



# CULTIVATING CONTENT

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CULTIVATING CONTENT

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of North Dakota State University

By

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## ABSTRACT

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Cultivating Content aims to uncover truths about current social and environmental dilemmas, while revealing how mass transportation can be used to rectify them. It states that transportation via personal automobile has created a barrier between community members. It calls to attention the environmental damage there incurred. And finally it delves into the purpose of a city and asks how can mass transportation reduce consumerism while simultaneously nurturing the individual relationally. This project will be a 200,000 sq. ft. rail hub and its constituent elements, located in Tampa, Florida.

# STATEMENT OF INTENT



## PROBLEM STATEMENT

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How can design provoke social responsibility?



## STATEMENT OF INTENT

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### TYOLOGY

Rail Transportation Hub

### CLAIM

Social and environmental responsibility can be individually nurtured through one's engagement in the development of their community.

Who is the actor(s)?	one
What is the action?	nurtured
What or who is the object?	community
What is the manor of action?	engagement

### PREMISES

One takes on responsibility towards their community when they are inspired to act on a specific need.

A communities members become socially sensitive and nurturing towards their environment when an opportunity and incentive present itself.

Community is fostered when individual members are moved to act on these opportunities and incentives in a socially and environmentally contributive manor.

Engagement by its members is the first step towards social and environmental rejuvenation of a community.

### THEORETICAL PREMISES

The current method of physically linking most destinations in the United States leaves something to be desired both socially and environmentally. Designers are poised to advocate and initiate innovative ideas, challenge the orthodox mind set towards transportation and begin to mend a widening gap. As Richard Register said in his book *Ecocity Berkeley*, "Without a certain amount of stress and strenuous exercise, neither the individual's body nor the mind grows in health or wisdom. So too with the city" (Register, 1987, p.VII).

### JUSTIFICATION

Transportation via personal automobile is one of the most socially destructive and environmentally taxing activities to have ever been implemented in the United States. Thus mass transit must become the primary method of locomotion within a metropolitan area for the betterment of society collectively.

A metropolitan area will experience social and environmental rejuvenation only after its members have reevaluated their duties as such, and have resolved to partake in a means of adequate progression.

# PROPOSAL



## NARRATIVE

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How can design provoke social and environmental responsibility? Responsibility toward one's social and ecological environment begins with an opportunity and incentive. Individuals have an innate instinct to continuously seek out resources to satisfy their primary needs. In most instances, the mode or method of obtaining these resources is carried out in a 'path of least resistance' fashion. This behavior, regardless of the reason an individual chooses to employ it, often causes unnecessary harm to the individual socially or the environment ecologically. In order to positively direct how one goes about obtaining these resources, both an opportunity and incentive must present themselves.

An opportunity can be defined as a good position, chance, or prospect for advancement or success. In this context, when opportunity is partnered with incentive, the result can be a restructured order of individual priorities that ultimately benefit a community collectively.

Transportation via personal automobile in the U.S. has created a barrier between the members of a community while consuming an unprecedented amount of resources and polluting at an exponential rate. Mass transportation is poised to augment social interaction while alleviating our demand on the earth's resources.

Mass transportation removes the social barrier that the personal automobile innately erects. Consider a recent driving experience, did you arrive at your destination overwhelmed with admiration for your fellow drivers? Or is it more likely that you would rather not have driven among that crowd? Individual automobiles create an undue tension between community members – members that should be in fellowship and not at odds with one another.

The following example is just one of many problems I've discovered with the personal automobile. As such mass transportation appears to be the optimal vehicle for the alleviation of Tampa's traffic congestion problem. As Les Weakland, HART's (Hillsborough Area Rapid Transit) head transportation planner, reluctantly revealed, "You can describe a majority of our intersections as malfunction junction" (L. Weakland, personal communication, September 29, 2011).

Another area I wish to explore is the connection between individual automobile ownership and the rate at which Americans consume resources. The automobile itself requires more resources than any other method of transportation, but I also suspect that it deceitfully encourages and enables the consumption of consumer goods, many of which are unnecessary. The key to how we commute and consequently consume, may

be linked to social vulnerability and our relationships.

A major key to social interaction will be drawing individuals into socially vulnerable positions. I believe at the heart of every human is the longing to care for others. I was amazed riding transit around Europe over a four month study abroad trip and how I continually saw locals ready to help a mother struggling to carry her baby and stroller up a flight of stairs, for example. My German friend explained that hospitality is a readily accepted social responsibility.

When discussing the implications of social interaction and the cultivation of sustained relationships, the Bible states, "Two are better than one, because they have a good return for their work; If one falls down, his friend can help him up. But pity the man who falls and has no one to help him up! Also, if two lie down together, they will keep warm. But how can one keep warm alone? Though one may be overpowered, two can defend themselves. A cord of three strands is not quickly broken" (Ecclesiastes 4:9-12 New International Version).

This text promotes interaction and reliance on one another, which seems to be at odds with the current personal automobile trend and general self dependence. Social interaction is pivotal to a thriving city.

Assigning social responsibility may be the largest design challenge. The manner in which this transit center is thought through will be instrumental to its success at cultivating the engagement of community members.

Ultimately, my desire throughout this design process will be to draw out the compassionate nature of transit users via friendly exposure to an unprecedented social vulnerability. I long for humility and empathy to soften the citizens' hearts in a way previously overlooked.



## USER/CLIENT DESCRIPTION

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Transportation in the U.S. has fallen behind that of most industrialized nations. A multi-modal transit center has the opportunity to make rapid travel between major metropolitan areas and within cities highly convenient, more energy efficient, and overall vastly cheaper while reducing land consumption. This facility will be established to provide and promote high speed rail transportation throughout Florida and beyond as well as develop a rail system within the Hillsborough county area.

### Owner

The mass transportation hub will be owned by the state of Florida and managed by the Hillsborough Area Regional Transit Authority (HART).

### Users

Tampa's central rail station desires patrons from every genre of life including businessmen, tourists, the working class, students, and the elderly. A successful city requires density, and high density happens through mixed uses by a variety of individuals from various economic backgrounds - A healthy balance.

Located adjacent to the recently renovated Marion Transit Center (Tampa's central bus terminal), users will have access to buses and light and high speed rail. This interplay will meet the needs of a wide variety of patrons including those dependent on ADA standards.

The site is surrounded by vacant parking lots which should also prove instrumental in the utilization and development of the area.



## PROJECT ELEMENTS

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### Rail Platforms

The rail platforms will be where passengers board and depart from both light rail and high speed trains.

### Ticket Office

Passengers will be able to purchase transit tickets and get directions at the ticket office.

### Restaurants

Dining facilities will enhance the opportunity to attract customers to the transit facility.

### Bicycle Housing

There needs to be a special place to lock up bikes while users are riding the rail system.

### Restrooms

### Concourse

A place is needed for patrons to be united with their family/acquaintances once they have returned (possibly an exterior space).

### Tourism Office

A place will be needed for out of town visitors to be welcomed and oriented to the city.

### Police Department

The local police department will need to establish an office in this active facility.

### Taxi/Car Pick-Up and Drop-Off

A loop where cars can interact with rail passengers will be essential.

### Offices/Administration

The HART planning office is located a few blocks away but may want to establish a number of offices in this new facility.





(Figure 1, U.S. map)



(Figure 2, Regional Map)



(Figure 3, Downtown Site)

## SITE INFORMATION

Tampa, Florida is ripe with the need and opportunities required to establish a transportation hub. First off, the city has no rail system apart from the strictly historic trolley car downtown. Second, Tampa is the primary metropolitan area on the west side of Florida. The Clear water-St. Petersburg-Tampa area supports over 4.2 million residents (U.S. Census Bureau, 2010).

These numbers, along with the year-round beautiful weather, made Tampa the prime location. After meeting with the HART transportation board, my transportation hub instincts were confirmed. Hillsborough County recently rebuilt its Marion Transit Center (hereafter referred to as MTC), where currently 15 bus routes currently pass through each day. Just north of this station, a vacant lot and an under built abandoned lot lie dormant.

The instrumental part to a transit system will be the land acquisition, which Weakland explained is usually the most difficult and expensive component to obtain (L. Weakland, personal communication, September 29, 2011). No other site could work better for this project as this vacant lot also lies just south of Interstate 4. The highspeed rail system coming in from the northeast will be intricately woven into this corridor to maximize land usage. Centrality, proximity, land maximization, and mass transit needs can all be

successfully addressed on this site.

ADDRESS:  
522 Scott St.  
Tampa, Florida  
33602

Other notable site amenities include the Oaklawn Cemetery to the southeast and the recently completed 'Metro 510' four-story housing complex directly south of the MTC. Two blocks southeast of the site, a mixed-use development know as ENCORE is under construction. This development will provide housing for a variety of income levels, hotels, outdoor green spaces, a skate park, water features, and jogging trails. A Grayhound bus service is also within walking distance of the site.



## EMPHASIS

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Social interaction has been declining due to the rise of digital communication and transportation via personal automobile. This thesis aims to uncover how design can stimulate social interaction and strengthen the communication that should be taking place between the members of a community. My research also aims to reveal how truly damaging the SOV (Single Occupant Vehicle) is to a community both socially and environmentally.



## PLAN FOR PROCEEDING

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### Research Direction

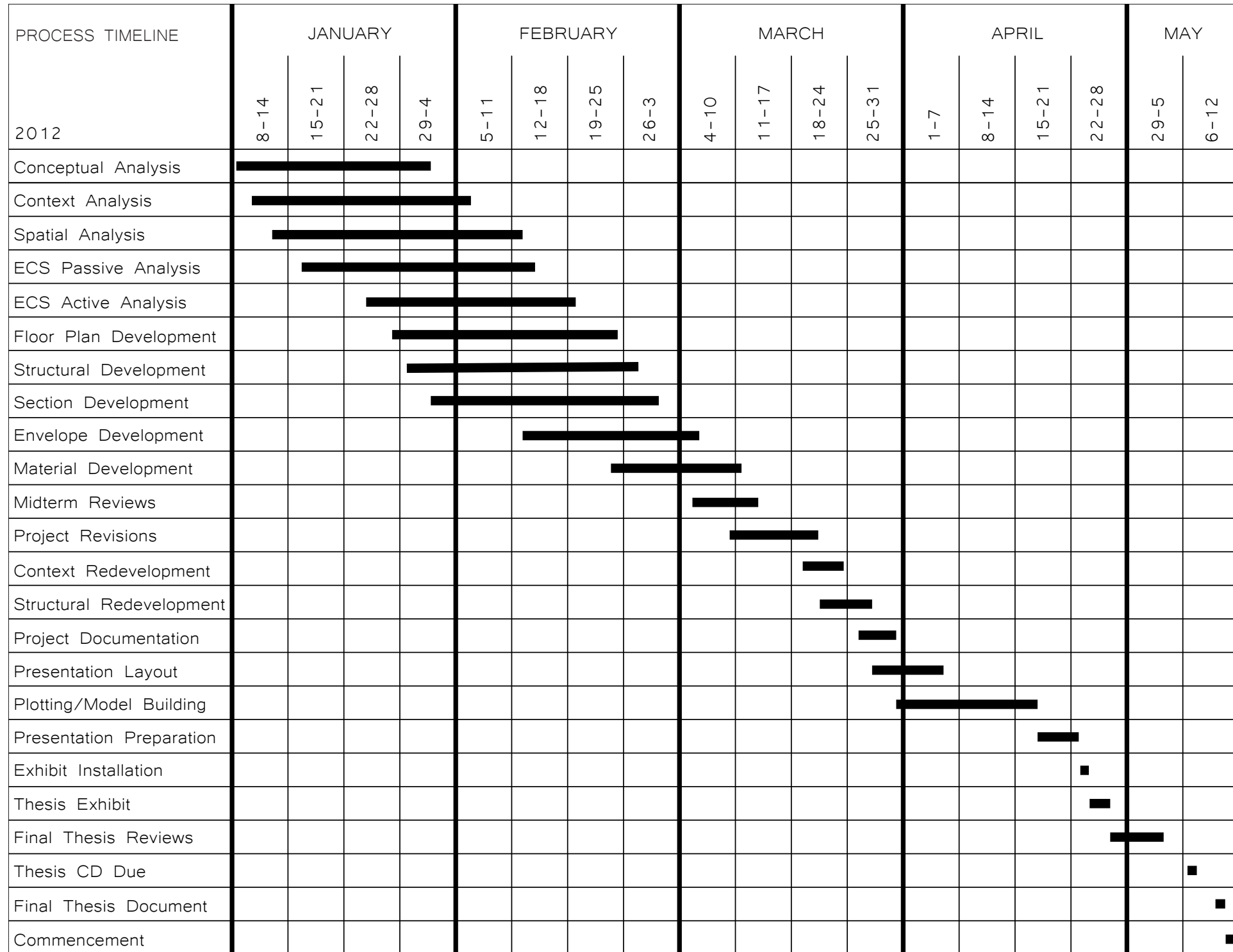
Research areas will include theoretical premise, qualitative and quantitative data, statistics, high speed rail systems, light rail systems, site environmental building conditions, hurricane safety, humidity and saline water properties, sociology, psychology, programming, ADA codes, historical context, site analysis, climates, and soils.

### Design Methodology

I will follow the mixed method of qualitative and quantitative research. Researching in this way, data will be invaluable as I study the relationship of individuals to their cars. I need to understand how far people live from their work places and why they choose to live in those areas. I will employ color defined graphs to help my reader understand my findings in the most clear manor.

### Design Documentation

A biweekly scanning and compilation of sketches will enable the presentation of my findings to future scholars as well as enable me to incorporate findings in my thesis book. Photography will also be an instrumental part to my site investigation. I will record the most valuable data from personal interviews via digital transcription as well as publishing my final documentation in the institutional repository.



# PROGRAM



## RESEARCH RESULTS & IMPLICATIONS FOR THEORETICAL PREMISE

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Social engagement is a fundamental behavior of human beings, and stands to be effectively augmented through the implementation of mass transportation. Reducing the personal automobiles' damaging effects on relationships, the environment, and our economy will considerably restore our cities to a healthier, more enriched state. The first phase of this research will discuss why mass transportation must be implemented, followed by a few underlying design considerations.

### The City's Purpose

Before suggesting a transportation precedent, the function of a city must first be understood. From the beginning, I offer that this historical exploration is nowhere near exhaustive but only works to give an introductory understanding on which to base further claims.

With that said, today, as well as thousands of years ago among the ancient cities of the Mediterranean, a city served as an exchange center for goods and ideas. This new interdependent medium for producers and consumers to live and cultivate relationships birthed trade routes, urban development, and eventually the monetary system (Mumford, 1989, p.95-117).

Established to meet basic human needs while providing a more effective means of production and access to specialized goods, the city quickly attracted a

variety of tradesmen. Riverbanks and seaports rapidly emerged as the favored location to ground these new vehicles of industry. Fresh goods and ideas percolated through society unrestrained.

### Least Common Denominator

The pedestrian was once the primary and priority user of the city. Designing for the pedestrian was what some might refer to as the 'least common denominator' of the city. This element constitutes the smallest building block to which the design must correspond.

The success of a city has always been in the spacing, mobility, and rate of exchange that it provides. Based on these factors, it has become apparent that the movement of people, goods, and the proximity there associated, are vitally important to the prosperity of a city.

Today we find our cities catering to a different least common denominator: namely, the personal automobile. This came about after World War II when president Eisenhower, spurred on by his advisors and the lingering threat of a national emergency, inaugurated the construction of the first American interstate system under the Federal Highway Act of 1956 (A&E Television Networks, 2011).

Through innovation and demand, American cities evolved around what was once considered a luxury vehicle of privilege. The problem with this industrialization and growth was that city planners and those who implement policies lost sight of the fact that cities exist as a center for the exchange of resources and ideas. Giving full and unrestrained vent to capitalism encouraged Americans to desire as well as consume in a manner previously unthinkable.

To better complete this illustration, James Kunstler comments in his book *The Geography of Nowhere (1993)*, "The rules of good transportation planning were not exactly forgotten – they were simply overruled by a government sympathetic to the needs of the automobile, petroleum, and road-building industries. It has been well documented how, at mid century, these industries were not so much an influence upon the federal government as they WERE the federal government. It is to be noted that the chairman of President Eisenhower's commission on highway policy was a director at General Motors." (Kunstler, 1993, p.106).

After understanding how the personal automobile was introduced and acknowledging its abrupt intrusion into city life, the next question to ask may be how it has impacted the city's ability to function.

### Freedom?

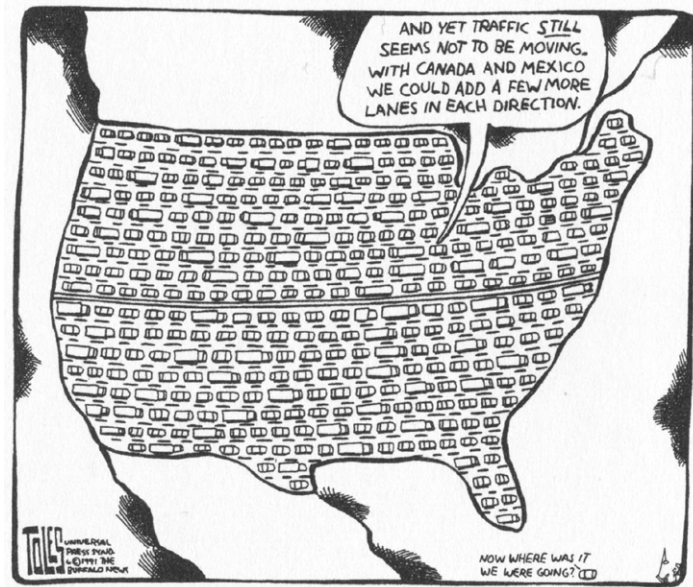
The automobile has been great proof of human ingenuity and has encouraged a lifestyle of hard work and individuality, but there may be a few too many hurdles that accompany this supposedly freedom granting system.

successfully addressed on this site. Relating to the flow of goods and ideas within a city, automobile lanes have severely divided our neighborhoods and continue to encourage urban sprawl. This sprawl, which could be metaphorically correlated with the uncontrollable spread of cancer, has finally met its match with ever increasing fuel prices as only one of many constraints.

A simple example I use explains that the reason I do not drive my car from the downtown architecture campus up north to main campus is because there is no available parking during the day. I resolve to ride my bicycle or ride the bus on a rainy day. However, when asking a traffic engineer to solve this problem, he or she would mechanically develop a way to handle more parking on campus and also potentially widen the roads between my destinations.

The engineer solved the problem, but was it truly better? More cars commuting results in a greater chance for a traffic accident, more road and parking infrastructure required, more automobile pollution, and more nonrenewable fossil fuels consumed, further adding to our foreign debt. Not to mention this results in the loss of a healthy bike ride all in the hope of shaving a few minutes off my commute.

Engineering feedback on road use would indicate that the new roadway widening and parking lot expansion were a successful due to added usage, but in reality, it seems quite contrary. I would offer that this thought process has contributed to the design and plan failures of our cities. Tom Toles (1991) perfectly



(Figure 4, Traffic)

captured this notion in his comic (Figure 4).

Smart growth advocate David Engwicht (1993) revealed in his book *Reclaiming our Cities and Towns*, “transportation engineers think about the function of transportation 24% more than they think of the cities purpose” (Engwicht, 1993, p.77). This statistic succinctly reveals that engineers are effectively doing their job, which is to make transportation possible with what we know, not reinvent transportation. The question now is: where are our city planners and how much do they really dictate the growth of our cities?

### Consumerism

There must be a reason why our government, which has vowed to be ‘for the people,’ seemingly encourages

an automobile centered growth mentality. As I investigated, it became apparent that the government has far less power than one would assume. Often, politicians are elected based on campaigns supported by large corporations that have their own interests in mind, which can lucratively interfere with the intended purpose of government.

As we’ve seen with the Eisenhower era, large corporations have an overpowering say in government policy, so what are the consequences? First, a corporation sells some sort of good and to maintain business, must make regular sales. America’s economic system has given full steam to the idea of capitalism and “if they’ll buy it, you should make more of it.” This has given birth to a generation of relentless marketing schemes and propaganda.

On top of corporations’ endless marketing bombardment of the American people, they also entice the government to subsidize systems like the personal automobile. Always pushing for more production, purchases, and consumption, the capitalist system makes no analysis of whether their products are actually beneficial to society.

### Finances

The financial sector is another arena that personal automobiles largely impact. The average American may have little means of individually stopping the overrun of automobiles in our country, and this is exactly what large corporations desire. Shockingly, in America “the lower 80% of the U.S. population controls only 7% of

the wealth; meanwhile the top 1% of America controls 42% of the wealth” (Levinson, 2002).

This gross imbalance is partially to blame for the blatant disregard for the environment, resources, and quality of life of the American people. We’ve become basically trapped in the auto manufactures’ web of marketing, government roadway subsidies, and the death of many bicyclists and pedestrians who attempt to forgo the automobile. We live in a society fixated on production–consumption–disposal, a process showing no sign of slowing.

### The Big Box

Not only do large retail stores and shopping centers destroy the local urban context of a neighborhood, but they also consume land in an unthinkable manor. The roadway infrastructure and acres of parking required to support one of these facilities can be regarded as monstrous. Encouraging greater distances between consumers and their resources must be a way of the past.

From *The Smart Growth Manual*, I’ve uncovered a great metaphor to explain this trend: “We learn from biology that monocultures cannot thrive and that hypromobility is a sign of impending extinction. We need mixed-use, pedestrian oriented urbanism, not single use free-flowing traffic.” (Speck & Duany, 2010, p.XII–XIII). Large retailers and single use zoning have contributed to an infectious city growth plan known as urban sprawl.

### Urban Sprawl

As the primary culprit waging war against pedestrian oriented urbanism, urban sprawl can be recognized by low density and automobile dependent development beyond the edge of service and employment areas. It has become ubiquitous and the impacts of its spread have only recently gained national acceptance.

To give a rather blunt overview of this trend, the authors of *Suburban Nation* write, “Climatologists link sprawl to the global warming crisis. Economists link sprawl to our dependence on foreign oil. Environmentalists link sprawl to declines in air and water quality. Public health officials link sprawl to an epidemic of obesity and diabetes, not to mention 40,000 car-related deaths a year” (Duany, Plater, & Speck, 2000, p.94). These and even more downfalls are monumentally degrading the quality of life in America.

Stopping this trend and densifying our cities would be largely beneficial. Higher density would reduce fuel consumption, offer greater access to goods, reduce infrastructure, and generally restore community. Planners Newman & Kenworthy (1992) shed light on these values by noting, “annual gasoline consumption per person in Phoenix and Houston is over 50 percent higher than in Chicago or Washington D.C., and over 500 percent higher than London or Tokyo” (p. 9).

Reducing the footprint of our cities and their infrastructures will be a major step in returning balance to our exponentially busy and spread-out way of life.

## Subsidies

Planner and author Thomas Lynch (1998) offers a sobering statistic which adds quantification to these allocations. From his research of future high-speed rail in America, he writes, "On average, in a decade federal, state and local highway subsidies exceeded \$142 billion. By comparison, the air mode received a subsidy of \$29 billion over that decade while the rail mode, both freight and passenger, received \$46 billion (Lynch, 1998, p.125, 149).

These numbers came as a shocking confirmation that the American population, has by far a very limited understanding of how costly personal automobiles truly are. This only adds to the increasing list of concerns I've uncovered through my research.

Furthermore, urban development critics Hart and Spivak (1993) summarize, "From fighting global warming to supporting public transit – the real justification is economic: subsidized automobile use is the single largest violation of the free-market principle in the U.S. fiscal policy. Economic inefficiencies in this country due to automotive subsidization are estimated at \$700 billion annually, which powerfully undermines America's ability to compete in the global economy." (Hart & Spivak, 1993, p.166).

If our country has ever needed a second chance to get back up and regain economic balance, this suggested progression to public rail transportation may be it.

## Cost of Commute

Adding to the frustration of government subsidies is also the issue of who truly pays for personal automobile usage. It may seem like the vehicle owner pays for the car, insures it, repairs it, licenses it, and fuels it, but that's hardly the beginning. As mentioned, the government uses billions of tax dollars a year to subsidize auto manufacturers, fuel providers, and road construction. On top of that is the cost of land use. Someone has to pay for the land those highways, streets, and parking lots consume, which of course falls on the shoulders of the American tax payer. The problem lies in the fact that not all tax payers operate a personal automobile.

Take, for example, the mall. Now the parking lot consumes more land than the building itself, and someone has to pay that bill, which obviously falls to the shoppers. This almost seems fair except for the fact that not all shoppers employ a personal automobile to reach the mall. Some endure the under-funded public transit (which the government labels as a 'liability') and yet have their fares misallocated to financing the parking.

In one sense, ownership of personal automobiles would be acceptable if the operator was charged the actual cost of operation. Again, that is currently not the case in the U.S. The book *Suburban Nation* estimates, "Government subsidies for highways and parking alone amount to between 8 and 10 percent of our GDP, the equivalent of a fuel tax of approximately \$3.50 per gallon. If this tax were to account for

'soft' costs such as pollution cleanup and emergency medical treatment, it would be as high as \$9 per gallon. The cost of these subsidies – approximately \$5,000 per car per year – is passed directly on to the American citizen in the form of increased prices for products or, more often, as income, property, and sales tax." (Duany, Plater & Speck, 2000).

## Health

Unjustly subsidizing the personal automobile has been an exponential problem. Another issue that has had the media buzzing lately is the physical health of Americans. Unprecedented numbers of adults have developed diabetes and a slew of other health conditions due primarily to a lack of exercise. In fact, the generation below my own has been predicted to be the first wave of Americans to not out live the former.

A lack of exercise combined with a poor diet and possibly supplemented by too many hours spent behind the television, America is one of the unhealthiest and unbalanced nations in the world. Replacing vehicles with bicycles (supplemented by public transit) would be the healthiest decision the government could ever make for its people.

## Pollution

In order to set a precedent for rail methods of transportation, I have exercised a generous questioning of all other modes of transportation. The airline industry has not been delivering with unrivaled satisfaction either. Questions of jet fuel availability and rising cost have come to the fore with limited air space and the

ever increasing demand to travel farther faster, airlines have seen unprecedented numbers of passengers in the twenty-first century.

The primary concern with flying though, is the exponential amount of pollution. The Department of Transportation estimates that around 10% of all greenhouse gases created by transportation come from the aviation sector (DOT, 2011). I call flights into question because they could often be replaced by ground transportation in the form of high speed rail. As I will discuss later, I feel that each mode of transportation has an appropriate application; I would submit the case of aviation for mostly overseas destinations.

As for carbon emissions, it has been widely publicized that the transportation sector can be credited with releasing around one-third of all U.S. greenhouse gases (EPA, 2003). Creating that much of a disturbance in our ecosystem is what initially evoked my interest in transportation.

What has sustained and fueled my passion has been the recent understanding that there are many solutions to this ever-increasing problem. A major obstacle that must be hurdled in this process will be bringing understanding to a depraved American population.

## Independence

America currently houses 4% of the world's population but devours more than 25% of the planet's resources. Induced by capitalism, marketing,

and greed, the simple fact we must swallow is that Americans consume far too much! The United States has stood on claims of freedom and liberty, but what has urban sprawl and consumerism actually given rise to in our country?

I hope the information discussed thus far has raised some eyebrows and caused each of us to question our own contribution to this defective system. Revisiting the idea of urban sprawl, Speck & Duany (2010) conclude “single use zoning, massive road construction and urban disinvestment have turned a nation of ecologically sustainable neighborhoods into a collection of far-flung monocultures, connected only by the prosthetic device of the automobile” (p.XIII).

Due to this independent mode of transportation, we have become disconnected socially. Somewhat comically, we’ve traded in true friendship for facebook friends. This has spurred me to question how we develop the trends we have, and where did they come from? I feel part of the answer lies in socialization.

### Socialization

Defined by the Merriam-Webster dictionary, socialization is the “process of learning social norms in a given culture. This can be gender roles or rules of what is expected in society whether moral or not. Socialization is not the actual acquisition of rules and roles of a culture, but rather is the process in which a person accepts and implements those expectations. Socialization is not solely determined by the

environment, but results from the interaction of an individual’s genetic make-up, personality, educational experience, and environmental influences.”

I interpret this to mean that a most influential entity initiates a trend, and others follow, even if they are not completely on board with what it ascribes. Humans long for acceptance and purpose, and if compromising some of their desires and values means achieve acceptance, we often will.

To reiterate this concept, sociologist Lawrence Nucci (2004) writes, “the process of moral socialization was not simply an acquisition of prepackaged cultural messages, but rather the active renegotiation of social relations and the gradual reworking of one’s fundamental conceptions of self and other in reciprocal interaction” (p.195). In other words, we continually refine our morals according to the interactions we have with others.

The changing of our morals and desires based on our environment has proved very interesting to me as I’ve contemplated how we make decisions. I believe that if Americans were once convinced to sign on to the defective system of personal automobiles, they again can be lead to something far greater. I desire to have this change come from an understanding of how truly damaging personal automobiles are to our quality of life.

### Social Interaction

While lavishly subsidizing the auto, oil, and roadway

industries, the government unfortunately considers methods of public transportation a liability. This attitude is partially birthed from the concept of NIMBY meaning, ‘Not In My Back Yard.’ Most of those who trust in personal automobiles have little regard for how well the public transportation network functions. Neither do they concern themselves with how interstates and roadways encroach on the parks or homes of lower income families. The auto has unfortunately created a serious physical and social barrier between different socioeconomic groups of a society.

Along with the apparent segregation of the different members of a society, the individuals of a community are also cut-off by the lack of interaction. Dense downtowns, corner markets, and walkable neighborhoods were the means by which ideas and principles were once shared among neighborhood members. Today, wider roads, big box stores, and vehicular isolation have deteriorated the downtown life of our cities.

Our country once failed to allow the African American race to ride freely on the bus system, but today our failure includes the apathetic segregation of economic classes. I’m afraid that we have separated ourselves from one another in such a harmful way that future generations may actually prove to be less intelligent and less successful than their predecessors.

Also, the interaction between different generations has come into question. Nowadays, seniors have special vans to commute in and complexes to reside in. This generational disconnect may be yet another downfall

to our current primary dependence on the personal automobile.

### Methodology

I believe that in every circumstance there is a proper tool for the job, an ideal material for the application. With transportation, this has become ever more visible. The evidence presented here may sound harsh, but in reality it is only current circumstances under new light. I doubt that cars will ever be full expelled from the earth, nor is that my intention. I see the car as a versatile tool, constructed to be used in the most extreme or remote applications.

Within cities, I hold that priority should be granted to the pedestrian, bicycle, bus, and light rail systems. Previous evidence has spoken quite clearly that the single largest problem facing cities today is that the personal automobile has been the primary design consideration.

Cars have a place outside of the city when remote destinations must be reached. In other circumstances, where no other option exists, maybe a construction contractor drives one truck throughout the city to various job sites while his crew arrives by light rail.

The point is that personal automobiles have served as the primary mode of transportation instead of a last resort. So, which came first: the car or the sprawl? Nowadays, we cannot practically ride our bicycles anywhere due in large to our destinations having been relocated at unreachable distances. Restoring quality



of life to our cities will intrinsically resume only once we have committed to prioritizing the pedestrian and public transportation systems.

Imagine a city without a single car: quiet streets, resources available at walking distance, a silent light rail train gliding through your neighborhood every ten minutes, and no parking tickets (or speeding tickets for that matter). What about never having a mechanical failure at an inconvenient time, or the risk of crashing a brand new car on icy roads (after all, there is a reason full insurance costs so much).

When traveling by rail, you could read a book or safely eat a meal. Never again will an elderly person who can't turn their head to verify the other lane is clear or an overworked soccer mom run you off the road. And you can forget about the depressing fact that cars only depreciate in value as well as stop sweating rising oil prices, which could unweave the U.S. from our Middle Eastern oil dependency.

## Safety

One of the greatest downfalls to the personal automobile is its safety factors. As I quoted earlier, over 40,000 deaths occur each year in the U.S. due directly to our autos. This number boils down to a death every 5 minutes and leaves each of us with a 72% chance that someone in our family will be killed in a car accident at some point in our lifetime (Duany, Plater, & Speck, 2000).

These statistics don't reassure me as I think forward over the loss of my future child's ability to play safely outside. Taking our comparison between rail and auto further, astonishingly, I discovered that over the past 40 years, Japan has not had a single fatality induced by their rail systems (Fischer, 2010, p.8)!

As previously scrutinized, how much freedom are we actually granted by the personal automobile? Freedom to kill more people than all other modes of transportation

combined? Freedom to fight wars over the earth's rapidly diminishing supply of oil?

The personal automobile has an array of concerns that most Americans feel are simply unavoidable. Figure 5 on the adjacent page questions whether the convenience of the personal automobile is truly worth risking our children's, our pedestrians', and our own daily safety.

One other brief safety concern I've contemplated has to do with crime. Now, wrong-doing predates the personal automobile, but I still have to question all the burglaries, rapes, and kidnappings that take place each year in the U.S.; how many of them involved a personal auto?

I am afraid that the number may be higher than we would like to admit. While in Germany, I witnessed ten-year-old girls going out at night on their own, but this was not seen as risky because of all the citizens that ride those same public systems. Safety along with so many other factors should be carefully weighed before America votes against a transition to the public rail system.

## Ideas

After being convinced of a very real need for mass transportation both between cities as well as within them, I'm left still to elaborate on how this should be carried out. A few of my ideas include how to take what we already have and use it more effectively. For example, after discussing passive energy with a

mechanical engineering student, I discovered that wind power has a potentially great opportunity to complement high speed rail.

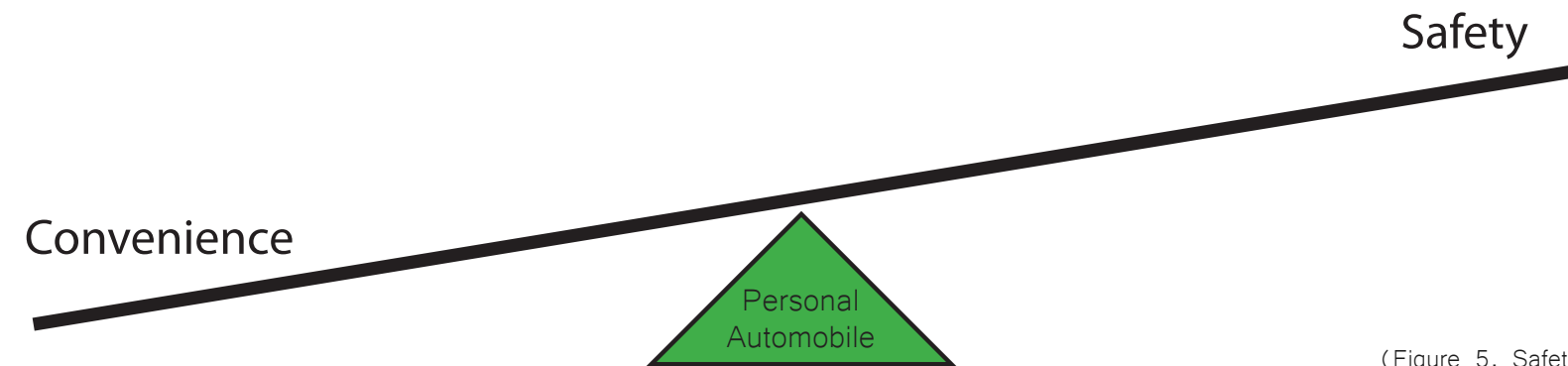
Currently, the fastest HSR trains run purely on an electrified track. Now, sprinkled across America's countryside are wind turbines producing electricity which must be utilized immediately as we currently lack a financially feasible method of storing that energy.

Many analysts of wind power criticize its large overhead power lines interrupting the landscape. My unrefined thought of how to utilize this available energy would be to merge these two previously unrelated systems, the HSR and wind generated electricity, harnessing in tangent both of their greatest characteristics.

As far as within the city, I know that having a well established rail and bus system will be instrumental to seeing Florida fully embrace mass transportation. One of the primary criticisms of the \$8 billion proposal from the federal government this past year was that even if a high speed rail line connected Tampa to Orlando, the people would still need a car to move about the city. Mass transportation has to be implemented holistically. An incomplete branch to the system will not convince anyone to abandon his or her personal automobile.

## History In Advance

When sharing my findings on rail transportation, many people ask me if I honestly envision a day when cars would no longer exist (very skeptically, of course).



Humbly and patiently, I respond to them that in two-hundred years from now, I believe humanity will look back on this generation of Americans and disgustingly label us as the most selfish, wasteful, and inconsiderate generation of people to ever walk the earth. Personally, I would rather not be responsible for such a title.

### **Reactive or Proactive**

Transportation via personal automobile was once an exciting transition in America's transportation methodology, but times have changed. To ignore the environmental red flags and neglect our vast technological developments would be a grave injustice to American innovation. As an engineer at IBM framed it in a television commercial, "America is great at heart attacks but terrible with cancer." Meaning that when we have an emergency our ability to meet the need and overcome has been outstanding, but when it comes to imperceptibly dying a slow death, we've shockingly lacked haste.

America is enduring a slow death incurred by our dependency on the personal automobile. The remaining question relates to whether the U.S. will continue to tolerate this infection until our resources are completely exhausted, or ought we to change the way we commute, consume, interact, and ultimately live before it's too late?

An ancient Chinese proverb offers that, "The best time to plant a tree was twenty years ago, but the second best time is today."

## Summary

Where to go from here? These findings have been, to say the least, a rollercoaster of information. There have been widely ranging topics with the implications of changing the way we do most everything. At first a shock and scare to me, but now, after a semester of critically analyzing the true value of operating a personal automobile, I've come to openly embrace the thought of restructuring transportation in America.

## Planning The City

After evaluating all current methods of transportation, I have drawn what continues to be startling and almost laughable conclusions in light of current trends. I have discovered that cities should be designed around the pedestrian.

The bicycle, which delivers quick, flexible, compact, and fuel-and-pollution-free transportation, remains unrivaled as the best method of transportation to ever be invented. New York City holds as evidence to this as it had a 35% increase in bicycling during 2007 following a commitment to plan for the pedestrian first (Speck & Duany, 2010).

Cities should be constructed around walking radii with regards to proximity of necessary goods and services. Supplementing public transportation with personal bicycles should satisfy all the needs one would have. Density is the key to placing all the basic elements in reach of a city dweller. To illustrate this, a U.C. Berkeley Master of Urban Design professor (while riding a public bus in Italy) once offered to me

“the shortest distance between two points, is to move them closer together” (personal communication, April 20, 2011).

## Opportunity

I have progressively felt a new challenge being lifted onto my shoulders. This information has become so potent that I can no longer remain ignorant or apathetic. As a designer, the opportunity to question processes most people take for granted, to say the least, has been rewarding. However no opportunity for successful innovation comes without opposition.

The lack of information the general American consumer faces leaves him or her unquestionably dependant on the personal automobile. My own parents and I too, prior to my European outing, had no inclination towards commuting in any other fashion.

The great news is that we know these systems can and will work as a simple review of Europe or Asia uncovers. America is a unique piece of geography just as every country has its own opportunities and obstacles. The challenge for transit-minded designers like myself will be to systematically plan each city and regions mass transportation system in a way that integrates contextual needs. Site specific design has been the hallmark of great architectural work, and with transportation, it's no different.

## Conclusion

The major conclusion I derived from this research was twofold. First, as the consumers of a quarter of the earth's resources, we must carefully evaluate our actual needs. The media presents enticing advertisements to buy things we don't need with money that we don't have (resulting in rising credit card debt), all in hopes of impressing people we don't even like. The generally undereducated American population must be informed of the true results of the choices they partake in.

Second, life in America should be about giving, supporting, and loving, not individualistic consumption. Contrary to this, capitalism has fueled insatiable greed. Sadly, the human-being's moral compass at the government and corporate levels has been mostly disregarded. Trading internal profit gain for external quality of life loss has unfortunately become commonplace.

## Purpose

Developing an appreciation for the things we do have is only the beginning. I would submit that quantity cannot serve as the ultimate purpose of our lives, but rather quality. Quality can be experience through relationships, selflessness, humility, and in general, considering another greater than ourselves. When walking, I have never witnessed someone aggressively act out their frustration for someone else walking slower, but a day does not go by that drivers do not act out their impatience through aggressive driving.

Cultivating context boldly calls for the broad questioning

of how we live our lives. An alternate mode of transportation will certainly not mend all of our country's needs, but I hold that it will significantly augment our restoration.

Implementing a local light rail system throughout Tampa, assisted by the newly developed Bus Rapid Transit, will serve as catalyst to a refreshing community rejuvenation. Regional connectivity being achieved via high speed rail will serve as witness to greater America and will proclaim that the time of change is today.

# TYOPOLOGICAL RESEARCH RESULTS



CASE STUDY 1  
BERLIN CENTRAL STATION  
GERKAN, MARG AND PARTNERS

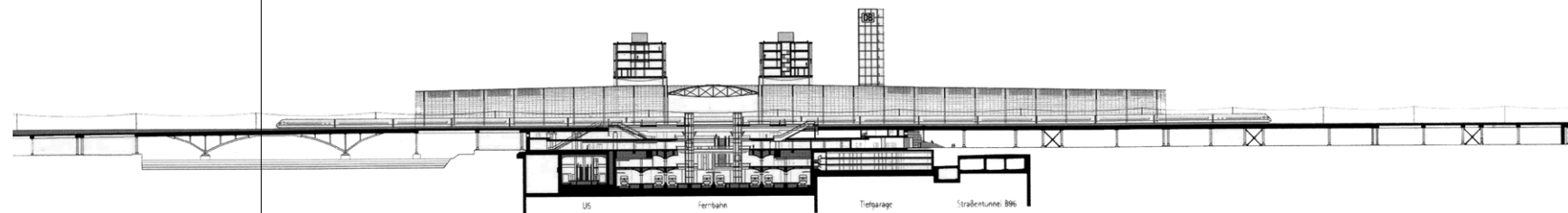
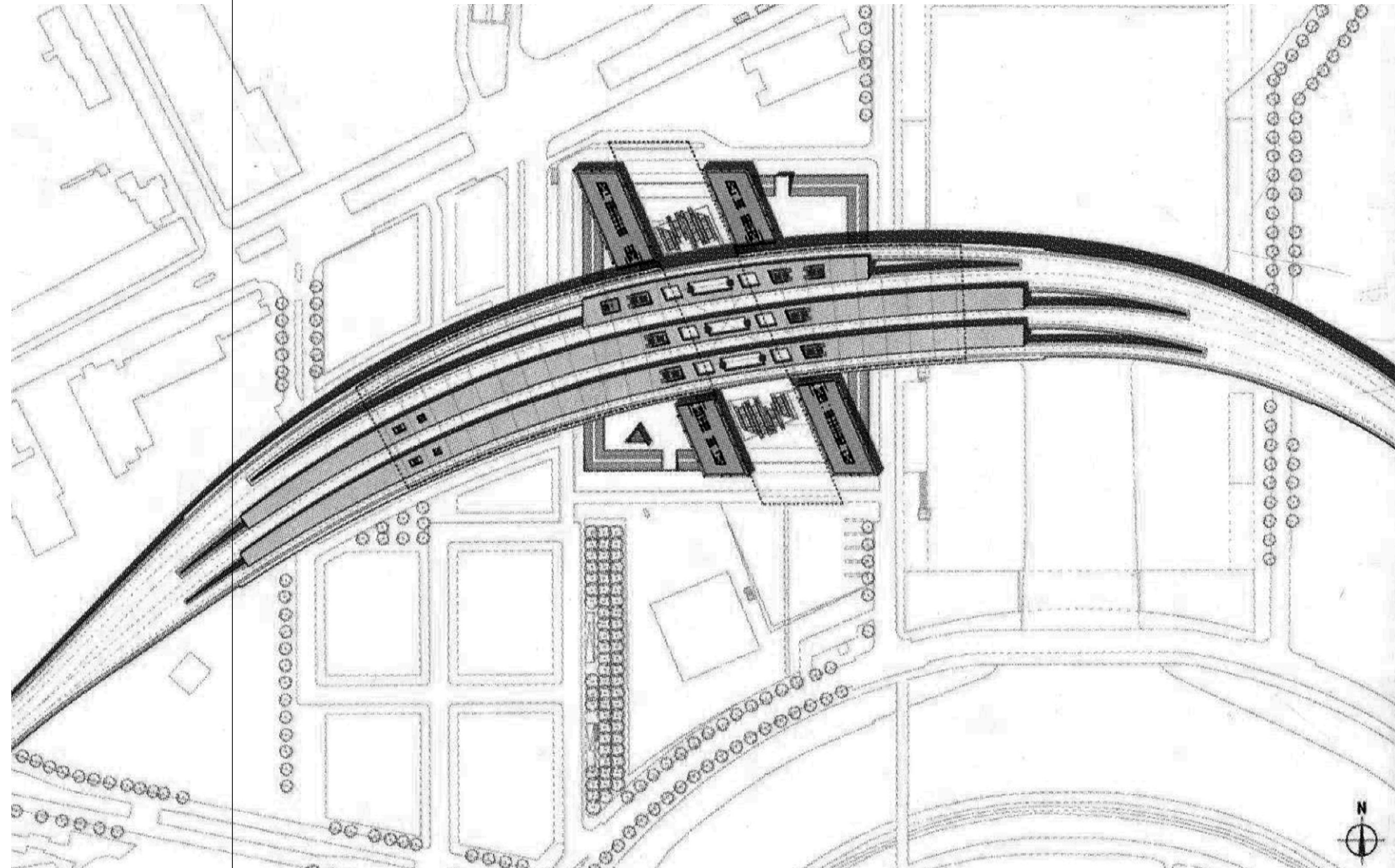
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Project Type: Rail Station  
Location: Berlin, Germany  
Project Name: Berlin Hauptbahnhof  
Date: 2002–2006  
Client: Deutsche Bahn (DB)  
Architect: Gerkan, Marg and Partners  
Area: 575,000 sq. ft.  
Cost: €700 million (\$892 million)  
Rail Types: Metro, Regional, High Speed  
Platforms: 14



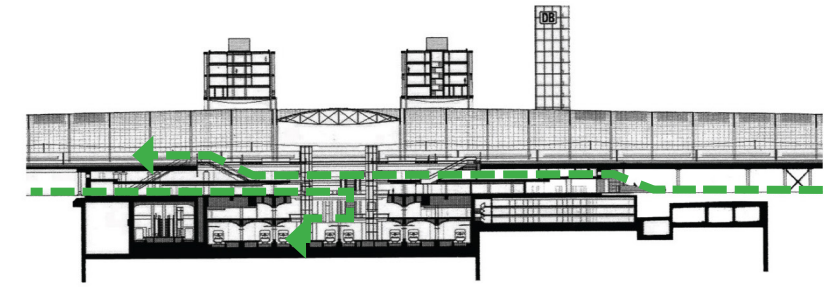
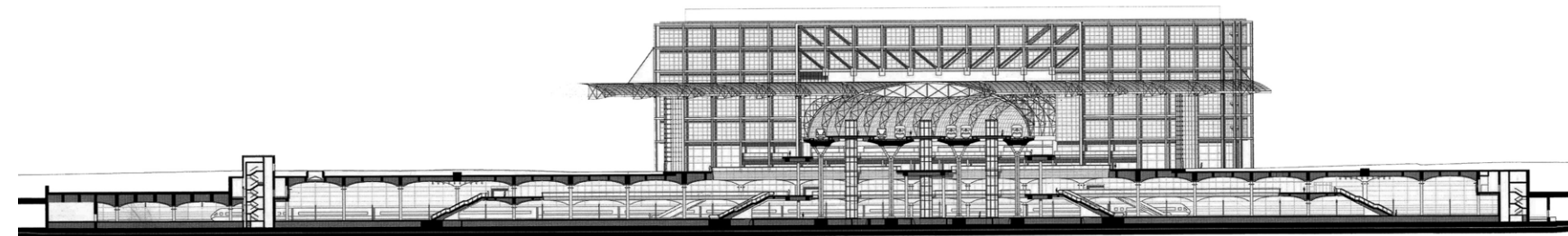
Berlin Hauptbahnhof (Berlin Central Station), is the main railway station in Berlin, Germany. It began full operation two days after a ceremonial opening on May 26, 2006. It is located on the site of the historic Lehrter Bahnhof, and until it opened as a main line station, it was a stop on the Berlin S-Bahn suburban railway temporarily named Berlin Hauptbahnhof-Lehrter Bahnhof. The station is operated by DB Station&Service, a subsidiary of Deutsche Bahn AG, and is classified as a Category 1 station, 1 of 20 in Germany... 1 and 4 in Berlin.

The original Lehrter Bahnhof Station opened in 1871 as the terminus of the railway linking Berlin with Lehrte. Located near Hanover, this later became Germany's most important east-west main line. In 1882, with the completion of the Stadtbahn (City Railway, Berlin's four-track central elevated railway line, which carries both local and main line services), just north of the station, a smaller interchange station called Lehrter Stadtbahnhof opened, providing connections to the new line which later became part of the Berlin S-Bahn (Rail Europe, 2011).

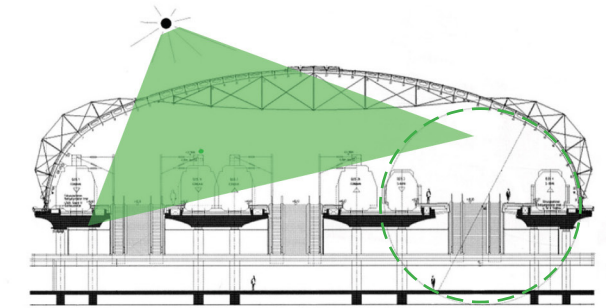


Berlin has long been the center of political and cultural turmoil. Tearing down the Berlin wall in 1989 symbolized a long awaited unification and changing of political power. Roughly fifteen years later the Berlin Hauptbahnhof, significantly located in central Berlin along the Spree River, was reestablished as a transportation and commercial hub. Programmatically, the station is recognized for its 14 rail platforms, shopping expanses, and business offices. Architecturally, the interchange is distinguished by perpendicular, elevated rail lines; complex curved glazing; and sheer size as it is currently the largest European rail hub.

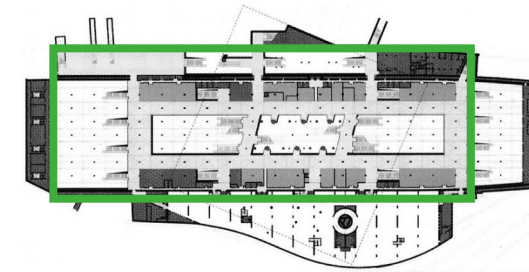
Berlin Hauptbahnhof bears striking similarities to Belgium's new Liège-Guillemins TGV Railway Station in that they both brought striking revitalization to their cities. The high speed rail element was an instrumental incorporation to both of their designs, which have enabled each station to service a greater amount of connections at distances previously unreachable. Berlin Hauptbahnhof currently sees over 110 million rail line customers a year (Rail Europe, 2011).



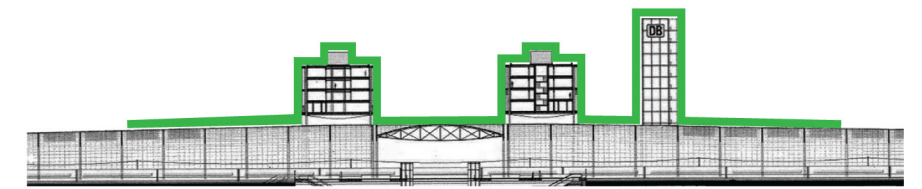
Circulation-to-Use Space



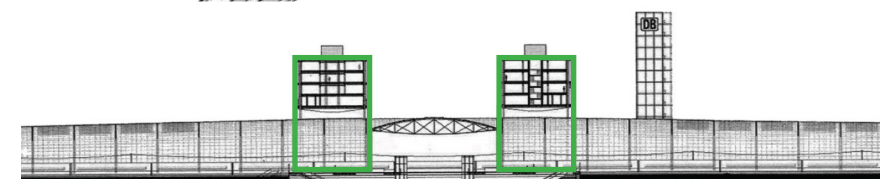
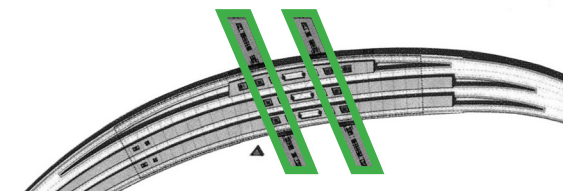
Natural Light, Geometry



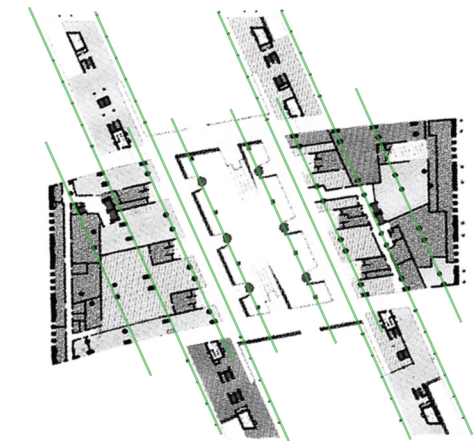
Massing



Hierarchy



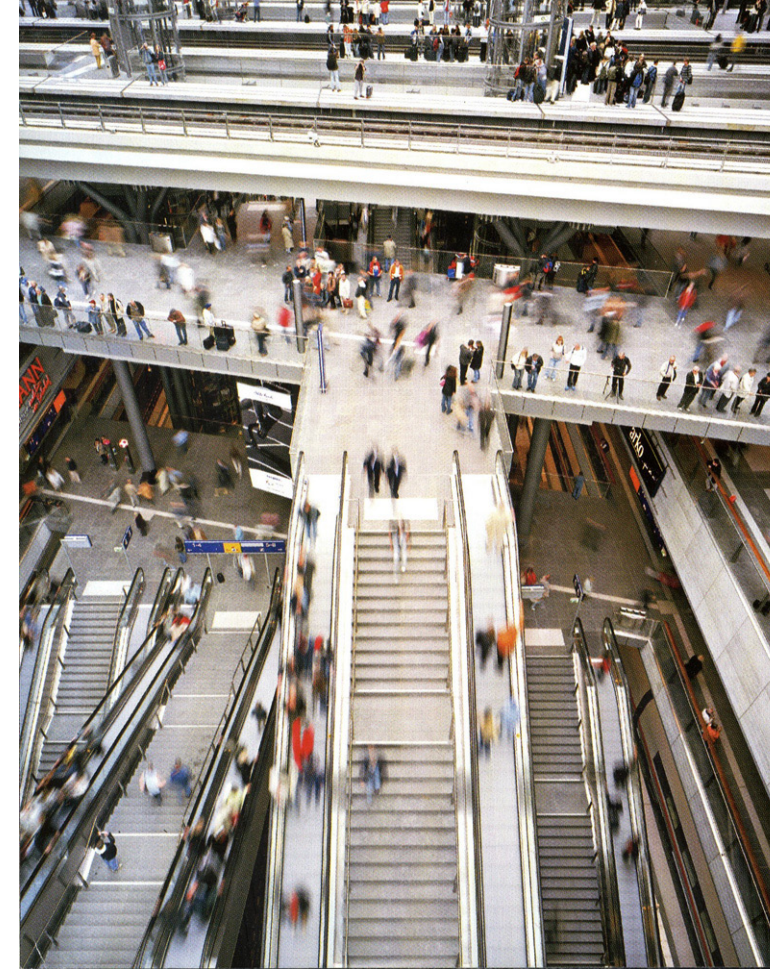
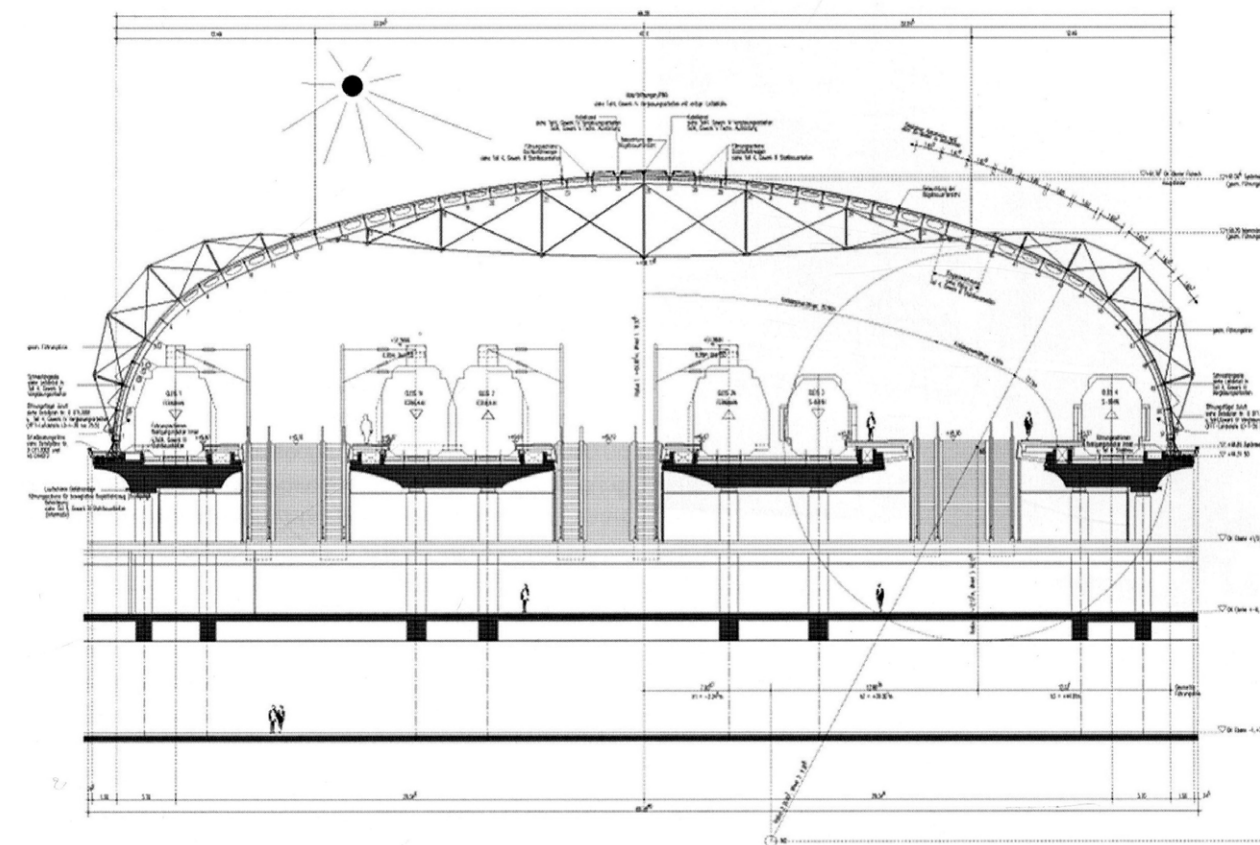
Plan to Section



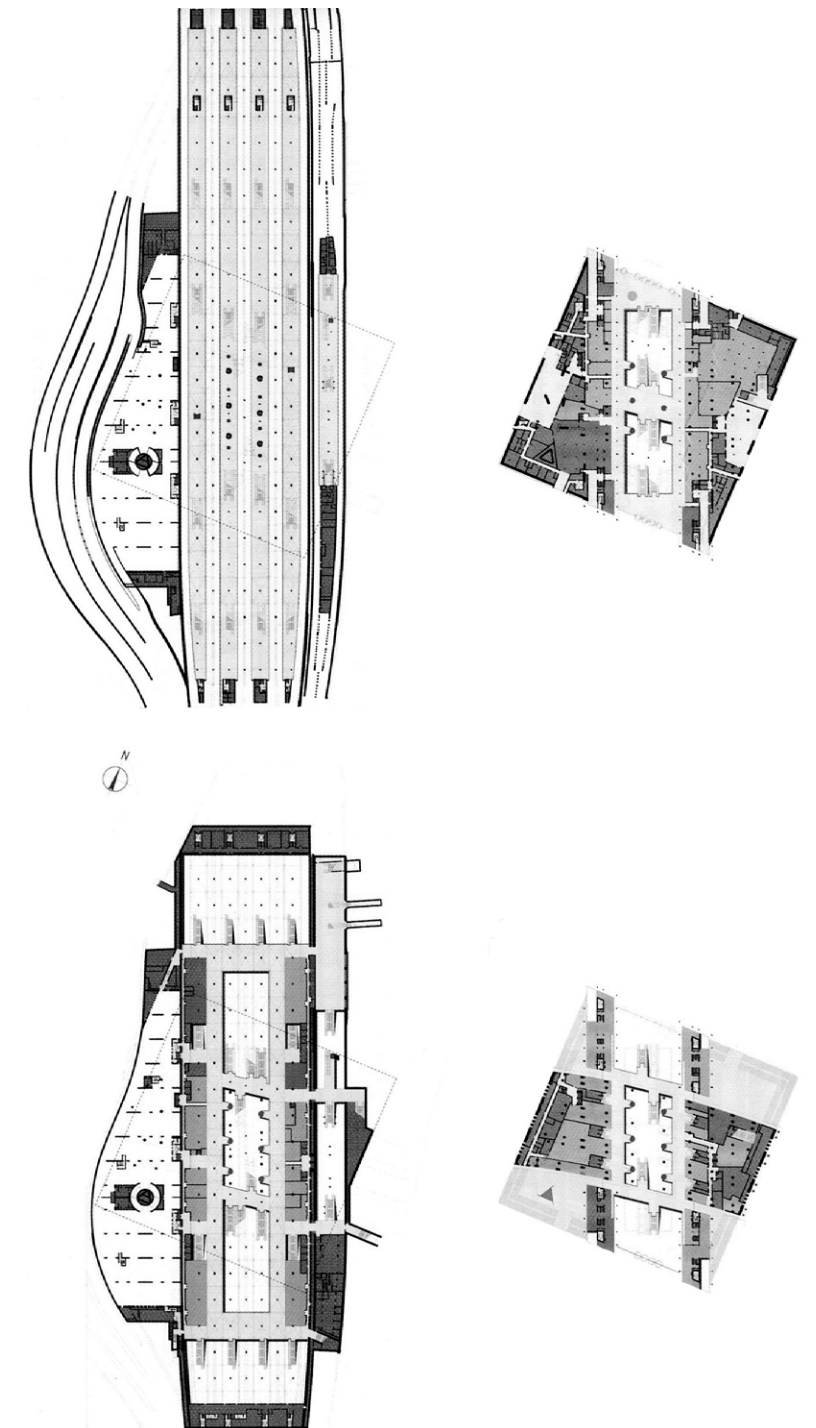
Structure



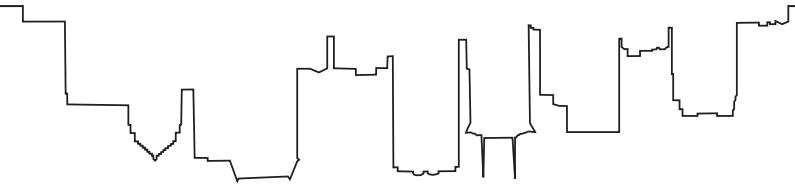
Berlin Hauptbahnhof rests on a unique site in that the rail line curves along the Spree River. Conceptually, this forced Gerkan and his team to envision a strong north-south axis with the lower rail but a curving east-west line for the elevated track. An opportunity to introduce a complex curved glazing along this arc was beautifully juxtaposed by the two parallel seven-story axial office towers. Socially, the station has become the epicenter for commercial trade and business. With over sixty shops and services available, the station has taken center stage as the ideal exchange center for goods and ideas. The S-Bahn and U-Bahn lines connect residential housing sectors with this trade center, creating a hybrid type of mixed-use development all made possible by incredible public transportation innovations.



The Berlin Hauptbahnhof station opened my eyes to see how a rail station has the unique opportunity of hosting a major portion of a city's economic activity. This model is not only highly energy efficient, but also connects a diverse socioeconomic breadth of consumers to the goods, services, and ideas they need in order to facilitate healthy growth in their metropolis. Watching people flow from the upper to lower level platforms while interacting with acquaintances during my time there was truly inspirational. This drove me to question what type of interactions we may be missing in America due to our current transportation model.







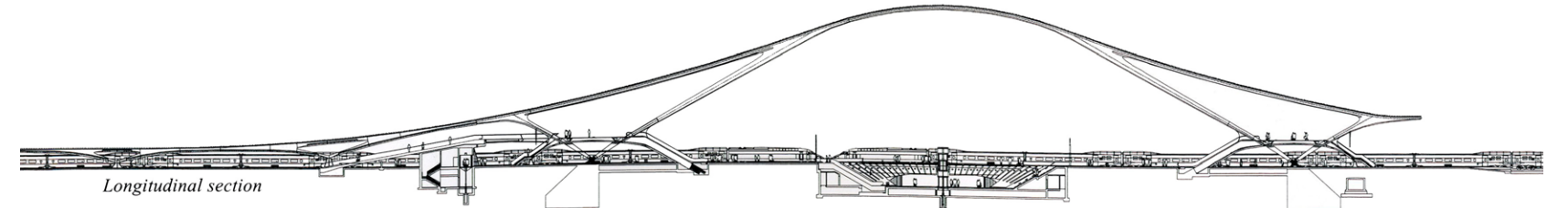
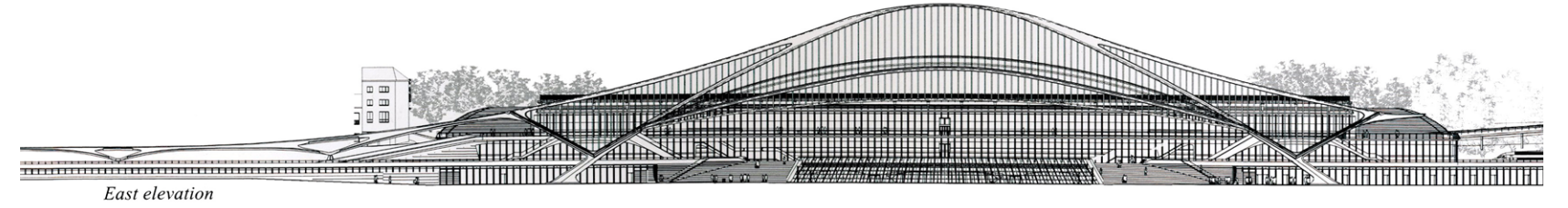
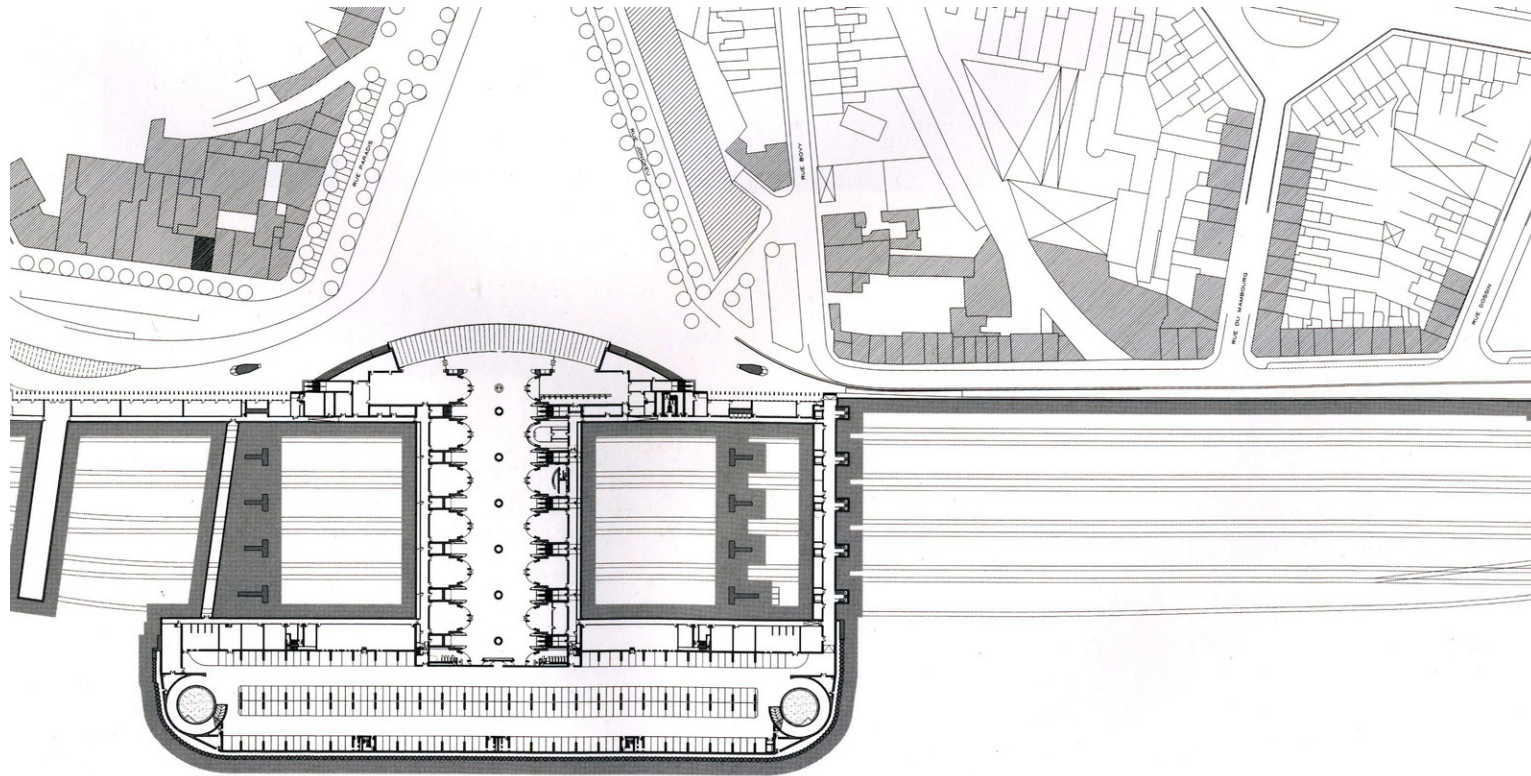
CASE STUDY 2  
LIEGE-GUILLEMINS TGV RAIL STATION  
LIEGE, BELGIUM

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Project Type: Railway Station  
Location: Liege, Belgium  
Project Name: Liège-Guillemins TGV Railway Station  
Date: 1996-2009  
Client: SNCB Holding, Infrabel and Euro Liege TGV  
Architect: Santiago Calatrava  
Area: 527,000 sq. ft.  
Cost: €312 million (\$430 million)  
Rail Types: Regional, High Speed  
Platforms: 9



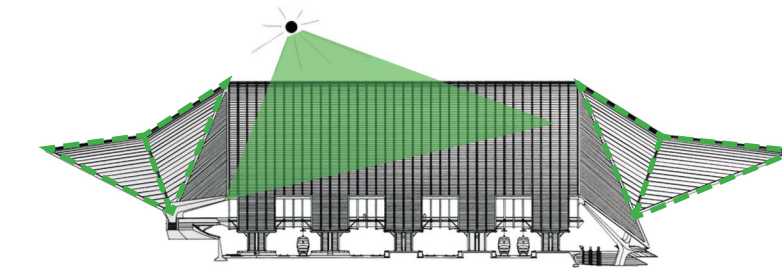
Soaring arches and rhythmic columns serve as staples for world famous architect Santiago Calatrava. These elements also gracefully guide visitors in a soothing manner, which add to the serene quality of such a grand space. The element that links this case study to the previous one is without a doubt the soaring ceiling of glass that delightfully illuminates that space. This will serve as major influence on my design of a transit hub. The open indoor/outdoor space also causes one to question its boundaries as any great architecture should. Culturally and economically, the facility has recharged Liege as the must-see city of North and Eastern Europe.



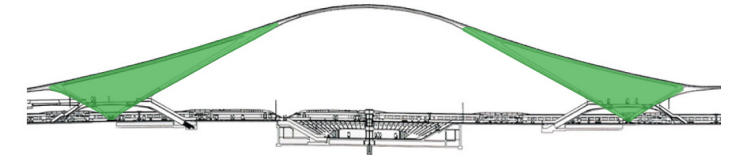
13 years in the making and three years after topping off, the new high-speed rail station at Liège-Guillemins designed by eminent architect Santiago Calatrava has finally opened in Belgium. Billed as the 'epicenter of the North European High Speed Network', the station can now beat as the heart of any transport network should.

Calatrava was first commissioned to design the new Liège-Guillemins Station in 1996 and was tasked with the seemingly impossible duty of replacing the existing station without disturbing the ongoing train services and daily passage of 36,000 people.

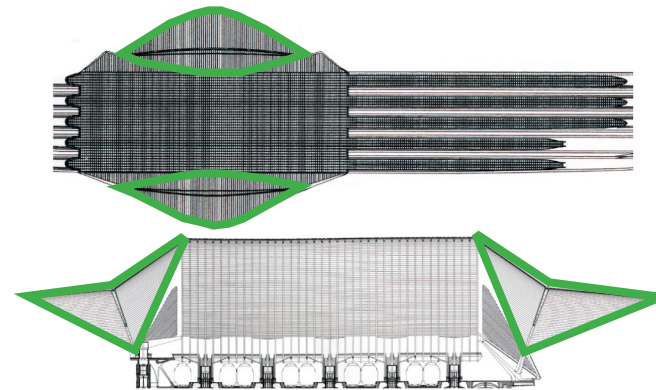
The result of his efforts is a cathedral for passage throughout Europe. The vast glass roof encases exposed working platforms and the dynamism of the moving ensemble of passengers and trains, asserting the urbanity and bustle represented within the high-speed network. The architect's vision of a building without facades adds to this energy. Commuters can now travel to Aachen, Cologne, and Brussels, Frankfurt, Paris, London, and the Southern portions of Europe at a modern pace through this monumental gateway (Young, 2009).



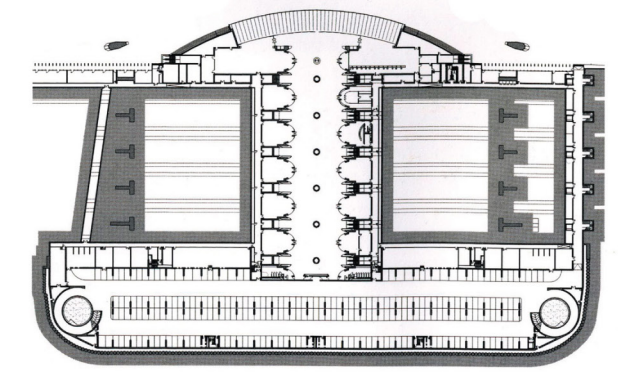
Natural Light, Geometry



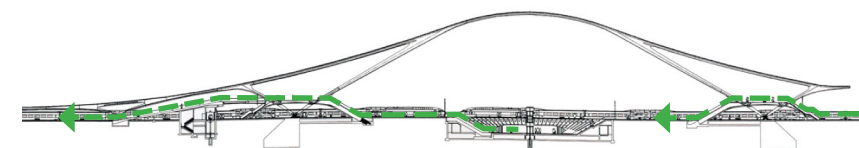
Massing



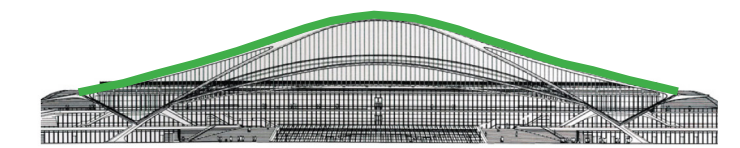
Plan to Section



Structure



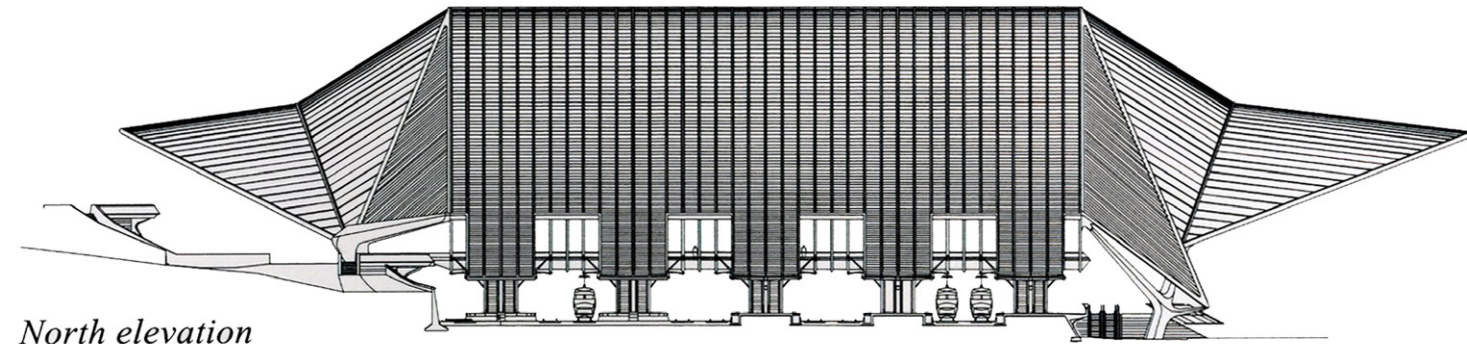
Circulation-to-Use Space



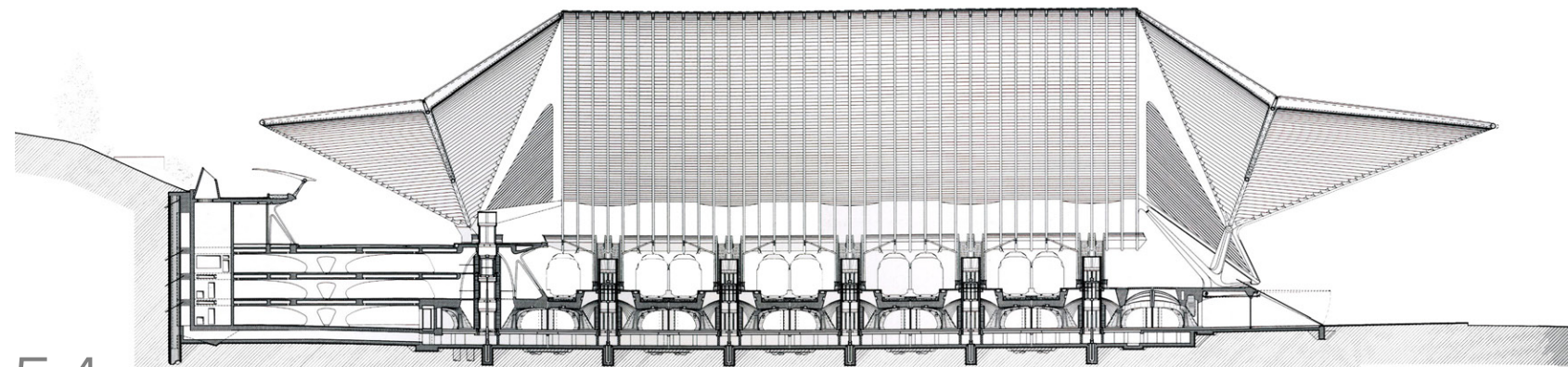
Hierarchy

Liège-Guillemins station is served by InterCity and InterRegio trains, connecting Liège with all major Belgian cities as well as several international destinations such as Aachen, Lille, and Maastricht. In addition to the national traffic, Liège-Guillemins station welcomes Thalys and ICE trains, connecting Liège to Brussels, Paris, Aachen, Cologne, and Frankfurt. Two newly dedicated high-speed tracks have been built: HSL 2 (Brussels-Liège) and HSL 3 (Liège-German border). There are also plans for Eurostar and ICE to link Liège to London directly (Young, 2009).

This station exemplifies the revitalization that ensues after a carefully planned and brilliantly executed exchange hub comes on line. Economically, Liege has already experienced a boom in growth; this passage city has since grown by more than 6% (Young, 2009). Having access to the countryside for a relaxing weekend and yet being quickly linked to a major city are greatly valued elements that the twenty-first century transportation hub can successfully provide.



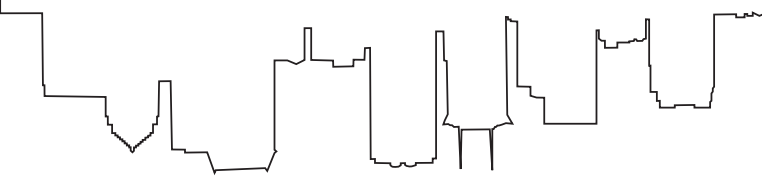
*North elevation*



*Cross section*



From this case study, I learned a great deal about scale and spacial balance of a rail station. Between the three case studies, my design for Tampa will most similarly reflect Liege's proportions. Calatrava's effort to control and permit light was simply outstanding as a primary design consideration and will also be a major design factor of my future work.



CASE STUDY 3  
SOUTHERN CROSS STATION  
MELBOURNE, AUSTRALIA

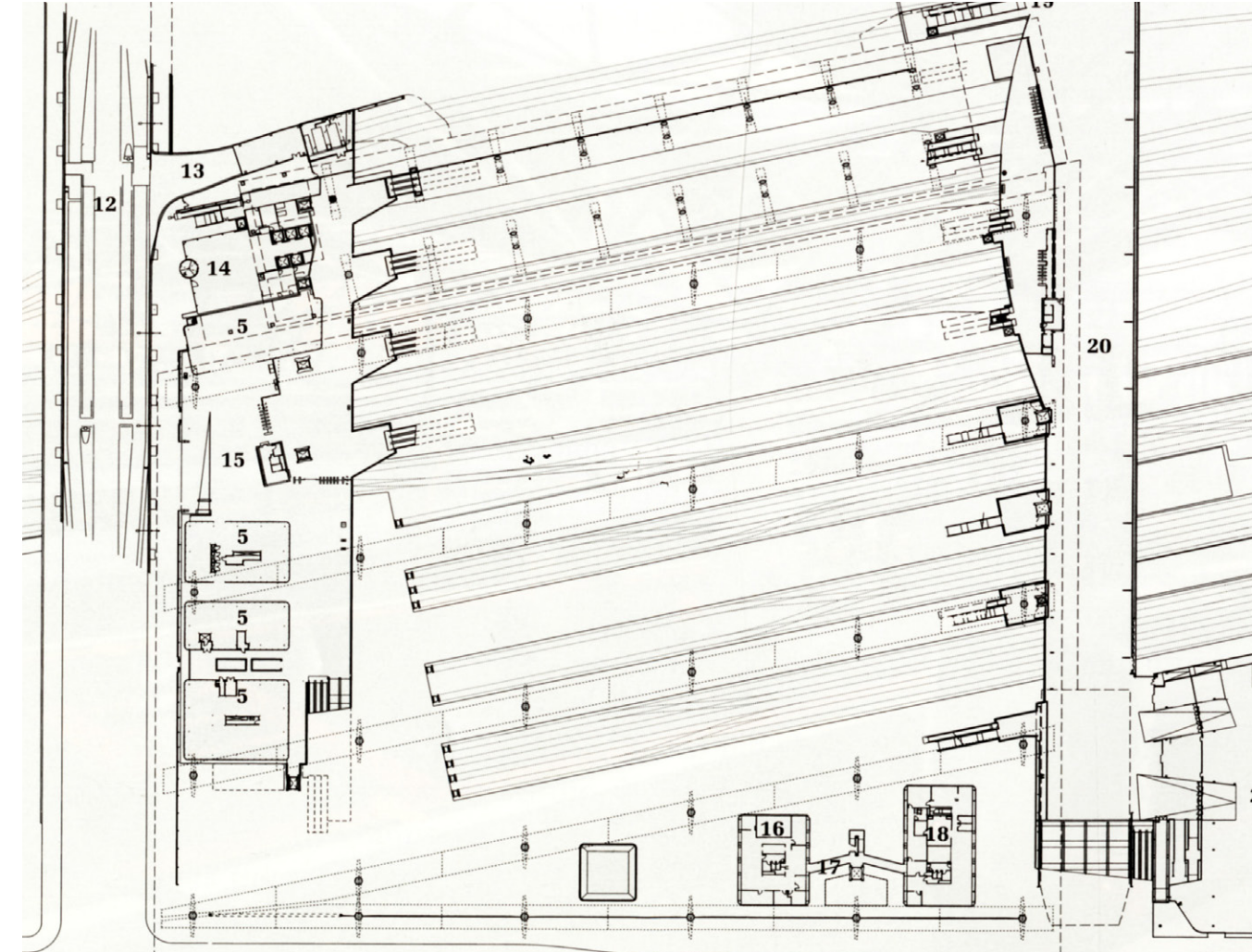
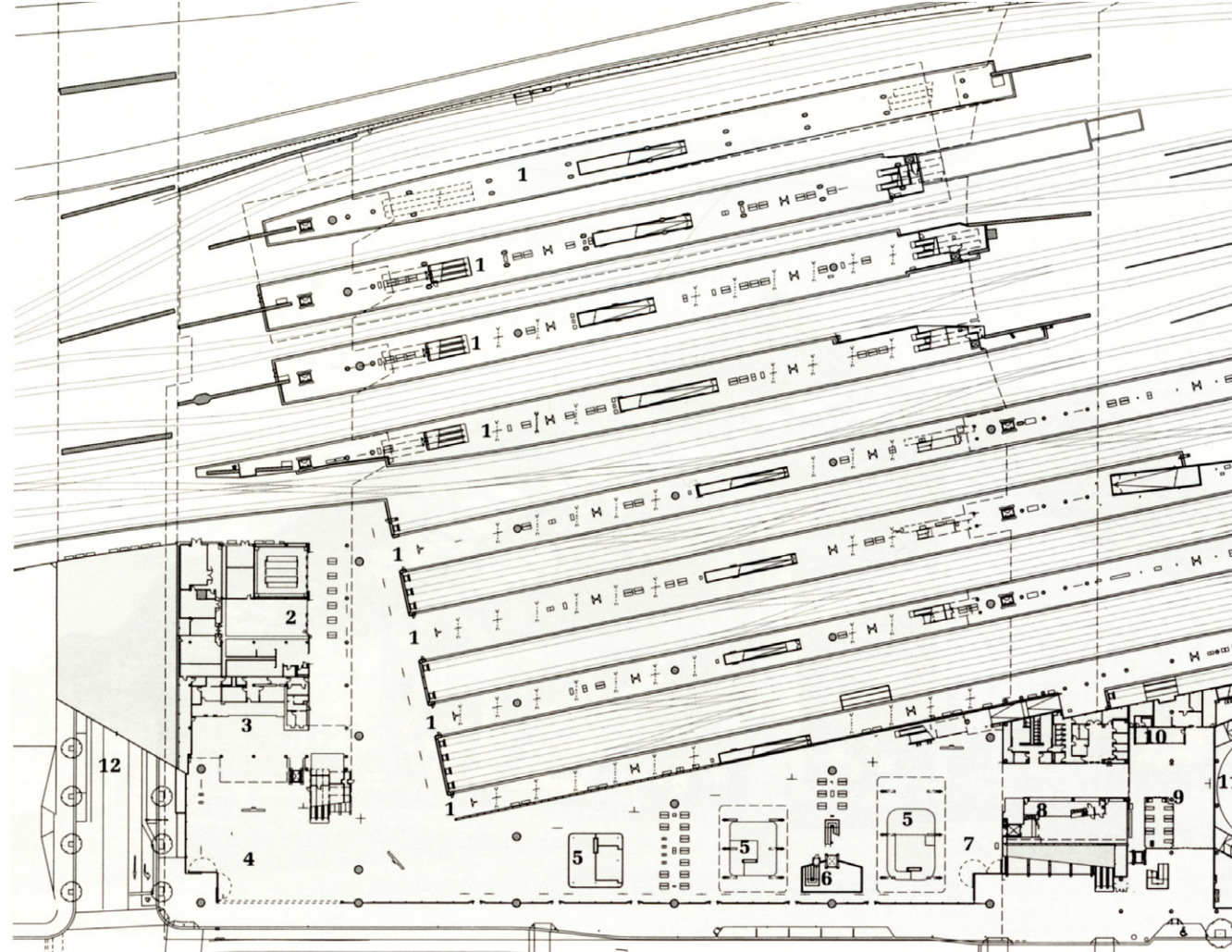
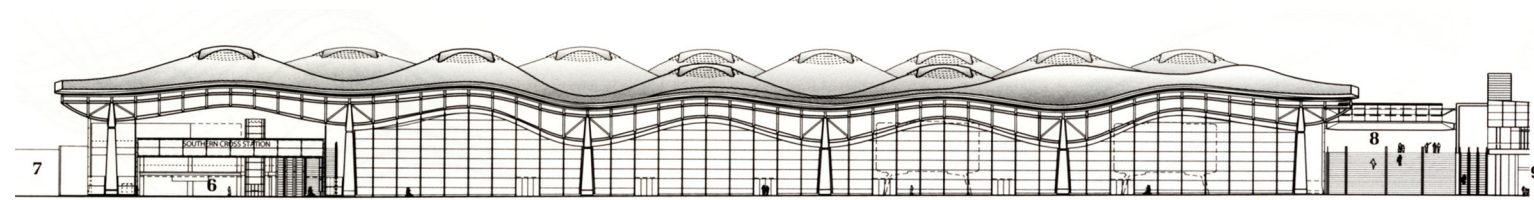
Project Type: Rail Station  
Location: Melbourne, Australia  
Name: Grimshaw Jackson's Southern Cross Station  
Date: 2002-2006  
Client: V/Line  
Architect: Nicholas Grimshaw Partners, Jackson Arch.  
Area: 320,000 sq. ft.  
Cost: \$700 million Australian (\$725 million American)  
Rail Types: Tramway, Regional, High Speed  
Platforms: 15

Melbourne Case Study Images: Architecture Australia

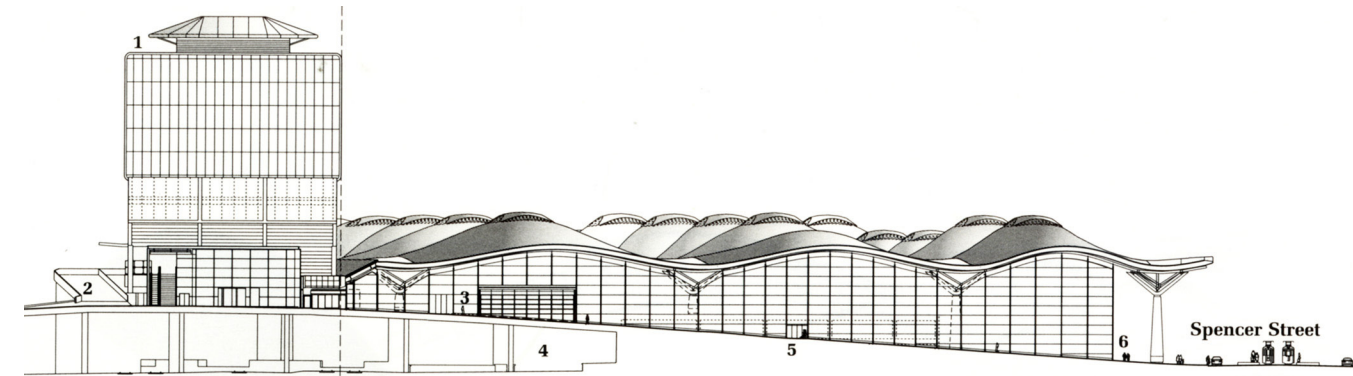




Serving 15 million passengers a year, Southern Cross has elevated itself as one of the premiere rail stations of southern Australia. This station is recognized by its 'wave' roof and at-grade access. The major existing elements were the docklands that lay adjacent to this facility as well as the previous Spencer station, which this new facility replaced. The history of this site dates back over 100 years and has propelled the Southern Cross's site to a status of historic precedence. (Southern Cross Station, 2011).

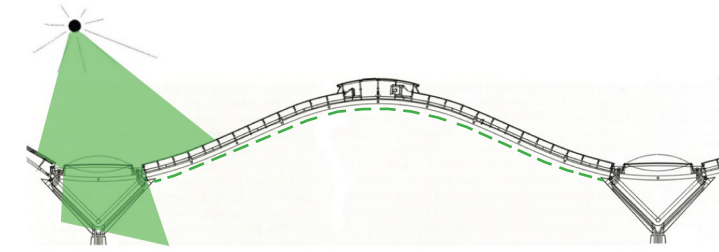


- PLAN KEY
- 01 Train platforms
  - 02 Passenger lounge
  - 03 Booking hall
  - 04 Collins Street/Spencer Street entry
  - 05 Retail
  - 06 Void to courtyard below
  - 07 Bourke Street/Spencer Street entry
  - 08 Baggage check-in
  - 09 Waiting lounge
  - 10 Ticket office
  - 11 Bus interchange
  - 12 Collins Street bridge
  - 13 Vehicle ramp
  - 14 664 Collins Street – South entrance/foyer
  - 15 Collins Street upper concourse
  - 16 Pod B
  - 17 Pod link bridge
  - 18 Pod A
  - 19 664 Collins Street – North entrance
  - 20 Bourke Street pedestrian bridge
  - 21 West End Plaza

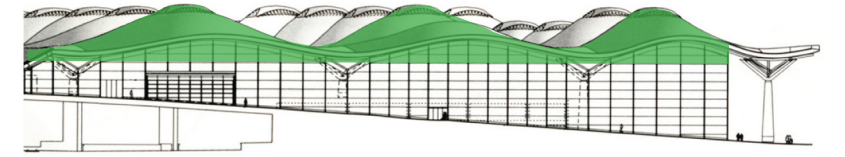


Southern Cross was redeveloped by the Civic Nexus consortium following an innovative design by Grimshaw Architects which features an undulating roof. Construction began in October 2002 and was completed in late 2006. The majority of the transport facilities were finished in time for the 2006 Commonwealth Games. The central features of the design include a wave-shaped roof, a new entrance and concourse on Collins Street, a new bus interchange, a new food court, a bar/restaurant, separate retail outlets inside the station, and a separate shopping complex between Bourke and La Trobe Streets (Southern Cross Station, 2011).

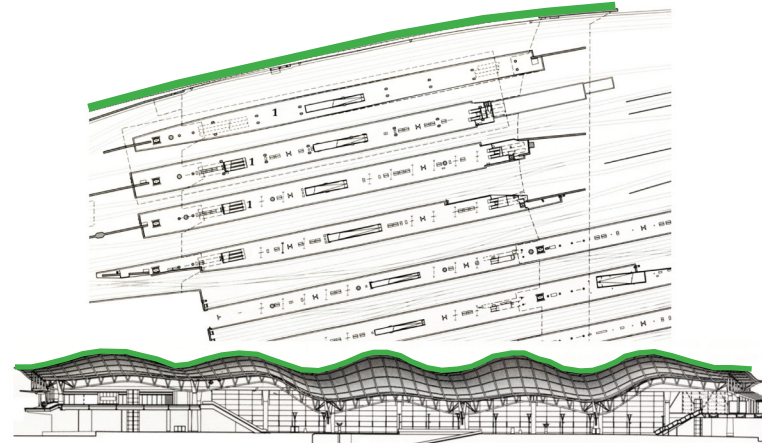
In addition to the station's physical modifications, its name was changed from Spencer Street to Southern Cross in December 2005. One of the greatest Distinguishing characteristics of this facility is its wide expanses free of structural columns due innately to the undulating roof pattern. This technique of creating vast expanses between vertical members may prove to be a critical future design feature. Street access and walkability seem to have been more carefully integrated with this design compared to previous studies, which allows this station to have an even greater abundance of commercial growth and social interaction.



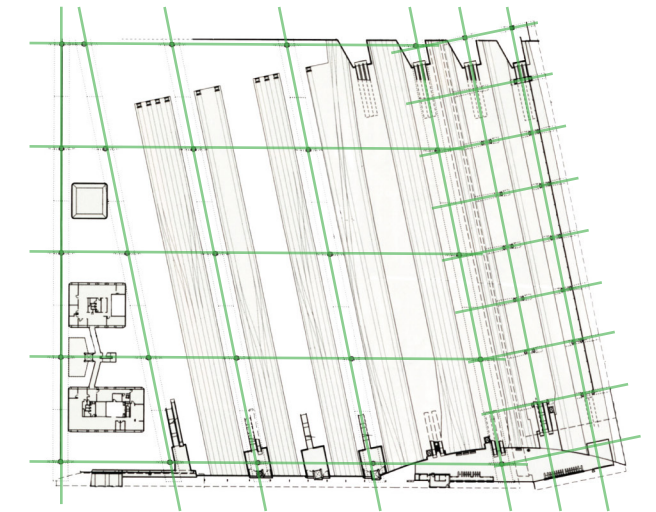
Natural Light, Geometry



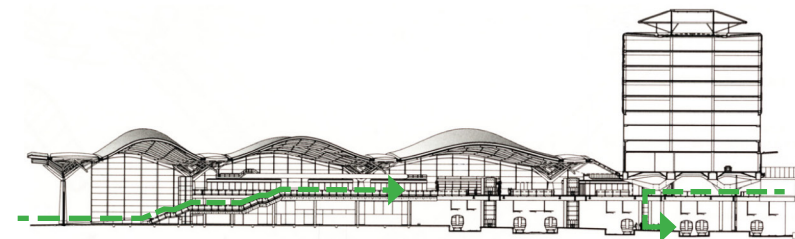
Massing



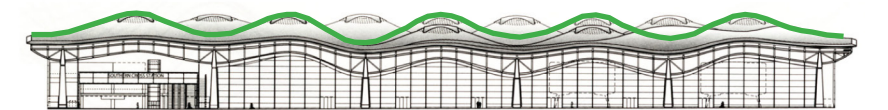
Plan to Section



Structure



Circulation-to-Use Space



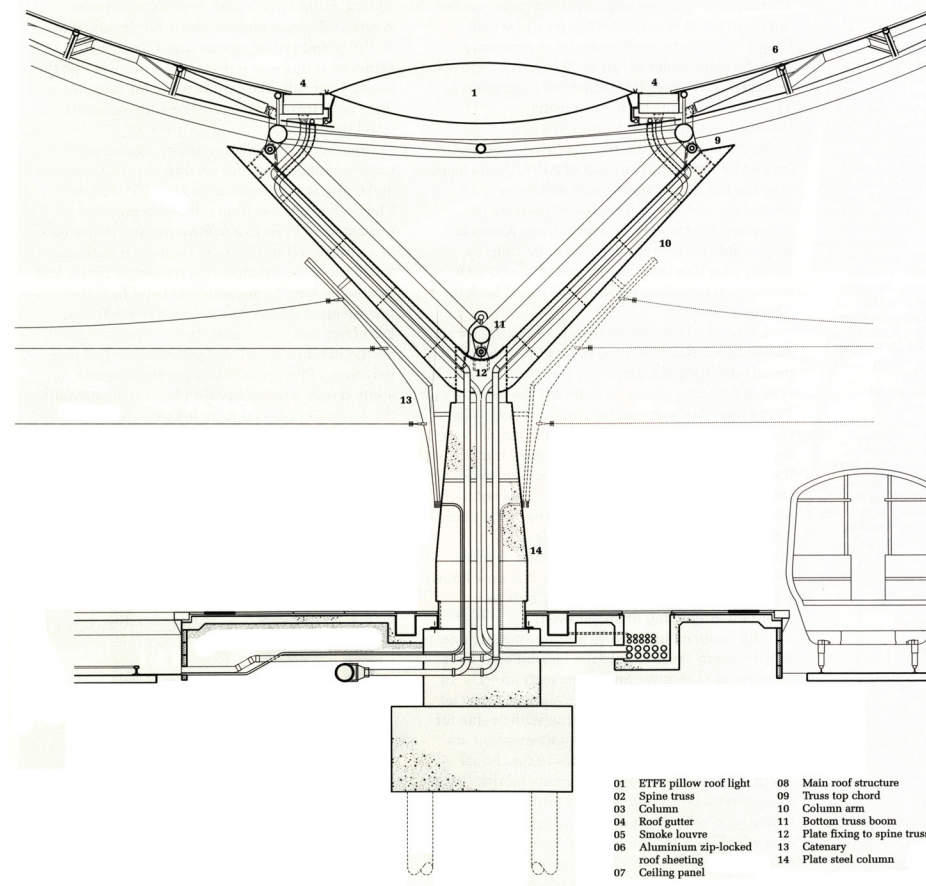
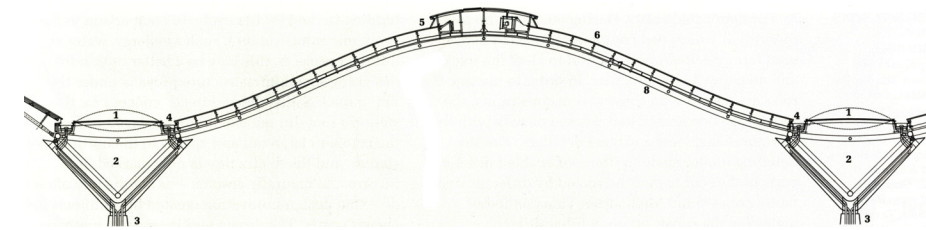
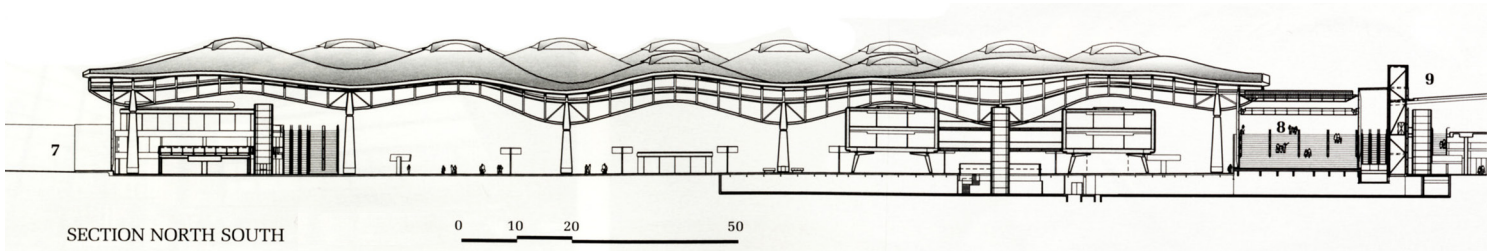
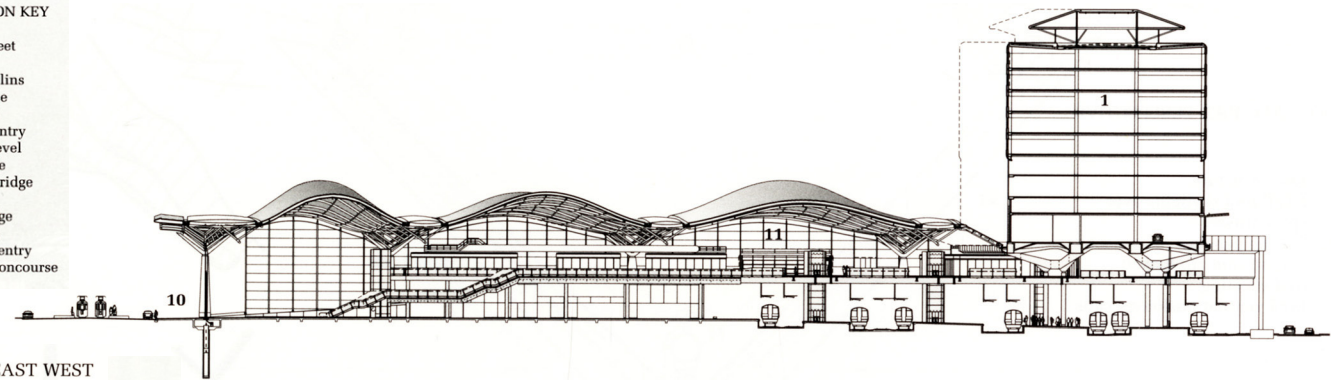
Hierarchy

Melbourne's Southern Cross Station began with a fairly simple design concept that was quickly activated by the curving roof structure. I enjoy this solution for it purposes movement and life. The thought of a rail station being static or bland does not excite the visitor, nor does it draw economic activity. The site of this station is one of history and action. Located in the 'Docklands,' this station once served as a heavy industry rail yard, serving ships and cargo from both the Indian and Pacific Oceans (Southern Cross Station, 2011).



SECTION/ELEVATION KEY

- 01 664 Collins Street
- 02 Vehicle ramp
- 03 Entrance to Collins Street concourse
- 04 Train platforms
- 05 Collins Street entry to mezzanine level
- 06 Station entrance
- 07 Collins Street bridge
- 08 Bourke Street pedestrian bridge
- 09 West End Plaza
- 10 Spencer Street entry
- 11 Collins Street concourse



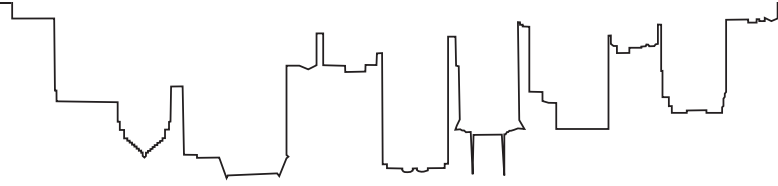
- 01 ETFE pillow roof light
- 02 Spine truss
- 03 Column
- 04 Roof gutter
- 05 Snake louvre
- 06 Aluminium zip-locked roof sheeting
- 07 Ceiling panel
- 08 Main roof structure
- 09 Truss top chord
- 10 Column arm
- 11 Bottom truss boom
- 12 Plate fixing to spine truss
- 13 Catenary
- 14 Plate steel column



A long look at this facility reveals a simplicity and connection to life that a more complex station may lack. Having all the activity on one level with an elegant bridge spanning the rail lines seems to be a strength of this station both socially and programmatically. One element that always comes into question when dealing with an irregular roof structure is how interior walls meet that shape. Grimshaw answered the challenge by placing stand-alone office quarters in what seem to be orange spaceships. I will take this solution carefully into consideration as my station may end up being a single-level facility with an irregular roof.







## CASE STUDY SUMMARY

Throughout the case study process, I developed a new passion for seeing a building holistically. A facility may have the most appealing day lighting, for example, but is completely lacking in social gathering spaces. A transit station plays a very unique role in people's lives in that some merely pass through while others may spend hours or even work long days in the station. It is a destination but also a passage, a point of arrival while marking only the beginning.

In revisiting the stations, I will enunciate the achievements, complimentary elements, unique features, and areas leaving something to be desired.

### Berlin Hauptbahnhof

Monumental structure, commercial vibrance, and technological innovation are a few of the high points of this impressive station. This station hosts the most foot traffic of any Germany station, successfully highlighting the gracefully flowing staircases and perpendicular rail axis. Furthermore, the station offers outstanding solar access, which is naturally balanced by the breezes that pass through the station. Incredibly high overhead expanses offer an outdoor freedom while protecting as if indoors.

### Liège-Guillemins TGV Railway Station

Spoiling Belgium with a world-class station, Calatrava has ceased to amaze architects world wide. The bright, naturally lit station is a symbol of economic prosperity and international sophistication. Being recently completed, along with the other case studies, this station has inspired me to question how the twenty-first century station will engage its occupants. The simplicity of this station will be the greatest design element to extract apart from repetitious column sequences. After studying the circulation patterns, I have gained a deeper appreciation for simplicity and satisfaction on the part of the architectural participant.

### Southern Cross Station

Interaction with the site was definitely the primary struggle for Grimshaw's design team. Existing infrastructure as well as the docks served as a personal indicator to me about site constraints and probable difficulties. Signifying the proximity to the water with an undulating roof was not only clever but also graceful as a response to the long spans required. Giving interest to a simple design element has proven to inspire individuals at an inner level. The stand-alone office space solution seems to be a minor drawback to the station.

### Conclusion

The Berlin and Liege stations both superbly take advantage of the solar gain, that proliferate the indoor spaces in an almost magical way. The Southern Cross does not accept such a high level of solar activity, which can be understood due to the hot climate of Southern Australia. My station in Tampa, Florida will do well to control the sun in a similar manner.

Symmetry has also been a primary design component to both European stations, which I feel communicate a comforting level of understanding and accessibility to their patrons. Again, I draw that the Australian station behaves more responsively to the site, still offering a mostly complete understanding of the space. (A single level station with an observation bridge leaves little to be misunderstood). Repetition in the Liege example especially gives an ambiance I personally respect, almost assuring the passengers of the rail systems dependability and the precise train timing there exercised.

Technology will be instrumental to the comfort of riders as real-time updates on trains across the nation will be available. These stations have already greatly increased ridership by offering high-speed access to a wider range of destinations in a shorter time period than previously thought possible.

Breathtaking open spaces with wide column expanses have successfully served the patrons of all three stations. The interaction between indoor and outdoor can be highly celebrated through the program of a rail station in a way not possible in most other structures. I understand that soaring ceilings may very well be the crux of an inviting station while serving to passively regulate the functional needs of the space. The balance between levels, layers, and density can be wonderfully interwoven when both circulation and natural amenities are carefully considered.

The integration of green spaces within the buildings were a drawback to their designs. For future designs, I will carefully weigh the benefits of incorporating green plantings in areas of pedestrian traffic. These stations are open to the outdoors, so access to breezes and solar gain should not be a problem. Spatially, the Berlin station seems to be the most engaging, primarily due to the axial orientation of the rail lines.

Social interaction remains the primary activity I wish to facilitate through the programmatic development of a station. Creating a station like these that not only moves patrons, but introduces them to new and inspirational ideas will be crucial.

## HISTORICAL CONTEXT

Before beginning to discuss the history of passenger rail transportation, I should share the onset of my passion for public transportation. One year ago, I departed for a semester abroad in Europe, bound for Lille, France. I brought a minimal amount of possessions and was excited to embrace public transit, simply toting a camera and wrist watch. I lived and traveled around western Europe for four months. Each day I was dependant on the Lille metro system (VAL) to get me from A to B. I also rode the high speed TGV rail system between countries' and utilized other rail developments as well.

In total, I visited ten countries, utilizing an airplane only once. My time there was a blast. I saw the countryside, exchanged experiences with fellow travelers while on transit, and even joked with a lawyer from New York for two hours while commuting between Koln and Paris. I met a UC Berkeley Master of Urban Design professor on a trip from Torino to Lyon. We shared our passions for public transportation and city planning.

All of this is to say that I was greatly impacted by the simplicity and peace the European model delivered. I began to question how living in a car-dependent society has short-changed myself and fellow countrymen. I set to work questioning our current circumstances.

### Rail History

Historically, the very first rail travel in the U.S. occurred in Charleston, South Carolina in 1830. Only 10 short years later, in 1840, there were already over 2,800 miles of train track in place. By the start of the Civil War in 1860, that number had jumped to over 30,000 miles of track (Trainstations, 2008).

The U.S. government actively supported passenger rail growth with generous subsidies and land grants. Passengers enjoyed the speed and reliability of train travel. Even in inclement weather, travel was possible and relatively comfortable. What had once been viewed as a daring although rather impractical experiment had become an essential part of life in the expanding American society.

A turning point in the history of passenger trains and railroad expansion occurred in a remote area of Utah only a short time after the Civil War ended. It was there, in 1869, where the Golden Spike was driven, officially connecting the tracks of the Union Pacific Railroad with those of the Central Pacific Railroad: The first transcontinental railroad was born. Weekly, one train ran from east to west and one from west to east. Cross country travel would never be the same.

Passenger rail travel tripled between 1896 and 1916 with train travel accounting for over 95% of all major intercity travel through 1910. However the golden days of rail travel were not to last. Train travel peaked in 1920, with an estimated 1.2 billion passengers in that year alone (Trainstations, 2008).

A combination of sharp increases in fares and the rise of the automobile reduced rail passenger numbers by nearly 20% by the time the decade ended. The Depression further reduced train travel, and many predicted its end. A new technology though, would breathe fresh life into the ailing industry only a few years later.

In 1934, the inaugural run of the Burlington, Chicago,

and Quincy's diesel-powered Zephyr train and the Union Pacific Railroad's gasoline-powered M-10,000 brought a new face to train travel. The new design cut the traditional steam travel time almost in half and reenergized the passenger travel industry (Trainstations, 2008).

Although rail travel never regained its 1920 numbers, passenger travel by train had become a permanent part of the American landscape. Despite this, its heyday had clearly passed.

The most painful blow to train travel occurred in the 1950's with the advent of affordable airline travel. Suddenly, spending a day or two on a train was not



(Figure 6, History)

as appealing as making that same trip in a few hours on a plane. Automobiles had become the norm for short intercity trips, which were a mainstay of early train traffic. By mid-1970, airlines carried 73% of U.S. intercity passenger travel while railroads carried only about 7%. (Trainstations, 2008).

Today, congested airports with daunting security measures and crowded air space have given rail companies new life. Amtrak has reported unprecedented ridership increases the past five years consecutively. The Northeast Corridor (NEC) has had large success with the country's first high-speed rail system, the Acela Express, which travels at an average speed of 80 mph and reaches up to 134 mph on its route from New York to Washington D.C. (Amtrak, 2011).

Recently, President Obama's 2009 American Recovery and Reinvestment Act included \$8 billions for the development of the nation's high-speed rail network. Sadly in February 2011, Florida Governor Rick Scott rejected over \$2 billion to develop a high-speed line from Tampa to Orlando. Overlooking information like a population increase of over 100 million people in the U.S. by 2050, Scott labeled this investment as "too risky" (Silverleib & Kastenbaum, 2010).

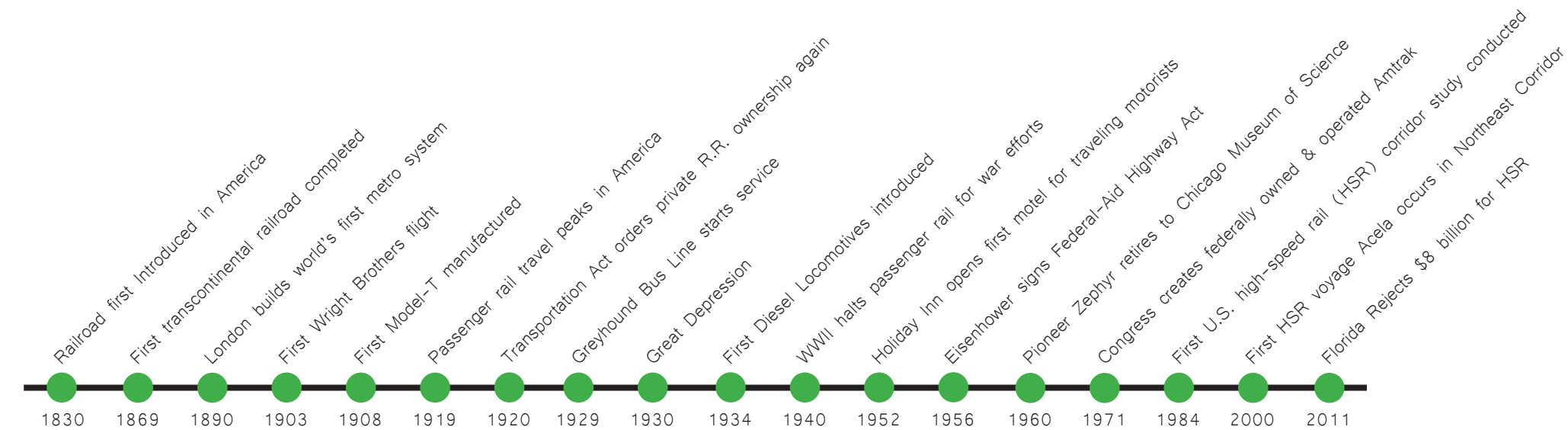
Nevertheless, Vice President Joe Biden, at the same time, announced spending \$53 billion on passenger trains and high-speed rail projects over the next six years as part of the administration's goal of making high-speed rail accessible to 80% of Americans within 25 years.

As far as land use goes, history has confirmed that rail lines operate most effectively when arranged in a linear fashion. Japan is currently the world leader in efficient transportation, moving the most people with the least energy exerted. The shape and constraints of their country's land mass has had a great impact on this outcome, not only convinced *me* that rail implementation should take place in more places that just Florida, but also Obama's administration as well (Silverleib & Kastenbaum, 2010).

Figure 7 reveals the Federal Government's future plan for high-speed rail development in America.



(Figure 7, HSR Vision)



(PBS, 2011)

## Florida History

The state of Florida had an incredible opportunity to establish a cross-peninsula railway soon after its founding in 1845. David Yulee, a politician who helped gain that statehood, pushed for the railway in hopes of averting cargo ships from the dangerous Florida Keys. After the initial success, passenger trains began to appear and shared rail tracks with cargo trains as eager tourists experienced previously unreachable inland marshes and forests (Florida Railroad Museum, 2009).

Since its climax in the 1920's, passenger rail travel severely declined in Florida, almost to the point of nonexistence, as personal automobile and air travel took center stage. Figure 6 depicts one of Florida's Atlantic Coast Line (ACL) passenger rails during that early twentieth century boom. Even after the government's creation of Amtrak in the 70's, the state of Florida, and especially the Tampa metro area, has produced poor ridership numbers.

Nevertheless, Florida has experienced population and tourism growth over the past few decades virtually unrivaled elsewhere in the United States. Considerable progress has been made in expanding Florida's

highways, ports, airports, and public transportation systems; however, the growing demand has continued to outpace the supply of the new transportation capacity. In addition, it is becoming increasingly clear that the costs and consequences of unlimited expansion of Florida's roadways are more than can be borne by our environment and by the taxpayers (Lynch, 1998).



(Figure 8, Existing Tram)

## Tampa Currently

Both a high-speed rail connecting cities and a light rail system to move people within the city interest me. Currently, Tampa has no fixed public transportation system within the city except a trolley car (Figure 8) that's maintained solely for historical amusement. In all of Florida, only the east coast operates the tri-rail which connects Miami to West Palm Beach, and Jacksonville. Jacksonville in the north also operates a people-mover monorail.

With a metropolitan area of over 4 million and the state supporting 19 million on top of a booming tourism industry, a time and energy efficient option for Florida has been long overdue (U.S. Census Bureau, 2010).



## PROJECT GOALS

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### Academic

To absorb fresh and inspiring information throughout this semester has been truly a joy. My academic goals for this thesis project include grasping the design and implementation process of intercity rail systems. Reading a plethora of information varying from city planning journals to books on processed foods and everything in between has kindled a desire in me to learn. I desire to understand how the seemingly unrelated elements of our society are almost directly connected when viewed in a more holistic frame.

The industrialized world demands a specialization from each field in hopes of streamlining the design, manufacturing, and delivery processes. Meanwhile, I have found delight in analyzing those specialties and revealing the startling connections that most intricately bind them. I am afraid that each entity (manufacturer, school, retailer) has become so enthralled with their bottom line that no one has stopped to ask how they relate to one another. Do various industries analyze how they relate holistically?

I aim to grasp the inner workings of cities, how they facilitate the activities of life, how interactions are spurred, why select cities develop in a 'healthy'

manner, and why others seem to struggle. After reviewing numerous books on cities and transportation, I realized my passion for efficiency while striving for an elevated quality of life. My academic purpose moving forward must be to question the things we currently take for granted and schematically reorganize those systems to selectively achieve more favorable outcomes.

Solidifying a personal work ethic that will be with me long into the future has also been a must of this process. I understand that my graduate dissertation is not the end, by only the beginning. I've taken to hearts scripture that says "to those who have been given much, much will be expected" (Luke 12:48, New International Version). Positioning myself to serve others in the most effective way has driven me to be somewhat of a perfectionist, an academic (in every arena of life), and a philanthropist.

### Professional

To be recognized as someone knowledgeable and worthy of planning cities has been a recent aspiration of mine. I would thoroughly enjoy establishing a foundation in city and transportation design. I often envision how new methods of drawing conclusions from unrecognized connections could render humanity with a greater potential to live a more fulfilled live but on

minimal resources. Cultivating content questions how we currently consume and asks if there could be something missing. Can ultimate satisfaction be primarily found in quantity?

I hope to prepare myself for the design world by analyzing critically, questioning boldly, and desiring the ultimate. I predict the future being about having the right things, not having the most things.

My fascination with rail systems launched during a four month study abroad session in France during the spring of 2011. I immediately cultivated an admiration for such an energy efficient system, which not only saved its city space but added a unique excitement to each day's journey in a personally unprecedented manner. I look forward to the challenges and satisfactions that lie ahead of me in a design process that may quite possibly dictate the trajectory of my life's work.

### Personal

Understanding rail systems and the implications of changing potentially many things America previously stood for has moved those around me to discomfort and me to exuberance. I have little desire to do things the way we've always done them for the sake

of a system or tradition. I marvel at the notion of innovation and unprecedented joy-filled experiences. Personally, I desire to be changed into a man who believes firmly but walks humbly.

My challenge now, after being confronted with many startling truths, lies in the delivery of the information. Motivating others to alter their passions and abandon any preconceived notions will be my largest challenge and accomplishment. The right message delivered in the wrong way is the wrong message.

I've come to see architects as stewards of information; thus, the only thing left to do is perfect the art of communication.

## SITE ANALYSIS

Warm breezes and blazing sunlight welcomed me to Tampa late in September. Before exploring my proposed site, I met with the transportation planning department of Hillsborough County. They welcomed me warmly, supplying me with every kind of map and data I would need for my investigation. They explained that a site near the interstate would actually compliment my design ideas best as land acquisition and right-of-ways tend to be the most expensive part to any transportation development.

After leaving their office with a newly directed vision, I headed downtown for my first taste of the suggested site. Upon arrival, I instantly felt a confirmation that this was the place for a new rail hub. As I had recently learned, the federal government had already selected this site as an option for future rail implementation. It was perfect: a wide open space where a dismantled sheriff's office once sat. Also, I understand this particular site is currently government owned and ready for construction.

Some of the initial impressions included a kind of despair that comes with a deserted lot accompanied by the hope that comes through the eyes of a visionary and opportunist. Even with the proximity to the interstate, its elevated construction removes almost all of the automotive noise and intrusion. The site was

mostly calm and collected, peacefully anticipating future proliferation. Nearby, the city has already positioned a new central bus terminal, the Marion Transit Center, in hopes of a future partner rail facility.

Developers had already caught wind of things to come and were within a month of opening a new four story apartment complex, the Metro 510, located directly south of the site and Marion Transit Center.

I snapped Figure 9 of the new facility, which shares the block with a 100-year-old Methodist Church. As I look back over the image, it reminds me of densifying cities, walkability, and the access to a wider range of goods due to proximity. Also, to the east, a major community development known as Encore! has broken ground.



(Figure 9, Existing Among New)

Most of the southern part of the site is bordered by the Oaklawn cemetery that invokes a somber introspective evaluation of life. The trees behind this fenced sanctuary speak of maturity, time, and understanding. Balancing the bustle of an active transit hub with the static oversight of the cemetery will be a design challenge. My hope is that this site amenity will somewhat slow the pace of busy life, allowing passers-by to humbly reflect on their own lives and purposes.

Other notable site qualities include the sunshine. Having always resided in the Midwest, I had never realized that the sun sets so quickly in the south! Due to Florida's latitude, the sun sets almost completely straight down. One minute you see the sun, the next it's vanished. This was a surprising and unforeseen experience I would have otherwise missed if I hadn't visited the site.



(Figure 10, Site Facing South)

As far as activity, the only people around are currently low-income citizens that walk by as they find their respective buses at the station. Scott Street borders the site on the north and is the only road with mild activity. The remaining roads around the site simply serve the bus station.

Views around the site do not reveal much of Tampa because the bay lies roughly 15 blocks south. Abandoned buildings in disrepair speckle the landscape, and a variety of tree species boast current dominion. A handful of cars inhabit a portion of the proposed site.

In summary, the peaceful sway of palm trees, the patches of sand and grass on a vacant lot, and the sun's generosity all welcome a fresh cultivation of prosperity and interaction. Below Figure 10 shows a south facing view of the site.

### Grids

A mostly urban transect of zoning is represented in this region. The river is the only area truly controlled by nature, and even it has been tamed by concrete retaining walls. Roadways have obviously been the most influential system dictating how architecture is birthed.

This poses an interesting dilemma when evaluating how transit-oriented development will not only influence how we move, but the very way in which we architecturally develop and ultimately live. Transit-oriented development is a planning concept that places value on the individual instead of the automobile.

Currently, almost every city in America has been planned around the personal automobile, resulting in the widening of roads and thus removing any hope of establishing a 'sense of place'. Only recently have planners along the West Coast started to critically evaluate how the automobile and wider roads have given way to other problems such as urban sprawl.

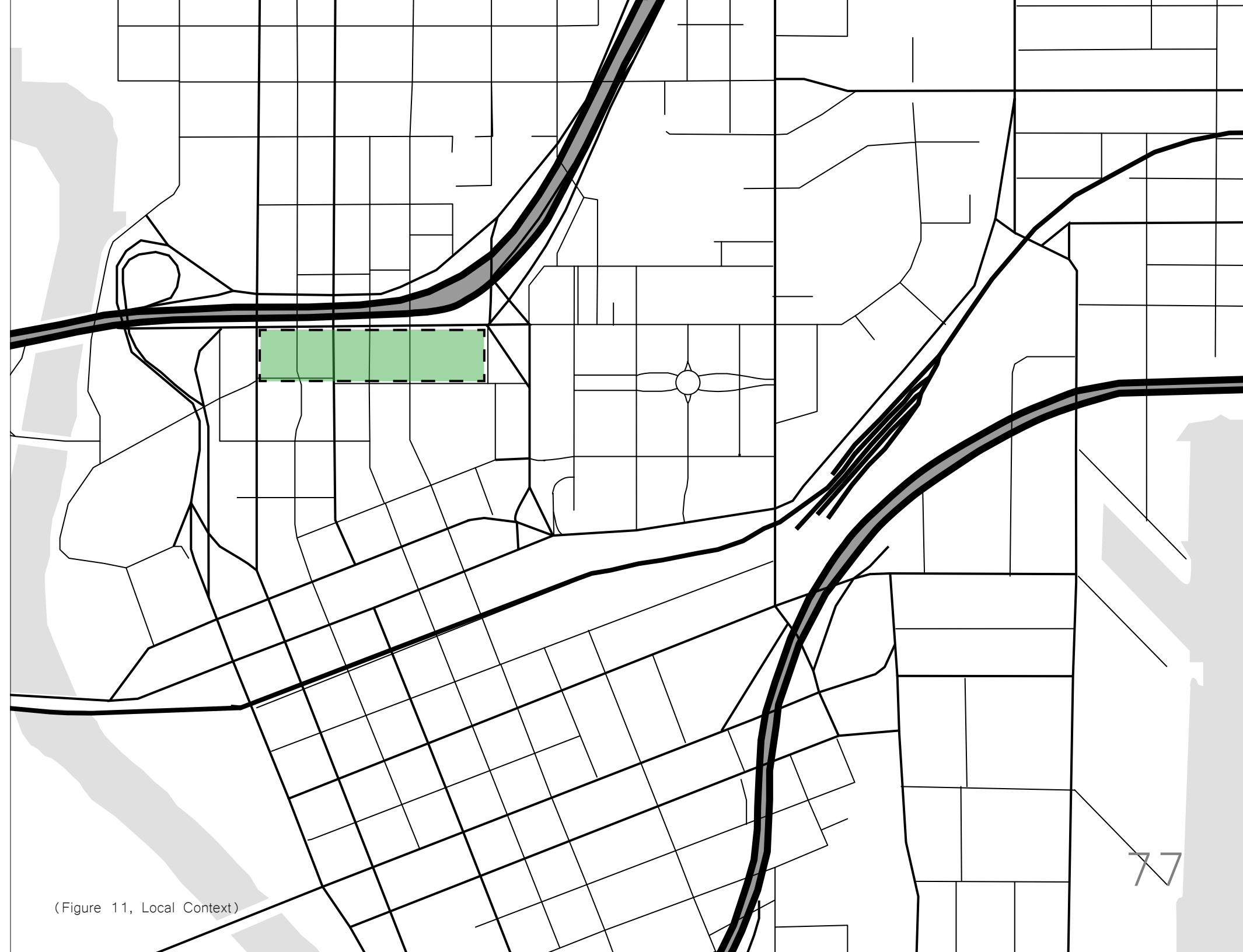
Another effect of the grid has been automobile induced fatalities. Transportation engineers call for wider and straighter roads and then post a low speed limit, but this only results in faster driving, increased police forces, and more fatalities than in all other modes of transportation combined (Speck & Duany, 2010).

### Textures

Site textures range from natural to man-made. The primary example of human intervention is exhibited by the interstate to the north. Other textures can be described as buildings, roadways, power lines, and automobiles.

Nature has contributed the palm trees, over-growth areas within the cemetery, and sun light. Natural light on the site is extremely harsh with very few areas of refuge, as the site is almost completely devoid of shade trees. Sparse sprinkles of palms dot the landscape, towering high overhead.

The views on site are relatively unobstructed apart from the builds marked for demolition, the interstate, and the cemetery. In plan, the site presents itself as open and ready to accept a greater function.



(Figure 11, Local Context)



(Figure 12, Site Facing West)

### Geometries

The site has been shaped into very orthogonal and predictable geometries. Thirty-six rectangular parcels make up the barren stretch of field and parking. Proximity to downtown has been a result of its very influential grid system.

Scripting a site plan with curving accesses and natural outdoor spaces will be instrumental to enlivening the space. Rail transit offers a new experience to most; thus, the site geometries should follow accordingly.

### Sections

In section, the site is fairly predictable. There exist three buildings that will be removed from the site itself. In the surrounding area, there's the cemetery and interstate structure. A few blocks south lies the beginning of the high rise district.

In its own right, the cemetery speaks in section as the grave stones stand to honorably announce those who've past. Other buildings infringing on the site have sprouted up in hopes of future development, patiently longing for new life.



(Figure 13, Site Parking Lot)



(Figure 14, View to Downtown)



(Figure 15, Oaklawn Cemetery)



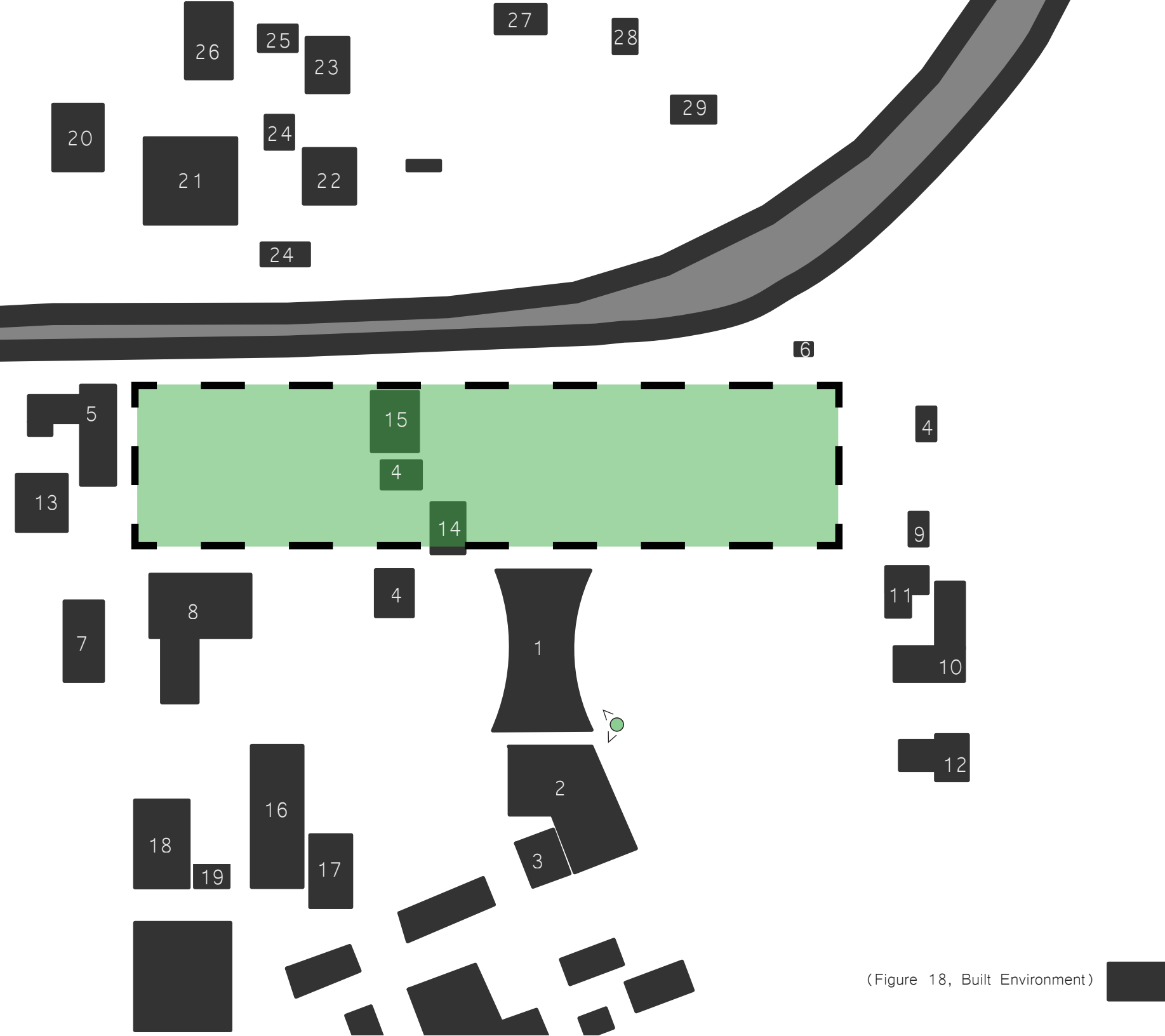
(Figure 16, New Apartments)



(Figure 17, Interstate Underside)



Built Environment



(Figure 18, Built Environment)

1. Marion Transit Center
2. Metro 510 Apartments
3. St. Paul Methodist Church
4. Vacant Building
5. Tampa Parks Office
6. Gas Station
7. Army/Navy Surplus Market
8. Persons w/Disability Agency
9. Ybor City Party House
10. Greater Bethel Baptist Church
11. Parsonage
12. Mason Community Center
13. Precious Bundles Day Care
14. Chem-Tel Inc.
15. Tampa Blue Print
16. One Market Reality
17. P.P.&K. Ad Agency
18. Mize Capital
19. Fly Bar & Grill
20. Hillsborough Bar Association
21. Oceanic Oriental Supermarket
22. Grace Evangelical Church
23. Warehouse
24. 717 Valet Parking Offices
25. Church Women United
26. Weekley Attorneys at Law
27. FG Attorneys at Law
28. Law Office
29. Residential



(Figure 19, Marion Transit Center)



(Figure 20, New Metro 510 Apartments)

The built environment in this sector, north of downtown, can only be described as broken. There are vast expanses of parking that greatly separate the various buildings. There is absolutely no sense of place. Around 15% of the builds are vacant, adding to the uninviting nature of the area.

I intend to remove a few of the under-used buildings in order to meet the special needs of my rail station. If my facility was to be established as proposed, a majority of the area parking lots and even builds would be consequently removed and replaced with housing complexes along with other amenities of a growing neighborhood. Figures 19 and 20 show two new facilities that already serve as the beginnings of this developing neighborhood.



(Figure 21, Interstate by Night)



(Figure 22, Abandoned Building)

← - Lighting - - - - - →

Nighttime offers the best lighting experiences in Tampa. During daytime, the sun blazes at a rate some would describe as relentless. The evening offers a cool, breezy time of peace after a hot day.

One noteworthy observation I made while enjoying Florida for six days was that the sun sets rapidly there. In the north, the sun sets at an angle across the horizon, prolonging its disappearance and offering incredible colors any photographer would delight in. Due to Florida's proximity to the equator, the sun is there one minute and unexpectedly absent the next.

Intervention & Distress

Human intervention include site utilities, unkempt buildings, and a plethora of parking surfaces. Overall, this site is actually quite depressing; between the morbidity of the cemetery and the intrusive busyness of Interstate 4, the site wrecks of neglect.



(Figure 23, Manhole)

Wind

Conditions on the site proved stable during my visitation. My climate data includes a wind diagram hinting at the majority of winds prevailing out of the North and Northeast.

A micro-climate evaluation of the site reveals that a wind tunnel effect is created underneath the interstate. Apart from that location, the remaining extent of the site lies climactically silent. The only structures on-site will be removed as spacial needs are realized.

Water

The site has a minor slope across it that does not allow ponding to occur. Supplementing the topography are the site utilities, including storm sewers.

Florida, is very muggy due to the air's high moisture content. Careful measures will have to be taken to ensure mold growth does not occur on my building or its seals.



(Figure 24, Downtown by Night)



(Figure 25, Soils)

### Map Unit Legend

Hillsborough County, Florida (FL057)			
Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
22	Immokalee-Urban land complex	69.4	4.2%
27	Malabar fine sand	1.4	0.1%
32	Myakka-Urban land complex	48.8	2.9%
42	Pomello-Urban land complex, 0 to 5 percent slopes	44.8	2.7%
55	Tavares-Urban land complex, 0 to 5 percent slopes	406.8	24.6%
56	Urban land	924.9	55.9%
59	Winder fine sand	44.3	2.7%
99	Water	114.9	6.9%
<b>Totals for Area of Interest</b>		<b>1,655.4</b>	<b>100.0%</b>

(Figure 26, Soils Legend)

#### Properties:

- Depth class: very deep
- Drainage class: somewhat poorly drained
- Permeability: rapid
- Available water capacity: very low
- Seasonal high water table: Apparent, at a depth of 2-3.5 feet from June through November
- Shirk-Swell potential: low
- Surface runoff class: very low
- Natural fertility: low
- Parent material: sandy marine sediments

Soil on the site consists of a sandy blend known as urban land, which is common to many coastal areas of Florida. For construction purposes, urban land sandy soil can be regarded as average-poor with a low bearing capacity due to permeability issues (USDA, 2011).



(Figure 27, Site)



(Figure 28, Water Table)

Water fluctuations are a significant factor to life in Florida. Figure 28 illustrates the estimated 100-year flood level for Tampa. Hillsborough County does not commonly experience more than a 6cm increase or decrease in sea level throughout a season. According to topography variations, my site sits between fifteen and eighteen feet above sea level.

Even though my region is not exactly in a direct flood zone, possibility of natural disasters should remain a concern. In the last decade, Florida has experienced 58 tropical and subtropical cyclones, many of which did minimal damage and usually could not continue inland with sustained destructive power.

Tampa Bay is a unique area as it is naturally sheltered from the Gulf and has yet to experience what would be classified as a major hurricane. The Atlantic side of the peninsula receives most of the damaging forces, which fortunately leaves Tampa as a favorable site for a new high-speed rail development.

It should be noted that the state of Florida as a whole maintains a strict building code which requires architects to rigorously design all structures in an approved and hurricane-safe manner (Hillsboro County, 2011).

Utilities on the site include readily available water and electricity. The primary portion of the site, which now is completely vacant, was once a multistory sheriff's office. Another amenity includes fire hydrant access on the east portion of the site. A curb, gutter, and sewer all exist on the site perimeter as well as along the bisecting collector streets. Also bordering the site exists an array of street lamps and overhead powerlines.



(Figure 29, Powerlines)



(Figure 30, Water)



(Figure 31, Tree Growth)

Tampa, FL, boasts a plant diversity that is among the largest in the world and includes 93 different tree species, scores of monocots (grass-like plants), shrubs, and wildflowers. Of the 93 tree species found in Tampa, 76% are native to North America and the remaining 24% are non-native. Of those native to North America, approximately 50% are considered to be native to Florida.

Plant species that thrive in Tampa have characteristics such as high salt tolerances, drought-resistance, and they also provide food for local wildlife. There are, however, difficult challenges faced by each of these species.

One concern throughout the Gulf Coast has been an overgrowth of the invasive Brazilian pepper tree species. It has out-competed the native plant life due to its fast growth rate and toxic effects. These trees displace local forests, which, in turn, reduces vital coastal habitat for native wildlife. On site, there is currently a varied palm tree presence. Panic grass and sand cover the ground (University of Florida, 2009).



(Figure 32, Low Growth)



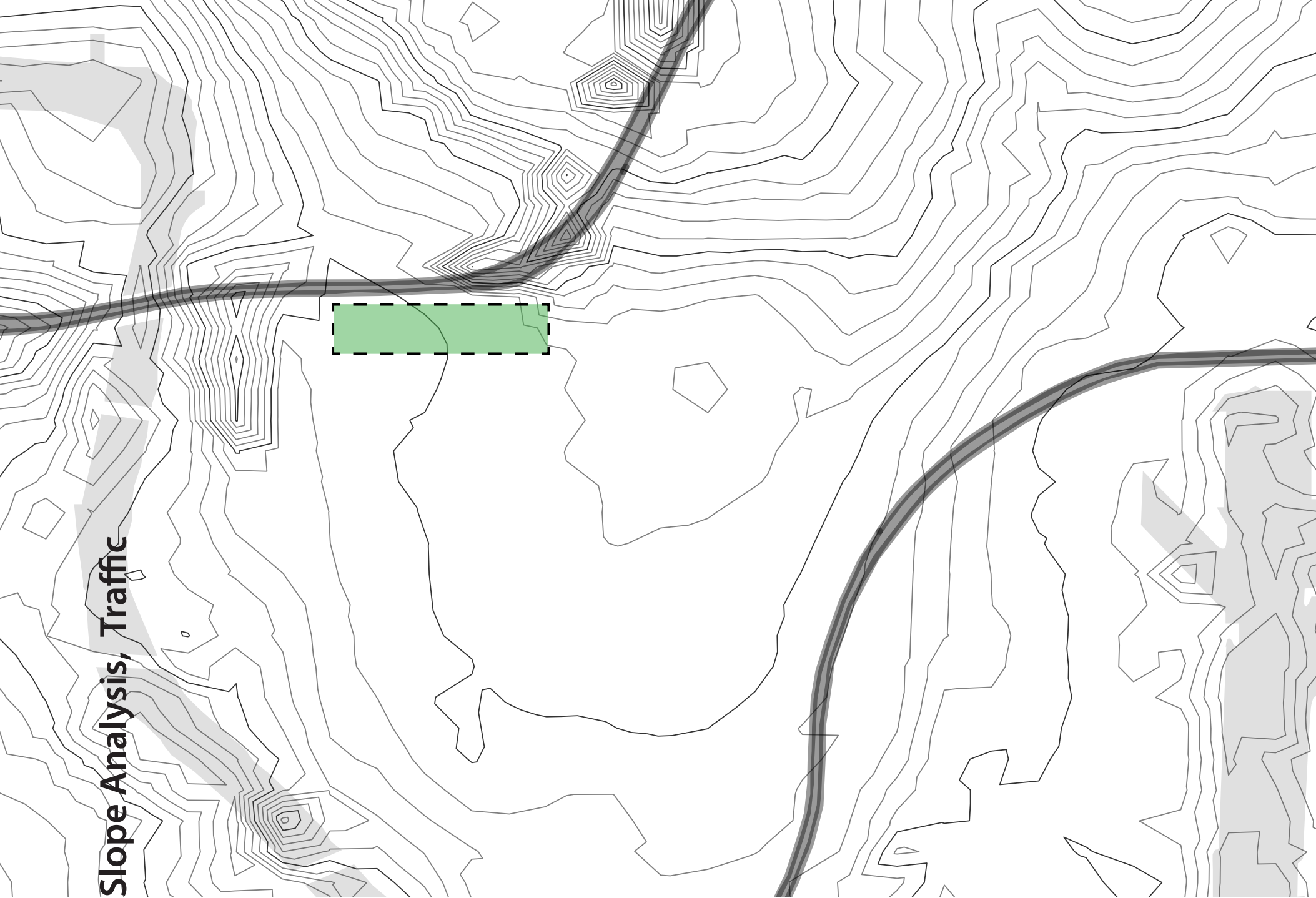
(Figure 33, Bark)



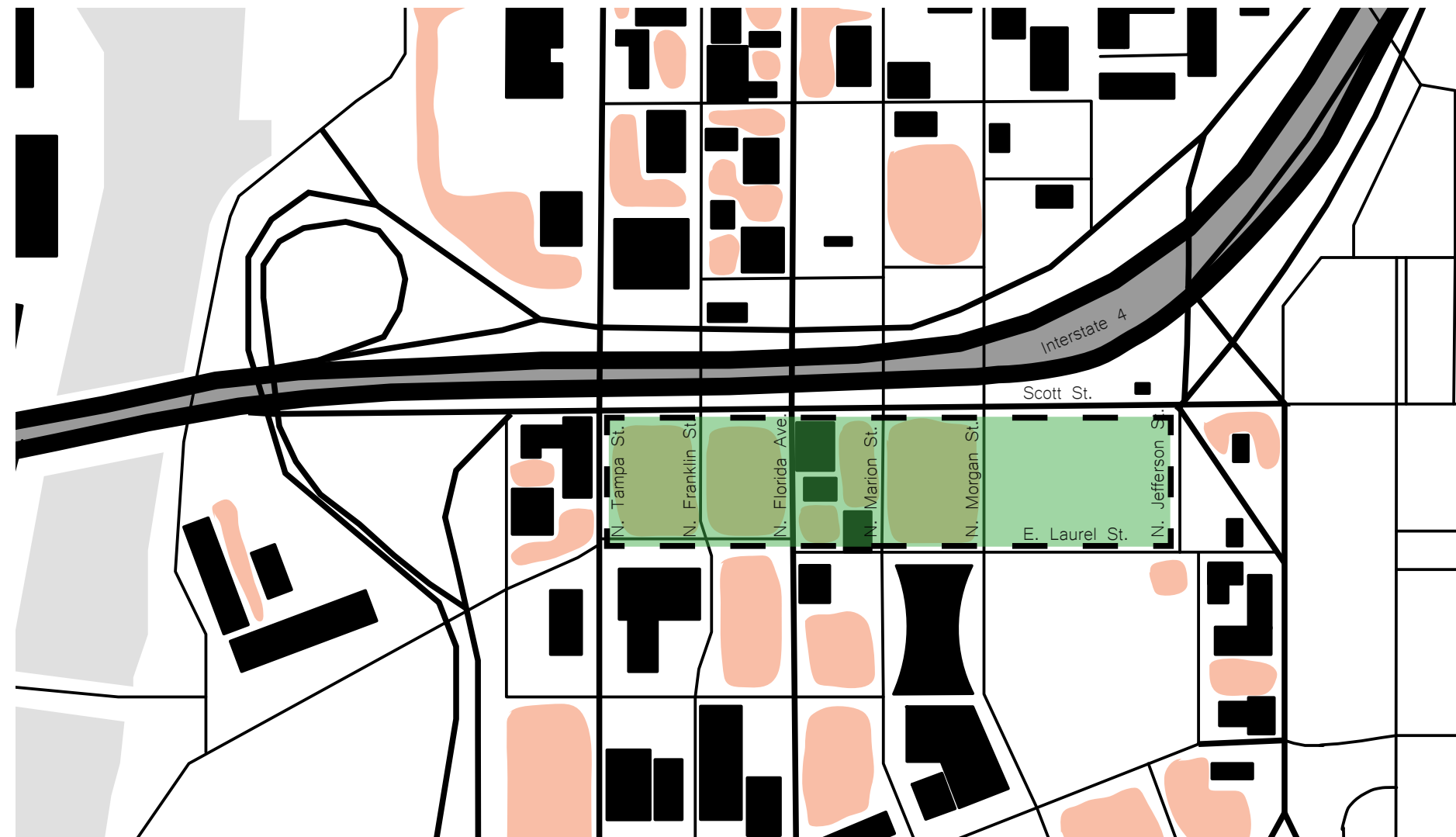
(Figure 34, Fern)



(Figure 35, Palms)



(Figure 36, Topography)



(Figure 37, Parking)

### Slope

The downtown peninsula of Tampa has a generally shallow slope. According to topography variations, my site lies between 15 and 18 feet above sea level with less than 2% slope throughout. Elevation changes will not prove to be a design constraint.

### Traffic

All automobile noise comes from the north portion of the site. The interstate has a contained sources of traffic, but along Scott Street, a steady stream of cars heads east as they take the off-ramp located to the west. Most other traffic comes in the form of city buses. Parking is also a major concern in Florida. Figure 37 illustrates the prominent spatial impacts of the endless vehicular parking in red.

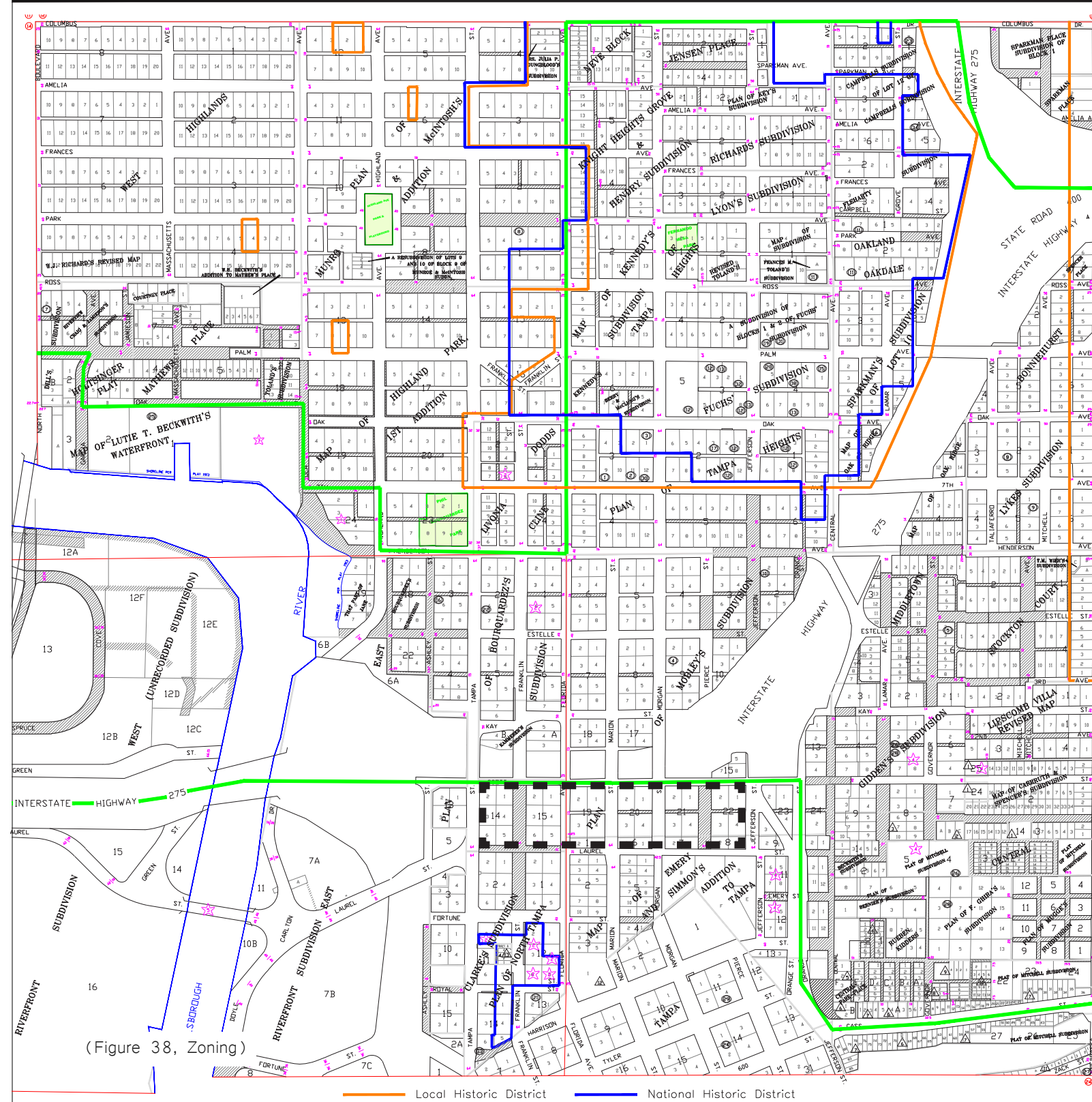
Regions along interstates are usually uninviting and have a very disjointed quality. This sector is no exception. No single building typology sets a rhythm for the context. As such, the city of Tampa has labeled this zone as a C2: Commercial Office Districts.

This district is generally intended for office buildings. 50% of the floor area may be for a limited number of auxiliary commercial uses that typically support the office use. Restaurants are permitted as a stand-alone use. Maximum lot coverage by structures and parking is 80%. The maximum Floor to Area Ratio is 1.0, and if residential is also provided 2.0. The maximum height is 60 feet abutting residential; there is no height limit if increased setbacks are provided as per formula.

The suggested site currently blankets 36 individual parcels of land. Apart from asphalt parking lots, there will only be three buildings that will have to be removed. One of them is currently vacant, while only the Chem-Tel Inc. establishment shows signs of activity.

Basically, a rail station will fit the zoning requirements precisely. The driving factor behind the selection of this site was access to the existing corridor. It was critical to select a location close an interstate because land acquisition can be the most expensive part to a ground transportation project (City of Tampa Land Development, 2011).

The great news is the state of Florida has been anticipating a high-speed rail development between Tampa and Orlando. The result is evident in the construction of Interstate 4 with its separated directions of travel, within which a rail track could be implemented.





(Figure 39, Base Map)

Oriented north, Figure 39 reveals the site context. Surrounding amenities include the new Marion Bus Transit Center to the southwest and the Oaklawn Cemetery to the southeast. The remaining builds are currently abandoned and surrounded by under-used parking lots. I selected this site because of its ideal adjacency to the interstate corridor and accessibility to the new bus station. The topography has a negligible slope.

Almost no shadow falls on my site apart from a few scattered trees and at sundown. The only structure that could cast a shadow is the elevated interstate, but its northern most location rarely grants opportunity for shadows. Also, air movement basically follows the traditional Tampa wind rose (noted in Figures 40 - 48) as there are no buildings to produce an air movement micro-climate. The interstate induces site noise.



(Figure 40, Site View A)



(Figure 41, Site View B)



(Figure 42, Site View C)





(Figure 43, Site View D)



(Figure 46, Site View G)



(Figure 44, Site View E)



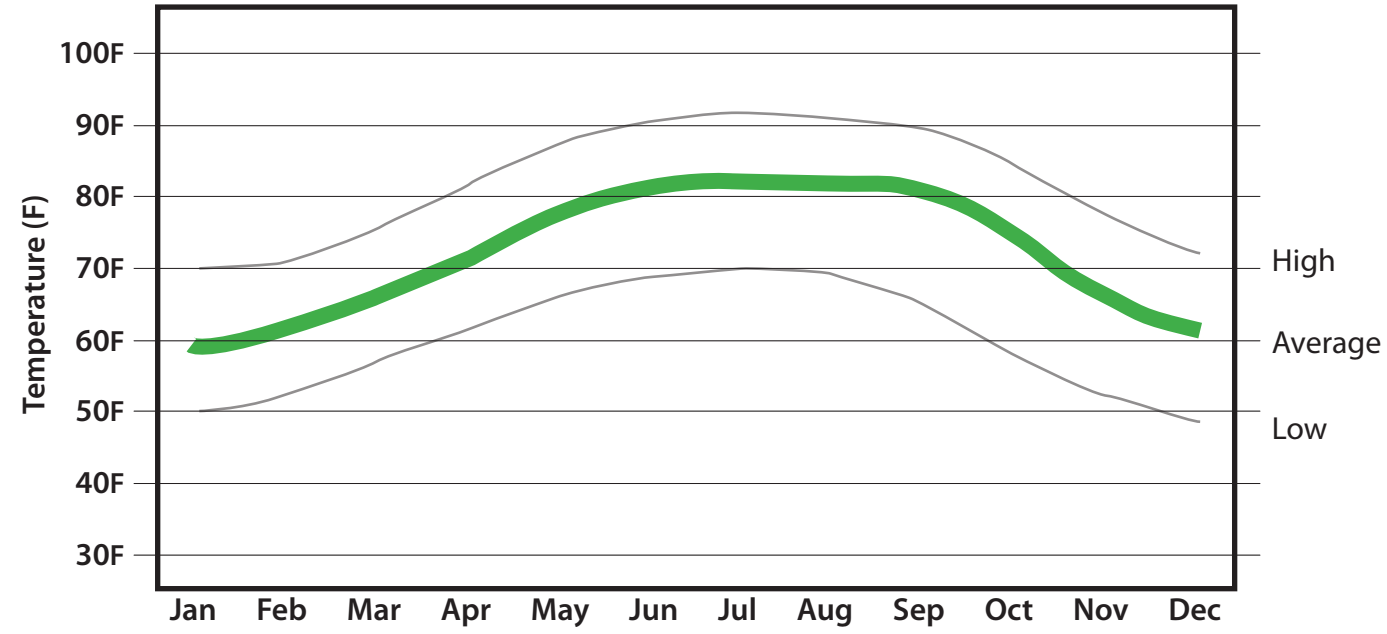
(Figure 47, Site View H)



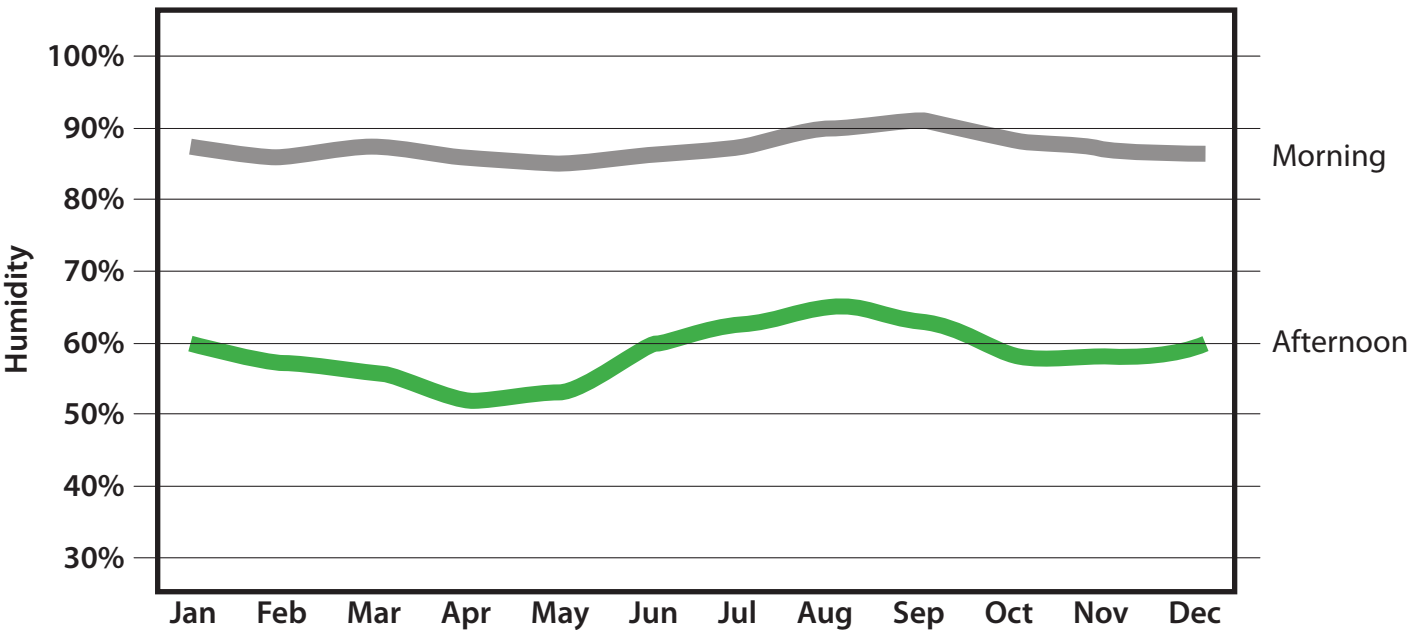
(Figure 45, Site View F)



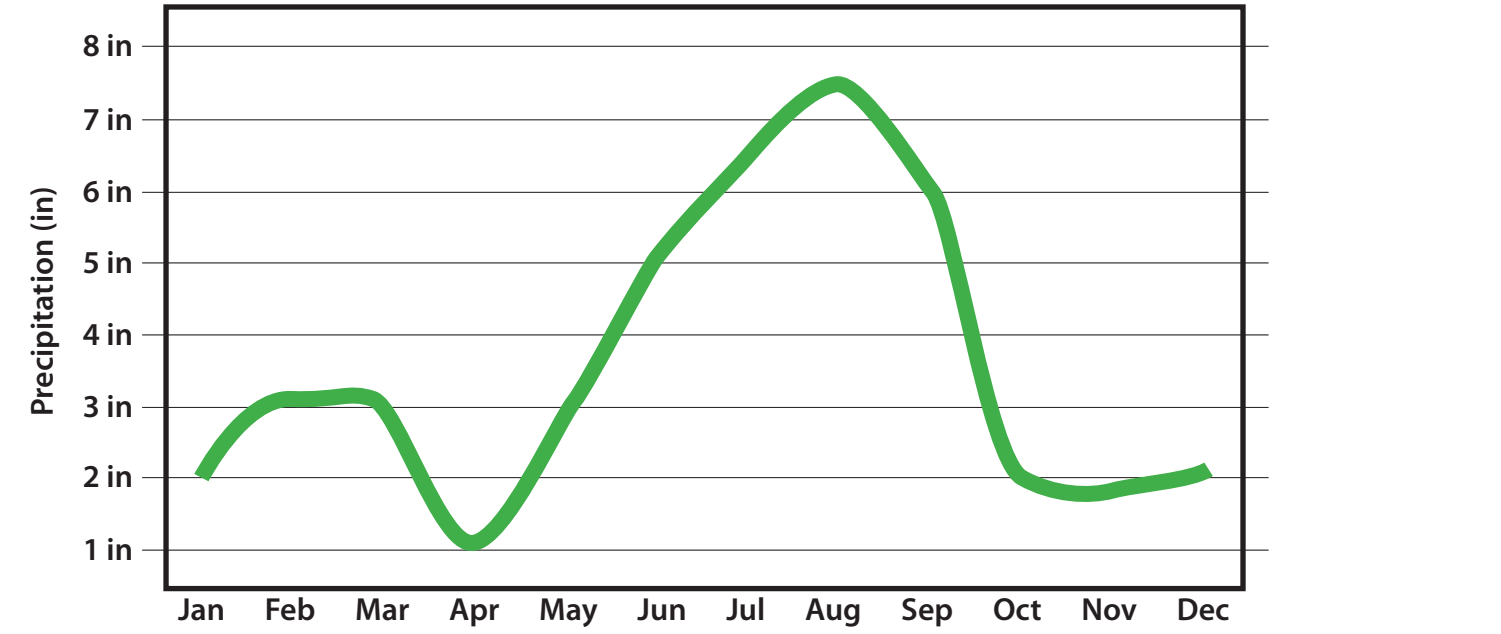
(Figure 48, Site View I)



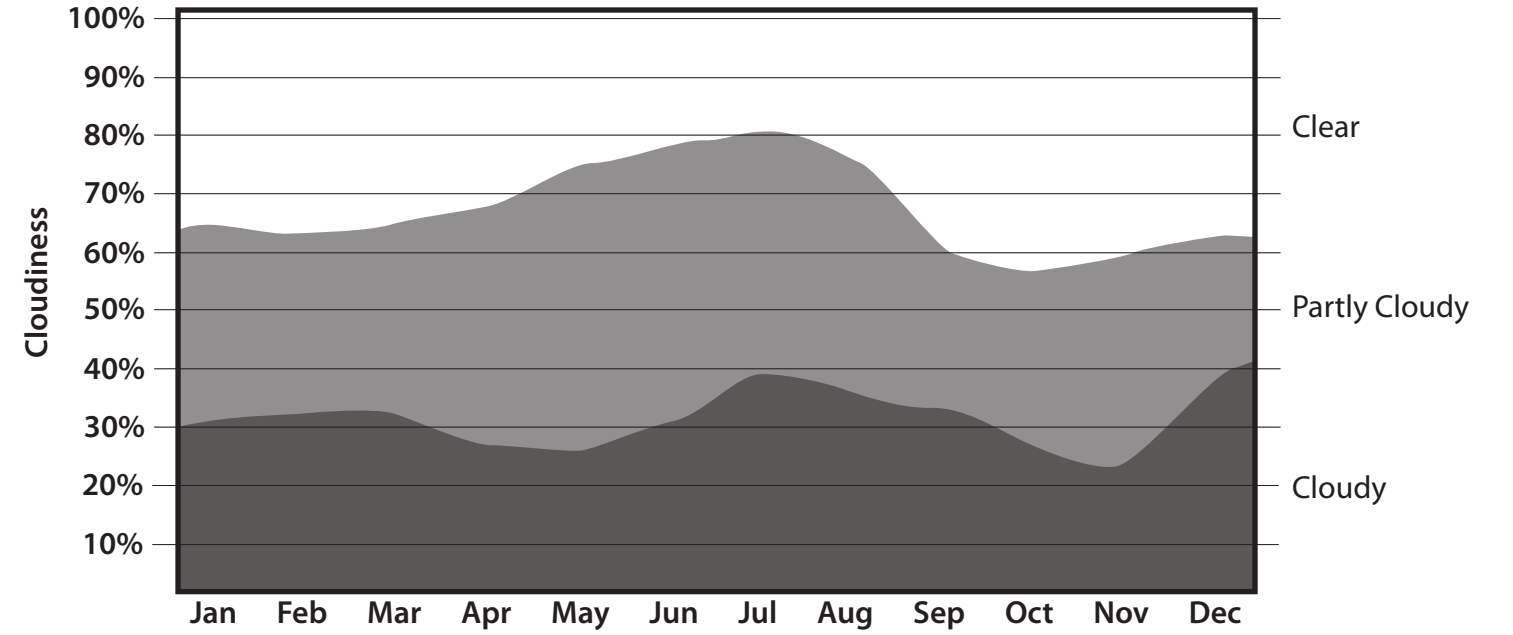
(Figure 49, Temperature)



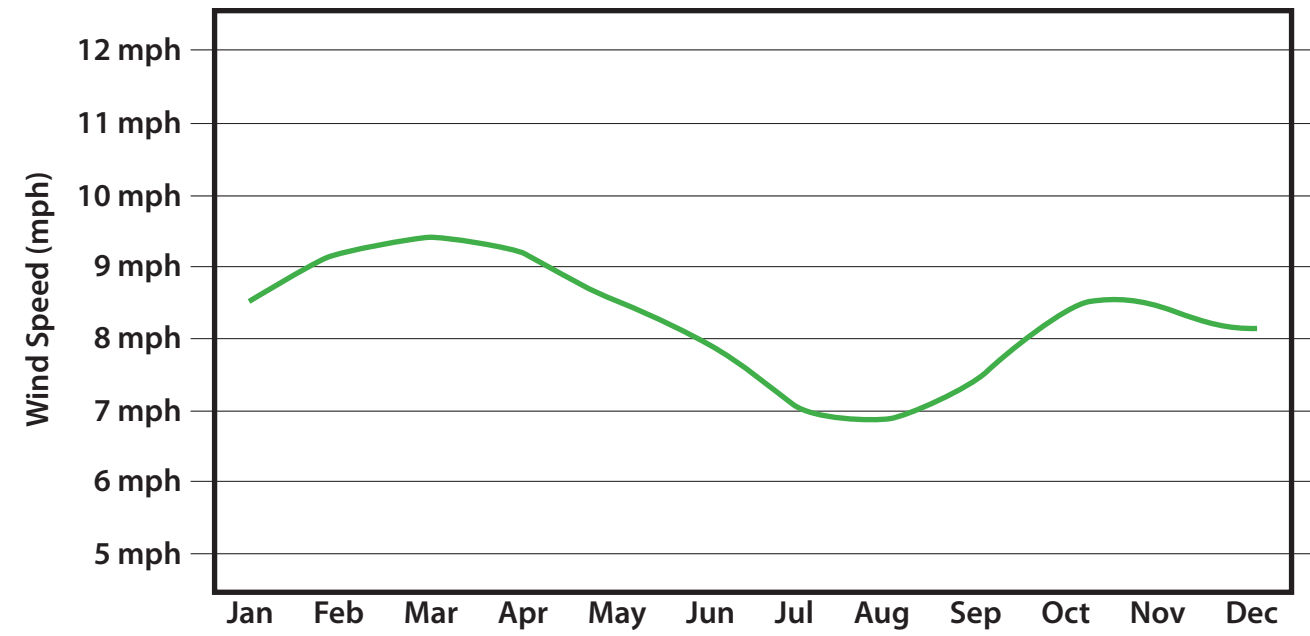
(Figure 50, Humidity)



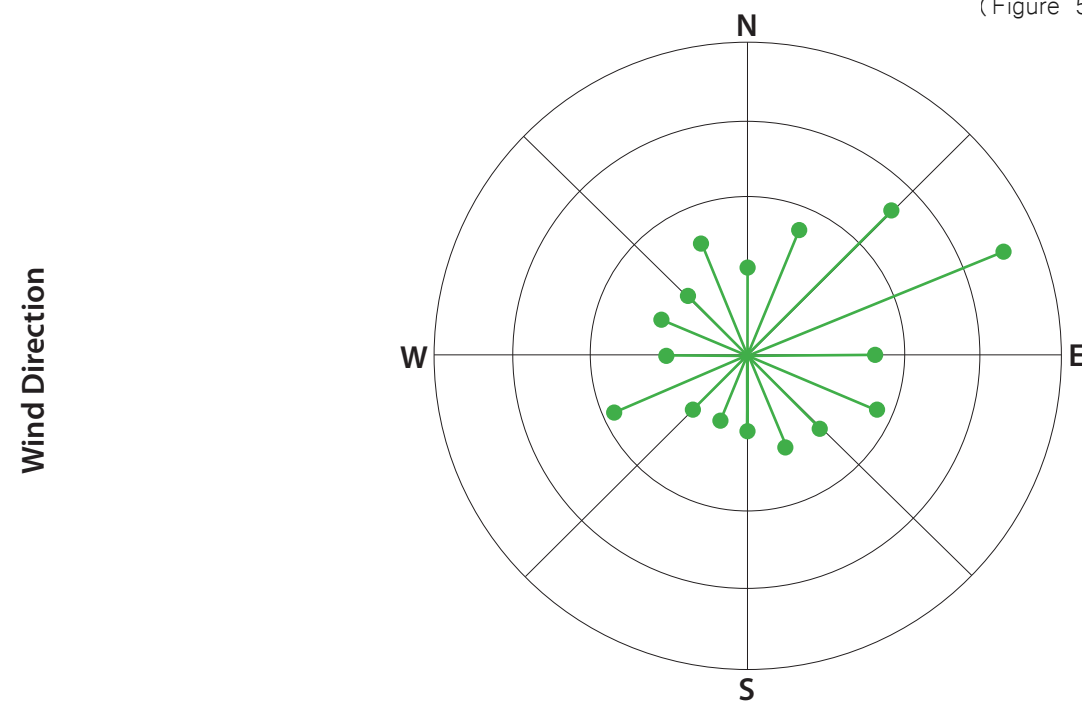
(Figure 51, Precipitation)



(Figure 52, Cloudiness)

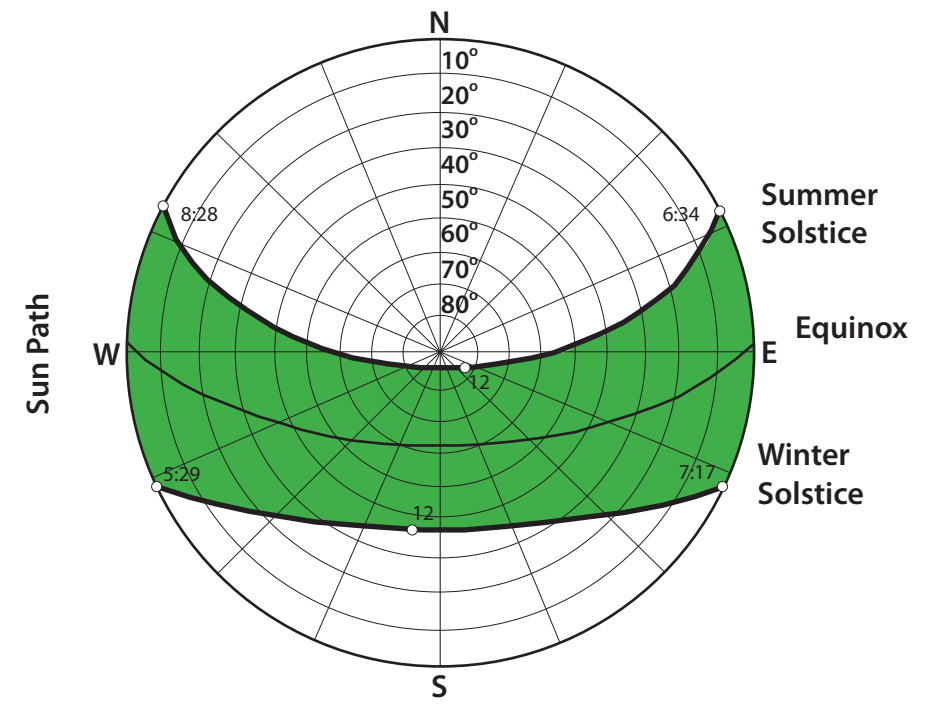


(Figure 53, Wind Speed)



(Figure 54, Wind Direction)

(NOAA, 2011)



(Figure 55, Sun Path)

## PROGRAMMATIC REQUIREMENTS

Approximately 200,000 Sq. Ft.

Main Concourse - 30,000 Sq. Ft.  
entry, concourse

Lobby - 5,000 Sq. Ft.  
lobby, waiting area, tech lounge  
\*primary area for social interaction

Information - 3,000 Sq. Ft.  
general information, tourism information, directions,  
translation services  
\*Introductory guides to Tampa and Florida available  
along with linguistic services

Ticket Office - 3,000 Sq. Ft.  
ticket sales

Currency Exchange/ATM - 1,000 Sq. Ft.

Art Gallery - 3,000 Sq. Ft.  
\*an art gallery will give local artists an opportunity for  
waiting passengers to browse their work

Chapel - 1,000 Sq. Ft.  
\*a quiet place for patrons to reflect and pray

Restaurants - 10,000 Sq. Ft.  
restaurants, coffee shop  
\*will provide a space for customers to interact, people  
watch or take food to go

Retail - 10,000 Sq. Ft.  
electronic shop, florist, newspaper stand, bookstore,  
clothing/rain wear shop, bicycle repair shop  
\*picking up a gift or grabbing a needed power cord

Business Offices - 5,000 Sq. Ft.  
facilities management, operations, and billing  
\*potentially a central office for the transportation de-  
partment of Hillsborough County

Storage/Mailroom - 2,000 Sq. Ft.  
facility storage, maintenance, mail, lockers

Custodial - 2,000 Sq. Ft.

Police Department - 5,000 Sq. Ft.  
\*the local PD will occupy a space in this bustling  
facility to ensure order and safety

Rail Platforms - 100,000 Sq. Ft.  
light rail and a high-speed rail lines  
\*enhanced with digital screens and real time train info

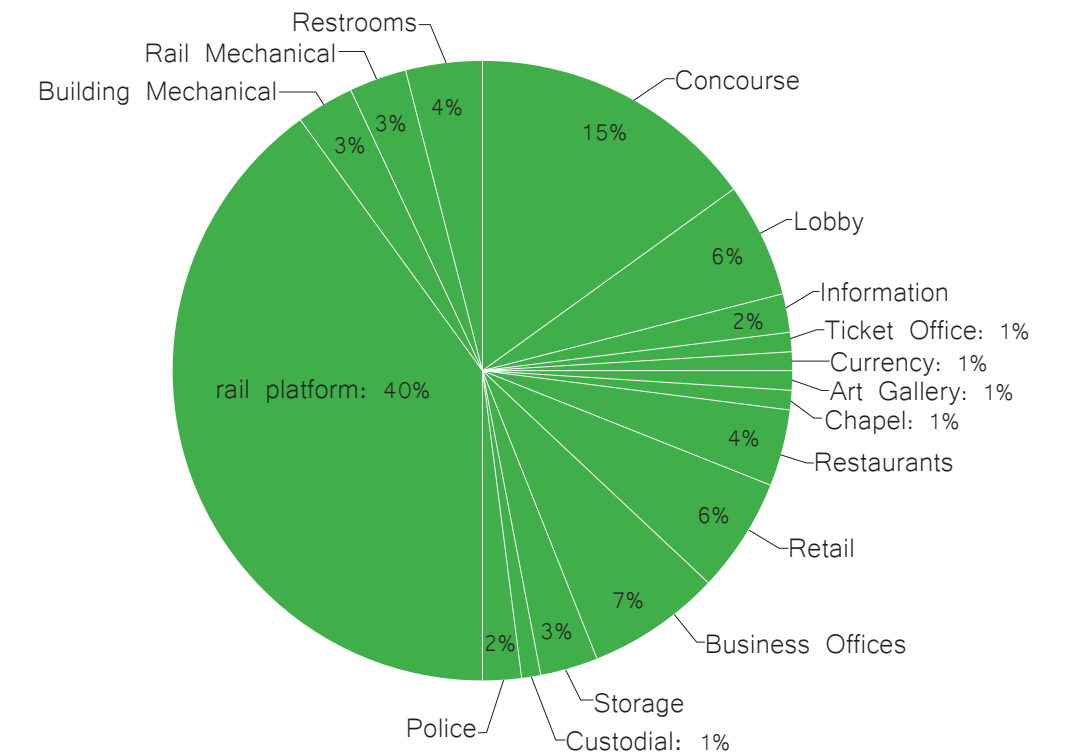
Building Mechanical - 10,000 Sq. Ft.  
HVAC, plumbing, electrical, utilities, storage

Rail Mechanical - 5,000 Sq. Ft.  
electrical power, maintenance equipment

Restrooms - 5,000 Sq. Ft.  
multiple locations, single sex bathrooms, exterior rest-  
rooms and private employee restrooms

Bicycle Housing - undefined  
\*exterior bicycle housing will encourage a healthy  
method for arriving and departing from the station

Green Spaces - undefined  
\*green spaces both indoors and outdoors will be es-  
sential to establishing a healthy connection to nature



(Figure 56, Programming)

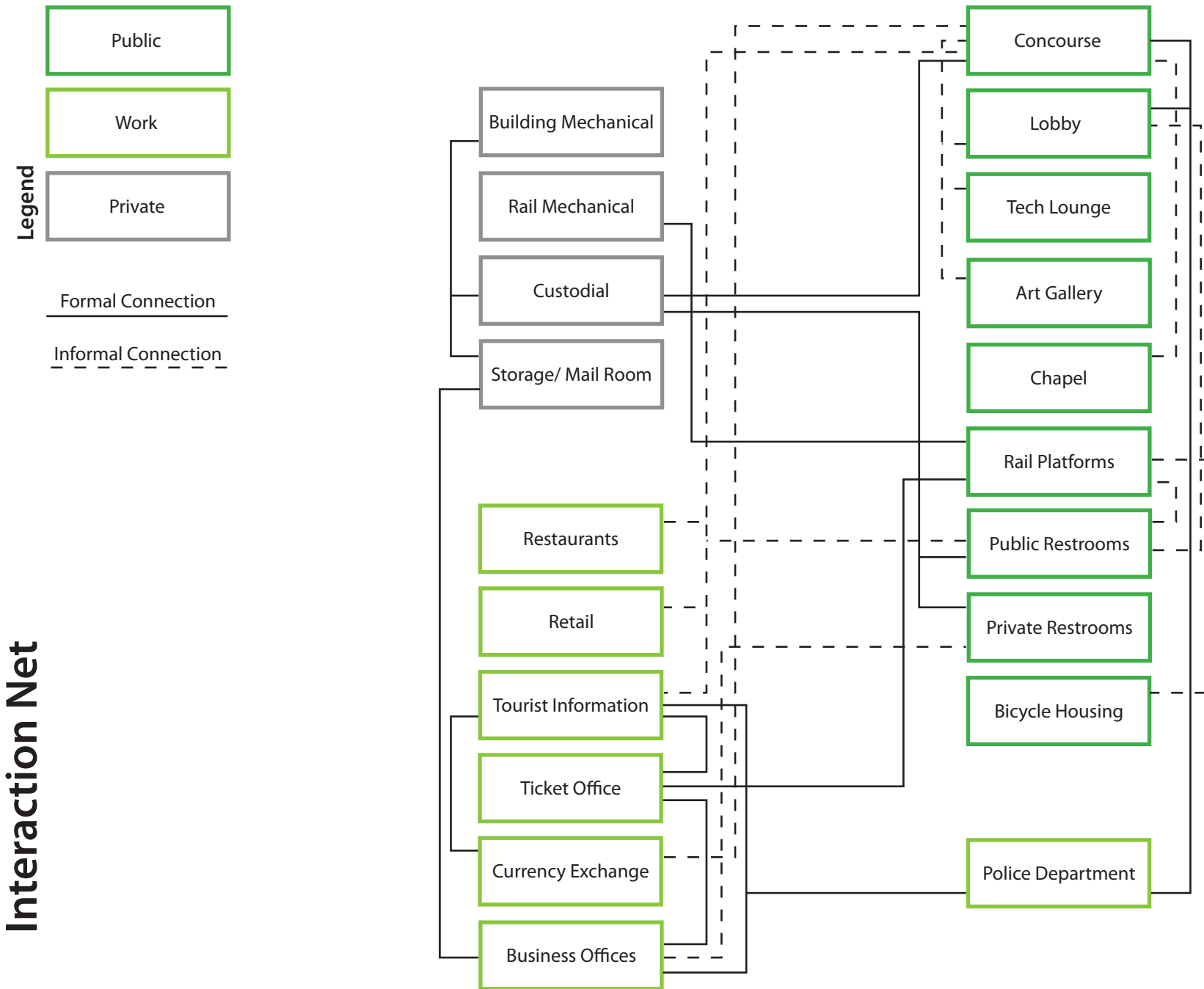
# Interaction Matrix

- Essential
- Desirable
- Not Needed

	Concourse	Lobby/ Waiting Area	Tech Lounge	Chapel	Art Gallery	Restaurants	Retail	Currency Exchange	Tourist Information	Ticket Office	Business Offices	Storage/ Mail Room	Police Department	Custodial	Building Mechanical	Rail Mechanical	Rail Platforms	Bicycle Housing	Public Restrooms	Private Restrooms	
Concourse		●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
Lobby/ Waiting Area	●		●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
Tech Lounge	●	●		●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
Chapel	●	●	●		●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
Art Gallery	●	●	●	●		●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
Restaurants	●	●	●	●	●		●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
Retail	●	●	●	●	●	●		●	●	●	●	●	●	●	●	●	●	●	●	●	●
Currency Exchange	●	●	●	●	●	●	●		●	●	●	●	●	●	●	●	●	●	●	●	●
Tourist Information	●	●	●	●	●	●	●	●		●	●	●	●	●	●	●	●	●	●	●	●
Ticket Office	●	●	●	●	●	●	●	●	●		●	●	●	●	●	●	●	●	●	●	●
Business Offices	●	●	●	●	●	●	●	●	●	●		●	●	●	●	●	●	●	●	●	●
Storage/ Mail Room	●	●	●	●	●	●	●	●	●	●	●		●	●	●	●	●	●	●	●	●
Police Department	●	●	●	●	●	●	●	●	●	●	●	●		●	●	●	●	●	●	●	●
Custodial	●	●	●	●	●	●	●	●	●	●	●	●	●		●	●	●	●	●	●	●
Building Mechanical	●	●	●	●	●	●	●	●	●	●	●	●	●	●		●	●	●	●	●	●
Rail Mechanical	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●		●	●	●	●	●
Rail Platforms	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●		●	●	●	●
Bicycle Housing	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●		●	●	●
Public Restrooms	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●		●	●
Private Restrooms	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●		●

(Figure 57, Interaction Matrix)

# Interaction Net



(Figure 58, Interaction Net)

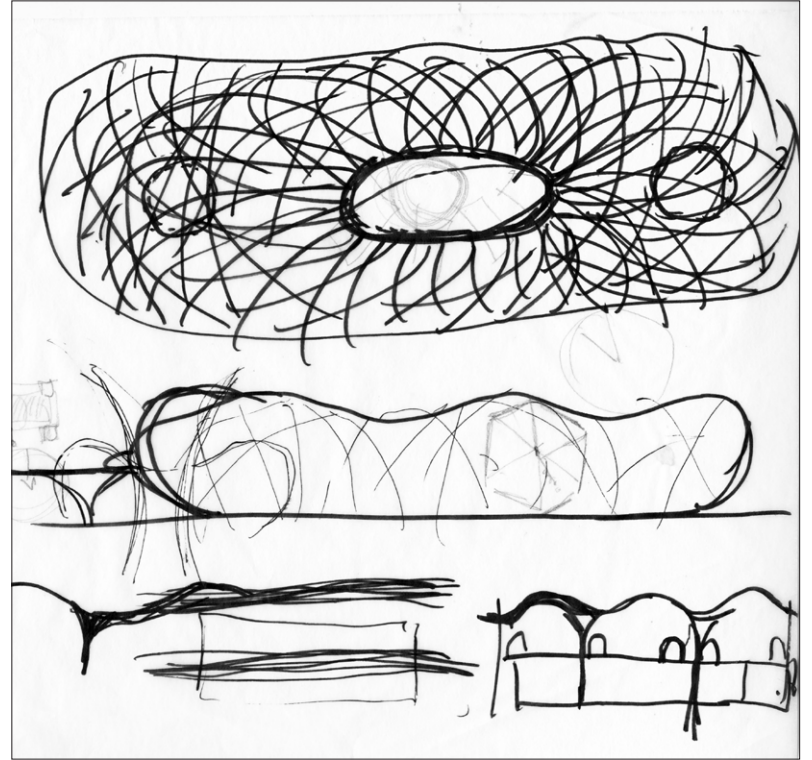
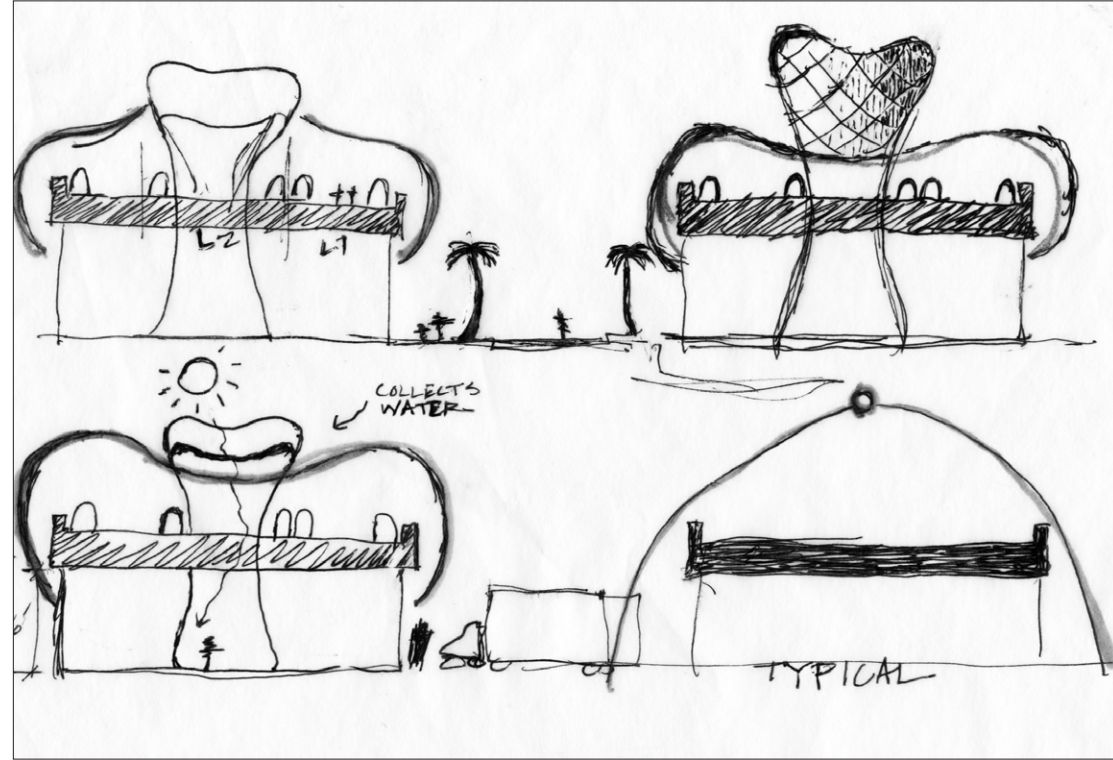
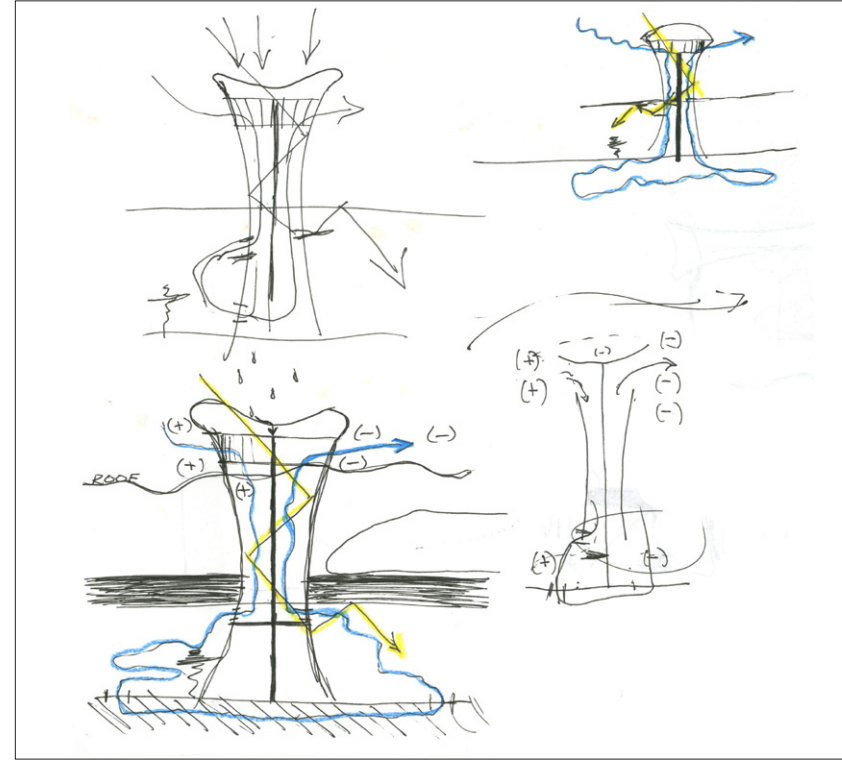
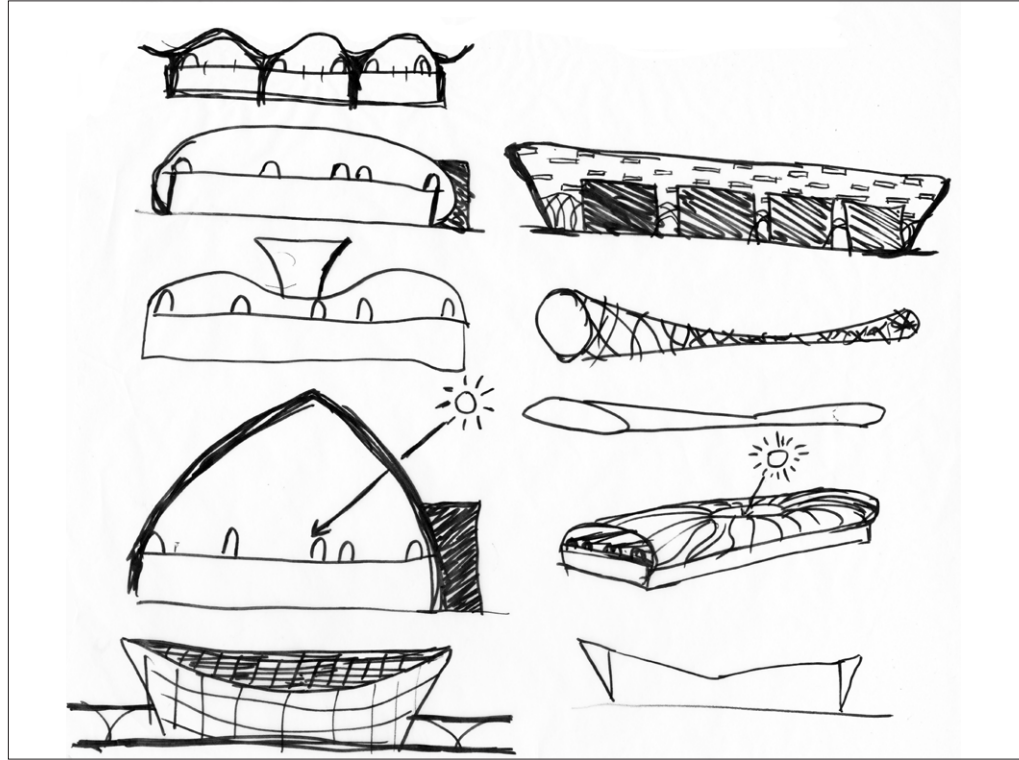
LEED 2009 for New Construction and Major Renovations			Project Name				
Project Checklist			Date				
<b>Sustainable Sites</b>		<b>Possible Points: 26</b>	<b>Materials and Resources, Continued</b>				
<input type="checkbox"/>	<input type="checkbox"/>	Prereq 1 Construction Activity Pollution Prevention	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Credit 4 Recycled Content	1 to 2
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Credit 1 Site Selection	1	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Credit 5 Regional Materials	1 to 2
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Credit 2 Development Density and Community Connectivity	5	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Credit 6 Rapidly Renewable Materials	1
<input type="checkbox"/>	<input checked="" type="checkbox"/>	Credit 3 Brownfield Redevelopment	1	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Credit 7 Certified Wood	1
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Credit 4.1 Alternative Transportation—Public Transportation Access	6	<b>Indoor Environmental Quality</b>			
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Credit 4.2 Alternative Transportation—Bicycle Storage and Changing Rooms	1	<b>Possible Points: 15</b>			
<input type="checkbox"/>	<input checked="" type="checkbox"/>	Credit 4.3 Alternative Transportation—Low-Emitting and Fuel-Efficient Vehicles	3	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Prereq 1 Minimum Indoor Air Quality Performance	
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Credit 4.4 Alternative Transportation—Parking Capacity	2	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Prereq 2 Environmental Tobacco Smoke (ETS) Control	
<input type="checkbox"/>	<input checked="" type="checkbox"/>	Credit 5.1 Site Development—Protect or Restore Habitat	1	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Credit 1 Outdoor Air Delivery Monitoring	1
<input type="checkbox"/>	<input checked="" type="checkbox"/>	Credit 5.2 Site Development—Maximize Open Space	1	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Credit 2 Increased Ventilation	1
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Credit 6.1 Stormwater Design—Quantity Control	1	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Credit 3.1 Construction IAQ Management Plan—During Construction	1
<input type="checkbox"/>	<input checked="" type="checkbox"/>	Credit 6.2 Stormwater Design—Quality Control	1	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Credit 3.2 Construction IAQ Management Plan—Before Occupancy	1
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Credit 7.1 Heat Island Effect—Non-roof	1	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Credit 4.1 Low-Emitting Materials—Adhesives and Sealants	1
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Credit 7.2 Heat Island Effect—Roof	1	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Credit 4.2 Low-Emitting Materials—Paints and Coatings	1
<input type="checkbox"/>	<input checked="" type="checkbox"/>	Credit 8 Light Pollution Reduction	1	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Credit 4.3 Low-Emitting Materials—Flooring Systems	1
<b>Water Efficiency</b>			<b>Possible Points: 10</b>	<b>Innovation and Design Process</b>		<b>Possible Points: 6</b>	
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Prereq 1 Water Use Reduction—20% Reduction		<input type="checkbox"/>	<input checked="" type="checkbox"/>	Credit 1.1 Innovation in Design: Specific Title	1
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Credit 1 Water Efficient Landscaping	2 to 4	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Credit 1.2 Innovation in Design: Specific Title	1
<input type="checkbox"/>	<input checked="" type="checkbox"/>	Credit 2 Innovative Wastewater Technologies	2	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Credit 1.3 Innovation in Design: Specific Title	1
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Credit 3 Water Use Reduction	2 to 4	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Credit 1.4 Innovation in Design: Specific Title	1
<b>Energy and Atmosphere</b>			<b>Possible Points: 35</b>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Credit 1.5 Innovation in Design: Specific Title	1
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Prereq 1 Fundamental Commissioning of Building Energy Systems		<input checked="" type="checkbox"/>	<input type="checkbox"/>	Credit 2 LEED Accredited Professional	1
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Prereq 2 Minimum Energy Performance		<b>Regional Priority Credits</b>			
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Prereq 3 Fundamental Refrigerant Management		<b>Possible Points: 4</b>			
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Credit 1 Optimize Energy Performance	1 to 19	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Credit 1.1 Regional Priority: Specific Credit	1
<input type="checkbox"/>	<input checked="" type="checkbox"/>	Credit 2 On-Site Renewable Energy	1 to 7	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Credit 1.2 Regional Priority: Specific Credit	1
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Credit 3 Enhanced Commissioning	2	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Credit 1.3 Regional Priority: Specific Credit	1
<input type="checkbox"/>	<input checked="" type="checkbox"/>	Credit 4 Enhanced Refrigerant Management	2	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Credit 1.4 Regional Priority: Specific Credit	1
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Credit 5 Measurement and Verification	3	<b>Total</b>			
<input type="checkbox"/>	<input checked="" type="checkbox"/>	Credit 6 Green Power	2	<b>Possible Points: 110</b>			
<b>Materials and Resources</b>			<b>Possible Points: 14</b>	Certified 40 to 49 points Silver 50 to 59 points Gold 60 to 79 points Platinum 80 to 110			
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Prereq 1 Storage and Collection of Recyclables					
<input type="checkbox"/>	<input checked="" type="checkbox"/>	Credit 1.1 Building Reuse—Maintain Existing Walls, Floors, and Roof	1 to 3				
<input type="checkbox"/>	<input checked="" type="checkbox"/>	Credit 1.2 Building Reuse—Maintain 50% of Interior Non-Structural Elements	1				
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Credit 2 Construction Waste Management	1 to 2				
<input type="checkbox"/>	<input checked="" type="checkbox"/>	Credit 3 Materials Reuse	1 to 2				

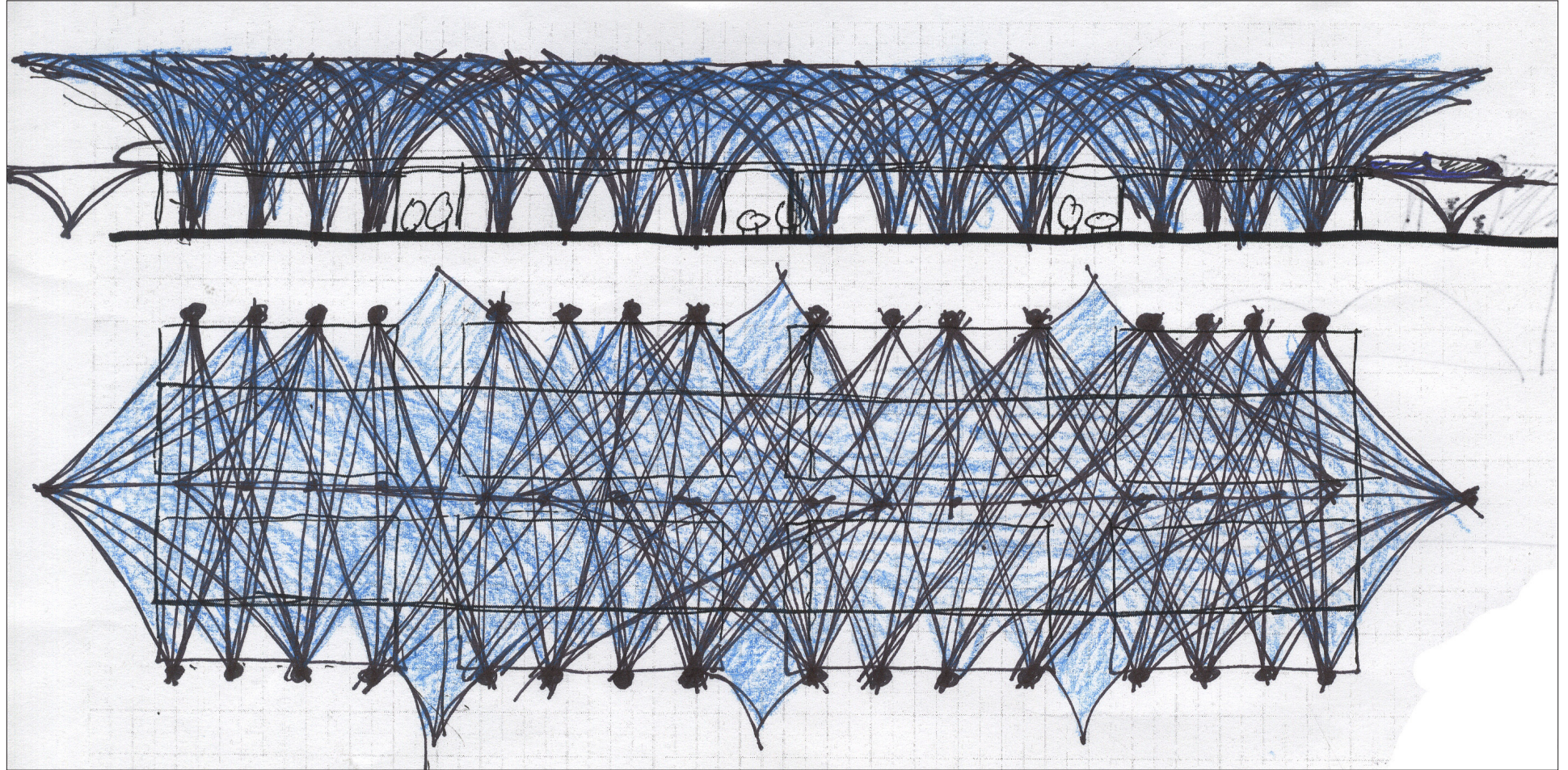
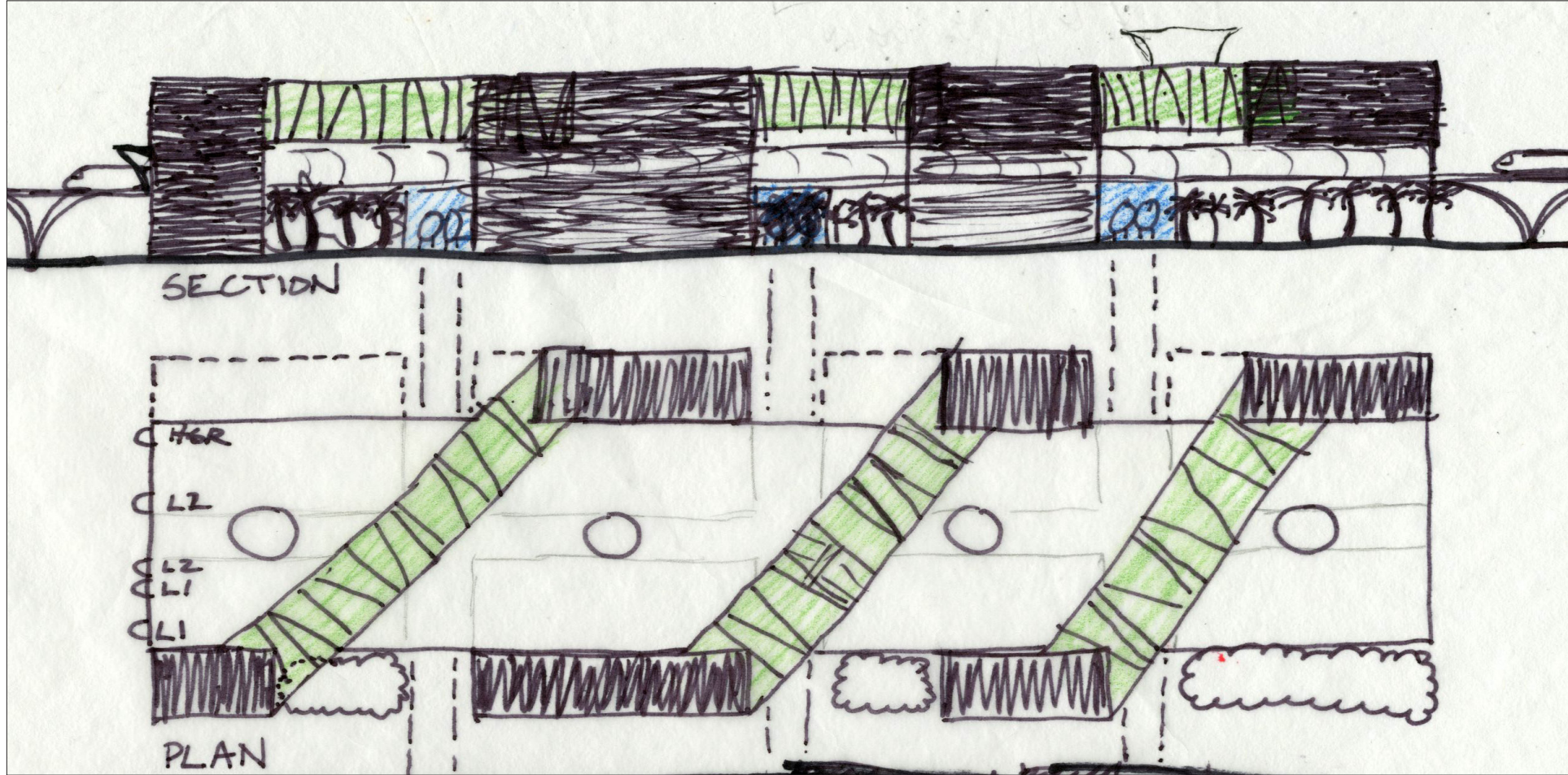
# DESIGN PROCESS

106 Anticipated Certification Level - LEED SILVER

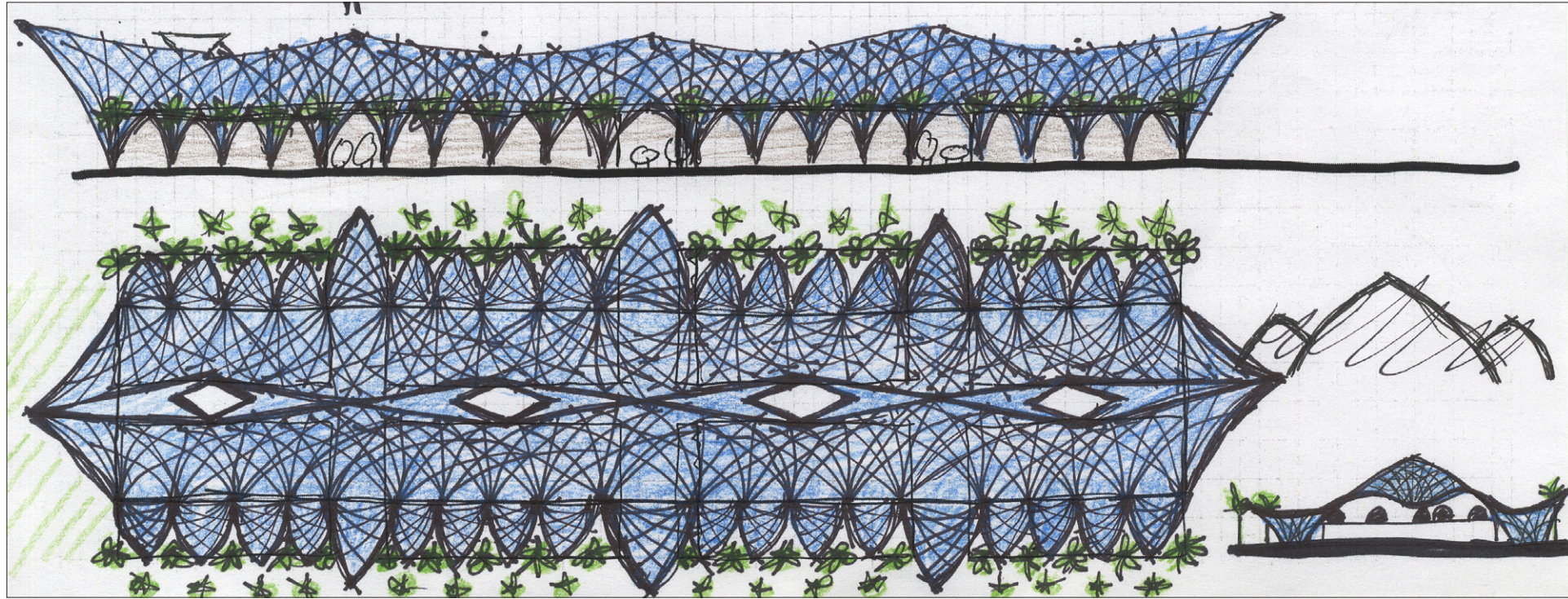
(Figure 59, LEED Checklist)

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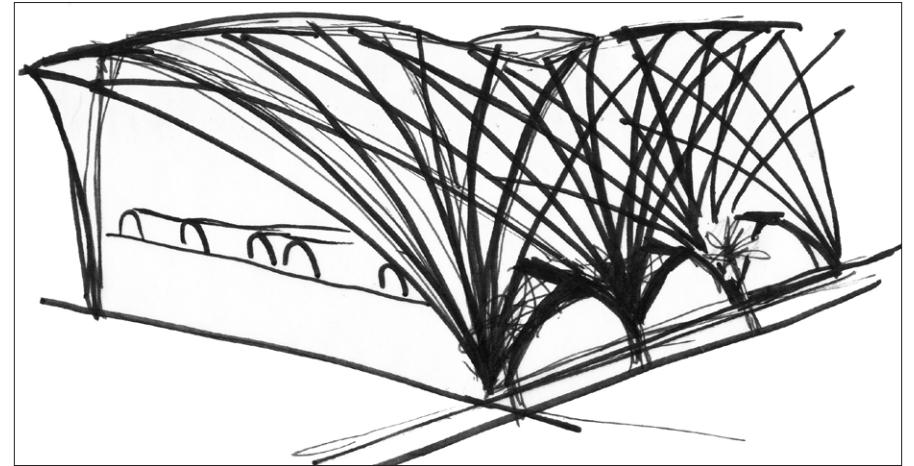
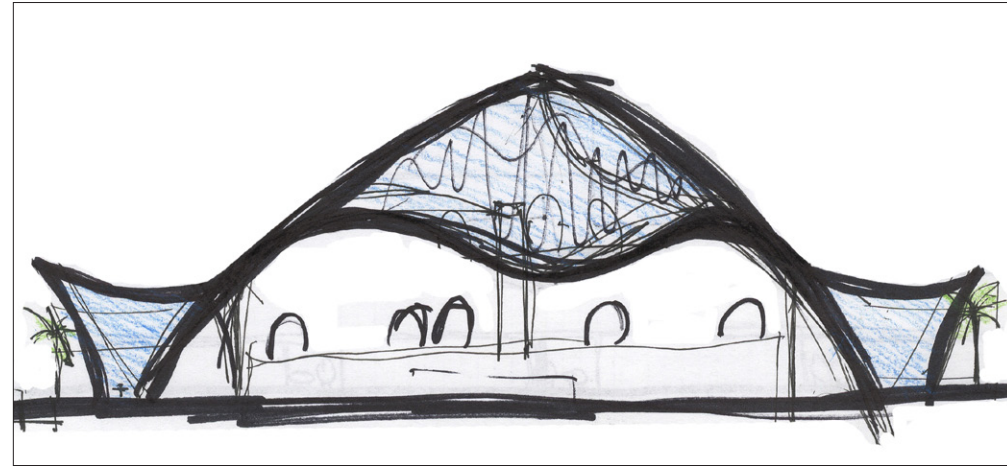




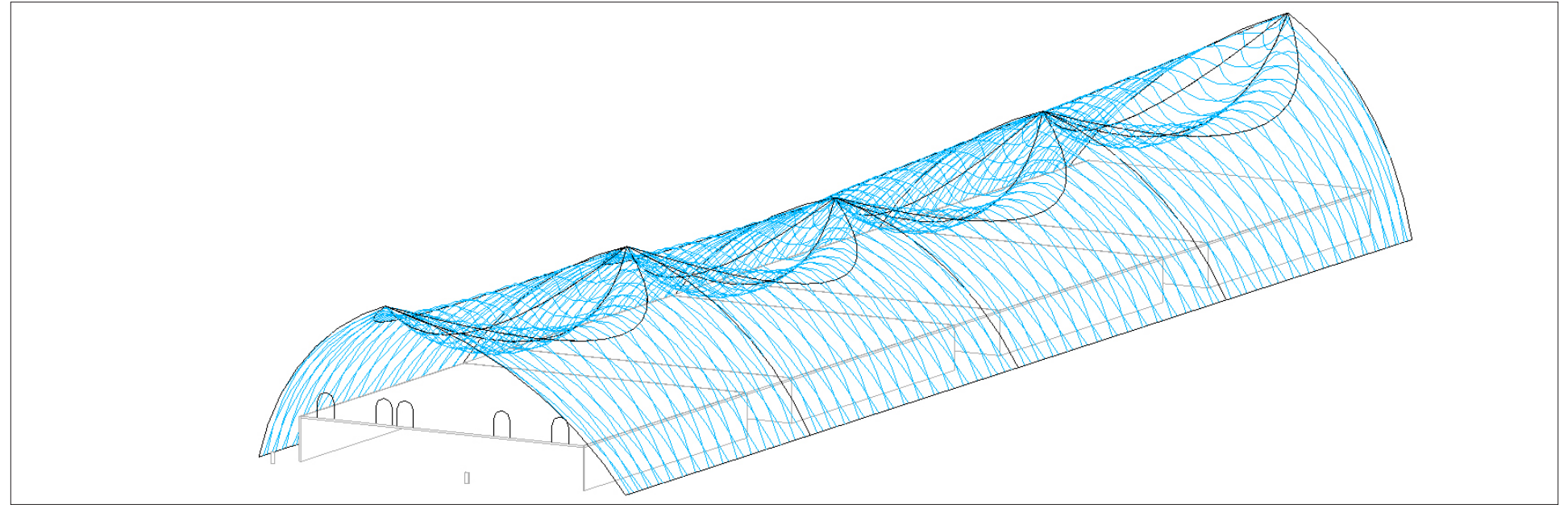
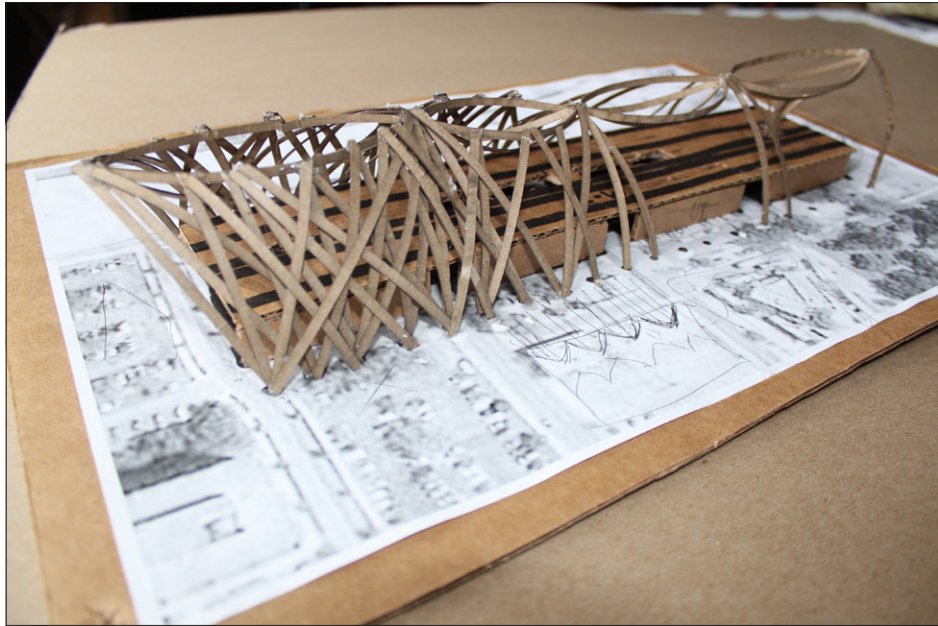


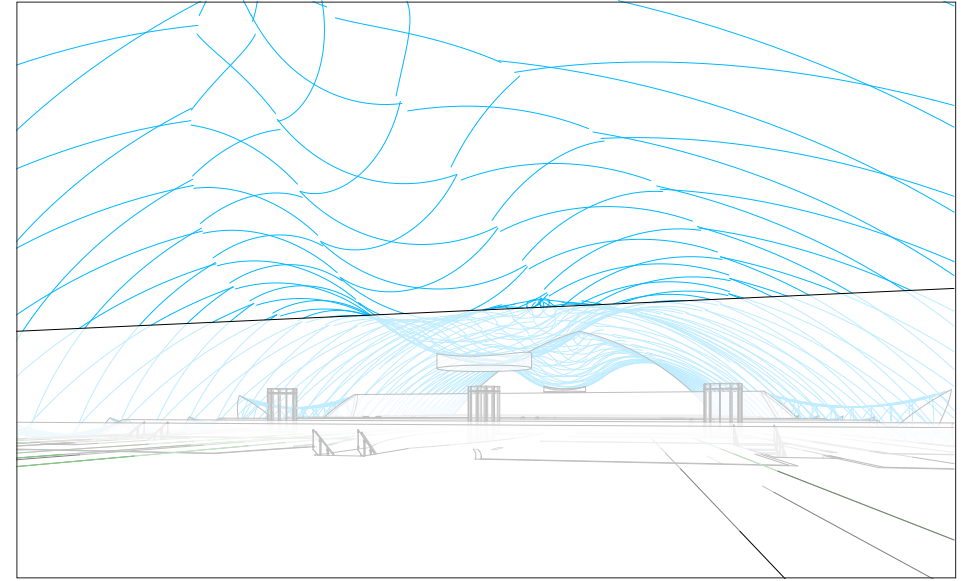
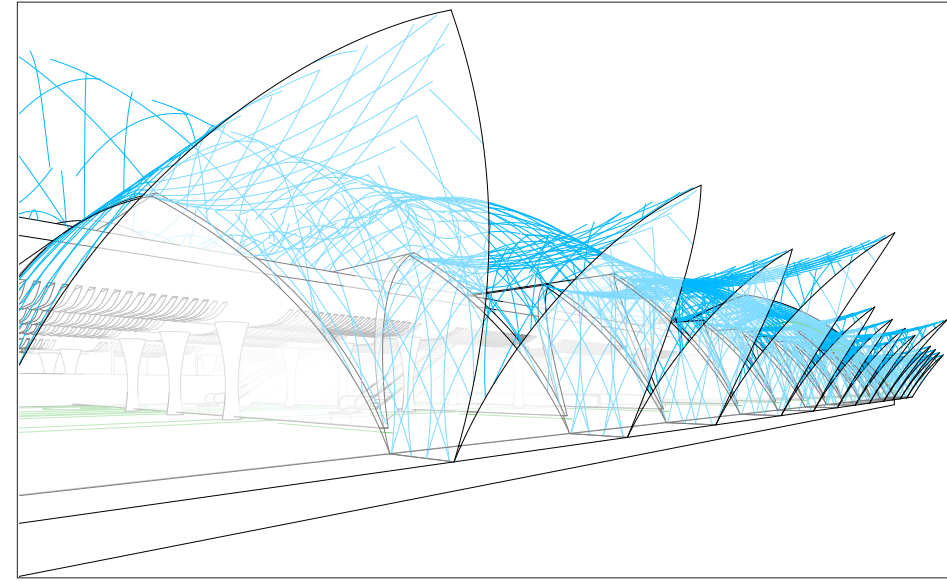
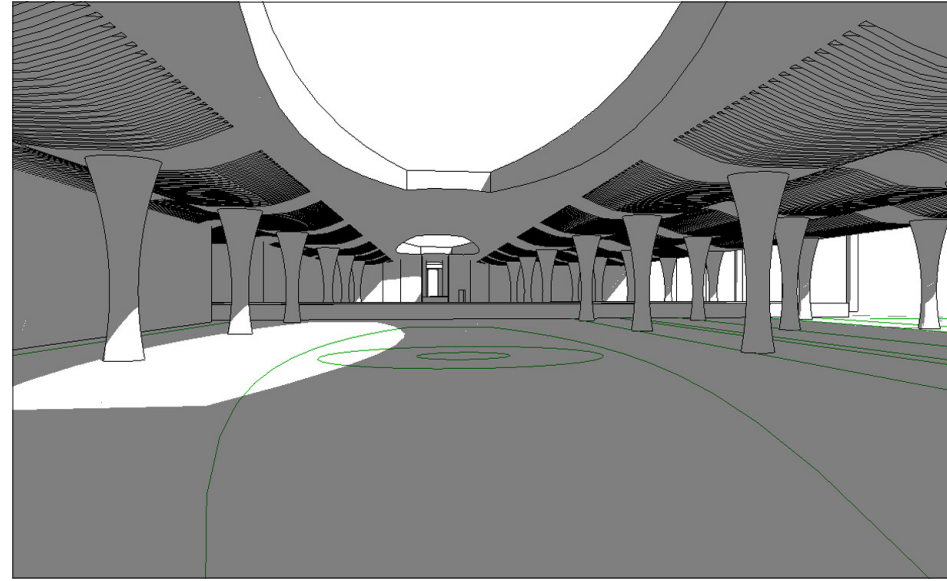
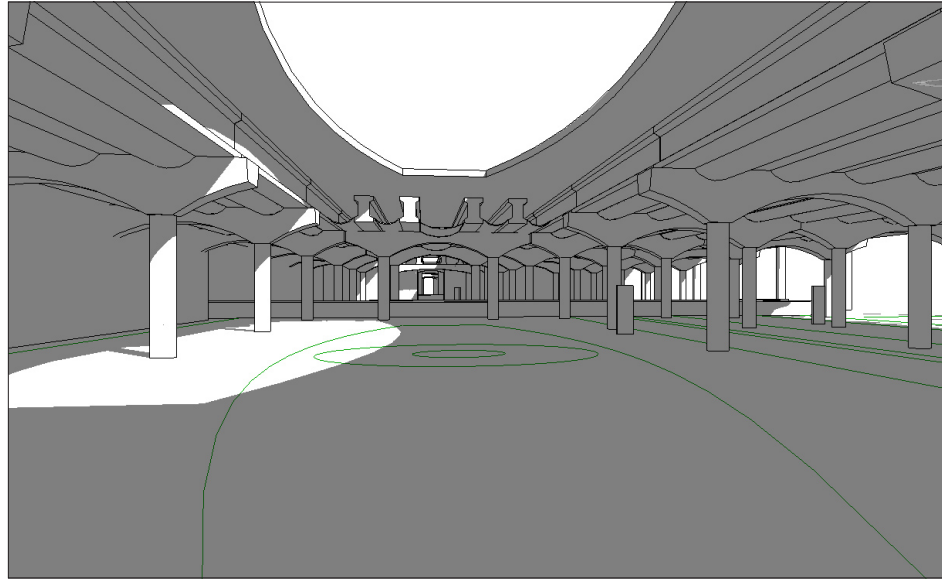


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# FINAL DESIGN



How Can Design Provoke  
**SOCIAL RESPONSIBILITY?**

Community Interaction – Environmental Concern – Economic Foresight

**Theoretical Premise**

The current method of physically linking most destinations in the United States leaves something to be desired both socially and environmentally. Designers are poised to advocate and initiate innovative ideas, challenging the orthodox mind set in regards to transportation, and thus begging to mend a widening gap.

**Project Justification**

Transportation via personal automobile has been one of the most socially destructive and environmentally taxing activities to have ever been implemented in the United States. Therefore, mass transportation should become the primary method of locomotion within the Tampa area for the betterment of its society. Tampa is currently one of the top 25 largest U.S. metropolitan areas, but remains the only one lacking any form of a pedestrian rail system.

**Proposal**

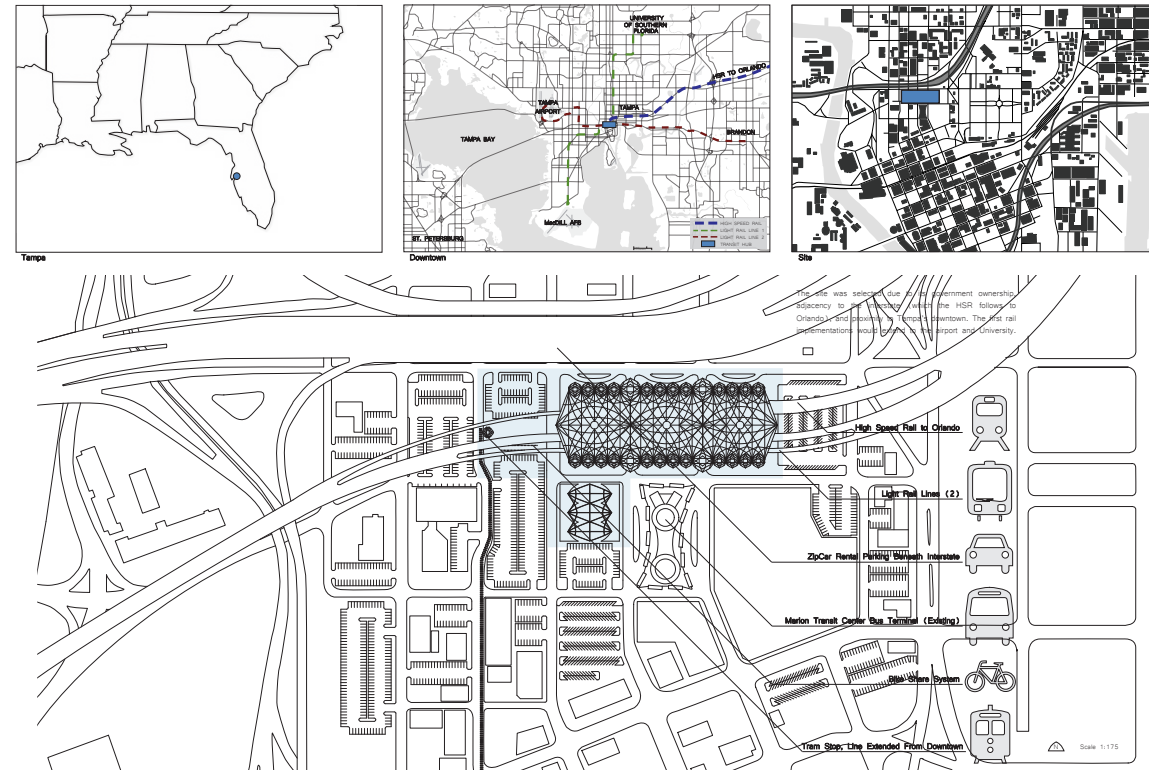
A rail hub supporting both high speed and light rail lines would connect the Tampa metro area (a community of over 4 million people) with the busy city of Orlando. This union would entice inland tourists to visit the city and beaches of the Gulf. Instrumental to the success of a high speed rail (HSR) line would be the complimentary light rail system throughout Tampa. This would primarily allow local residence to travel freely without automobile constraint, eventually leading to one car households. Along with supporting the HSR traffic, a local light rail system would place revitalizing demand on the land along its routes, reducing urban sprawl.

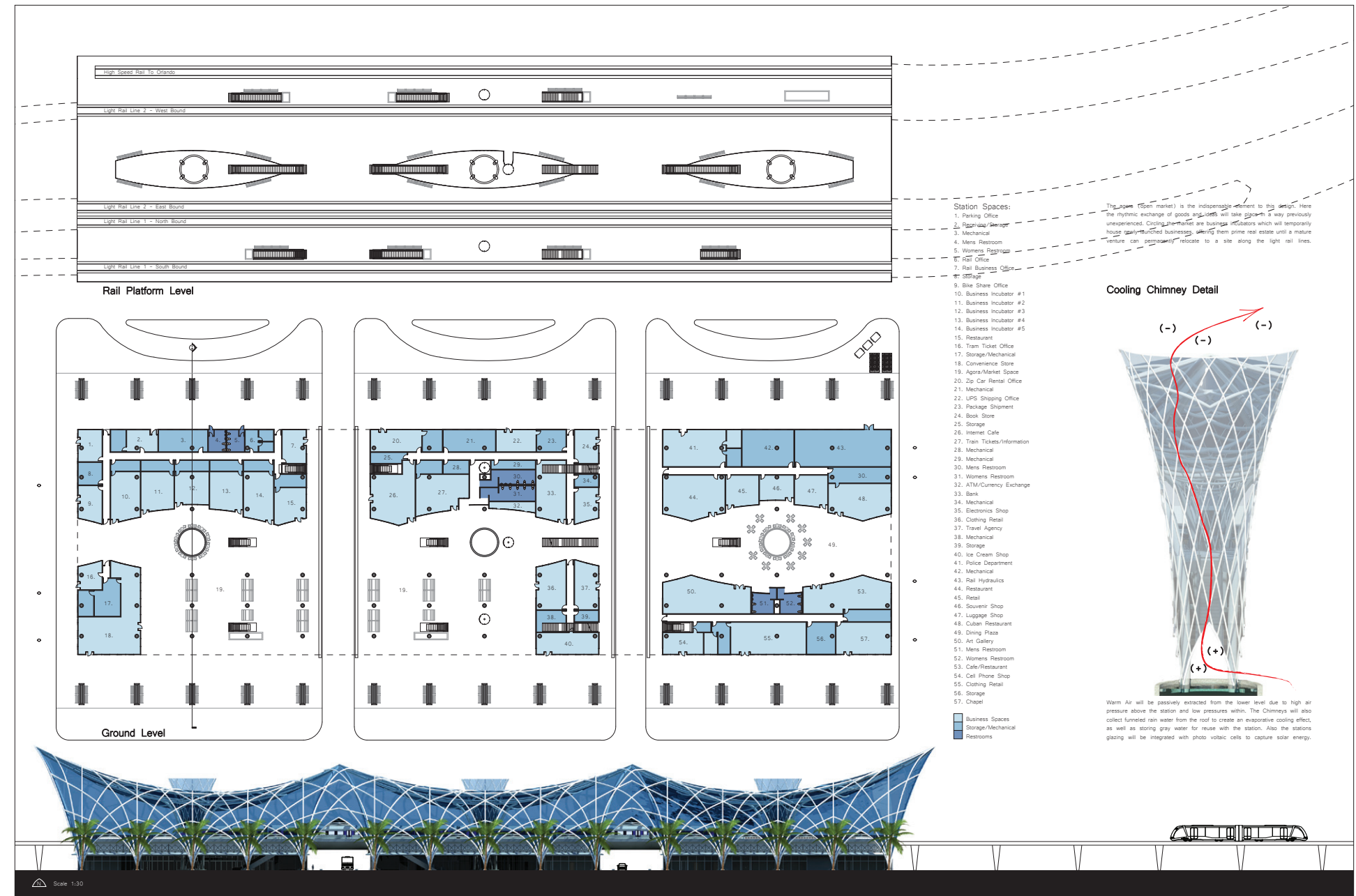
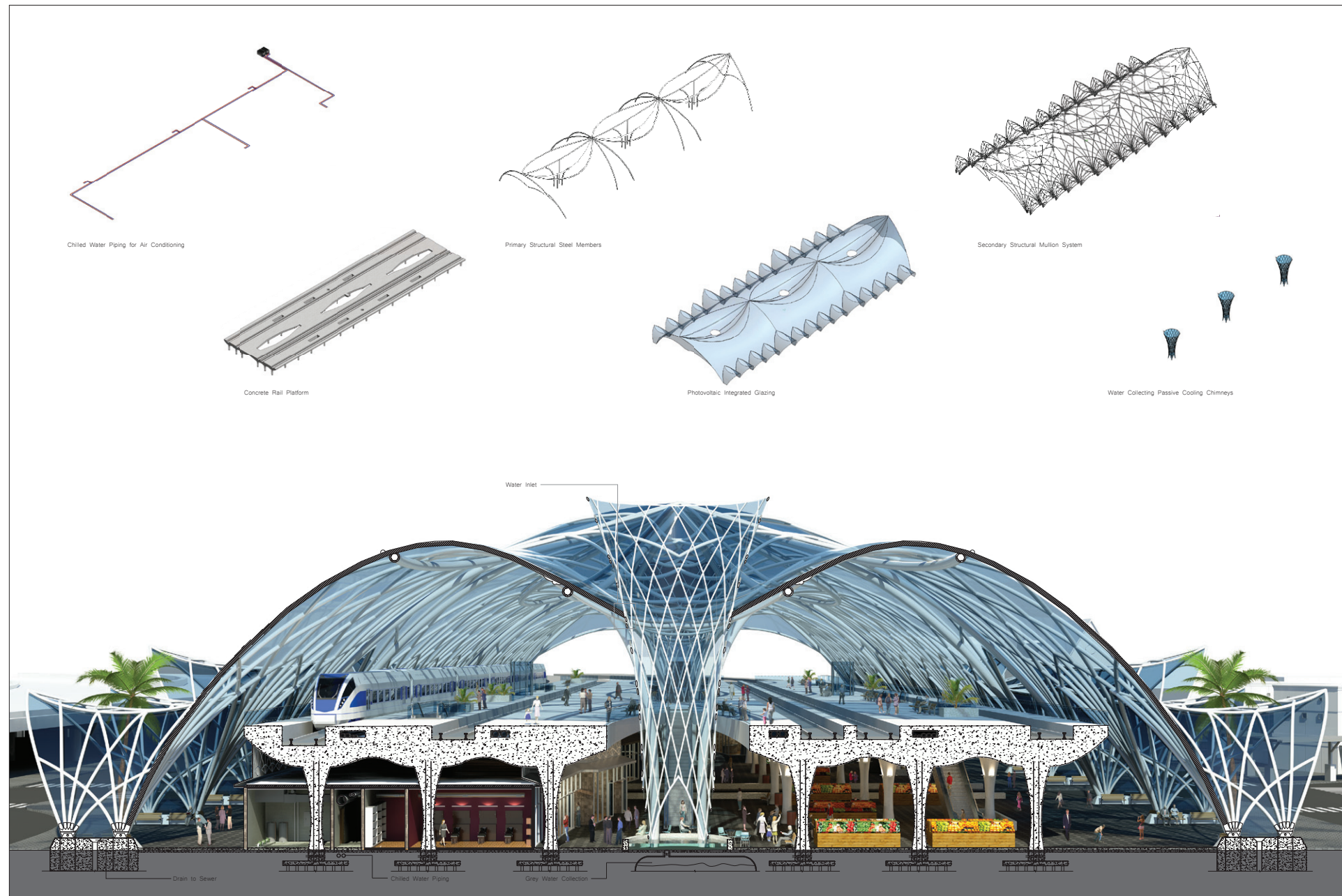
Once this hub of activity is established, it would stir up an exchange of goods and ideas previously overlooked by auto-dependant America. Some of the stations amenities to enhance this include:

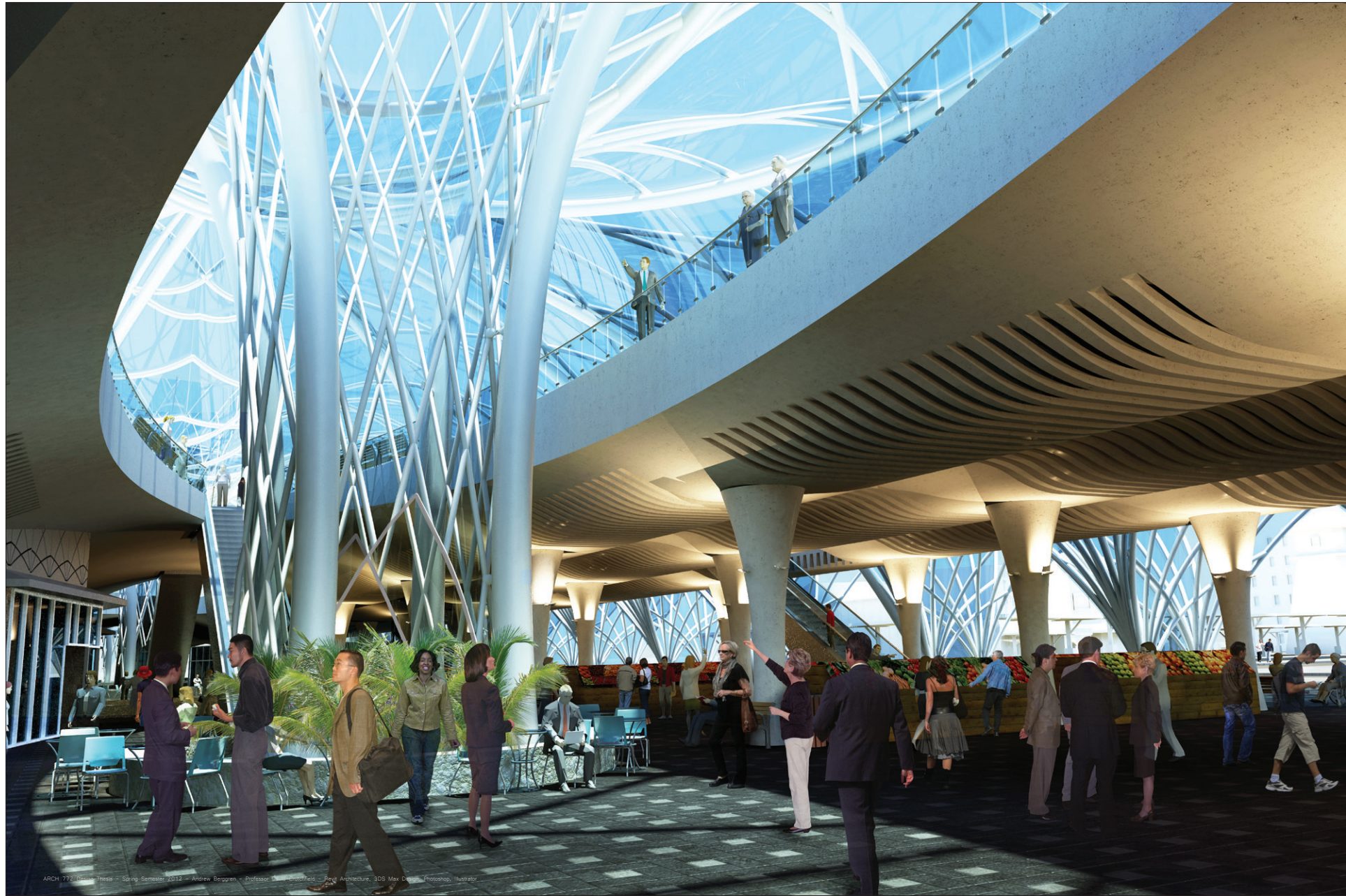
- **Business Incubators** – which would allow new businesses vital face-time with their community
- **Zip Car Rentals** – which offer the occasional rental of an automobile compared to private ownership
- **Bike Share System** – which encourages flexible, cheap and healthy commuting around the city
- **Plaza** – which provides a relaxing outdoor space shared by the rail and bus stations

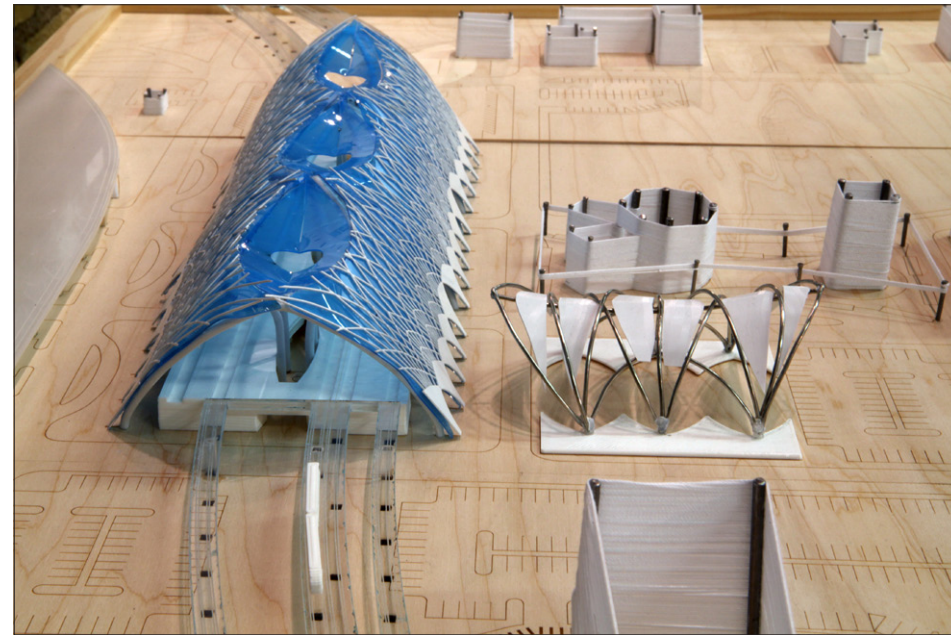
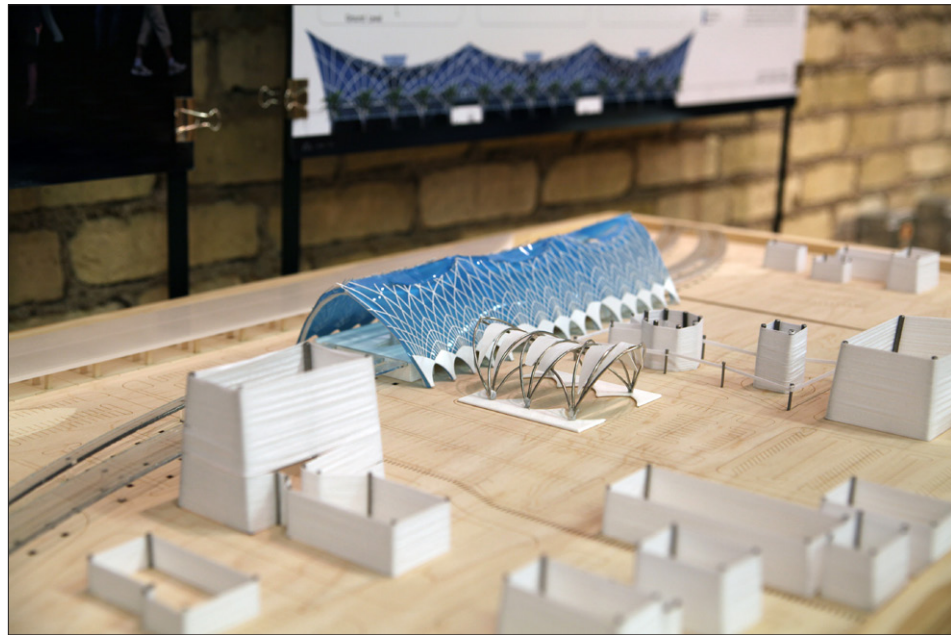
**Outcome**

Cultivating Content simply calls for a heightened concern over ones community. I believe social interaction, environmental awareness, and economic foresight all lie in wait for a city bold enough to accept this modern lifestyle. Tampa's station would reach far beyond being a mere doorway to a variety of destinations, but would be remembered as the very catalyst to the regions prosperity. Establishing a sense of social equity, I can envision this facility offering a vibrant new way of life for generations to come.









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Melbourne's Southern Cross Station. (2007, Jan/Feb). *Architecture Australia*, 96(1), 46-55.



## STUDIO EXPERIENCE

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2008 - 2009

Fall Studio  
Professor Steven Wischer  
-Tea House  
-Boat House

Spring Studio  
Professor Mike Christenson  
-Dance Studio  
-Material Research

2009 - 2010

Fall Studio  
Professor Steve Martens  
-Inuit School  
-Firehall

Spring Studio  
Professor Cindy Urness  
-Natatorium  
-Transportation Hub

2010 - 2011

Fall Studio  
Professor Frank Kratky  
-High Rise Tower

Spring Studio  
Professor Paul Gleye  
-Semester Abroad in Lille, France  
-Urban Planning & Plaza Design

2011 - 2012

Fall Studio  
Professor Mark Barnhouse  
-Water Resource Experiment Station

Spring Studio  
Professor David Crutchfield  
-Cultivating Content Thesis



## ABOUT ME

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“No one cares how much you know,  
until they know how much you care.”