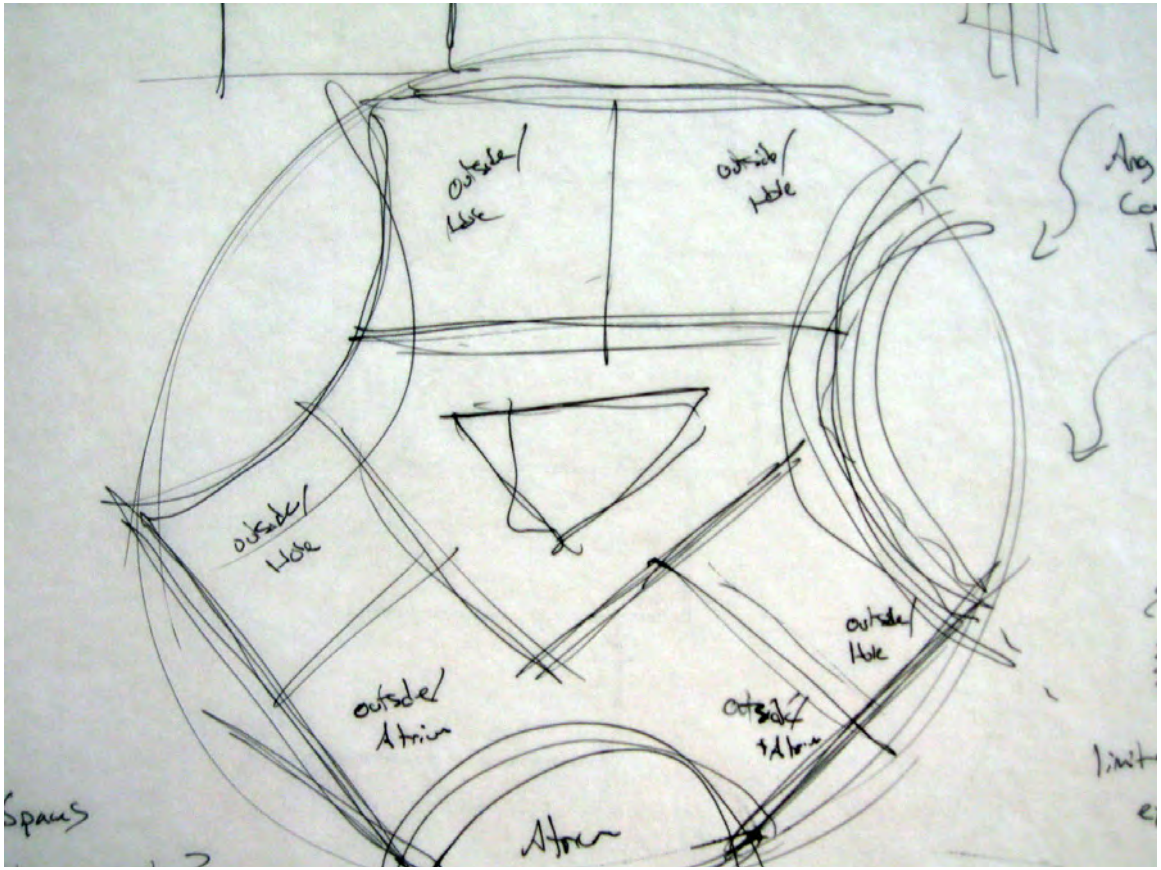


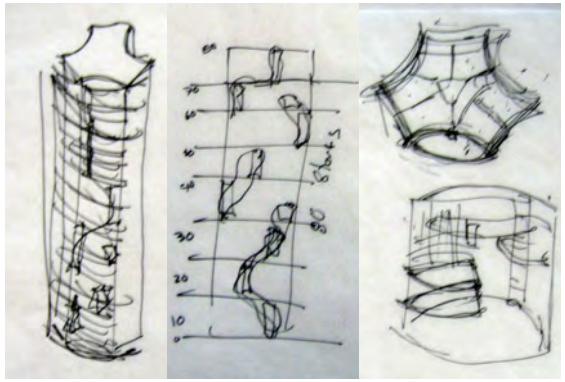


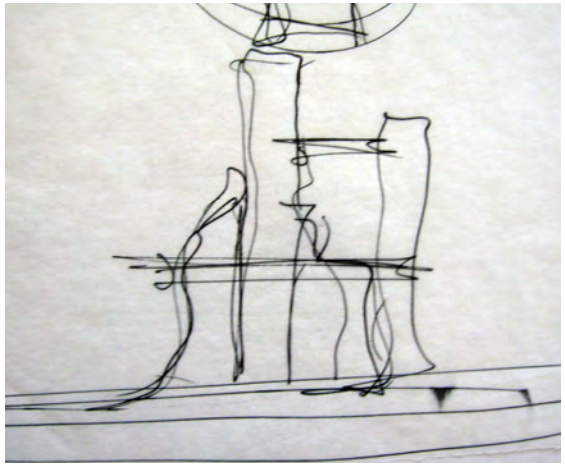
Various Conceptual Sketches

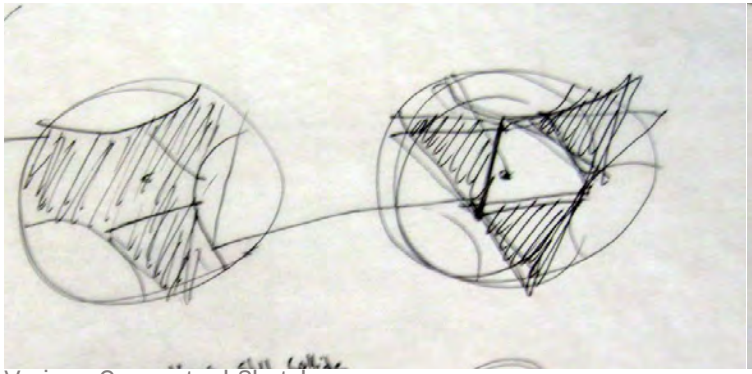
Ideas Change

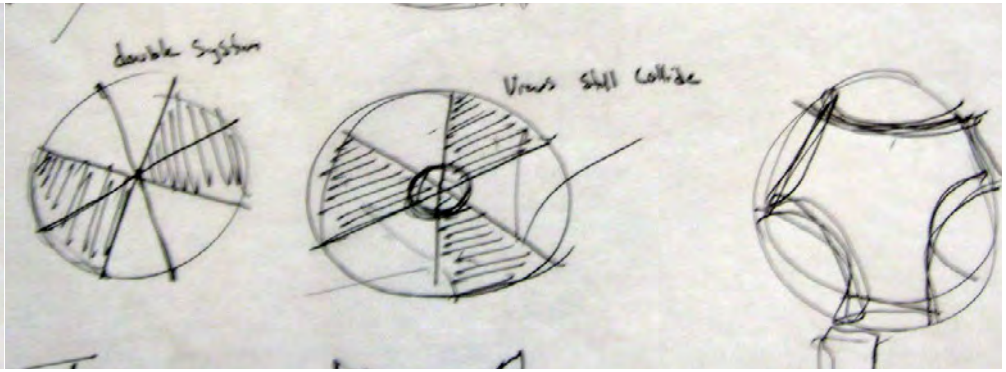
As I progressed through some of my sketches, I found that I was consistently envisioning a rounded building. I also was trying to think of the comments that I had gotten from the Mid-Crit, and most of them were about limiting the size of the building. I now began to think of making a significantly smaller tower, but including several of them together, which might work as a whole, creating more interconnections, and a much more sophisticated dynamic.











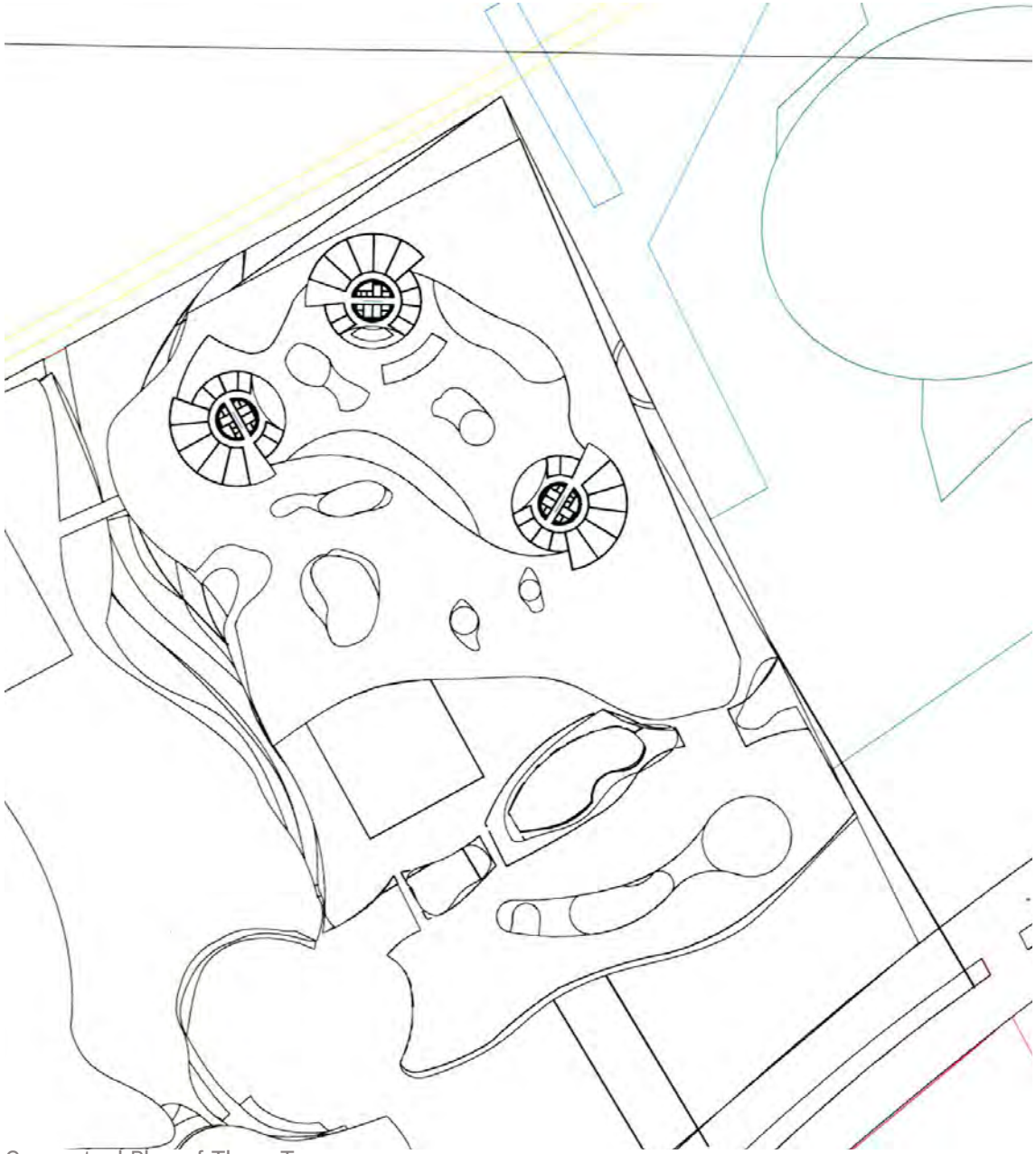
Various Conceptual Sketches



Working Models

The New Scheme

Working Models

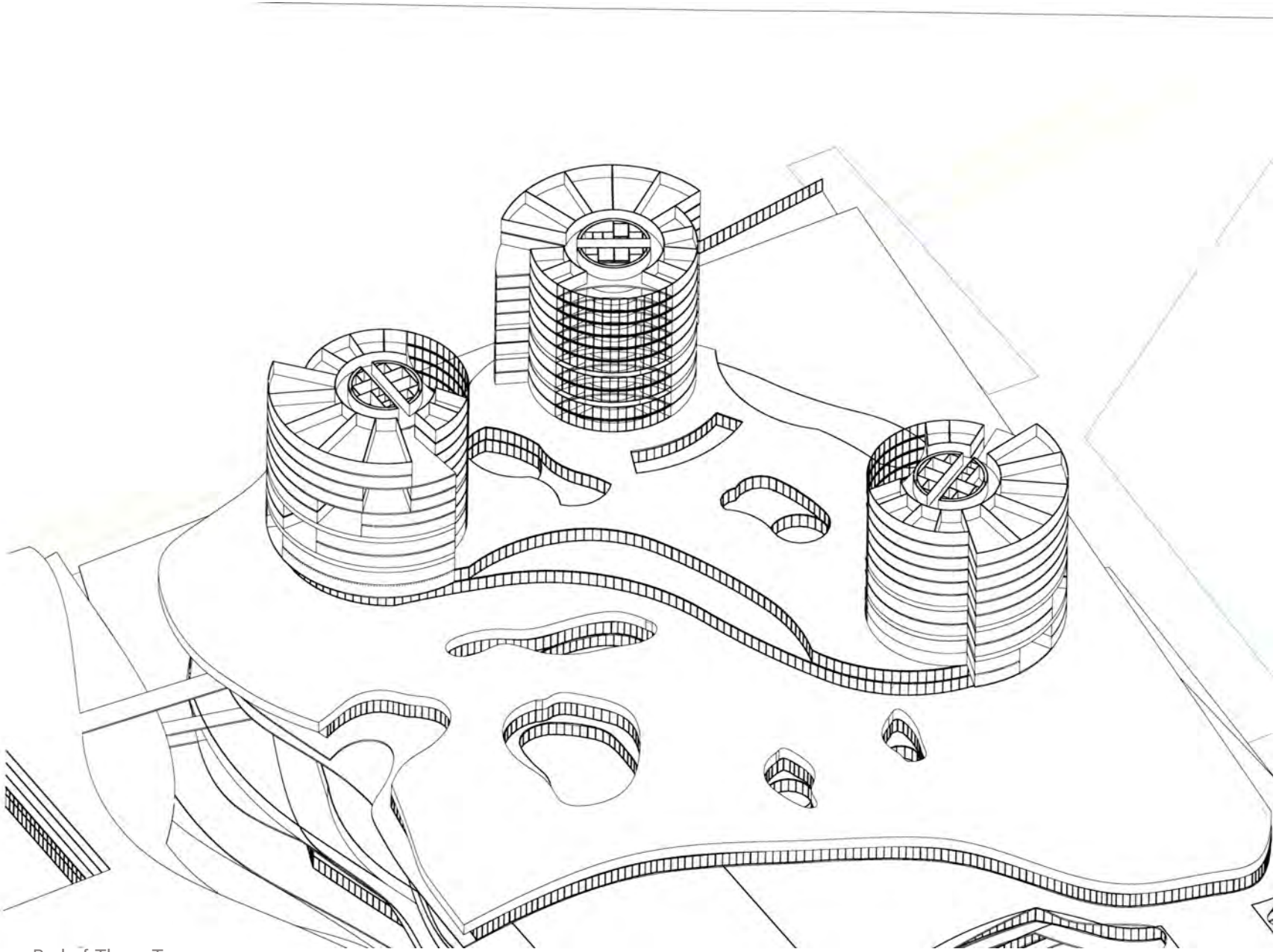


Conceptual Plan of Three Towers

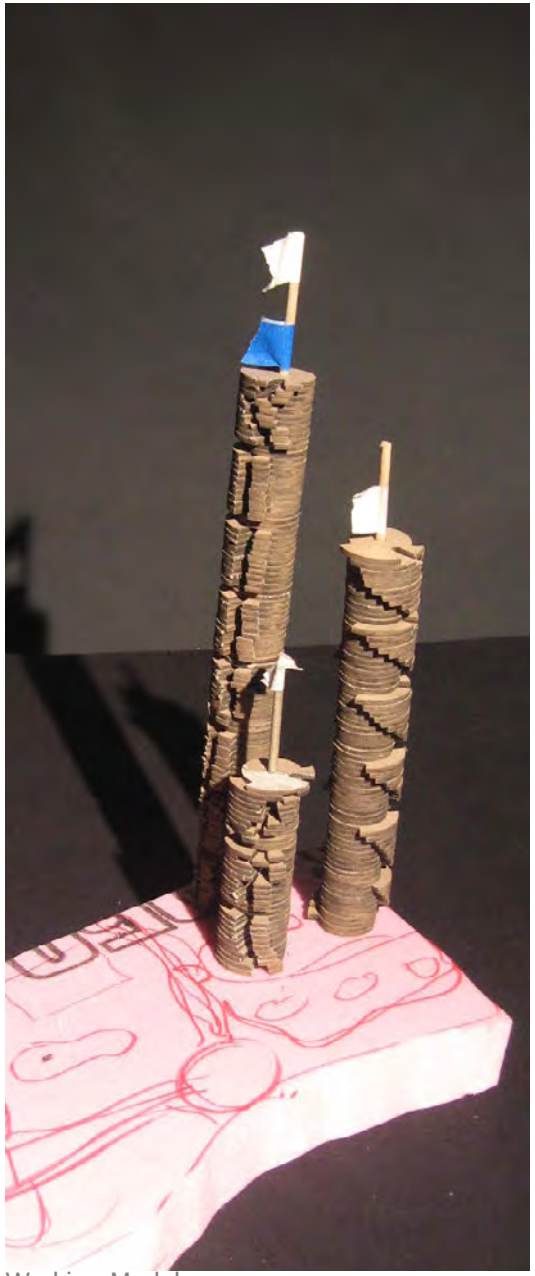
Circles

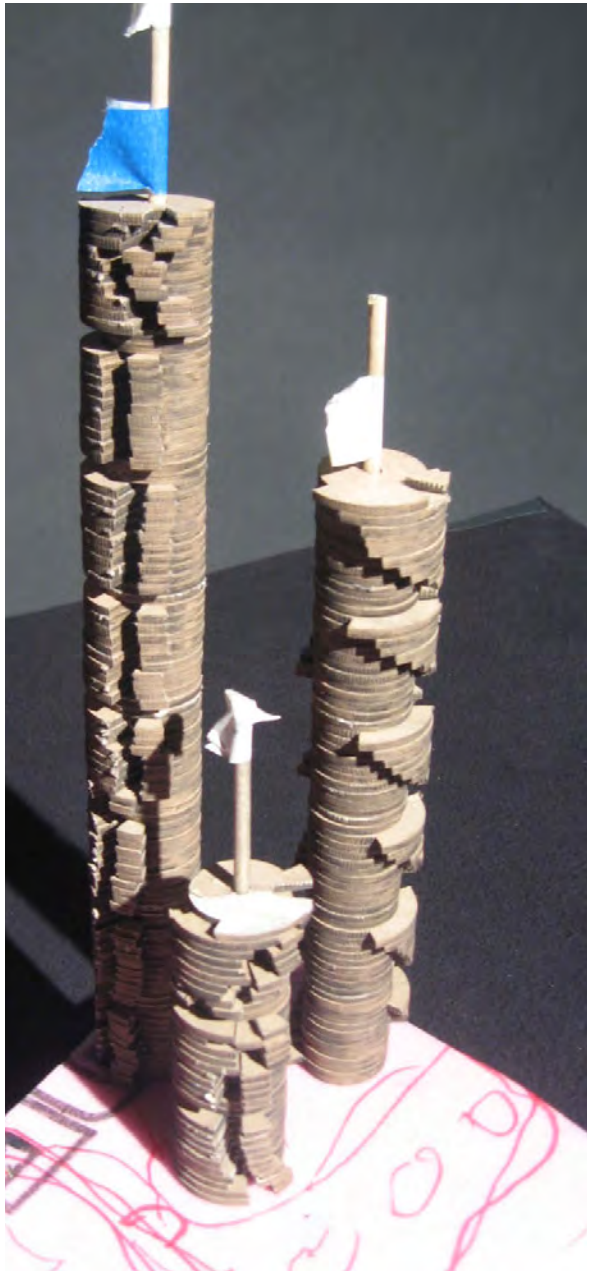
In starting to change my design approach, I looked at alternative forms for my tower. I had established that I wanted to significantly decrease the overall size of the tower. However, this would decrease the number of units, and therefore, the number of people who could reside in the tower. As a result, I would require more towers to yield the similar statistics of units and resident population. The end solution was then, to create several smaller towers which integrated within one another to create a connectivity on a grander scale, however, maintain the singularity of a small and more elegant tower.

When sketching ideas and thinking of optimizing all aspects of tower design, I started to lean towards a circular form. This instantly felt like it was a good solution to many of my issues which I had discovered in my mid-crit scheme. With a circular organization, zero cross-views would occur because every piece of the exterior would all be looking in different directions radially. This would also allow for an optimal structural system, as there would be no corners, and odd shapes or juts which I would have to account for, and I could establish an extremely strong core, which would be structurally robust, reducing any exterior structural elements. Ergo- this would allow for significantly reduced existence of structure around the circumference and reduce any possibility of line-of-sight infractions as well as wall placement limitations. Furthermore, the introduction of several towers, interacting as one, allows for greater variation, and added dynamics to the project.



Lower Pod of Three Towers



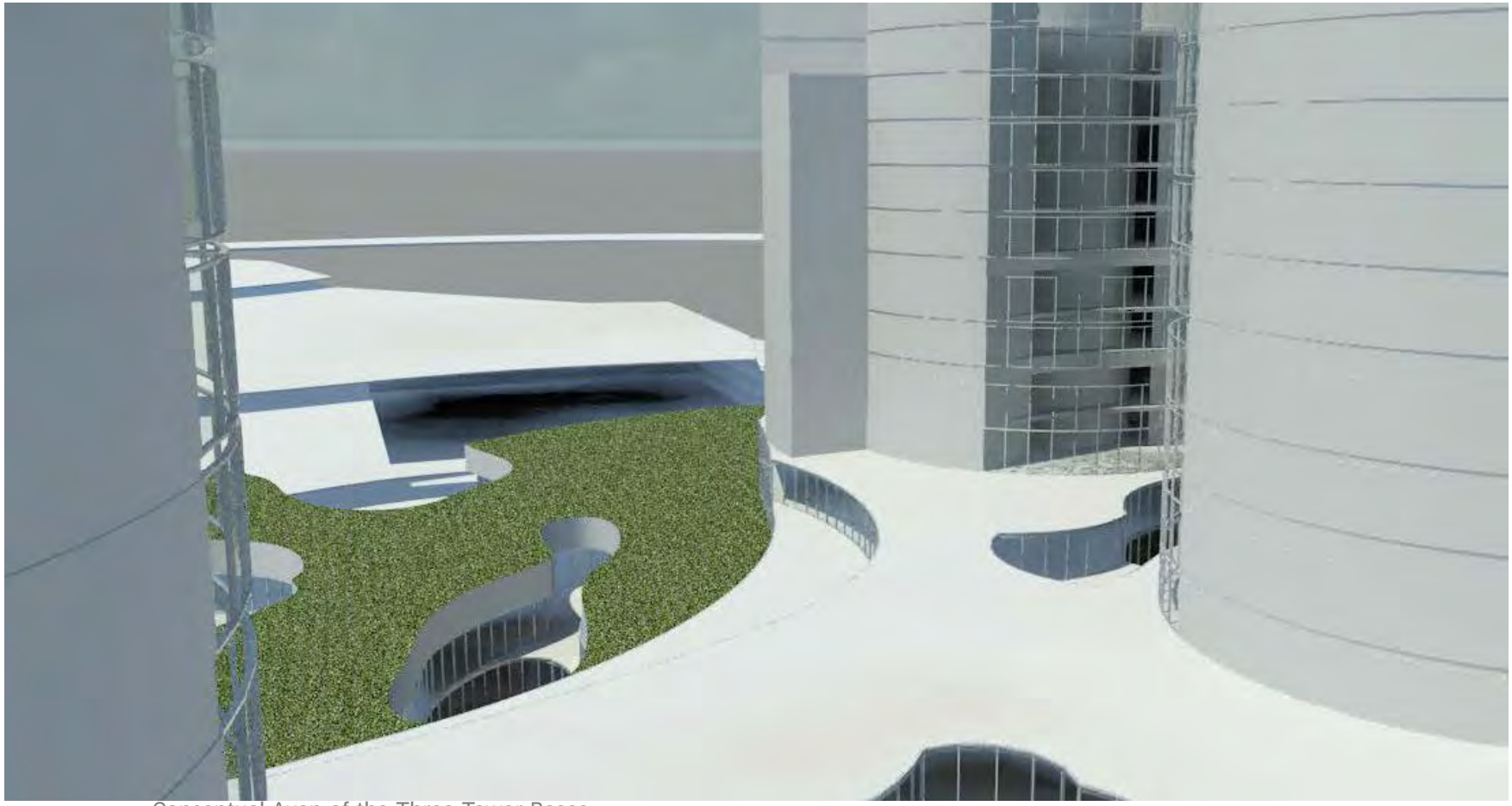


Working Models

Working Models

Towers

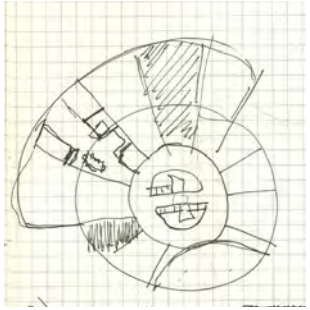
Once I established a tentative progression and direction to go with my towers, I was able produce a series of models to further determine what I found to be the most aesthetically pleasing. With slight but intended variation, I was able to mass-produce hundreds of floor plates to scale, and create a series of pods which I could manipulate. Once I figured what method I wanted to go with, I was able to repeat it, and make more specific changes within that mind-set. These images show some of the manipulations I was toying with, as well as some of the patterns that I tried out. I was also able to determine some of the height relationships that I liked, as well as spacial interrelationships between all of the three towers. By looking at the towers in three dimensions, I was able to fully understand space and mass ratios from one tower to the other, as well as in relation with the lower plinth. Additionally, shadow-cast studies and sun diagrams can be produced with extreme ease. As each tower can have two or three different iterations, I can interchange several of these until I find the solution that I want.



Conceptual Axon of the Three Tower Bases

Circles

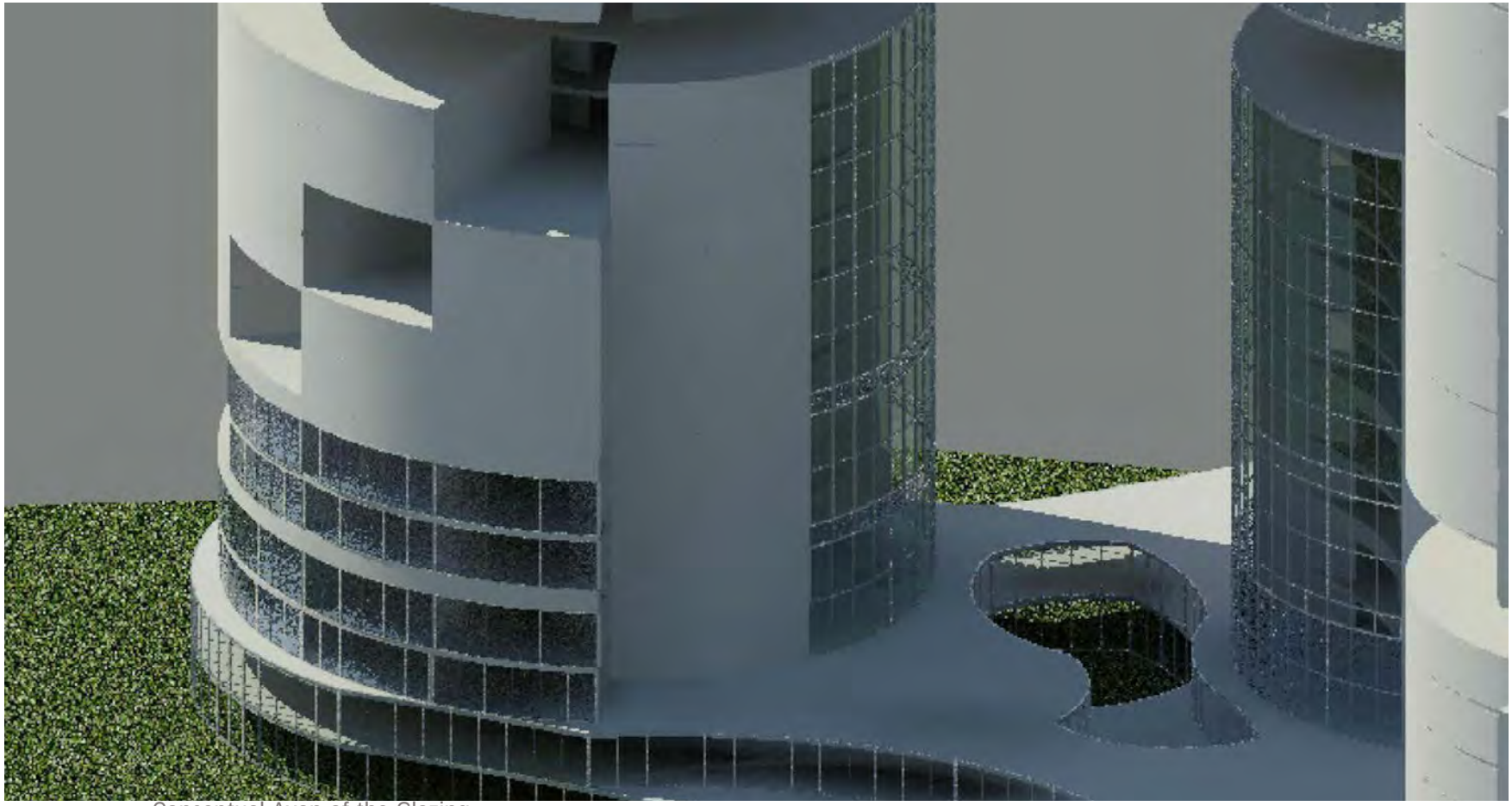
The basis of this tower design starts from a circle. With three towers, each being circular, the parts which face towards each other will become the public and atrium space. This is proposed to interrelate each tower to one-another as well as eliminate any cross-views from private space of one tower to the next. By keeping all of the private units to the outside parameter of the circle, each unit looks outwards, and does not impede upon any other unit in any other tower. An additional aspect of this scheme is to minimize the overall size of each tower. By giving the tower essentially two main radii, the public and community space will have ample room to exist, while the rear, and residential, will expand to fulfill the size requirements of multiple units. This also gives the spaces a sense of hierarchy, as well as play and manipulation within visual and programmatically differences in spacial use.



Conceptual Axon of the Tower Gardens and Plinth

Circles

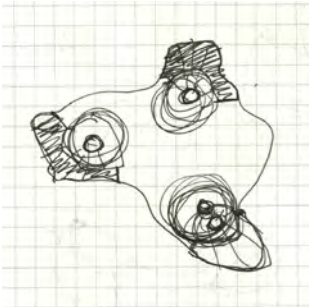
The towers and the residential sequence of spaces occurs from the bottom level all the way to the top of each tower. However, I wanted to differentiate a special space for residents in relation to perhaps other plinth users. While the top level of the plinth is intended to be an open park, the smaller residential plinth, in which the towers sit, is intended to be spaces for gardens and farming for not only the business which participate within the housing communities, but also the residents themselves. Upon the top of this smaller plinth, there exists a semi-public space where primarily residential owners, or friends of them, will be using this space. This looks downwards towards the rest of the park, which, in a series of step-like formations, recedes downwards to the street level. The towers themselves express the programmatically differences by having different facade treatments from the frontal atrium spaces, to the private unit spaces.



Conceptual Axon of the Glazing

Circles

As I start to play with facade treatments, I want to be sure to differentiate between public atrium spaces, and those of private unit spaces. Although I want a significant amount of glazing on each, I want to be able to visually depict the differences without depending on changes in form and shape to give away the programmatically move from one space to the other. In this case, I play with color tints and visual glass effects which change how the glazing appears.

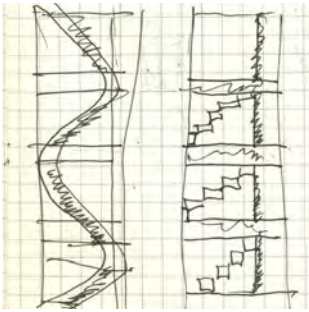


As the three individual towers face each other, I also wanted to play with the direction in which the are oriented or the language in which each one promotes itself. While at first I had very amoeba-like shapes, I conformed to a circular form which allowed for greater consistency. I would now have to denote the differences between towers in other ways.

Conceptual Axon of Two Pods with Established Gardens

Circles

While the atrium space consists of a multi-story open space which looks towards the other towers, it also includes gardens, shops, cafe's, sitting areas, and numerous energy harnessing techniques. As for the residential units, they locate on the opposite side. If this were continuous all the way around, it may be a rather daunting face, both internally, and externally. Therefore, I wanted to incorporate the idea of double-story garden spaces which might cascade upwards and downwards as the units rotate. This would break up the otherwise impeding mass of the facade and create an ever changing reality when accessed from within. This being said, I did not want to complicate issues with units and structure by making the openings arbitrary. I wanted them to be consistent, and patterned, but not redundant. Therefore, they maintain a double-height as they rotate around the tower, but then reverse as they switch to the pod above.

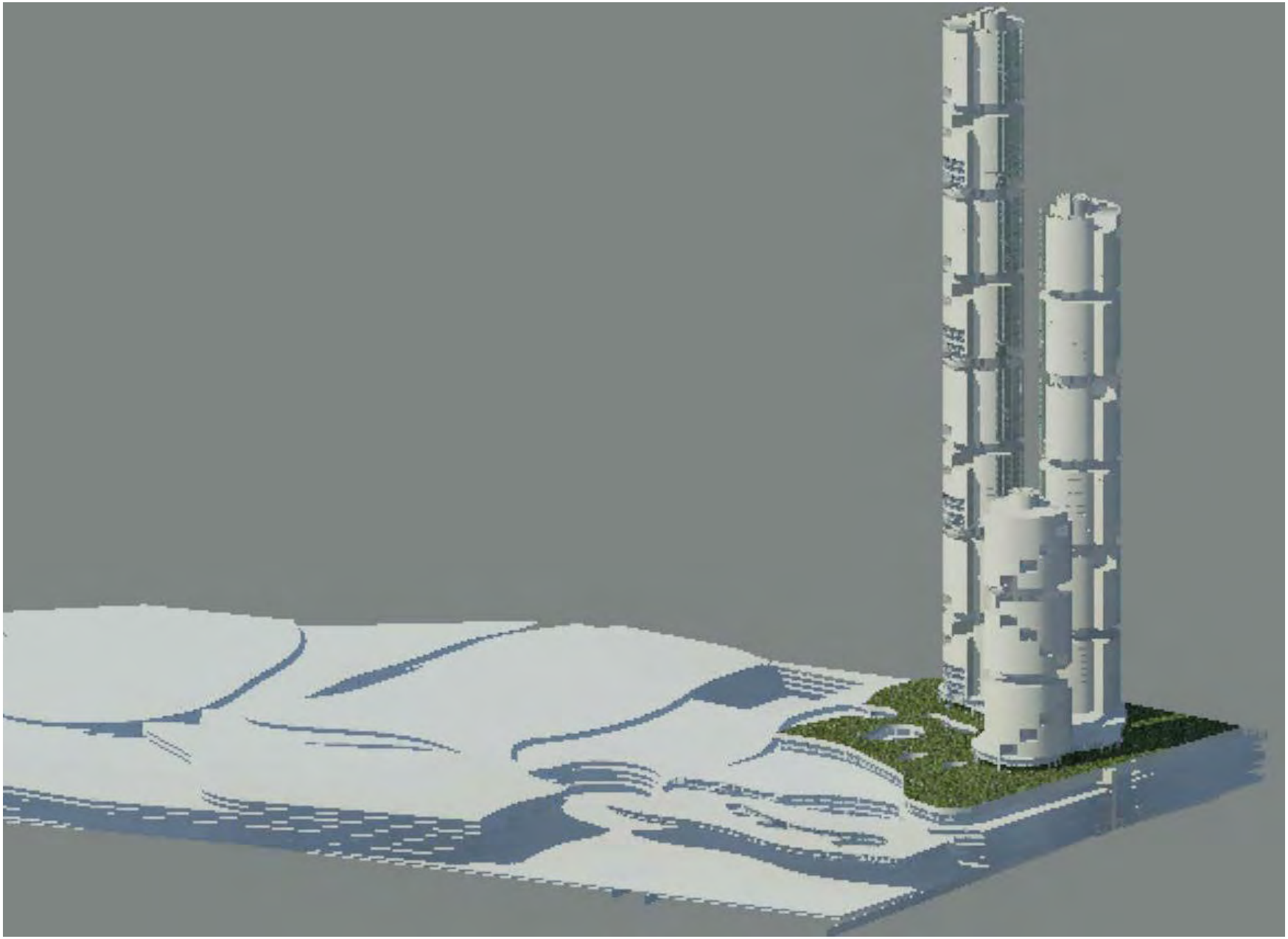


Axon from the Business end of the Plinth

Making it Work

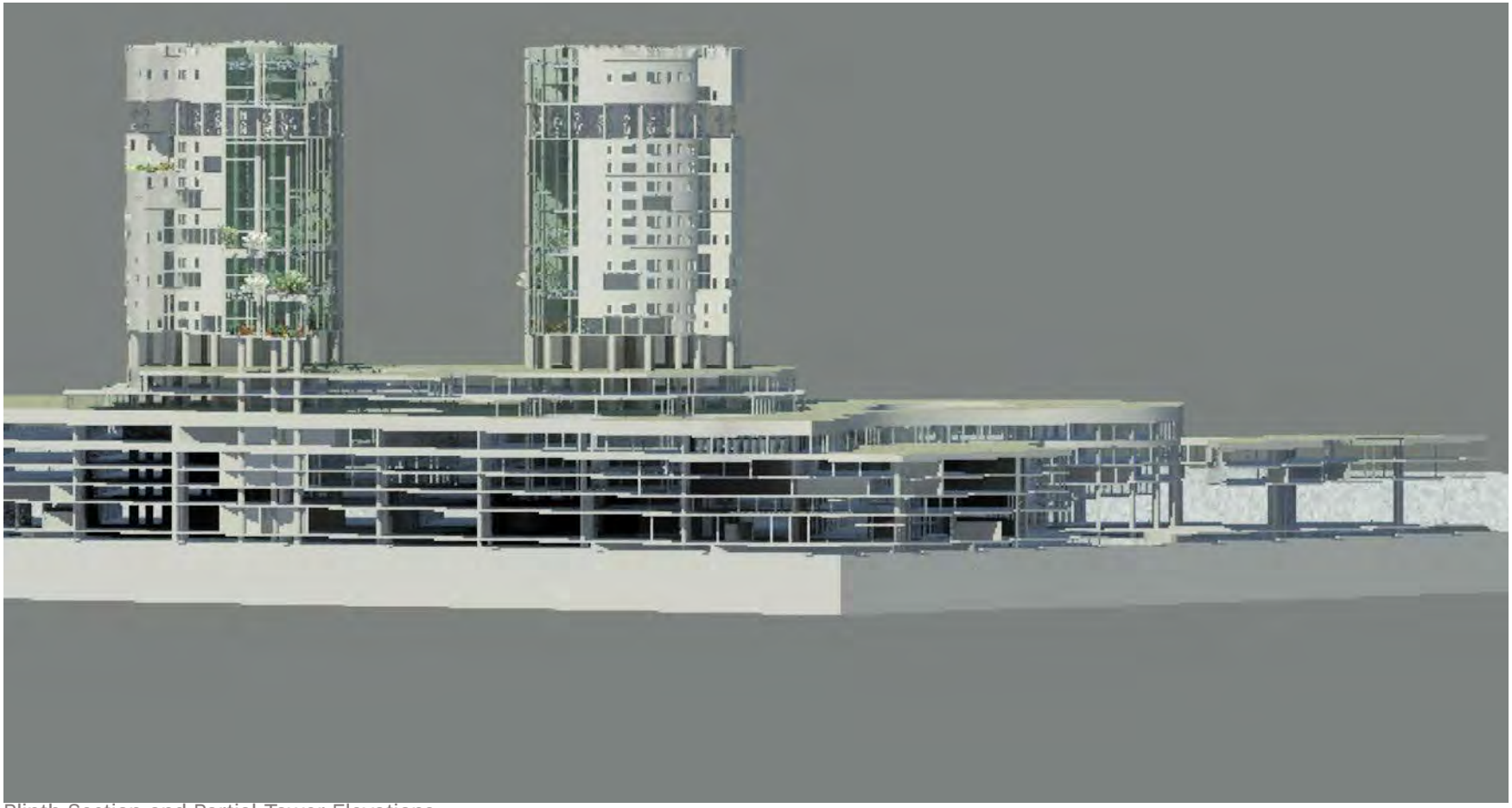
Although I was pretty certain I had figured out the correct premise for the design, there was still a significant amount of cleaning up and refinement to do before I could move forward and add complexity and detail. While I constantly worked and re-worked many of my ideas which I wanted to incorporate within the design, I would always come back to the point at which I needed to tweak the big moves. At this point, the towers still felt a little arbitrary in their relationship to one-another. While I enjoyed the fact that they had the ability to stand as their own, I also liked how they also felt like a single entity. This being said, there were still several logistical issues with their positioning. If I indeed wanted them to literally connect to each other at different points, then they would have to be closer. Otherwise their connections might become so massive and take away from the notion of the towers themselves.

As far as differentiating between the individual towers, I had decided to make them different heights. At this point, I had established the tallest at 8 pods (80 stories), the middle tower at 6 pods (60 stories) and the lowest at 3 pods (30 stories). This would eventually change. How they would actually connect to one-another and where this might happen, was still not determined. As each tower now had a culminating "top" to it, I now had 3 possibilities for specialize event spaces/suites/decks/restaurants which could be occupied. Ideally, the very top would be reserved for a restaurant, the middle, for a bar or club, and "hall", and the lower, as a garden or recreational space.



Aerial Axon of the Entire Scheme

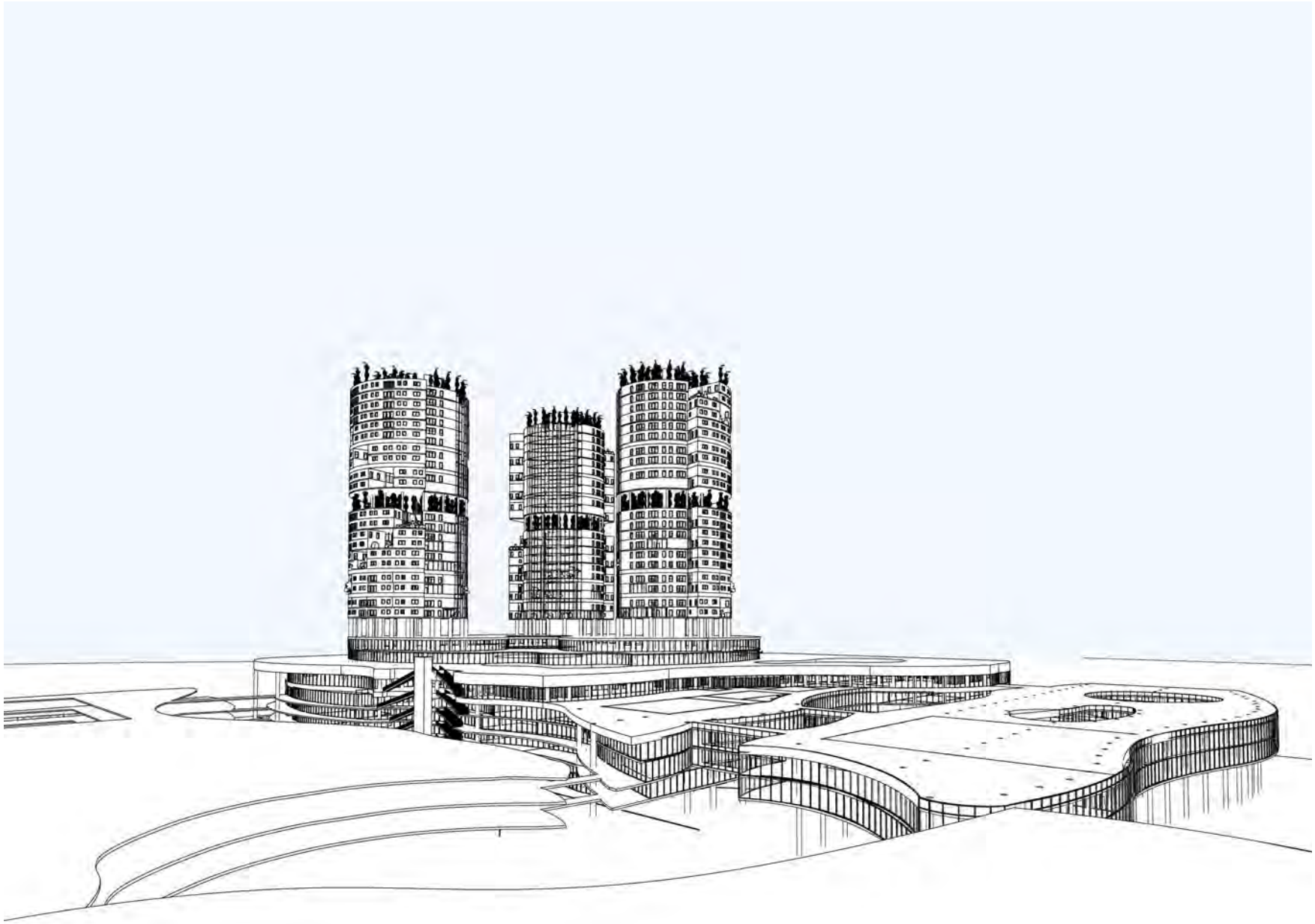
Internal Plinth Perspective Towards Towers



Plinth Section and Partial Tower Elevations

Refining Decisions

As the towers change, so does the lower portion of the plinth. What happens both above and below are connected, and therefore directly effect one-another. As one changes, so must the other. In order to produce a seamless project as a whole. As the towers, their entry points, and their overall relation to the lower plinth have changed, the pathways upwards and through the plinth has therefore also changed. Not to mention, that there are now three tower entrances and three cores, and three sets of structure which must run through the plinth below. This must be worked out so that it can function while this goes on. Before I submitted my material to gate, I made a few defining decisions which I would further explore. I chose to articulate the unit facades with smaller and more frequent openings in order to differentiate between that and the large and spansive atrium. Additionally, I lifted each tower so that it sat above the upper plinth in order to open up the top residential public space which looks out over the project, towards the mountains, and downtown.



Perspective of Lower Two Pods

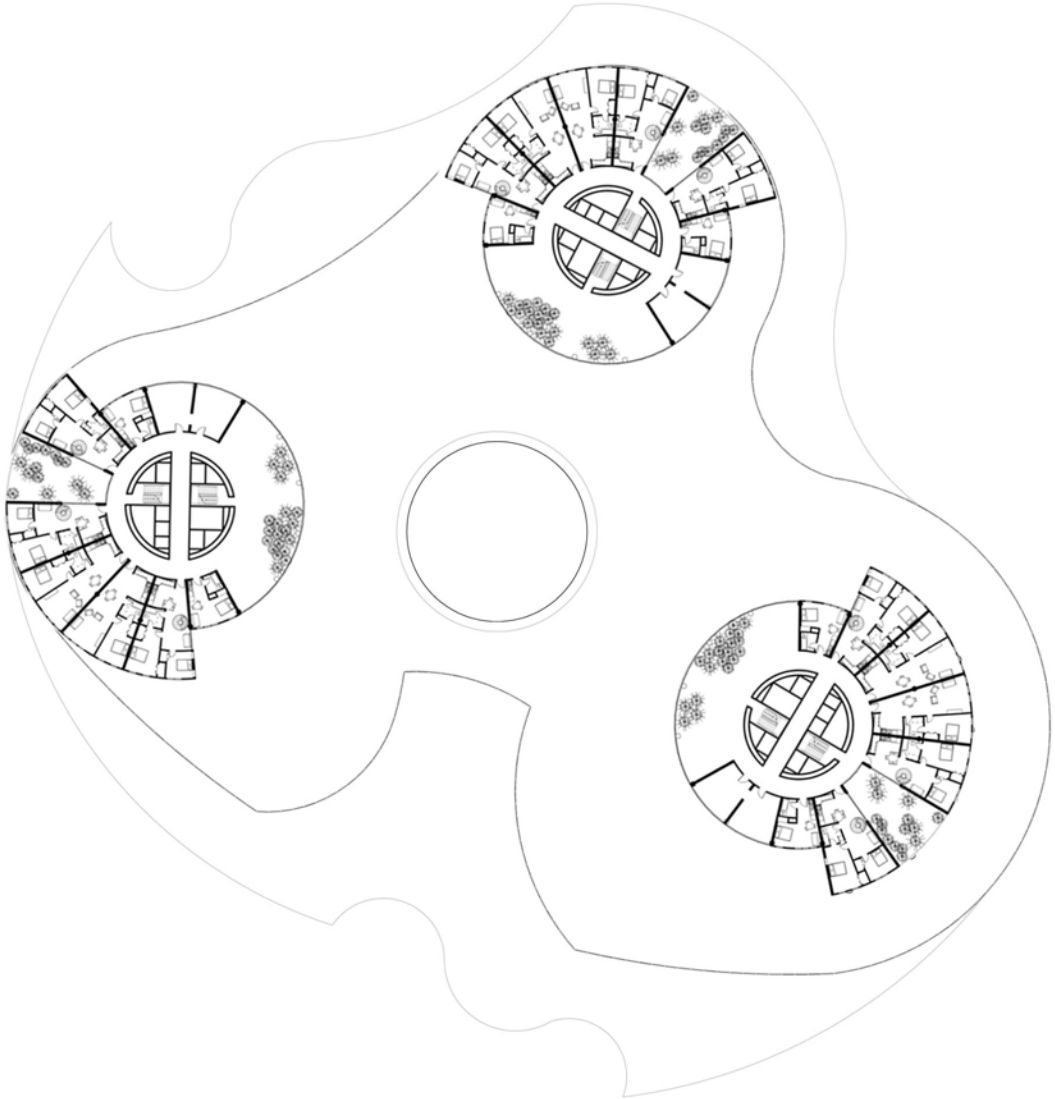
On the Board

Gate Presentation

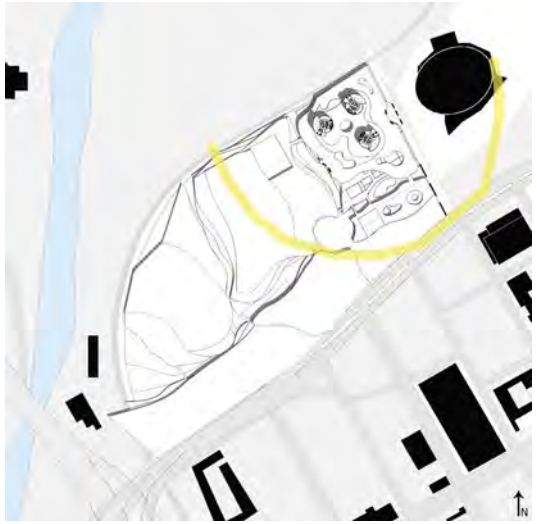
At this point, the towers had been established, along with some particular decisions as to what they would look like. While the atrium was to be large spans of glass throughout the pods, the individual units were to consist of much smaller openings. Additionally, each tower's core was worked out, and established all the way through the plinth and ground levels to the very bottom levels of parking. The Plans of the towers also had been figured out to some certainty. The units, which fan out in wedges radially from the center, coincide with the structure and party wall. Although this would eventually change, there was to be five full units, which varied from 2-5 person units, as well as the possibility of up to four smaller studio units. As the garden spaces shift upwards in plan, the units change as to their arrangement to accommodate for the added open space.

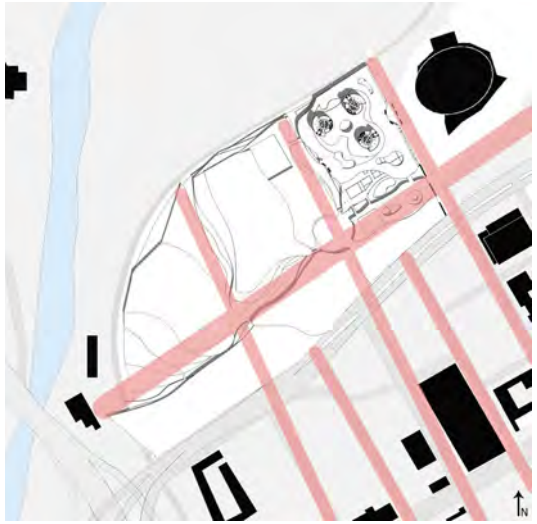
The atrium spaces are open towards the center of the tower cluster which focuses the public space inwards. On the entry level to each pod, there exists garden areas as well as scattered shops and facilities. As the one moves upwards into the pod, the 3rd and 5th levels have mirrored added public garden spaces which allow for further interaction within the large space.

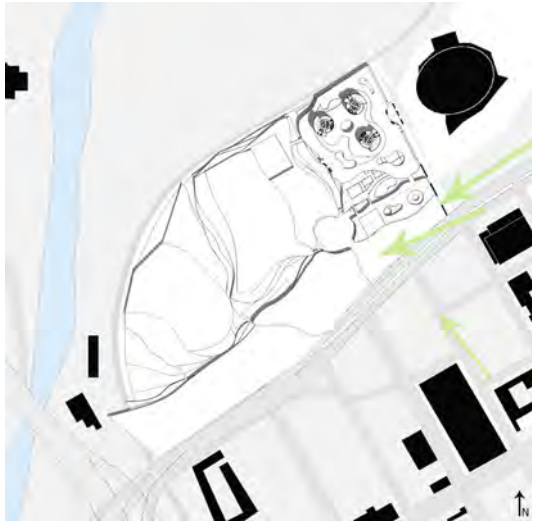
Within the lower plinth, the larger program exists. The spaces are also organized to coincide with the towers above, as well as aid in the progression from the ground level, to the public plinth park above. There also consists a greater connection to pedestrian, vehicular, and light-rail access to the project.

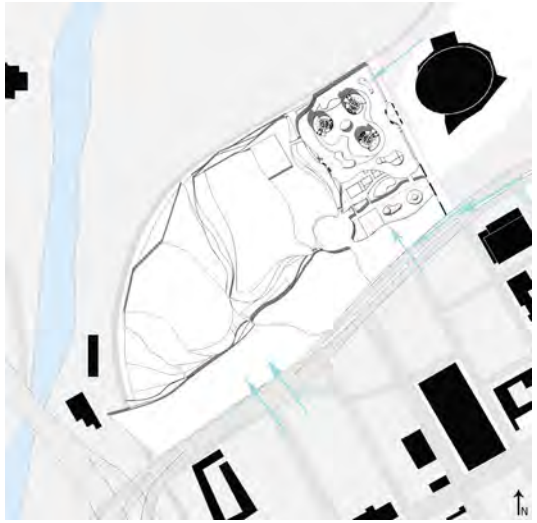


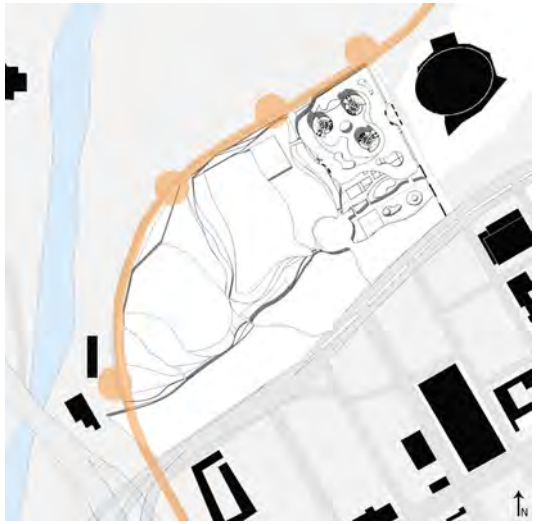
Level 1 Plan of All Three Towers

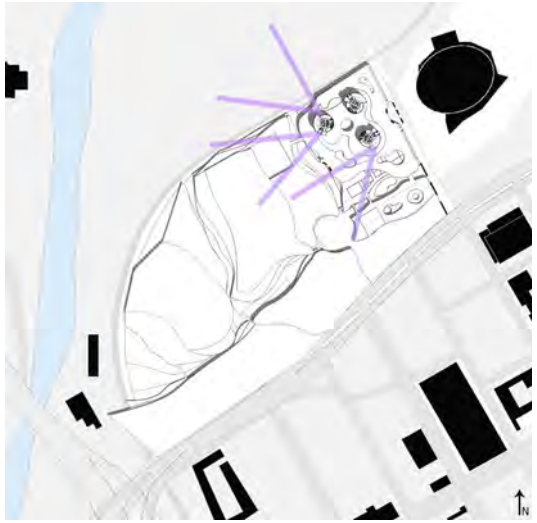

Solar Path

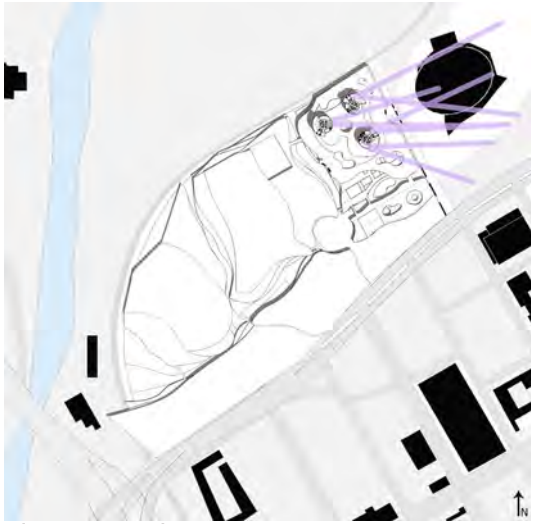

Extension of Urban Grid

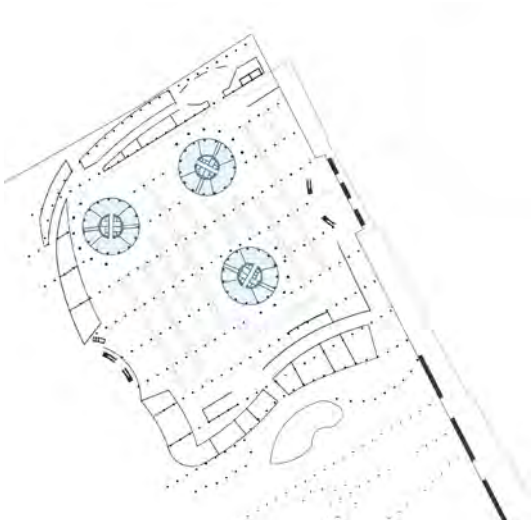

Predominant Pedestrian Traffic

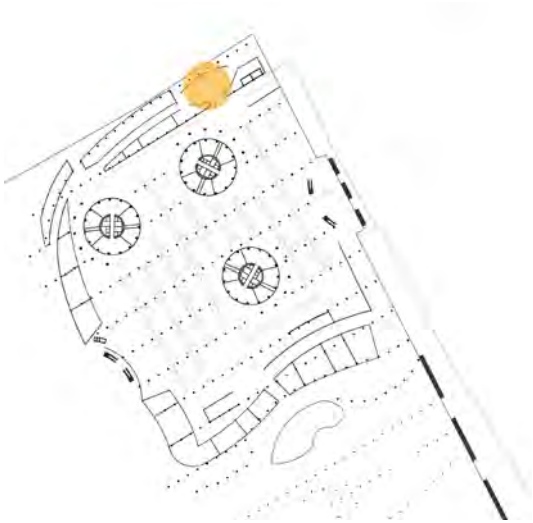

Primary Vehicular Access


Light Rail Stops

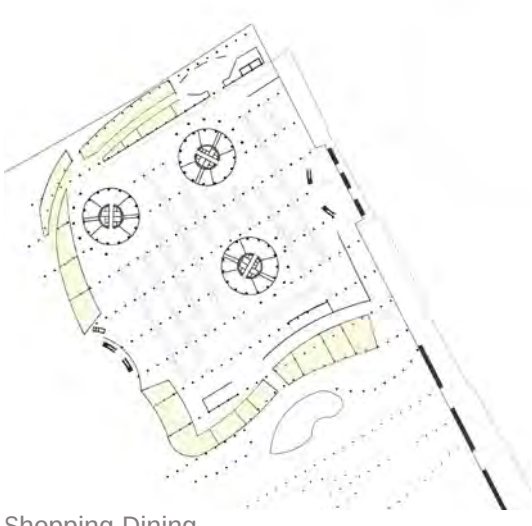

Views towards Mountains

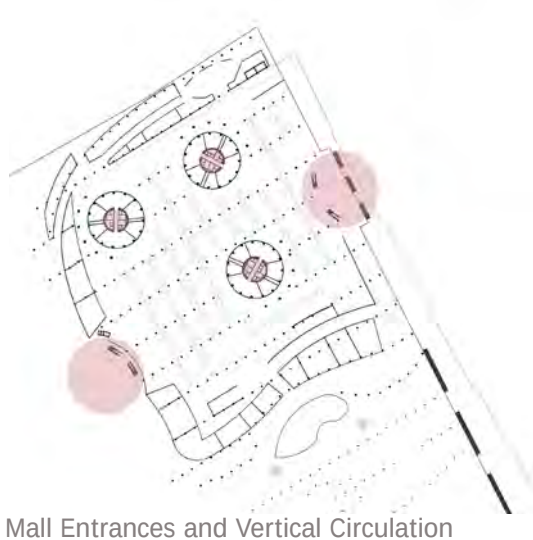

Views Towards Downtown

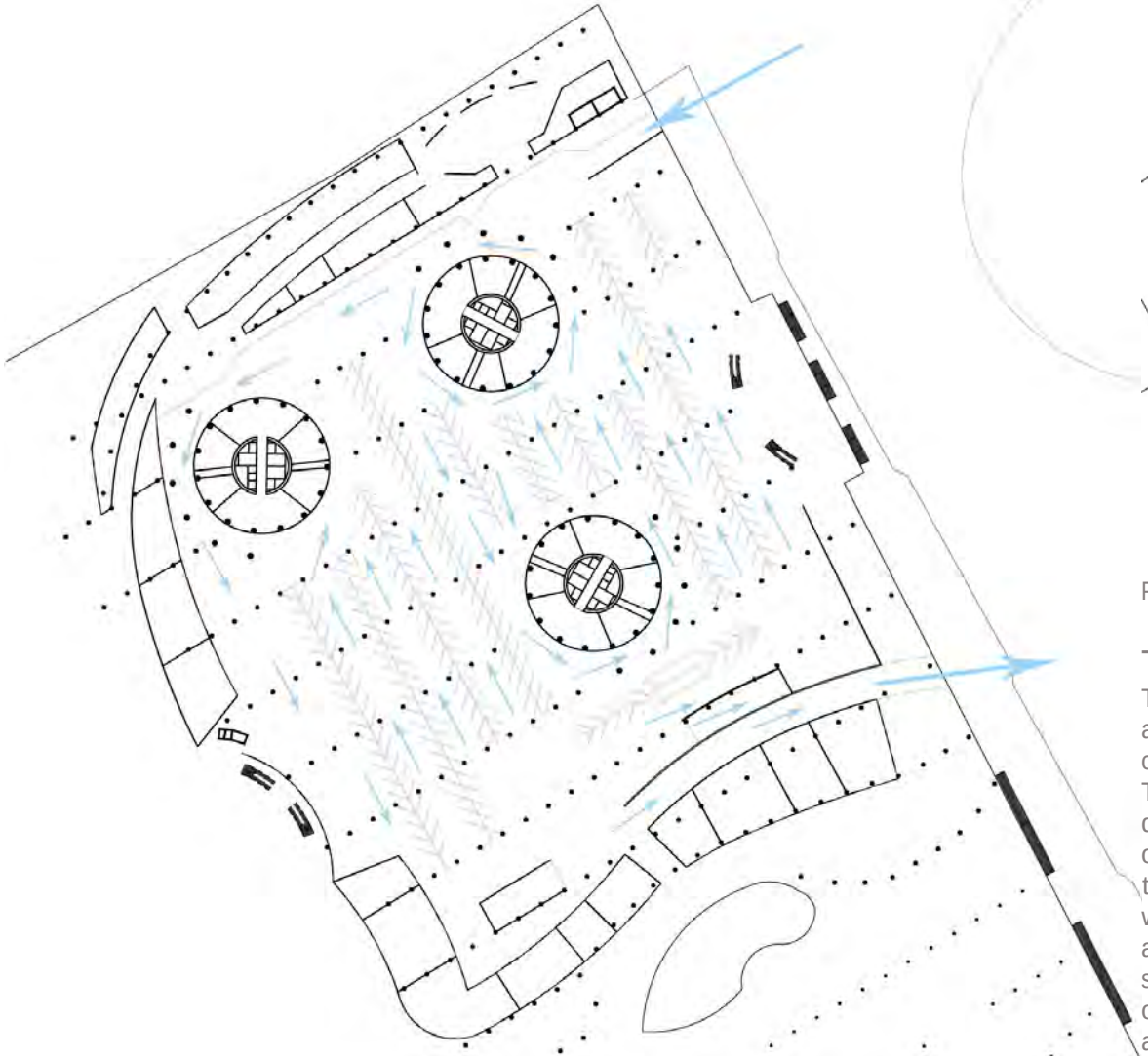

Tower Foundations


Transportation Hub

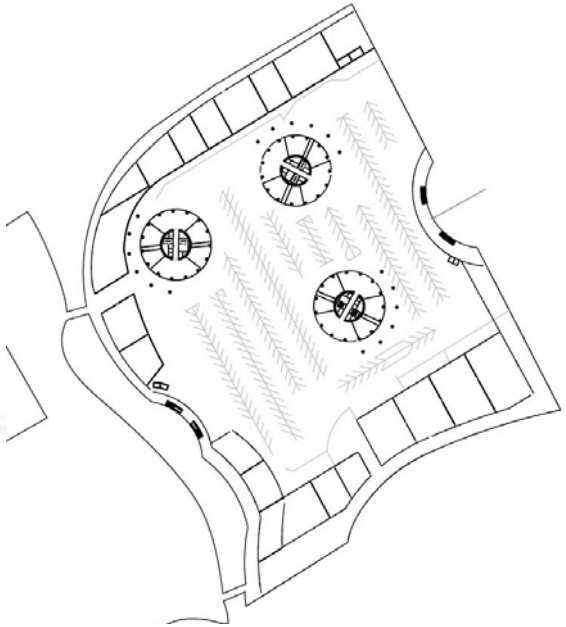

Prominent Wind Direction


Shopping Dining


Mall Entrances and Vertical Circulation



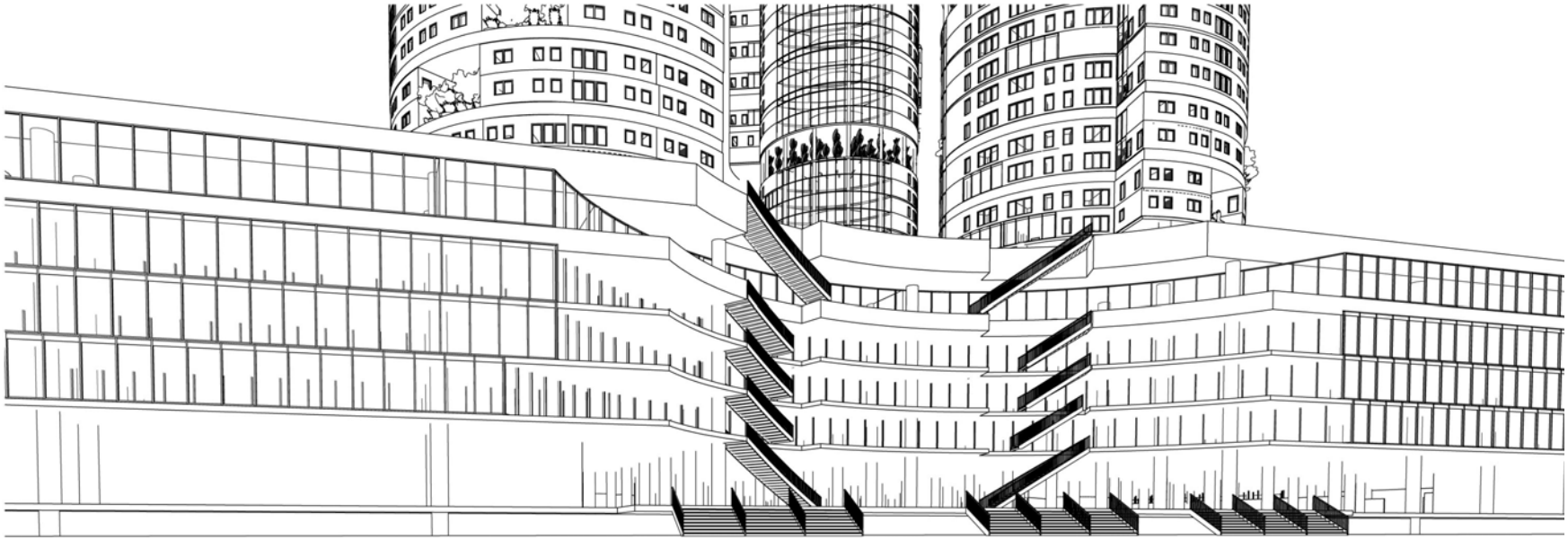
Mall Level Plan



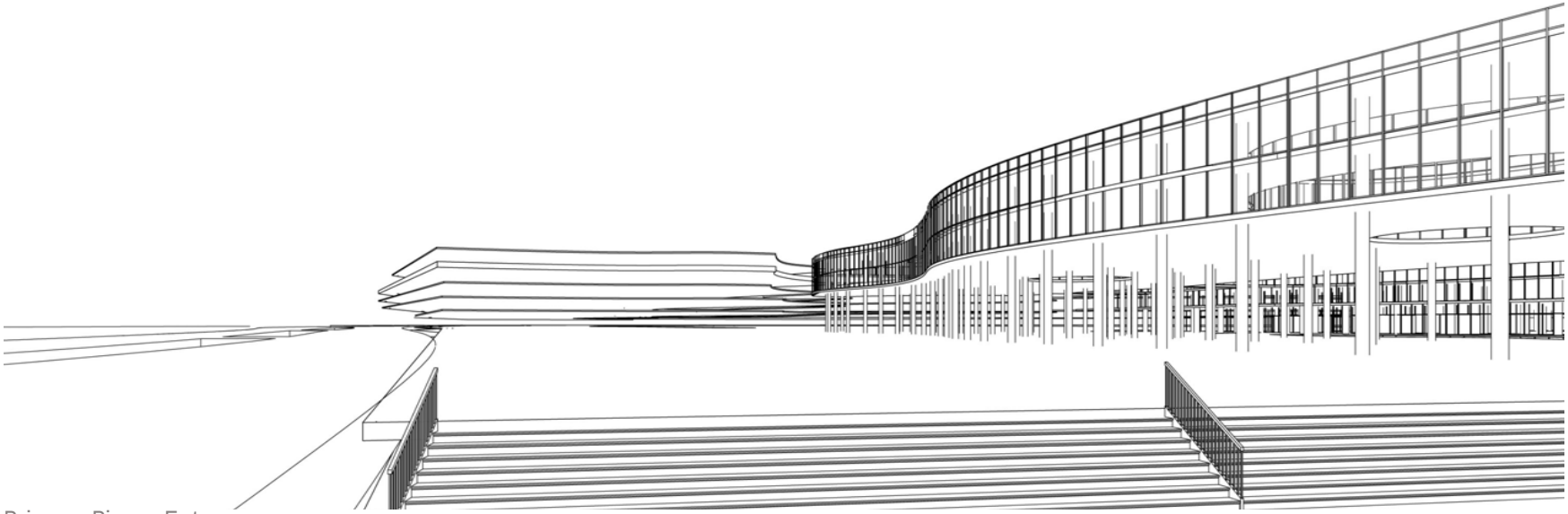
Plinth Level 1 Parking

The Lower Plinth

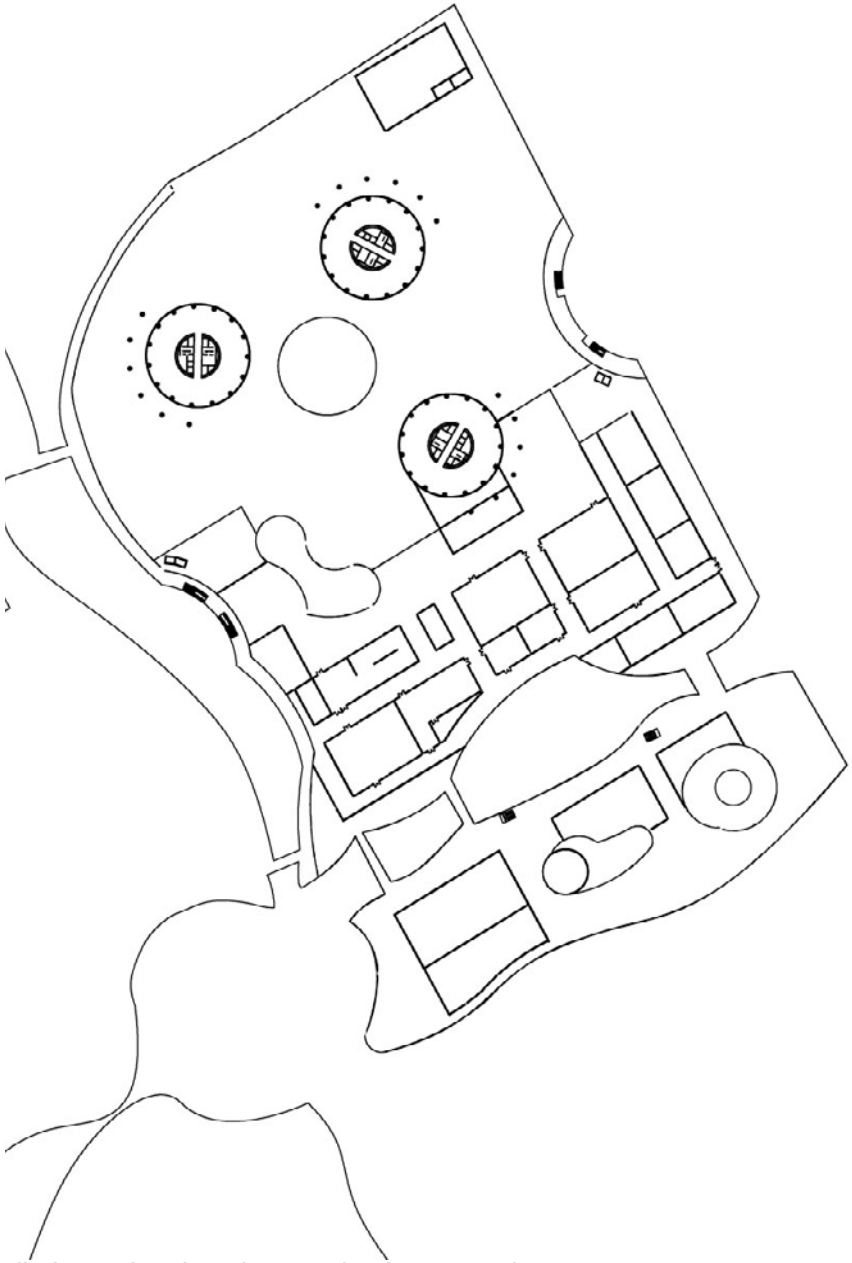
The idea with the lower plinth was to provide a greater social and business and recreational center which surrounds the residencies above. This would also be a destination for other downtown users as they move from the heart of LoDo, back and forth to the site. I wanted the bottom Mall level, especially the portion which is closest to downtown, to be very open and inviting. Therefore, as you approach the site, you are greeted with a massive open plaza on the Southeastern corner of the site. There also exists a large stairway which invites visitors to circulate upwards, as much as inwards, to the site. This is located directly across from the Pepsi center where the Denver Nuggets and Colorado Avalanche play professionally.



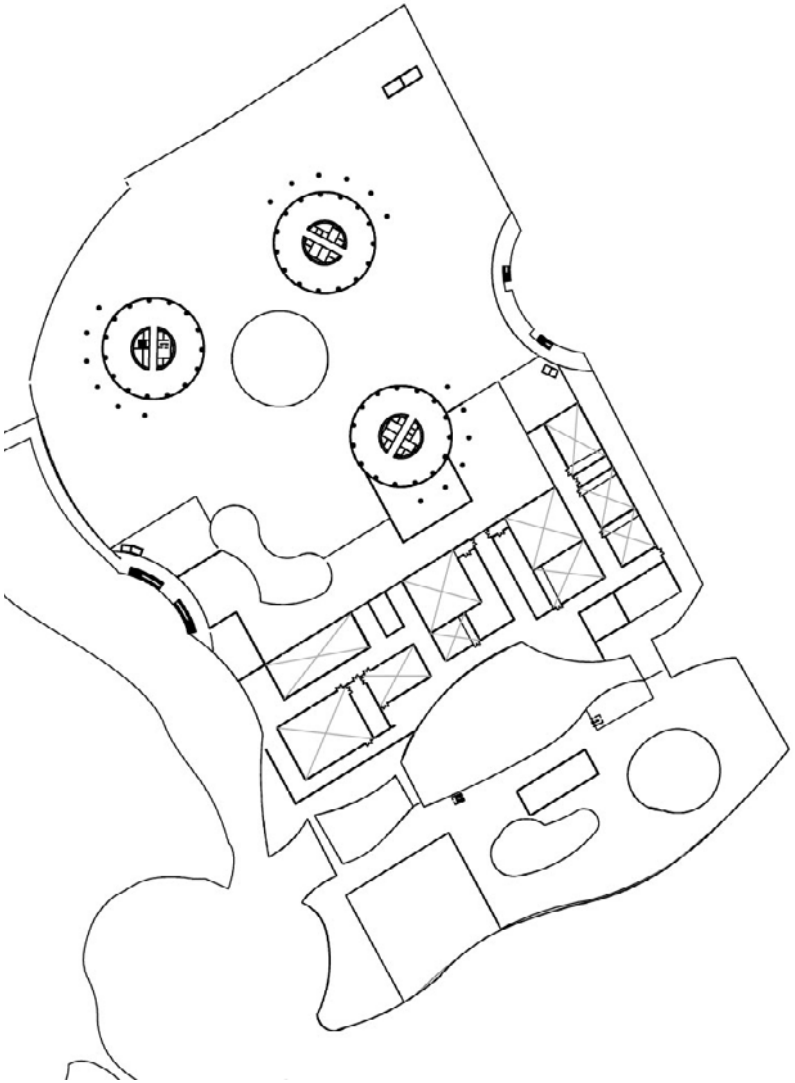
Plinth Entrance from Street Side, Pepsi Center



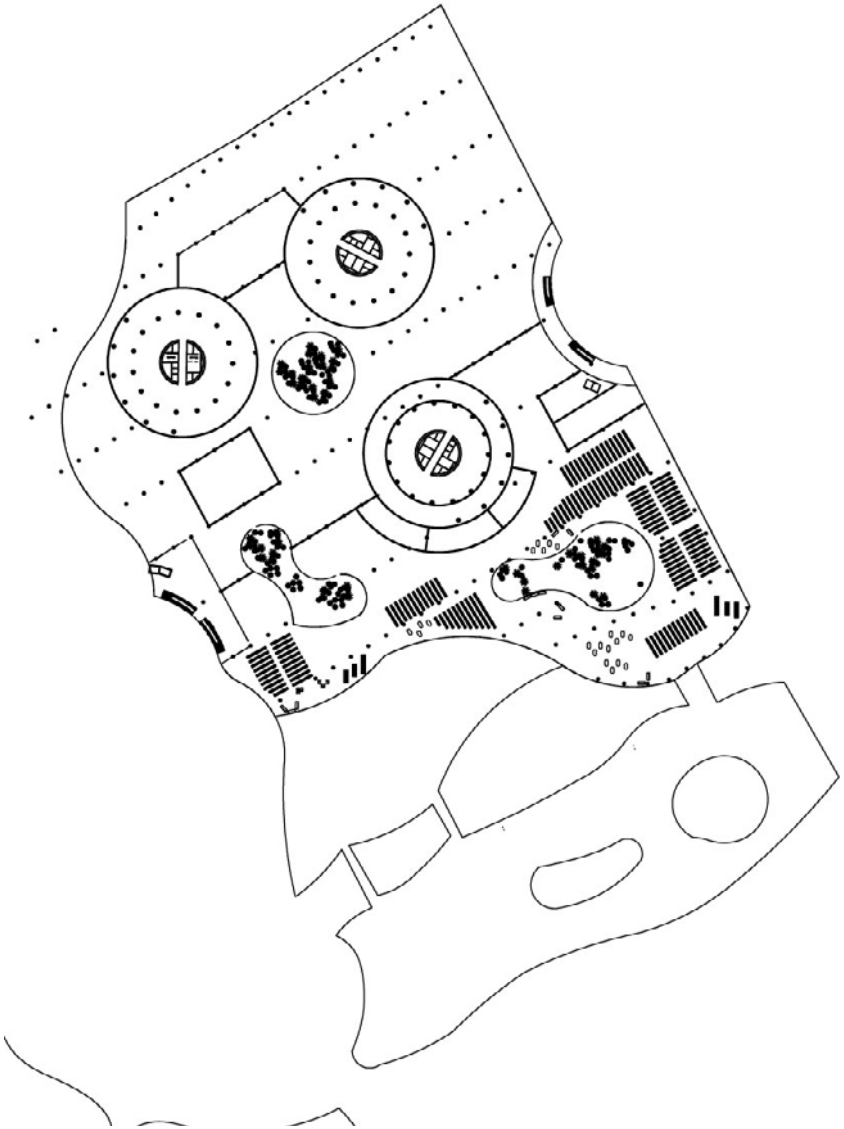
Primary Piazza Entrance



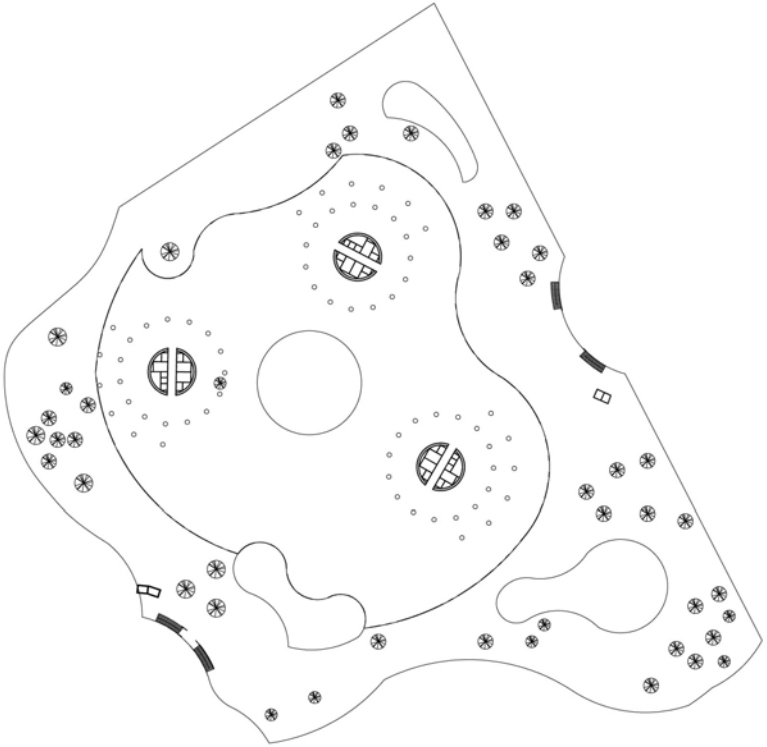
Plinth Level 2 Shopping, Movie Theater, and Gym



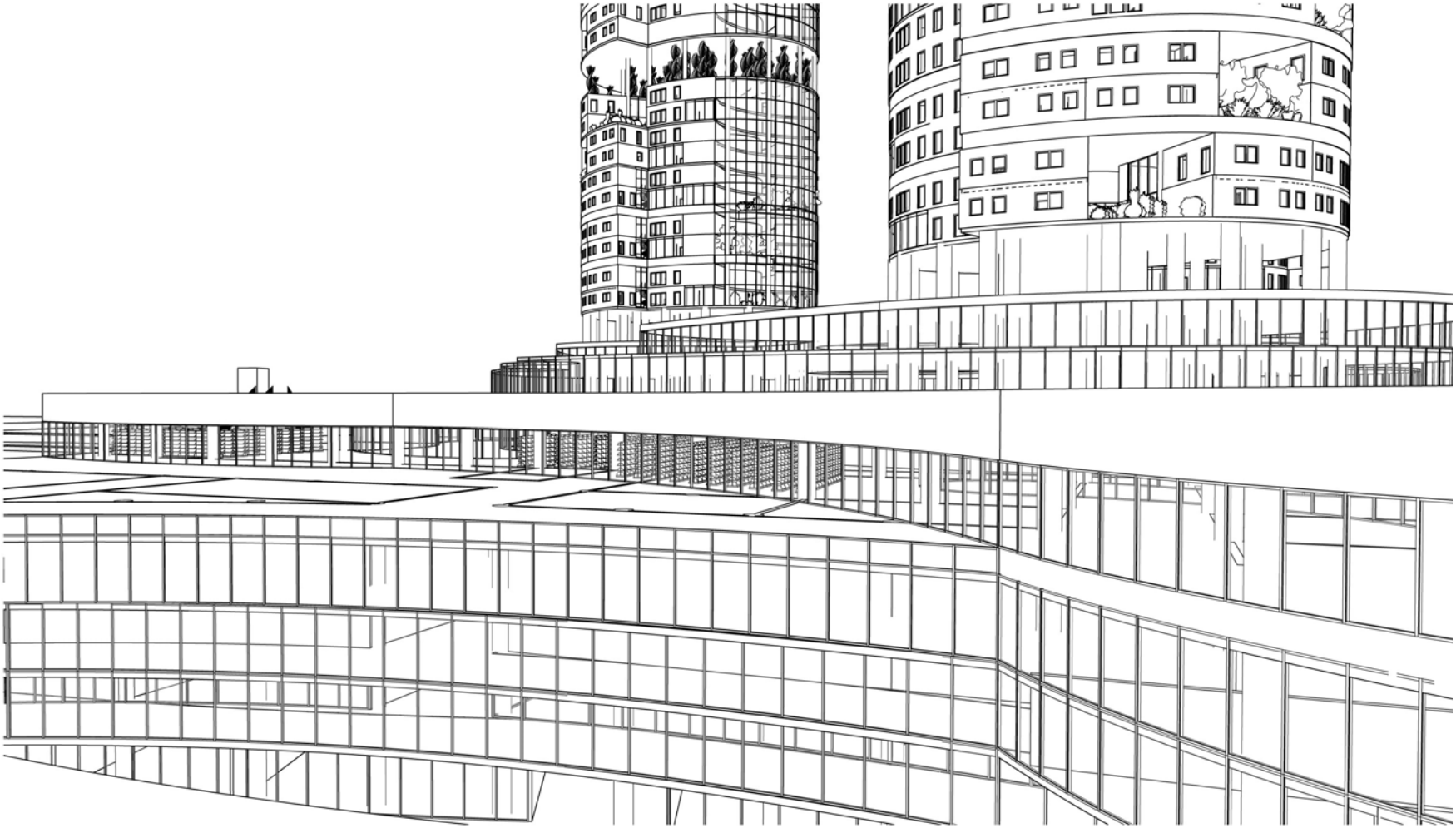
Plinth Level 3 Shopping, Movie Theater, and Gym



Plinth Level 4 School, Library and Garden Deck



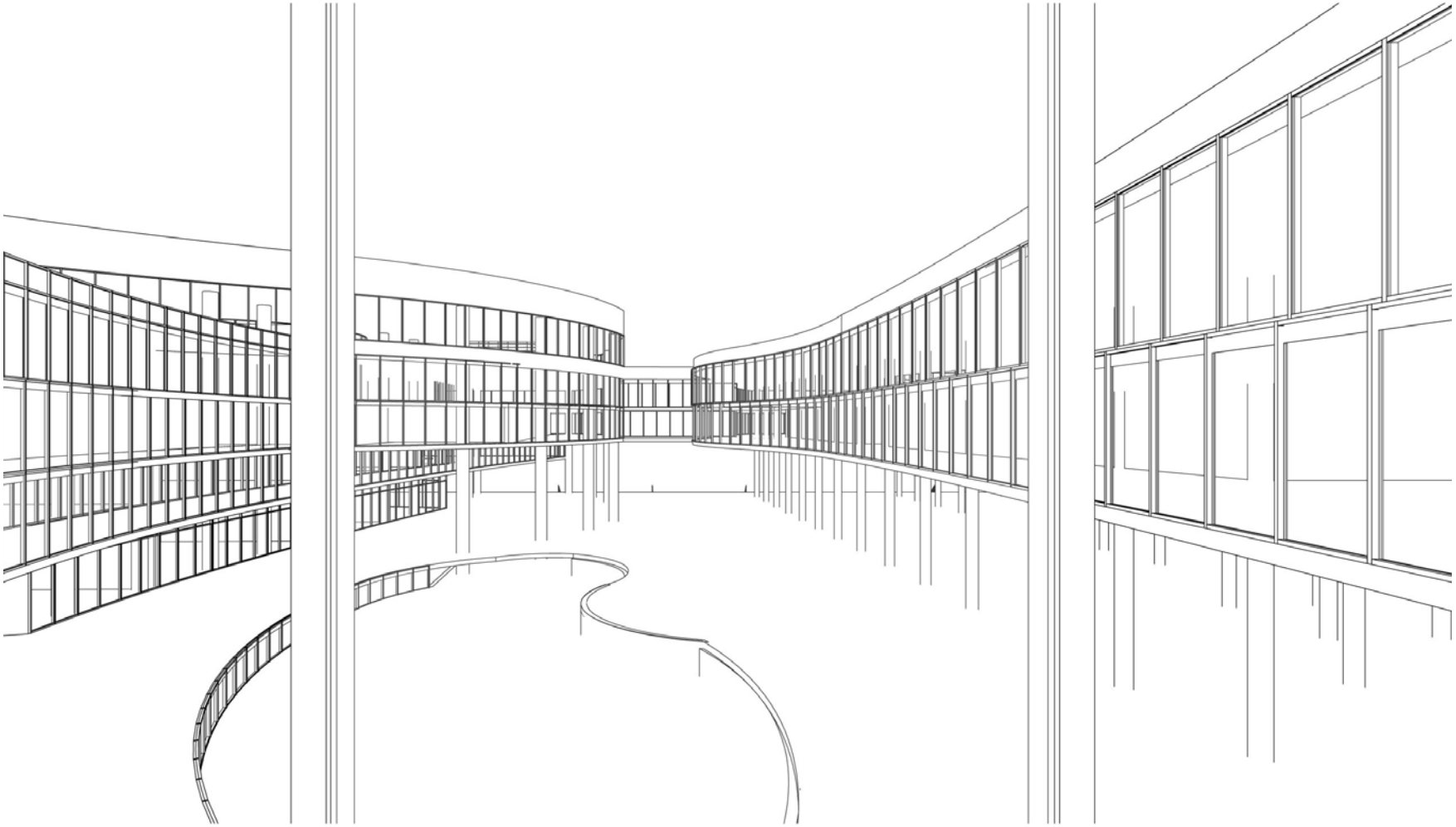
Plinth Level 5 Rooftop Park



Perspective Looking Towards Towers from Above the Gym

Plinth Aspects

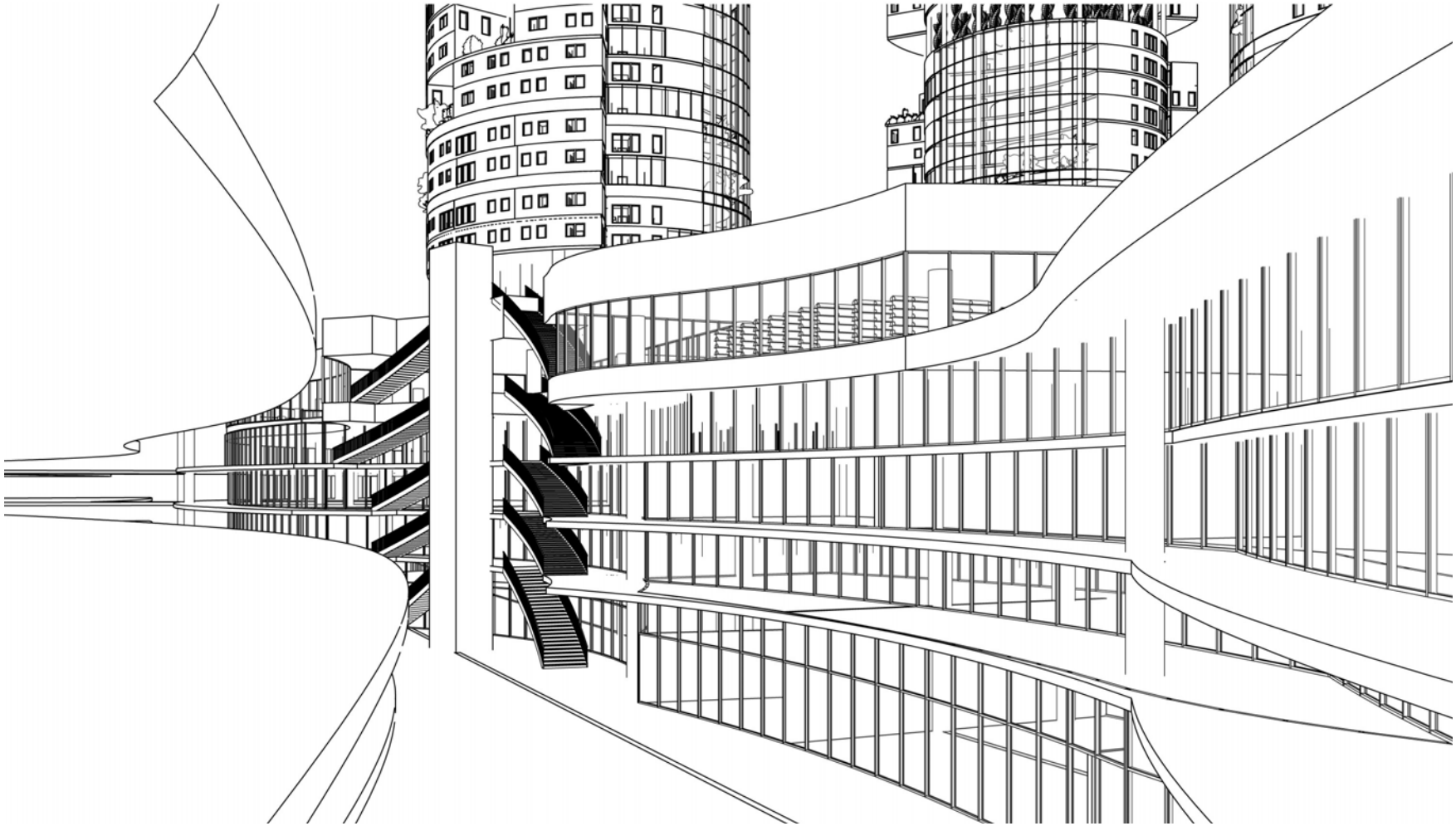
The lower plinth has significantly upgraded as has the towers design. This view looks towards the towers, as well as down into the large opening between the southernmost portion of the plinth and the rest of the project. The Library exists at this level, and opens up onto the large rooftop. This consists of a 4' thick garden surface which allows for diverse plantings to exist directly outside the library. The 8' thick roof-slab for the plinth park above is easily visible. This allows for significantly large trees and plantings to exist at this level. Below, most of the entertainment and shopping facilities of the lower plinth exist behind the this glazing.



Perspective Looking Towards Major Opening in Lower Plinth

Plinth Aspects

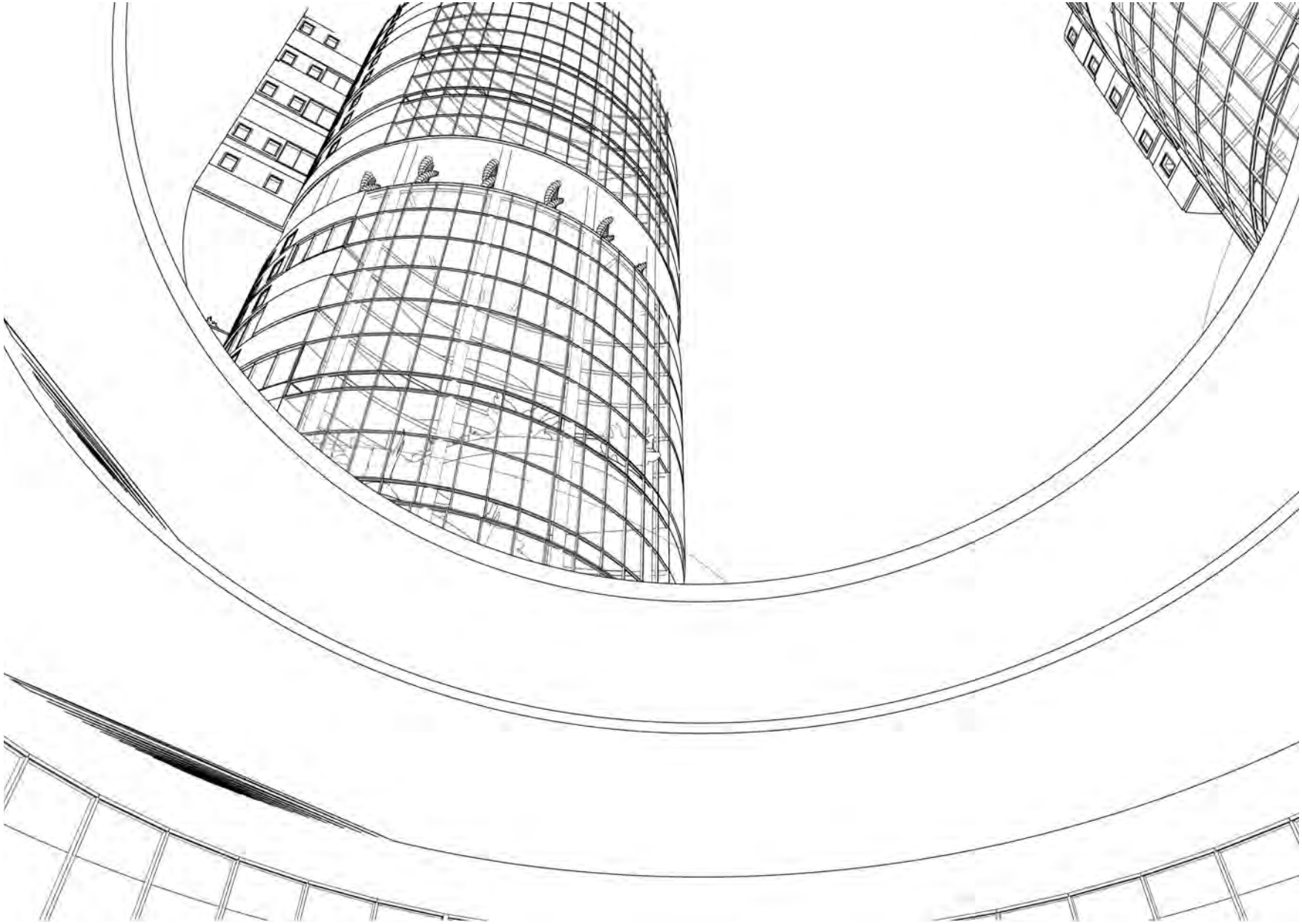
This view expresses the attempt at opening up the massive lower plinth all the way down into sub-grade parking facilities. This large opening illustrates the gym and some recreational facilities to the right, (south) and the shopping, entertainment, library, and park on the left. The gym on the right is elevated by several stories allowing for a covered-yet-open promenade of columns in which opens up to the southernmost entry plaza to the entire project.



Perspective Looking Towards Interior Mall Circulation

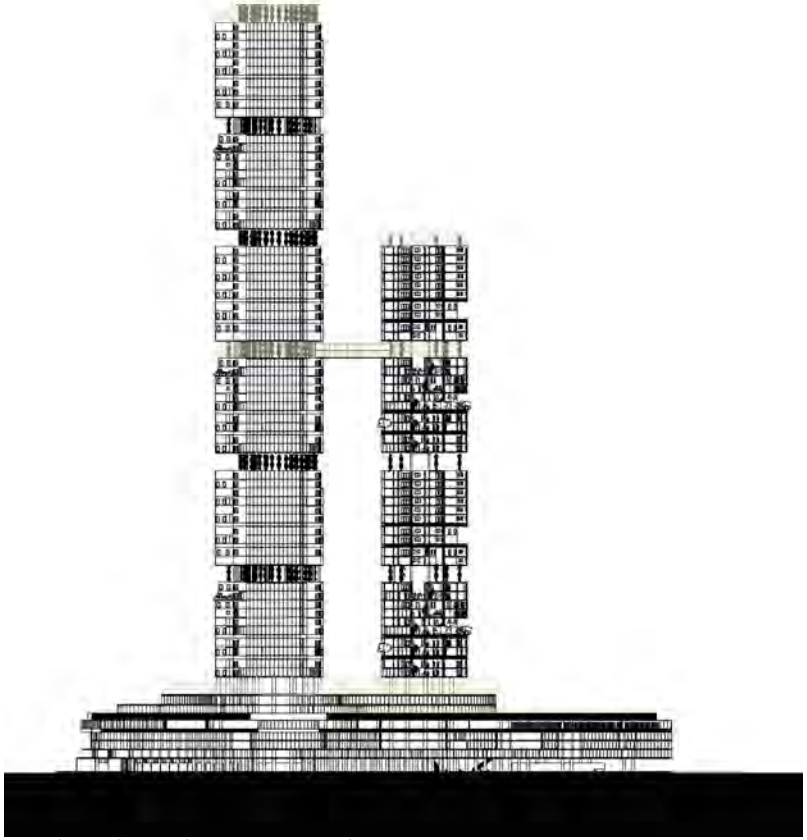
Plinth Aspects

I wanted the interior of the lower plinth to be open, but also full of activity. The winding pathways echo those of the existing street grid of the greater urban fabric, however, they exist in their own language of the overall project design. The spaces are designed to allow for a natural meander through the many facilities that the spaces offer, while also interacting on every level, both visually, and physically. With swoops, turns, bridges, and stairs, each allows the user to discover more of the space at each corner. Here you can see one of the major vertical circulation points which will carry users upwards to the other levels of the plinth. The following image shows the view from a major interior courtyard looking upwards towards the towers.



Perspective Looking Upwards from Interior Courtyard

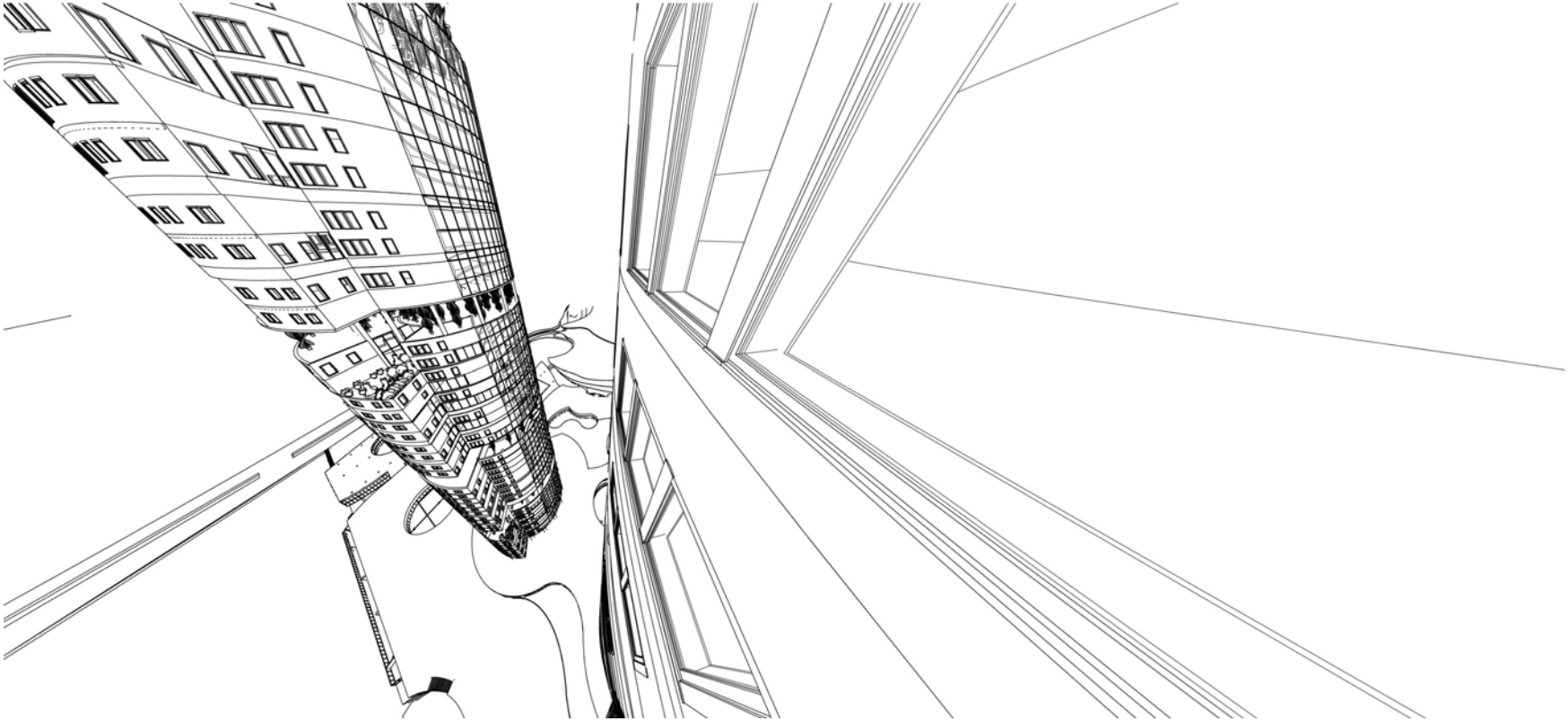
Section Through Tower 1 and Tower 3



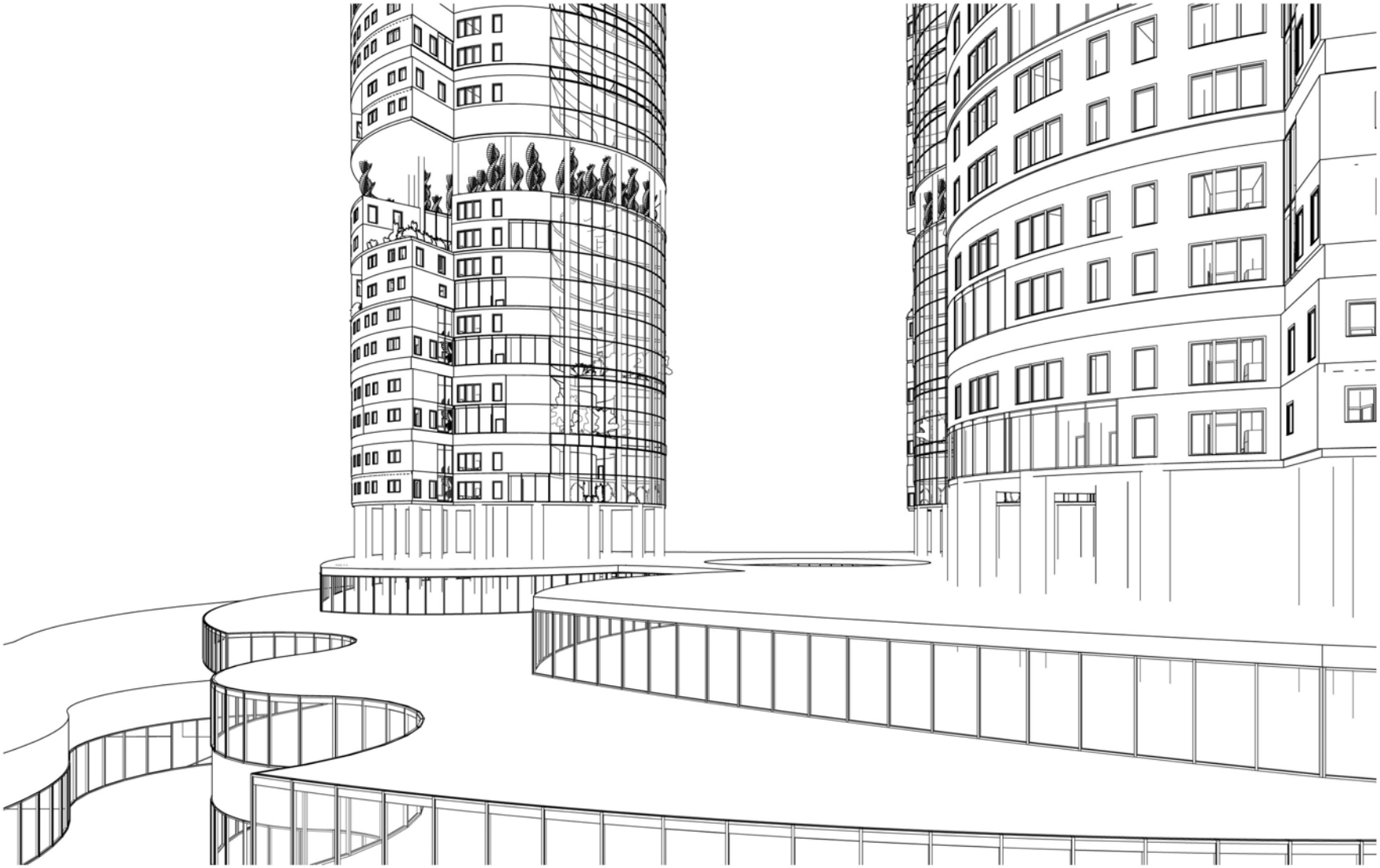
Section Through Tower 2 and Tower 3

Tower Aspects

At this juncture, most of the large decisions regarding the towers aspects have been made. The three towers are of 8, 6, and 4 pods. This allows any connections between the towers to occur with at least an entire pod above it. This ensure that there are at least several pods accessing any of the connections, rather than capping off a tower. The connections occur at the top of the first, third, and fifth pods



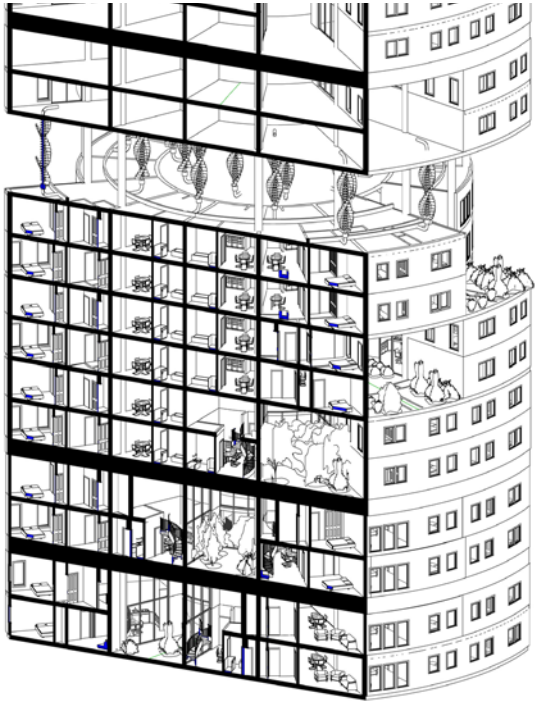
Perspective from 4th Pod Between Towers



Perspective Looking Towards Plinth Gardens and Towers

On the Board

Section Through Atrium and Gardens



Section Through Typical Units

Section Through Edge of Tower

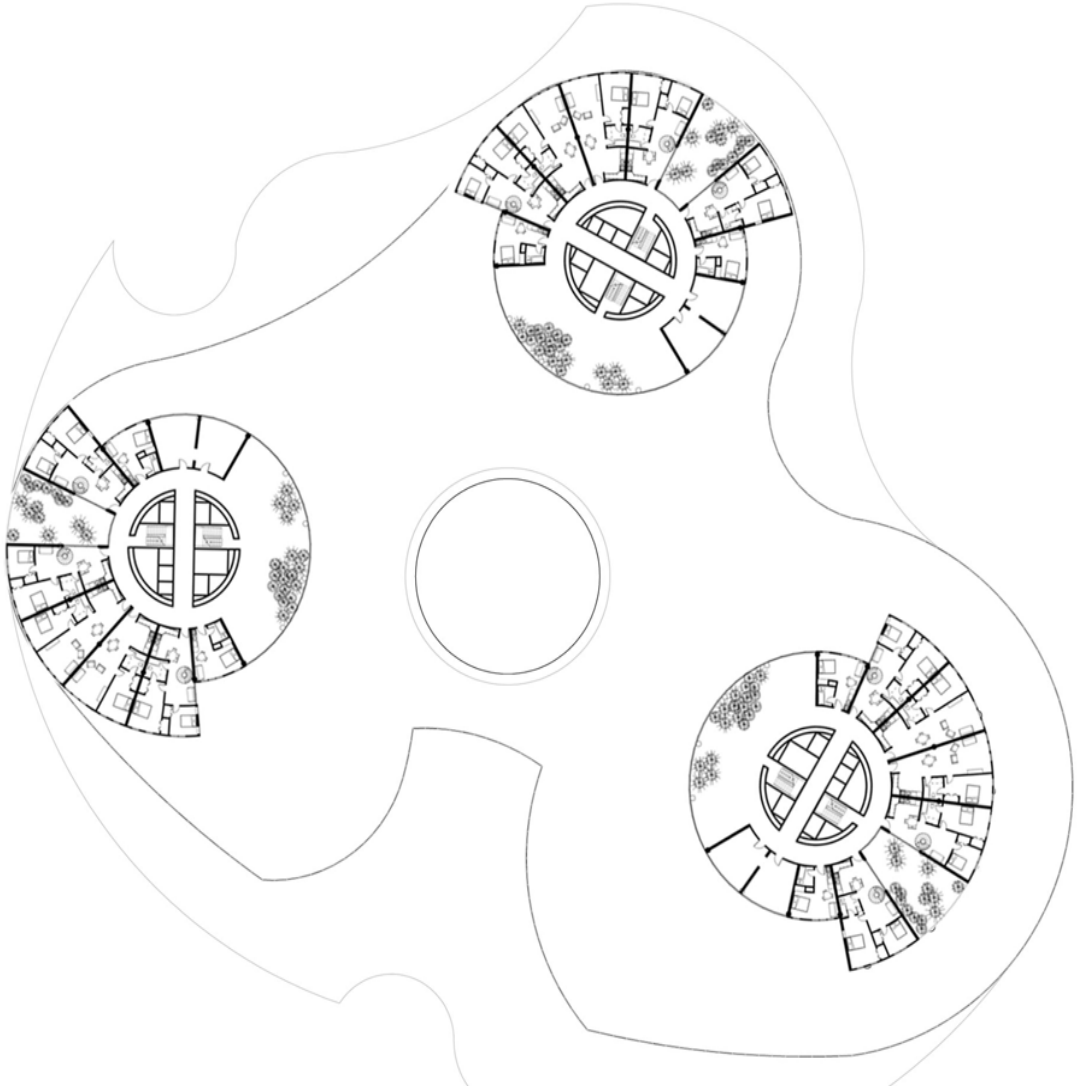
Tower Aspects

Every two levels the public garden moves a rotation. As you can see in some of these sections, there is a very prominent atrium space which carries itself throughout the pod, however, the larger spaces within the housing portion of the pod, have a constantly changing shift in spacial hierarchy. By moving the open garden areas in a corkscrew manner, it also effects the flanking units of that space. Thus, by allowing the garden to be relocated, exterior walls and added external light is granted to some of the interior units which would otherwise be lacking. Also, by maintaining the double-height space, more natural light is able to penetrate the space, allowing for those areas to become functional with natural light, rather than dependent purely on artificial light. Also noticeable by the sections, are the larger bands of the third and fifth floor-plate. These are represented here as solid, however, they are indeed a living floor plate in noted areas. They are abnormally larger to serve the purpose of increased vegetative abilities on these floors. While small planter vegetation may be available on the other gardens or exterior spaces, lush and full gardens with trees and larger plantations are available with the integrated floor plate. As these plates are consistent throughout the entire floor plate, they are also existent on the atrium spaces as well. Therefore, on the third and fifth floor within the atrium space, there also exist extensive garden and tree growth capabilities. These spaces are expanded on these two floors to create added available interaction space between everyday users.

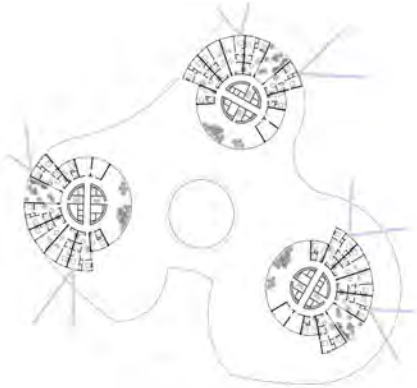
Section Through Typical Units

Elevation of Unit Facades

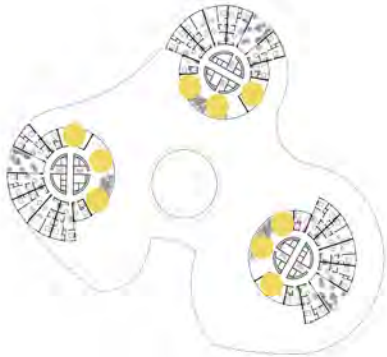
Axon of Two Pods



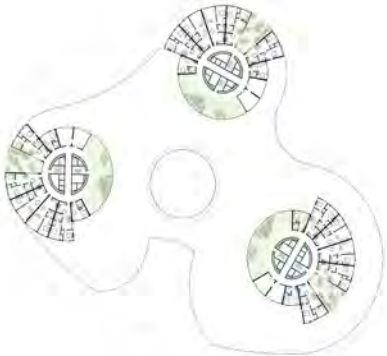
Bottom Floor of Housing Pods



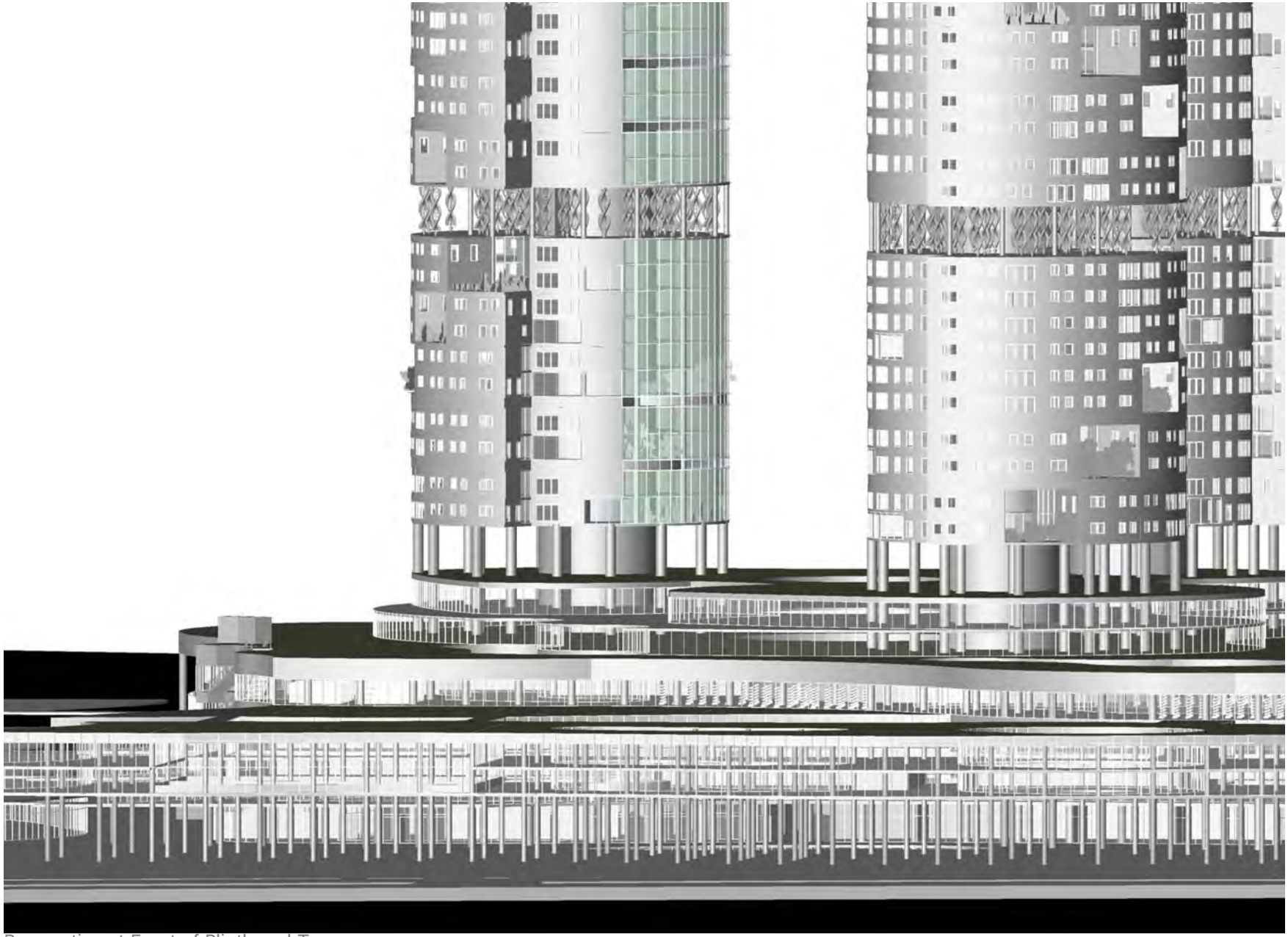
Optimum views- No Cross Views



Public Zones Facing Inwards



Green Public Space



Perspective at Front of Plinth and Towers

Level 2 Axon

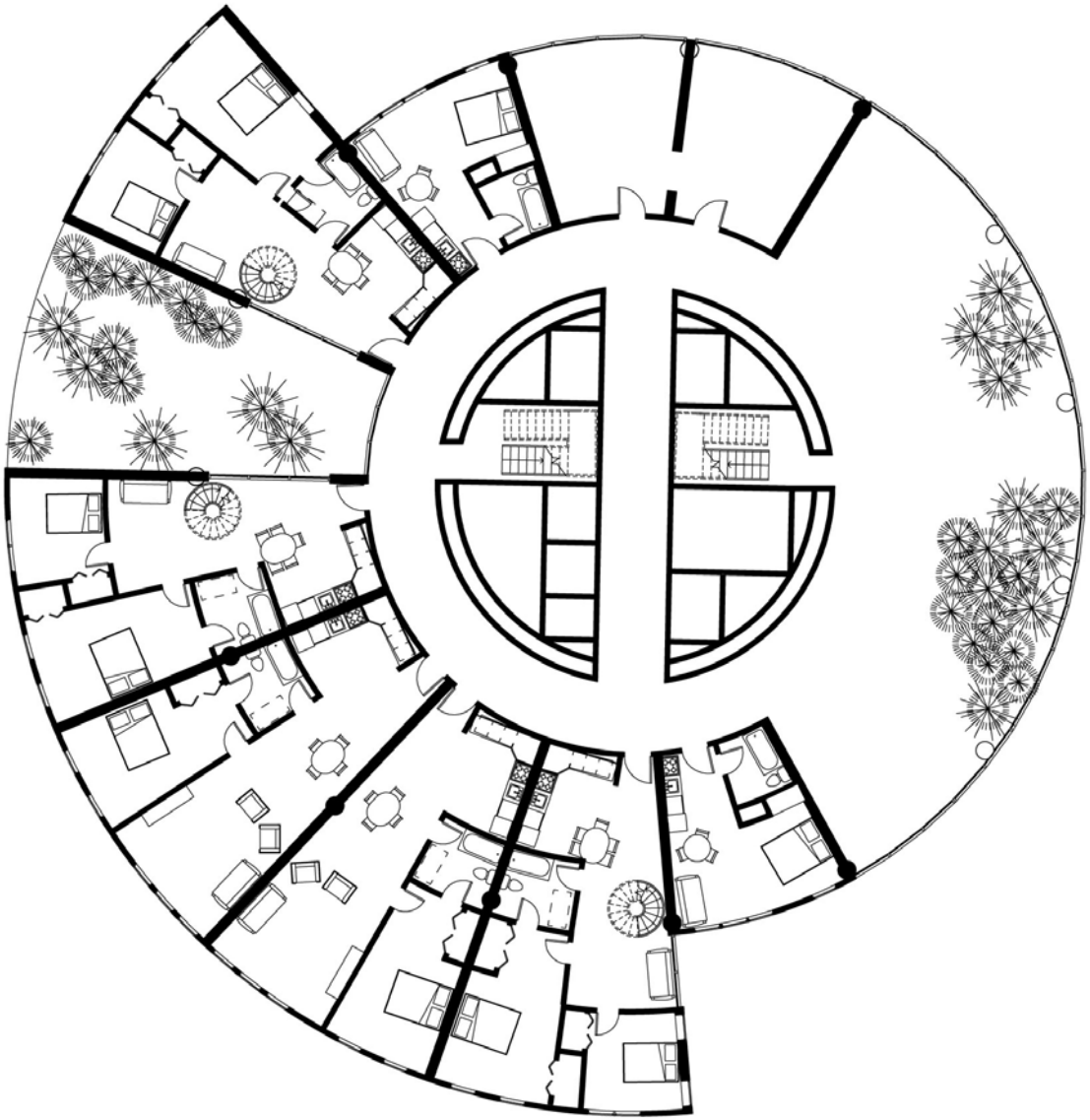
Level 4 Axon

Level 6 Axon

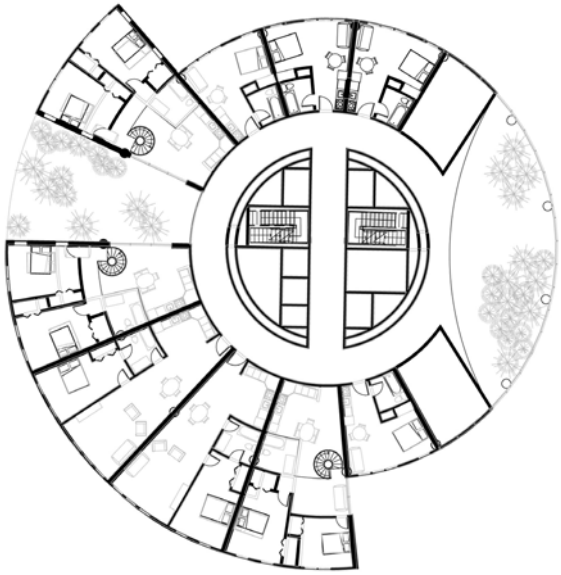
Level 1 Axon

Level 3 Axon

Level 5 Axon



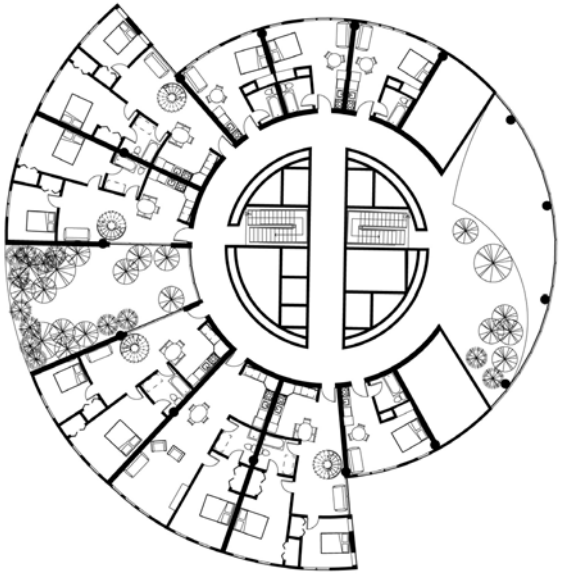
Typical First Floor Plan



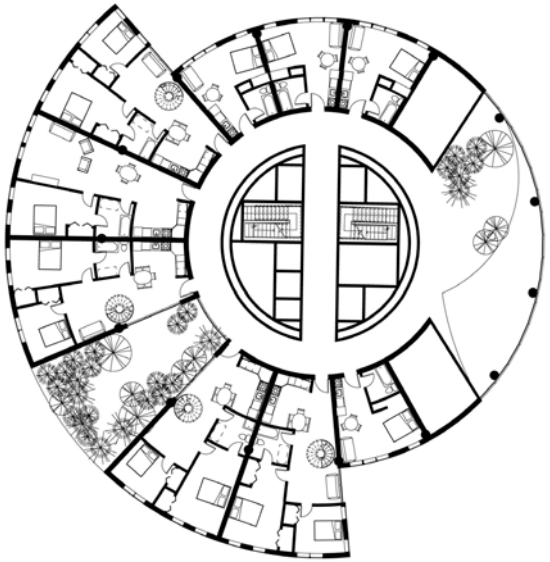
Typical Second Floor Plan

The Floor Plan

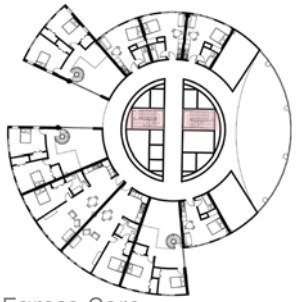
The floor plan is comprised of equally spaced wedges which radiate from the center point. The central core is comprised of 6 elevator shafts of which 2 go within the pod, and 4 go from pod to pod. There is also a freight elevator and 2 stairwells which run the entire height of each building. Each of the stairwells is positions to be accessed from the furthest points from one-another in attempt to optimize their location and access. This core is encased by a 3' concrete structural wall which carries most of the compressive and shear loads, as well as adds significant stability. 8' offset from this wall is the innermost wall of the units. This wall also runs the circle until it hits the atrium space. The individual unit party-walls splay out from this point to the exterior wall.



Typical Third Floor Plan

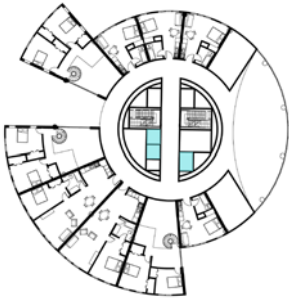


Typical Fifth Floor Plan



Egress Core

Elevators From Pod to Pod

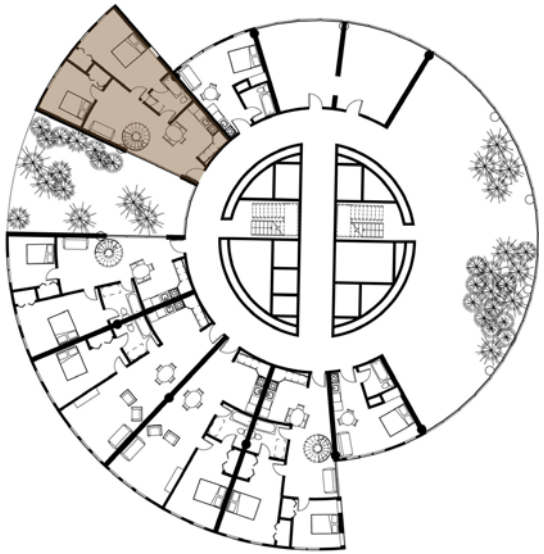


Elevators within Pods

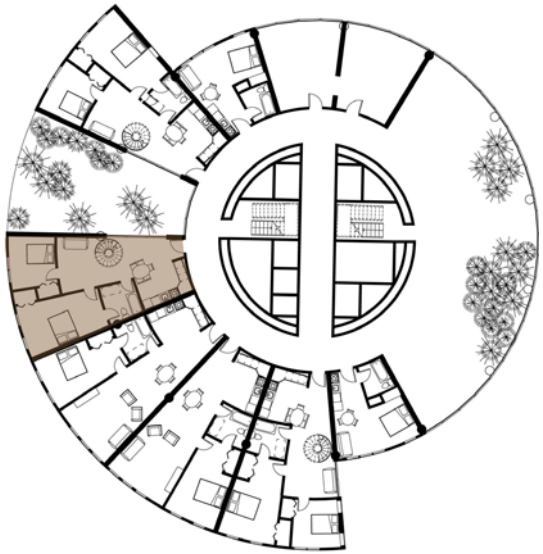
Services

The Units

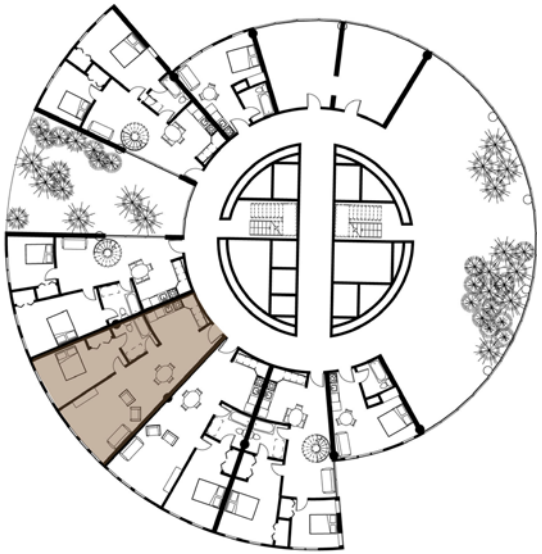
There are two sets of units. The smallest set starts from this innermost wall, and emanates outward 20'. These are smaller, one-story studio apartments. The similarly sized spaces which meet the atrium are used by either the public or private industries. Each of the larger units continues past this 20' mark and exceeds to 40' in total length. Therefore, each of the larger units breaks in the middle at roughly 20' across. The distance from the innermost wall, and the outermost wall is 40'. This means that the actual floor space of a single story, full apartment is 800sf. As these apartment vary from single height units to double units, from end units to central units, their arrangements change. The innermost portions of each unit is comprised of the kitchen, while the outermost are either the living areas, or bedrooms. The natural light is maximized by the use of double-height spaces in the living areas which allow it filter through to the back walls. Central zones are comprised of closet spaces, pantries, as well as bathrooms and laundry rooms. Because of the shifting gardens, the number of double-partywalled units is limited to a maximum of 2 on a given floor. When the Garden is in any of the central 3 units, it grants exterior walls to all but 1 unit. Specifically on floors 3 and 5, there is a specialty floor slab which allows for maximum vegetation growth. This is apparent at these levels by the flora and fauna included in the gardens both inside the atrium, and along the parameter.



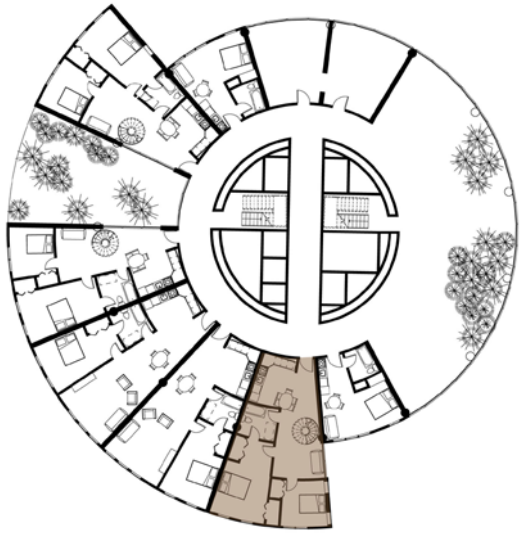
End Room With Garden Condition



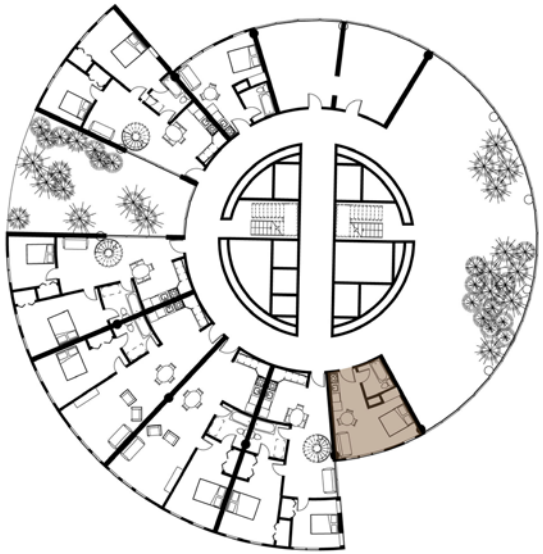
Inner Room With Garden Condition



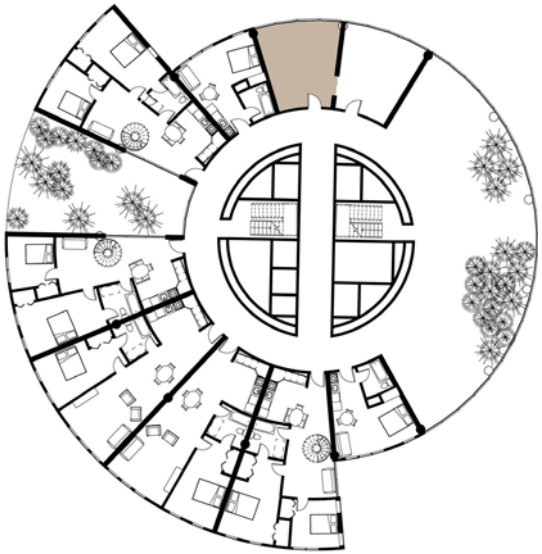
Inner Room Without Garden Condition



End Room Without Garden Condition



Small Studio Unit Condition



Small Studio Inner Unit Condition

Gate Review

The purpose of the gate review was to establish a good sense of where your progress is on your design. At this juncture, we do not actually verbally present our material, but only visually. This is to determine whether or not your drawings speak enough for themselves, and determine what needs to be added. Also, at this point, not all of your intended drawings need to be completed. There can be lesser versions of the drawings, or even empty spaces which describe what the drawing may indeed be for your final presentation. For me, the gate was a significant push to get things up to date and finalized to the best quality at the current state of process. All of the images within this presentation were to be worked out, and established as key to the explanation of your design. While almost none of my drawings were finalized, they were mostly there in the right sequence as to how I wanted to tell my story. I knew that I had a significant amount of work to do in order to actually get to the point of completion.

A few key aspects were missing. I did not know what my connection pieces between my towers were going to look like. I also did not know how they were going to be structurally implemented. While I had ideas about their size, and shape, I only had sketches, and no actual completed stages of that portion of the project was a major issue. As these spaces were literally and figuratively what brought each of the individual towers together, I knew I needed to spend a significant amount of time to develop those.

Additionally, I was not satisfied in the state of the exterior walls for the residential units. I understood and knew that I wanted expansive glass curtain walls for the atrium spaces, but I needed to develop what the other walls were to be made out of and how they would function. This would also assist in how I finalized the layout of the individual units. Furthermore, by determining a finalized wall system, I would be able to determine the adequacy of my structure.

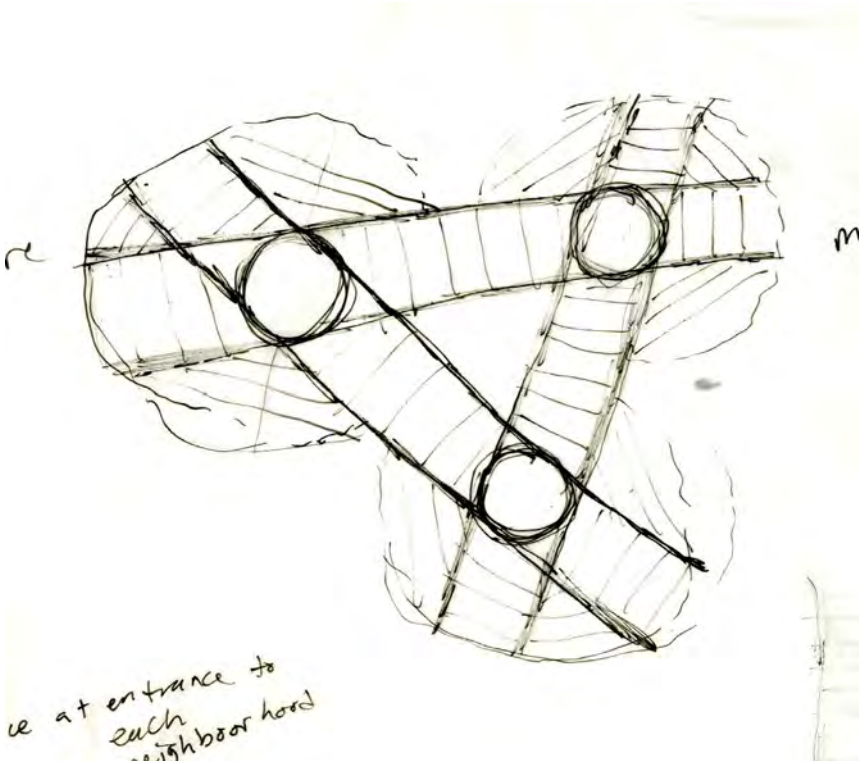
Another huge issue I had was the lack of cohesion with the lower plinth. The floor plans were not complete and needed a lot of tweaking in order to make them into working fashion. Several big moves needed to be taken into account which I had not yet implemented into the final design. First an foremost I wanted a much grander entrance for the permanent residence of the towers, as well as visitors to the site itself. Although I liked the exterior entrances and vertical circulation from the mall level and upwards, I did not like the lack of formal entrance to the towers. Also, the parking therefore needed to be re-worked to accommodate for visitors and permanent residences, as well as deliveries to and from the residence. Above these spaces are the shopping center, movie theater, school and library, which at least needed to be divided into a working plan. Although it is not crucial to my thesis that I have all of these spaces worked out completely, they need to be coherent and plausible.

As for the plinth park above the mall areas, I need to establish the different hard and soft-scapes of the area. While there exists the garden plinths that the towers sit directly on, these spaces need to be accessed at certain areas. There also needs to be a cohesion between the large plinth park, and the other areas which are located outside of the library and traverse to the roof of the gym.

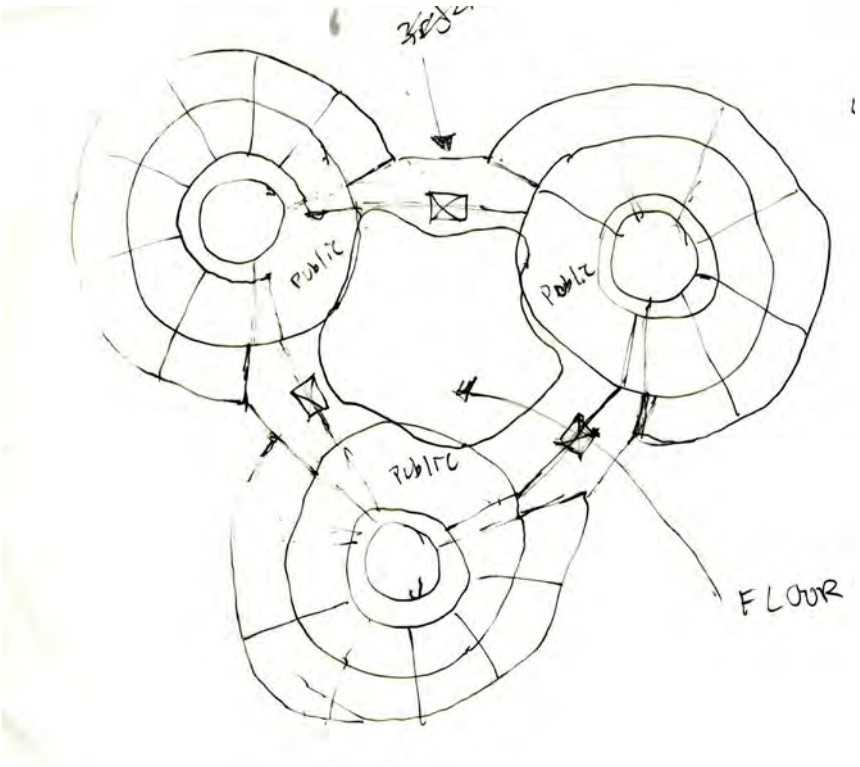
Aside from the larger moves, smaller and more refined issues also are unresolved. Although I have a general idea of how I want my units to work, the are consistently too small for the rang of tenants, and need to be enlarged. this will add a significant dynamic to the making and shifting of units as the gardens make their way around the radius. There also needs to be a greater range of housing available, which means that the units, while getting bigger, must also produce a significant possibility for alterations according to position, and orientation.

Additionally, even more refinement needs to go into each and every unit. While before I may have blocked out ambiguous spaces representing certain functions, I need to establish graphically what those functions may be, and how to show them correctly.

And last but not least, I must maintain the story in which I am trying to tell through each and every drawing. It is my job to illustrate the story through symbols and graphics in a manner that not only a learned person may understand my moves, but also a novice. My intentions need to be clear and concise, and to the point.



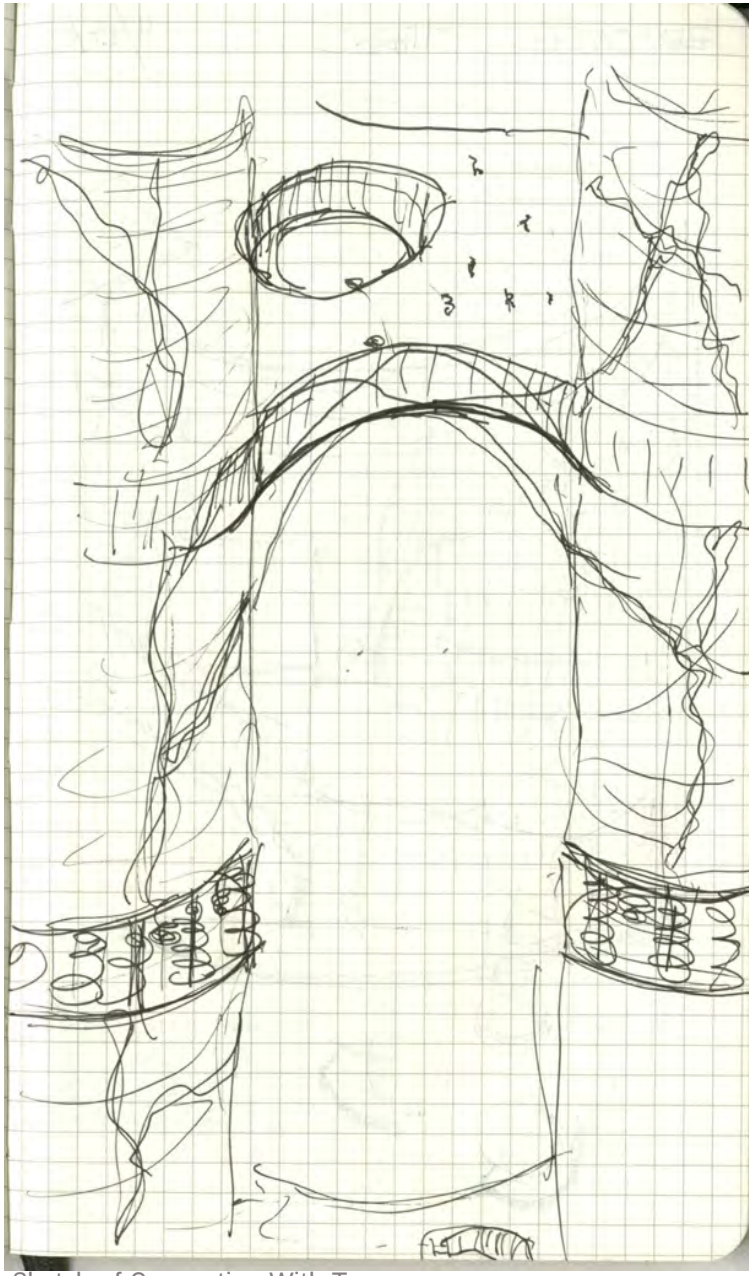
Sketch of Connection and Structure



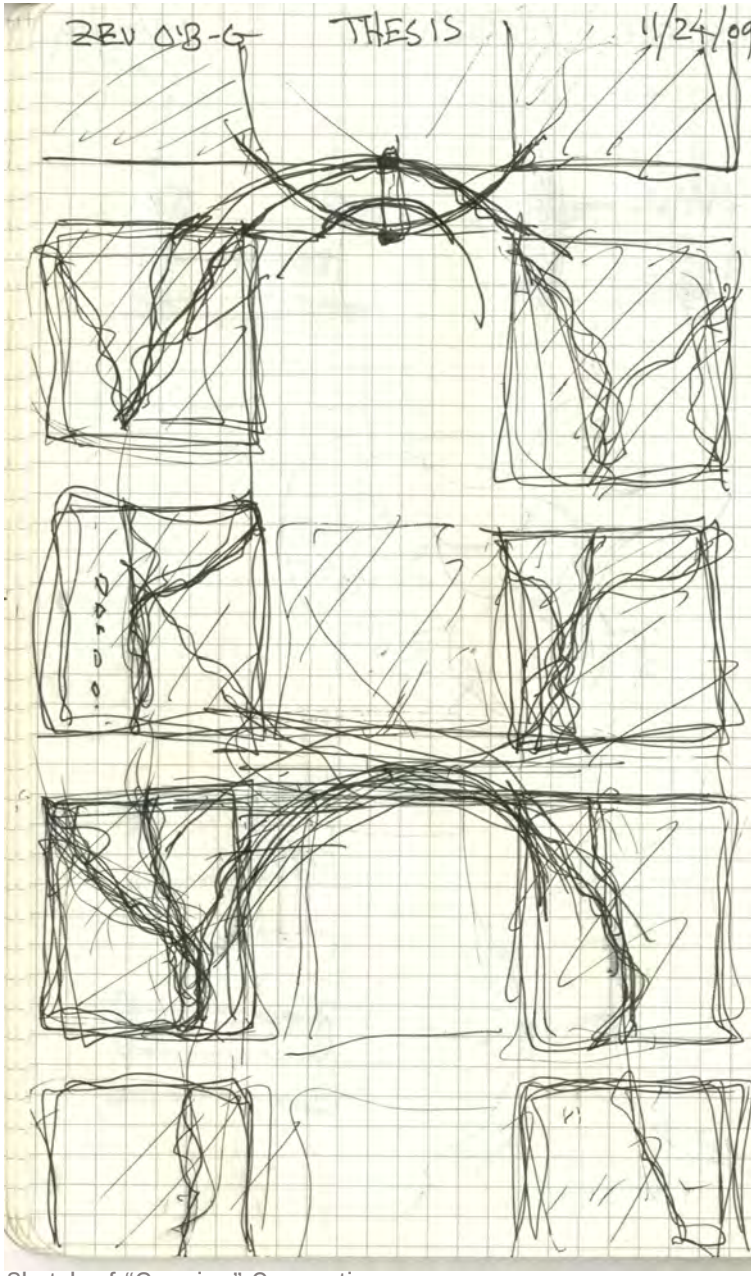
Sketch of Amoeba Connection

Development of Connection Spaces

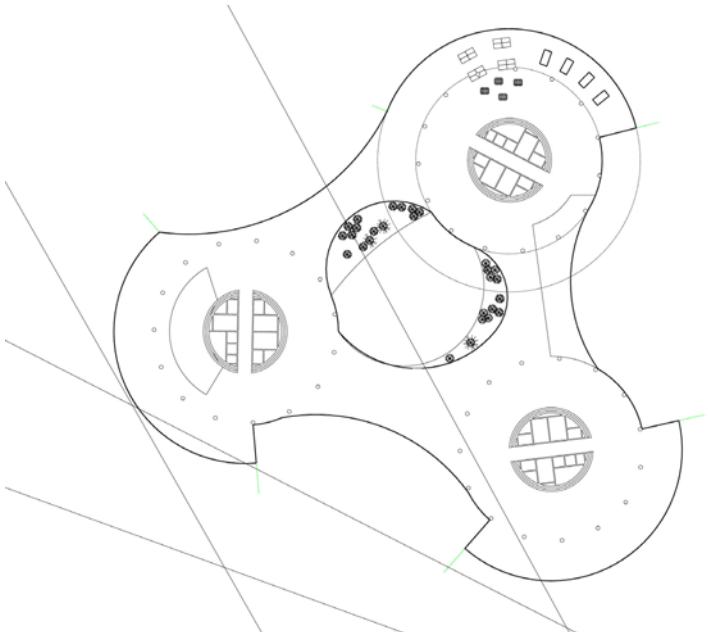
While I was still unsure what I wanted the end result to look like, I was sure that I did not want a rectilinear connection piece. However, I needed to think structurally how these might in fact be held into place. While the amoeba shape may visually adhere more with the lower plinth, it would not work both aesthetically nor practically at a 30 story height. I needed to find a happy medium.



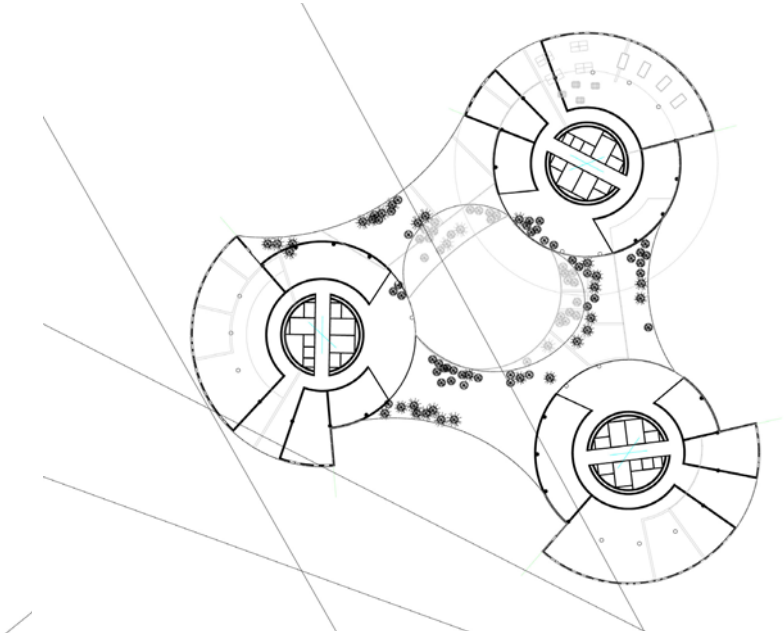
Sketch of Connection With Towers



Sketch of “Growing” Connection



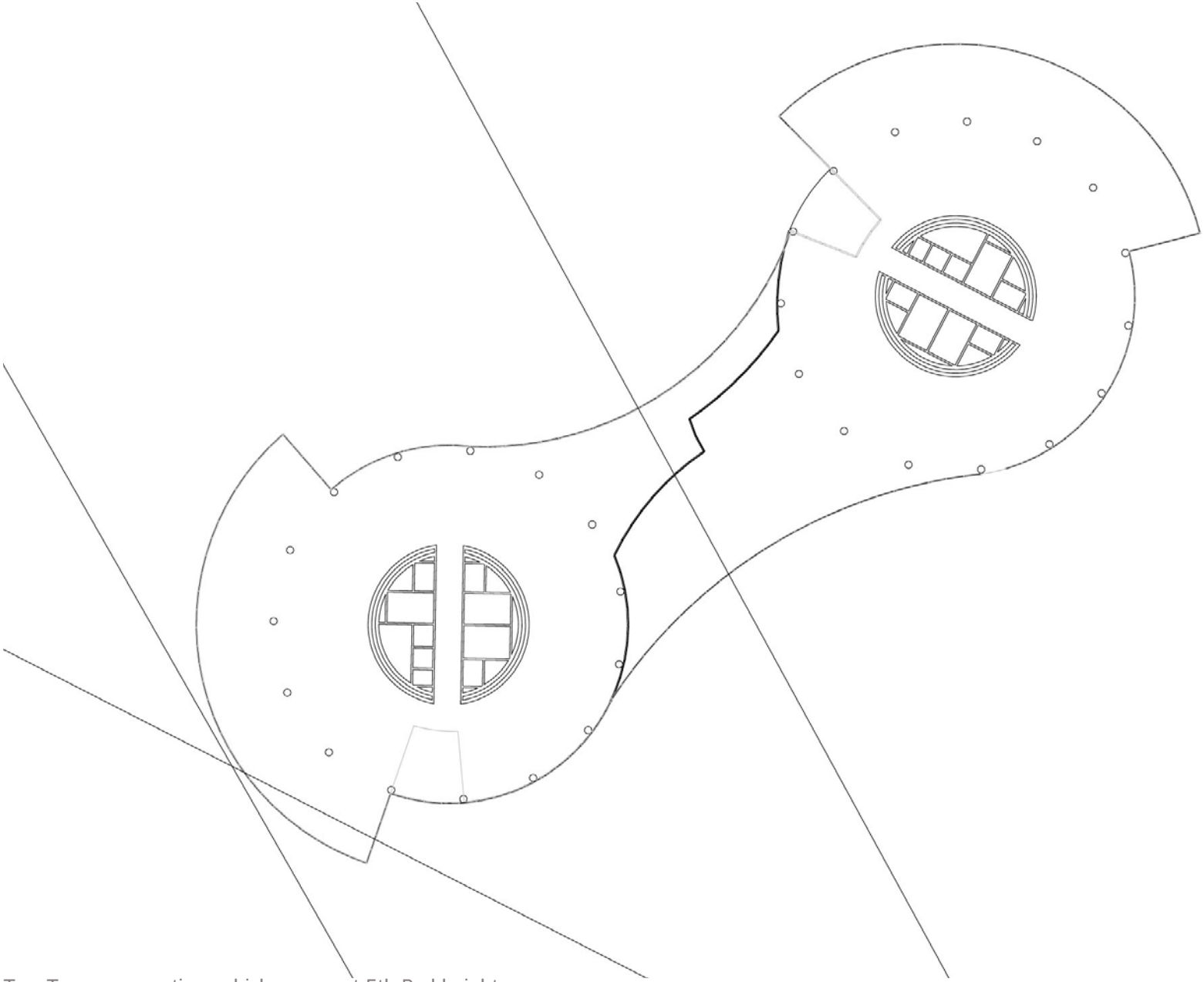
Three Tower Connection- First Floor



Three Tower Connection- Second Floor

Development of Connection Spaces

Because these spaces were to be the primary sources of interaction between the three towers, they needed to hold functions and amenities which would attract people to them. By having a variety of options, the spaces can remain occupied and in use all hours of the day. I wanted to include a smaller gym as a secondary option to residence. This would be more personal, and have a fantastic view of the surrounding mountains as you work out. Also, there would be a playground for kids, pool tables, ping-pong, and fooseball tables for older kids, as well as restaurants, rentable office spaces, dance studio spaces, and convenience store merchandise. The idea is to mimic a typical street with its options. While this may be a space that one visits to relax, dine, or play, others may indeed work here, or have their business here. As some of these spaces are fully rentable, any number of business may take place such as hair salons, ice cream parlors, burrito cabana, architectural offices, therapy, and even pharmaceutical depots. It holds the essence of an active and flourishing street within the city, however high it might be within the towers. While all of this activity and program is intended to activate the spaces, there also needs to exist vegetation. Therefore some of the spaces are designed with either interior gardens spaces, or exterior garden spaces with plants that mimic those who naturally thrive at these elevations and conditions.



Two Tower connection, which occurs at 5th Pod height

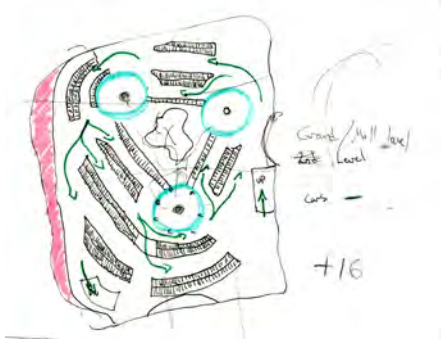
Three Tower Connection- First Floor

Development of Connection Spaces

Once I had a good sense of what I wanted the spaces to look like, and how I wanted them to act, I was able to make an additional model showing the connections between the towers. By creating several to choose from, and being able to change where and how the connections were done, I was able to further determine what looked most aesthetically pleasing. This scheme shows how there are three connections, each of which occur 2 pods away from one-another, and between opposite towers, which makes the connections visibly different as you the rotate around the towers.

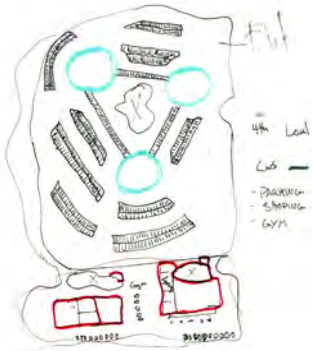
Working Model

Underground Level, Shipping, Mall



Mall Level, Parking

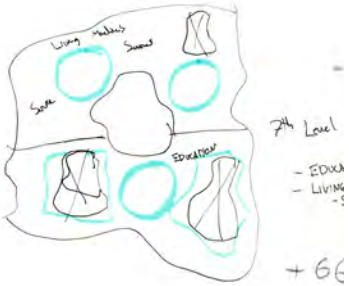
Level 3 Parking



Level 4 Parking

Level 5, Shopping and Entertainment

Level 6, School and Library



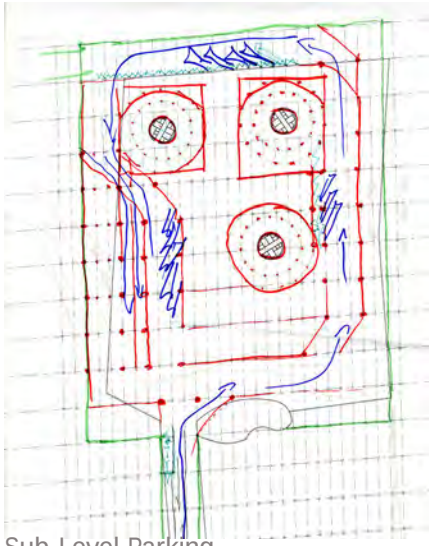
Level 7, School and Bio-Septic

Level 8, Upper Plinth-Gardens

Lower Plinth

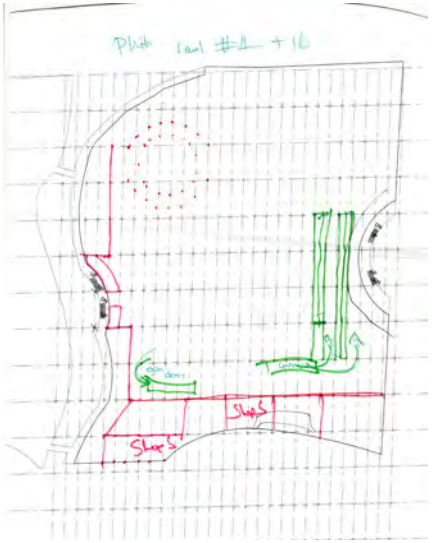
There are so many aspects which needed to be considered between the Mall ground floor, and the Plinth park on top. Within these spaces consist Parking, Shops, Light Rail Station, Movie Theaters, Grocery Market, Public Fitness Center, Library, and Educational Facilities. Also starting to be considered is a grand entrance on the mall level to the residential aspects above. This progression is visible as they plans go from one iteration to the next.

Lower Plinth, 1st Iteration

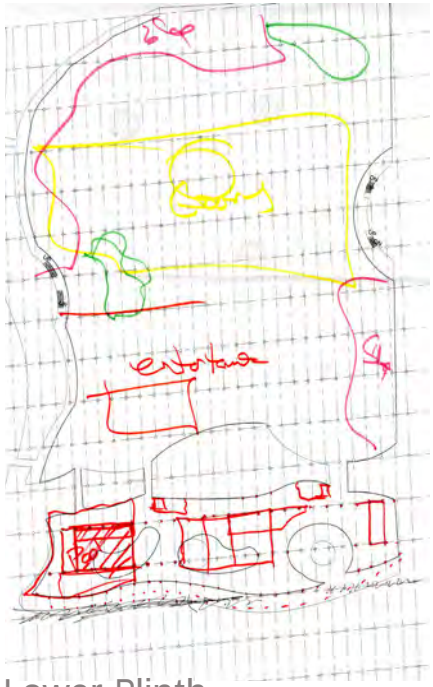


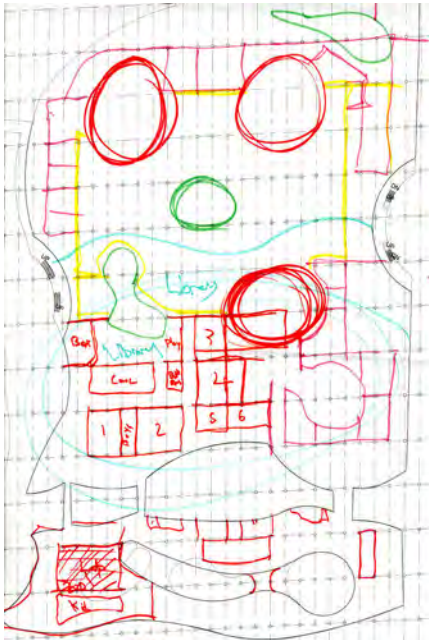
Sub-Level Parking

Mall Level Parking

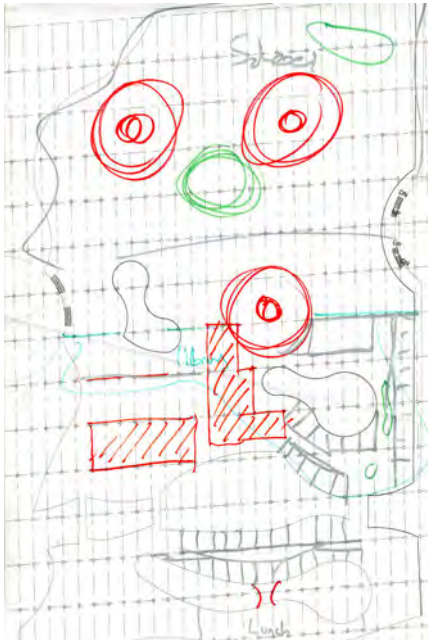


Plinth Level 2

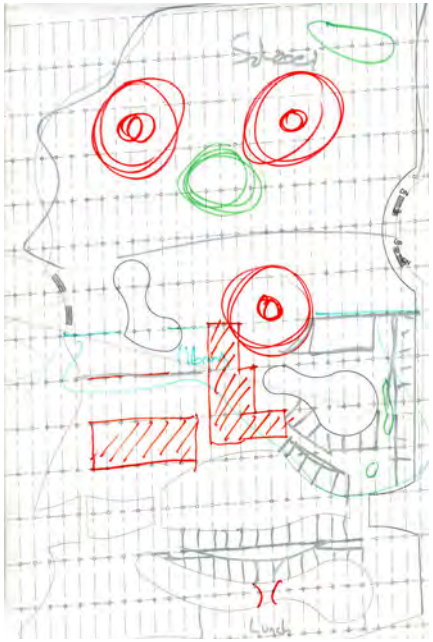




Plinth Level 3



Plinth Level 4

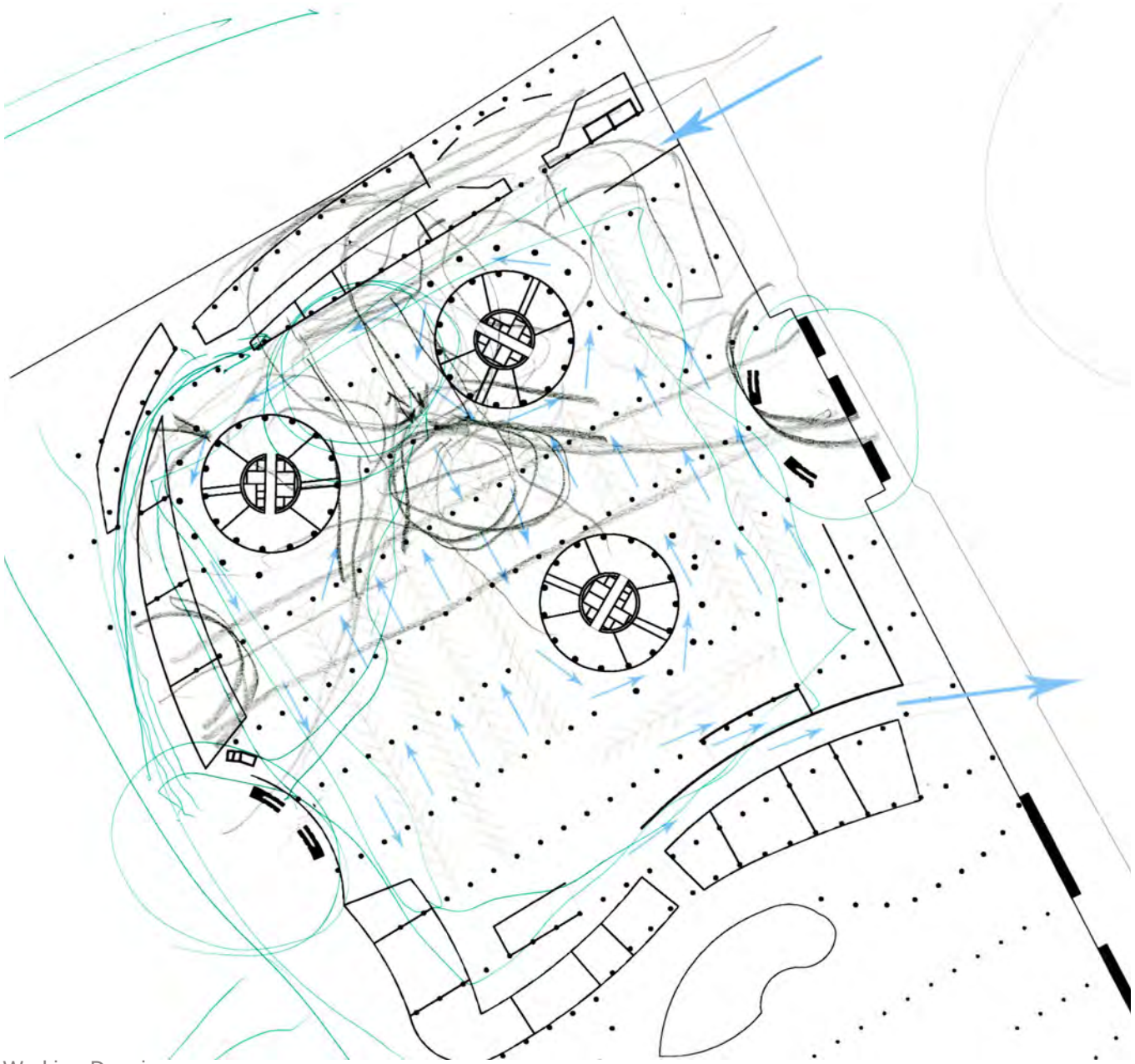


Plinth Level 5

Lower Plinth

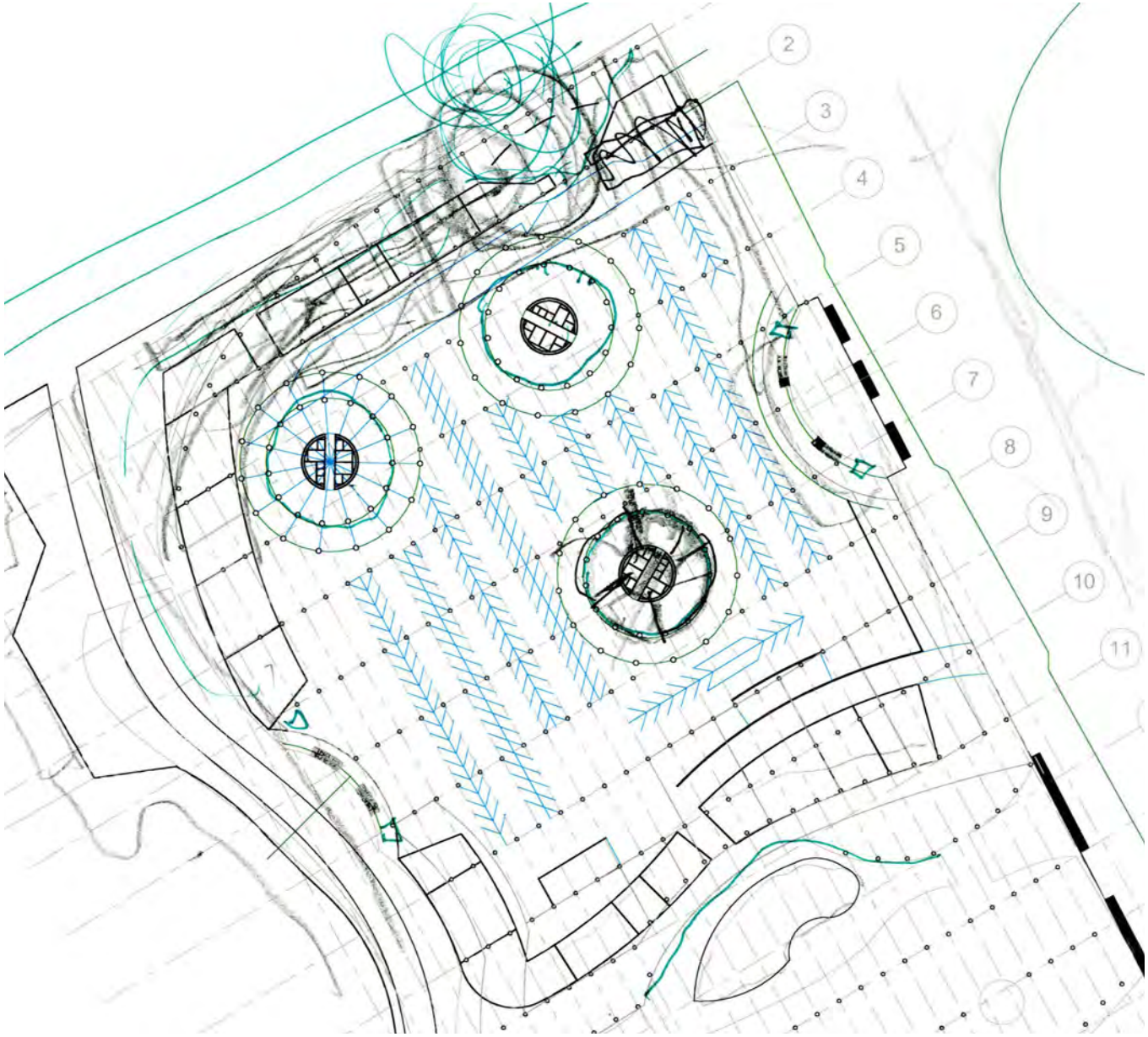
As the design progresses, a grid system is laid out to consider the internal structure of not only the plinth itself, but also as the towers structure interweaves with the plinth. As the two structures combine, a significant amount of planing and organization must go into making these spaces meet appropriately. Another consideration is the sense of scale. These spaces are so very massive, that often it is easy to forget how large. With the grid for scale, better conceptual understanding and sketches can be produced.

Lower Plinth, 2nd Iteration



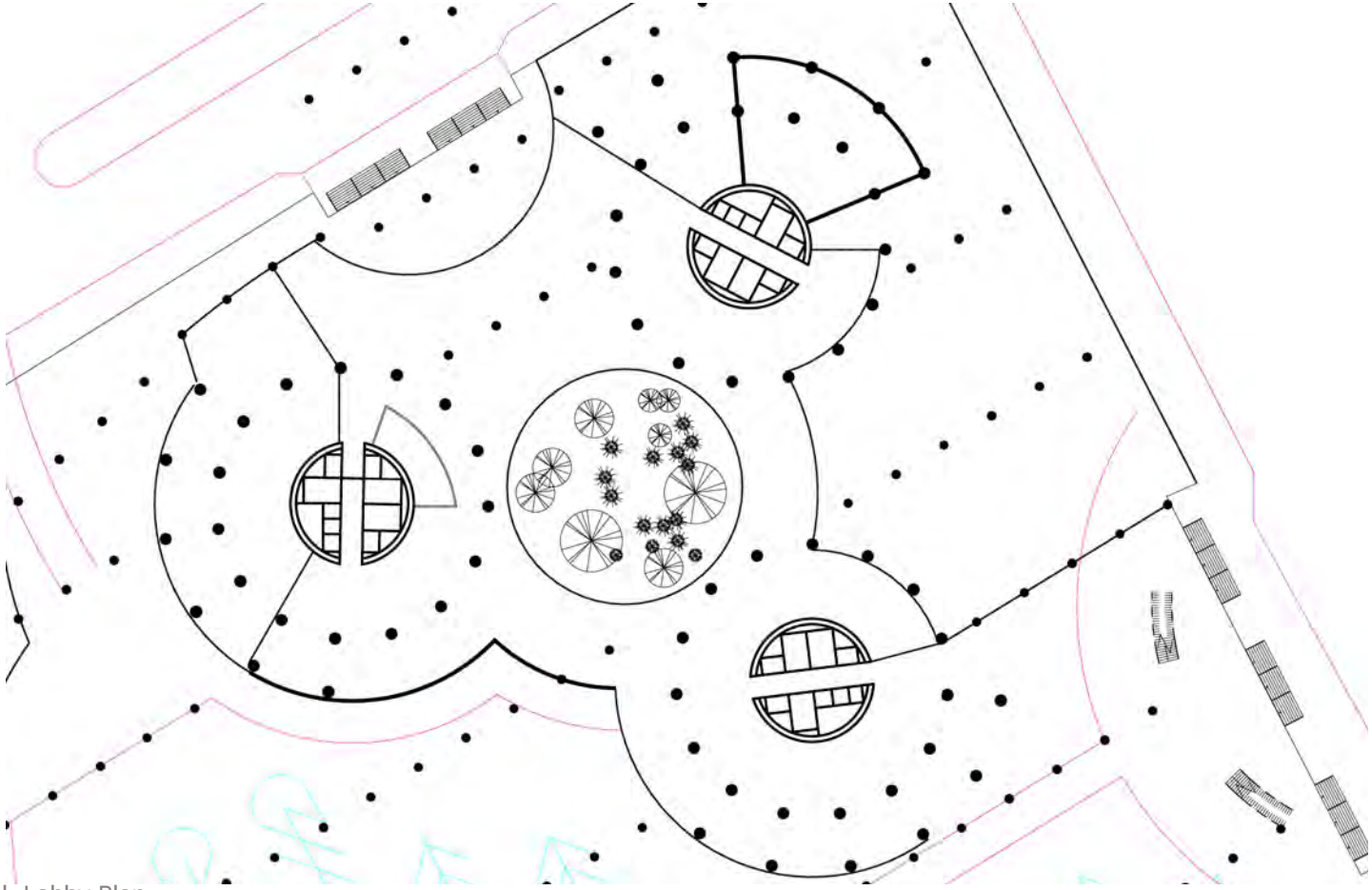
Plinth Mall Level Working Drawing

Lower Plinth Progress



Plinth Mall Level Working Drawing

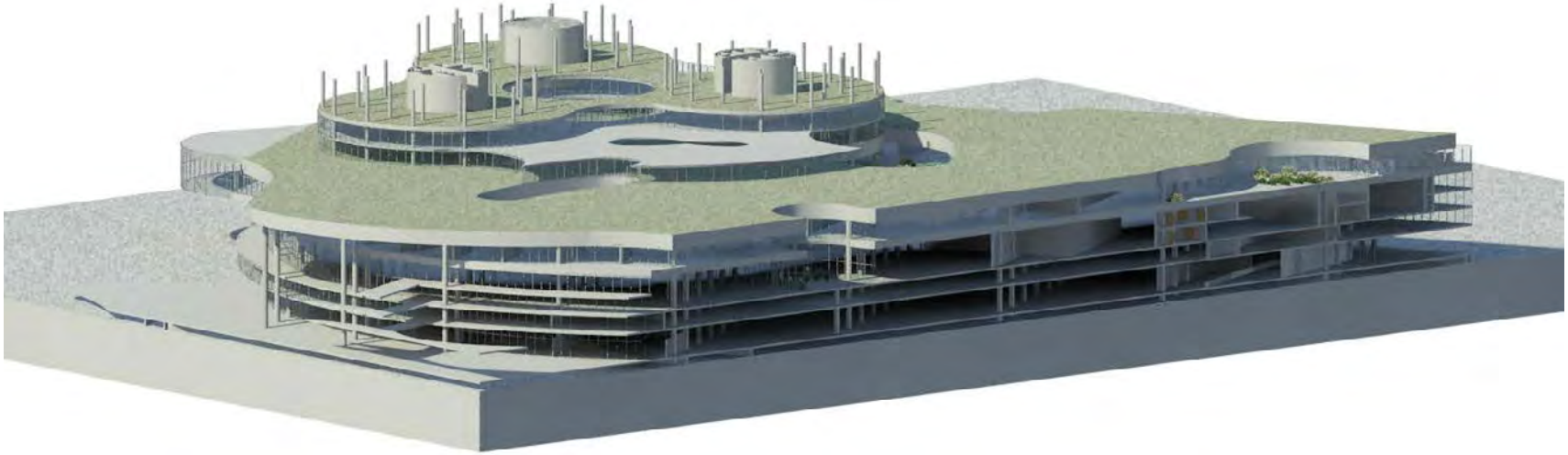
Lower Plinth Progress



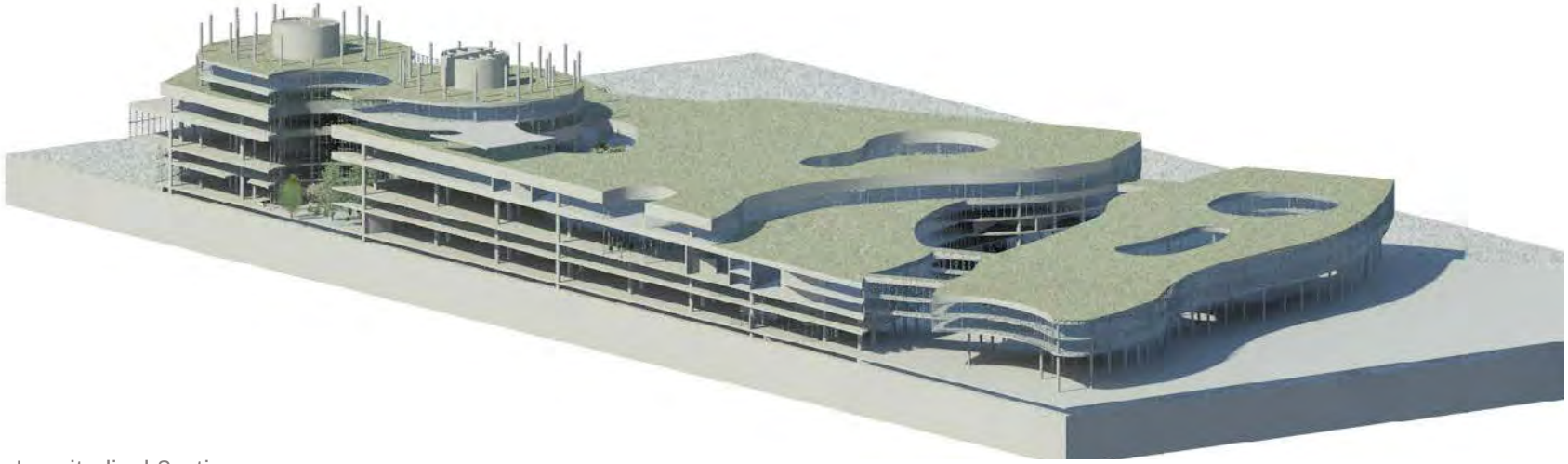
Plinth Mall Level, Lobby Plan

Lobby and Residence Entrance

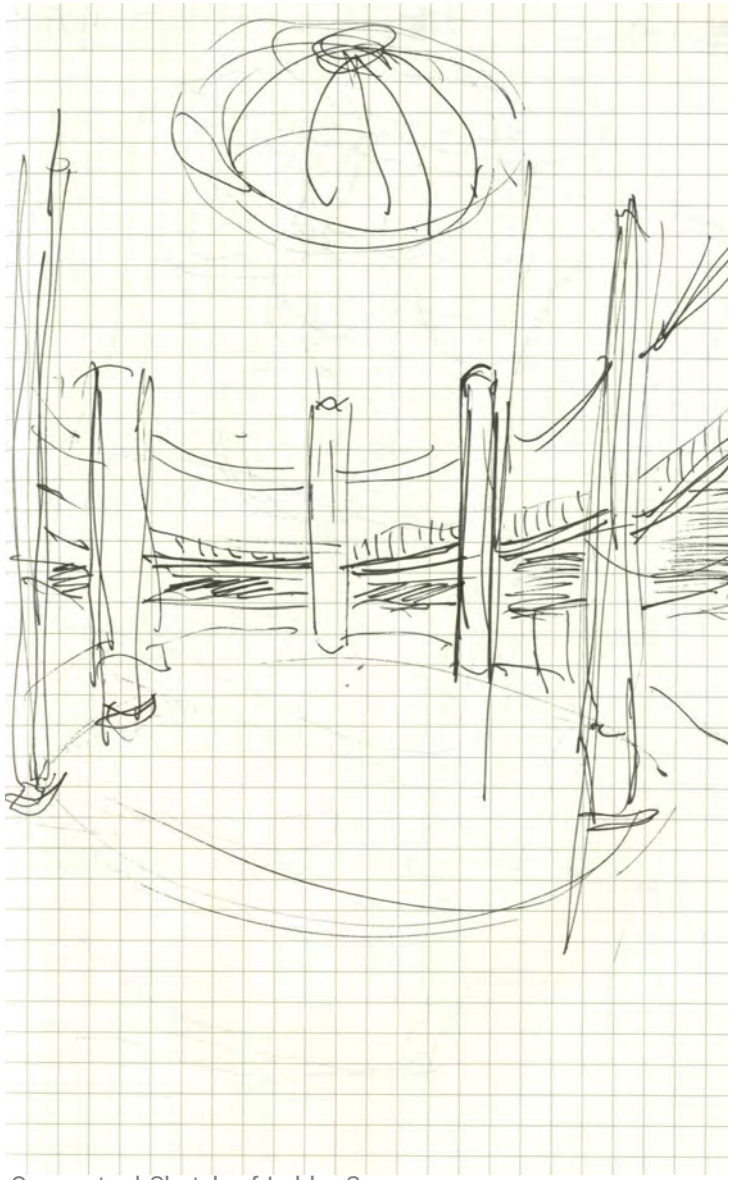
As I began to look at the possibility of having a combined lobby entrance as well as incorporating a light rail station, things started coming together. I also started to rethink my parking, submerging most of it underground. The residential parking is always underground, however, any resident has the option to pull up to the entrance and valet their car. Visitors as well, have that option. Anyone who wishes to park their own, they can either use the entrance underground at the south of the site, or enter from the port by the main residential entrance which takes you down the ramp, and into the garage parking underground. This immediately alleviated a major amount of parking, and allowed me to limit the parking on the Grand mall floor. This was crucial as the grand lobby for the residential now took up about half of the Mall Ground Floor directly under the towers. This lobby provides an official entrance and security, with surveillance , electronic entrance. It also access a major restaurant as well as secondary bar which resides at the mall level.



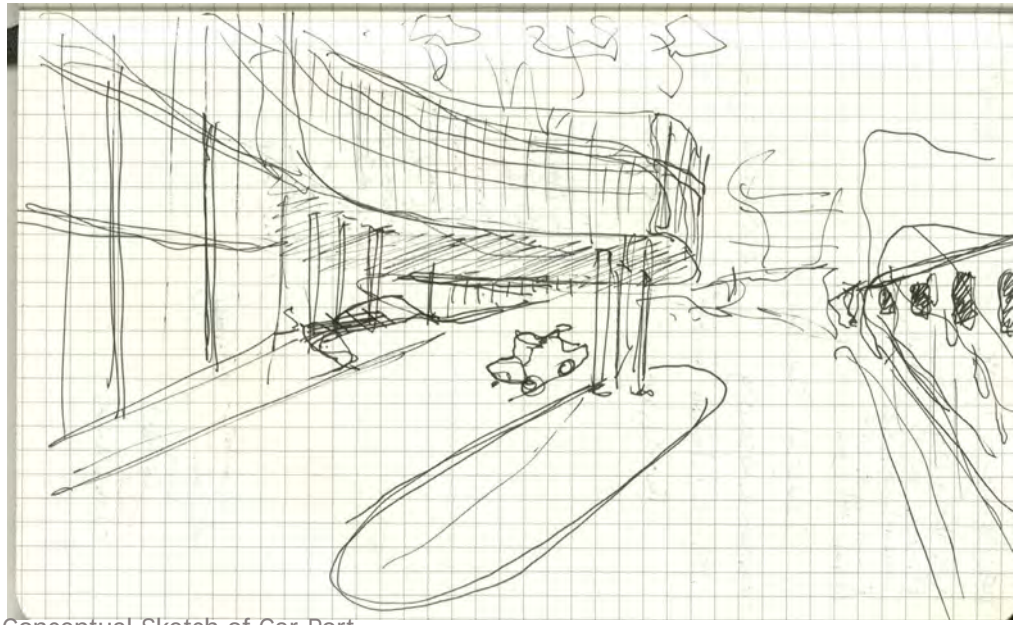
Plinth Cross-Section



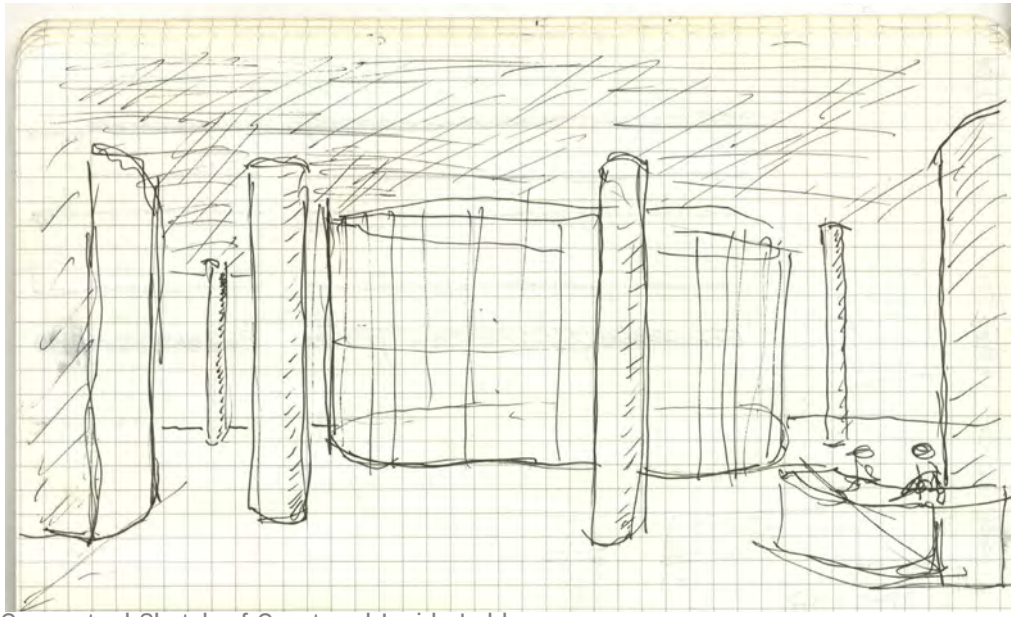
Plinth Longitudinal Section



Conceptual Sketch of Lobby Space



Conceptual Sketch of Car-Port



Conceptual Sketch of Courtyard Inside Lobby

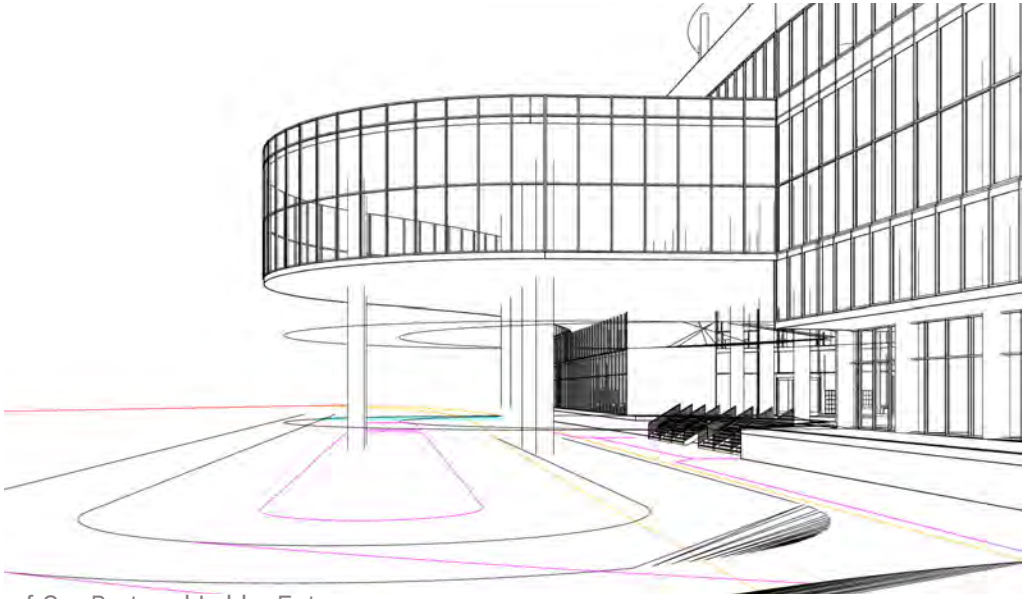
Lobby Entrance

Perspective of Car-Port and Lobby Entrance

Lobby and Residence Entrance

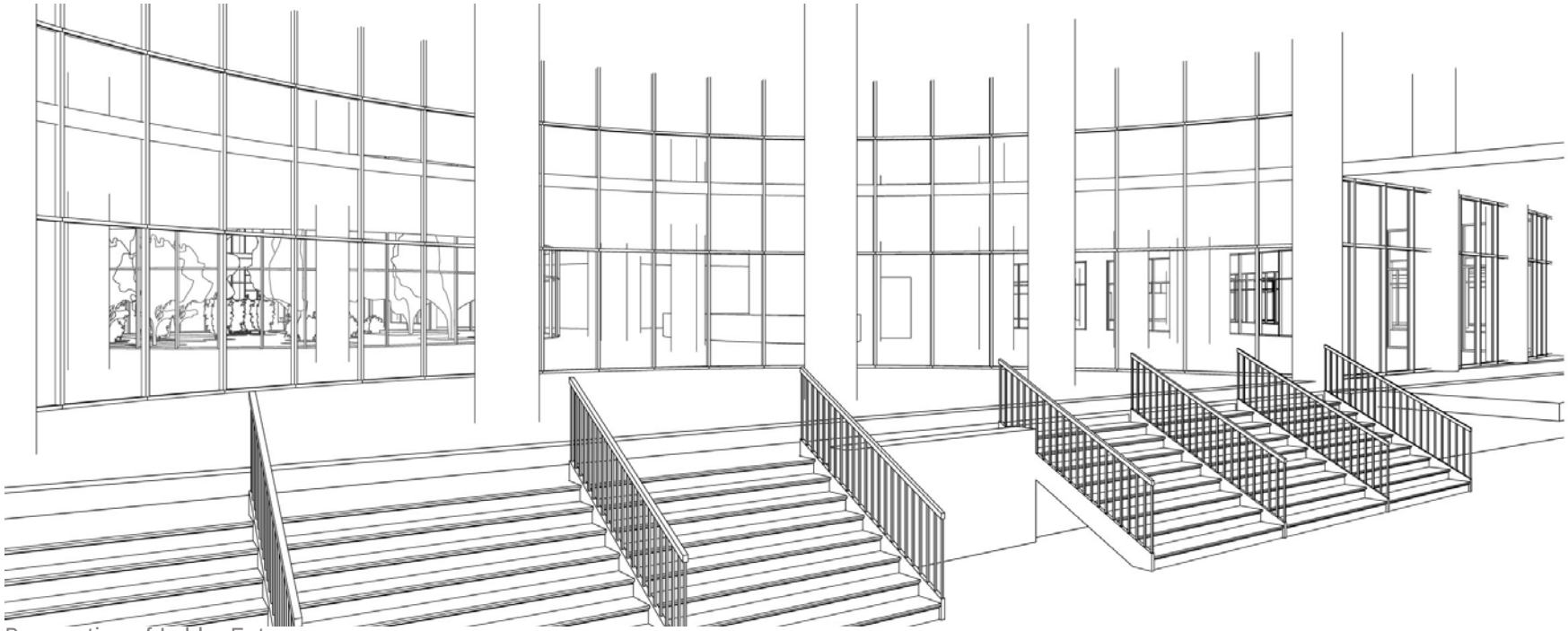
With original sketches, I had an idea how I wanted the space to look like. By creating a car-port which could be pulled under, I also wanted to incorporate that into the above levels, further granting access to another upper deck. By making the port large enough for two cars, one may be parked, and unpacked, while others drive through. I also wanted it to be able to be rounded, and then continued into the garage when loading/unloading was finished. I also wanted the structure, to continue in the similar grid pattern as the rest of the plinth, so I kept those distances as grounding points for the spaces below. Additionally, I wanted the physical entrance to be just as grand. This meant exposing columns, and having great big, almost triple-height spaces that greeted a visitor.

Once you enter the lobby, I wanted there to be an additional opening in the floor above, to further broaden the feeling of the space. There should be ample room to sit, and relax if waiting for a friend or family member, but also cozy enough to not feel dwarfed. The major courtyard which goes all the way to the top of the plinth gardens, would also meet at the lobby providing views into vegetation, as well as through to the other end of the lobby, and then outward through the back. The lobby needs to feel open, and not oppressed by the presence of the towers. This being said, I also wanted the towers to be visible from the edges of the court, allowing for a sense of orientation and direction.



Perspective of Car-Port and Lobby Entrance

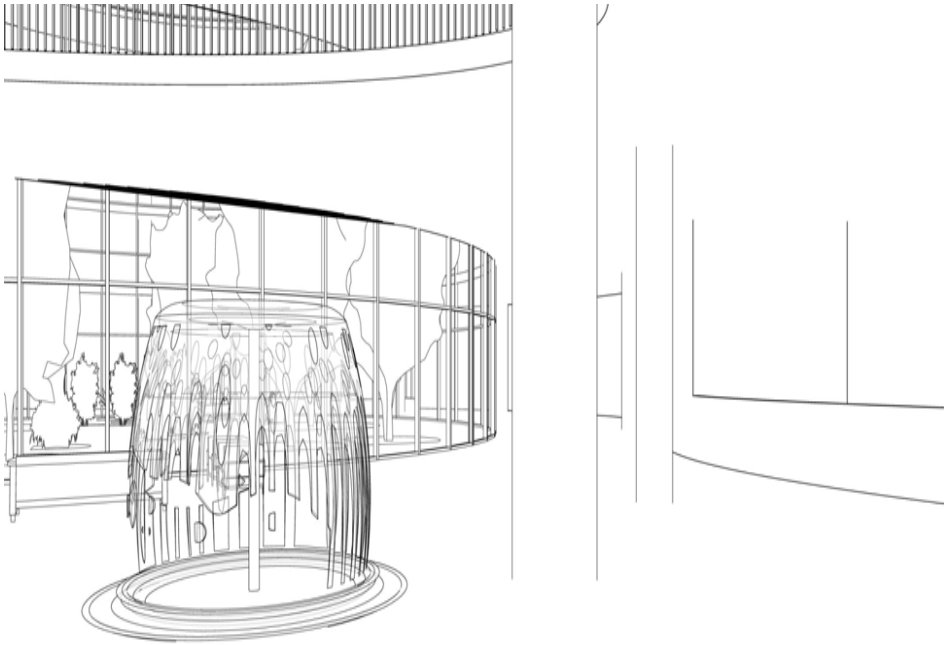
Perspective of Car-Port and Lobby Entrance



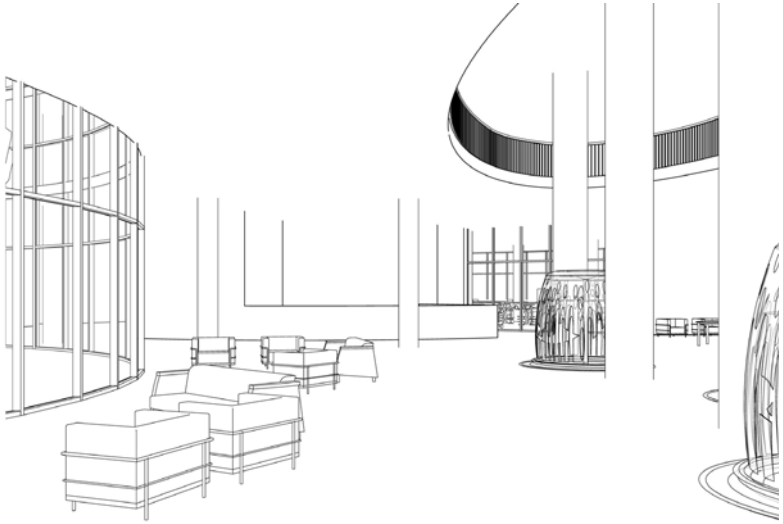
Perspective of Lobby Entrance

Lobby Entrance

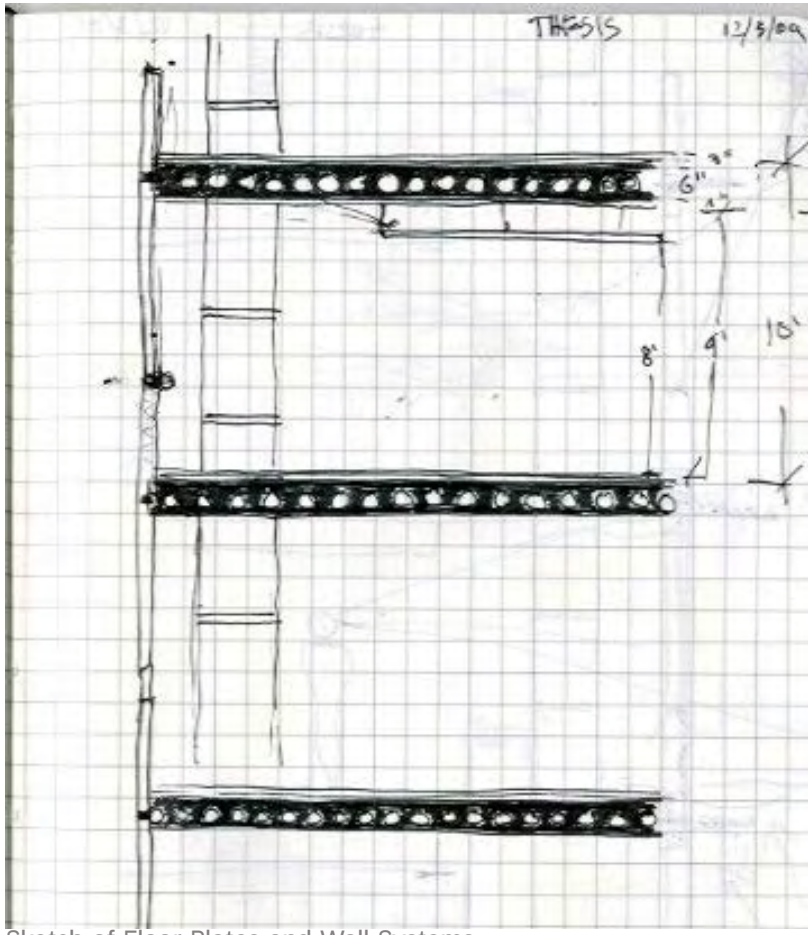
Perspective of Lobby Entrance



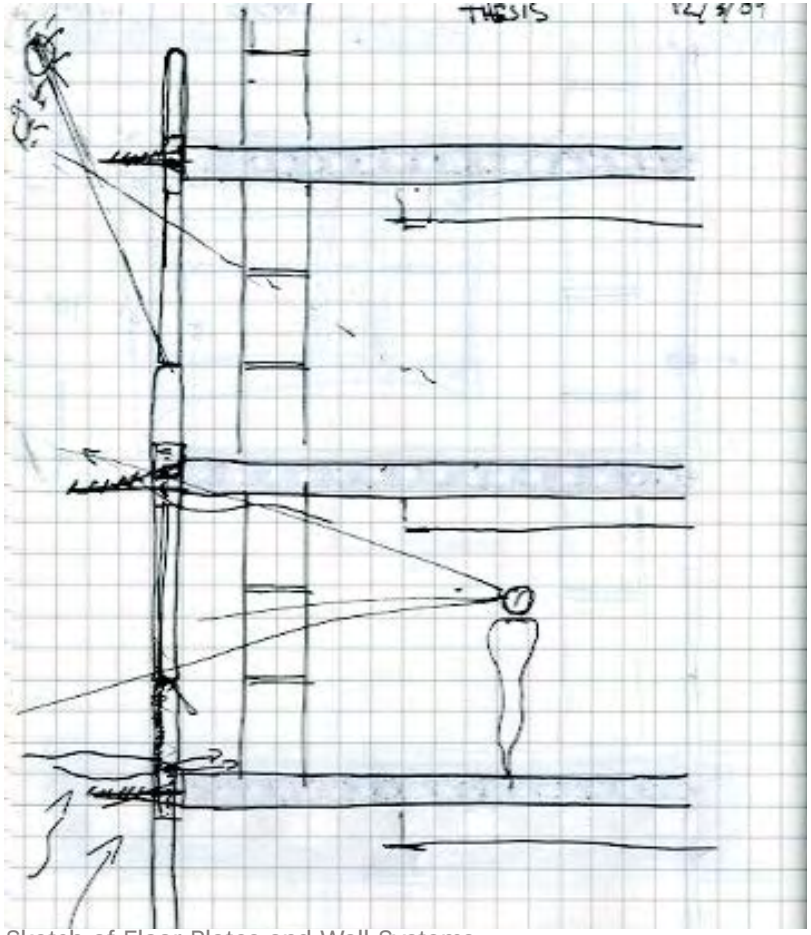
Perspective Inside Lobby Towards Internal Courtyard



Perspective Inside Lobby Towards Reception Desk



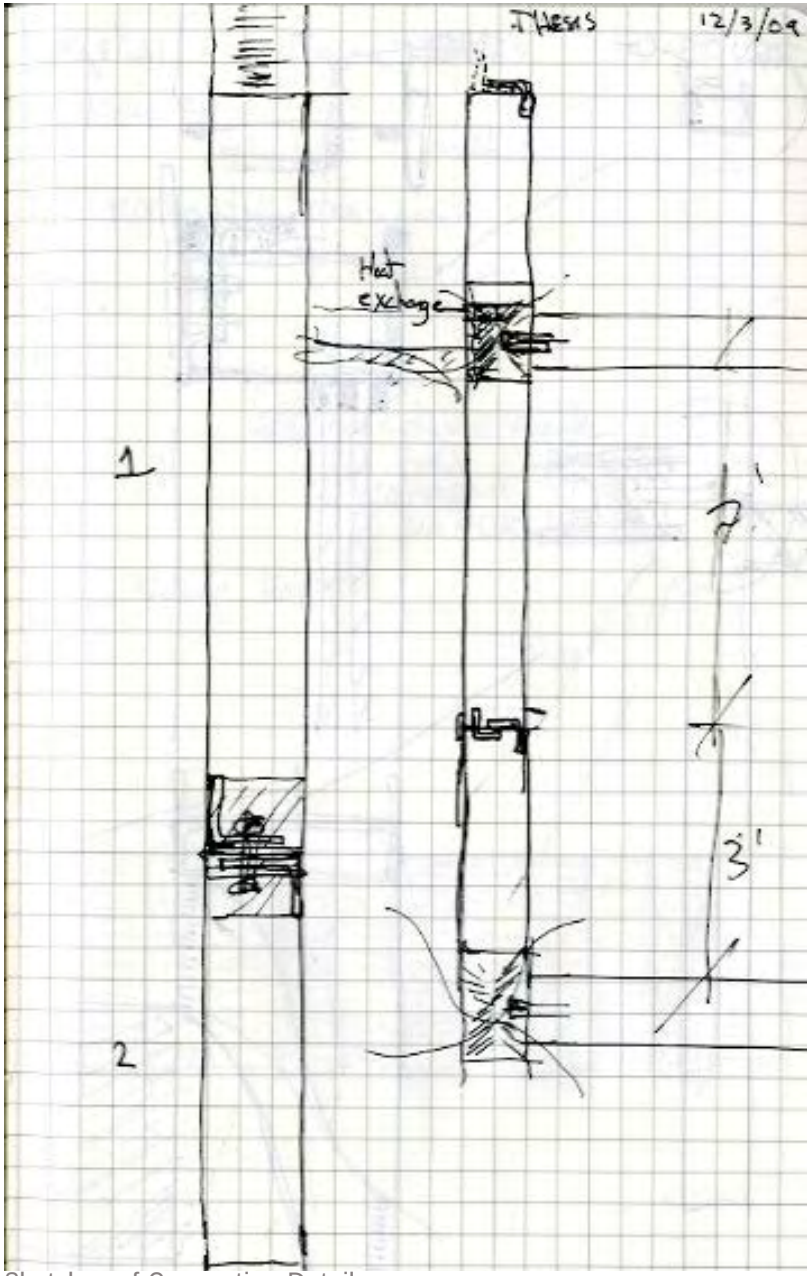
Sketch of Floor Plates and Wall Systems



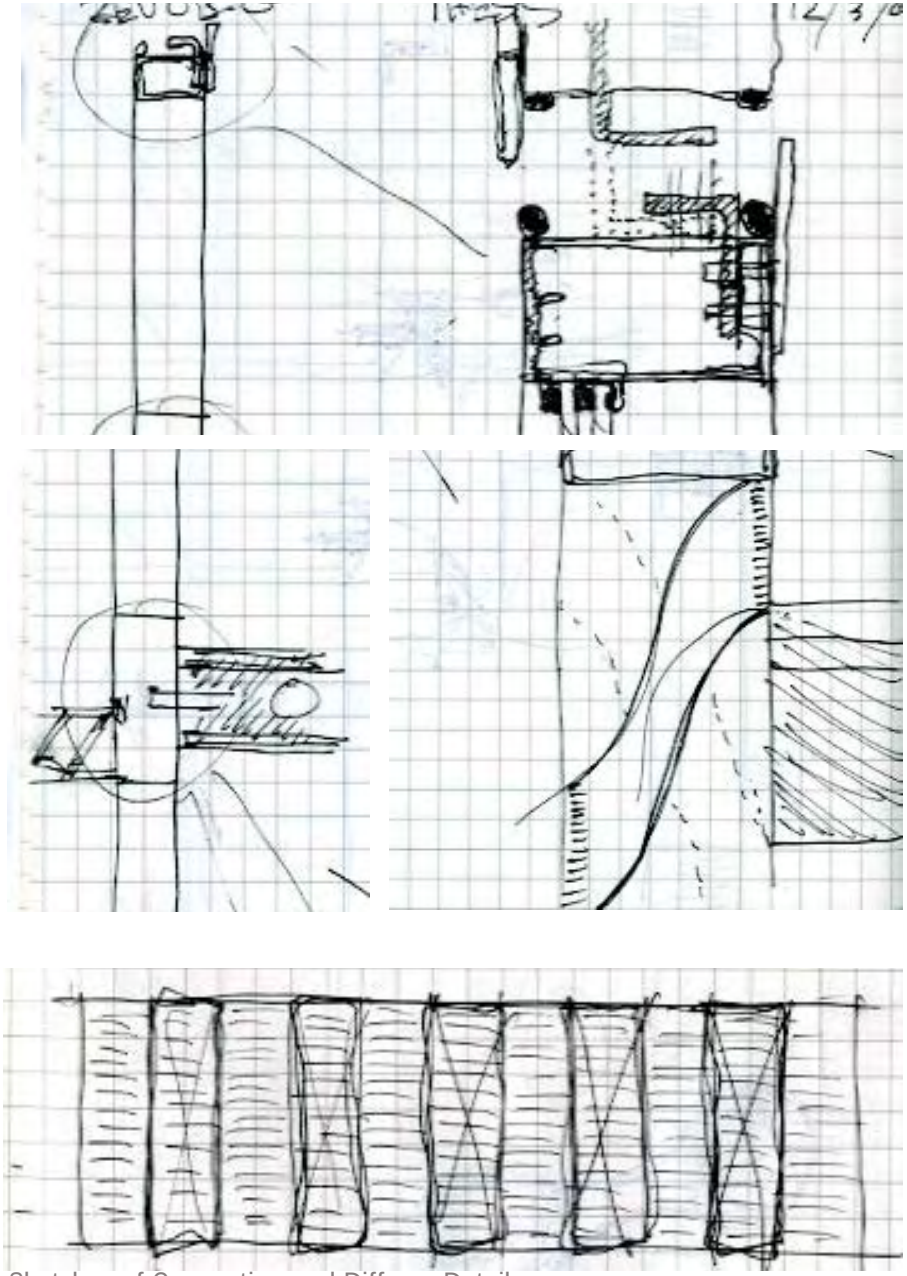
Sketch of Floor Plates and Wall Systems

Exterior Facade Treatments

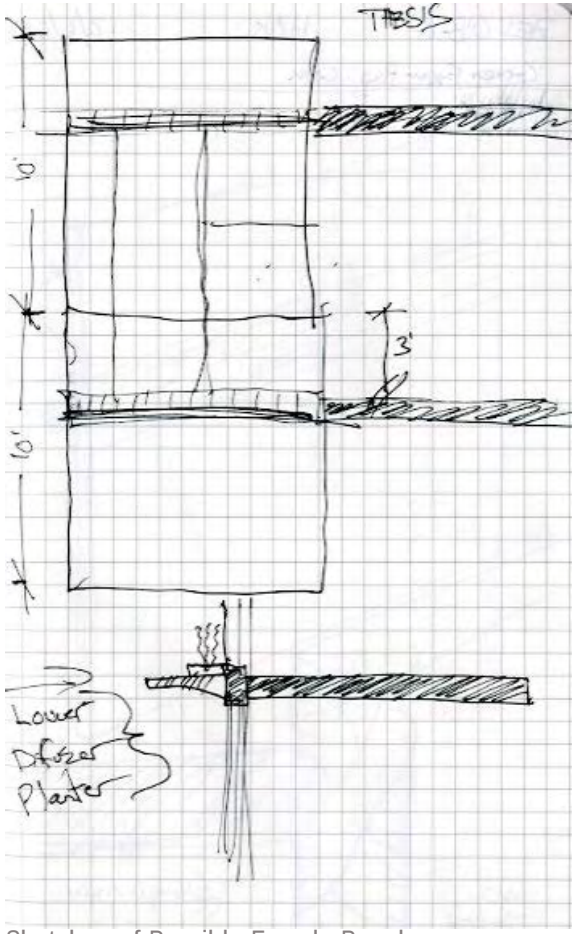
I had already decided that I wanted different treatments of the facade from the atrium spaces to the residential units. This being said, I had previously just treated the walls with punch-windows. As a large tower however, this would be extremely heavy, and very limiting. I wanted to explore the options of having a curtain wall panel system which could react to what I wanted inside. This being that I wanted a system with a series of panels, which different sized, which could produce the maximum amount of customization with the spaces. These panels could also differ in material, as well as function, further adding to the dynamic of the space and exterior. Additionally, I wanted to integrate as many environmental neutral and energy harnessing techniques as possible into the wall system. These included photovoltaics, sun-louvers, plant-climbers with growers, as well as operating windows, and recycled and light weight concrete panels. With all this in mind however, I also wanted to think about means and methods of applying this system to the tower. This needed to be designed so that the ease of implementation was maximized.



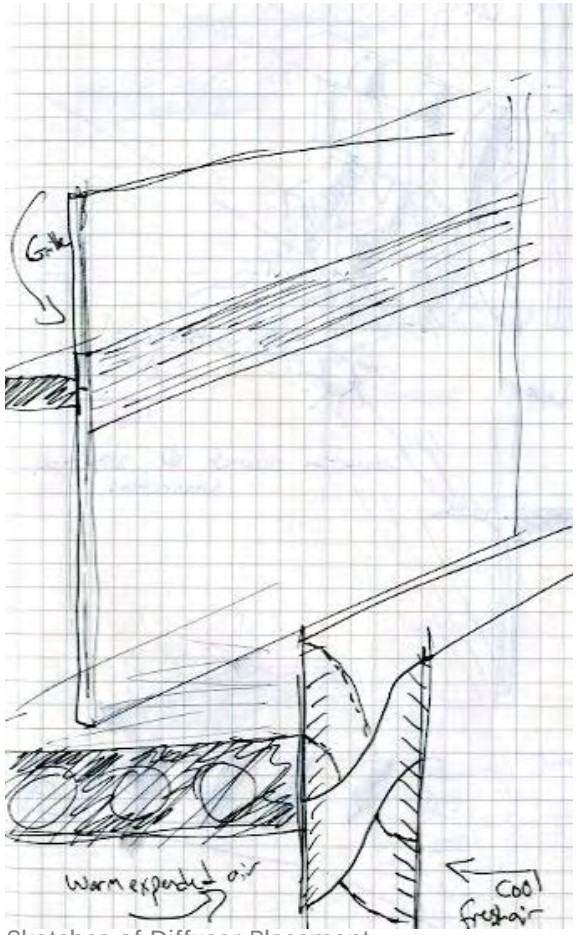
Sketches of Connection Details



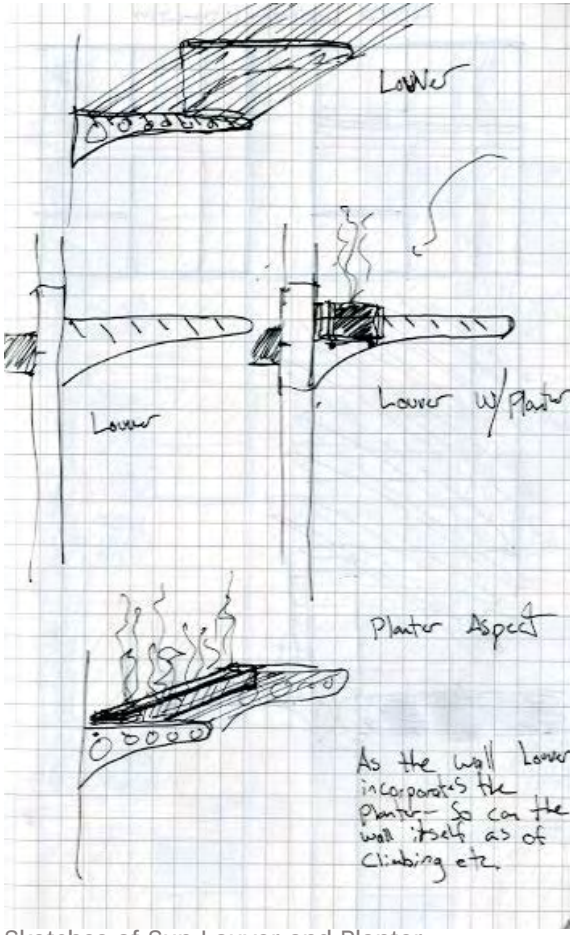
Sketches of Connection and Diffuser Details



Sketches of Possible Facade Panel



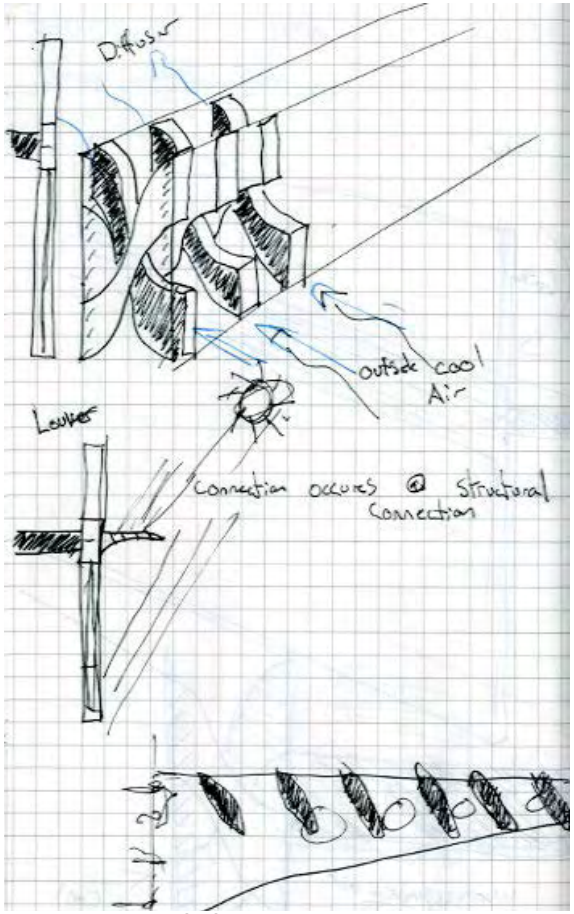
Sketches of Diffuser Placement



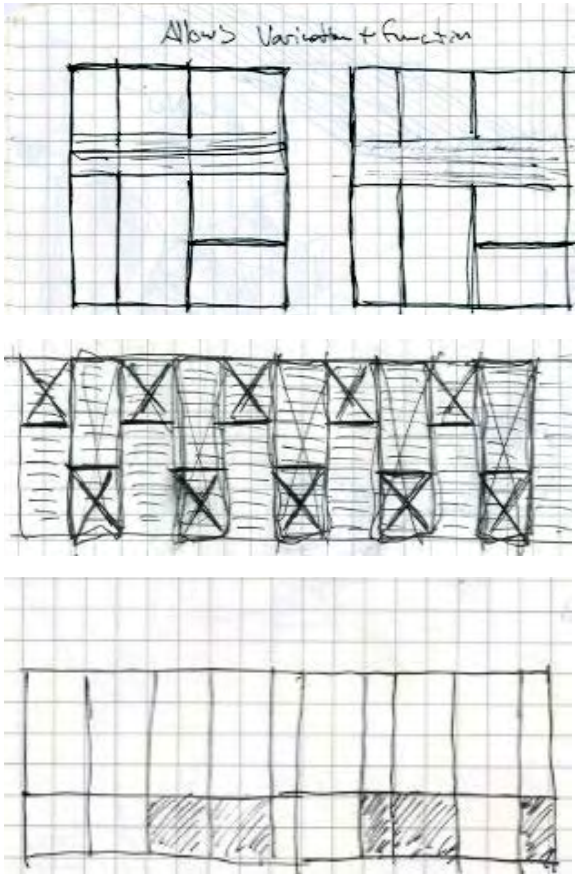
Sketches of Sun Louver and Planter

Facade Details

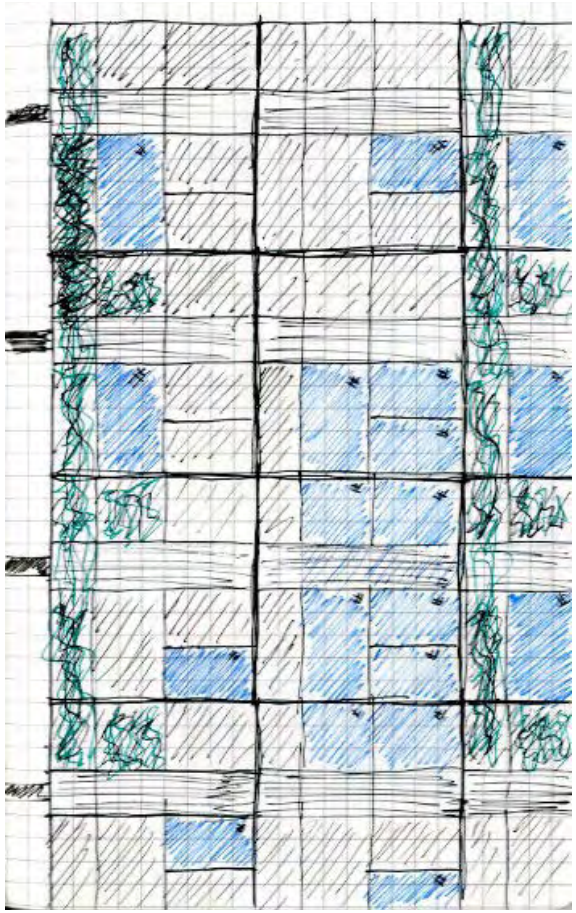
The idea behind the curtain wall is that is would be positioned so that it sticks up 3 feet from the floor, and hangs 7 feet below. These would then be connected at this point, and continued upwards. The advantage of this is time and ease. By implementing this system in this fashion, much less time must go into adding safety lines across the spaces for the construction workers. With the 3 foot height, the safety line is not needed, allowing much faster assembly. This also allows members to be on both levels, standing, and assisting the movement of the panel from a crane, instead of hanging over the edge at both points where the floor slab meets the wall. This also allows both members to have a hand on the outside of the panel while maneuvering it, which aids the construction. The method is designed to reduce time and increase productivity. By designing the panels to lock in this way, lots of time and money is saved.



Sun Louver and Planter Aspects



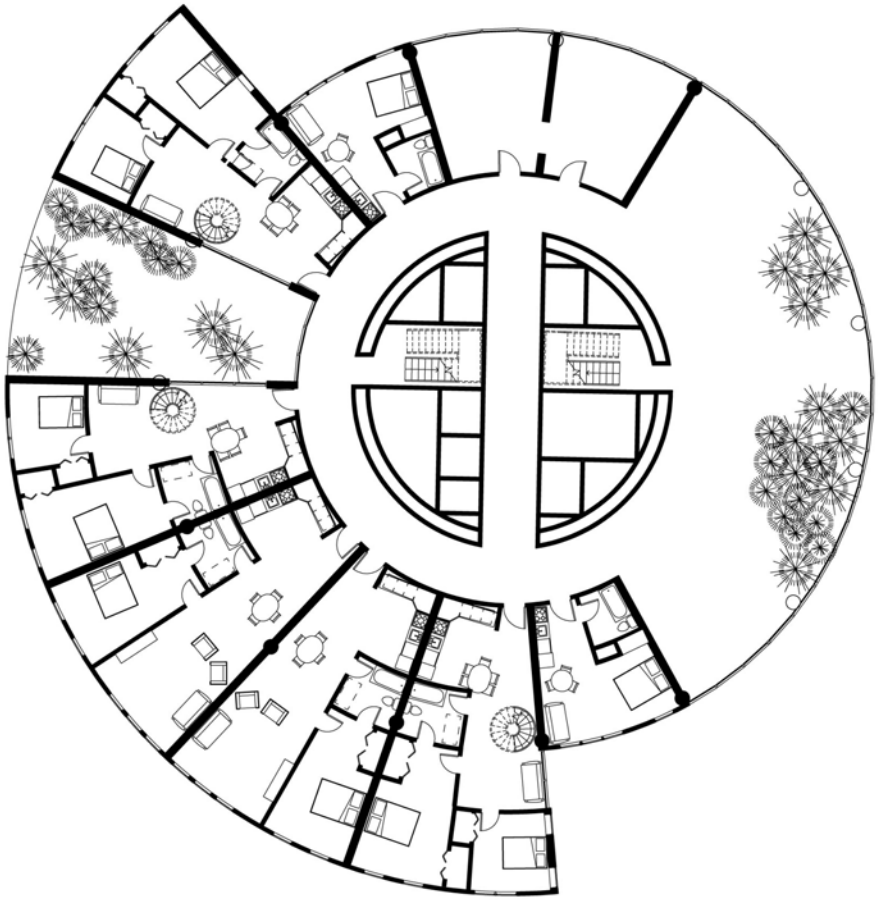
Panel Designs and Diffuser Sections



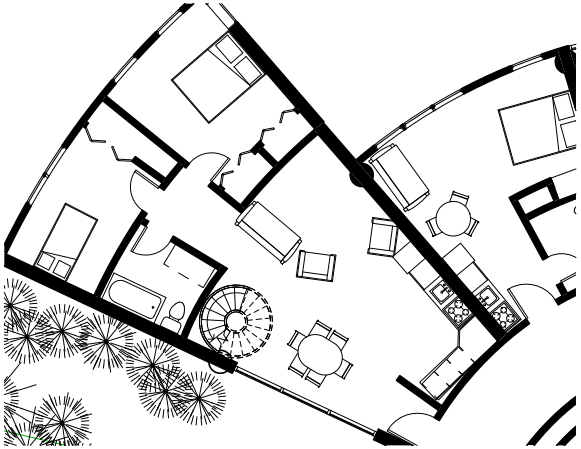
Panel Breakdown, and Facade Design

Facade Details

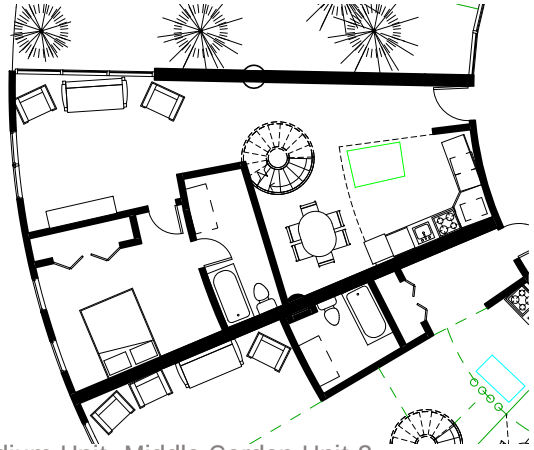
In the Middle of the panel, at the point at which it connects to the floor slab, I wanted there to be a natural vent which could be operated to be open or closed. This would mean that the similar vent would exist at the top few inches as well as the bottom few inches of each room span allowing for ventilation to come in the bottom and exhaust at the ceiling. This would be a two-way system which would allow for the warm exhausted air to momentarily preheat the incoming fresh air for the unit above. Small, but still active effects. Additionally, at this point, there could be attached a sun-louver at points where spans of glass exist. This would minimize overheating during hot summer days, while still allowing for solar penetration in winter months. Integrated into this system, could also exist at certain points a plant grower which could allow for climbing vines to clime up mesh panels on the system, covering the portions of the wall with living plants. As the panels all have different sizes and shapes, they can be manipulated to mimic and conform to the needed function behind. While intersecting with a wall, they can be solid, when a small window is needed they can be operable, and when large expansive double-height spaces exist, they can be full of glass for views.



Level 1, as of Gate Review



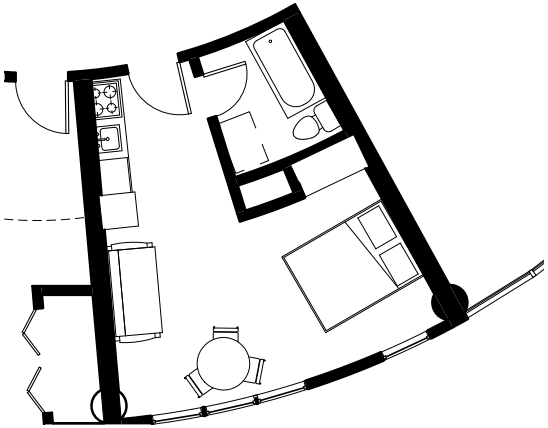
Medium Unit, End Garden Unit

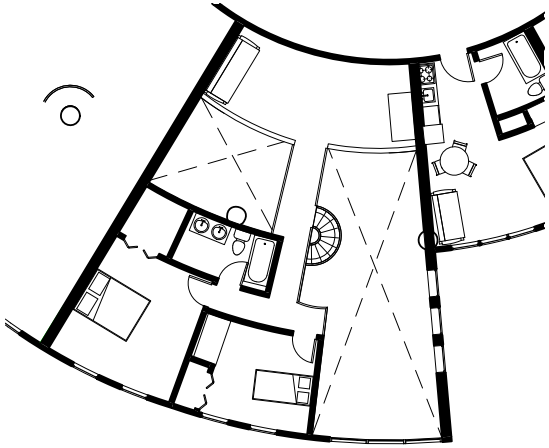


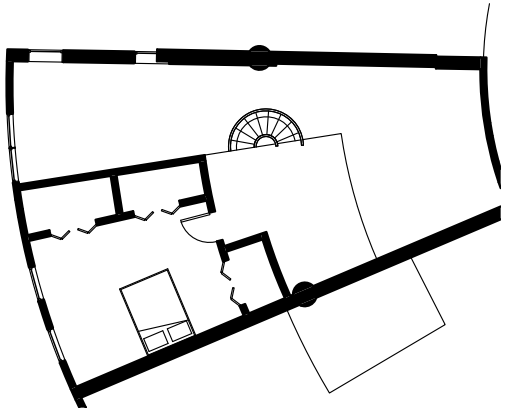
Medium Unit, Middle Garden Unit 2

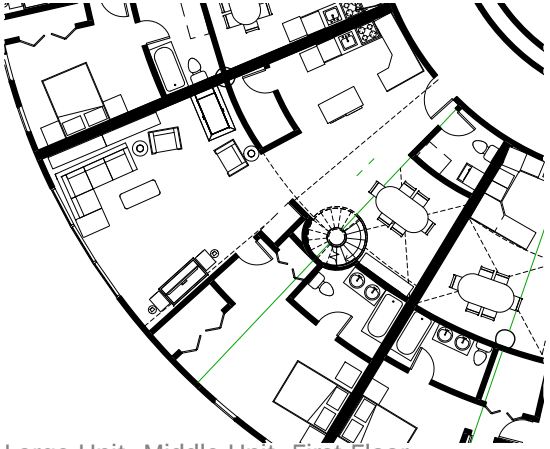
The Residential Units

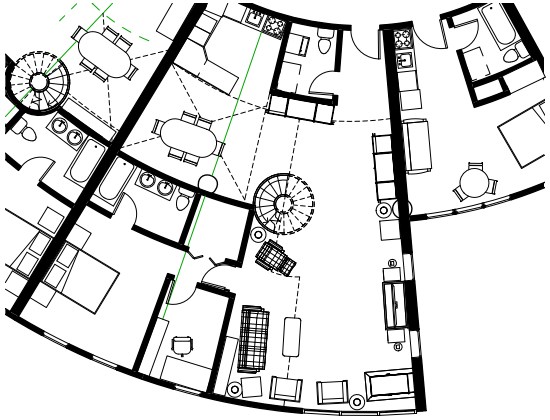
The Units went through hundreds of tweaks to make them the best they could possibly be. Some of the main changes include making the larger units to 1.5 times their first iterations. This made them actually large enough to really be a livable space and comparable luxury units. This also created a change in how the rotating garden related to the units. As the garden stayed the same size, the units now had to exist with the 1.5 unit ratio, while still allowing for the garden to rotate in the same pattern it had been. Also, most of the large units were then changed to double-height with open spaces in their living areas which serviced light into the rooms towards the back. Again, because the units change as the garden moves, this adds to variation, and the end result allows each unit can be unique. While it may be in a similar position as the floor below, its relation to the garden at its own level may be completely different than the levels below.

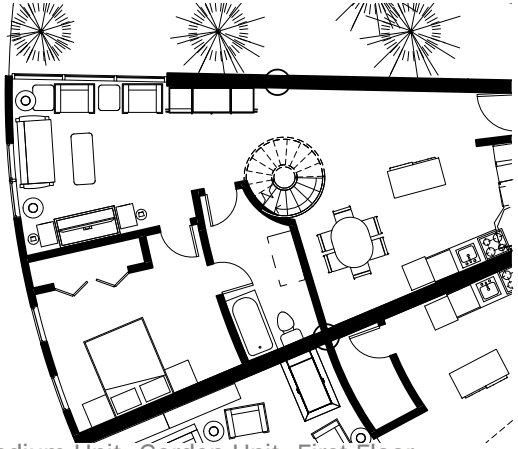

Studio Unit

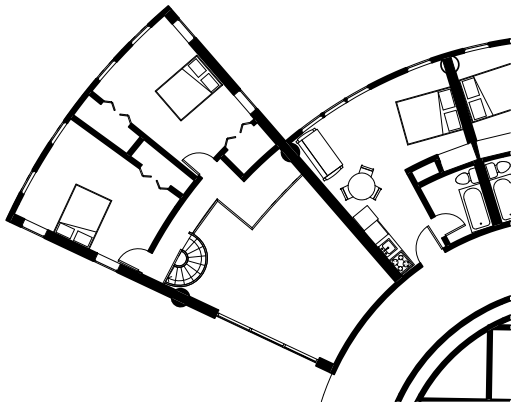

Large Unit- End Unit- Second Floor


Medium Unit- Garden Unit-Second Floor

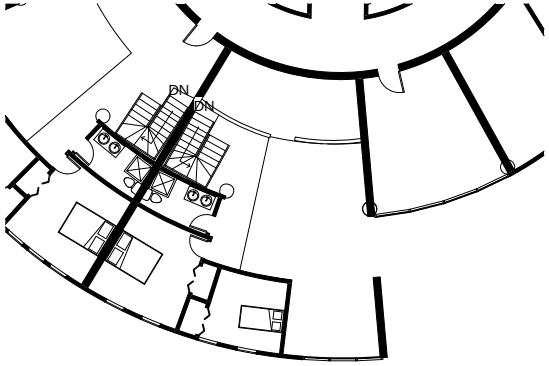

Large Unit- Middle Unit, First Floor


Large Unit- End Unit-Frist Floor


Medium Unit- Garden Unit- First Floor

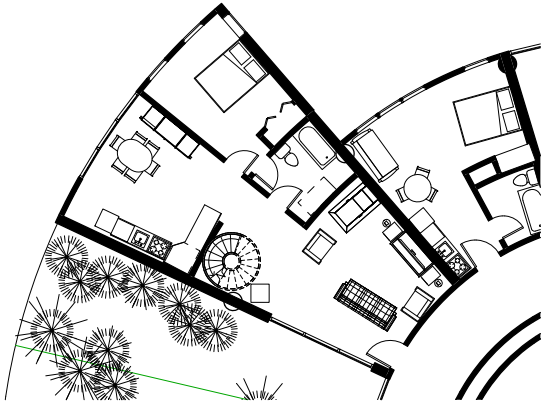


Medium Unit- End Garden Unit- Second Floor

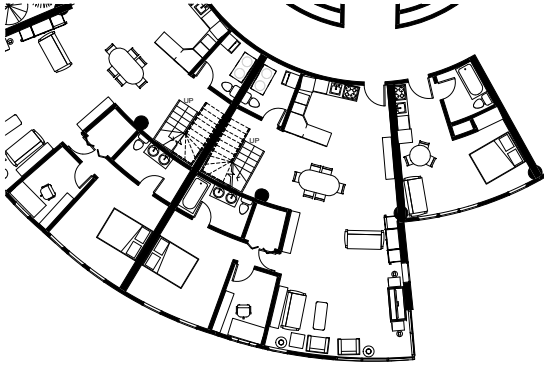


Large Unit- End Unit- Second Floor

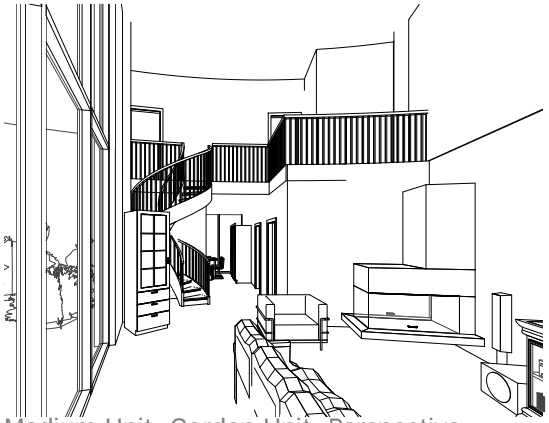
Large End Unit- Section



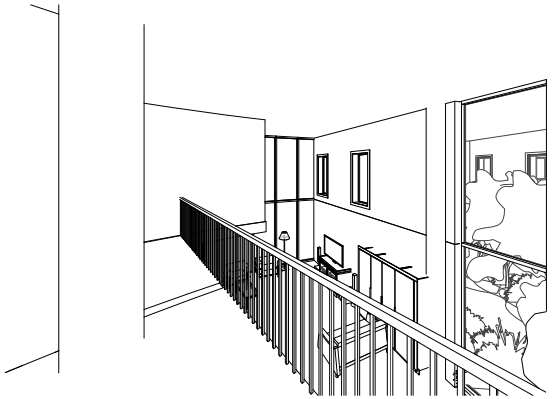
Medium Unit- End Garden Unit- First Floor



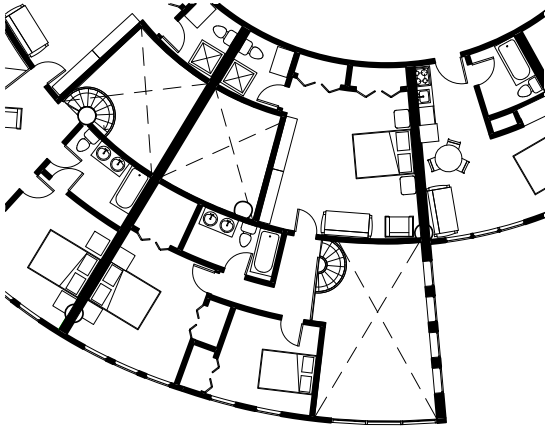
Large Unit- End Unit- First Floor



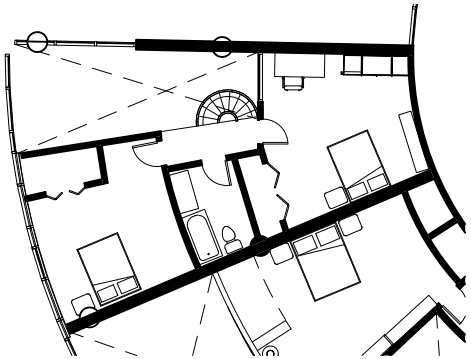
Medium Unit- Garden Unit- Perspective



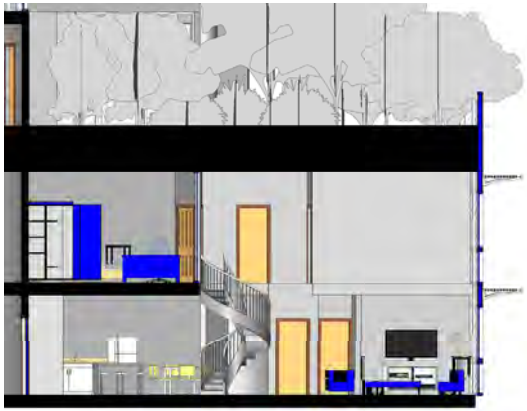
Medium Unit- Garden Unit- Perspective



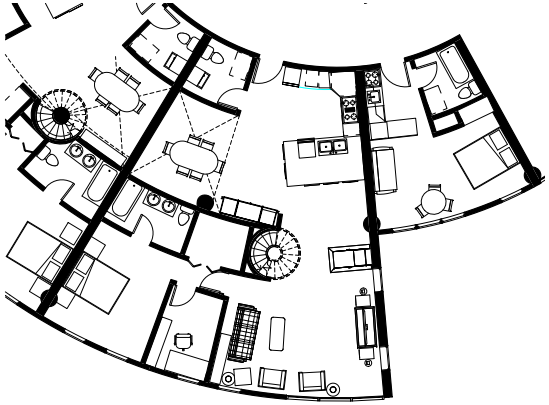
Large Unit- End Unit- Second Floor



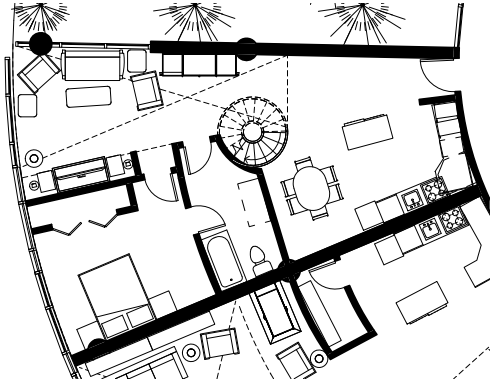
Medium Unit- Garden Unit-Second Floor



Medium Unit- Middle Unit, Section



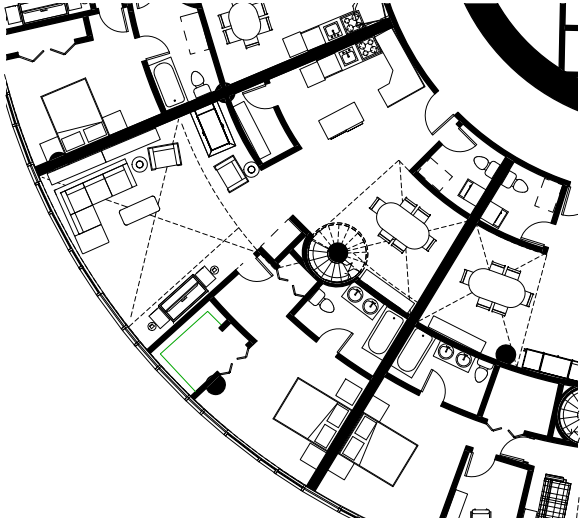
Large Unit- End Unit-Frist Floor



Medium Unit- Garden Unit- First Floor

Large Unit- Middle Unit- Section

Large Unit- Middle Unit- Second Level

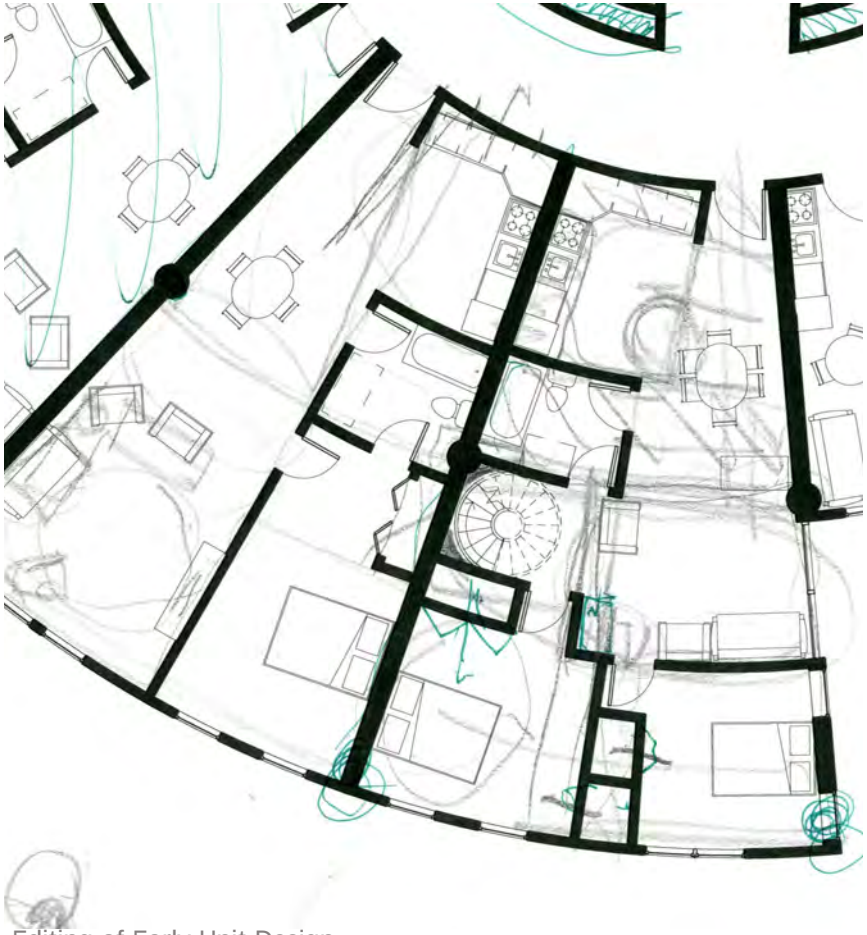


Large Unit- Middle Unit- First Level

Changing Units

As each and every unit goes through transformations in plan, there are also the other facets of the building which are also being developed simultaneously. There now exits Large, Medium, and Small Units within the floor plan. Besides these organizing factors, there are also variations within each unit set. Some are either End, End next to a Garden, Middle, or Middle next to a Garden. Furthermore, there are also differences within these sets as well including a change in number of rooms, addition of an office, change in shape of the kitchen, and change in staircase style. Additionally, there has been a significant change in the facade treatments, such that the parameter wall is now comprised of a curtain wall system, which changes the opening capabilities for each of the spaces.

Early Rendition of Units, Editing Markings are Visible



Editing of Early Unit Design

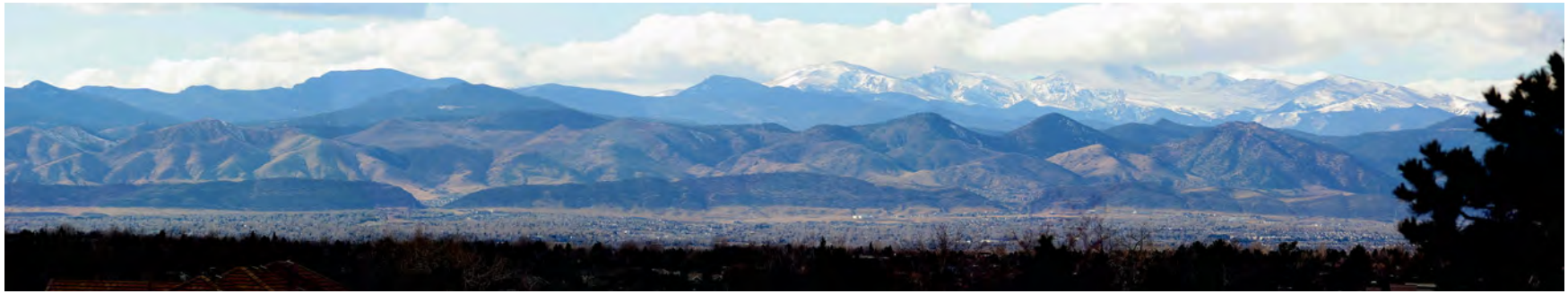
Changing Units

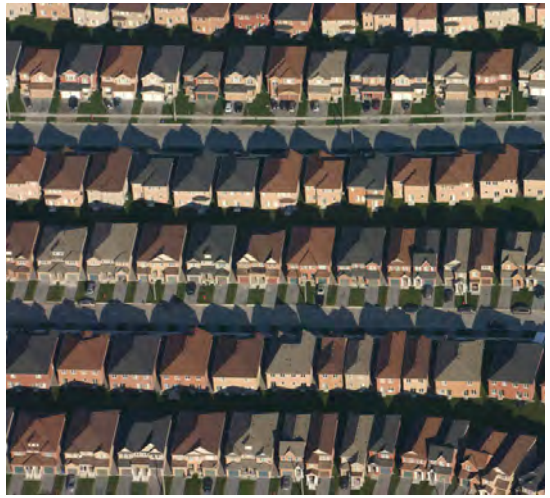
Each time I would produce a newly developed floor plan, there were several analytical aspects which allowed me to change and reconsider my decisions. What helped me along the way was constantly printing out each unit, drawing over, adding notes, and making change, I was able to slowly progress each and every design. While some of the units started out rather primitive, they had to start somewhere. Knowing that each and every time I refined the plan, I would eventually follow up with a “red-line” critique of each space, I was able to avoid becoming invested or attached to every move I had made, but rather excited in the progression towards a cleaner and more complete design. Remaining positive about each critique was crucial in maintaining a progressive attitude toward the refinement phase of design and channeling the positive feedback into a better end product.

Final Presentation

Final Critique

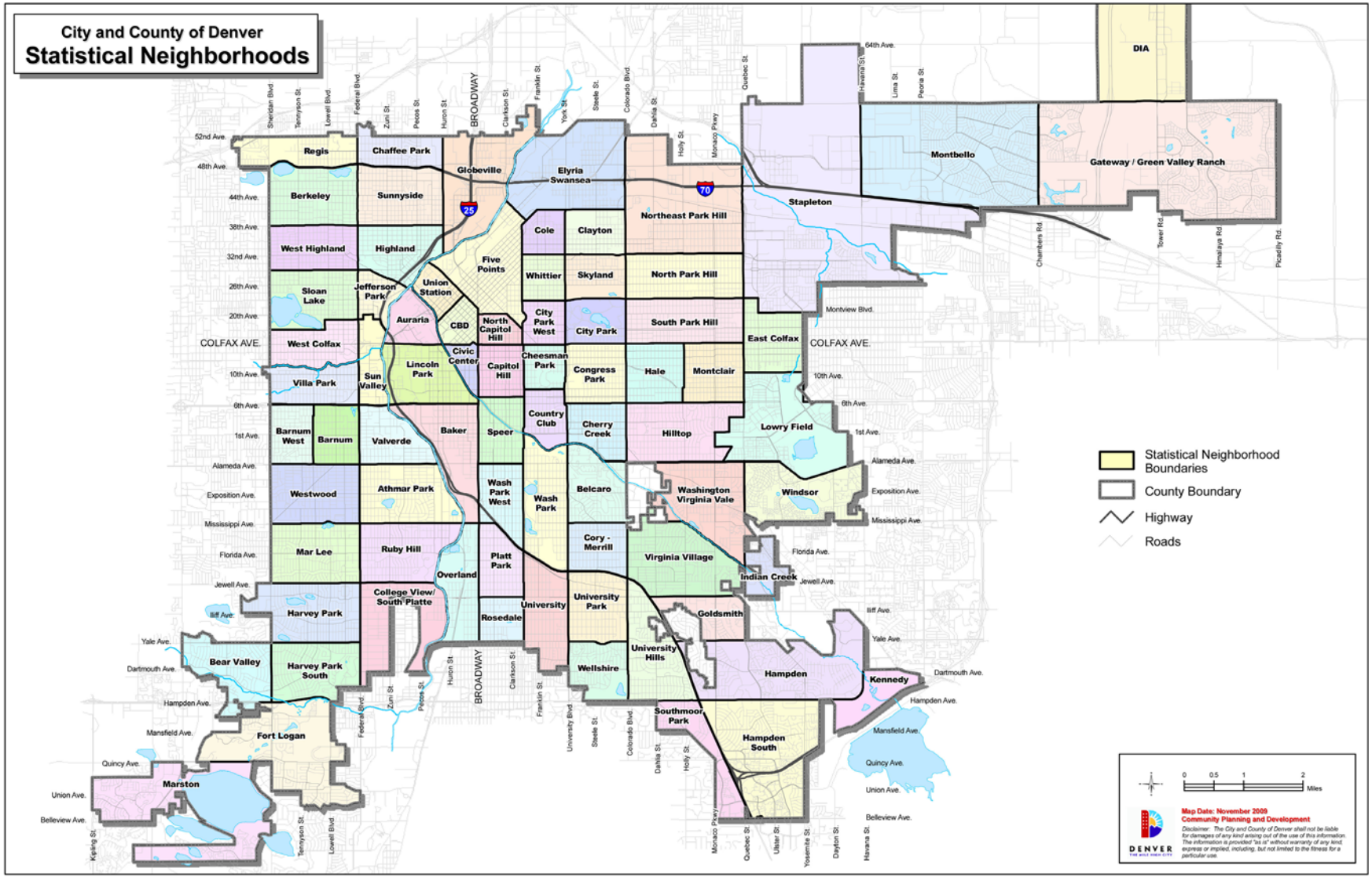
The following drawings are my final products for this Design Thesis. Although they represent my final work, and final design, a project can and will always use some additional refinements. While the product is something that I am very pleased with, the final critique was a great discussion regarding what direction the project could theoretically continue in if I were to have additional time to work on it. From sketches, notes, studio models, laser-cuts, computer drawings, printouts, and computer renderings, the project has been sifted through a multitude of medium in order to get to this point. Each and every aspect of the entire design, from door swings, to tower heights, stair direction, mall entrance locations, to the overall language, and yet back again to small interior finishes, the project has been thought out, ripped apart, and pieced back together time and time again. As the project is a constant balance between aesthetic attributes and functionality of product and form, the design has taken shape gradually. Each and every step in between was a necessary point at which contemplation and problem solving had to take place. This is the end result.





Suburbs of Denver, Colorado

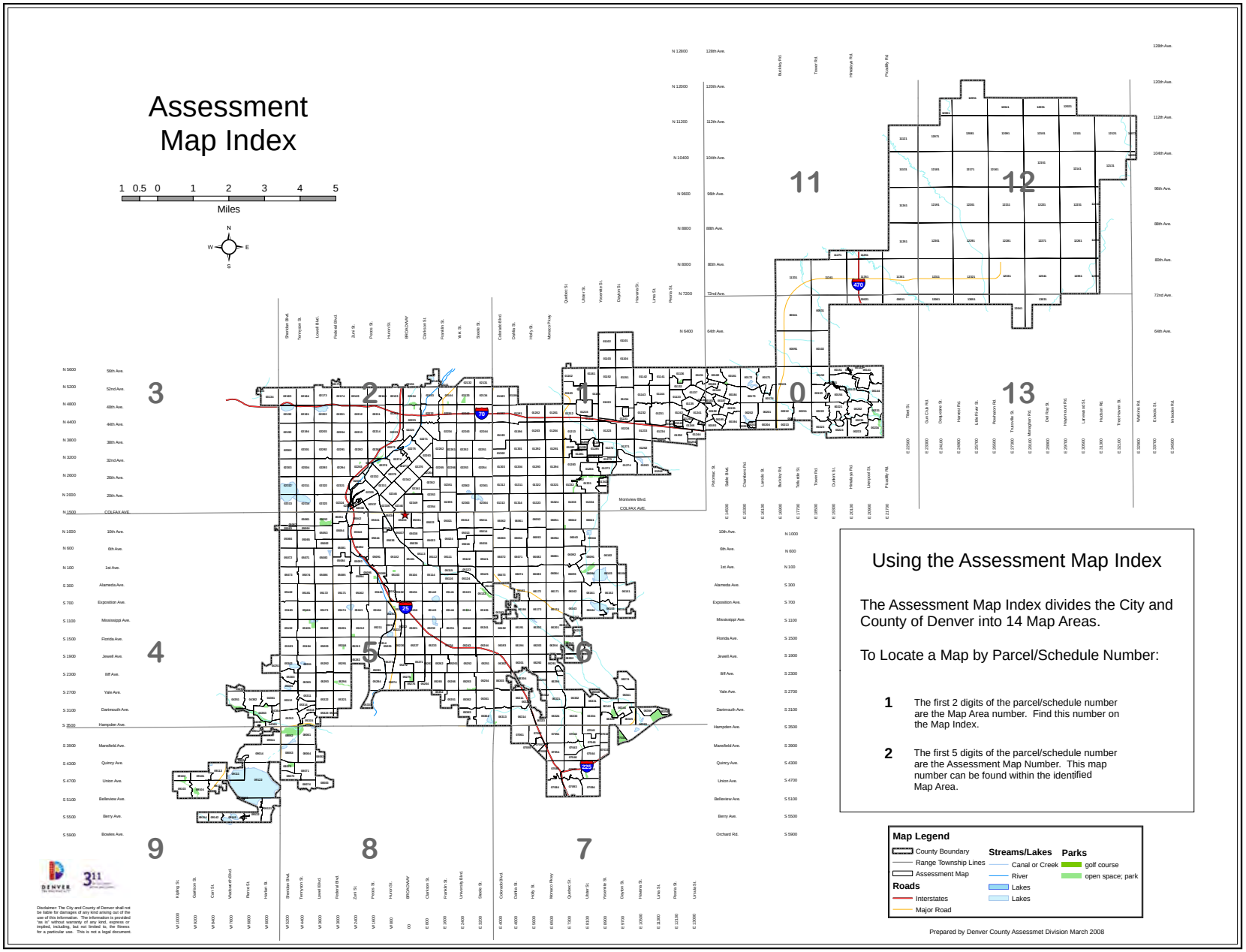
Denver Colorado

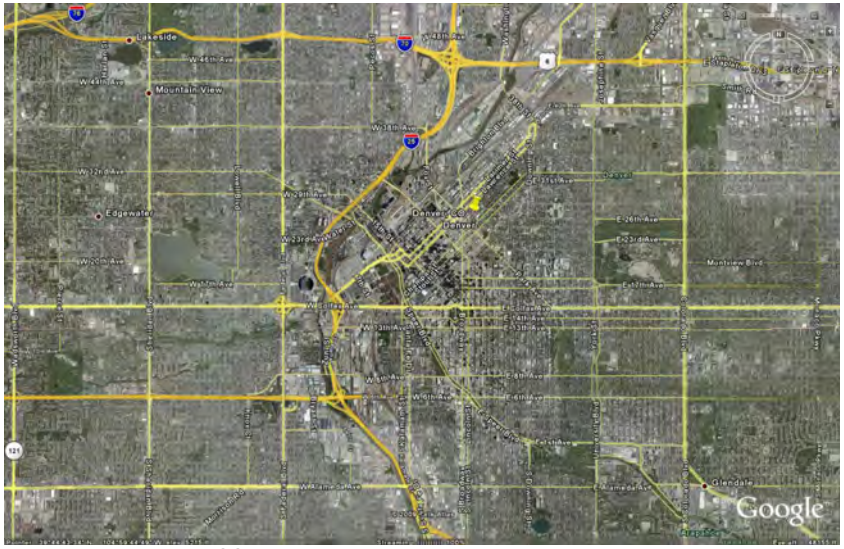

City and County of Denver
Statistical Neighborhoods
Regis
Chaffee Park
Globeville
Elyria Swansea
Berkeley
Sunnyside
Northeast Park Hill
Stapleton
Montbello
Gateway / Green Valley Ranch
DIA
West Highland
Highland
Five Points
Cole
Clayton
Whittier
Skyland
North Park Hill
Sloan Lake
Jefferson Park
Union Station
Auraria
CBD
North Capitol Hill
City Park West
City Park
South Park Hill
East Colfax
West Colfax
Civic Center
Lincoln Park
Capitol Hill
Cheesman Park
Congress Park
Hale
Montclair
Villa Park
Sun Valley
Country Club
Cherry Creek
Hilltop
Lowry Field
Barnum West
Barnum
Valverde
Baker
Speer
Westwood
Athmar Park
Wash Park West
Wash Park
Belcaro
Washington Virginia Vale
Windsor
Mar Lee
Ruby Hill
Platt Park
Cory - Merrill
Virginia Village
Indian Creek
Overland
College View/ South Platte
University
University Park
Goldsmith
Harvey Park
Rosedale
Bear Valley
Harvey Park South
Wellshire
University Hills
Hampden
Kennedy
Southmoor Park
Hampden South
Fort Logan
Marston
COLFAX AVE.
BROADWAY
Statistical Neighborhood Boundaries
County Boundary
Highway
Roads
Miles
Map Date: November 2009
Community Planning and Development
DENVER

The Tower, within the Context of Denver, Evening

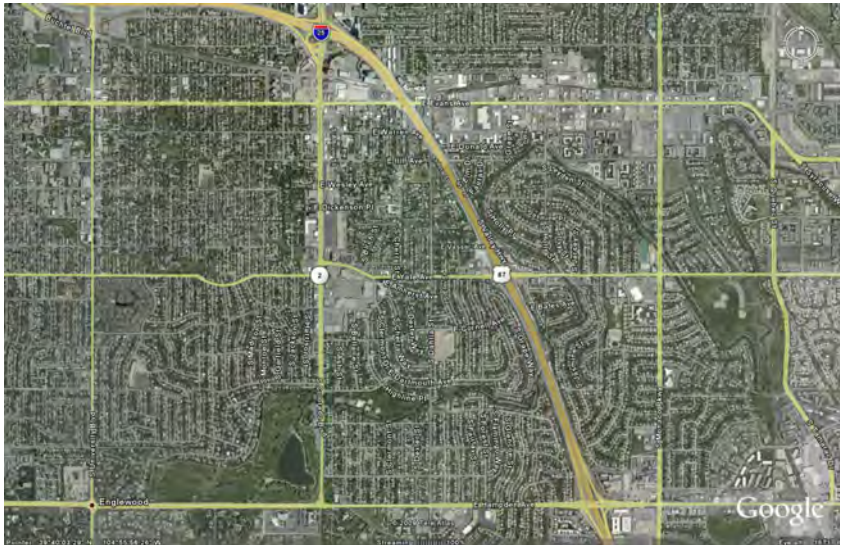
The Tower, within the Context of Denver Looking West

The Tower, within Denver at Night Looking Northwest


Assessment Map Index
1 0.5 0 1 2 3 4 5
Miles
N
W
E
S
3
2
1
0
11
12
13
4
5
6
9
8
7
Using the Assessment Map Index
The Assessment Map Index divides the City and County of Denver into 14 Map Areas.
To Locate a Map by Parcel/Schedule Number:
1 The first 2 digits of the parcel/schedule number are the Map Area number. Find this number on the Map Index.
2 The first 5 digits of the parcel/schedule number are the Assessment Map Number. This map number can be found within the identified Map Area.
Map Legend
County Boundary
Range Township Lines
Assessment Map
Roads
Interstates
Major Road
Streams/Lakes
Canal or Creek
River
Lakes
Lakes
Parks
golf course
open space; park
Prepared by Denver County Assessmet Division March 2008



Greater Denver Grid System



Lack of Grid

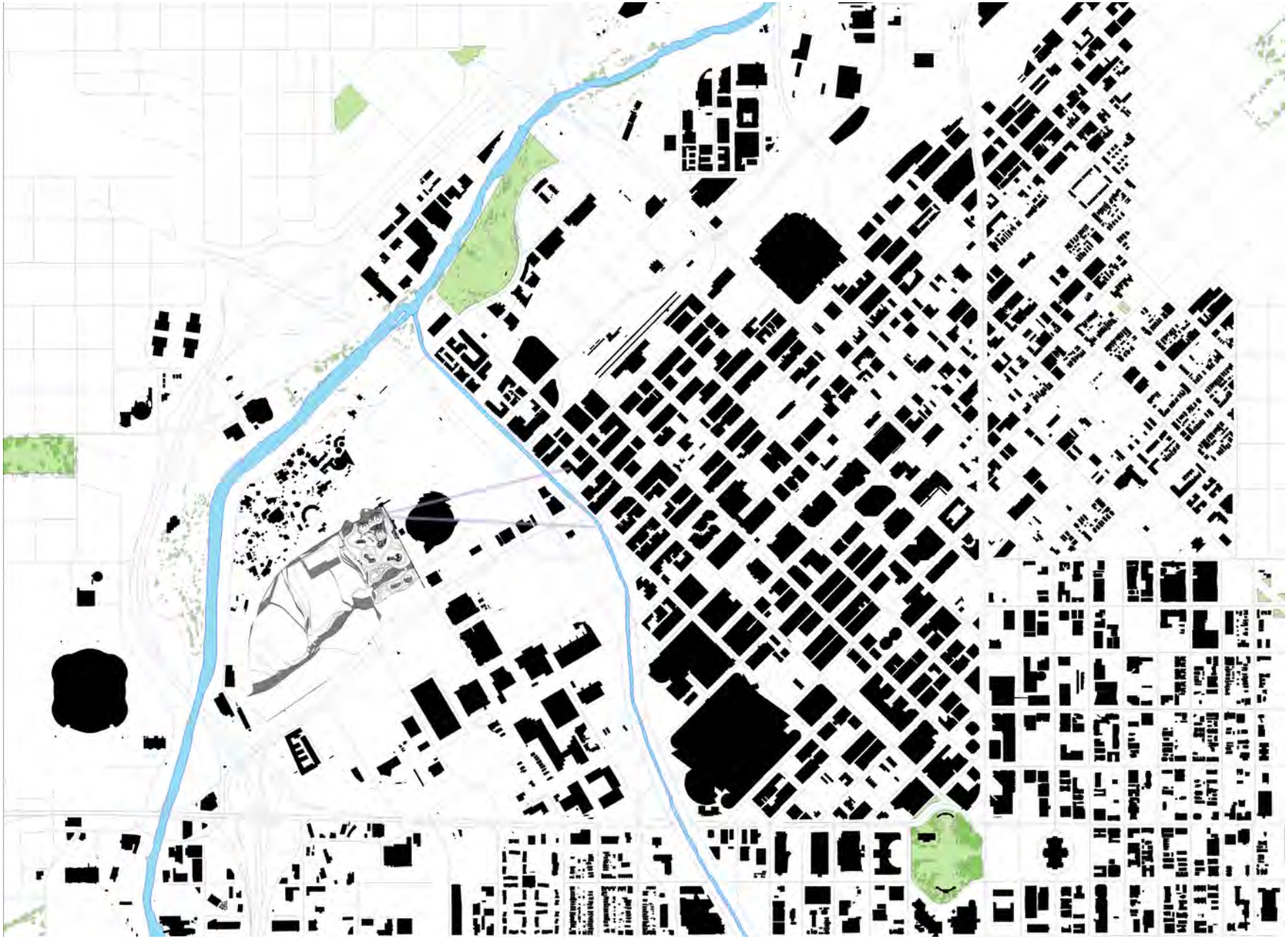
Grid with Large Highway Spline

Uniform Grid

View From Site of Lower Downtown

Project Placement

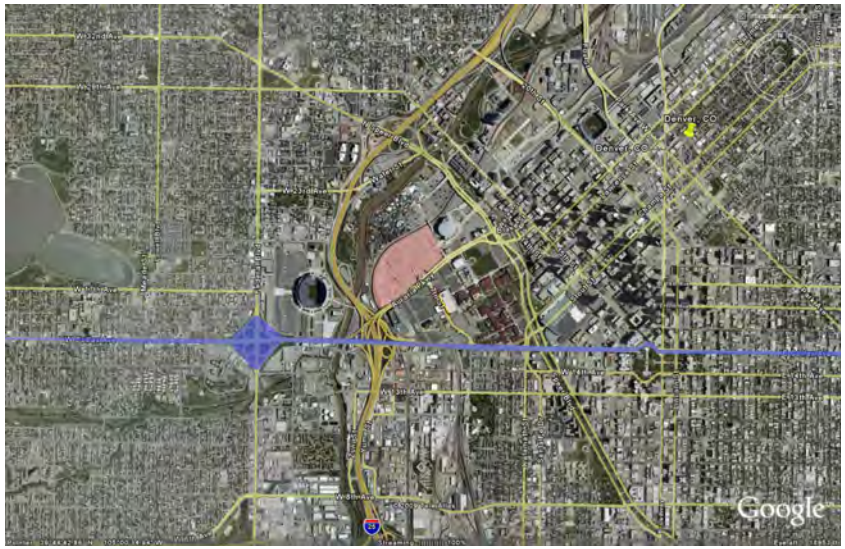
This view is similar to what the views on top of the Plinth Park would be like. This is a night shot looking at the Lower Downtown of Denver's Financial center. While slightly removed from the very core of the finance center, the project is within walking distance and incorporates numerous means and methods of fast and easy access back and forth to and from downtown.



Site plan in Context of Downtown

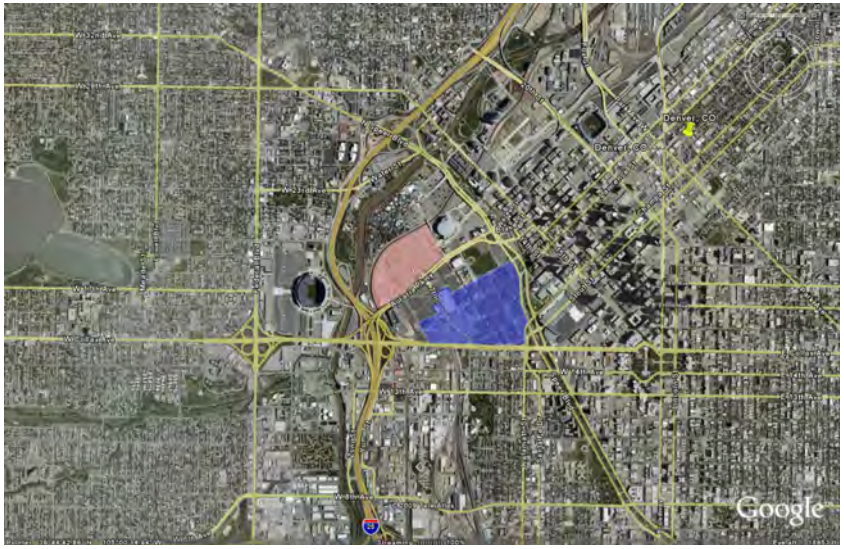
Site in Context

Interstate 25



Interstate 287

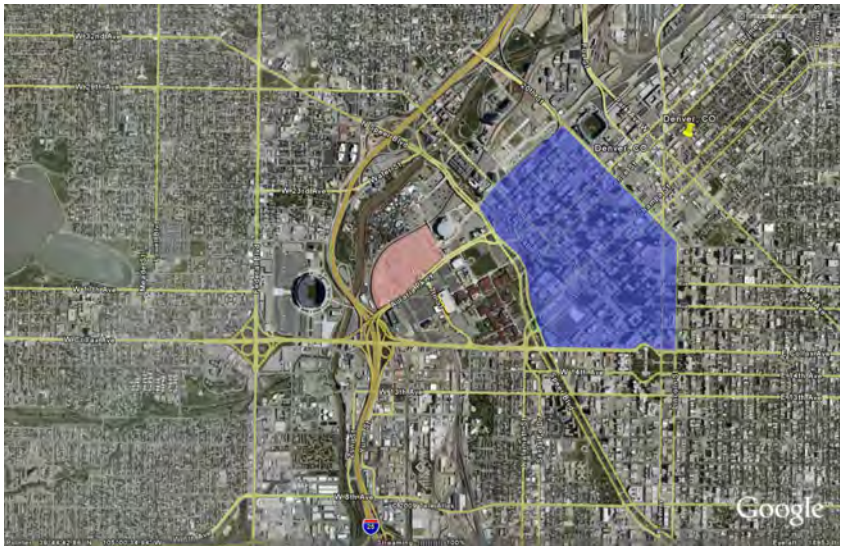
Pepsi Center



CU Denver Campus

Invesco Field

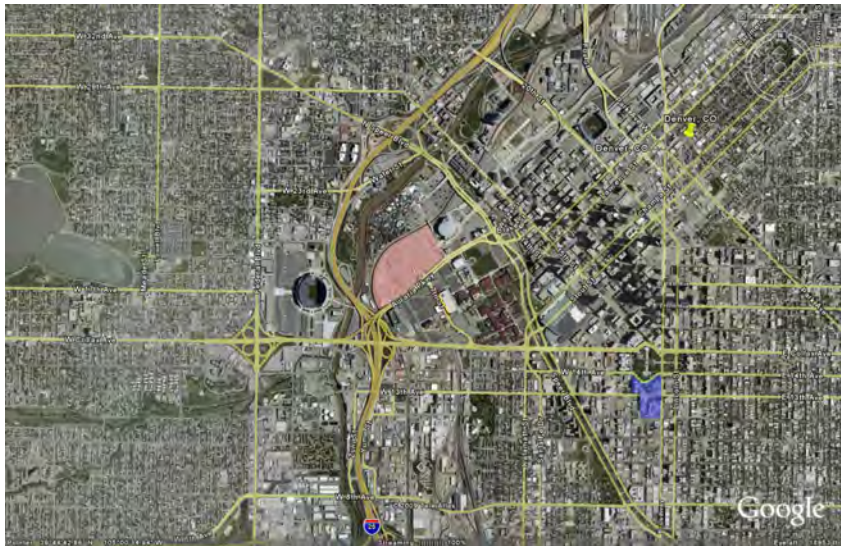
Elitch Gardens Amusement Park



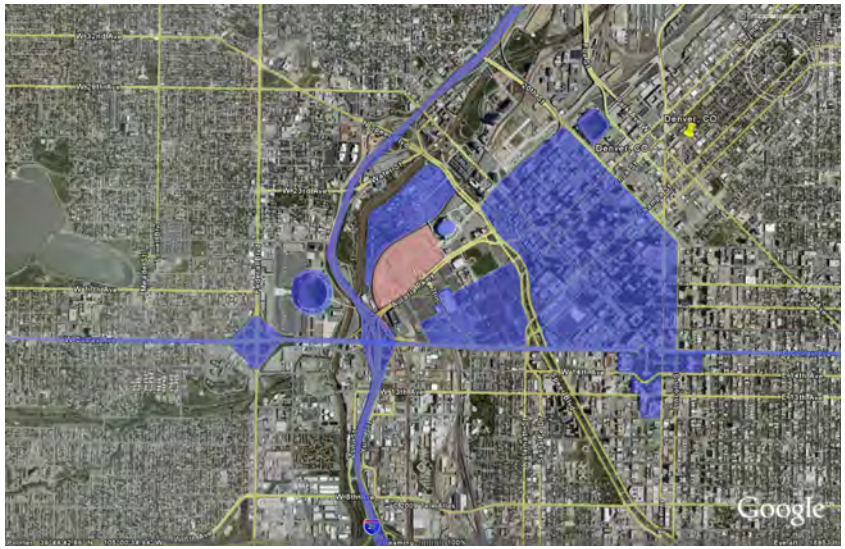
Lower Downtown (LoDo)

Capitol and Statehouse

Coors Ballpark



Museum of Modern Art



All Local Surroundings

Site in Context

Iinterstate 25

Auraria Parkway

Invesco Field

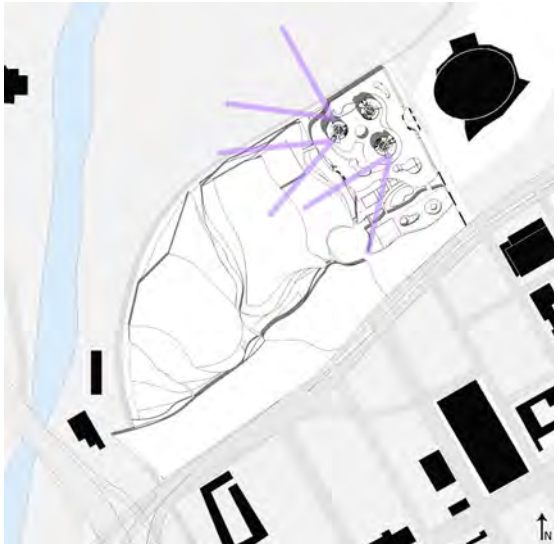
Pepsi Center

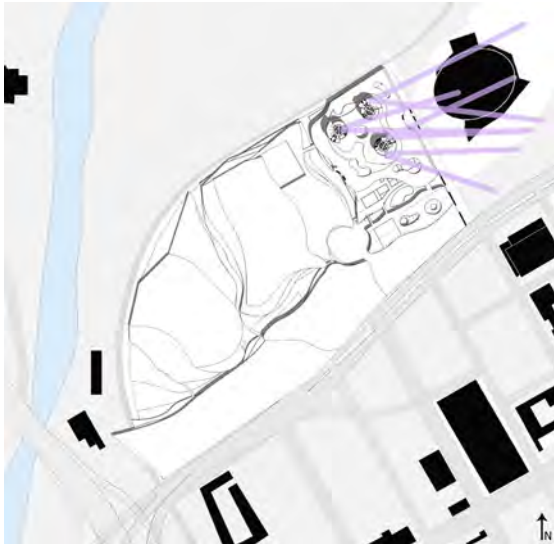
Elitch Gardens Amusement Park

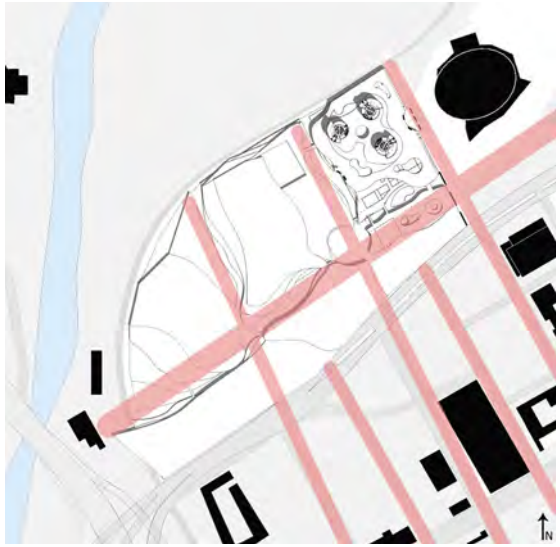
CU Denver Campus

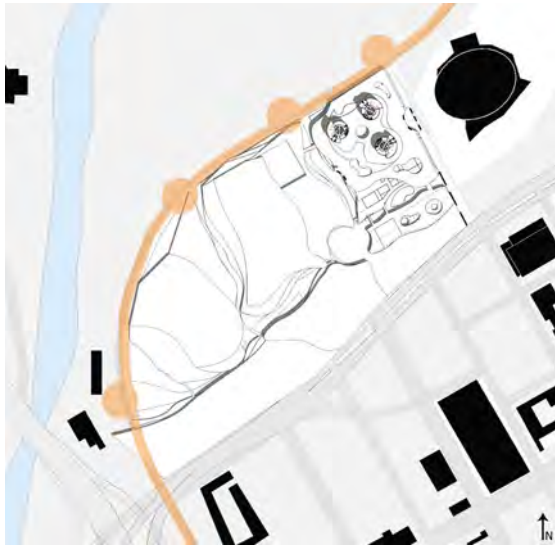
Surrounding Context

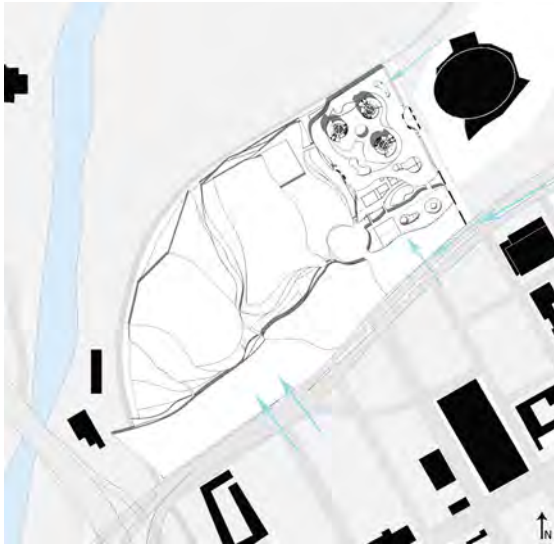
Diagrams

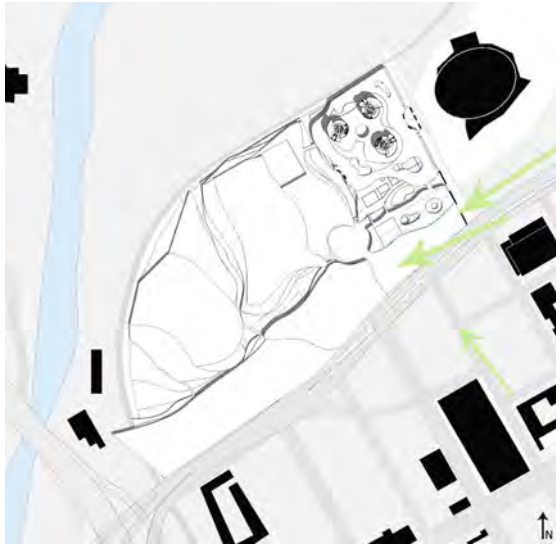

Views to Mountains


Views to Downtown

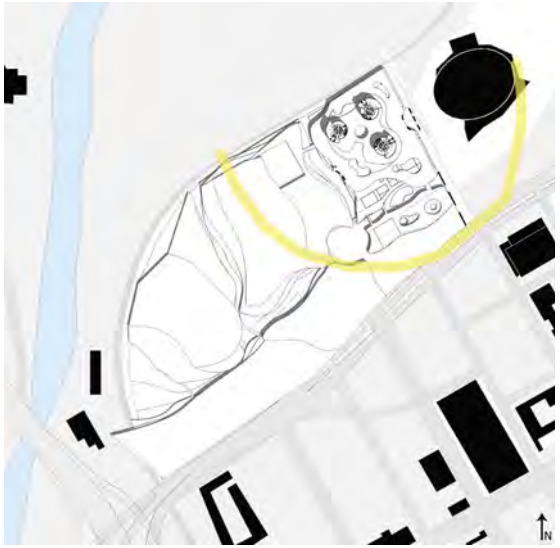

Continuation of Existing Grid


Light Rail Stops

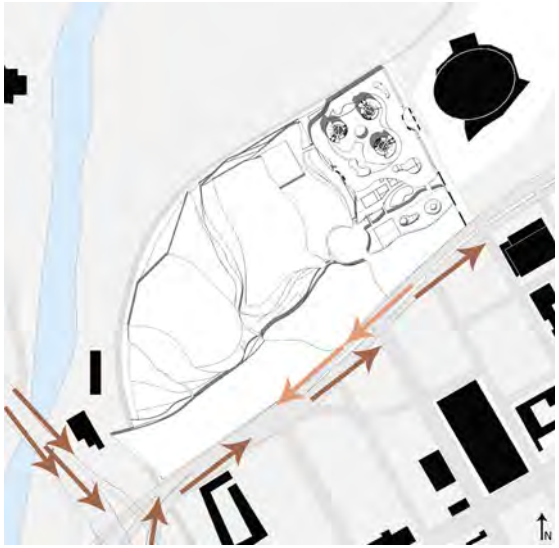

Points of Vehicular Entry


Predominant Pedestrian Entrance from LoDo

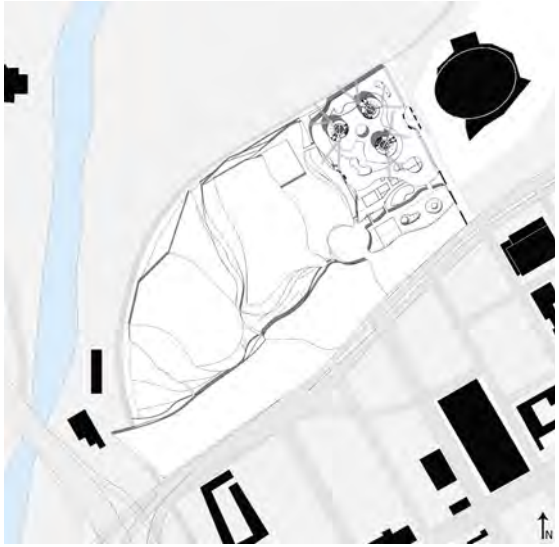
Prominent Wind Direction



Solar Orientation



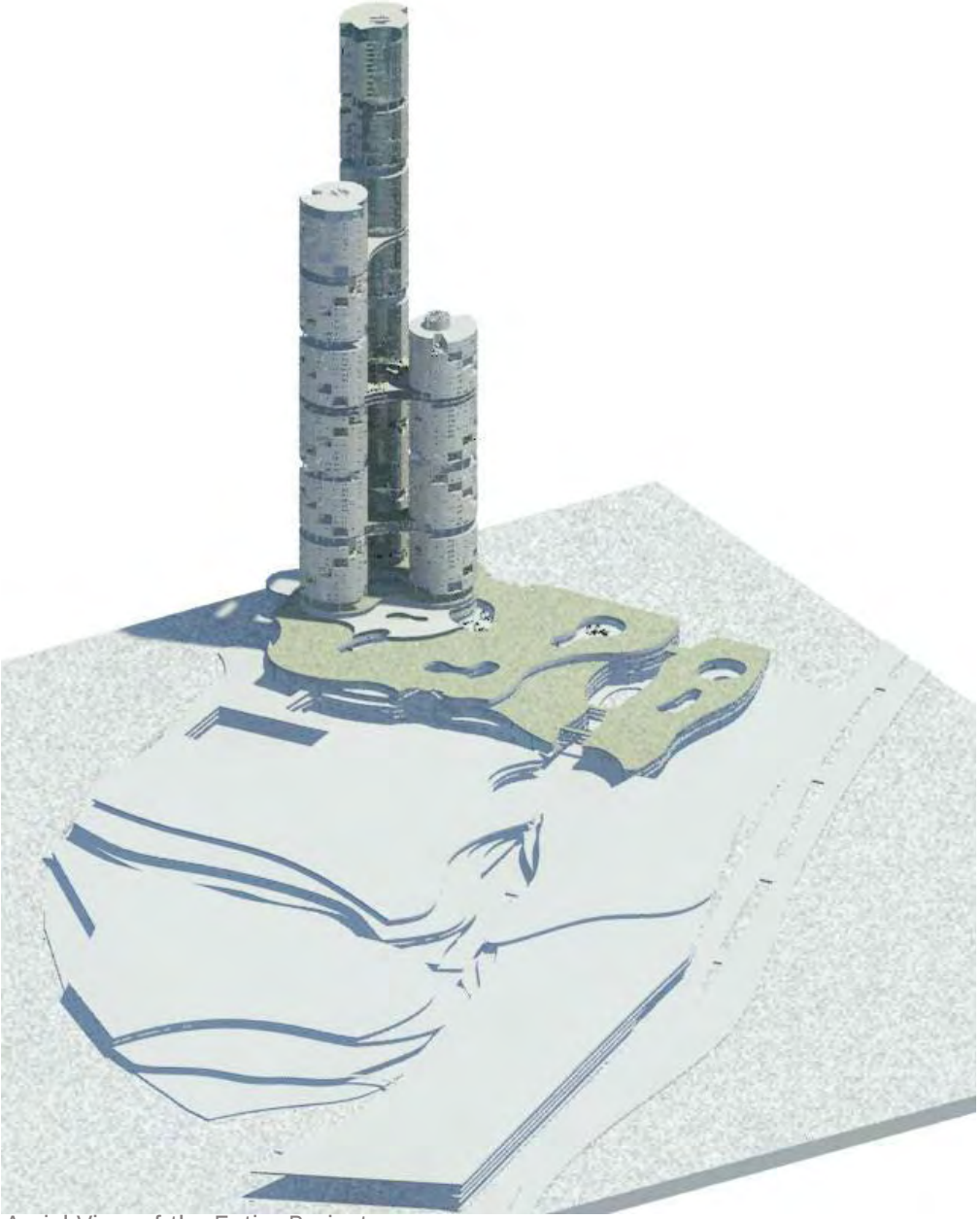
Surrounding Traffic Flow



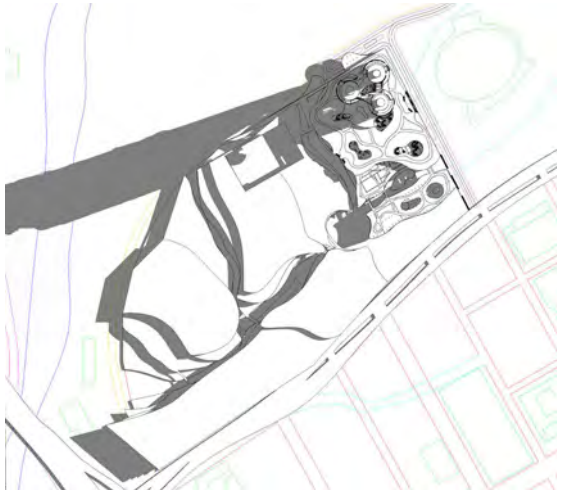
Views from Units- No Cross-Views

Diagrams

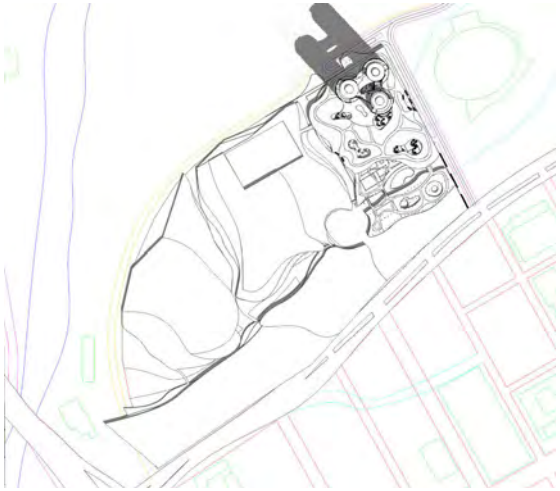
It is important to express some of the key factors which help to determine some of the major moves when designing the project. A lot of the projects success is based on how it fits within its immediately adjacent surroundings as well as the greater urban fabric which it is involved. Some of the design decisions were based on some of the general information which can be gained from these simple diagrams.



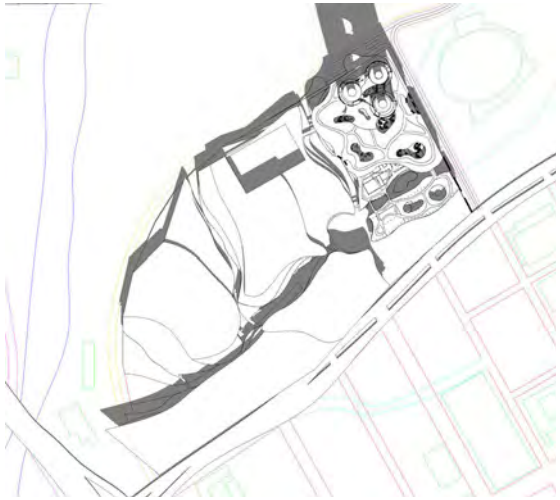
Aerial View of the Entire Project



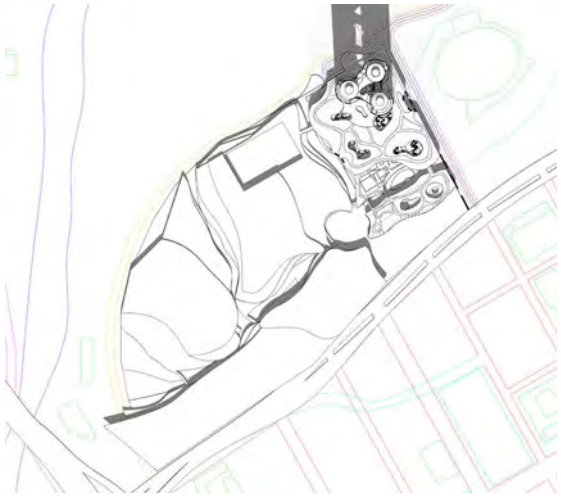
Shadows at 7am, Spring



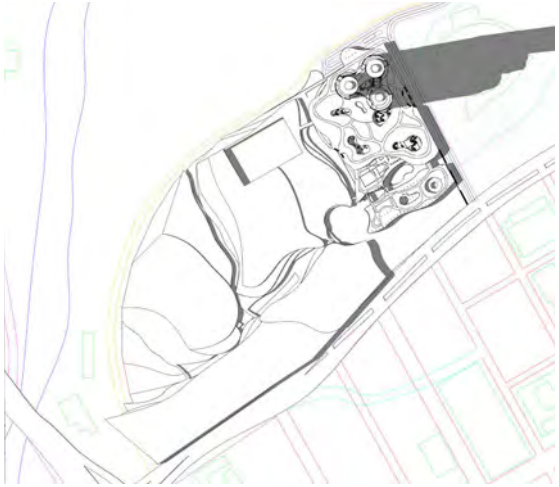
Shadows at 11am, Spring



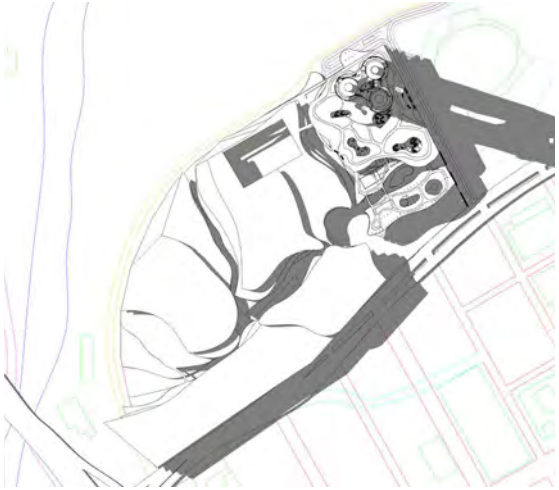
Shadows at Noon, Spring



Shadows at 1pm, Spring

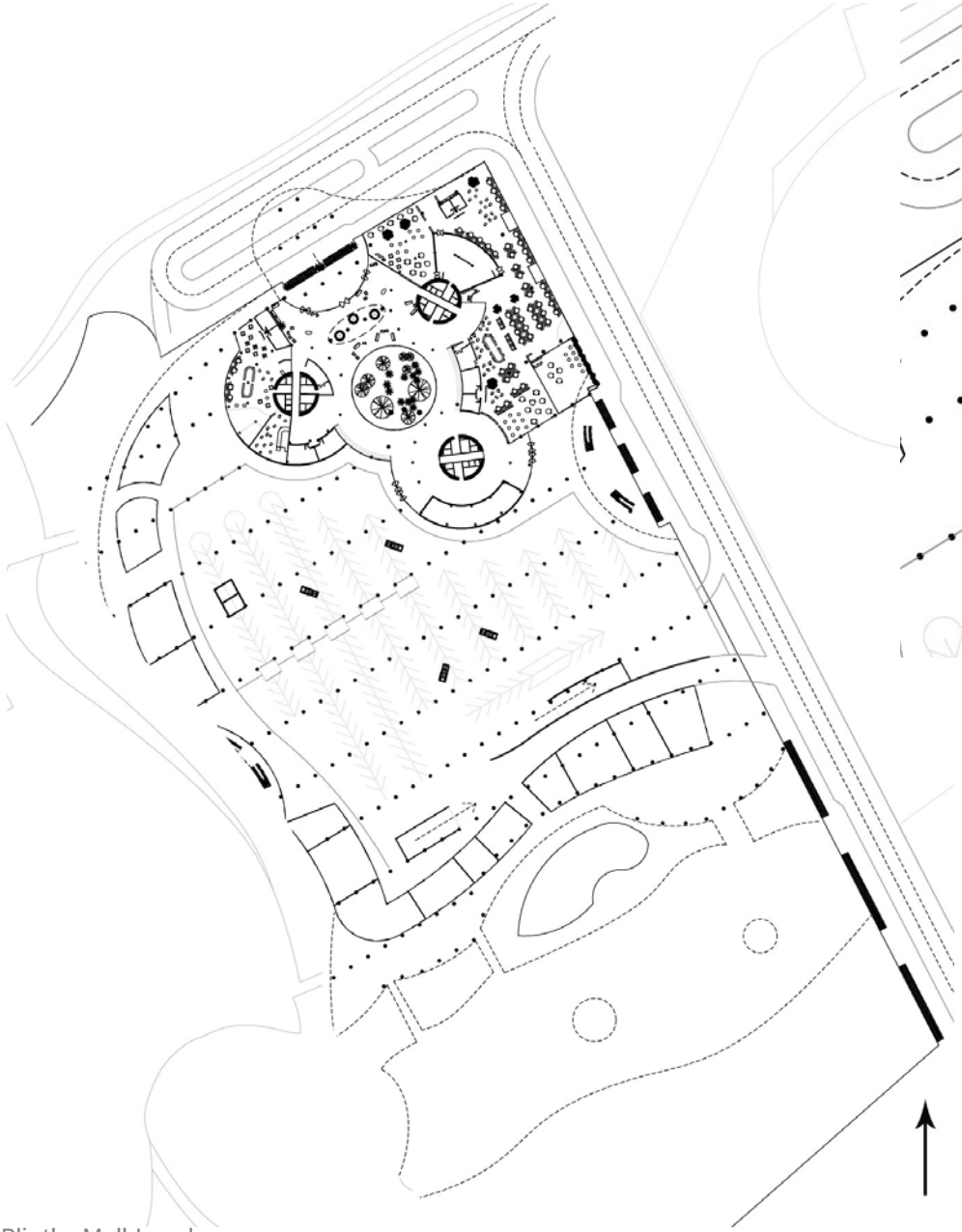


Shadows at 4pm, Spring

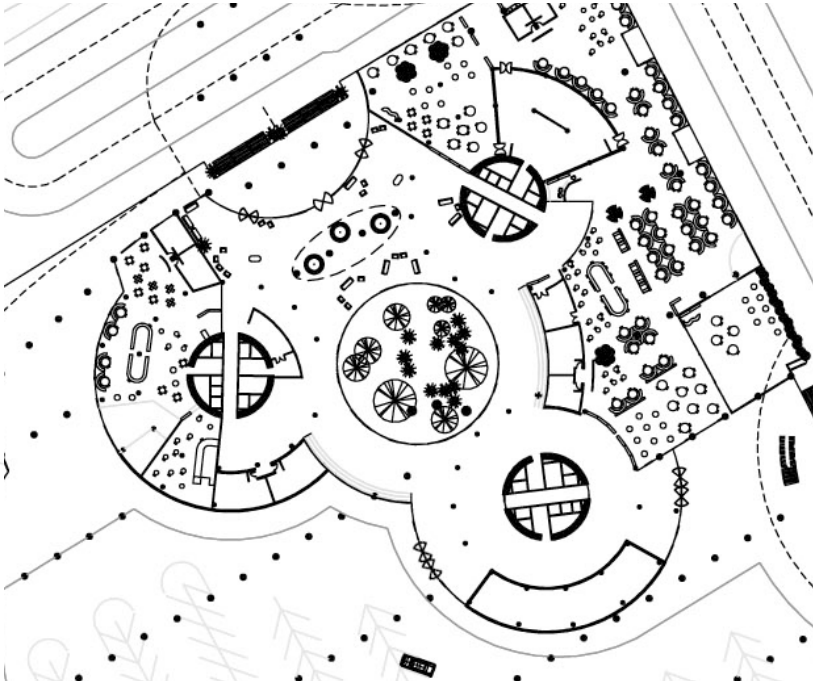


Shadows at 7pm, Spring

Shadow Studies



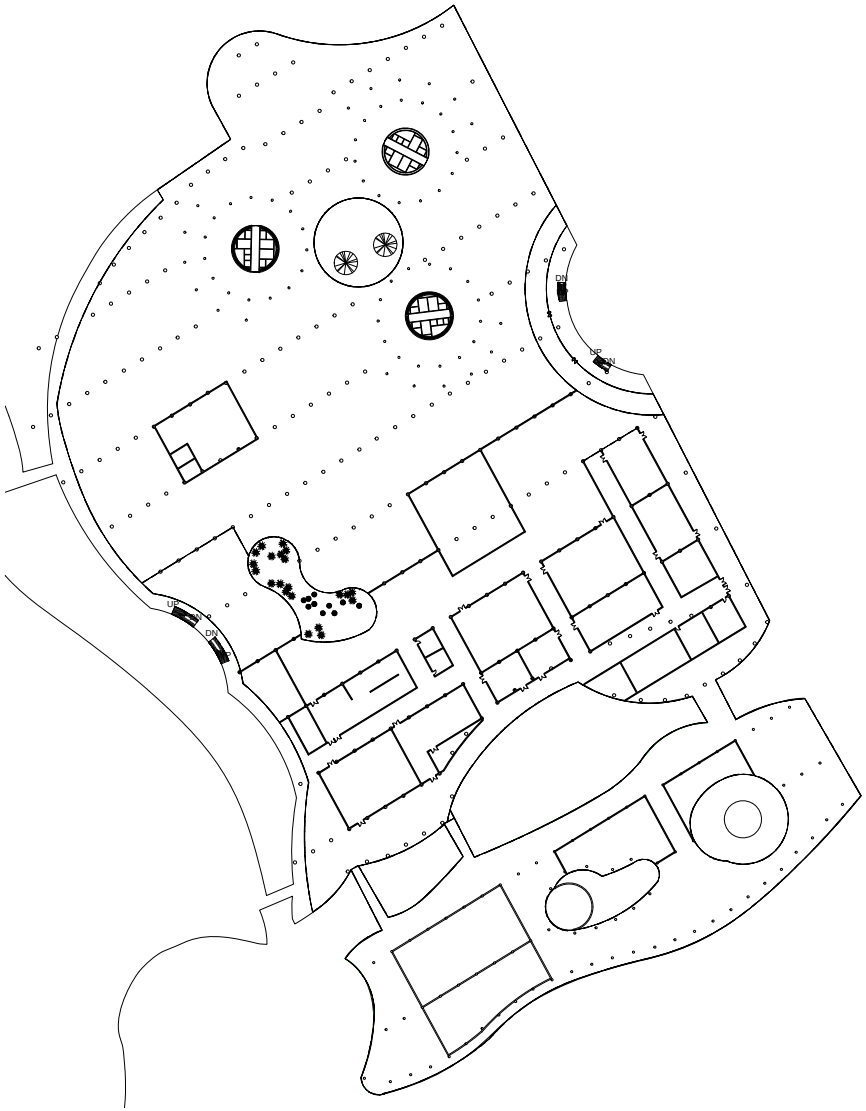
Plinth- Mall Level



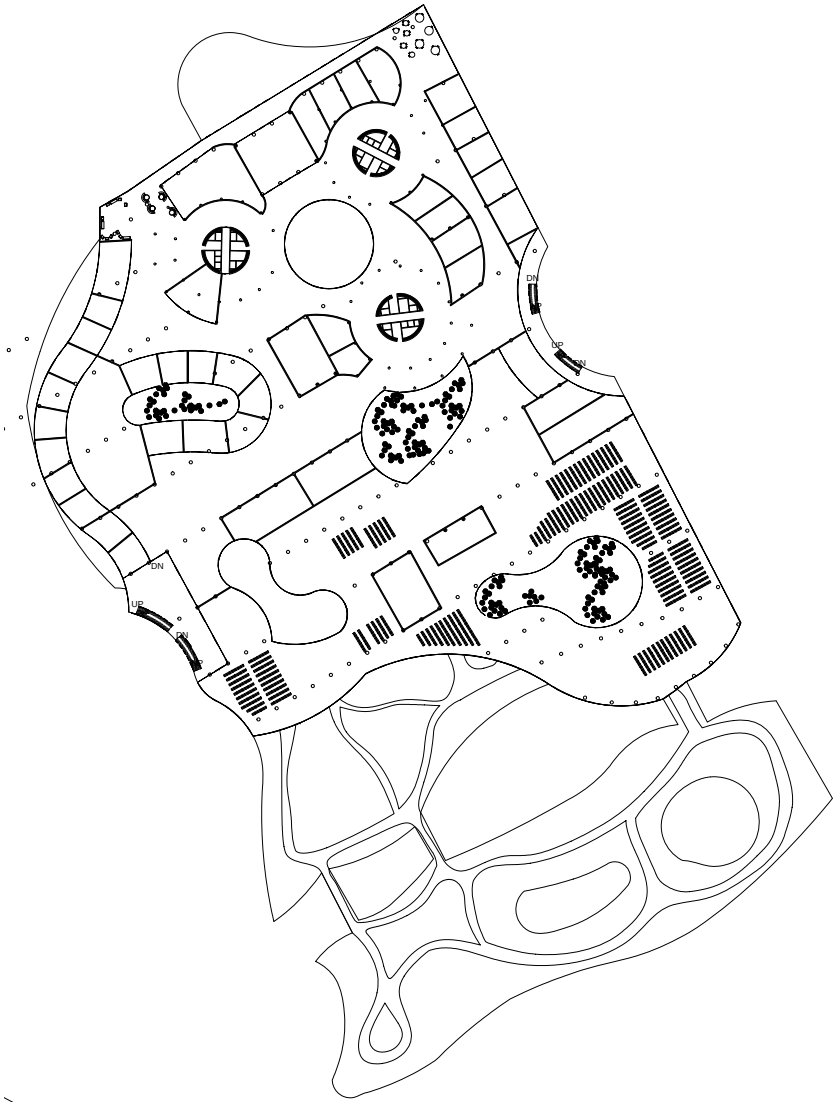
Lobby Floor Plan

Plinth Mall

The grand mall of the Lower Plinth consists of the entire bottom level. Emanating from the central court, shops, entertainment, Education, Library, Recreation and Business all reside within the levels above. By having such a range of activities and function within the lower floor, the spaces throughout the entire plinth are therefore used around the clock. The portion of the mall which I focused on for this project is only a portion of the entire site. It sits directly below the towers. At the mall level, there includes a rail station, various shops, the Grand Lobby for the towers, a restaurant and bar, as well as ample parking. A massive plaza exists on the Southeastern corner greeting all visitors entering the site.



Level 2 and 3 of Lower Plinth- Grocery, Movie Theater, Fitness Center



Level 4 of Lower Plinth- School, Library, Outside Deck

Plinth Organization

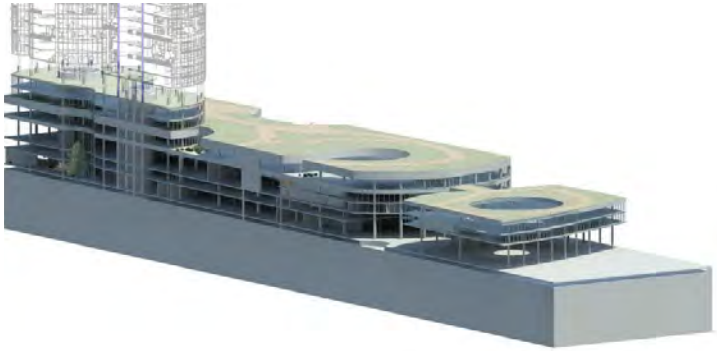
Plinth Top, Park and Interior Gardens

Plinth Park

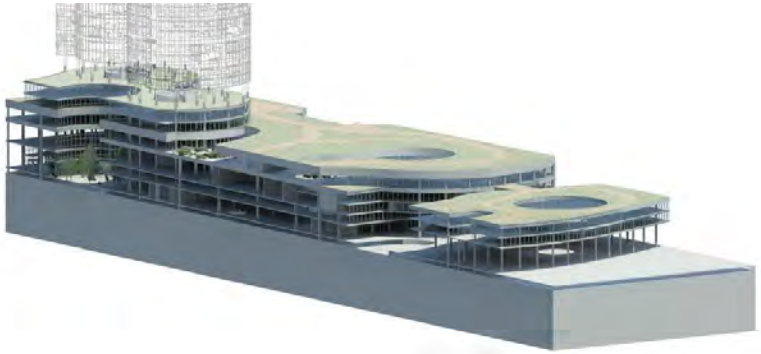
The top of the plinth consists of an 8' thick slab. The primary purpose is allow for full and flush vegetation throughout the area. With the ability to grow full size trees, and have lush field-grass and maintain a dirt path creates a true natural setting which would otherwise be unobtainable. The Park is supposed to be used as exactly that, an open park for any and all recreation and leisure.

Longitudinal Section of the Plinth 1

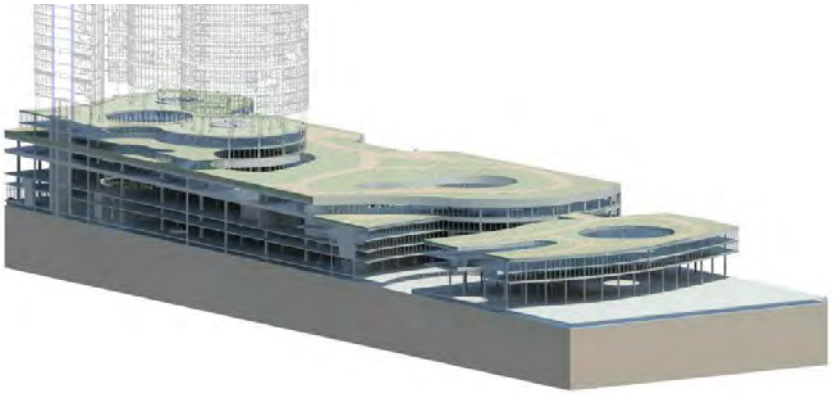
Longitudinal Section of the Plinth 2



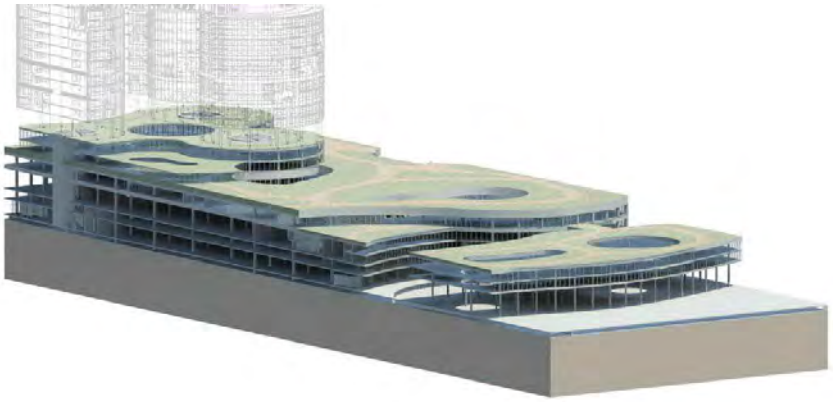
Longitudinal Section of the Plinth 3



Longitudinal Section of the Plinth 4



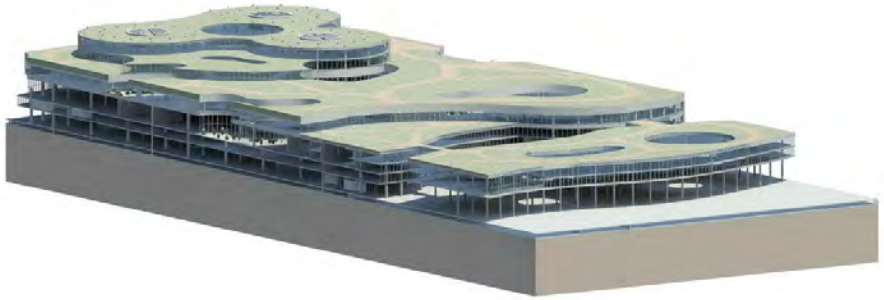
Longitudinal Section of the Plinth 5



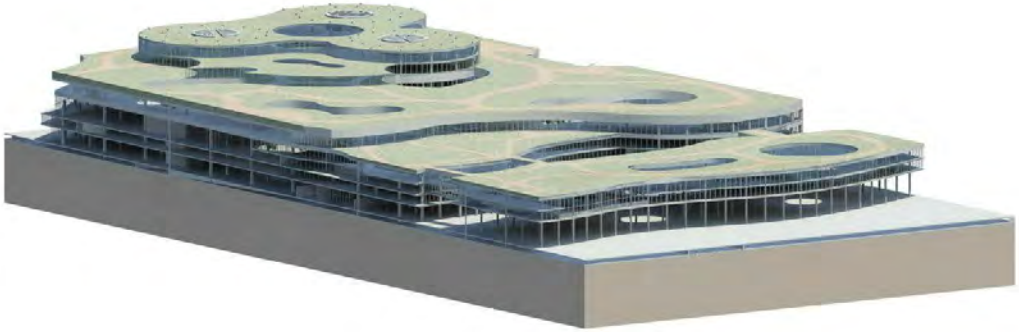
Longitudinal Section of the Plinth 6

Plinth Form and Organization

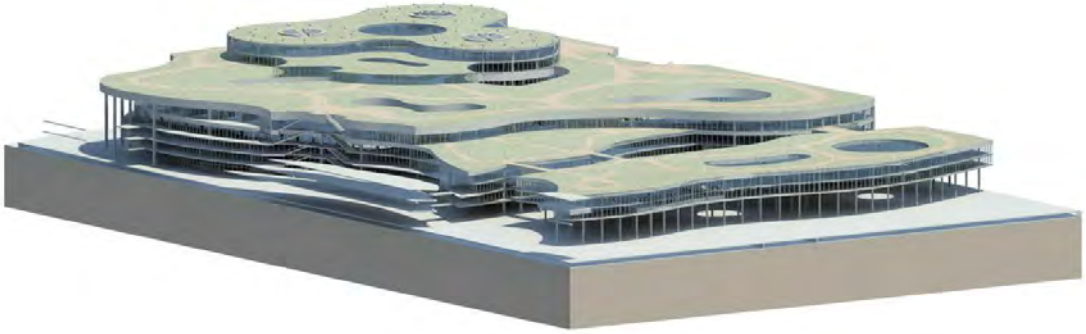
The Plinth itself consists of several layers. Generally, it consists of a Mall ground Level and 5 additional levels above that. On top of the larger plinth, there also exists the smaller tower plinth which sets the towers, and their users visually above the rest of the plinth. As this level, onlookers can see the whole site. As the plinth park spans and approaches the front of the site, an additional step-down occurs where the large opening creates gallery below. Access to the top of the gym is also granted, with similar plantings. This slab is made up of 4' thick natural materials which allows for slightly smaller, yet still allows for natural flourishing of bushes and small trees. From this edge, one can look out upon the great front plaza which greets most visitors.



Longitudinal Section of the Plinth 7



Longitudinal Section of the Plinth 8



Longitudinal Section of the Plinth 9

Lobby Entrance and Car-Port

Lobby Entrance

The entrance to the towers is very important. This is the place where all of the everyday residence will access the site. Additionally, any consistent day-to-day users or visitors can and may use this as their main entrance. I wanted the entrance to be grand. It needed to at least hold its own in the shadow of the three main towers. By creating a canopy in which one can drive under, and load/unload, the space becomes a transitional space, where you are neither inside nor completely out. Additionally, as one approaches the entrance doors, a second tier of enclosure takes place, as the entrance gently presents itself with a large and sweeping curve.

Lobby Entrance and Car-Port

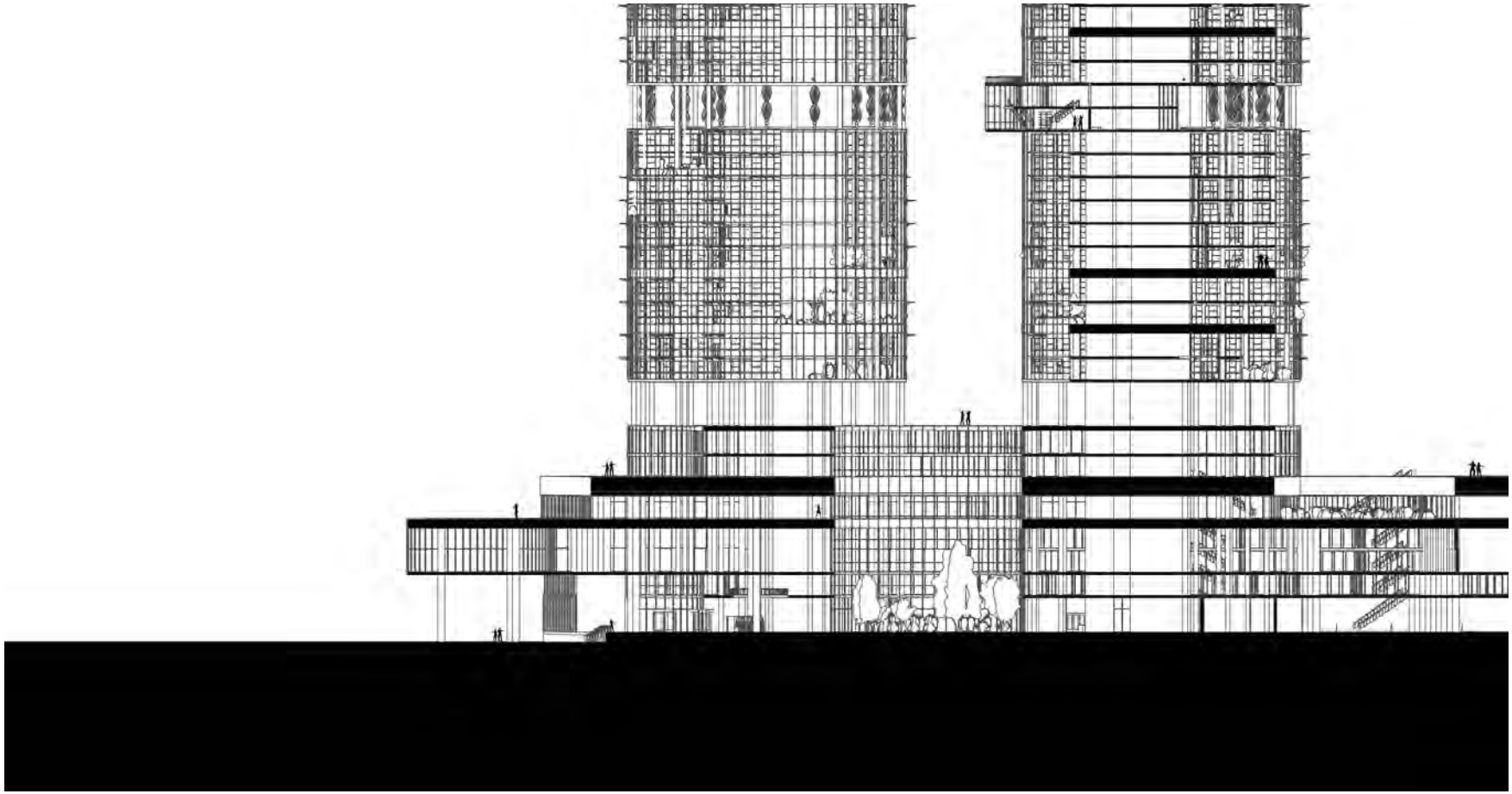
Lobby Entrance Views

Lobby Interior Looking Towards Reception Desk

Lobby Entrance Views

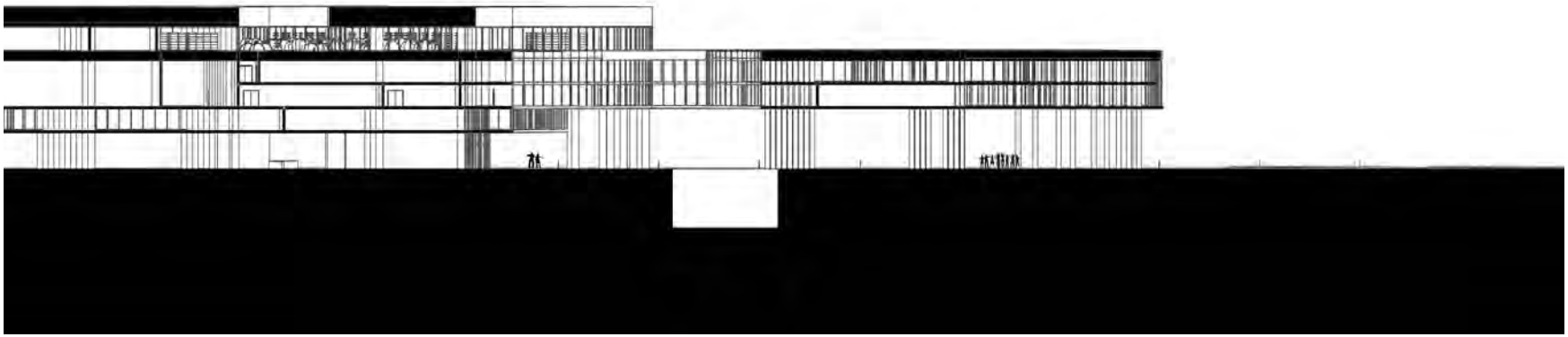
Lobby Entrance

Lobby Entrance Views



Longitudinal Section of Lower Plinth and Towers

Plinth Sections



Plinth Sections

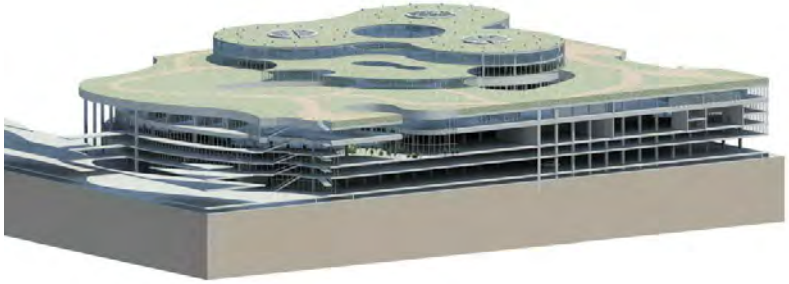
Cross Section of the Plinth 1

Cross Section of the Plinth 2

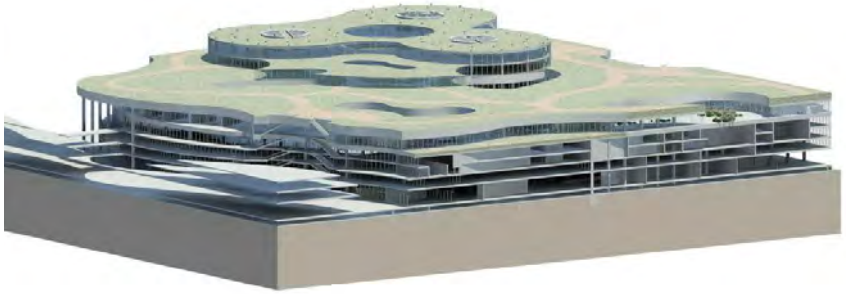
Cross Section of the Plinth 6

Plinth Sections

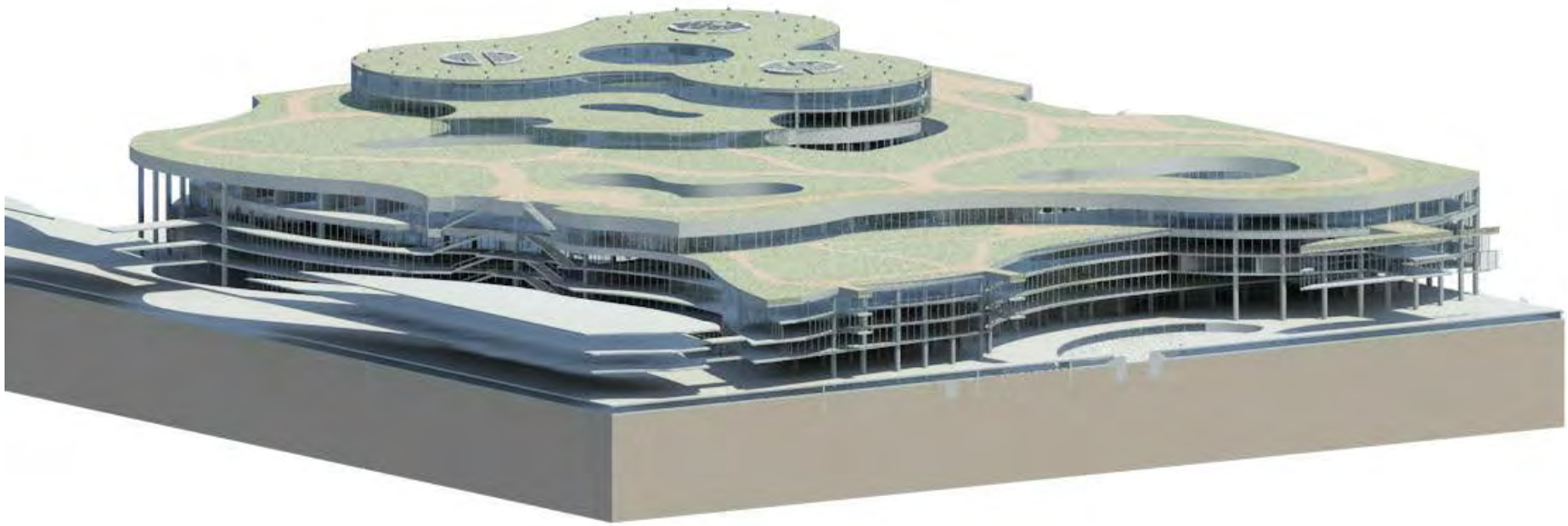
Cross Section of the Plinth 4



Cross Section of the Plinth 5

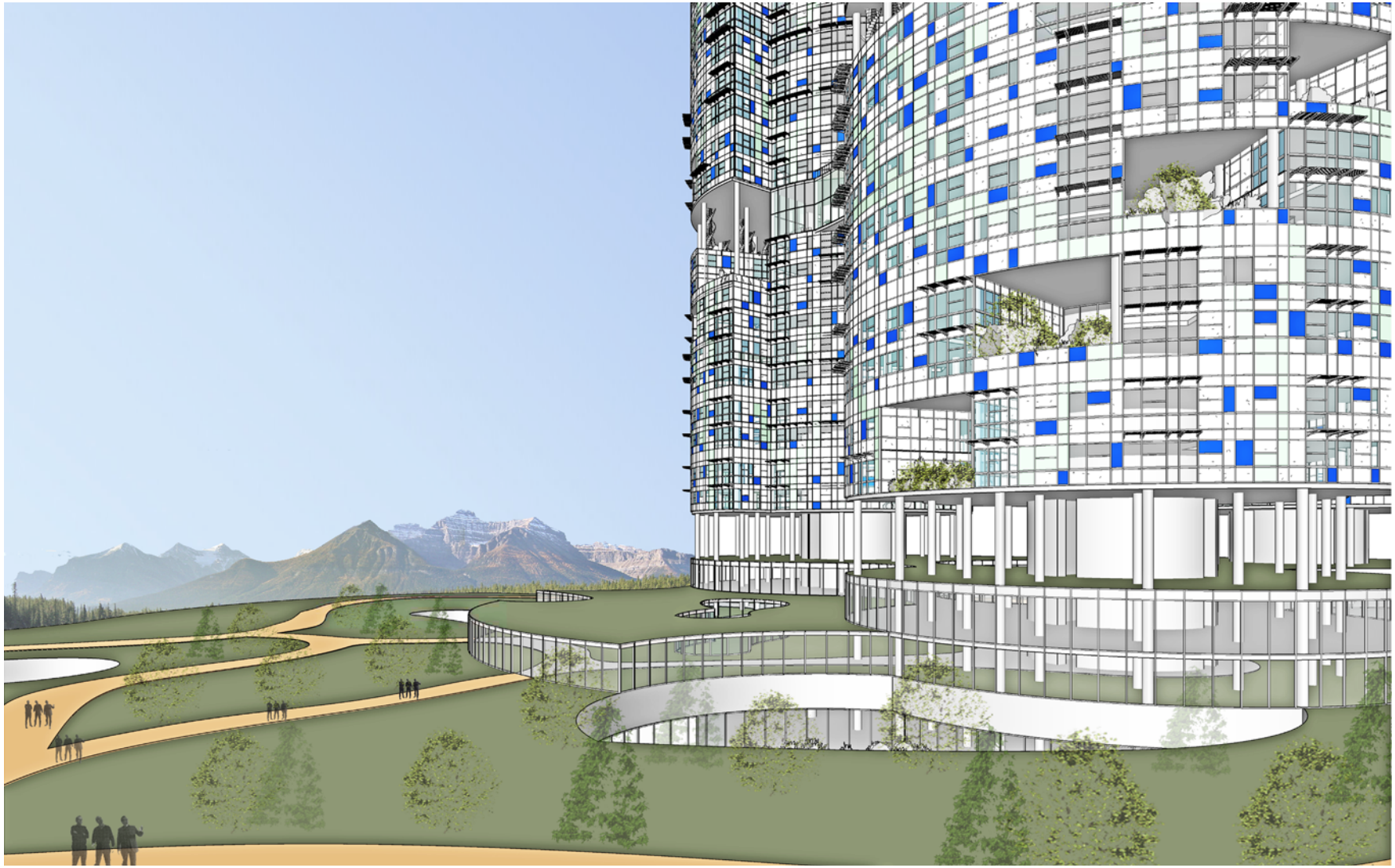


Longitudinal Section of the Plinth 9

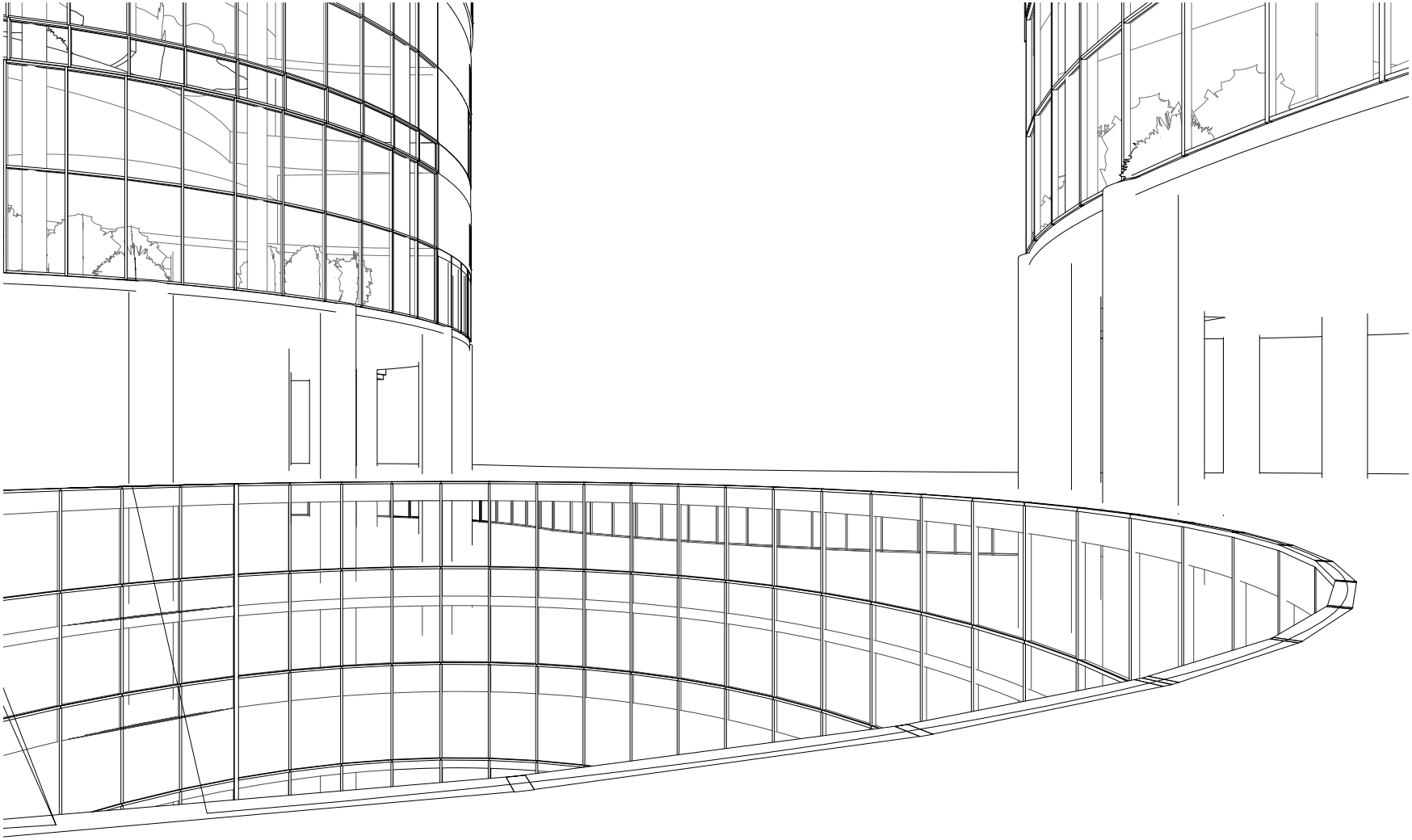


Cross Section of the Plinth 7

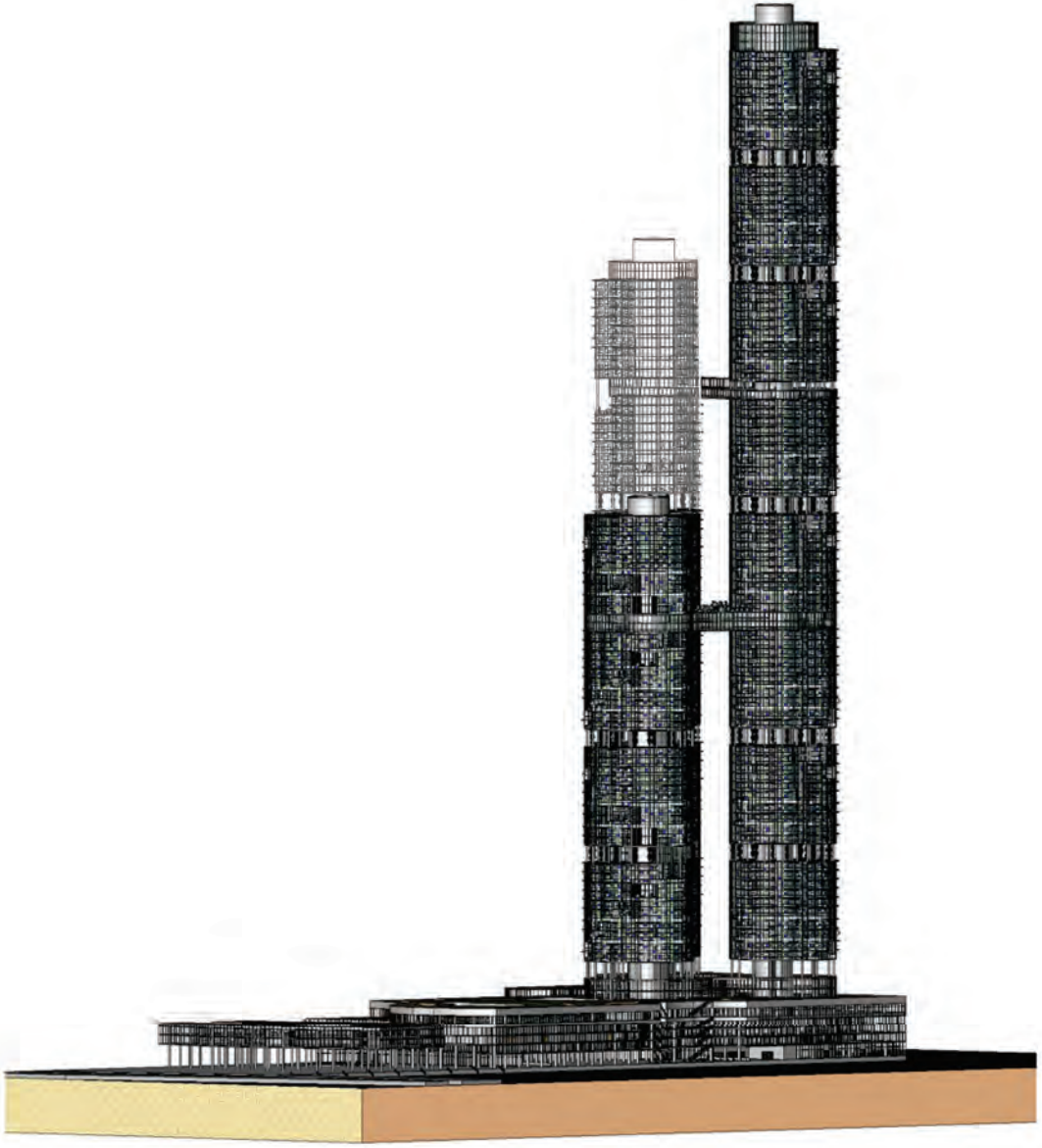
Cross Section of the Plinth 8



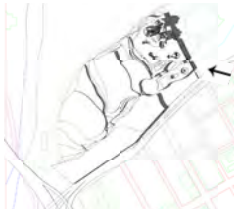
Perspective Looking at Bottom of Towers and Plinth Gardens from Plinth Park



Perspective Looking into Large Courtyard Hole

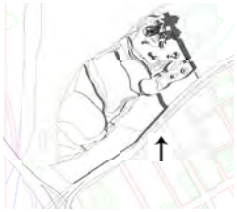


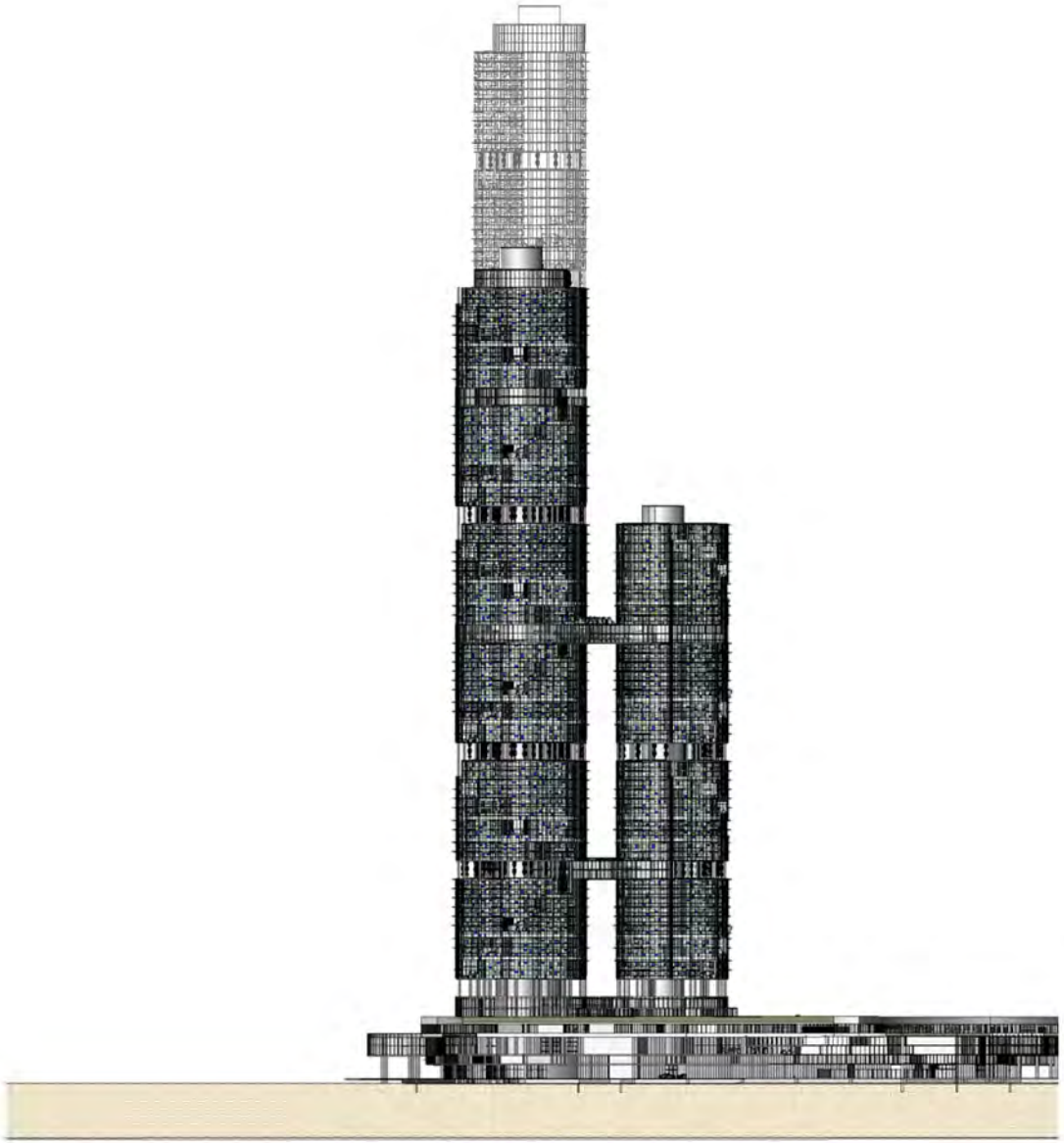
East Elevation



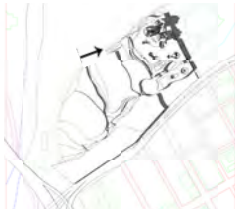
Tower Elevations

South Elevation

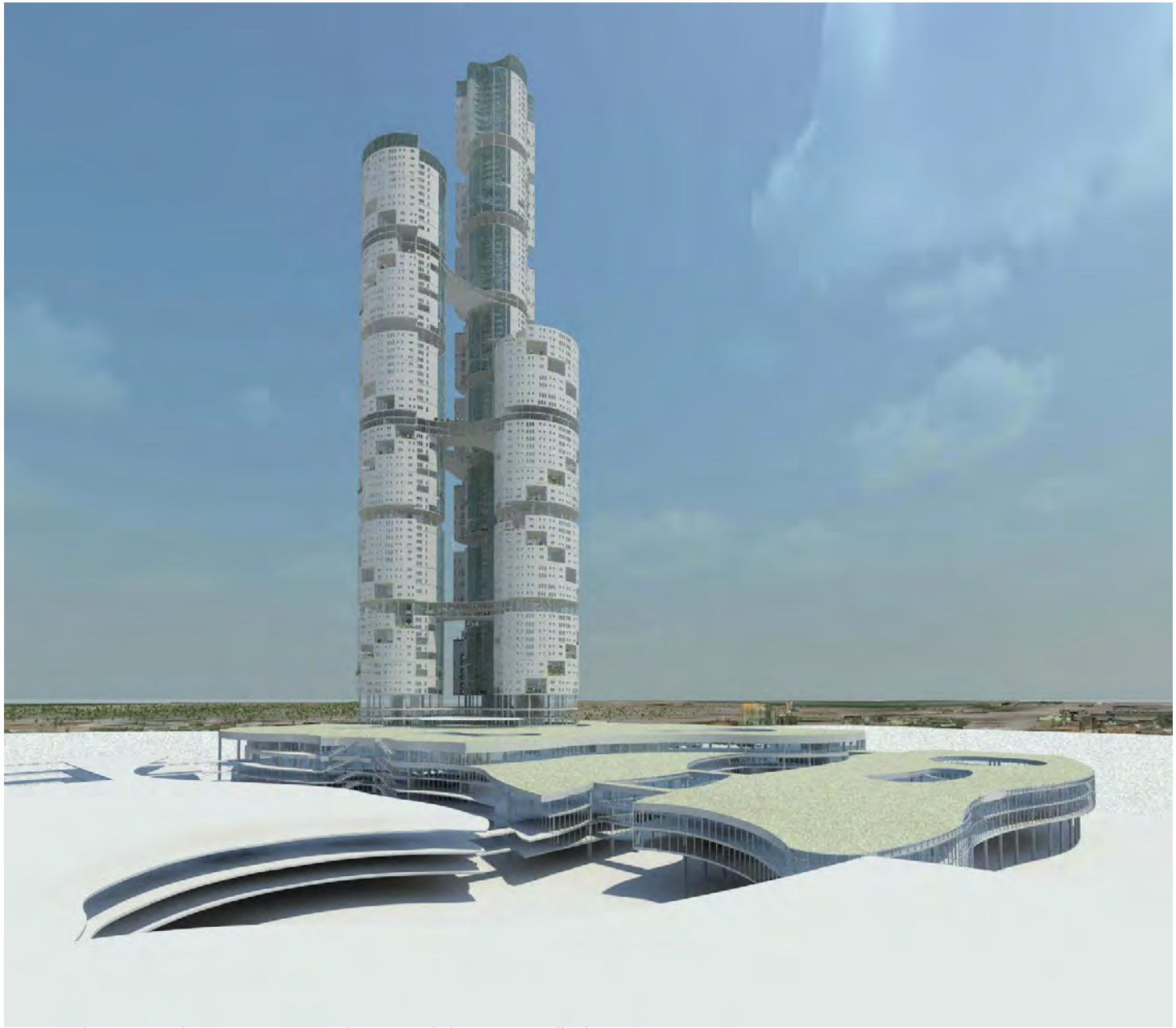




West Elevation



Tower Elevations

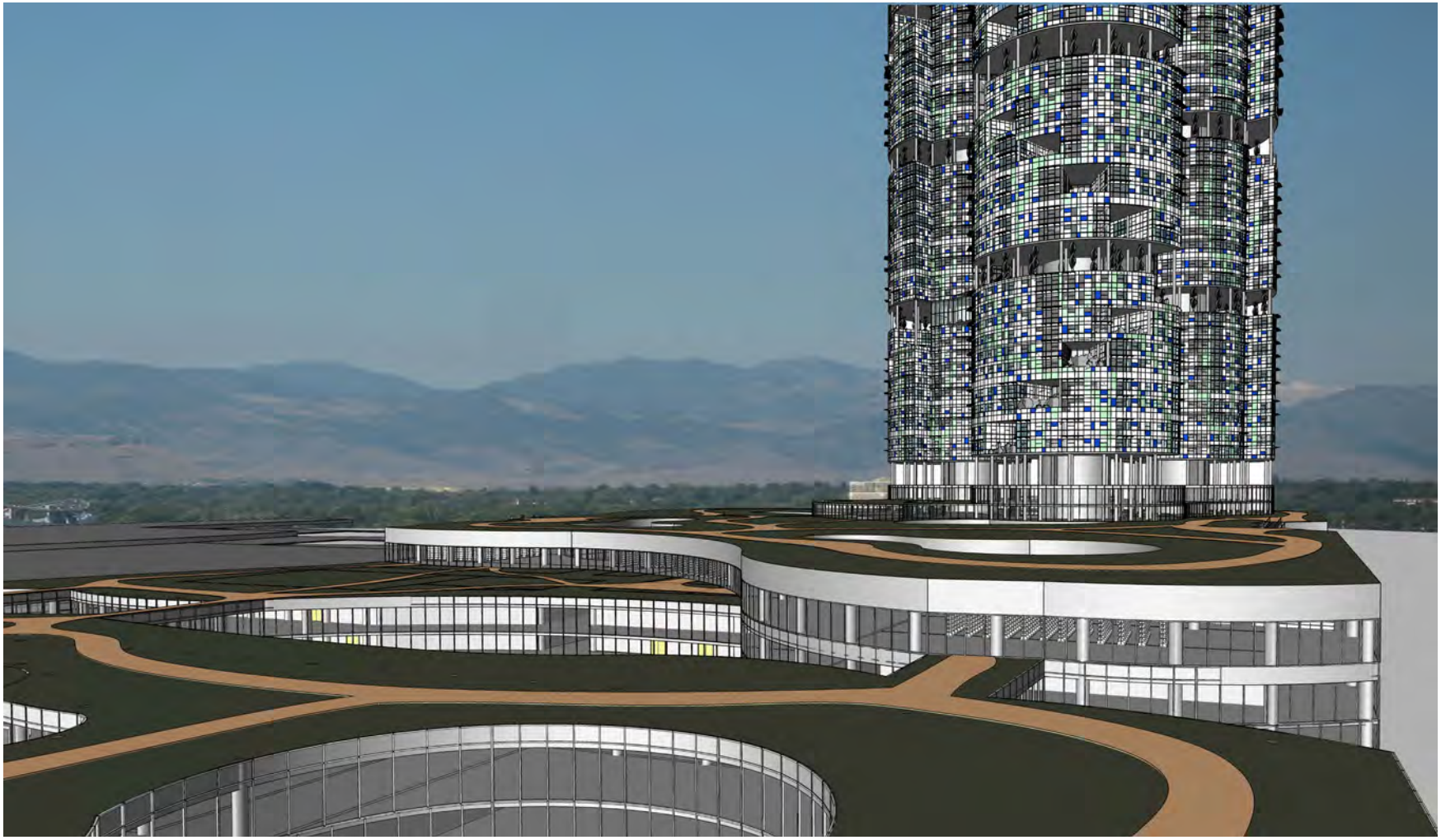


Perspective Towards Towers- From the Top of the Lower Plinth

Plinth Perspective

Perspective from Walkway in Plinth, Looking Down To Mall Level

Plinth Perspective



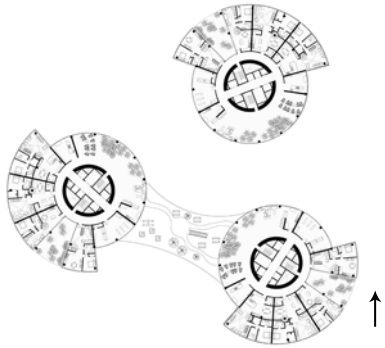
Perspective Towards Towers, Looking from Top of Gym

Tower Perspective

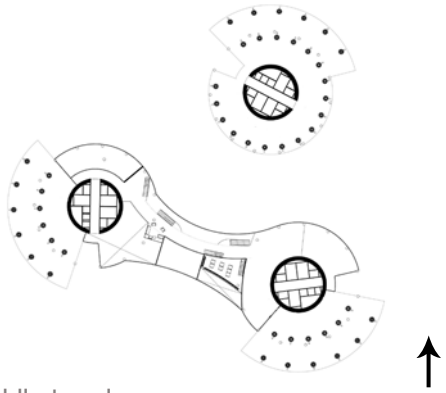
Perspective Within the Two Way Connection, Second Floor, Looking Towards Wind Turbines of the Other Towers

Connection Spaces

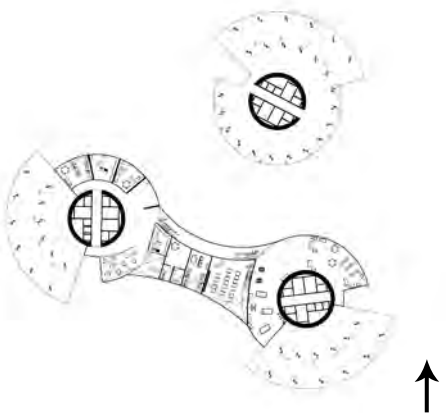
The spaces which connect the towers to one-another are crucial. They allow passage between each tower seamlessly and fluidly. Besides points of access, they are also intended to be destination. While there do exist a few amenities within each pod, there is a greater concentration within the connection bridges which attract users from each and every pod of each and every tower. The purpose of these spaces are for convenience, and socialization. They also provide areas for business, as much as they do for relaxation and play. Each bridge provides spectacular views of the towers themselves, some of the working wind turbines, as well as the mountains and the city below.



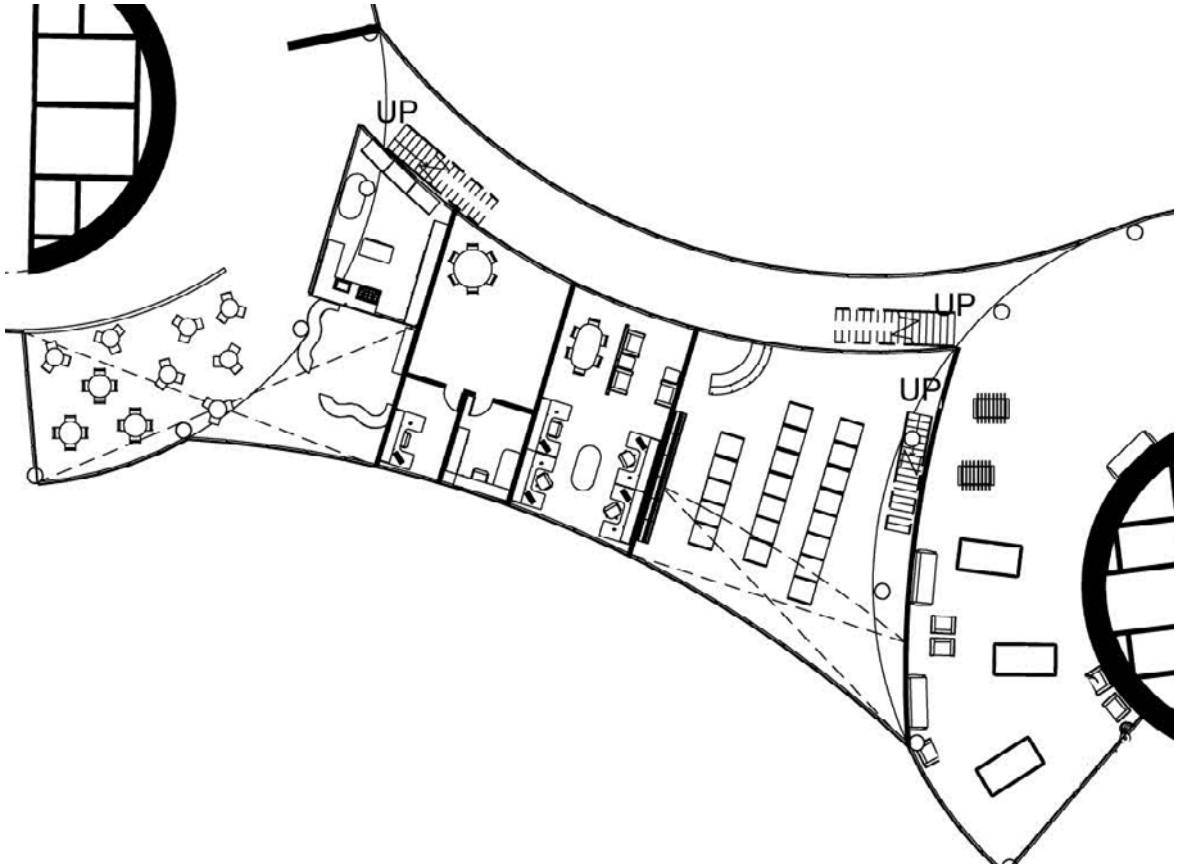
Top Level



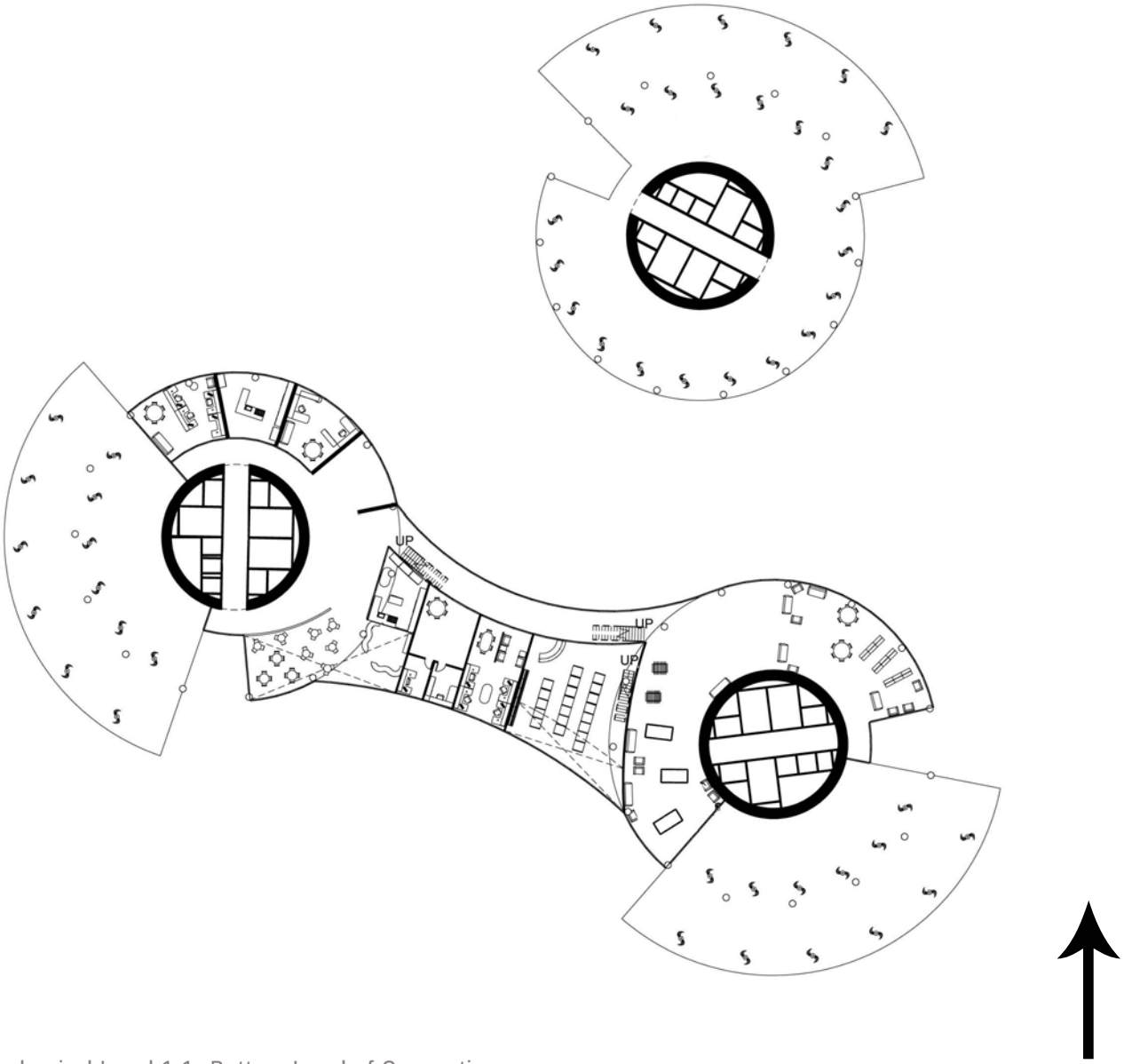
Middle Level



Bottom Level

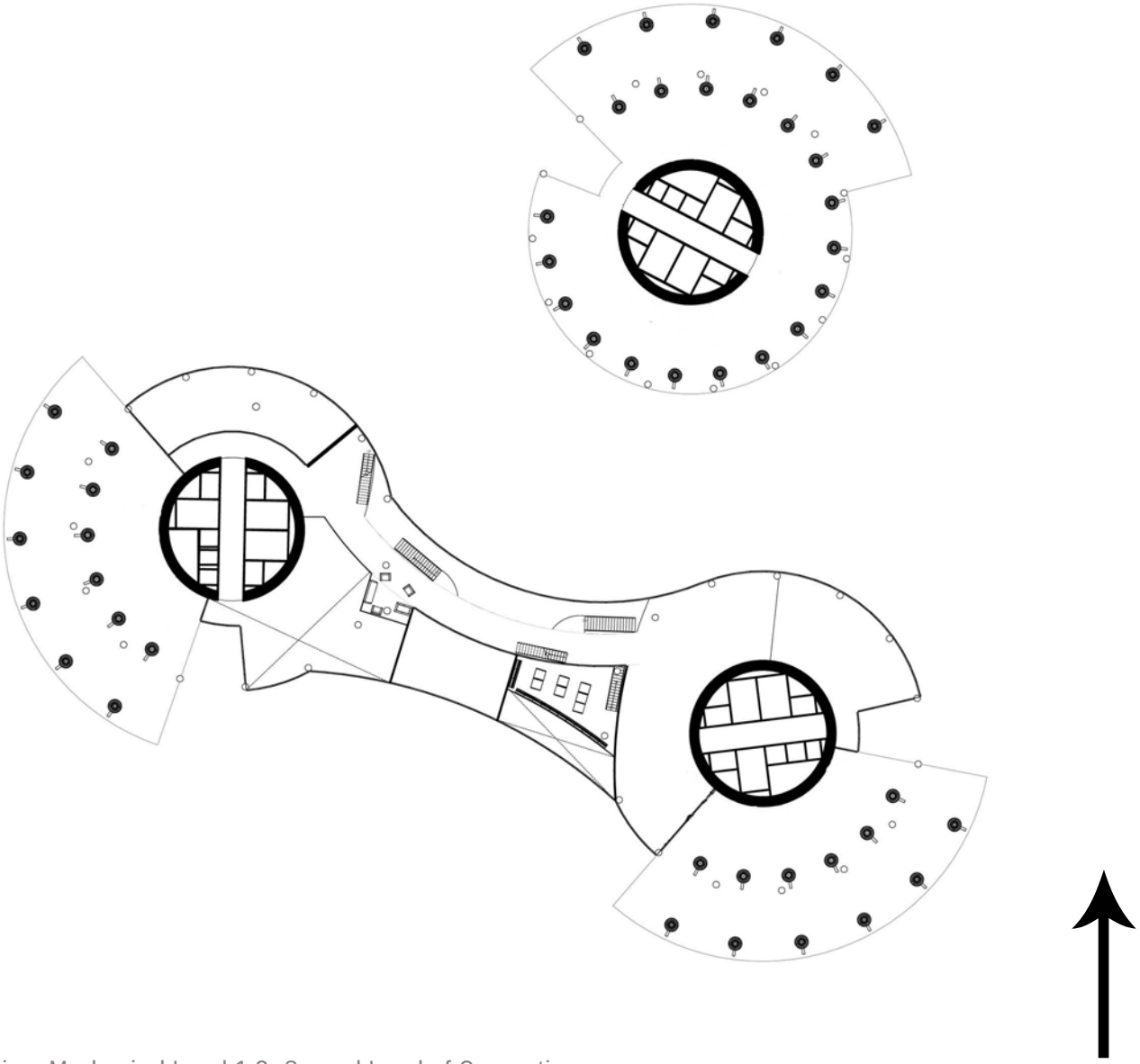


Close Up of Connection Spaces, Bottom Level

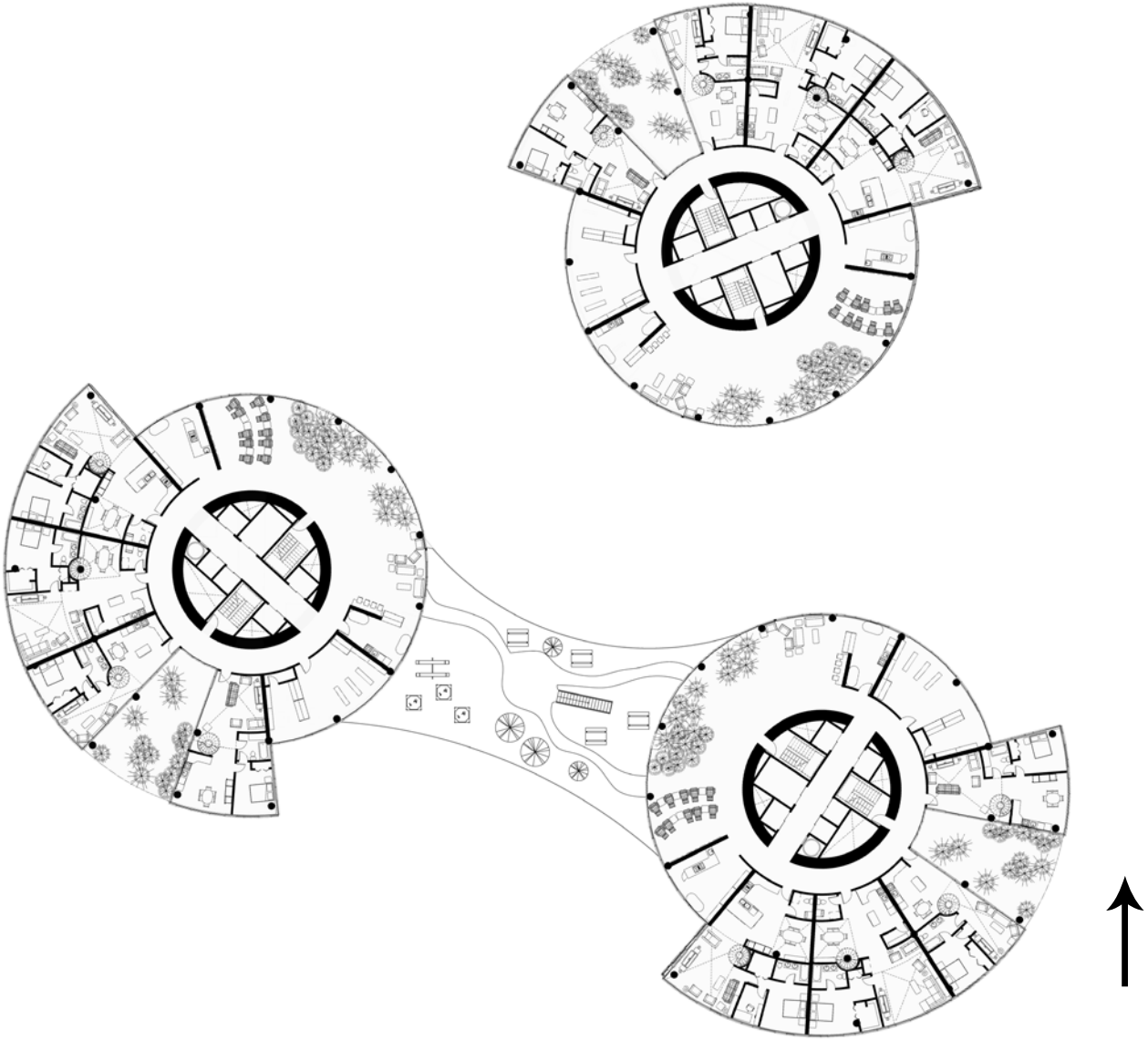


Two-Way Connection, Mechanical Level 1.1- Bottom Level of Connection

Two Way Connection

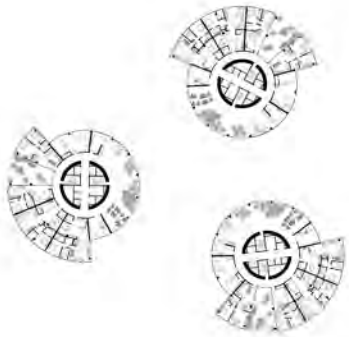


Two-Way Connection, Mechanical Level 1.2- Second Level of Connection

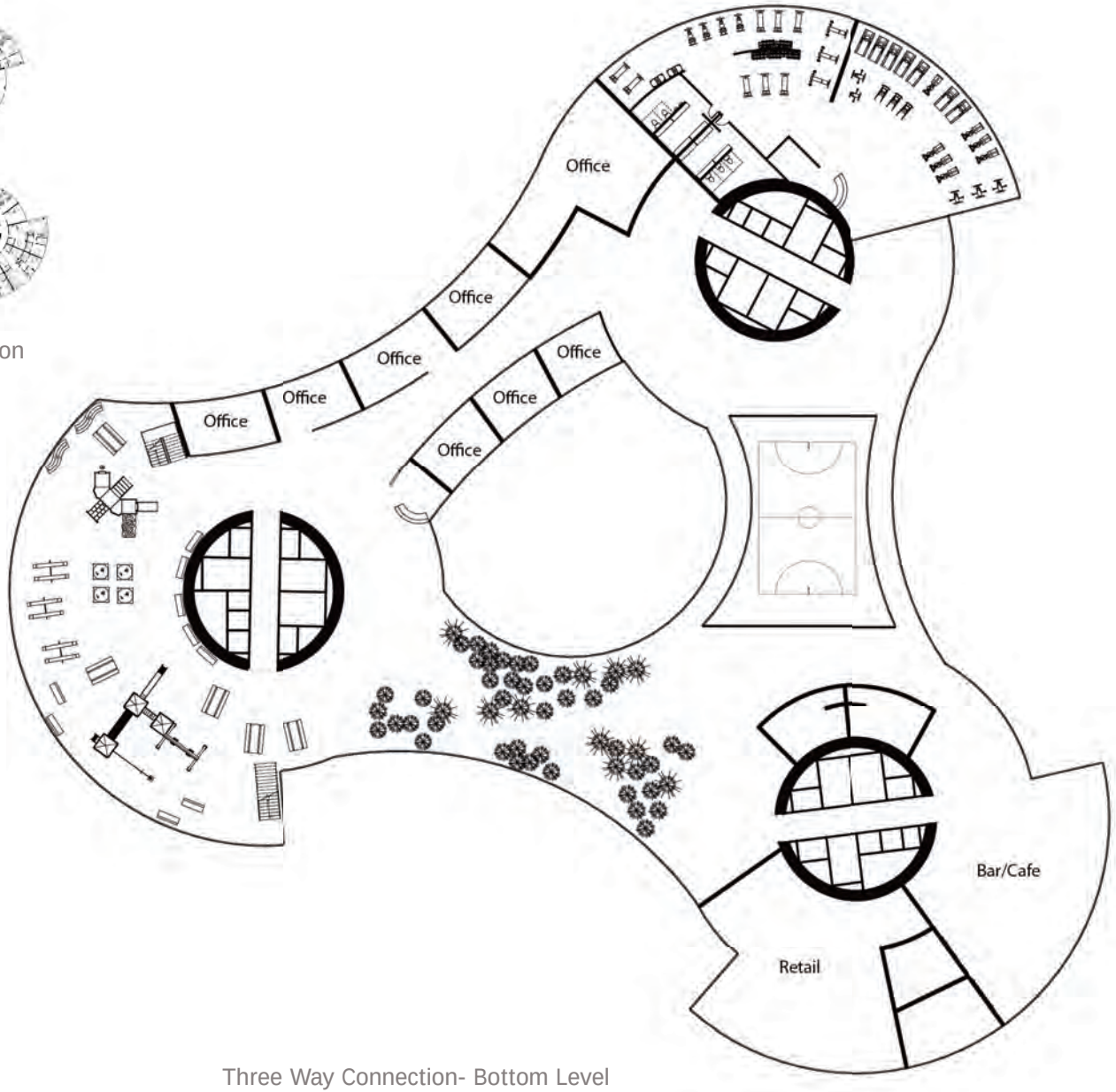


Two-Way Connection, Level 11-Top of Connection- Exterior Park

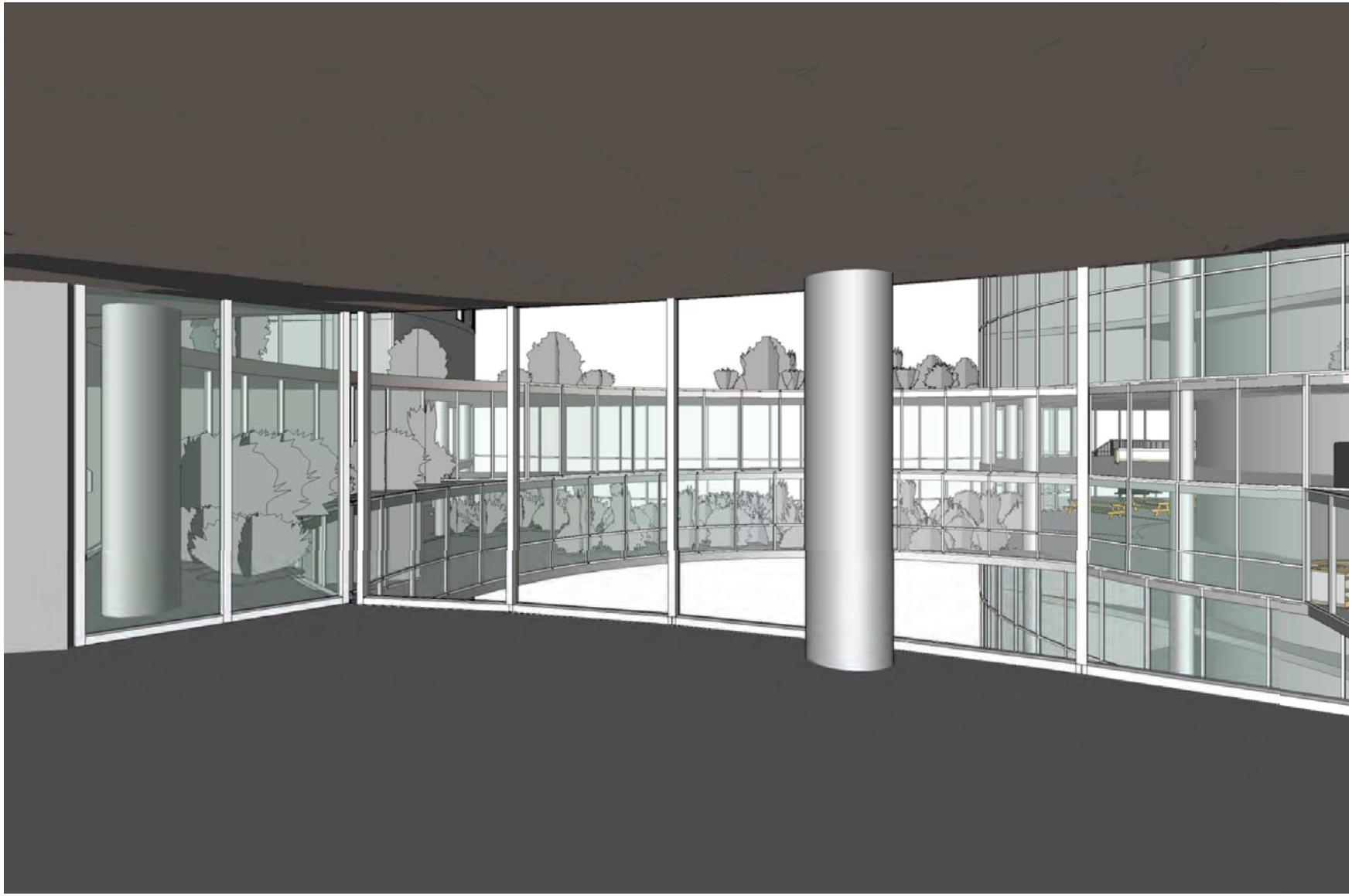
Two Way Connection



Three Towers, No Connection



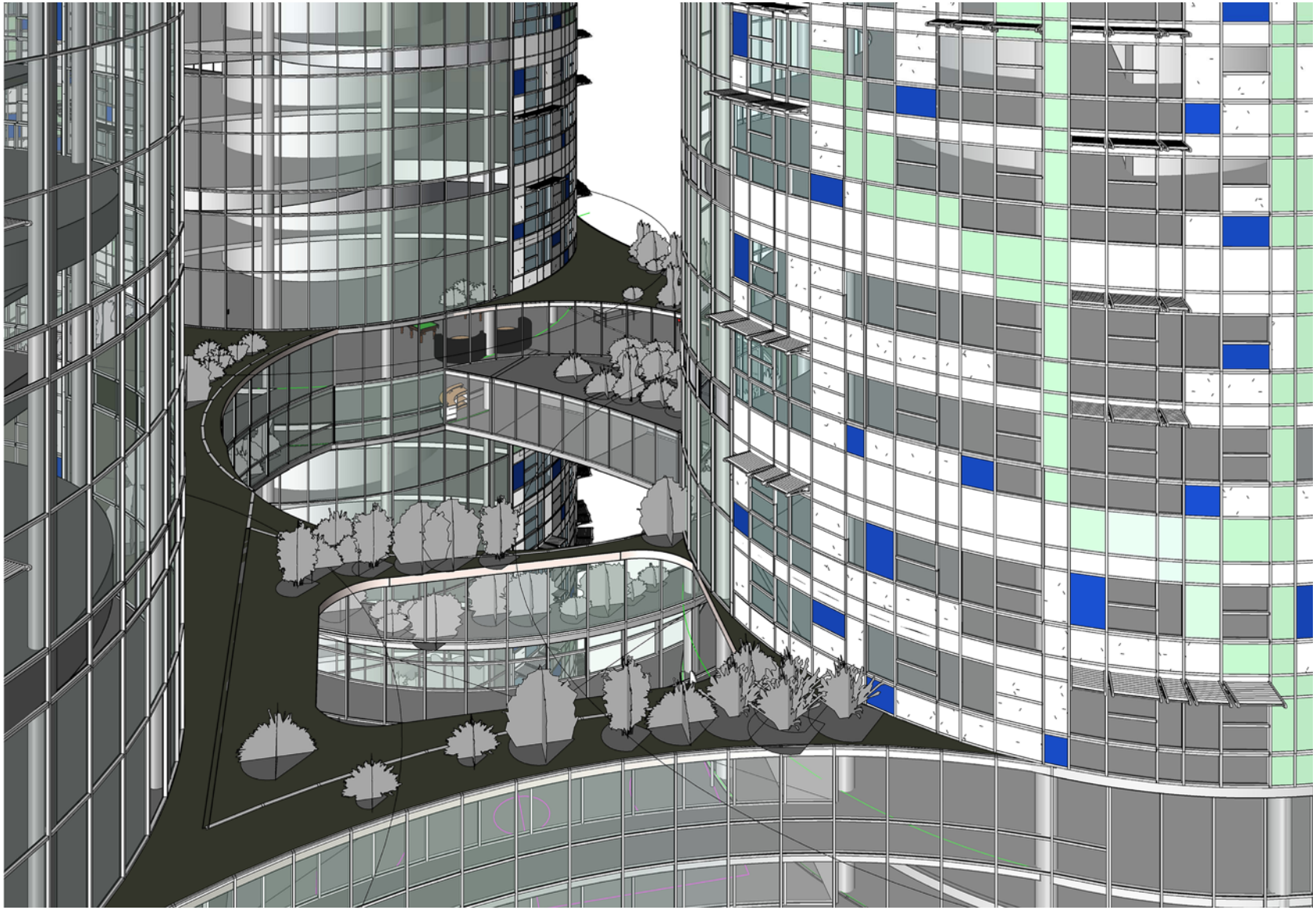
Three Way Connection- Bottom Level



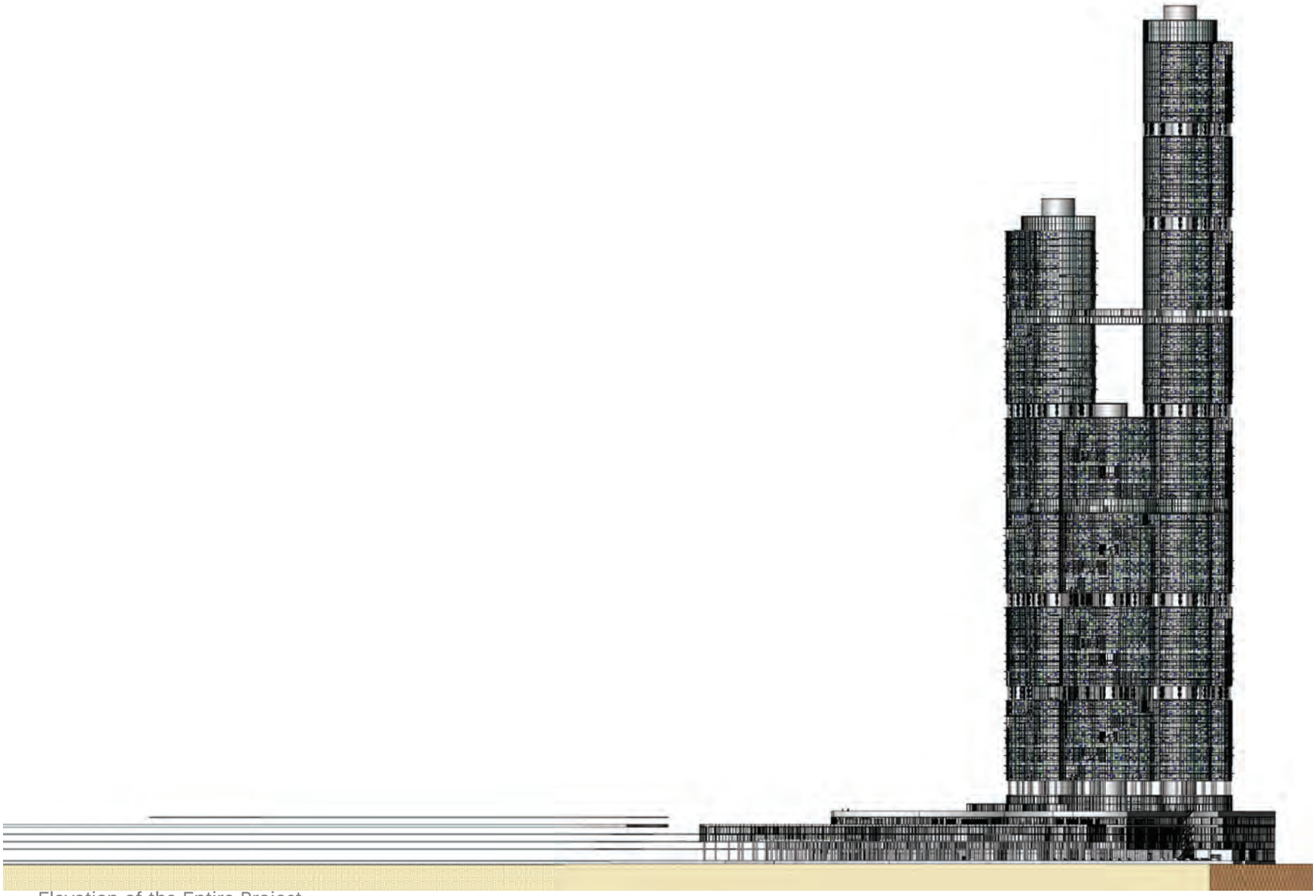
Perspective Looking Into 3-Way Connection Center Hole- Towards other Towers

Perspective Looking Into Atrium Space- Towards 3-Way Connection, Top Level Park

Three Way Connection

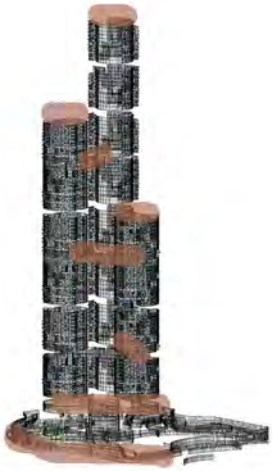


Perspective of 3-Way connection Roof Park



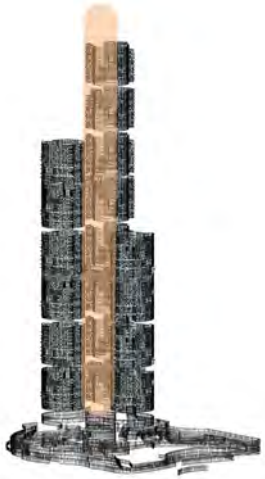
Elevation of the Entire Project.

Tower Elevations



Progression Upwards

Progression Upwards



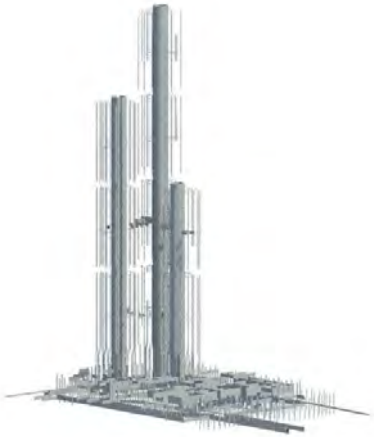
Central Public Core

Floors and Columns

Tower Diagrams

Floor Plates

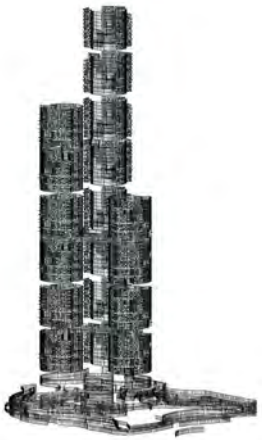
Green Spaces and Connections



Columns and Cores

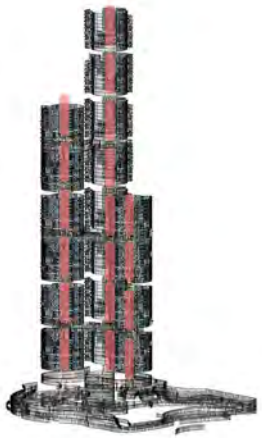
Columns

Pod to Pod Vertical Circulation



Curtain Walls

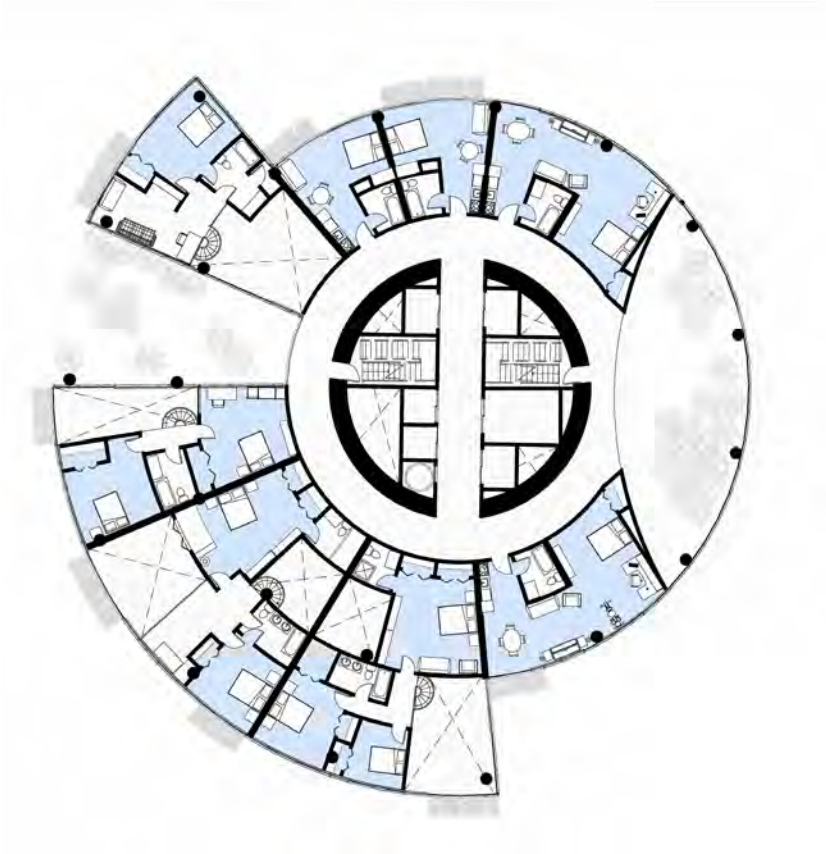
Public Destinations



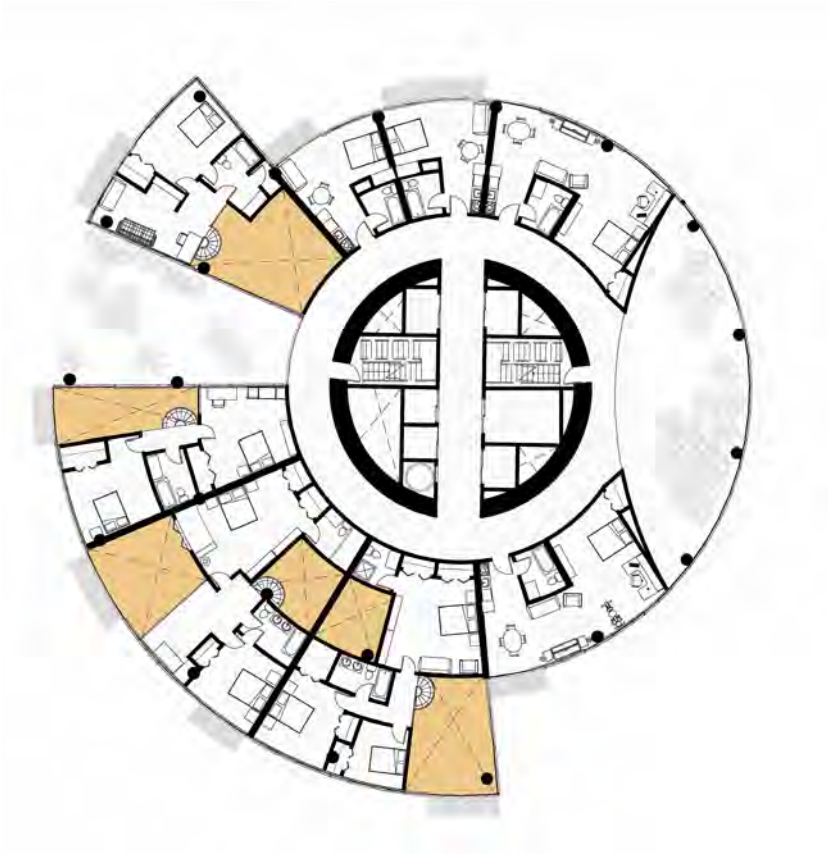
Internal Pod Circulation

Tower Diagrams

Cores



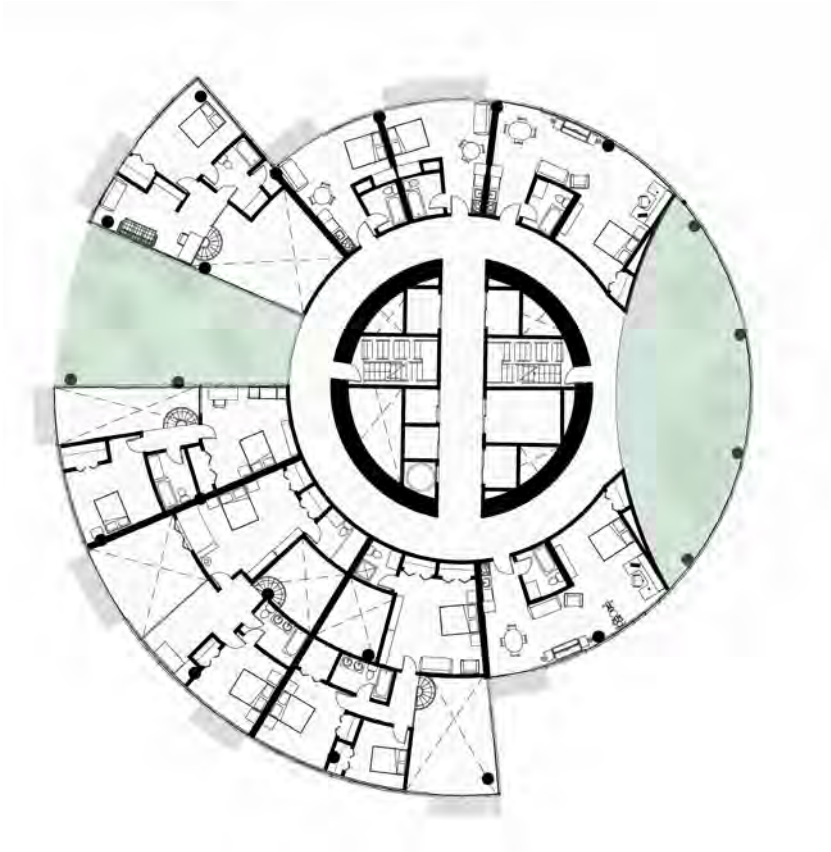
Bedrooms



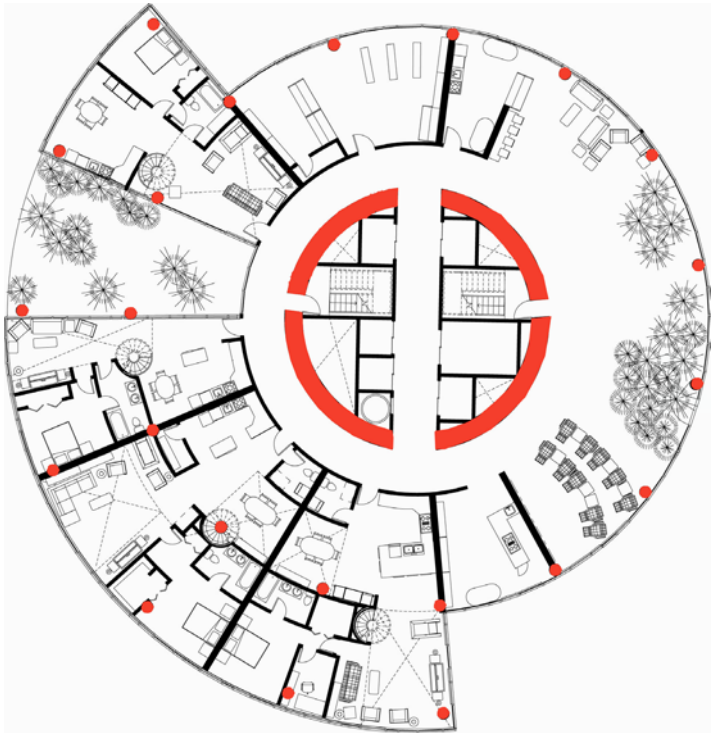
Double-Height Spaces

Floor Plans

While every intent is surely on producing functional and friendly spaces, there is also a great need for the spaces in the towers to be efficient, and minimized. With no room for wasted space, each parcel of unit must be used to its greatest potential. This being said however, within the floors themselves, I wanted a significant amount of space to be allowed for elegant double-height spaces, and ample public/private garden and green space. The units indeed needed to be concise, but they should not compromise their functionality, nor their aesthetics simply for the sake of saving space.

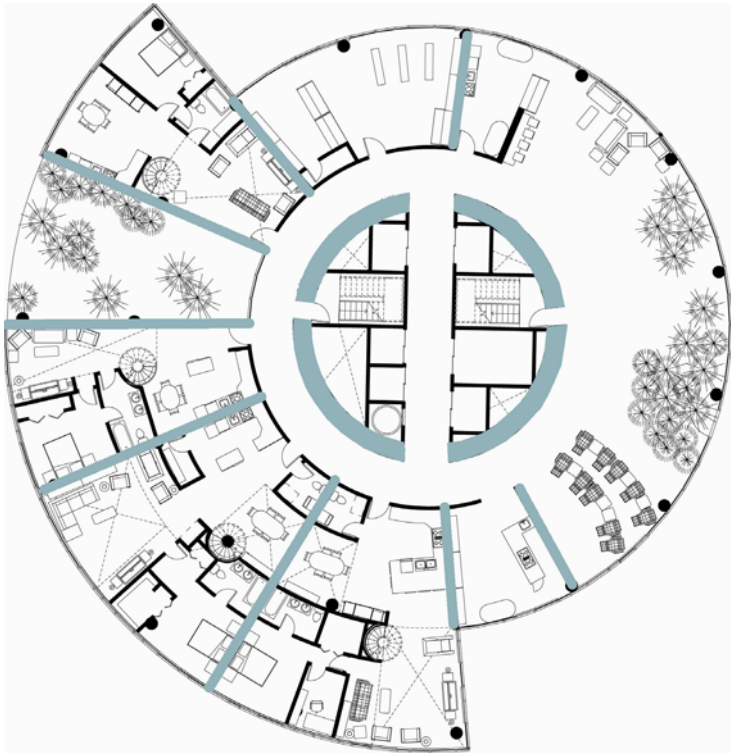


Green Spaces

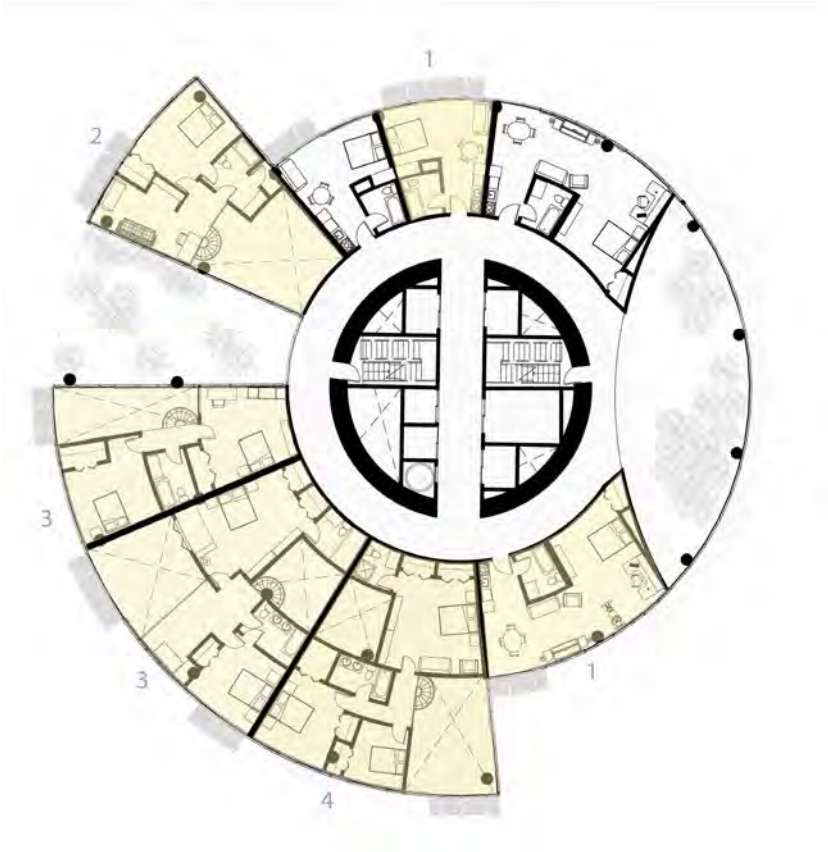


Primary Structure

Floor Plan Diagrams

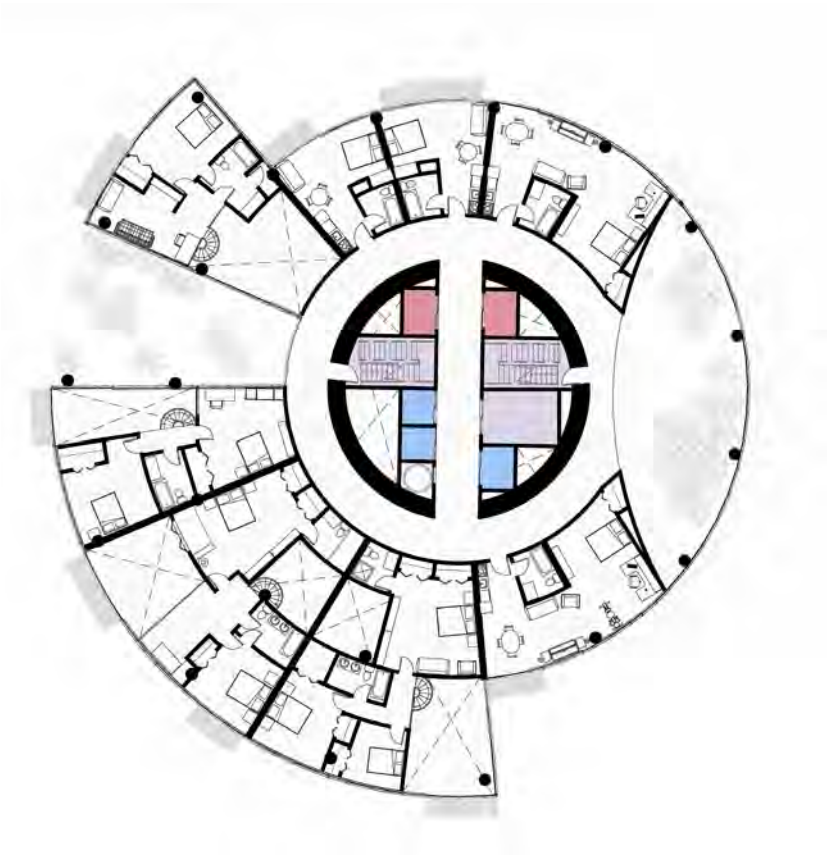


Secondary Structure

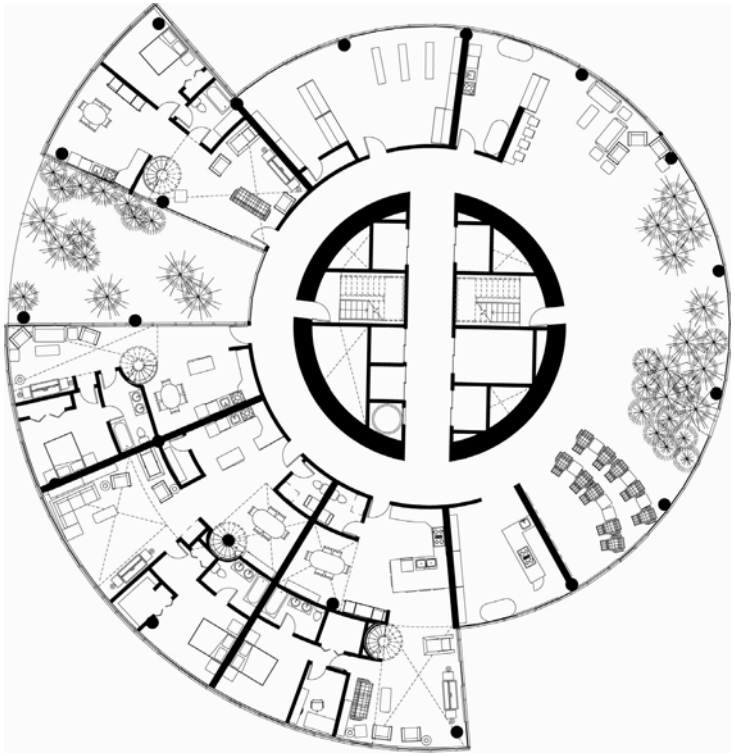


Number of Bedrooms in Various Units

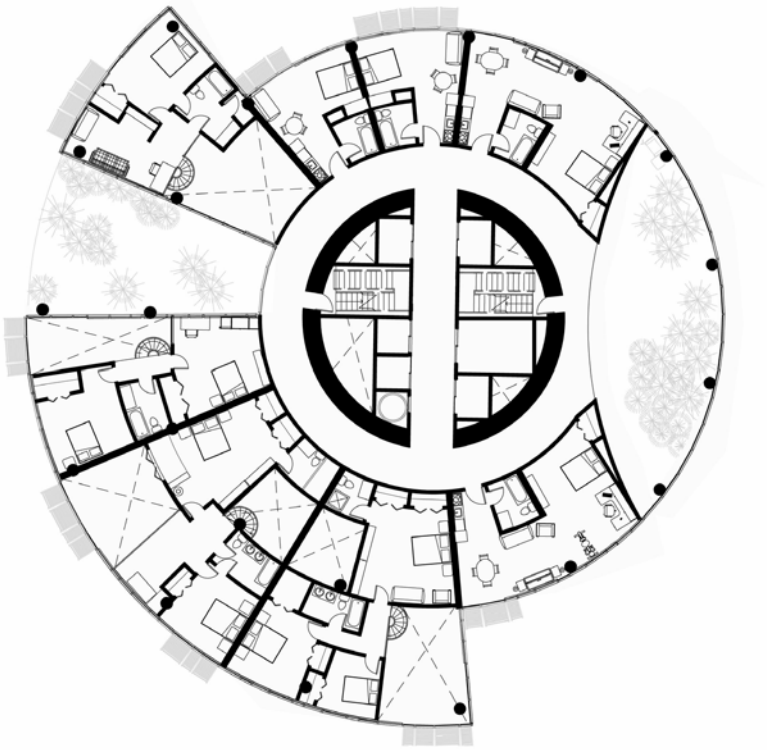
Floor Plan Diagrams



Vertical Circulation



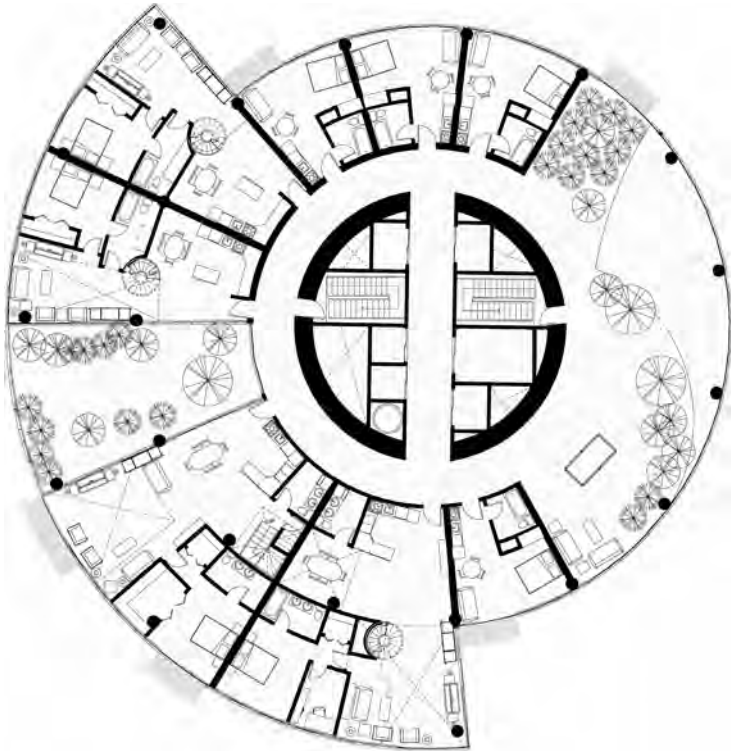
Floor Plan: Typical First Floor



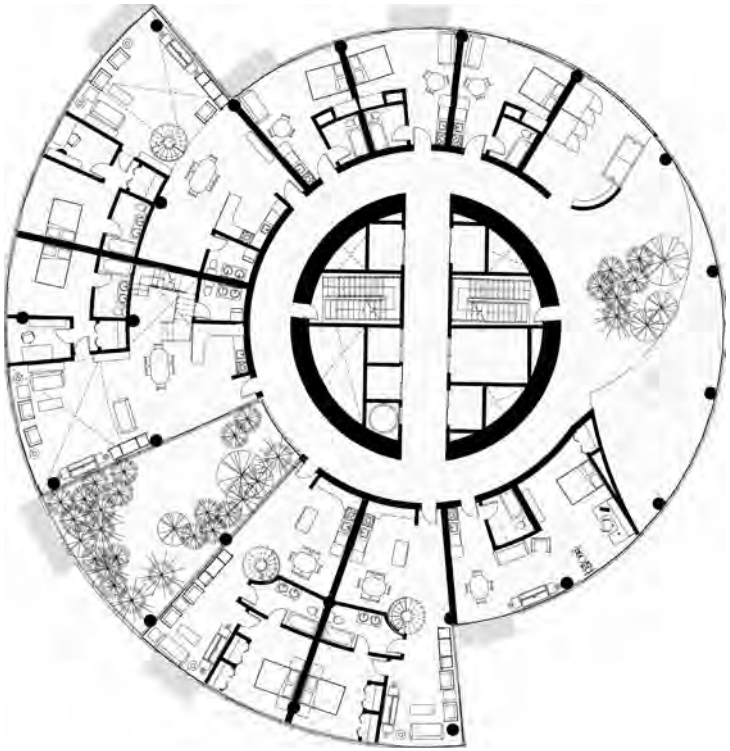
Floor Plan: Typical Second Floor

Floor Plans

The key aspect to working out the floor plans was finding the right balance between specialization, and repetition. While I certainly wanted a wide range of units to choose from, I also wanted to be realistic in production, as well as construction, and the build-out of the units. In order to help keep the overall cost down, a limitation on unit variation must be adhered to. Because of the shifting gardens, however, it was very easy to develop the when and where of the change in units occurred. I did need to pay close attention to how these changes reacted within the floor plan as a whole.

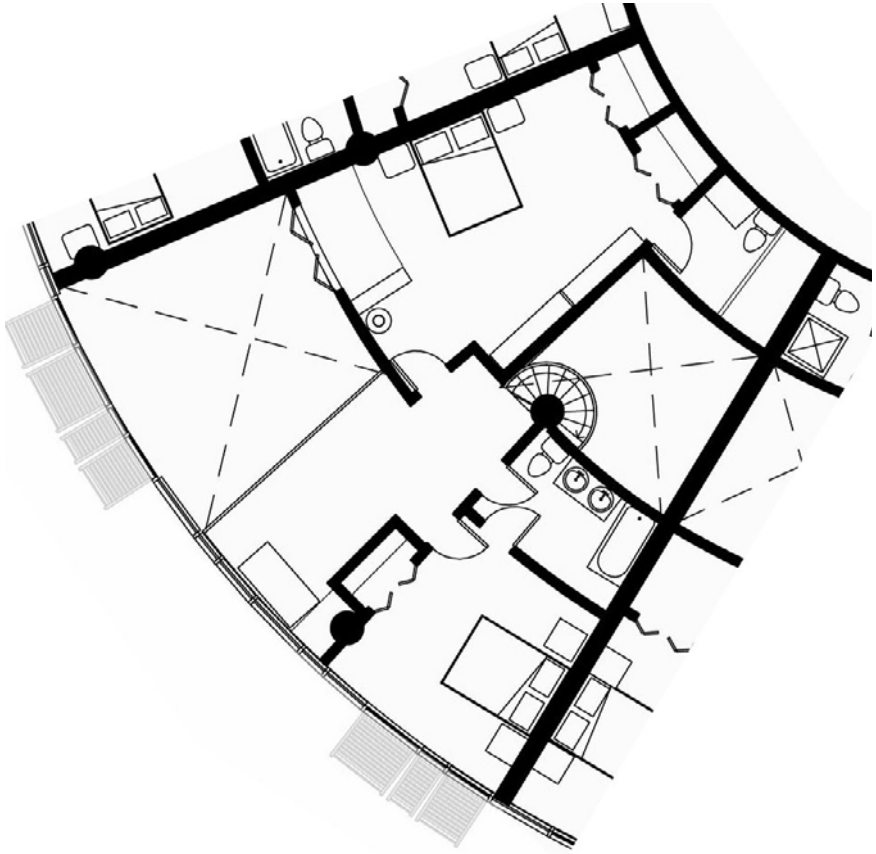


Floor Plan: Typical Third Floor



Floor Plan: Typical Fifth Floor

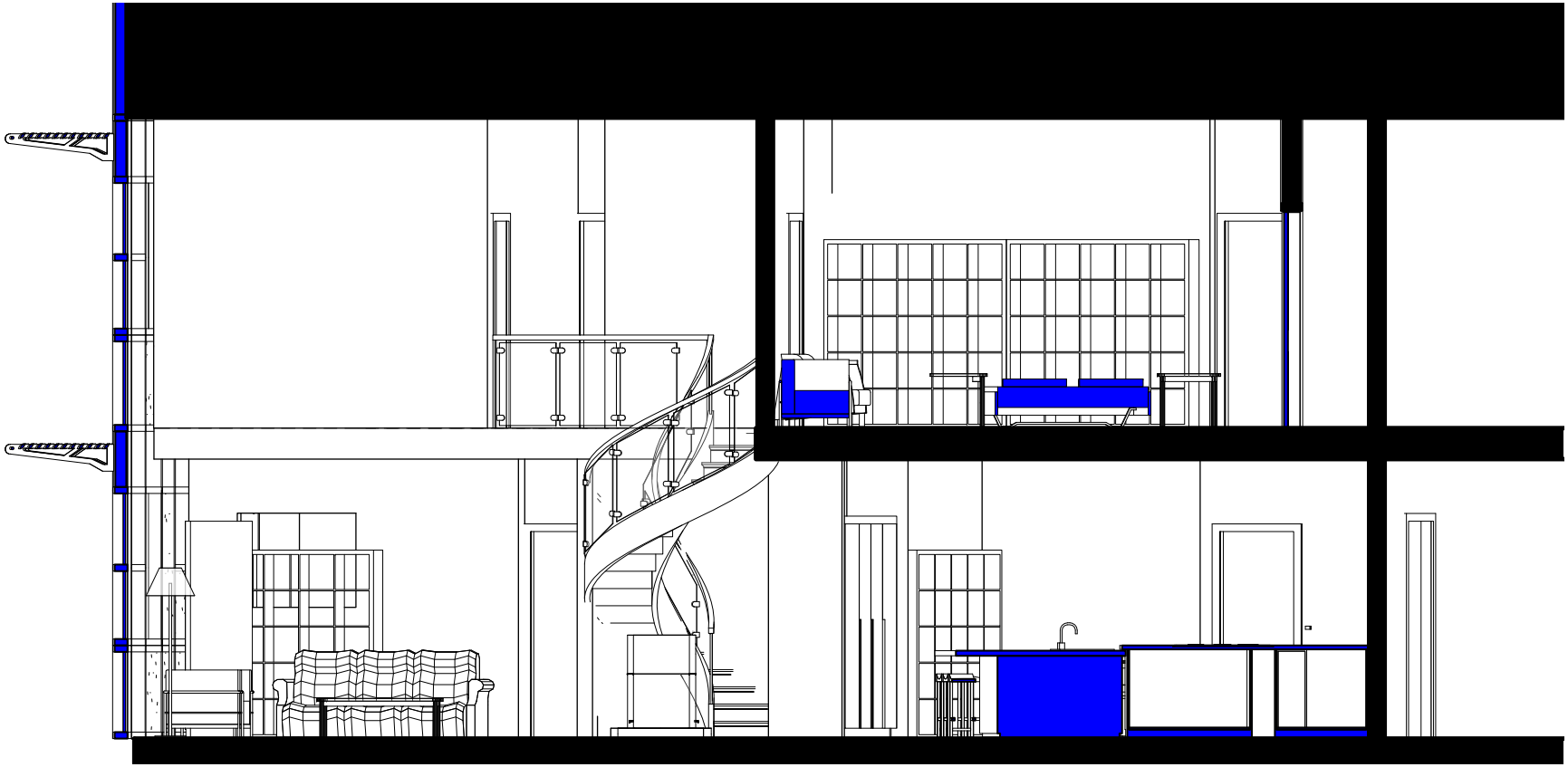
Unit Plan: Typical Large Middle Unit First Floor



Unit Plan: Typical Large Middle Unit Second Floor

Units

The Large Units can go either of two ways. There is a luxury, 3 Bedroom-4 Bathroom with double height living room, large kitchen, and spacious dining set. And there is also a 4-Bedroom, 3Bathroom version of which the Double Height living room and dining areas still exists, they are just sized accordingly to accommodate for the extra bedroom present. The idea with every unit is indeed to maximize the space, allow for ample natural lighting to each room, and provide for a comfortable living space with spansive exterior views of the City of Denver.



Unit 1: Section-Middle Unit

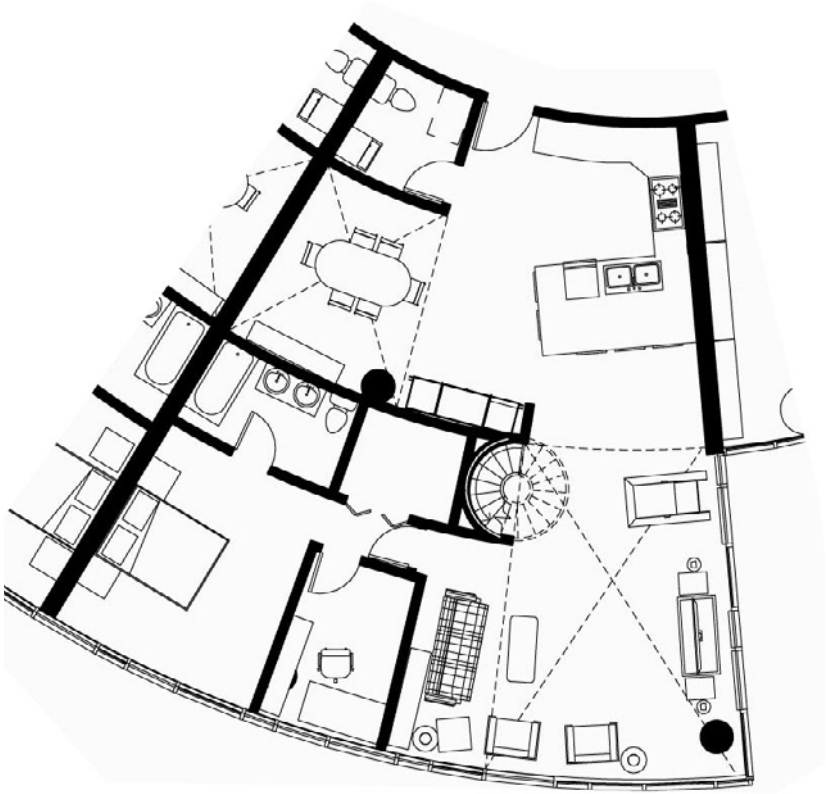
Section: Unit 1

Unit 1: Perspective- Middle Unit

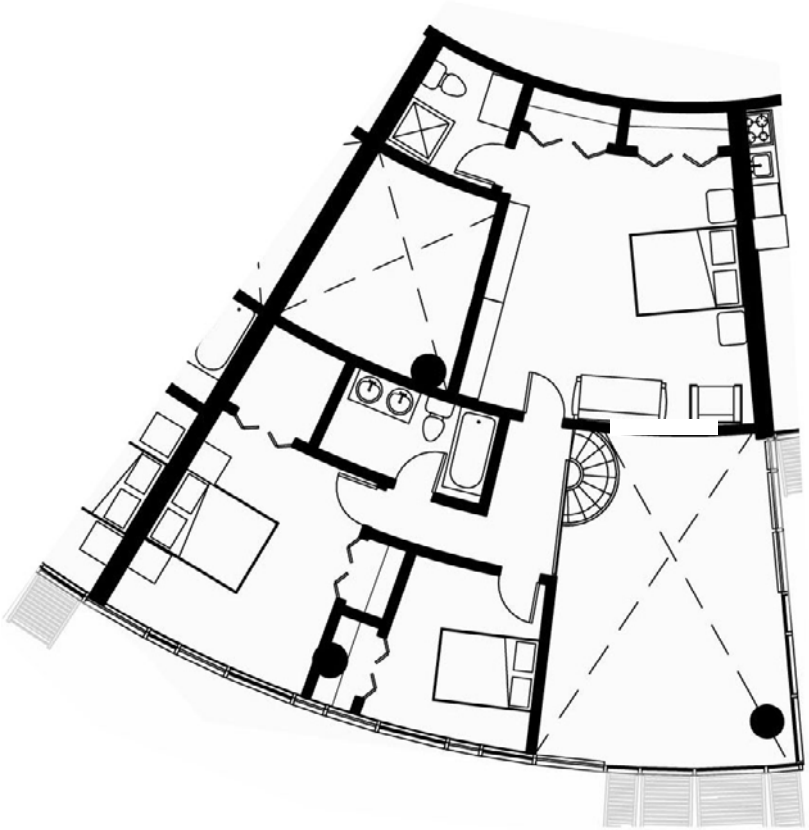
Sectional Perspective: Unit 1

Interior Perspective of Unit 1

Interior Perspective: Unit 1

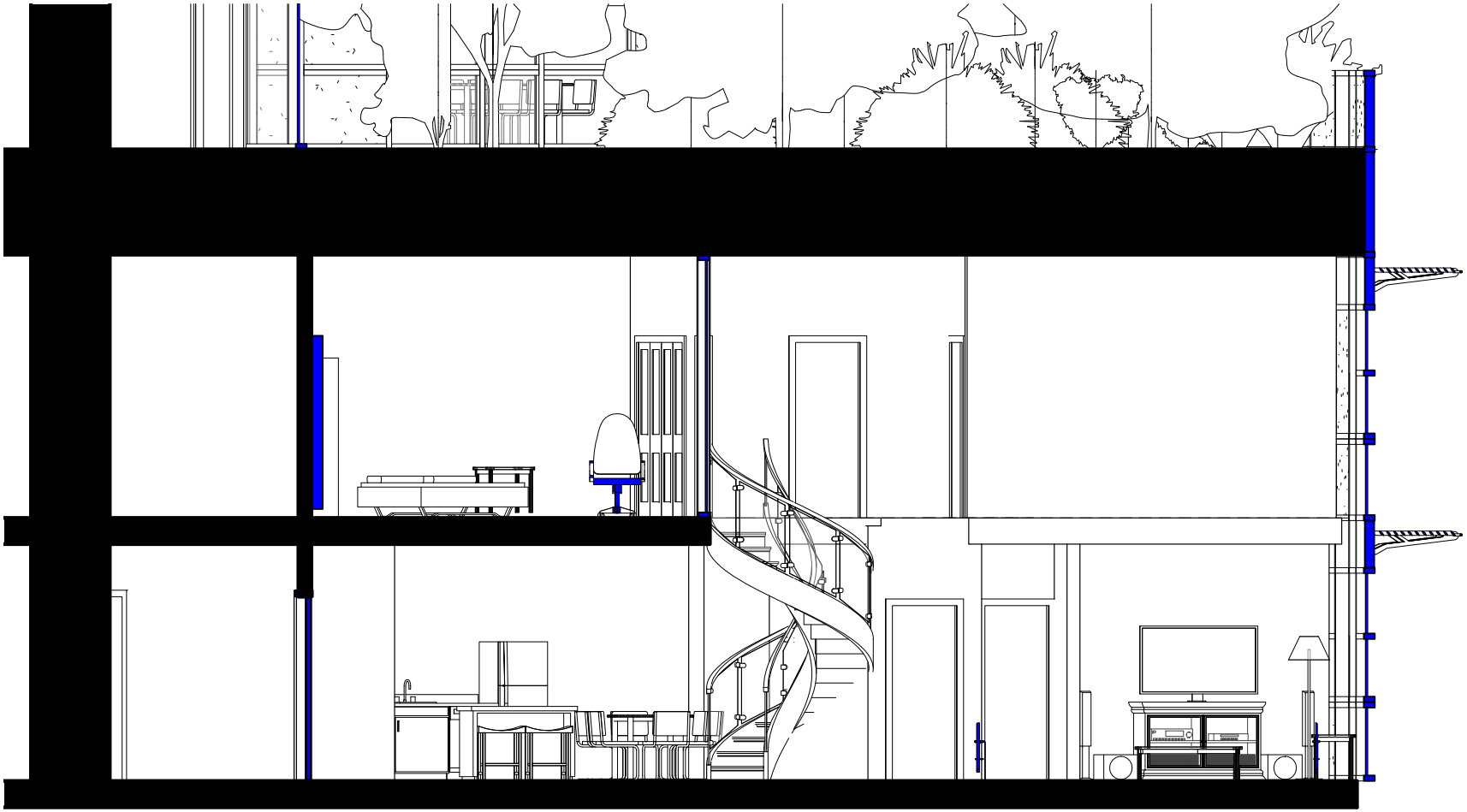


Unit Plan: Typical Large End Unit First Floor



Unit Plan: Typical Large End Unit Second Floor

Unit Plans: Unit 2



Unit 2: Section-End Unit

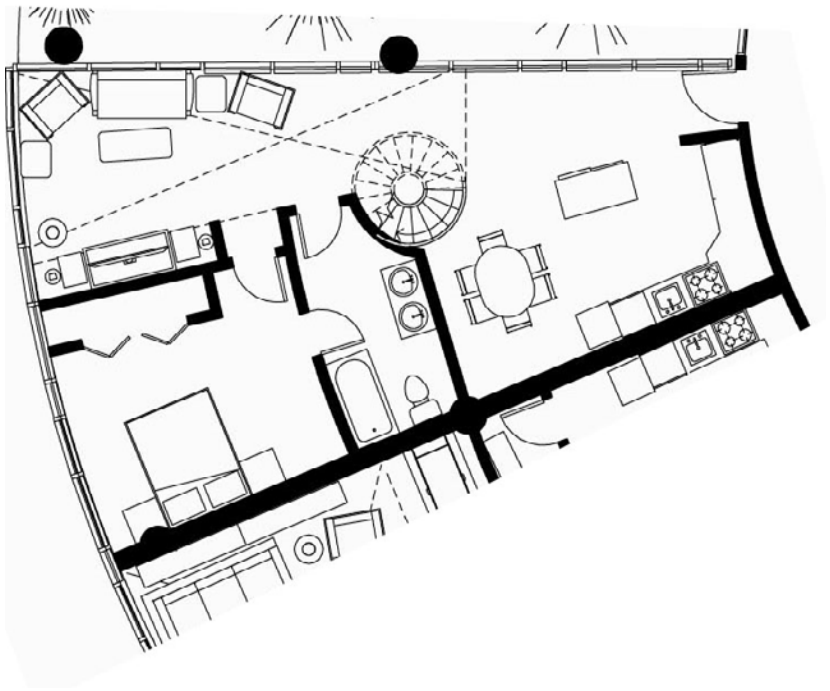
Section: Unit 2

Unit 2: Perspective- End Unit

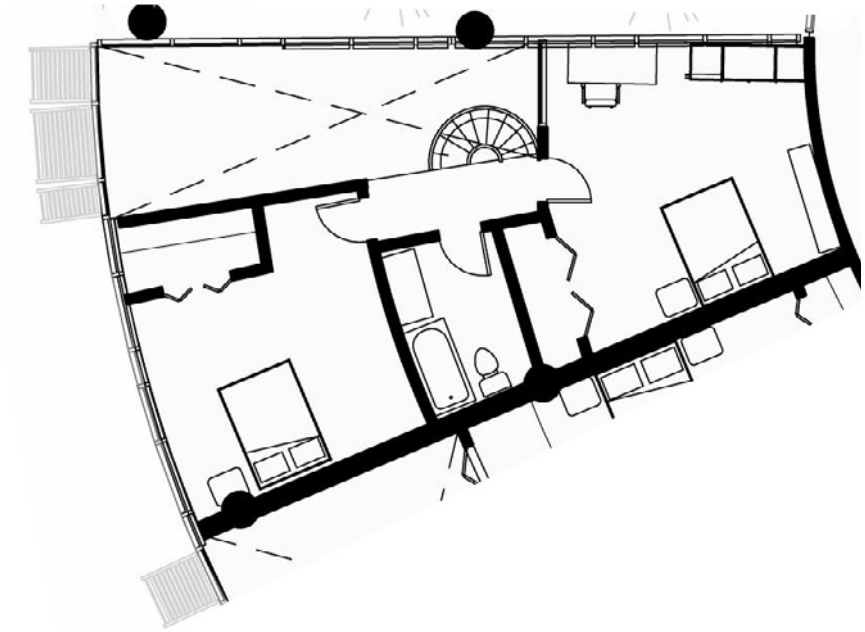
Sectional Perspective: Unit 2

Interior Perspective of Unit 2

Interior Perspective: Unit 2

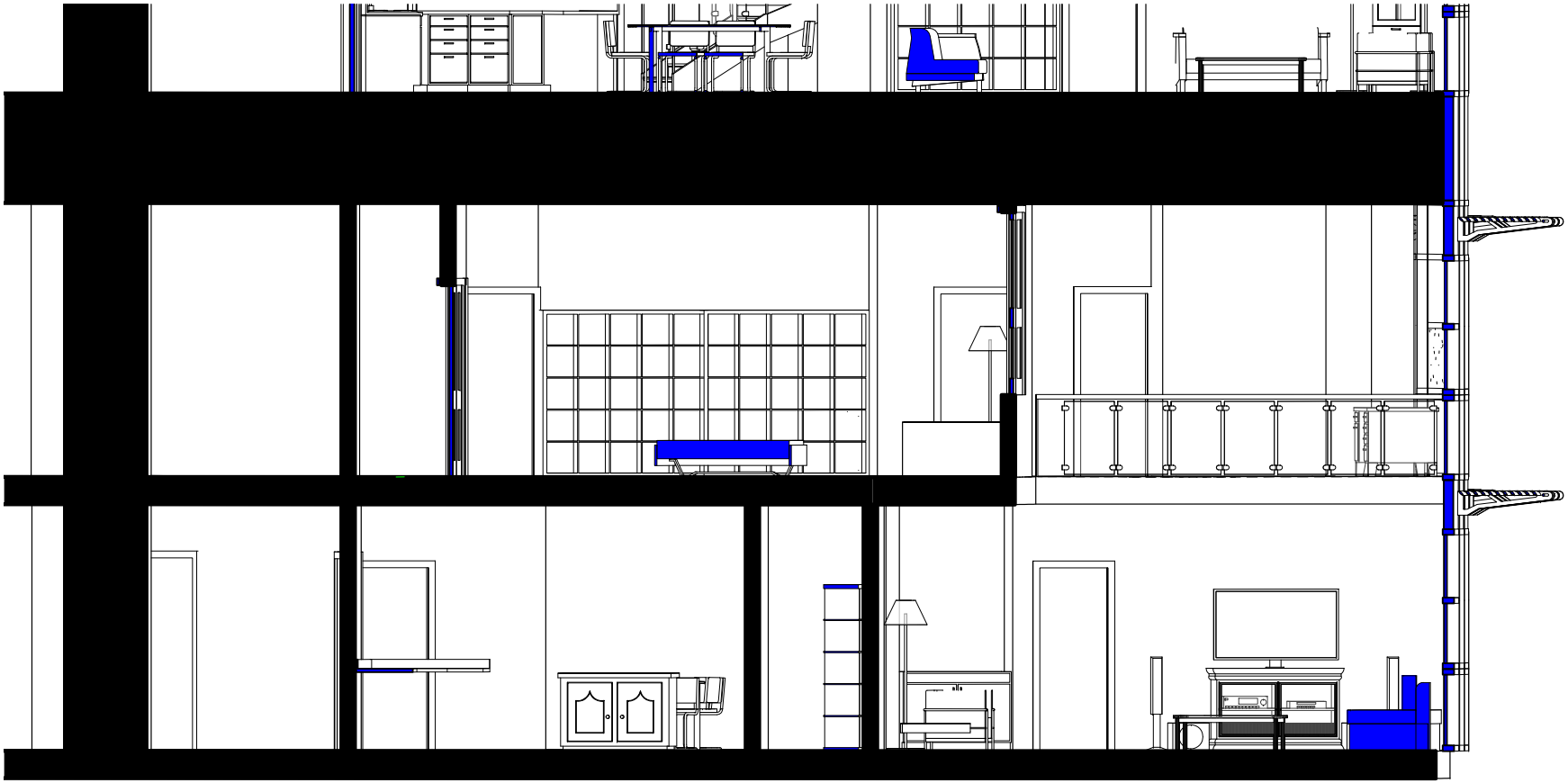


Unit Plan: Typical Medium Garden Unit First Floor



Unit Plan: Typical Medium Garden Unit Second Floor

Unit Plans: Unit 3



Unit 3: Section-Garden Unit

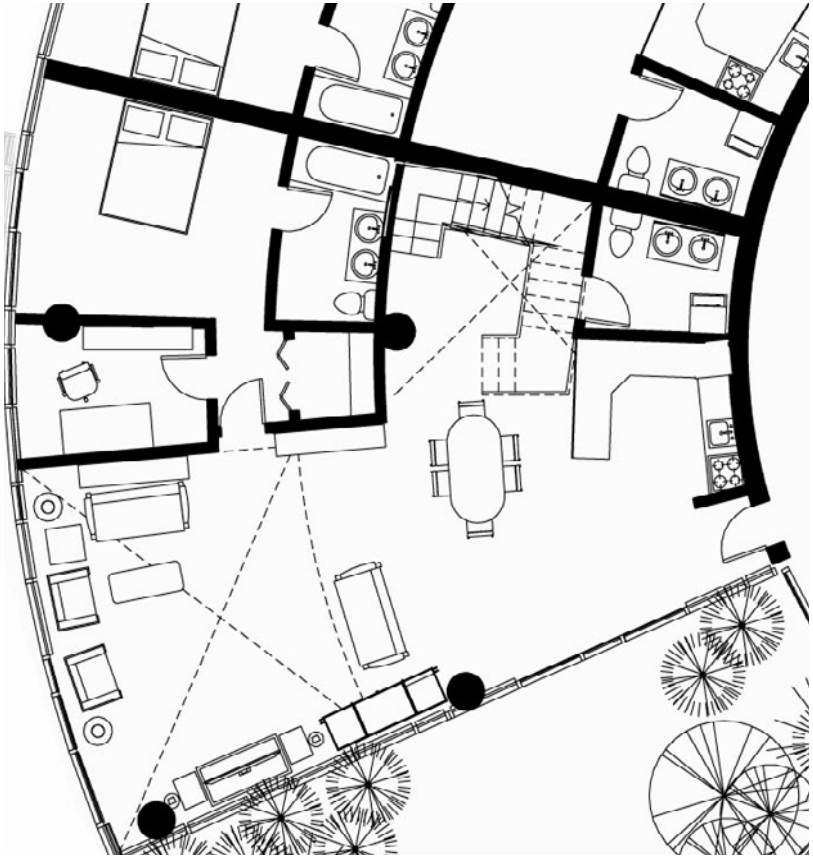
Section: Unit 3

Unit 3: Perspective- Garden Unit

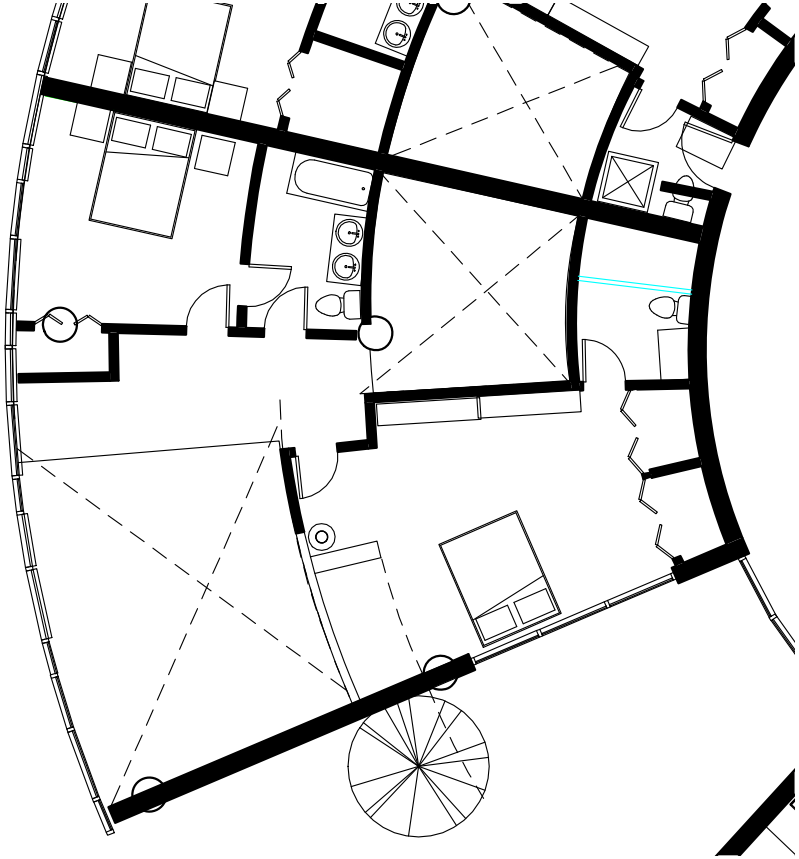
Sectional Perspective: Unit 3

Interior Perspective of Unit 3

Interior Perspective: Unit 3

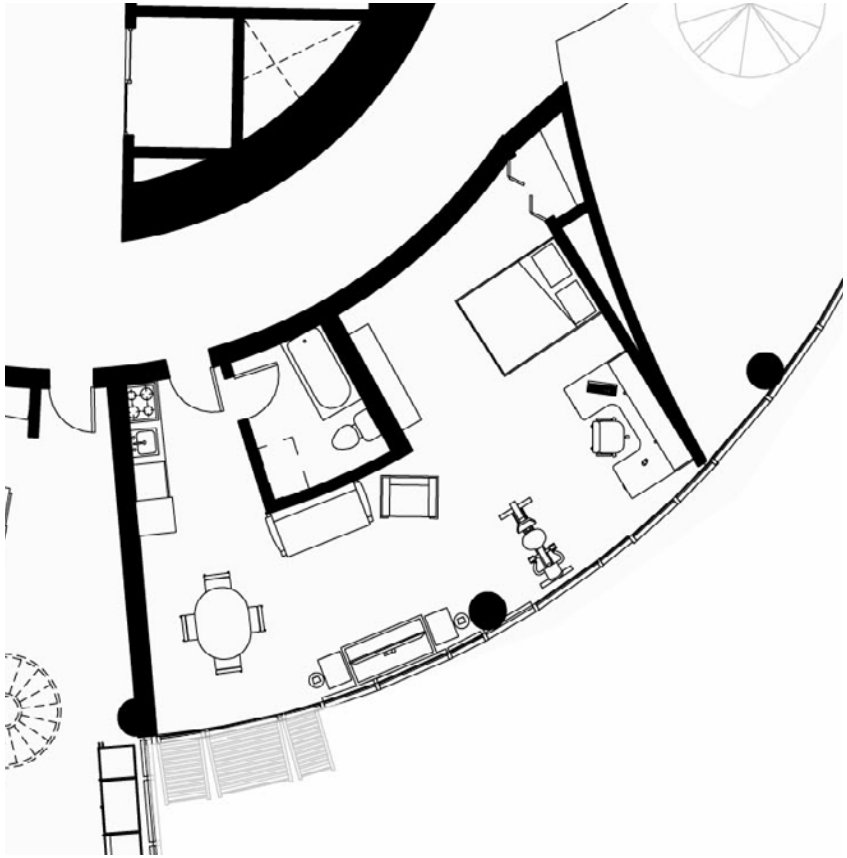


Unit Plan: Typical Large Garden Unit First Floor

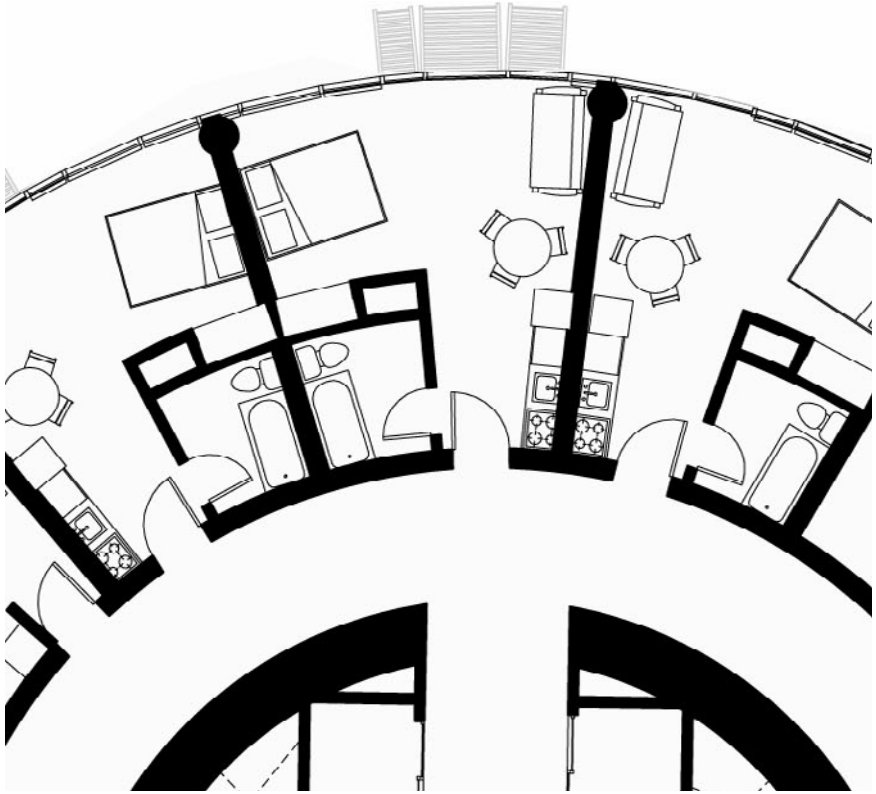


Unit Plan: Typical Large Garden Unit Second Floor

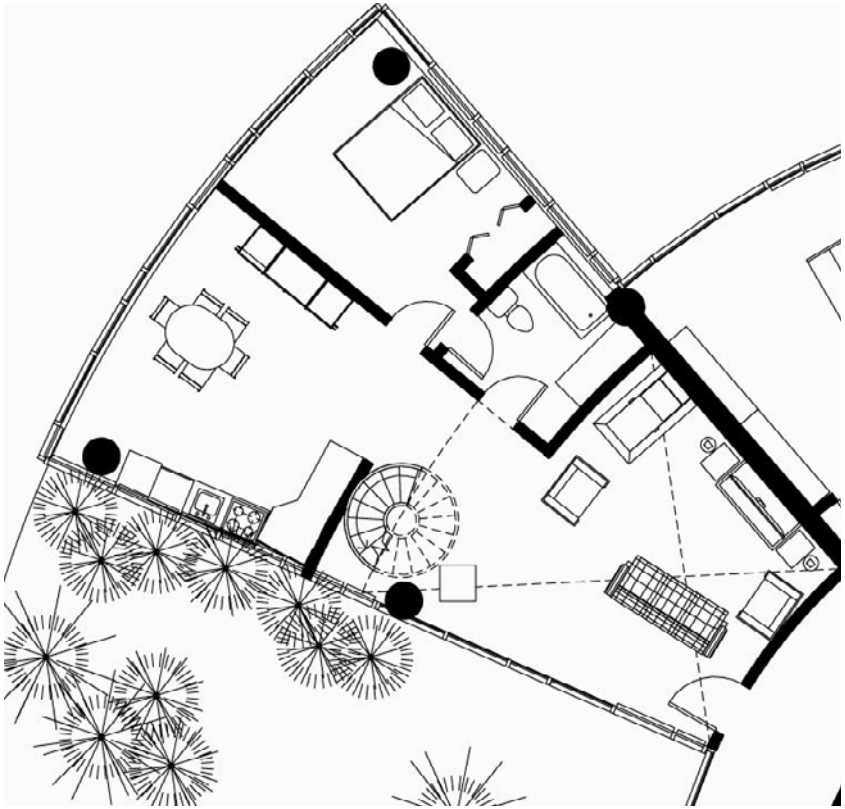
Unit Plans: Unit 4



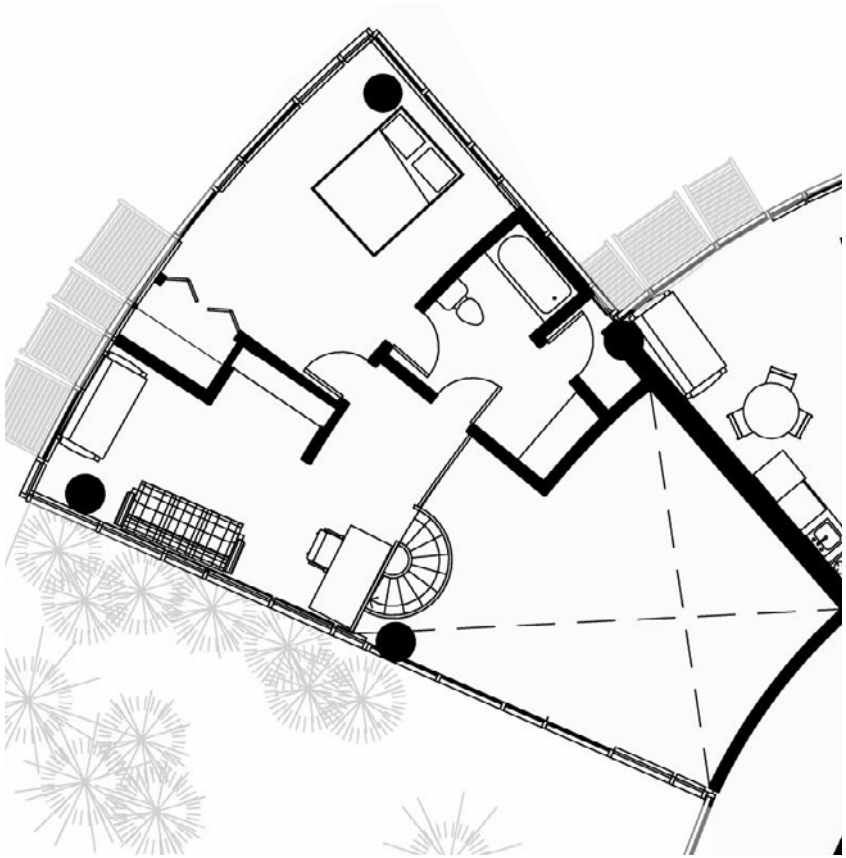
Unit Plan: Typical Extended Studio Unit, Single Floor



Unit Plan: Typical Studio Unit. Single Floor

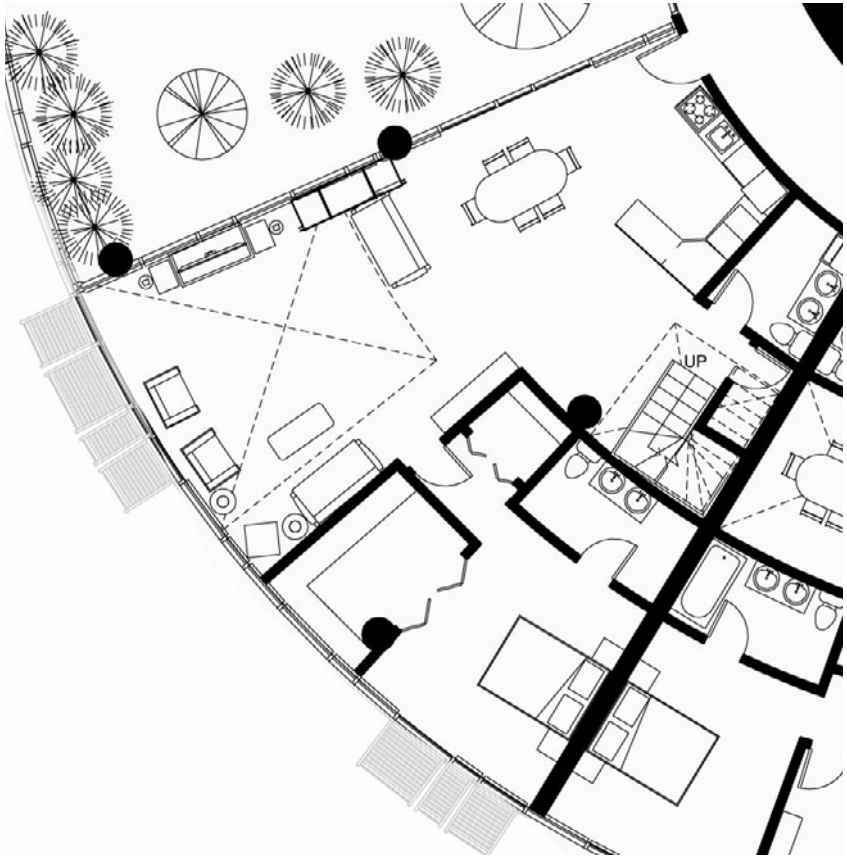


Unit Plan: Typical Medium End Unit First Floor

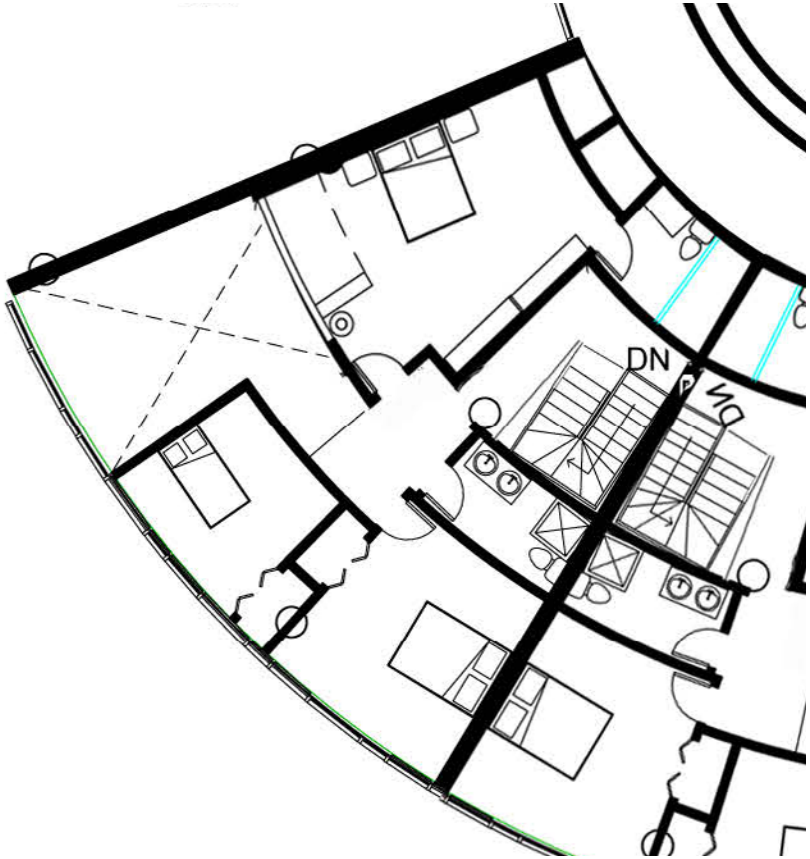


Unit Plan: Typical Medium End Unit Second Floor

Unit Plans: Unit 7



Unit Plan: Typical Large Garden Unit First Floor



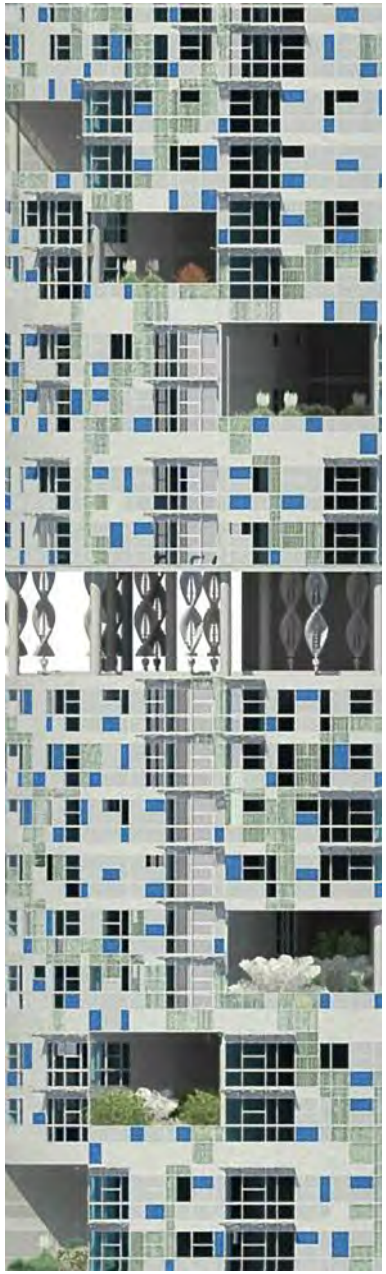
Unit Plan: Typical Large Garden Unit Second Floor

Curtain Wall and Garden Progression

Curtain Wall System

The curtain wall system was intended to be very dynamic. As these images show, the gardens shift and rotate up the pod in plan. The walls themselves are meant to mimic the constantly changing and reacting units. As the units must change to accommodate for the garden space, so does the skin of the building to accommodate for the changing program behind it. By using a multifaceted curtain panel, with interchangeable paneling system any and all configurations can be achieved, wether it requires a small slim, thin window, or a opaque panel at the intersection of a wall, or spansive open glass system for views, the system adapts as need be. Additionally, there is the ability to have the wall literally grow, and change, as the mesh panels make their way up the wall. Ideally, the greenery will climb all the way up the facade, connecting the shifting gardens in interesting patterns. Lastly, there is the incorporation of many passive energy saving techniques. With the integration of a Photovoltaic panel, optimum positioning can occur to get the best solar splash/collection. There is also a louver system which occurs at any large span of glass, reducing summer heat gain while permitting winter solar penetration. The passive air ventilation system which occurs at each floor slab is also integrated into the design

Curtain Wall and Garden Progression



Curtain Wall and Facade Compilation

Curtain Wall Detail- Growers and Photovoltaics

Curtain Wall Manipulative Qualities

Curtain Wall Detail- Primarily Growers

Curtain Wall Detail- Primarily Photovoltiacs

Curtain Wall Manipulative Qualities

Curtain Wall Detail- Primarily Concrete

Plan Section Cut- Level 1

Plan Section Cut- Level 1-2

Plan Section Cut- Level 1-3

Plan Section Cut- Level 1-4

Plan Section Cut- Level 1-5

Plan Section Cut- Level 1-6

Plan Section Cut- Level 1-7

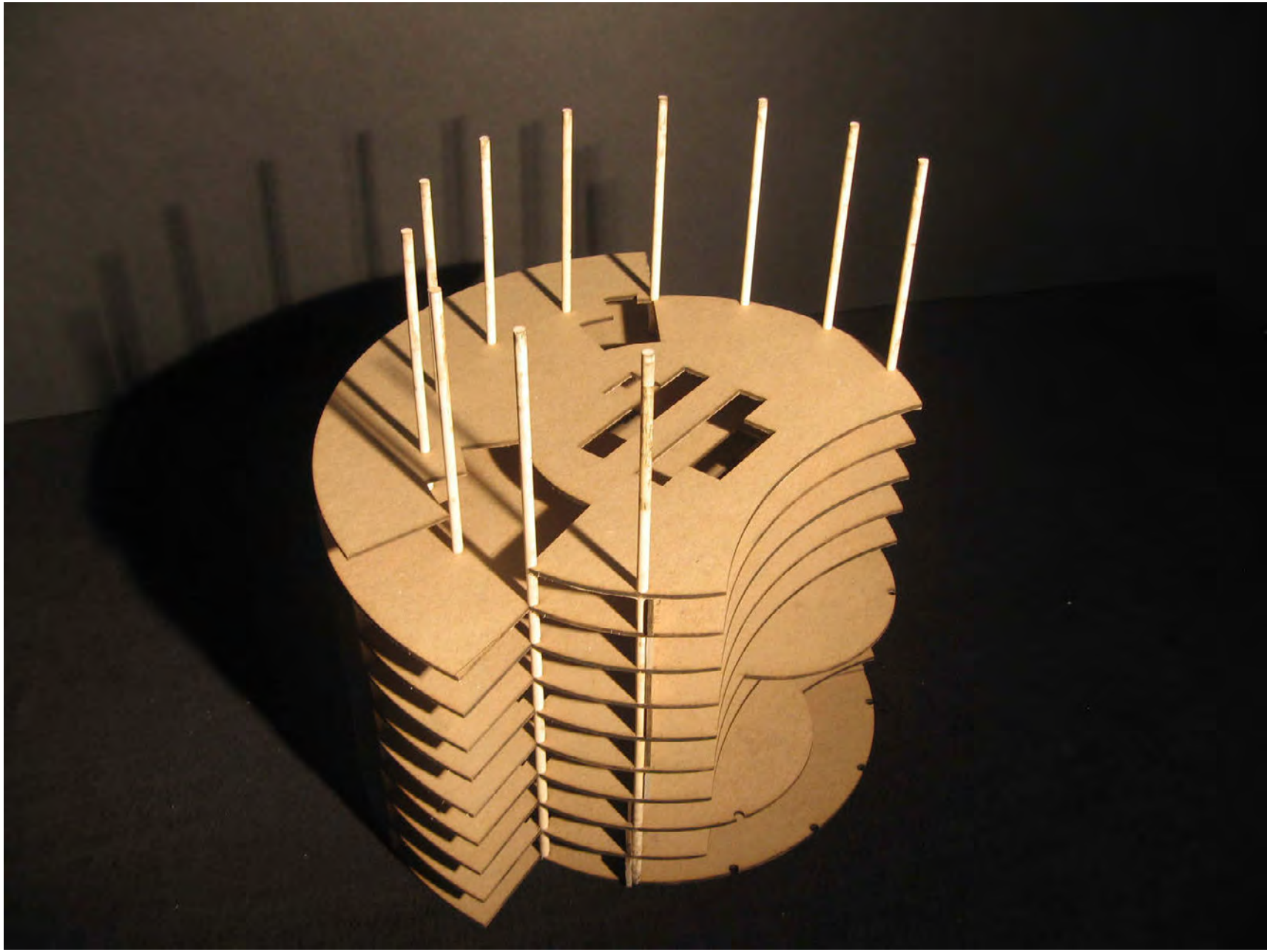
Plan Section Cut- Level 1-8

Pod Section Cut

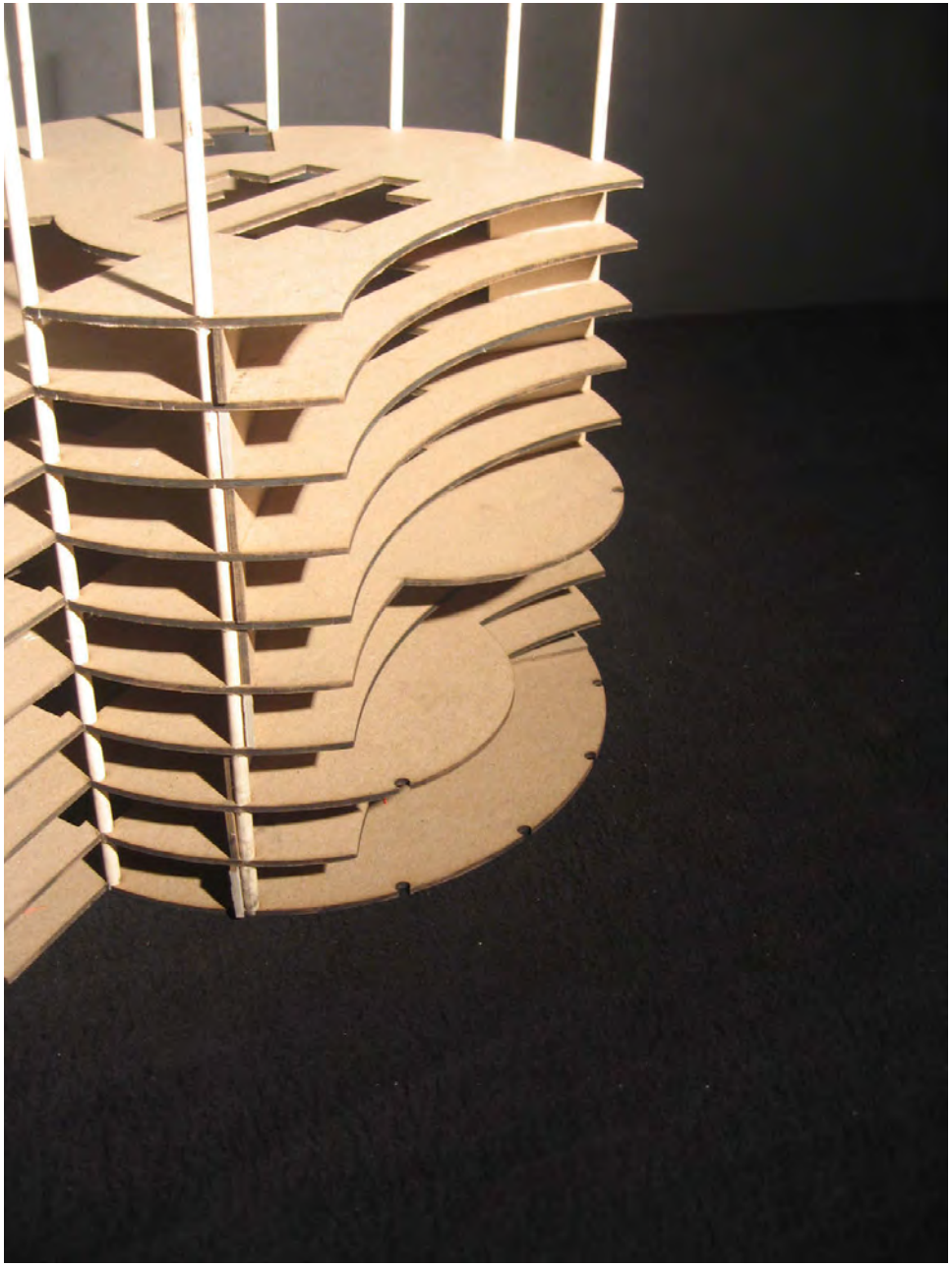
Entire Pod

Pod Section Cut

Entire Pod



Final Model



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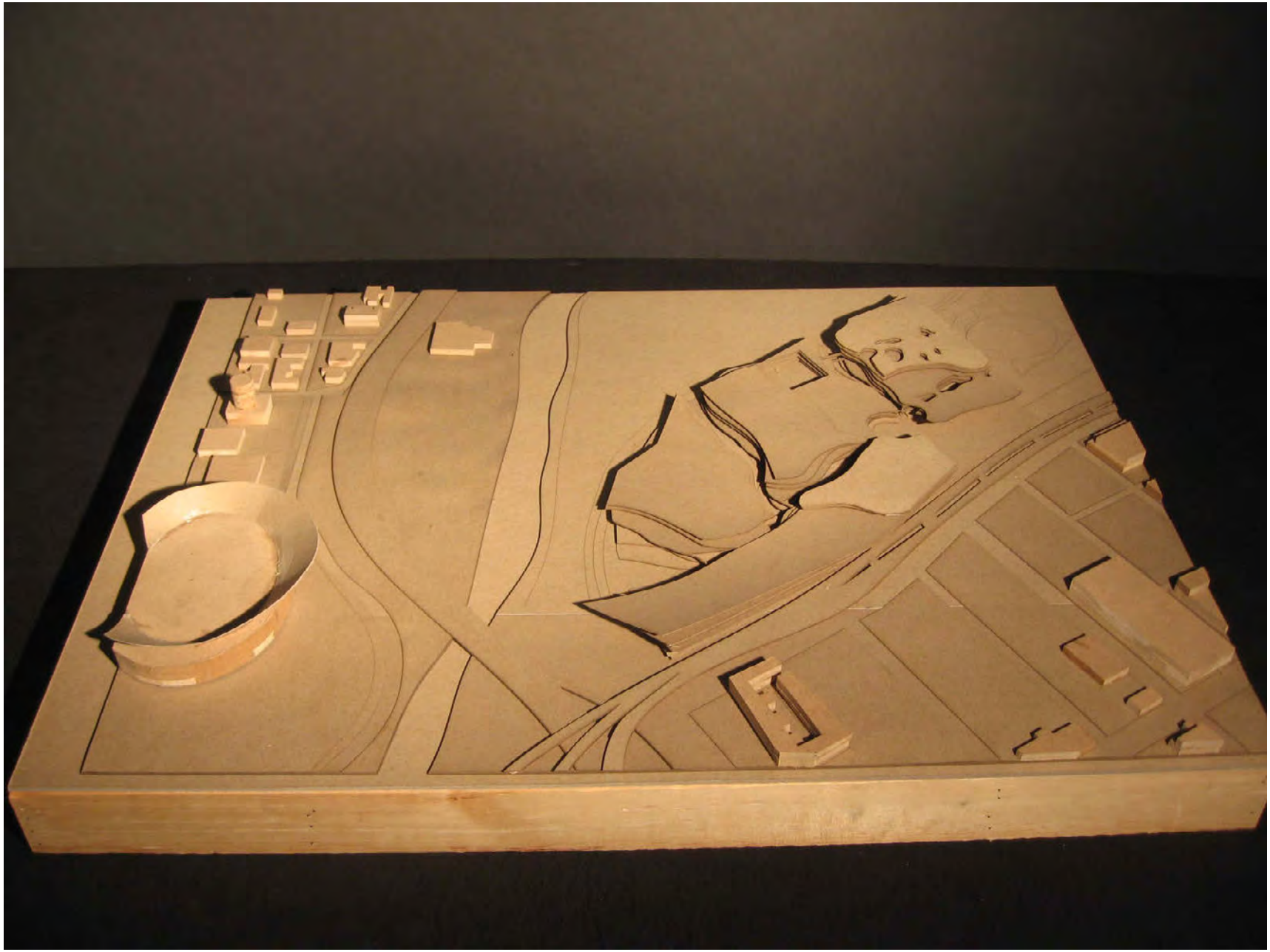

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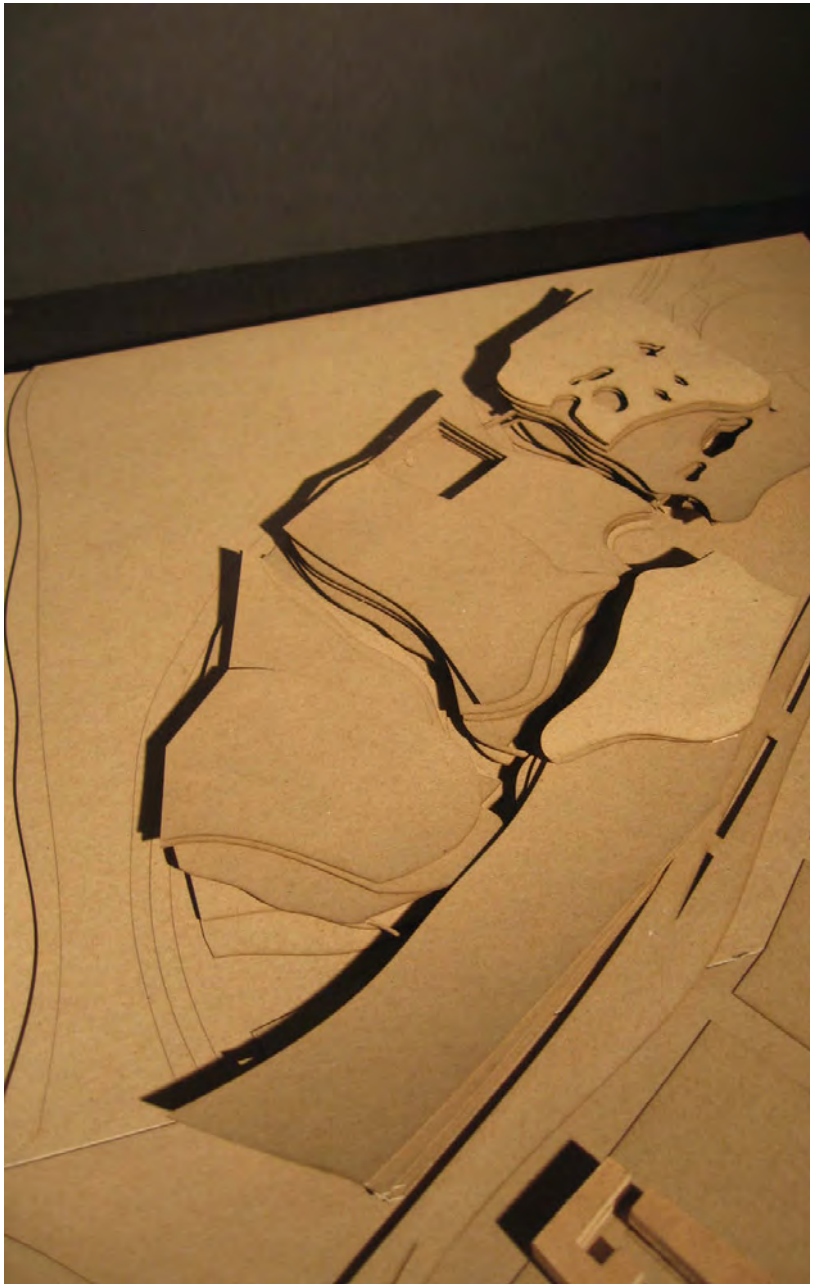

Final Model

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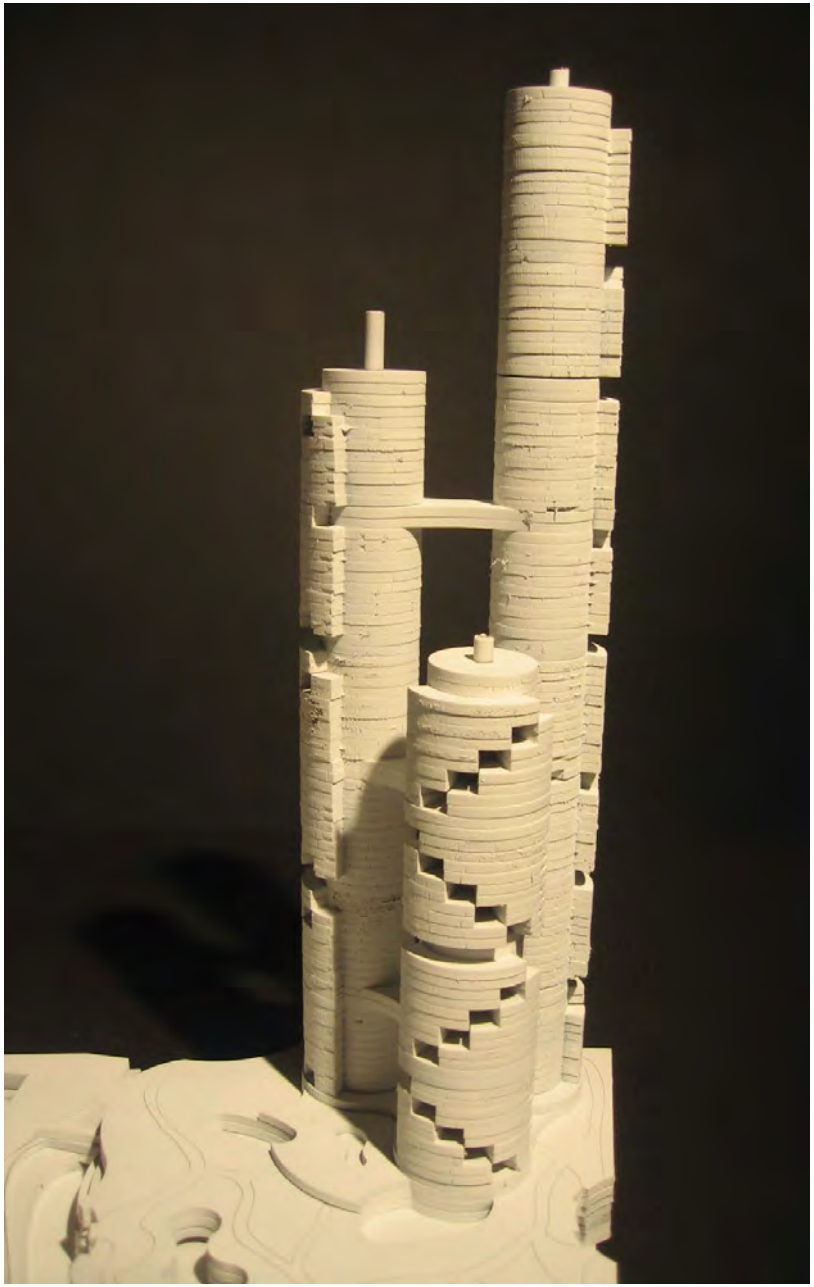

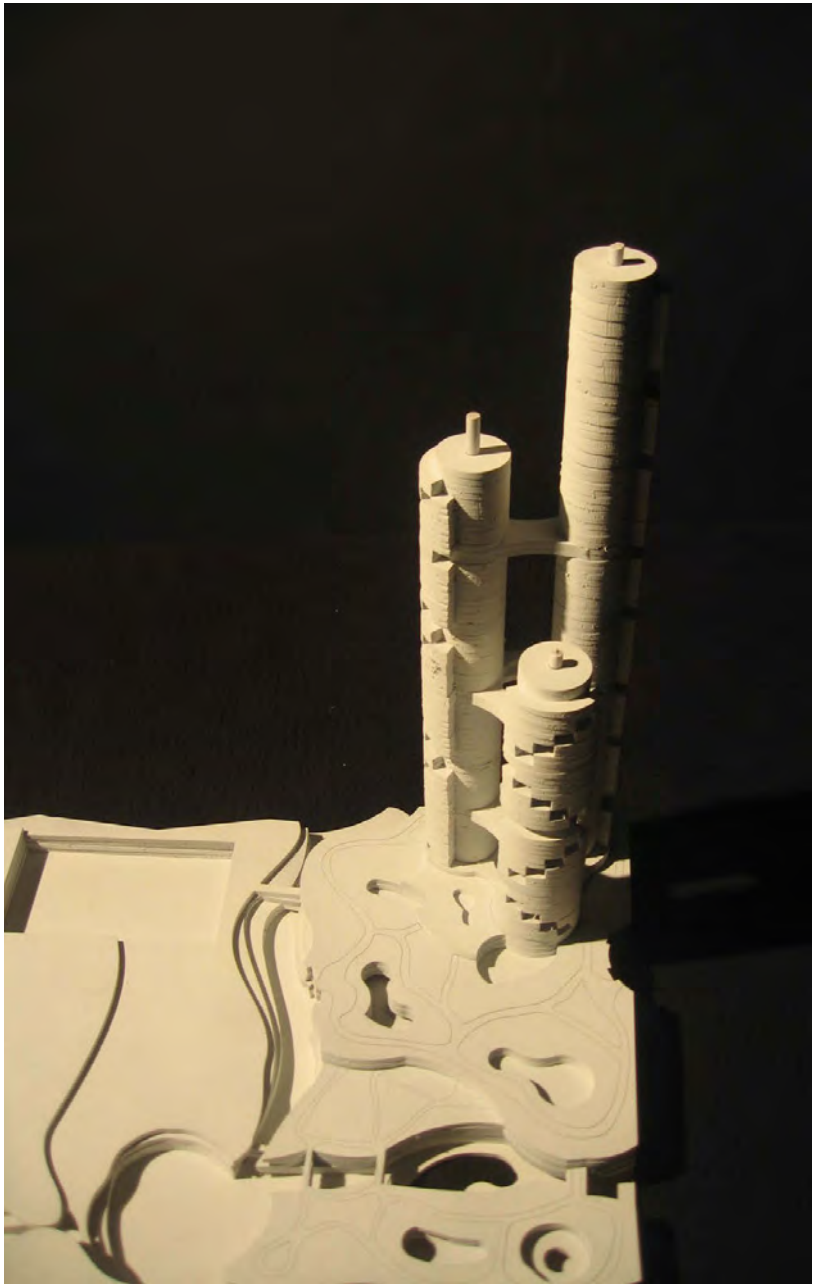

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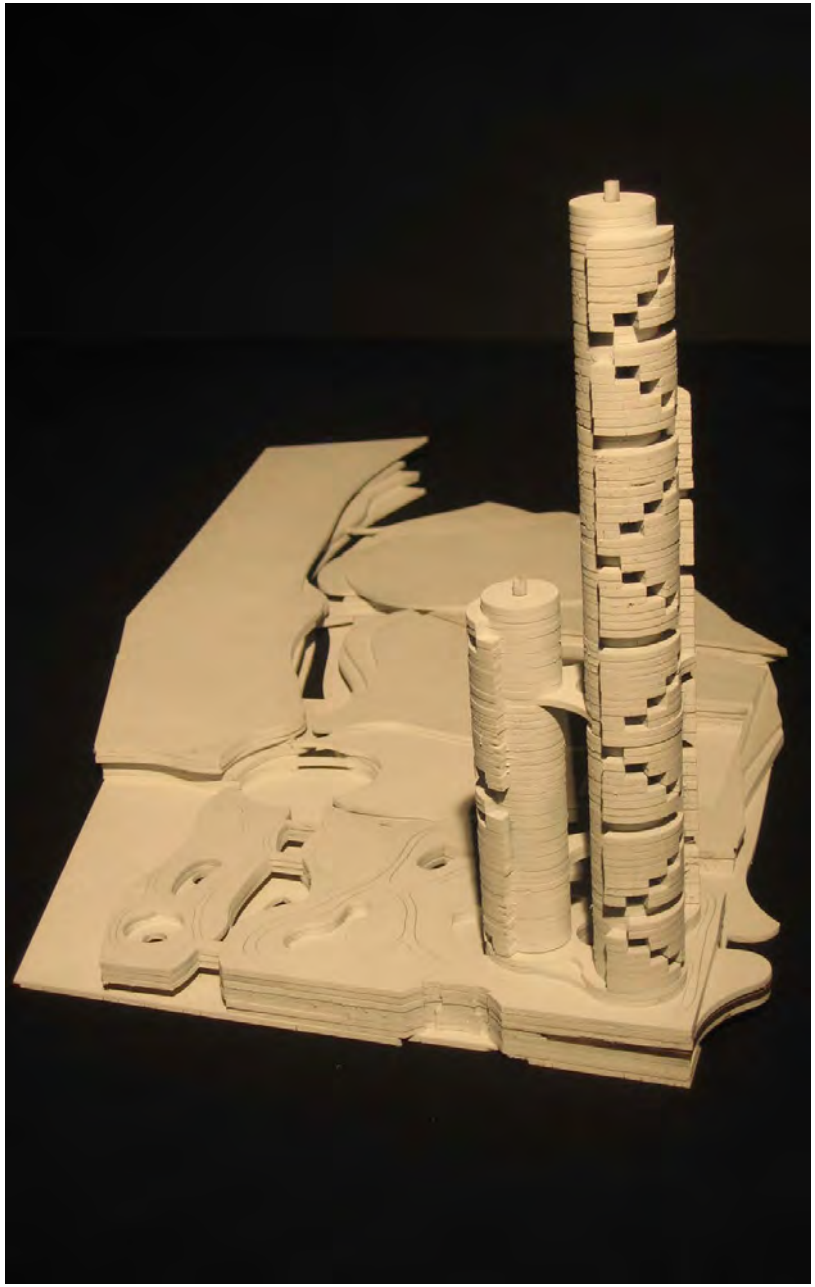

Final Model

Final Model

Perspective Up Towards Towers From Central Courtyard

Final Renders

Perspective Upwards Towards a Full Tower

Tower Perspective

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