

URBAN

ACUPUNCTURE

48222



URBAN ACUPUNCTURE - *48222*
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WHAT IF CERTAIN POINTS ALONG THE DETROIT AND WINDSOR WATERFRONTS ARE AT A POSITION IN TIME TO SPARK A NEW MEANS OF ENHANCING THE LOCAL ECONOMIC AND SOCIAL REALM IN BOTH CITIES?



WHAT IMPLEMENTATIONS CAN CAUSE DETROIT AND WINDSOR TO BEHAVE AS ONE CITY?

HOW CAN DETROIT AND WINDSOR CONNECT BEYOND THE AUTOMOBILE?



WHERE ARE THESE POINTS AND HOW DO THEY RELATE TO BOTH CITIES?

History has shown that there are moments in time when a product, service or movement crosses a threshold and grows exponentially, like a contagious epidemic, from the smallest yet vastly important of influences or events. Similarly, cities experience a parallel process. In the contemporary vernacular, epidemic carries with it a negative connotation, referring to disease, infection or contamination. In reality, it refers to a means or method of transmission, in particular a rapid spread, growth or development. In the manner that an outbreak can rapidly expand into prosperity, its decline can trend similarly and in some cases take an even faster path into deprivation. Throughout Europe and the United States, cities once dominated by manufacturing and production have become recognized for their unusual urban fabric due to deindustrialization and suburban sprawl. More notably, cities in the Rust Belt region of America experienced massive growth in the early twentieth century followed by rapid population reductions and urban depletion since the 1950's. The cause of these trends tend to be

ABSTRACT

intangible, rooted in communication, cultural, political and social issues, while the impact is typically reflected in the physical surroundings, vis-a-vis decaying architecture, infrastructure and the natural environment of the modern city. Arguably, Detroit has experienced these problems the hardest.

In his book Tipping Point, Malcolm Gladwell goes into great detail to explain how little things can provide huge epidemics (both good and bad) on social behaviors and preferences. For example, in 1994, Hush Puppies footwear hit a tipping point when a group of kids from the East Village, New York started wearing the shoes to bars and clubs, not in an attempt to make a fashion statement, but because no one else was wearing them. Fashion designers, photographers and artists took note and the soon-to-be-phased out shoe line was revived, with sales growing from thirty thousand to nearly two million within two years. The concept of small influences having large, beneficial impacts is suggestive to acupunctural healing techniques. By metaphorically adopting the fundamental principles of acupuncture and applying it to the city and its infrastructure, small, precise interventions in the urban body could potentially revive the relationship between Detroit and Windsor and its social disconnection.

PREFACE

Everything flows; nothing stands still...change is the only constant.¹ Just as all life adapts to accommodate the external conditions that surround it, our cities follow a similar path in that the slightest changes that may or may not be discernible during the process, play a part in their non-linear progression. If we look at a long enough time line, the changes that occur over that duration can be seen rather clearly through comparative studies of initial road maps to figure ground diagrams to population trends. At the same time, on a day to day basis the city can go through many changes that affect urban fabric such as infrastructural, social, political, agricultural, financial and environmental systems to name a few. While these changes appear minimal at the scale of the human to the scale of the city, they alter the landscape in a very precise way and affect the manner in which people navigate the urban environment. This thesis seeks to explore the relationship between the city and the

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evolutionary processes of change using acupuncture as a metaphor for departure.

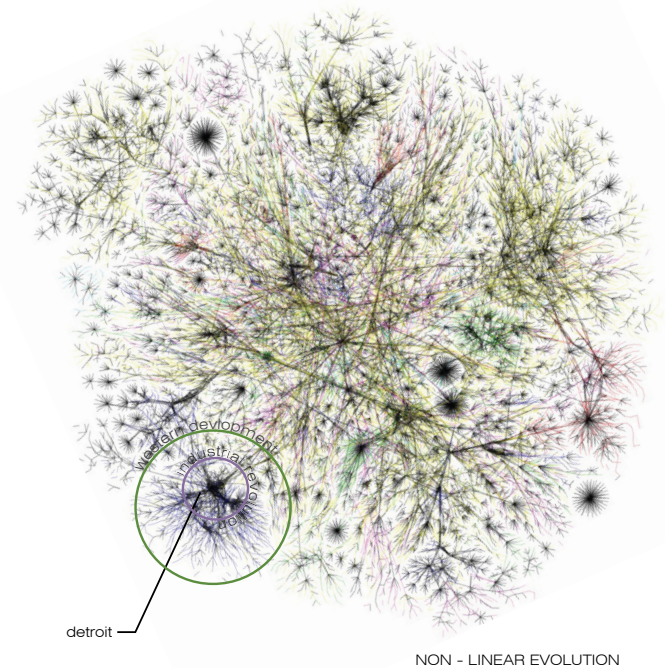
To better understand how urban acupuncture can be applied to the entirety of the city, there are certain parameters that must first be established. In the field of biology, the taxonomic classification system establishes a hierarchy that all living things fall under. Taxonomy is the classification of organisms in an ordered system that indicates natural or evolutionary relationships.ⁱⁱ For example, phylum is the primary subdivision of a kingdom that groups together all classes of organisms that have the same body plan, i.e. invertebrates.ⁱⁱⁱ This classification system is necessary in understanding the evolution of life and therefore can be an instrument in understanding the evolution of cities. By adopting this strategy, an abstraction of a city’s “biological” organization can be created as a way to comprehend the process of evolution and the factors that contribute to the changes that occur at a more microscopic level.

As a result of the discovery of new species being added to the taxonomic classification model, the theory of evolution developed as a means to understand the procession of events that led to the current state of say, a given family, genus, species or even sub-species. While evolution carries several definitions, biologically it is defined as change in the genetic composition of a population during successive generations...resulting in the development of new species.^{iv} In his book *On the Origins of Species*, Charles Darwin makes an argument for the importance (and unimportance) of examining variability in similar species.

life
domain
LAND
kingdom
CIVILIZATION
phylum
REGION
class
CITY
order
BUILT ENVIRONMENT
family
POST INDUSTRIAL CITY
genus
DETROIT/WINDSOR
species
TRANSPORTATION
sub-species
PUBLIC TRANSPORTATION

“Some authors use the term “variation” in a technical sense, as implying a modification directly due to the physical conditions of life; and variations in this sense are supposed not to be inherited: but who can say that the dwarfed condition of shells in the brackish waters of the Baltic...or a thicker fur of an animal from far northward would not in some cases be inherited for at least some few generations?...These individual differences generally affect what naturalists consider unimportant parts; but I could show that parts which must be called important sometimes vary in the individuals of the same species.”^{iv}

The notion of external and internal variation is a critical concept needed in understanding the city as an ever-changing entity in a state of constant progression. In their life cycles, which can be based on a confluence of factors, this progression may not necessarily be linear but rather multi-directional, adopting both a state of growth and decay that occur simultaneously. While the qualities and characteristics can be a byproduct of the external conditions that surround it, it would be irresponsible to assume the internal conditions that arise due to short term changes over several life cycles are unimportant. Biological taxonomy accompanied with a brief understanding of evolution as it pertains to variation help to frame the metaphor of the city as an evolving species and further develop the planning strategy of urban acupuncture.

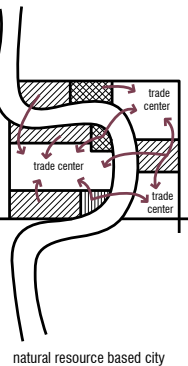
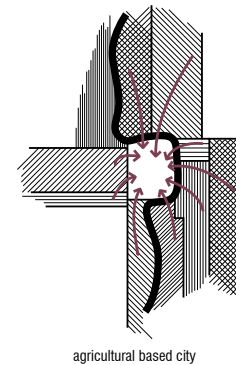


EVOLUTION OF CITIES

Like the evolution of a species, cities have humble beginnings. Accepted as being the cultural, financial, economic and social centers of activity within a region, cities typically retain a level of permanent settlement through times of prosperity and demise. While it is debatable as to the reasoning why and how they came into existence, the establishment of an economy or means of trade was seen as the most essential in their development and acted as an underpinning for the social needs of a civilization. The most noteworthy theories that support this revolve around agricultural or natural resource commodity based systems of economy.^{vi} In an agricultural based environment, the populace occupied the peripheries and transported goods to the city center, using it as a forum for commerce. On the other hand, Jane Jacobs makes the claim in her book, *The Economy of Cities*, that the formation of cities preceded agricultural necessity all together and was instead derived from the discovery of natural resources in a given area.^{vii} Her theory is best understood through an example of a valued natural resource, Obsidian, which was controlled by one group and traded with outlying tribes as a means to generate primitive economic activity, or bartering. Tribes would travel great distances to obtain this material as it was recognized to “make the sharpest tools to

be had.” During this process, grains and other seeds were traded and subsequently, agriculture was brought to the region. A similar process can be considered when examining settlements in California during the mid 19th century’s gold rush or more recently, oil based economies in the Persian Gulf. However our cities came into existence, whether through agricultural needs or valued natural resources, concentrated development within small areas significantly improved interaction between the general public and businesses, benefiting both parties in the process and leading to overall economic growth of the city center.

Through the formation of these dense urban areas where citizens lived, worked, ate and slept in close proximity to one another, interactions between individuals manifest themselves on many levels in both positive and negative forms. Benefits of a dense environment included reduced transportation costs, large local markets, social collaboration and increased communication to name a few. However, negative



consequences surfaced in the form of increased traffic, pollution, disease, crime and a decrease in life span and quality of life. As pointed out earlier by Charles Darwin, internal variation (both constructive and harmful) can be the cause of mutation which alters a species and its characteristics into a completely singular species. Typically, harmful characteristics within a species are altered as a way to adapt to the needs of its physical surroundings. Cities are no different and the same rules can be applied. For example, to combat growing issues of filth and illness, Romans incorporated aqueducts, one of the earliest infrastructural components to date which, in varying degrees, are still used throughout parts of Italy. Not only was this a feat of engineering in the ancient world but the introduction of a water sewage system brought clean water in to the population and took polluted water out, relieving citizens from potential disease while directly contributing to a cleaner, healthier street life. As a result of internal variation within cities, new methods of improving the urban form were constantly being imagined and in some cases implemented to perfect how individuals navigated and interacted on the city scale.

The most critical time period in the evolution of the modern city was the industrial revolution. During the latter half of the modern era, around the late 18th and early 19th century, major changes in

agriculture, manufacturing, mining and transportation had come into existence due to innovations in the means of production, i.e. the introduction of the steam engine, spinning jenny's used in textile mills and iron foundry advances. The age of industry had a profound effect on the socioeconomic and cultural conditions of cities; major advances were being made in a relatively short period of time. Raw materials were faster and more easily extracted while the machining of parts from materials was more efficient due to a decrease in labor necessity. Rail transportation grew exponentially as tracks were laid across America and other countries in Europe to interconnect cities. Due to this internal variation, new cities were growing in places that were not conceived of before. In the past, a lack of natural resources in a region meant that an environment was uninhabitable. Modern technological advances proved that that rule did not apply anymore. If we look back to the city as an evolving species, the industrial revolution can be interpreted as an internal variation that aided in spawning a new species of city; one that can rely on infrastructural intervention rather than direct natural resources to survive. Furthermore, it illustrates that external conditions which surround a city are not the only controlling factors that affect alteration. The realization of the industrial revolution marked a major turning point in the evolution of the modern city where nearly every aspect of life was influenced and altered in some way.

DETROIT|WINDSOR: INDUSTRIAL (R)EVOLUTION

Since its establishment in 1701 as a French military outpost, Detroit has gone through many transformations over the past three hundred plus years. Likewise, Windsor has had a shared evolution in the contextualization of its urban fabric. Like many others, these cities have seen several contrasting cultural regimes take control of the land along the Detroit River through declarations of war, hostile takeovers and the aspiration for cultural freedom. During the first one hundred years in both countries, there were no political lines to interfere with development. No passport restrictions or any other bureaucratic loopholes to jump through; crossing the river was a relatively straight forward act; if you had a boat you could cross to the land that is now Canada. Therefore, and not by coincidence, on the other side of the river, Windsor's progress mirrored that of Detroit in its economic and cultural evolution.

In 1749, the French utilized both sides of the river bank to develop a system of ribbon farming. The establishment of long, narrow farms allowed for a greater democracy of water adjacency and consequently, improved distribution of natural resources to a greater number of farmers. Later in

the development of both cities, this linear grid became integrated into the street plan, which is still discernible in both cities to this day. Eleven years later, the British army captured Montreal and according to the Articles of Capitulation, it was required that all remaining French outposts be handed over to British rule. Now under new governance, Native American Tribes attacked Fort Detroit in disdain for the British and capture the military outpost for a short period of less than a year. Around this same time, population levels achieve parity at 2500 people on both sides of the river. By the time the United States seceded from the British and declared independence, a symbiotic relationship had developed between Detroit and Windsor that political lines could not break; In fact, in some ways, it strengthened the connection.

During the period of the civil war the Detroit-Windsor connection played a critical social role for bringing equality to enslaved African Americans: it was labeled as “Route No. 1” for the Underground Railroad. The drawing of that imaginary line between Detroit-Windsor/Wayne-Essex/Michigan-Ontario/United States-Canada created the closest crossing point to a safe haven for slaves anywhere in the region. Furthermore, after the civil war had ended and African Americans gained freedom, Detroit became an easy city for them to settle in as job growth was booming due to increased manufacturing and

agriculture from the industrial revolution.

In 1908, industry and manufacturing was at its height naming the Detroit River the greatest commercial artery on earth. The level of activity occurring on the river and within both cities during this era was astounding. There was more tonnage moving through this corridor than in London and New York combined (≈ 67 million/year). A few years prior, Henry Ford builds his first automobile. Ransom E. Olds built the first automobile factory in 1900 and became a millionaire in two years. Woodward Ave. became the first street in America to be paved with asphalt to support the massive growth in the automotive industry. Soon after, another important movement in history arrived: the institution of prohibition.

With laws set in place inhibiting the sale of alcohol in the United States, the Windsor-Detroit connection, more importantly, the Detroit River, became the highest trafficked crossing of liquor into the United States with over 75% of the nations supply arriving from this distribution valve. Rum runners drove boats across the river to make deliveries and during winter months when the river froze it was said that children would run sleds across the ice to drop points. While this wasn't necessarily a legal

means of production and trade, both cities found a way to generate an economy which eventually fell off after the removal of prohibition.

Recognized as the production and manufacturing capital of the world, Detroit was recruited around 1940 by the federal government to halt automotive production and focus on military fabrication for World War Two. Known as the "Arsenal of Democracy," Detroit was responsible for a large proportion of weaponry with an estimated contribution of 50 billion dollars in materials by the auto industry alone. This accounted for an astounding 20% of all war production of anything from machine guns to tanks and even B-24 Liberator planes. While production in Detroit had shifted to assist the war effort for the United States, Canadian GM and Chrysler production plants in Windsor and other cities nearby picked up in production automobiles to compensate for what was being lost. After the war, automotive production resumed and Detroit and Windsor became known as the respective car capitals of their countries.

As far as similarities between the neighboring cities, the decline of manufacturing and production of goods marked a turning point for their mutual industrial evolution. Today, Detroit and Windsor are

cities with obsolete identities. The first half of the twentieth century was undoubtedly beneficial to this region, promoting unprecedented growth in population, wealth, economic stability and sheer size. Unfortunately, the prosperity experienced was not meant to last. It's undeniable that a post industrial economy produced negative consequences for Detroit and Windsor affording a multitude of reasons as to why such blight was experienced: the race riots of 1967, federal incentives to move people and businesses out of the city, white flight, racial inequality, demolished public transportation or the Federal Aid Highways Act. Whereas they all played a part in the decline none can be held solely responsible for the current state of the city. Nevertheless, they are all social, political and economic issues that have been identified as problems and must be dealt with in order to move forward. For the purpose of this thesis, the infrastructural networks will be examined as the critical medium to perform urban acupuncture on as a means to stimulate the city and move it beyond the 21st century.

INFRASTRUCTURE: LIFELINE OF CITIES

in•fra•struc•ture (n.) – 1. An underlying base or foundation especially for an organization or system. 2. The basic facilities, services, and installations needed for the functioning of a community or society, such as transportation and communications systems, water and power lines, and public institutions including schools, post offices, and prisons.^{viii}

Undoubtedly, the most important components in the growth of our cities have been infrastructural system. Like a nervous system that weaves through the body, infrastructure acts as the foundational network of cities, performing as a conduit to the synaptic stimuli commanding the transfer people, ideas, goods, services and utilities to different locations within its capacity. This Whether roads, maritime freight, mail, water, sewage or telecommunication, these arrangements facilitate connectivity between individuals and other networks, providing a necessary, basic framework that brings organization to what could be a potentially chaotic social situation. If executed correctly and in a creative manner, infrastructure, in addition to providing order can contribute to the expansion of economic, social and cultural prosperity within a region.

Under the current administration, “infrastructure” has become a buzz word to describe potential opportunities to expand the economy and bring job growth to a region. Aside from U.S. high speed rail propaganda, actual jobs being generated typically fall under the category of repaving roads or repairing existing highways. Although these positions may be good in the short term, they are jobs that are inherently temporary and have no long term plan other than to serve their current purpose (i.e. a road to drive on). Can we think of infrastructure in a different way; not just expanding or

repairing upon it, but rather implementing new, creative networks as a way to re-imagine and revive unused spaces? The slogans that President Obama ran his campaign on were “Change” and “Yes We Can.” Slogans that bring with it hope and foresight into the future of what our country and cities can become. “Infrastructural improvements” don’t have to be restricted to paving roads; it should be as imaginative as any other means of design, integrating itself into other foundational systems.

With advances in telecommunication, the advent of the internet and other technological progressions, the level of infrastructural systems in place in our cities today have created a tangled web of digital and physical connectivity never before seen. While these new infrastructural systems gain momentum and grow at what seems to be an exponential rate, our more traditional systems of connection (i.e. roads, waterways and rail), on some levels almost seem to be disconnecting us from one another. Take roads for example. In 1956, Dwight Eisenhower enacted the National Interstate and Defense Highways Act as a way to create a national commercial and defense network to be used by the public and the military during times of foreign invasion. The design had the best intentions; however, the implementation of the highway act had a profoundly negative effect on many cities, particularly Detroit. In order to create the projected network, neighborhoods had to be relocated to make way

for wide expansive arteries. To achieve this meant executing eminent domain – the seizure, by the government, of private property for monetary compensation without the owner’s consent. Families were displaced and rewarded minimal damages, leaving once vibrant communities fractured and isolated while creating pockets of crime and insurgency.

It would be unfair to declare the automobile as an epidemic spreading through cities destroying the urban fabric. On the contrary, it is the socio-political decisions that get made in haste without thinking of the long term repercussions that negatively affect the urban form. Automotive traffic (and to go further, our road system) is merely a component to a larger system that must find a balance with other modes of physical and digital infrastructure. Our dependency on automotive transportation has reached its limits. If we’ve learned anything from Detroit, reliance on a single mode of transportation (or a single form of anything) is hazardous; diversity is the key to a successful city.

While many infrastructural systems have experienced divestment in recent years, the waterway and waterfronts of the Detroit River have been altered in an incredible way on both banks. Historically, oceans, lakes, straits and rivers acted as the first superhighways for trade and communication.

Consequently, cities developed according to their proximity to water. Over the course of several hundred years and into the early 20th century, economic prosperity in the Detroit-Windsor region could be directly linked to the great lakes waterway system and the many trades and products that emerged from it. Today, the waterfront as an infrastructural system has become outmoded and abandoned; disconnected from the city and unwelcoming to the general public. While the root of this issue is water it could also serve as the regions salvation in the future. In the past, the Detroit River served as the connector between both cities; it is now the means of disconnection. Methods like maritime freight and railroad networks that dominated trafficking of goods seventy years ago are not used as intensely as they use to be. In the book Shrinking Cities, Klaus Müller states that places like Detroit, Manchester, Liverpool...New York, Zurich, Hamburg and many other metropolises have lost their former significance as industrial centers or ports.^{ix} While this may be true, the port still remains a significant aspect of the city, industrial or otherwise, that is vital to urban and human interests particularly in the Great Lakes regional network.

Lake Michigan, Superior, Huron, St. Clair, Erie and Ontario account for the largest surface fresh water system on Earth.^x The Great Lakes region comprises 84% of North Americas Fresh water and 21% of

the worlds and would submerge the contiguous 48 United States in an excess of nine feet of water. This natural infrastructural network is responsible for the development of many of the greatest cities in North America. Conversely, the expansive sprawl toward uninhabitable landscapes has produced a network of pipelines which has led to depleted levels of this resource faster than it can be replaced. For example, the migration of population to the southwest United States has led to dramatic water declines and recent drought levels in Lake Meade and the Colorado River.^{xi} The moral of the story is that water is looked at as infinitely available when in fact, fresh water availability is a local, regional and global issue as sited in the 2002 World Summit.^{xii}

Viewed as the most critical natural resource on the planet, the Great Lakes region is to fresh water as the Persian Gulf is to oil. Its vast supply has brought perhaps unwanted attention to the region as a “spigot” for national (and potentially international) distribution. Were Michigan to be located in the center of the country, surrounded by other States, the Great Lakes may have already been tapped into for national allocation. However, the international border between America and Canada makes it a shared commodity that is not so easily negotiated. Due to the establishment of the Great Lakes Water Agreement Act by the International Joint Commission in 1972, the area is currently protected

by both American and Canadian governments against chemical, physical and biological alteration. Furthermore, Oil as the King of commodities is no longer true with research suggestive that the Earth may be approaching its peak conventional oil supply within 2010. This recent development has led to new and innovative approaches to energy production such as hydroelectric power and wind harvesting, furthering the value and richness that the Great Lakes have to offer. Emerging energy production methods combined with the growing potential of the Great Lakes as a source of that production has the potential to link both countries in an innovative manner. While there are many potential scenarios that could transpire, all scenarios are rooted in one question: is it easier/more sustainable/cheaper to move water to people or the people to water?

URBAN ACUPUNCTURE

In his book, *Tipping Point*, Malcolm Gladwell goes into great detail to explain how small influences can provide huge epidemics (both good and bad) that spread through our countries, cities and ultimately, people.^{xiii} The concept of small influences having large, beneficial impacts is suggestive to acupunctural healing techniques. As a holistic practice, acupuncture consists of inserting fine needles

into specific locations in the body as a way to relieve internal concerns and stimulate depressed areas of the body. The location of these insertion points fall along several meridians, lines of Qi (Chi) which control energy flow. In an exploratory examination of Detroit and Windsor, there is a laundry list of social, political and economic dilemmas that cannot be addressed all at once. As a design approach, urban acupuncture metaphorically adopts the principles of traditional acupuncture and focuses on identifying specific issues and locations within the urban context that through precise intervention could stimulate or rejuvenate other aspects of the city.

One of the biggest issues today affecting Detroit and Windsor is the dis-connectivity between the two cities due to the Detroit River and Great Lakes. While an argument can be made for the opposite, especially with the most heavily trafficked border crossing in the United States, the interpretation of the functions of these crossings can be somewhat inaccurate. Take for example the Ambassador Bridge. While the connection is made and located in Detroit and Windsor, for the most part, the Bridge acts as a conduit in a larger network of freeway arteries used for long distance trade and travel, bypassing both cities in the process. It is understood as a link that people have to go through to get beyond Detroit and Windsor and not as a means to create connectivity within the respective

city limits. The tunnel on the other hand is situated in the heart of both cities, however, with the only means of crossing being dependant on the automobile, it discriminates against those who do not have the ability to own and/or operate a car. Also, retention in the city becomes an issue; with anywhere from 27,000 to 29,000 commuters utilizing the tunnel, an individual can migrate as far as Quebec or California (or suburban attractions, i.e. Somerset Mall, golf courses) if they feel so inclined. The automobile is the most democratic method of transportation we know, allowing people to travel anywhere they can think of. In order to bring and retain people in the city, there has to exist a masked level of inefficiency within efficiency.^{xiv}

The most energetic cities in the world (New York, Tokyo, Milan, Sao Paolo, London and Moscow) all share a similar characteristic trait: a particular level of inefficiency, specifically in the form of public transportation. The connective quality of their subway and rail systems creates a restricted network of nodal points that become integrated into concentrated areas with social, residential, economic and political activity. These locations are understood to be beneficial as far as accommodating an urban lifestyle and are therefore, in most cases, desirable places to live, work, play or learn. Furthermore, the intrigue of these nodes aids in the creation of identity districts within the city. The urban form

is shaped by the flow of people, not the flow of cars.^{xv} Take for example the Erasmus Bridge in Rotterdam, one of the busiest port cities in Europe and the World. Prior to the bridge, Rotterdam's riversides were primarily industrial based economies with little social appeal. As the saying went "Amsterdam to play, Den Haag to live, Rotterdam to work." The current state of the waterfronts conversion from an industrial landscape to socially active spaces can be directly attributed to the identity marker of the Erasmus Bridge and the functions incorporated to it. By integrating public rail transportation along with automotive traffic, the bridge becomes a democratic connective component to socially conscious spaces on either side of the Nieuwe Maas River. With an extensive automotive friendly grid already in place, Detroit and Windsor on the other hand have relied (for the most part) on a public transportation system that has no physically limiting parameters to operate within: bus transportation.

While this method of public transportation my work in other urban settings, due to the complex evolution of these cities social demographics, it carries with it an entirely different perception, especially in Detroit. Limited only by the extent of drivable roads, buses expand upon the democracy of automobiles by operating within the realm of automobiles but without the restrictions associated

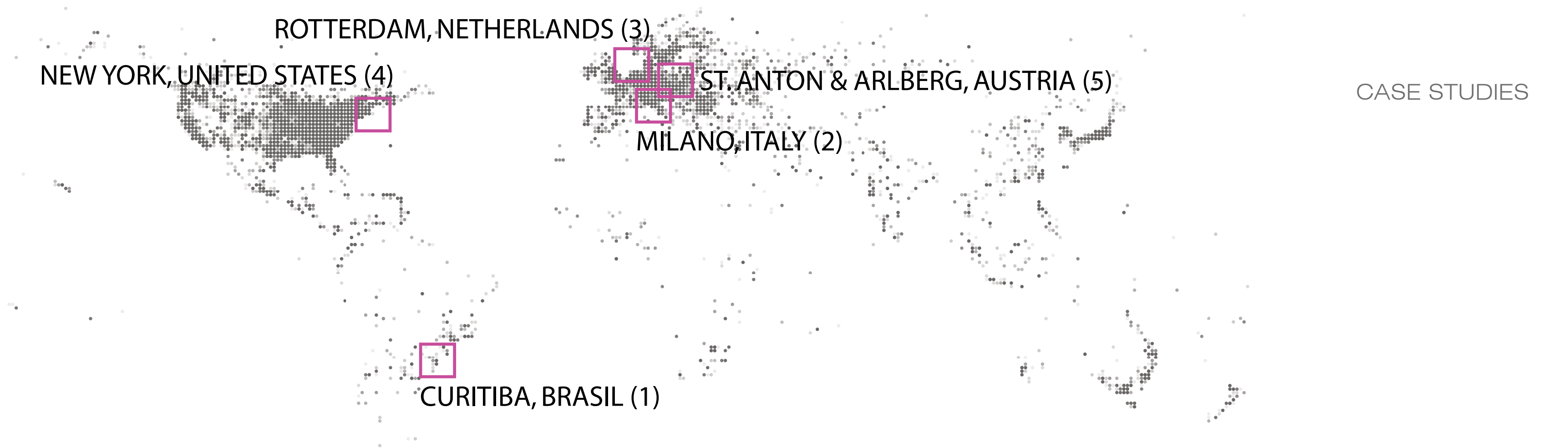
with ownership such as titles, insurance and maintenance to name a few. This in turn lends itself to faster, cheaper expansion. For example, the level of infrastructural additions required in extending a bus route pales in comparison to that needed in a new subway or elevated rail addition. Some would argue that this is a positive thing, serving to stimulate growth and develop new economic hubs; however, it creates a landscape of identity-less-non-places, facilitating suburban sprawl and abandonment from within once vibrant neighborhoods in the process. It's as though the automotive industry has made Detroit and Windsor overly efficient leveraging the economy of the city in the process. And while efficiency is always something we strive for, in the case of transportation connectivity, the current scheme (or lack thereof) has left both cities disjointed, in need of a coherent system that can re-pressurize urban pockets and bring a new identity to the region while harnessing assets that exist in hidden abundance.

As the function of the respective waterfronts in Detroit and Windsor have evolved from military outposts to agricultural economies to commercial industrialism with offshoots of social civic responsibility seen via the Underground Railroad and short term opportunistic economies such as prohibition smuggling, the Detroit river has been quite literally at the center of activity. The interesting element

in this is that, typically, rivers are understood as non-places. The Greek philosopher Heraclitus put it best in saying “You could not step twice into the same river; for other waters are ever flowing on to you.” The only way to recognize a river as a permanent place is through an abstraction of what our minds understand associate with place. In the case of the Detroit River, the assignment of a zip code, 48222, helps to give the river a sense of identity, seeing it not just as a means to an end, but as an actual place that receives basic infrastructural services in the form of postal delivery to container ship sailors.

“Charles P Weiss, a 25 year old deck hand on the Hogan, dumped a gray canvas bag of mail into the bucket and tied it to the rope. After trying unsuccessfully to persuade the sailors to buy a couple of newspapers... Wundrach, 58, steered the tugboat clear and when the freighters horn boomed acknowledgment of the mail delivery, he gave a pair of parting toots. So ended another delivery on one of the world's most unusual mail routes, where high waves and reckless pleasure boaters pose more of a risk than icy sidewalks and vicious dogs.”^{xvii}

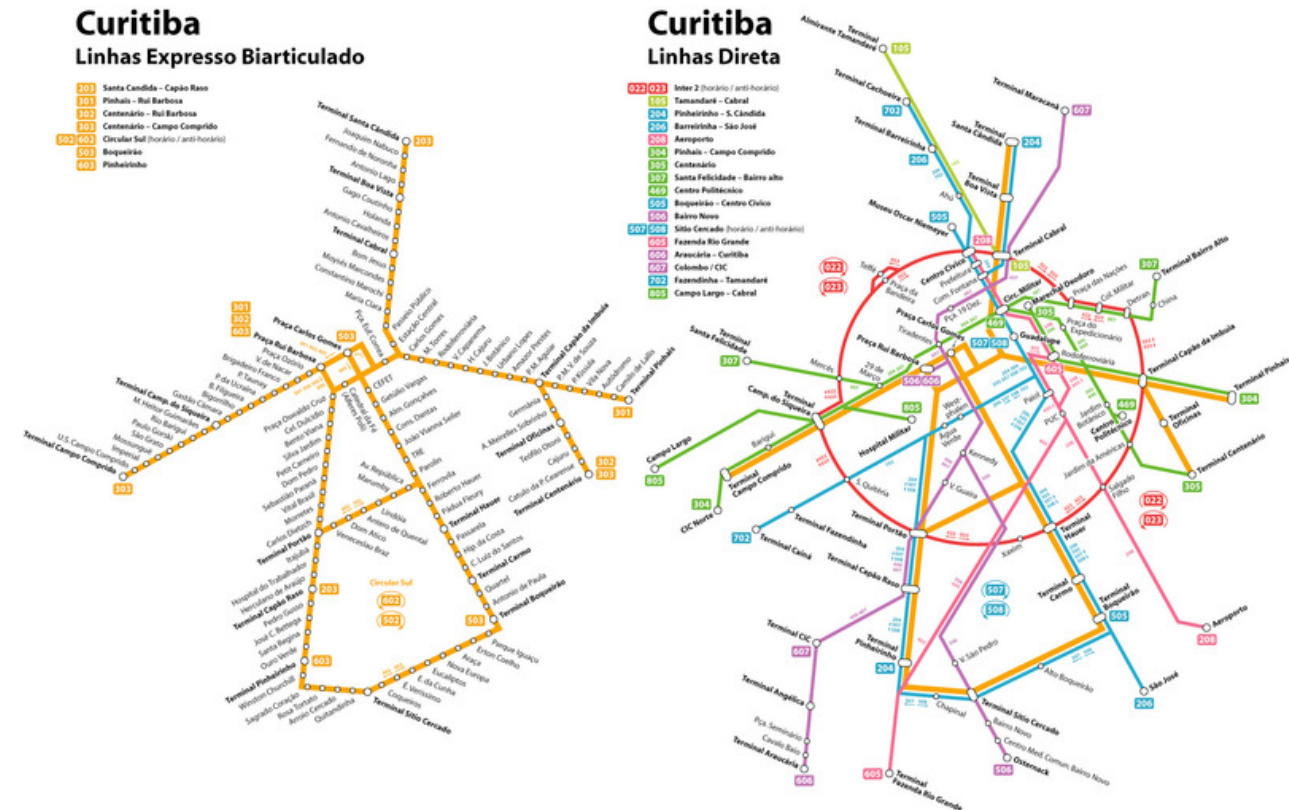
This extraordinary pre-established identity has been around for over one hundred years, when the Detroit River was considered the largest commercial corridor in the world and is the only floating zip code in the country.^{xvi} Since that time has now passed on to new regions and economies in the world, 48222 is poised to become the idea, the acupuncture point that begins the process of re-imagining Detroit and Windsor's international connectivity through the 21st century...and beyond.



CASE STUDIES

CURITIBA, BRASIL
BUS RAPID TRANSIT





(Right) Public transportation riders map indicating major bus rapid transit lines and stops in Curitiba, Brazil.

(Upper Left) Tubular stations with loading platforms extended to load and unload passengers onto awaiting bus.



(Middle) central loading station in the heart of the city.



(Lower Left) detail of station tube with bus line signage inscribed in the top portion of the tube. Platform stands 18" off the ground.



Curitiba, Brazil has one of the most sophisticated public transportation systems of any contemporary city in the world in its Bus Rapid Transit network. Due to strong political influences of architect/ mayor Jamie Lerner, the city has woven a minimally invasive transit system into the urban fabric with citizen ridership within the city at roughly 80 percent. The small intervention of tubular transit stations has given the bus system an identity within the larger urban context, creating landmarks easily identifiable for wayfinding.



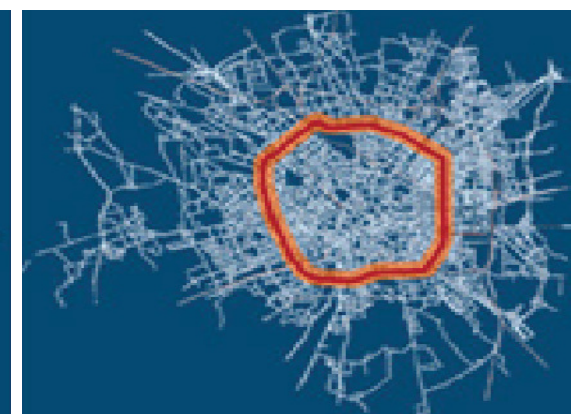
MILANO, ITALY

URBAN RING ROAD RENEWAL

Milan is a city with a metropolitan population close to 7.5 million people. With one of the largest populations in the European Union and an expanding populous, public transportation is a major part of the cities make up. With an extensive rail system that connects the far corners of the city to the core, the system is somewhat one dimensional in that matter. The incorporation of a secondary ring road rail application begins to shorten the distance between periphery identity nodes and the time necessary to travel using public transportation. At the same time, the italians understand that the road must accomodate many forms of transportation, making the ring road renewal a multifacated approach to urban fluidity.

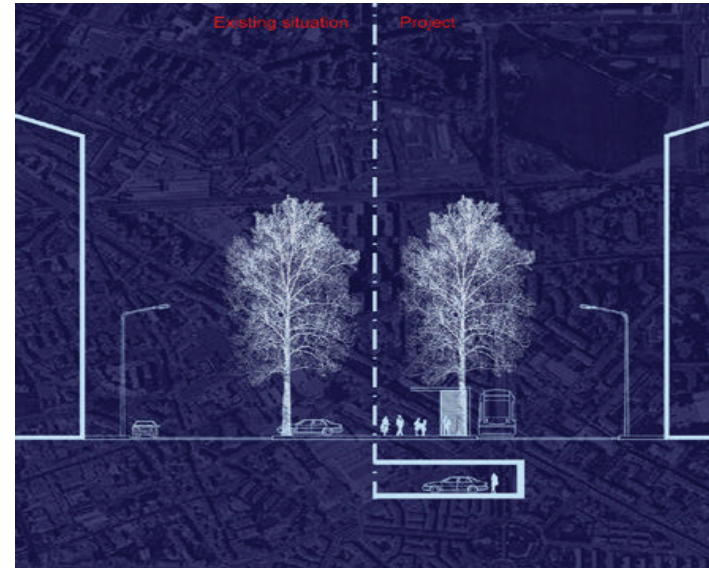


Ring road conditions in different locations of Milan. single lane corridor with pull-in parking. 8-lane highway type rural setting. Intersection condition.



Urban analysis of ring road condition. Contextural situation within the Milan street grid. Identity districts linked to ring road corridor. Conceptual idea of extending and incorporating identity districts into new ring road circulation corridor.

The zipper-like pattern from the conceptual development phase is literally imbedded in the design with a central pedestrian friendly, tree-lined corridor along the middle of the ring road. This corridor serves foot and bicycle traffic, among other forms of non motorized transit. Along the inside of the ring road adjacent to the pedestrian core, public rail is introduced to alleviate automotive congestion and dependency. Below grade are parking flats that are accessed at specific intervals along the ring road which concentrate people in urban specific conditions to increase investment along the street. The Ring Road Renewal project is a reimagining of a once desolate, pedestrian unfriendly infrastructural system.



An aerial photograph of Rotterdam, Netherlands, showing the city's layout and the Erasmus Bridge. The image is in grayscale and has a semi-transparent overlay. The bridge is a prominent feature, crossing the Nieuwe Maas river. The city's dense urban fabric is visible, with a mix of residential and commercial areas. The river's winding path through the city is clearly defined.

ROTTERDAM, NETHERLANDS

ERASMUS BRIDGE

Historically speaking, Rotterdam has always been seen as an industrial hub, the gateway to the rest of Europe's inland cities. Recently, the city is currently going through somewhat of a renaissance, with urban renewal projects featuring ambitious architecture, an increasingly sparkling nightlife, and a host of summer festivals celebrating the city's multicultural population and identity. This newfound success in urban lifestyles can be partly attributed to infrastructural interventions, specifically, the building of the Erasmus Bridge across the Nieuwe Maas river. This identity marker has improved the quality of the city by linking the disconnected shorelines through rail and automotive transit while simultaneously contributing to the creation of socially conscious spaces.



Night illumination of Erasmus bridge, Rotterdam, Netherlands.

Street/Rail level of Erasmus Bridge showing the main tower and cable stay architecture.



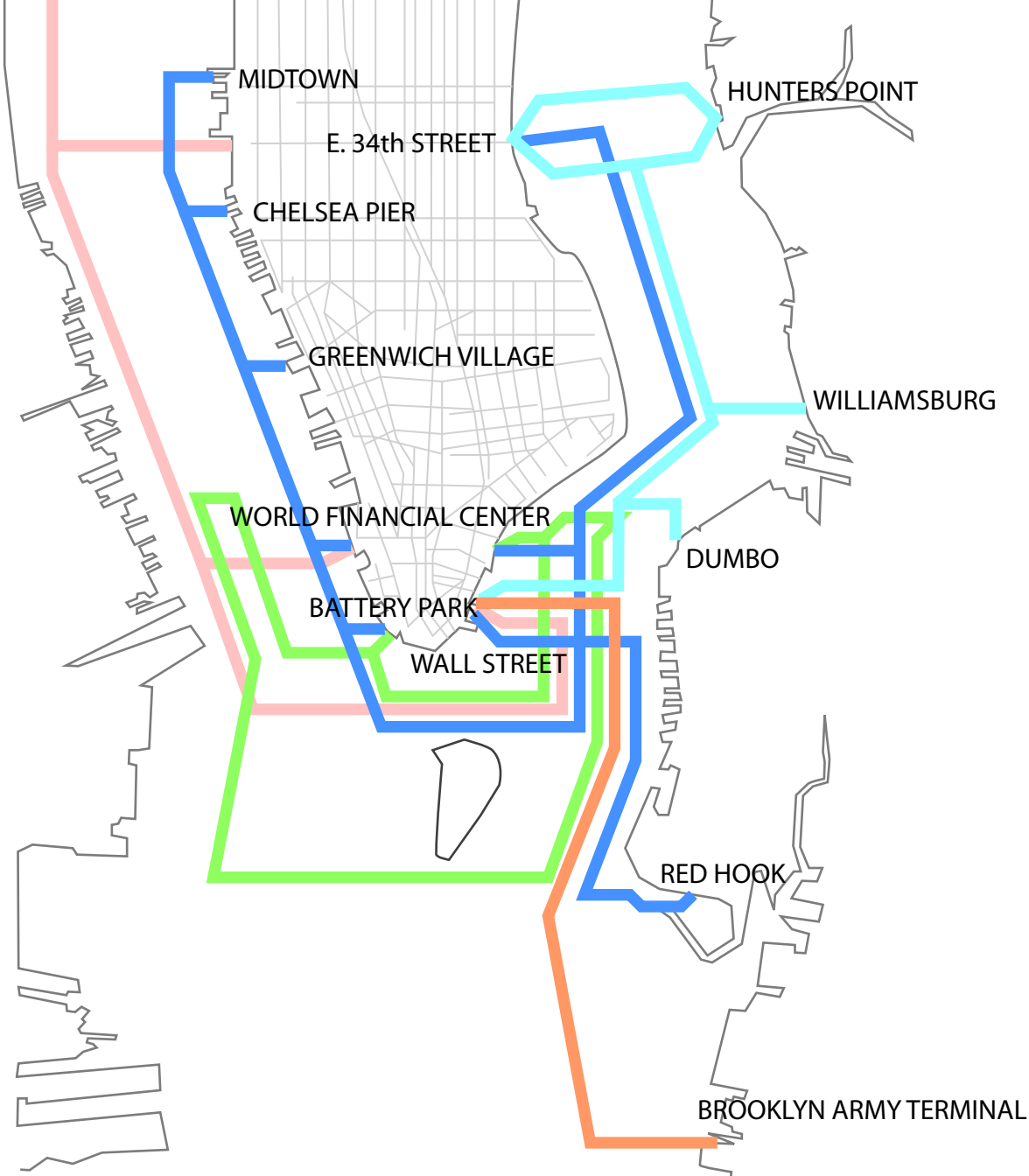


NEW YORK, UNITED STATES OF AMERICA

CITY WATER TAXI SYSTEM

A relatively unknown method of transportation in the web of New York's extensive public network is the sophisticated water taxi system. Aside from the bridges, subway and Roosevelt tram, the water taxi services several ports in Manhattan, Brooklyn, Queens, Staten Island and New Jersey to alleviate automotive traffic in the city and give New Yorkers an alternative means of transportation through the urban fabric. Furthermore, the water taxi system provides tourists (and citizens) with a unique way to experience the city and its many cultural attractions.

Ports and transit lines for the New York water taxi system. Major points of entry include battery park, wall street, E. 34th and the World Financial Center.



Water taxi station in the Red Hook district of Brooklyn. Plans have been drawn up to develop this as a maritime tourist attraction based around the water taxi network.



Water taxi commuting from Manhattan to Brooklyn along the Brooklyn Bridge.





ST. ANTON & ARLBERG, AUSTRIA

FUNITEL AERIAL TRAMWAY

St. Anton & Arlberg is home to one of the most technologically sophisticated means of transportation; the Galzigbahn Lift. Completed in time for the 2006-2007 winter season, the Galzigbahn is a state of the art ski gondola utilizing funitel bi-cable technology, which has helped revive the reputation of St. Anton & Arlberg as a world class ski resort town. With the potential to carry 2000+ people per hour over 10,450 meters, the Funitel technology could easily be applied to the urban context as a legitimate means of public transportation while creating a unique identity for the city.

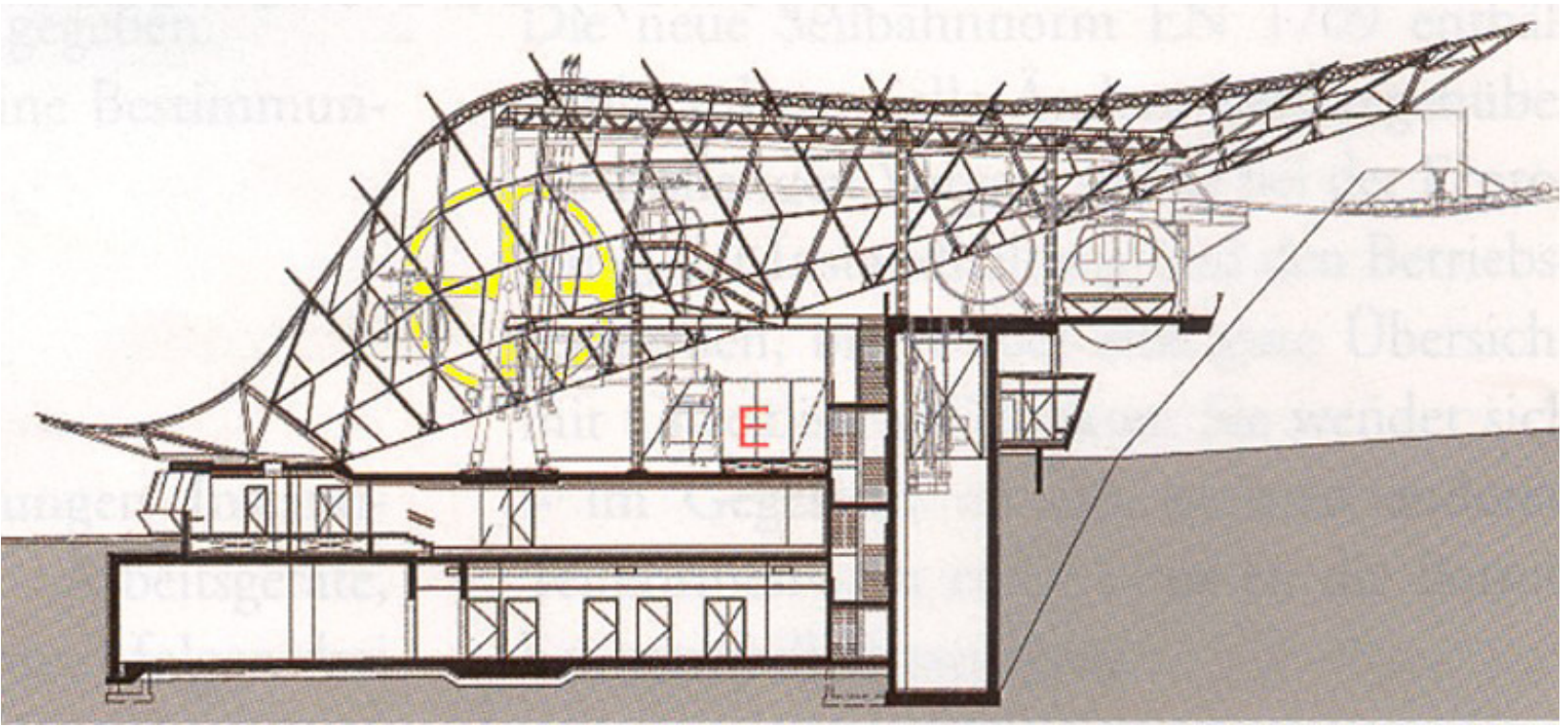


(left) The city of St. Anton and Arlberg at night.

(right) A detail of the funitel gondola at one of the intermediate towers in the Galzig mountains. Bi-cable technology provides excellent stability to high wind loads.

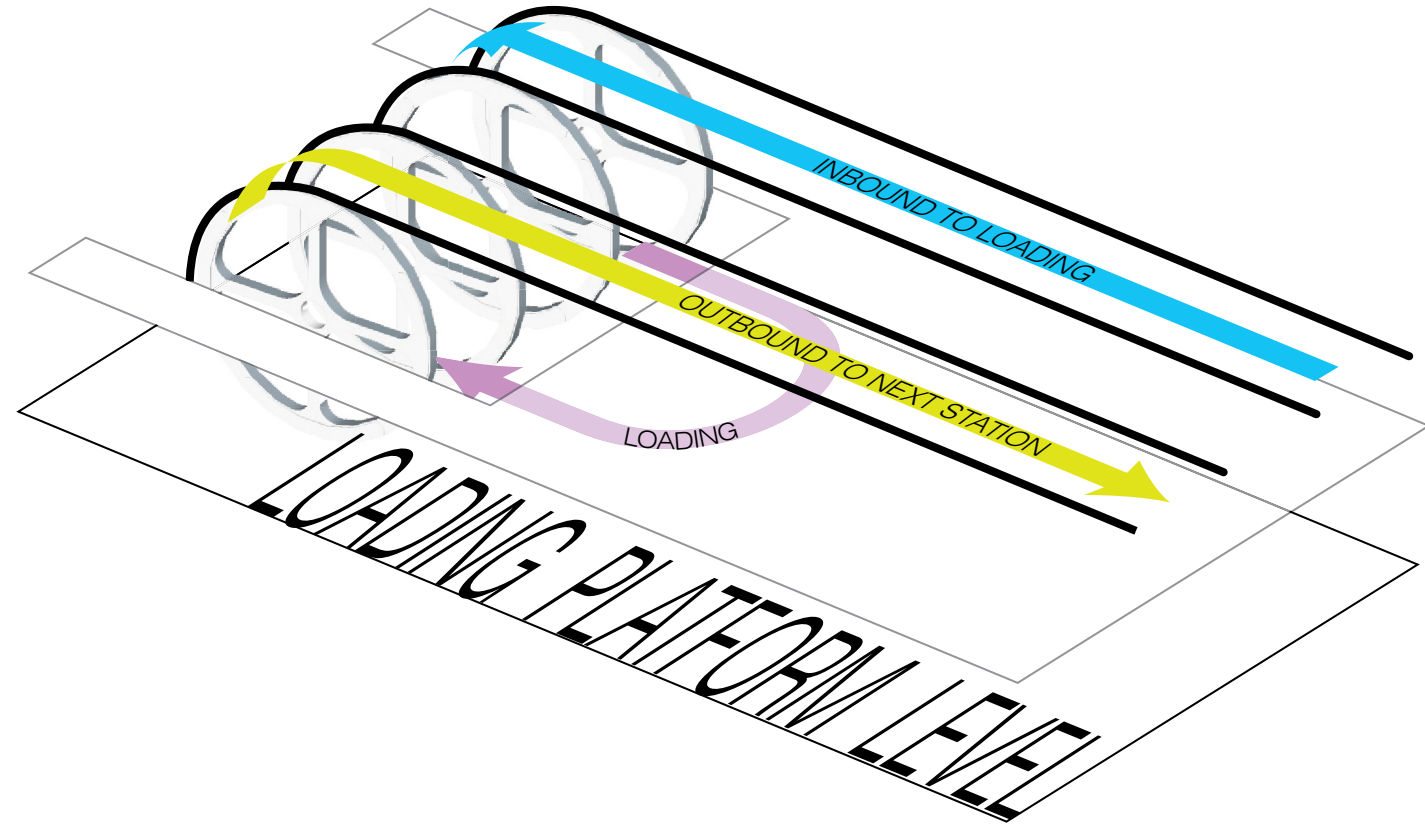


The funitel system developed by, Doppelmayr Garaventa, utilizes a bi-cable system which provides extreme stability in high wind loads. The four 30' diameter “ferris wheel’s” play an integral part in the mechanics of the system. Two wheels receive the gondola’s on a mezzanine level in which it travels between, around and down to a loading platform below. Once loaded, the second set of wheels circulate the gondola back to the mezzanine level where it gradually picks up speed and ascends to the mountain station, some 10,450 meters away.



(left) mezzanine service level with outbound gondola.
(right) Galzigbahn valley station section highlighting loading platform (E) and gondola circulation.

(Below) "Ferris Wheel" mechanical operation diagraming cable path for gondolas at valley station.



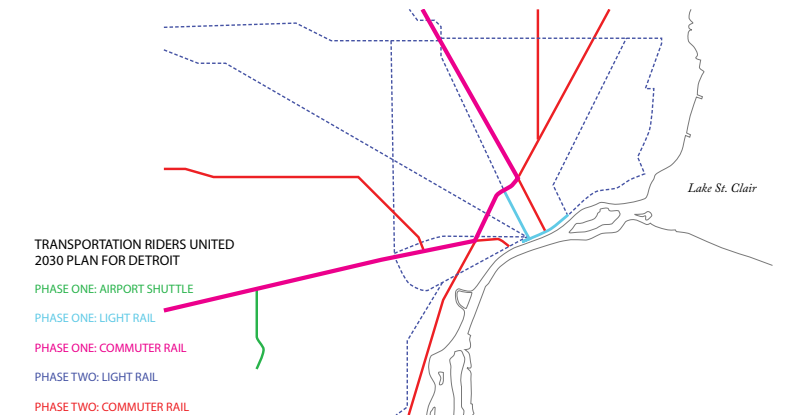
SITE SELECTION AND ANALYSIS



The Great Lakes account for the largest collection of surface fresh water and holds roughly 20% of all fresh water in the world. Looking at the Great Lakes watershed, 33 million people in major U.S. and Canadian cities are affected by the natural balance of this ecosystem. A unique characteristic of this natural resource is that it is a shared commodity between two nations. Were the lakes to be landlocked strictly in the U.S., the political policy of distribution would be very different. Furthermore, Detroit and Windsor are located at the proverbial “spigot” of the lakes. Rather than see the waterways as just a means of transportation, how can both cities benefit from the water system beyond industrial manifestations?



Based on an urban analysis study of infrastructure, income density, housing density, land use and projected land use (renaissance, empowerment and tax credit zones), the cities of Detroit and Windsor have several acupunctural points that, with the right interventions, could revive the social inequalities within that district.



(left) acupunctural locations in the urban body of Detroit. (above right) Land use map provided by professor Noah Resnick of the University of Detroit Mercy. (Bottom right) Transit Riders Unit: planned expansion of public transportation for the city of Detroit.



woodward
video
sequence

A video analysis of day and night conditions was taken as a way to study and interpret the importance of Woodward in the larger context of the city. By layering the two sequences over one another, Woodward is read in a different manner than it typically is in reality. Furthermore, the layering simultaneously provides information about what districts in the city are active or passive and at what times they are understood as active or passive. For example, Midtown has an active nightlife which diminishes during the day while the central business core is less active at night and picks up again during standard business hours.

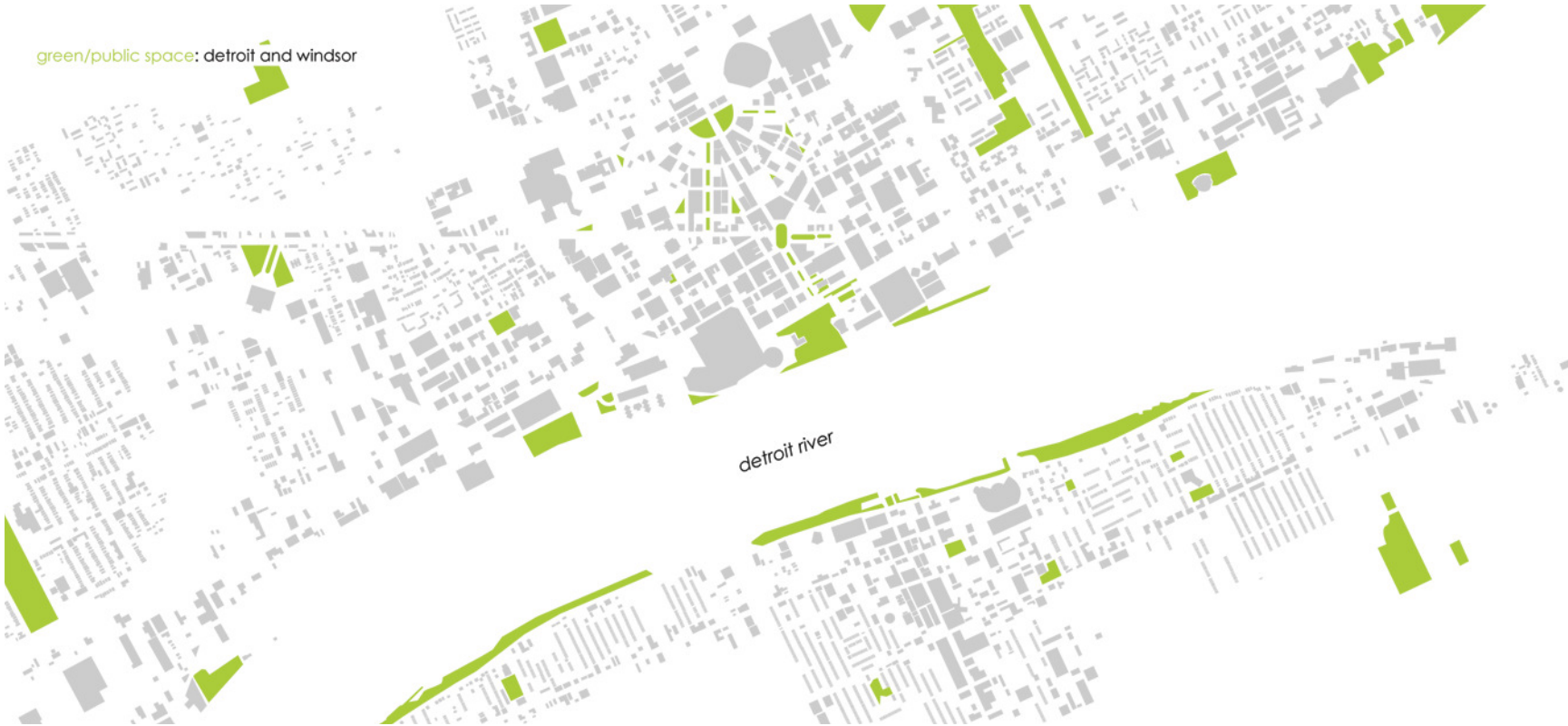
As the focused study of Urban Acupuncture, infrastructure systems serve as the bloodlines and nervous system of our cities. To understand how they affect us and how we operate in the built environment, an in depth analysis of the many individual layers that comprise and shape the urban landscape can help to clarify questions of scale and appropriatness as well as site selection in the overall exploration of the city.



Figure ground studies are particularly helpful in understanding the positive and negative spaces of a composition. By applying this to an urban study, the built environment is crudely but effectively represented, highlighting the separation of occupied and unoccupied land. Furthermore, by highlighting only architectural components, the radial street grid in Detroit and ribbon farming grid in both cities are easily understood. Whether the figures indicated in the study are occupied by people, and to what length, is an entirely different study.



As a component of the built environment, green spaces can be just as important in the development and appropriateness of architectural solutions. In the case of Detroit's waterfront, the amount of public park space is limited in comparison to its size, not including Belle Isle. Windsor on the other hand has long greenways that stretch nearly 3/4 of the Canadian shoreline of the Detroit River.



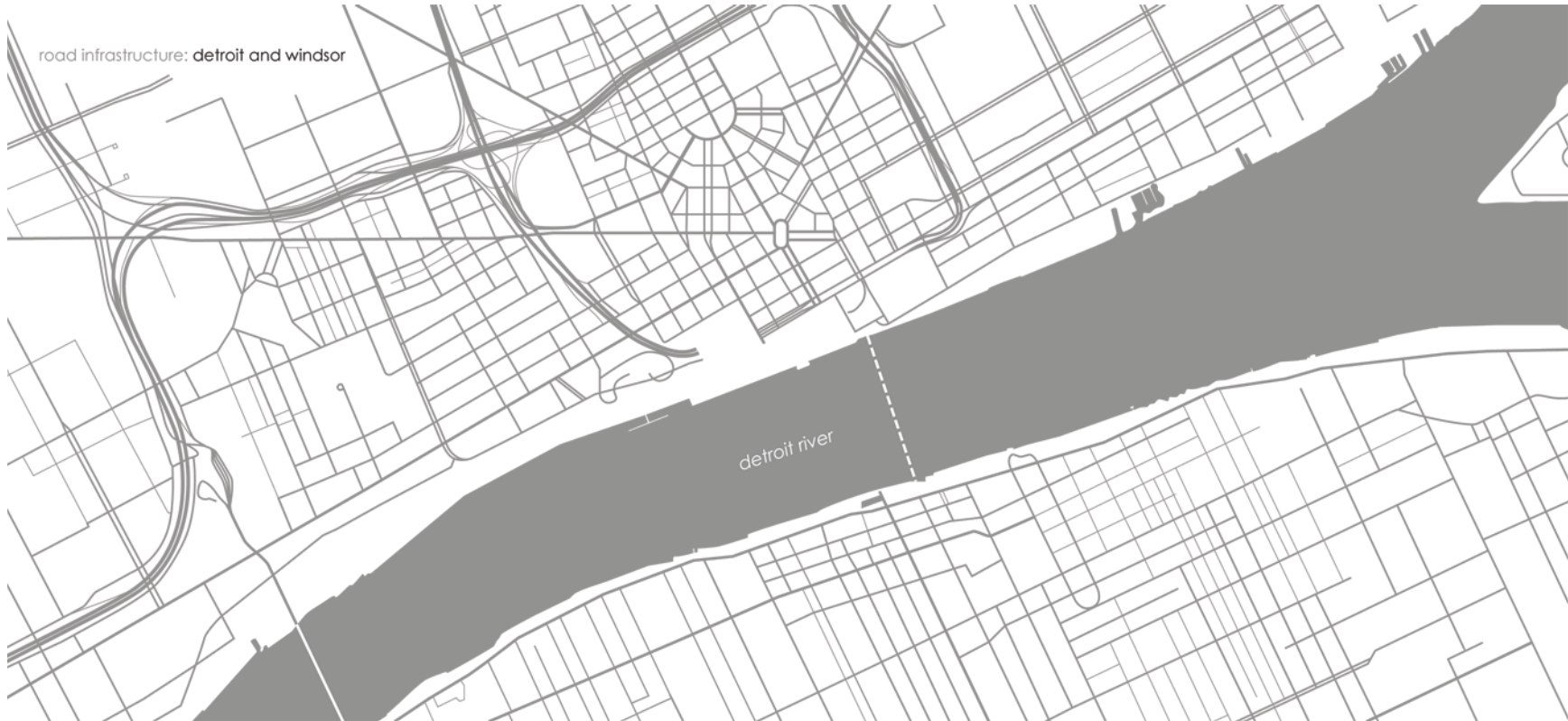
The only extensive public transportation system in the cities of Detroit and Windsor is the Bus transit network. On the Windsor side, the city provides several lines that intersect and weave through the city, providing a sophisticated public transit network. Detroit on the other hand is centrally focused, where all lines seem to travel along the radial streets to the central business district, leaving several voids in the city that are unattended to and therefore, to a certain extent, undesirable.



One of the strongest connections between both cities as industrial mecca's is the now abandoned MCS line that travels below the Detroit River, surfacing near the Michigan Central Depot and deep into Windsor's residential neighborhoods. The People Mover, Detroit's only rail transit, is seen more as an amusement ride than a legitimate means of public transit. With a new plan for light rail along the Woodward corridor, This meridian has potential to become a major contributor to the growth of the city.



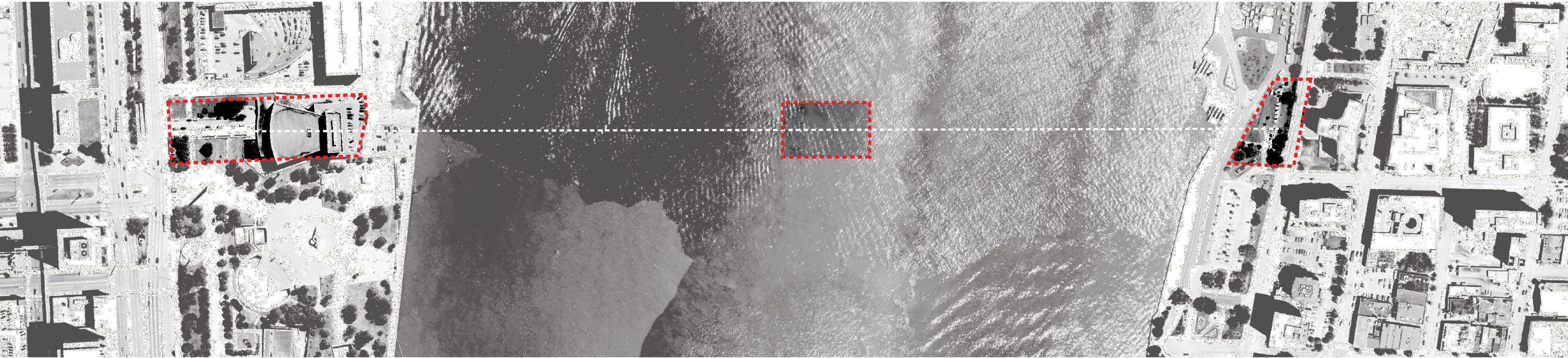
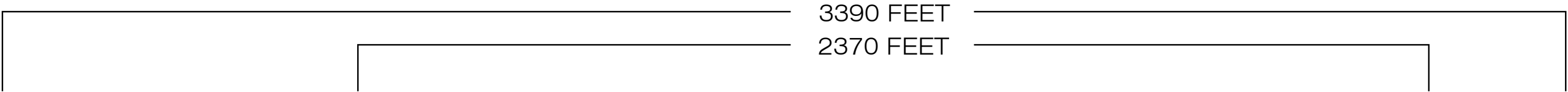
The most abundant transit network in both cities is the road and freeway system. Before Dwight Eisenhower passed the Interstate and Defense Highway Act, Detroit was a relatively well knit city with positive interaction between identity districts. Once freeways were introduced, neighborhoods became severed from one another, creating undesirable living situations both socially and contextually. Looking at individual layers of street grids based on size and traffic, historical heirarchies appear and show how the modern city and its people circulate.

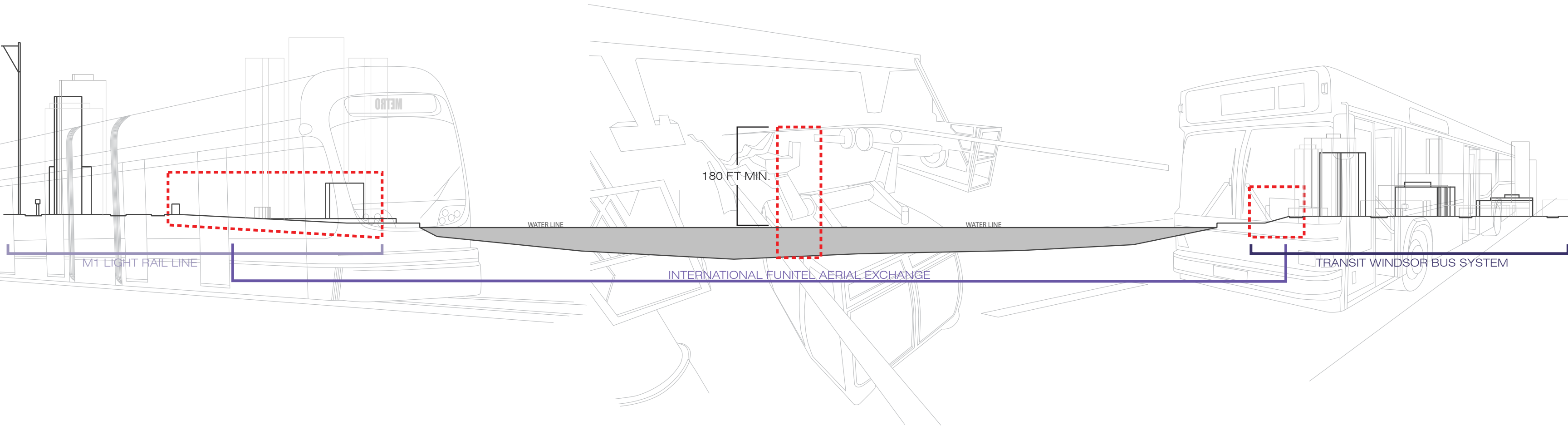


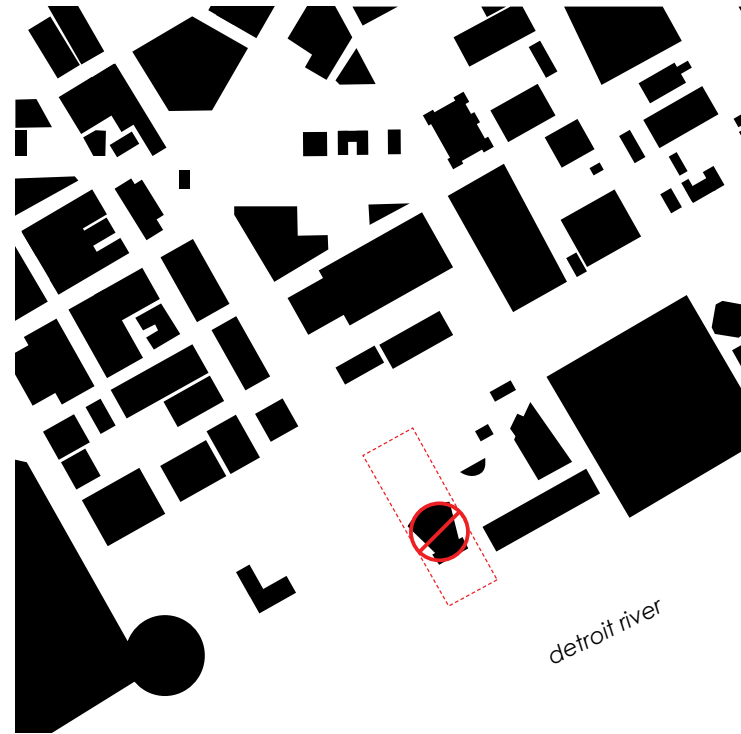


After layering all of this information together, certain patterns start to come to the surface. The Woodward/Goyeau corridor lends itself as having the most potential for becoming the meridian to which urban acupuncture can be applied. With the M1 line breaking ground in 2010, coupled with the current attractions such as Comerica Park, the Fillmore, Ford Field and many others, the introduction of a secondary transit system from the end of the M1 (Hart Plaza) across the Detroit River and into Windsor's social district could create a unified international transit system not shaped by the flow of automobiles but rather shaped by the flow of people.



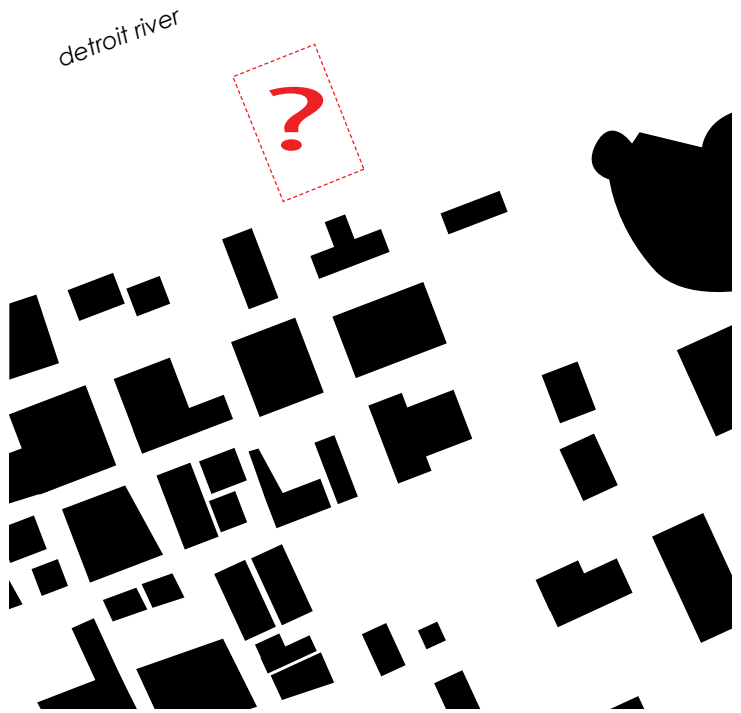


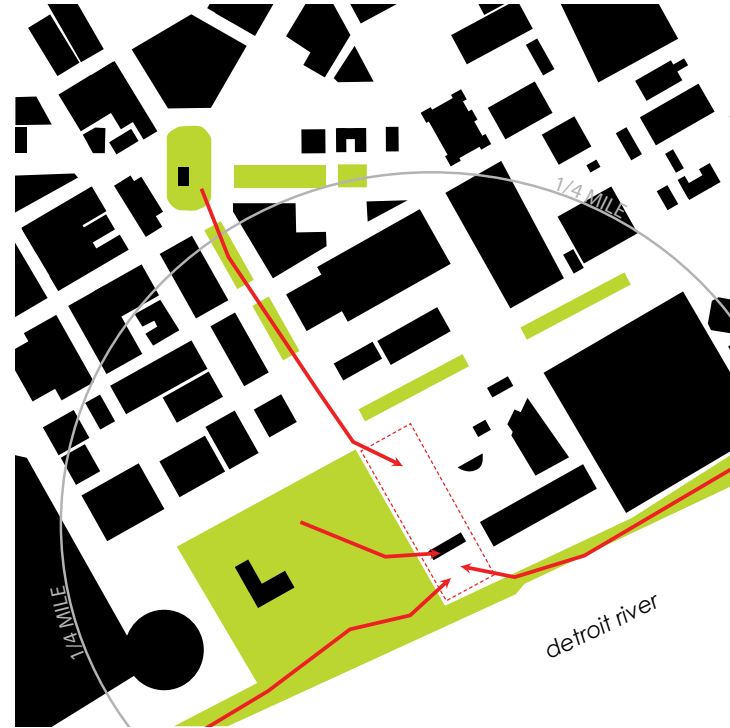




For over 15 years now, the Henry and Edsel Ford Auditorium has been abandoned. Home once to the Detroit Symphony Orchestra, the facility has become a frozen relic surrounded by active spaces such as Hart Plaza to the west, the Renaissance Center to the east, the financial core to the north and new Riverwalk to the south. It's hard to believe that in a modern city, prime real estate like this can sit abandoned for close to 20 years.

While Detroit's waterfront sits with acres of under developed, under-utilized land, Windsor and its downtown is relatively dense for its size. One site in particular stands out when on the Canadian side of the river and that is the under-utilized parking lot that sits between Dieppe and Riverside parks. Sited along the Woodward/Goyeau corridor, the ability for the site to accomodate intermodal transportation makes it the perfect sister site in the schemata of an international transit system.

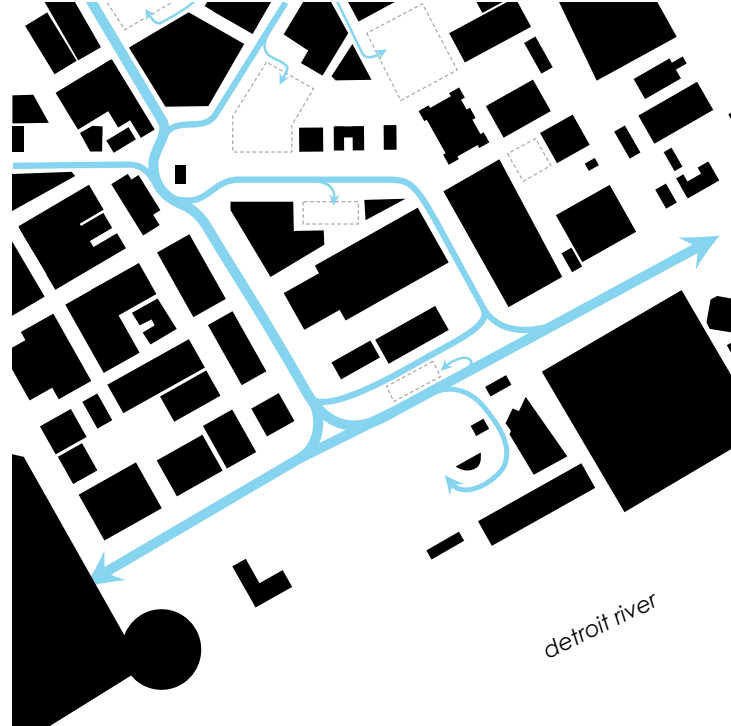




The urban analysis phase indicated that there is a lot of green space that can be built upon given the context that the proposal is operating under. With active identity parks like Hart Plaza and Campus Martius located within a quarter mile of the site, the walkable character of the city is greatly amplified. Also, the close vicinity of people mover stations gives the city much needed pedestrian mobility.

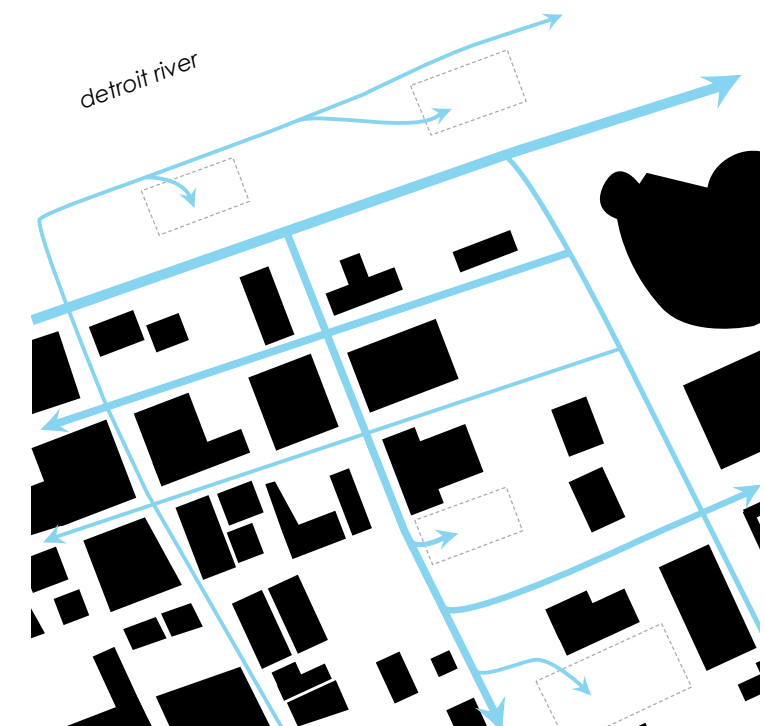
Unlike Detroit, Windsor's approach to green space is more invasive; there are less "pocket park" typologies and more extensive networks. Applying the same quarter mile radius to the Windsor site, the active parts of the city are well within walking distance. Transit Windsor Bus stops along riverside drive directly south of the site with routes turning south on Goyeau into the city provide an increase in pedestrian mobility in this auto friendly environment.





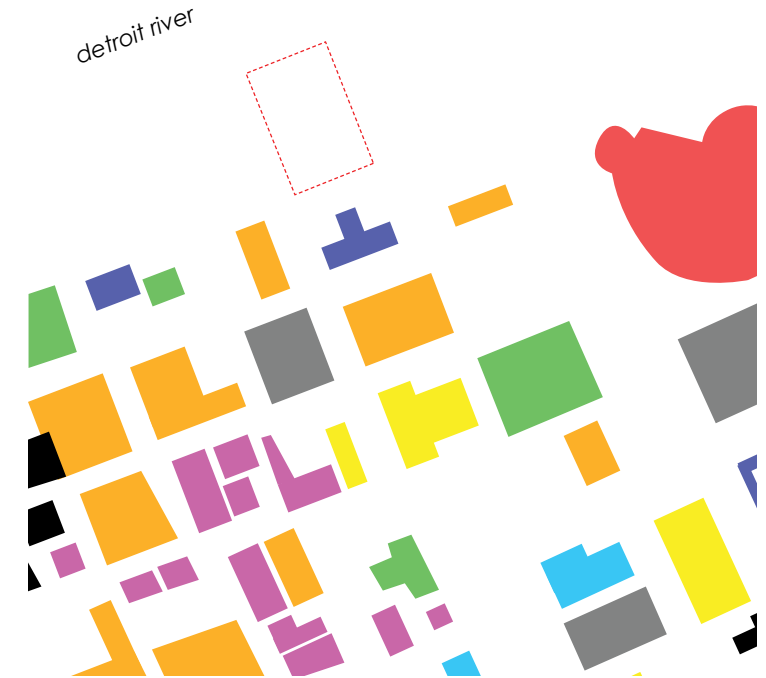
In Detroit's blown out post industrial landscape, parking and traffic flow have rarely been an issue. However, it is important to understand how cars travel and what those levels of flow are. Jefferson Ave is one of the main spokes of the radial street grid which intersects with another radial line, Woodward. It is also serves in the direct connection to the lodge (M-10) freeway which brings traffic into the city from the Northwest neighborhoods.

Windsor's urban landscape also has many locations for parking making it less of an issue needing immediate addressing. However, the city never adopted a radial plan like Detroit which makes the flow of traffic more rigid. Traffic levels are the highest at the waterfront and gradually diminish running parallel away from the water.





Detroit's building uses surrounding the site is primarily financial with mixed use secondary programs, as indicated in orange. There is very little residential in the area as well as stand alone restaurants. Surprisingly, with the high concentration of business and event spaces like Joe Lewis arena and Comerica Park, there are only a few hospitality and hotel buildings to accommodate the area, in green.



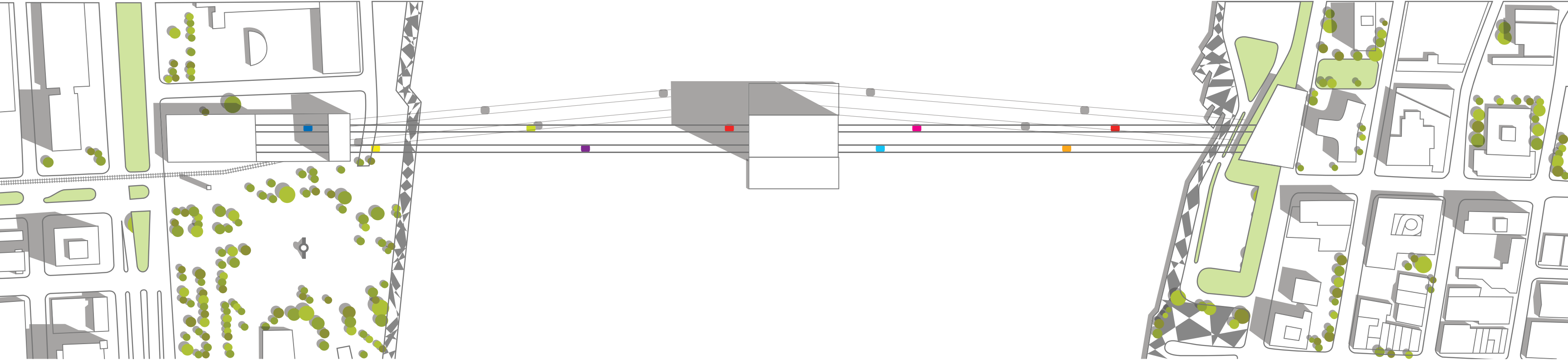
Windsor has a more diverse downtown with a mixture of financial mixed use, stand alone restaurants and bars, institutional and event space. One of the most noticeable constituents in this study is the Caesar's Windsor Casino, a major attraction for international travelers, which is within walking distance from the site.

284 FEET

1242 FEET

1340 FEET

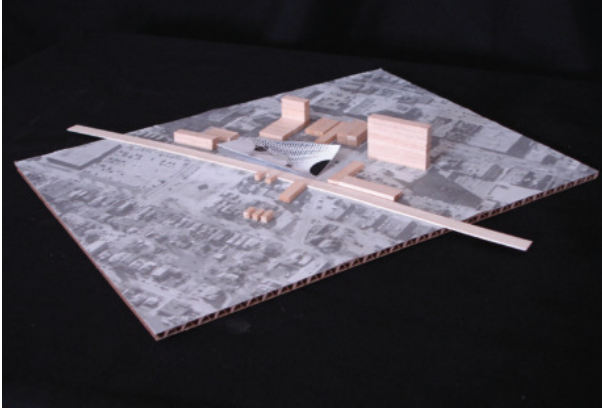
OVERALL SPAN: 2866 FEET



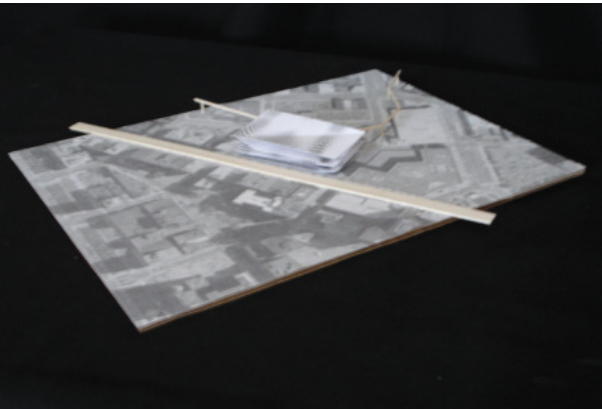
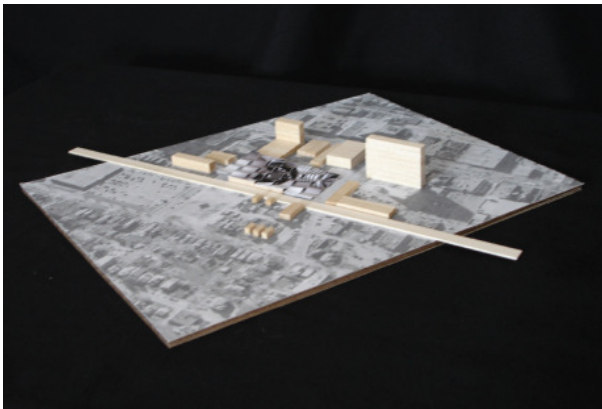
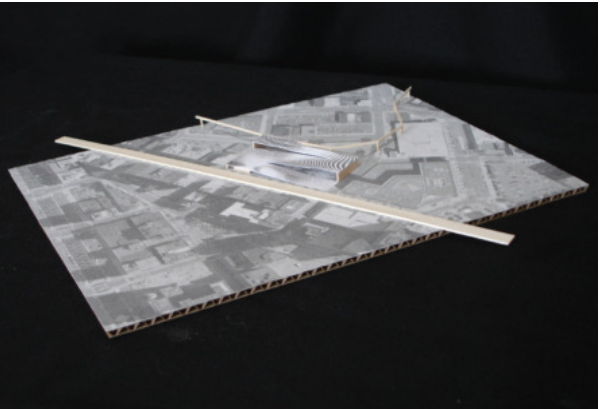
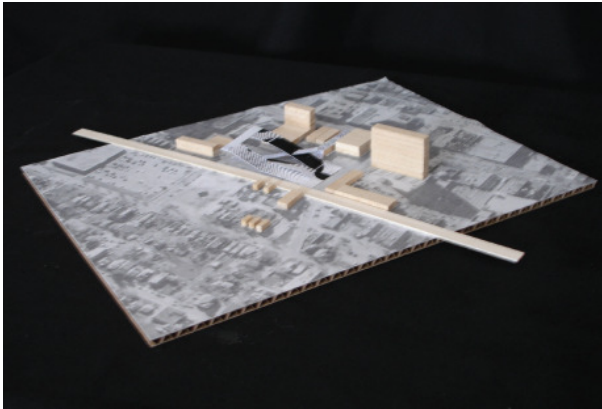
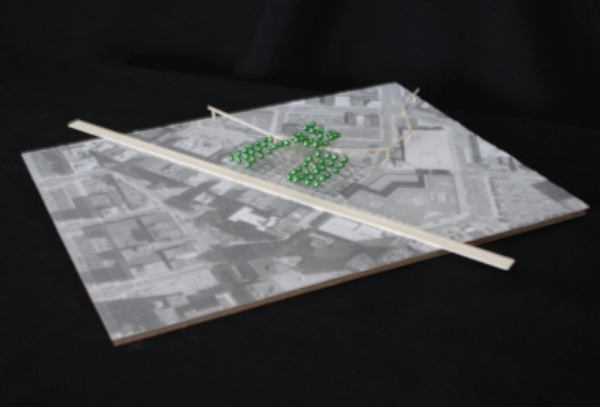


DESIGN AND DEVELOPMENT

Initially, five sites were selected to be addressed for this thesis exploration. As the project progressed and research about specific infrastructural systems became clearer, certain sites became less important to the underlying objective and were therefore set aside to be revisited at a later date as part of a phasing plan. The other two sites in the second phase of development would be located at the Hudson Block in Detroit, and in Windsor, at the intersection of Tuscarora and Goyeau, still along the original Woodward/ Goyeau meridian.



(Left) Site models of potential architectonic form for Tuscarora and Goyeau in Windsor phase two. (Right) Architectonic and conceptual diagram models for the Hudson Block in Detroit.

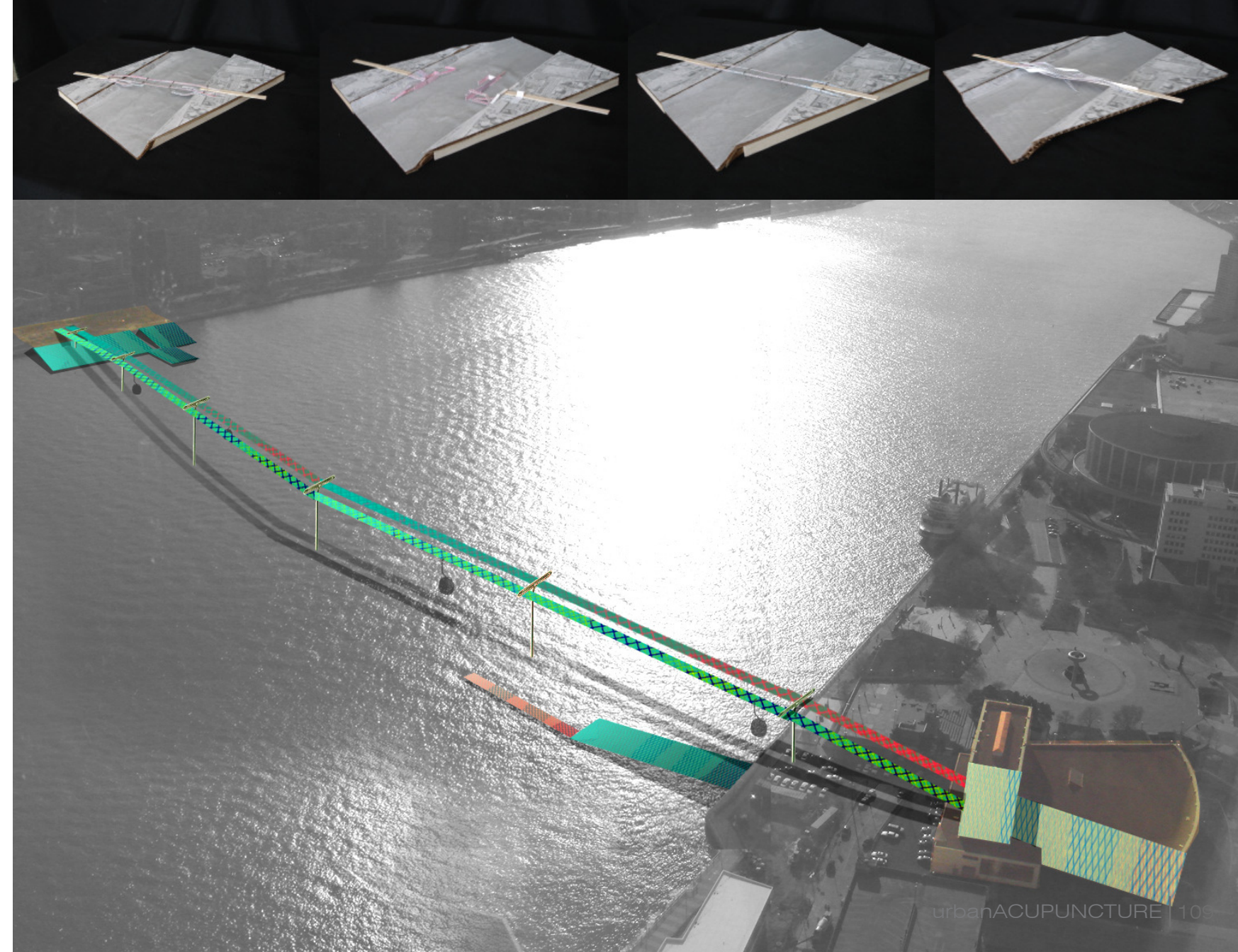


The site in Windsor at the intersection of Tuscarora and Goyeau. Located between the midrise downtown district to the north and residential areas to the south the site required an inviting quality that tied into the surrounding environment of small scale retail, service and hospitality. With a few high rise condominium buildings around the site, it becomes a focal point, centrally located needing a program that provides function for the entire community to enjoy.



(Top Left) Site models depicting methods of transportation; water taxi, pedestrian bridge, aerial tram and combination. (Lower Left) Tram and water taxi study collage.

A unique quality to Detroit's waterfront is that it doesn't have a "two sides of the river" condition, rather it's a shared international border with Windsor and Canada. While there is an inherent disconnect through issues such as public policy, interestingly enough, the Detroit-Windsor tunnel accommodates approximately 27000-29000 vehicles on a daily basis. The interchange of people between the two cities suggests on a socio economic level that they operate as one city with border crossing as just another part of daily life. The problem within this situation lies in the method of transportation. Detroit and Windsor have been overly leveraged by the automotive industry in the development of their urban makeup. With the planned M1 rail line and the transit Windsor bus system, the Funitel can unite the two disconnected systems and enhance both waterfronts as socially and economically vibrant components to a larger system of transit.



During the development phase of the Funitel system, issues of span came up, specifically, how many intermediate stations would be needed to span from Detroit to Windsor while accommodating the 180' minimum clearance for shipping lanes. Around the same time, information surfaced that the Detroit River is federally recognized by the Post Office with the area code 48222. The purpose for 48222 is to deliver mail to large freight ships as they sail through the Detroit river.

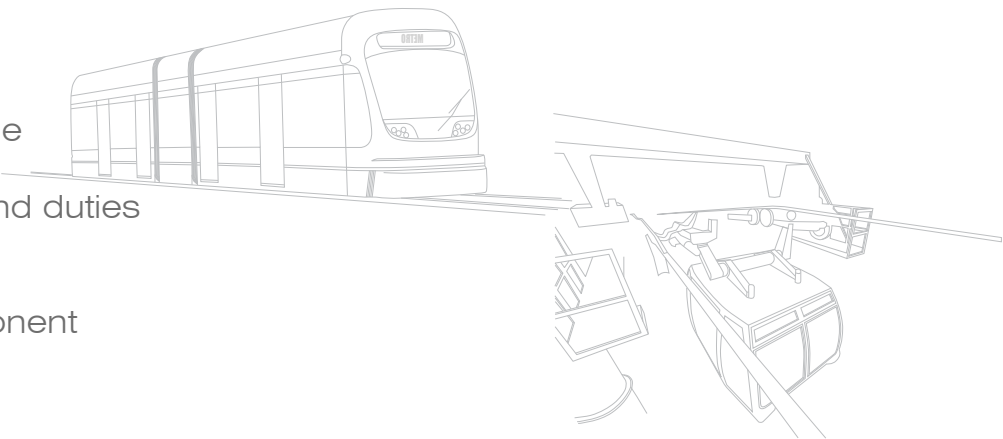


(Above) The J.W. Westcott II approaches the freight ship to make its delivery of mail to the crew on board.

PROGRAM | PROJECT PROPOSAL

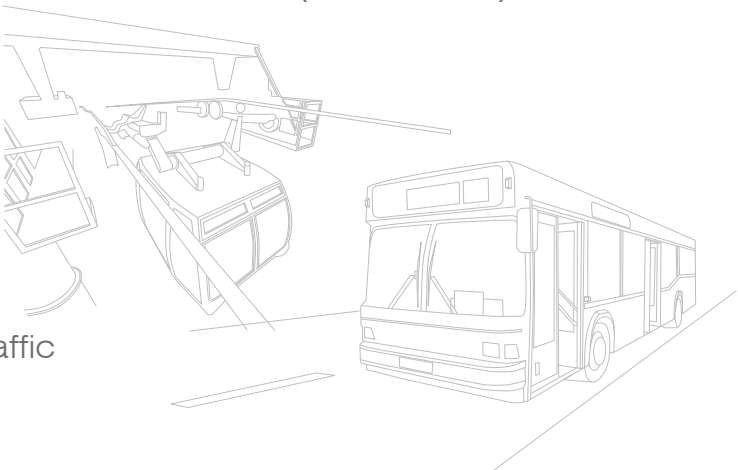
INTERMODAL FUNITEL | M1 STATION (detroit)

- BUILDING PROGRAMMING
- funitel loading station
 - funitel service mezzanine
 - administrative offices
 - international customs and duties
 - ticket kiosks
 - light rail platform
 - vertical riverwalk component



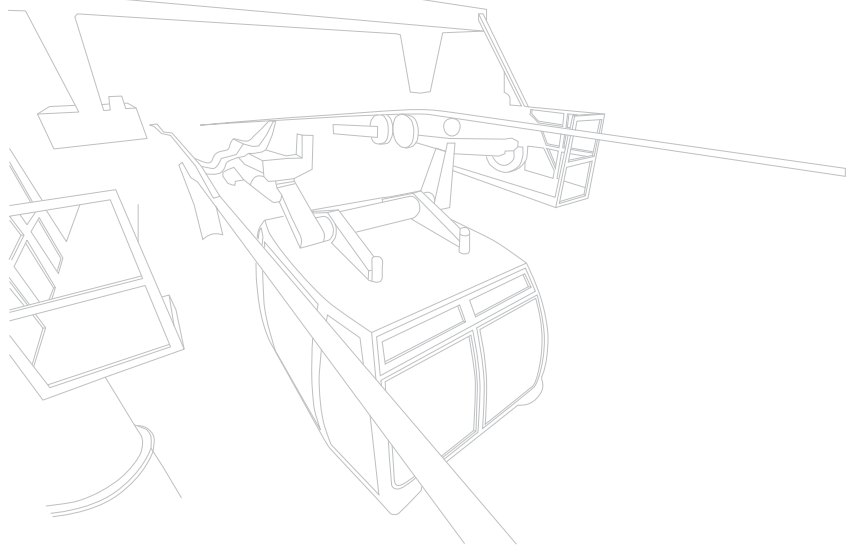
INTERMODAL FUNITEL | BUS TRANSIT (windsor)

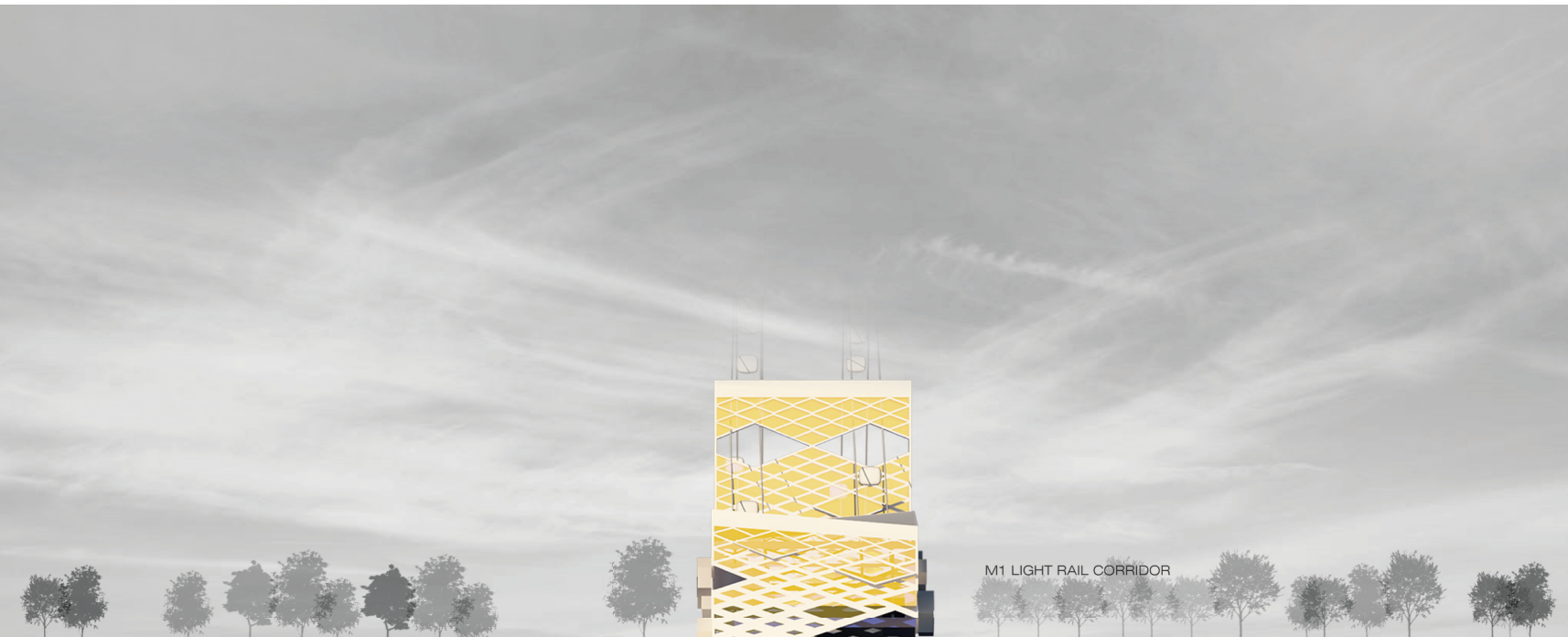
- BUILDING PROGRAMMING
- funitel loading station
 - funitel service mezzanine
 - administrative offices
 - international customs and duties
 - ticket kiosk
 - small scale retail and restaurant
 - covered loading platform for bus traffic



INTERMODAL FUNITEL | HOTEL (detroit river)

- BUILDING PROGRAMMING
- funitel loading platform
 - funitel service mezzanine
 - administrative offices
 - ticket kiosk
 - boutique hotel
 - residencies
 - hotel lobby
 - restaurant and hospitality
 - social recreation space
 - pool and boat dock





BATES ST

M1 LIGHT RAIL CORRIDOR

HART PLAZA



JEFFERSON
AVE

CUSTOMS

FUNITEL STATION

M1 LIGHT RAIL STATION

VERTICAL RIVERWALK COMPONENT

RIVERWALK

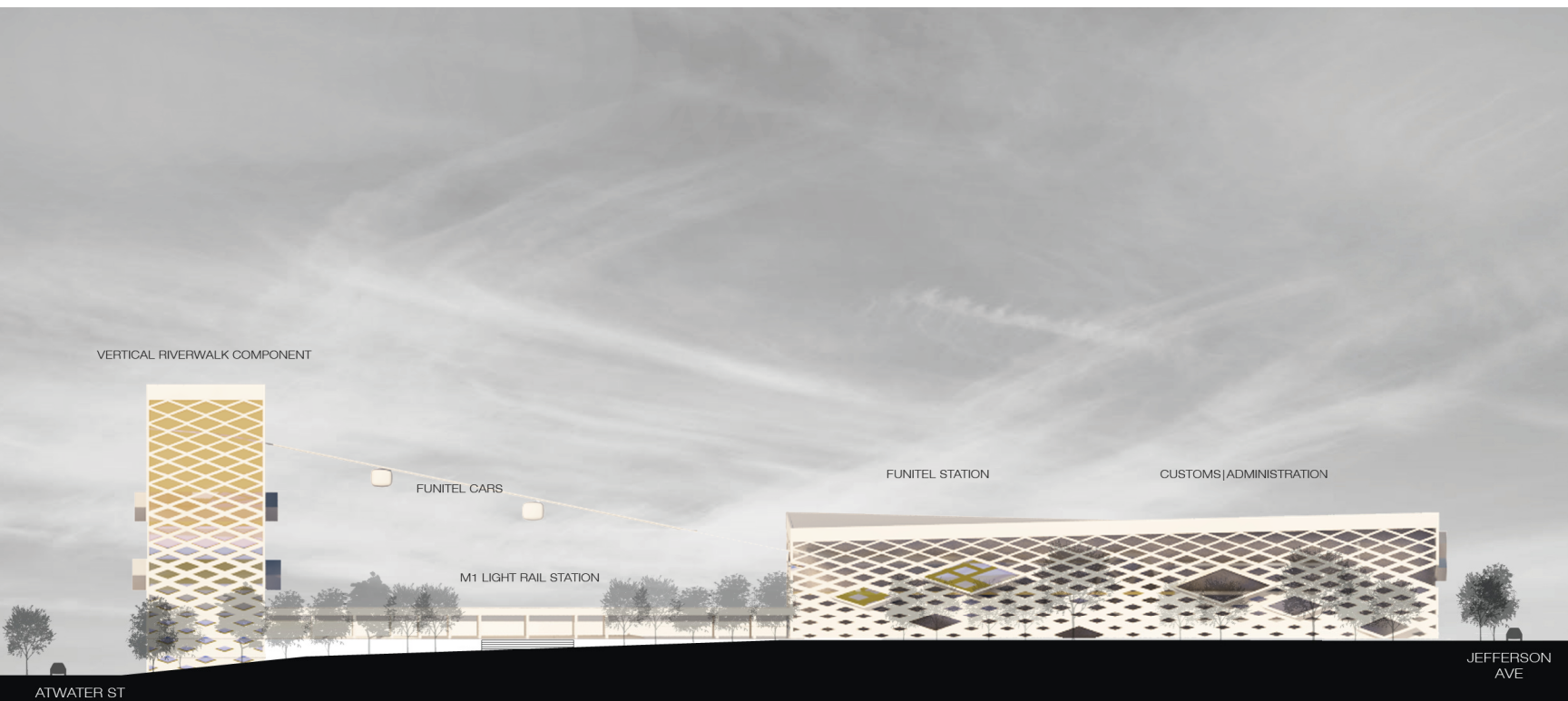


north elevation

west elevation



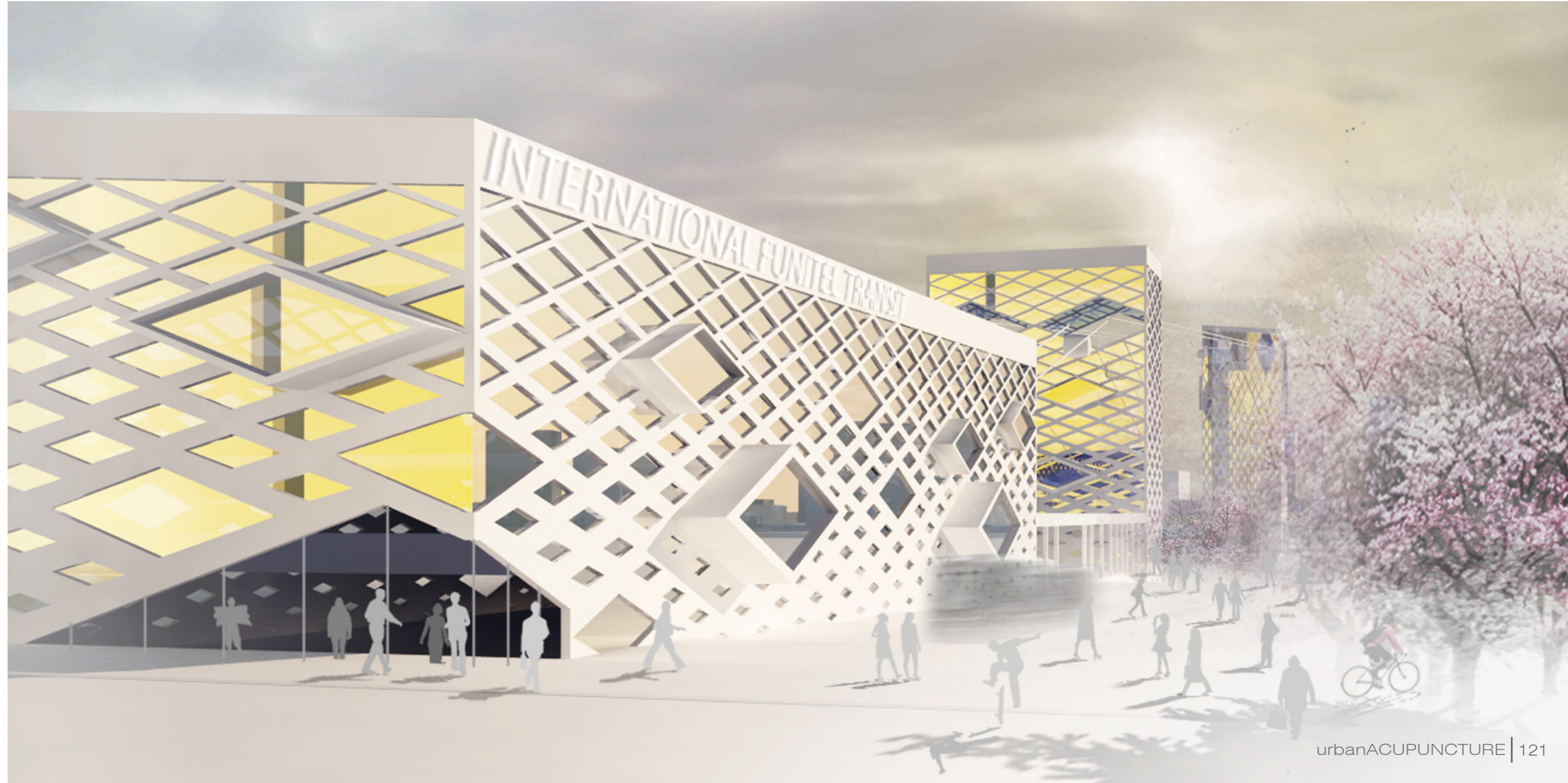
south elevation

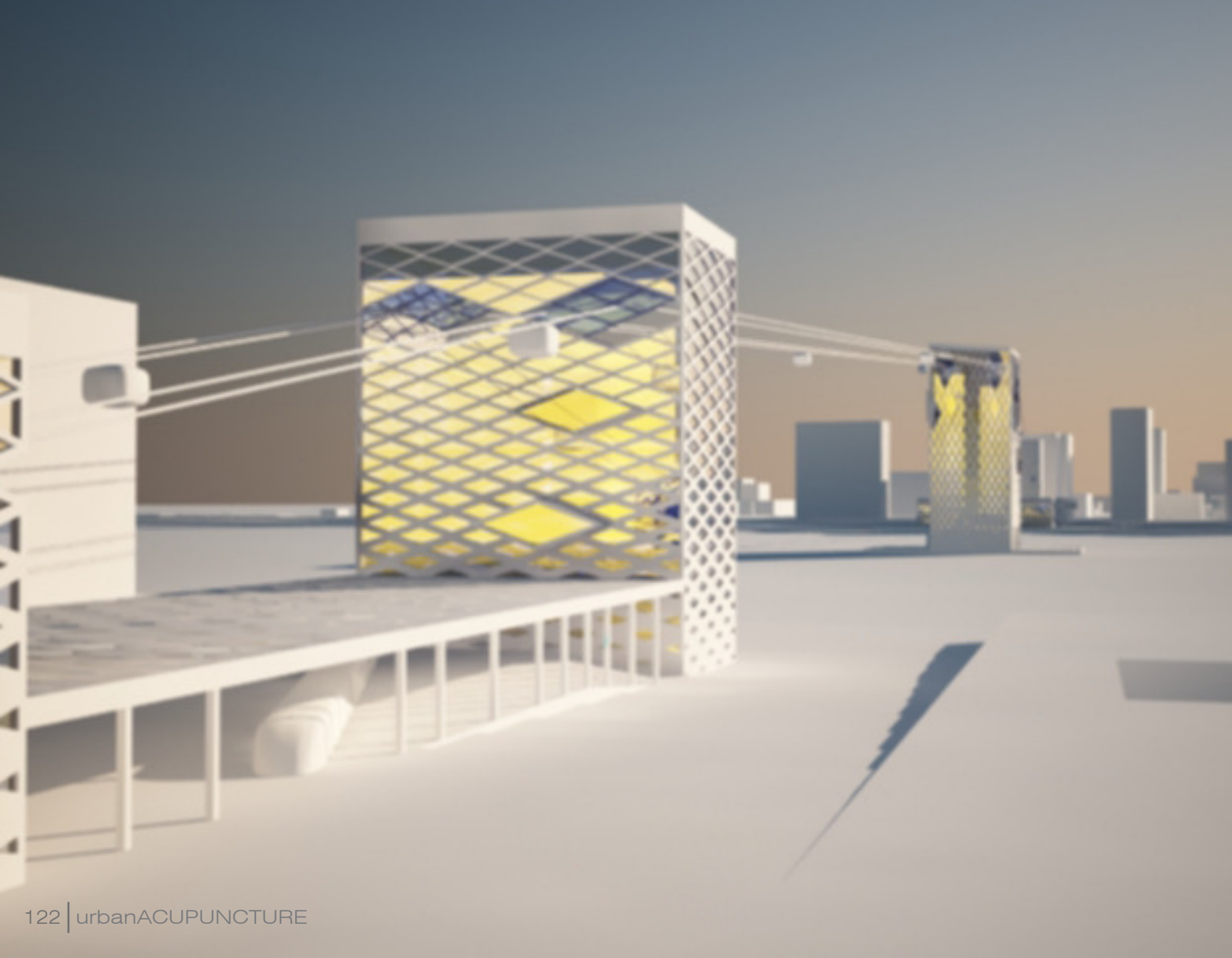


east elevation

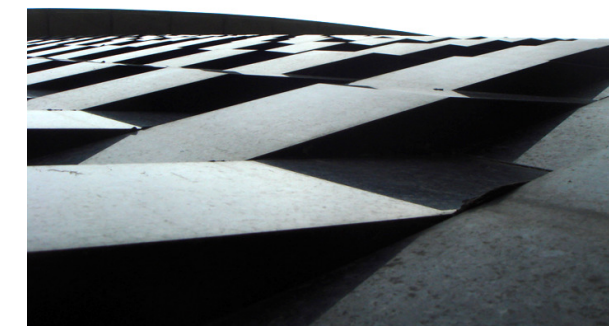


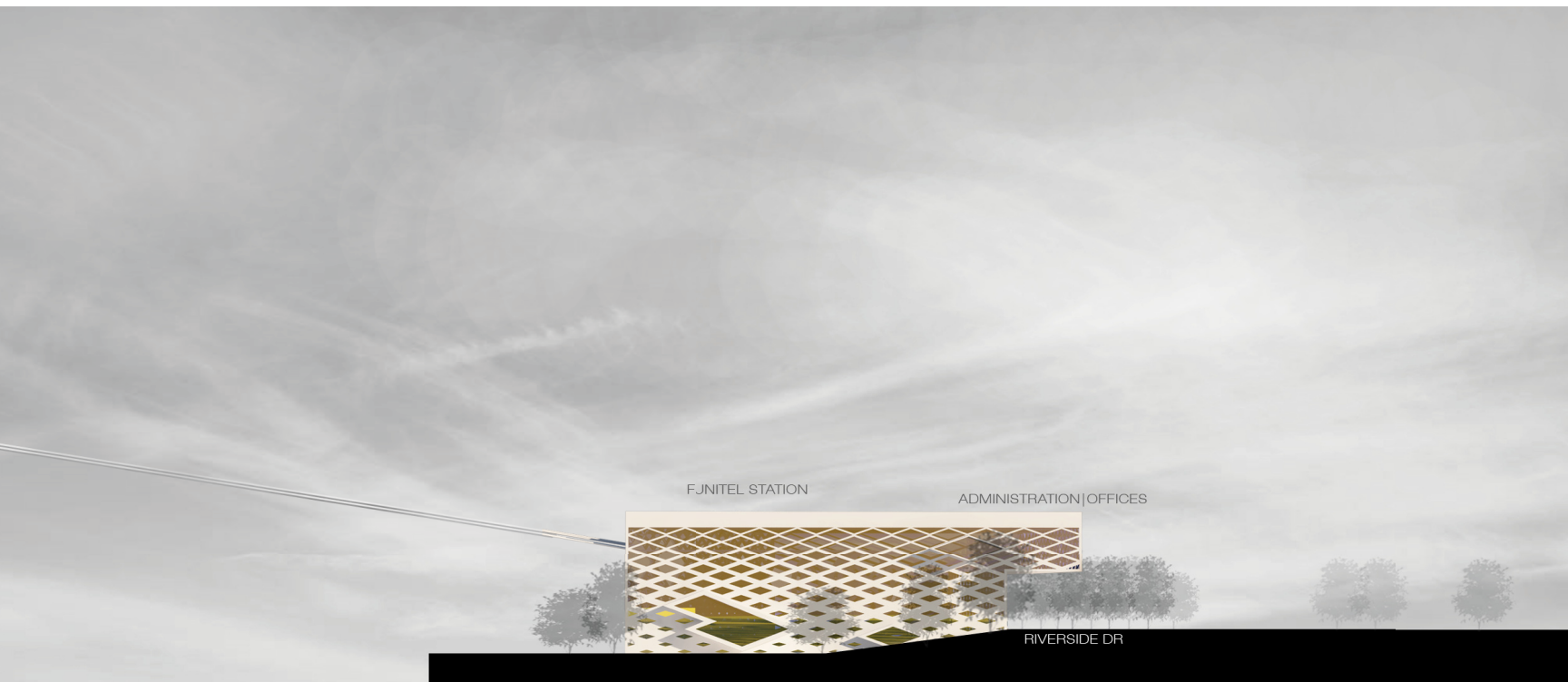
The international funitel and M1 building replaces an antiquated, abandoned auditorium on the banks of the Detroit river. By latching onto the end line of the M1, the Funitel picks up where the light rail leaves off, creating a string of transit oriented design that bridges the gap between Detroit and Windsor while also bringing a new identity to the gap, in the form of the W hotel and residences at 48222. Where the tower of the auditorium once stood, a fulcrum tower is created to give the funitel cables extra tension. The space within the tower becomes a vertical element to the expand upon the existing riverwalk. The M1 rail travels adjacent to the Funitel and administrative housing until it turns to go under a canopied platform.





The minimally invasive, linear quality of the station mimics the historic ribbon farm street grid used in early development of the city of Detroit. Furthermore, it allows for Hart Plaza to expand and interact with the new public transit modes and the frequently used riverwalk. The train station canopies' apertures follow the order of the diamond facades, which were inspired by a detail photograph of the Henry and Edsel Ford Auditorium.



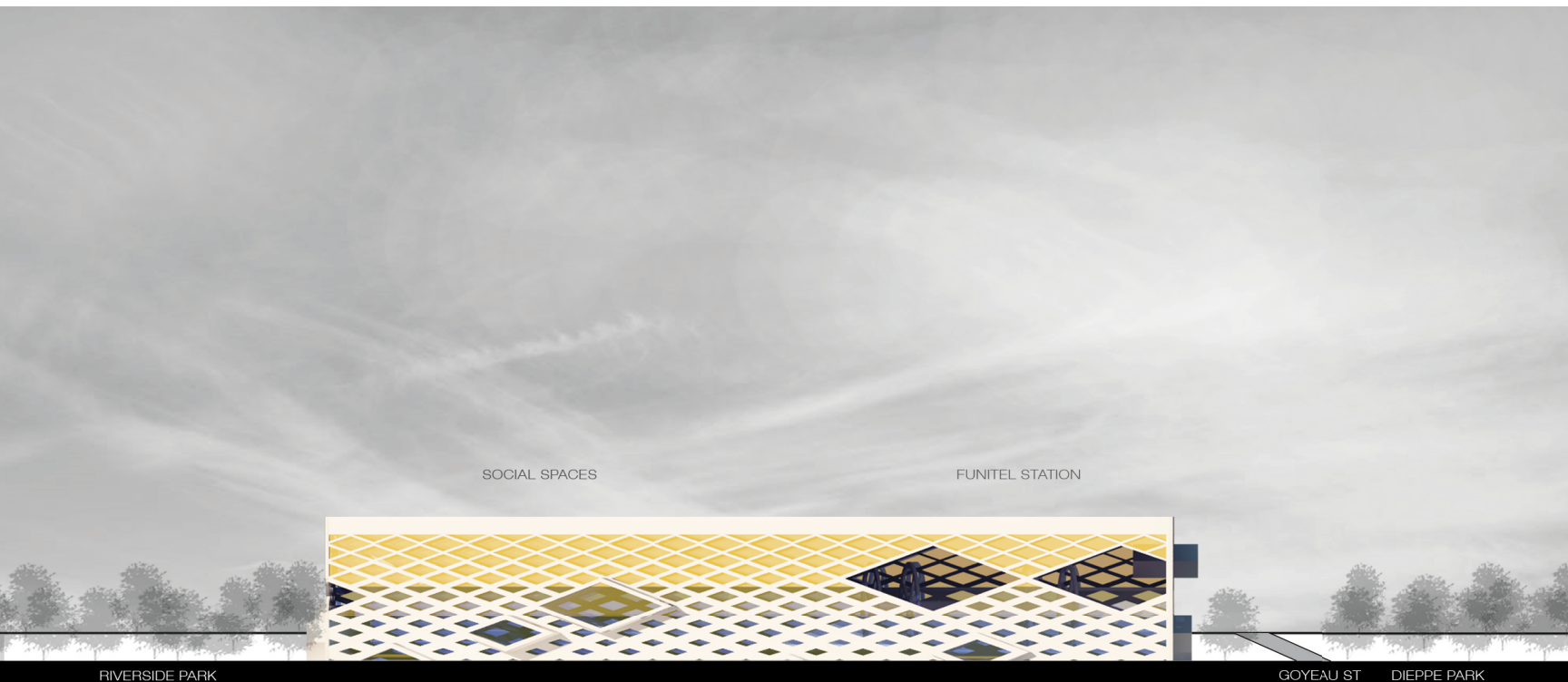


DETROIT RIVER

FUNTEL STATION

ADMINISTRATION | OFFICES

RIVERSIDE DR



RIVERSIDE PARK

SOCIAL SPACES

FUNTEL STATION

GOYEAU ST

DIEPPE PARK

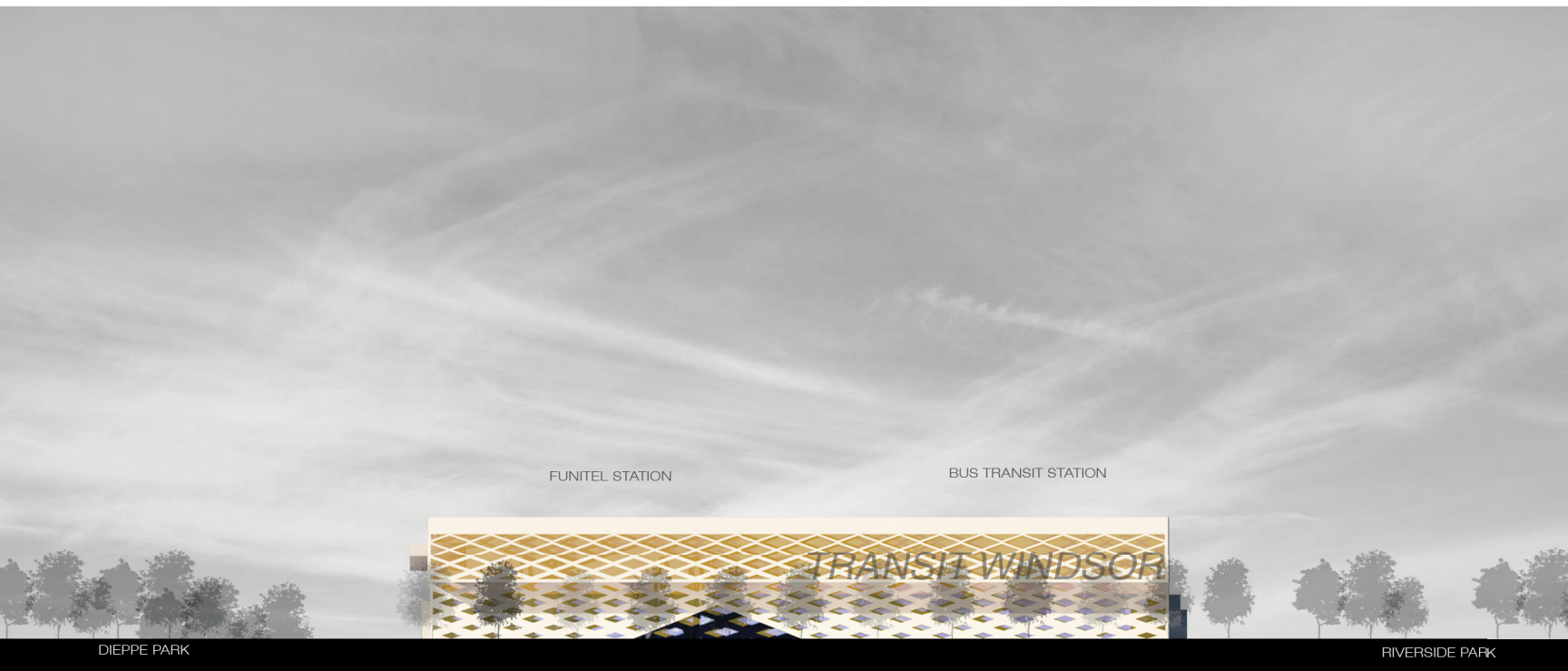
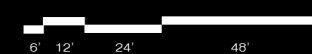


east elevation

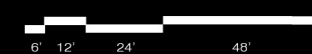
north elevation



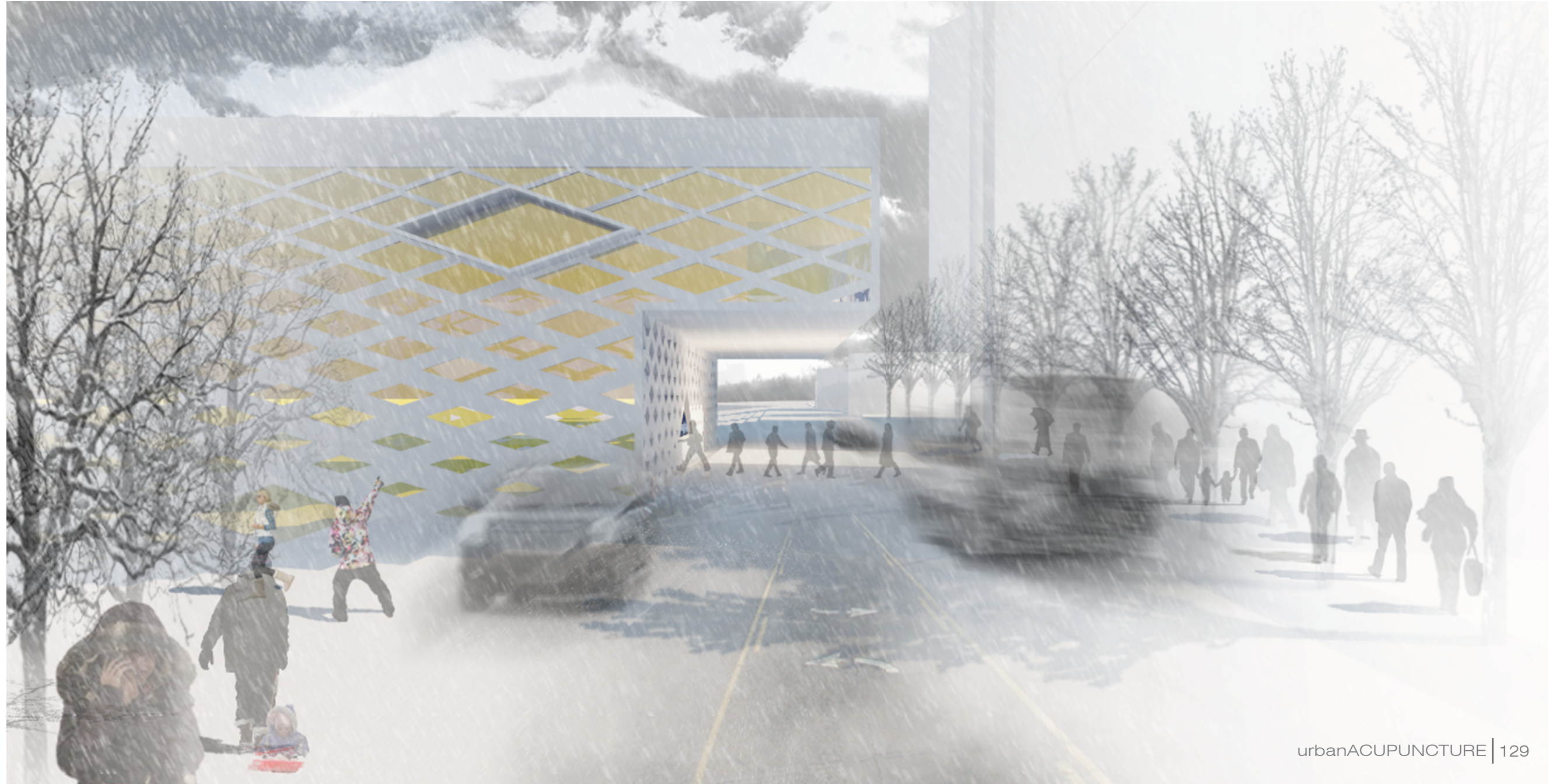
west elevation

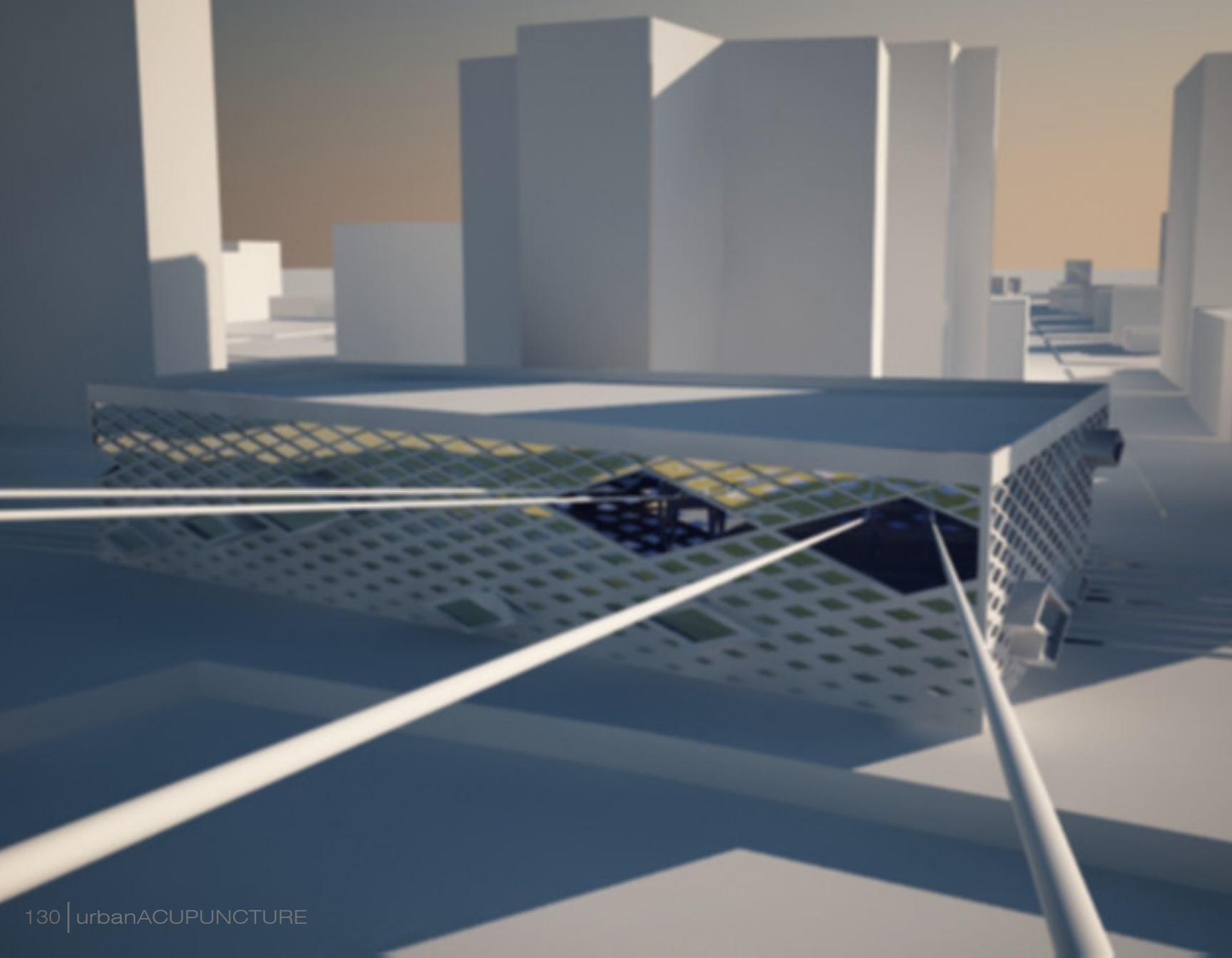


south elevation

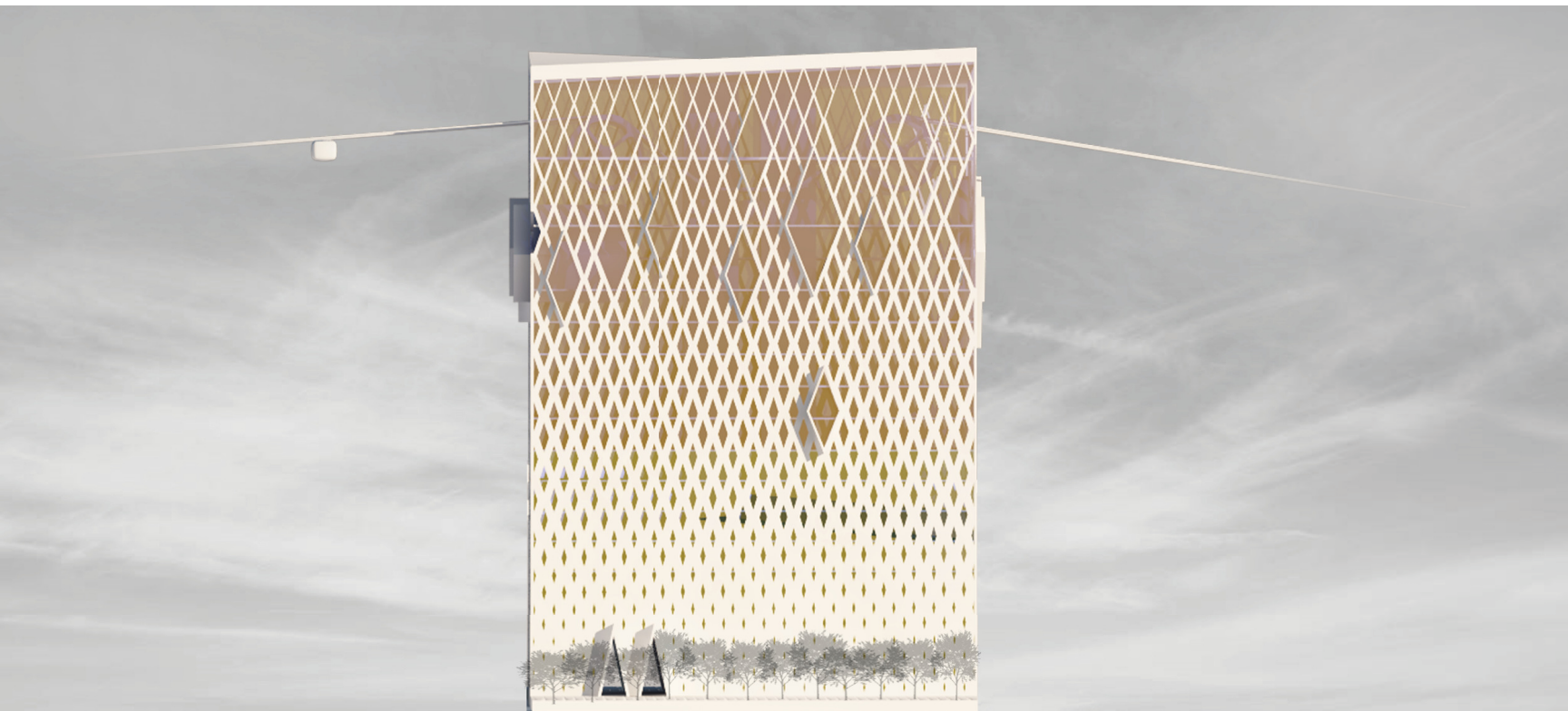


On the other side of the Detroit River the International Funitel and Transit Windsor building infills an under utilized parking flat. The close adjacency to the waters edge makes this building ideal for accomodating the two forms of transit mentioned earlier, with potential for expansion to include ferries. The south side of the building boasts a large cantilever which serves as the bus transit systems main stop, with administrative offices directly above. The buildings location also helps to more clearly define the two parks that seemed to mash together at the parking lot. The facade pattern is carried out through all three buildings to identify a single system.

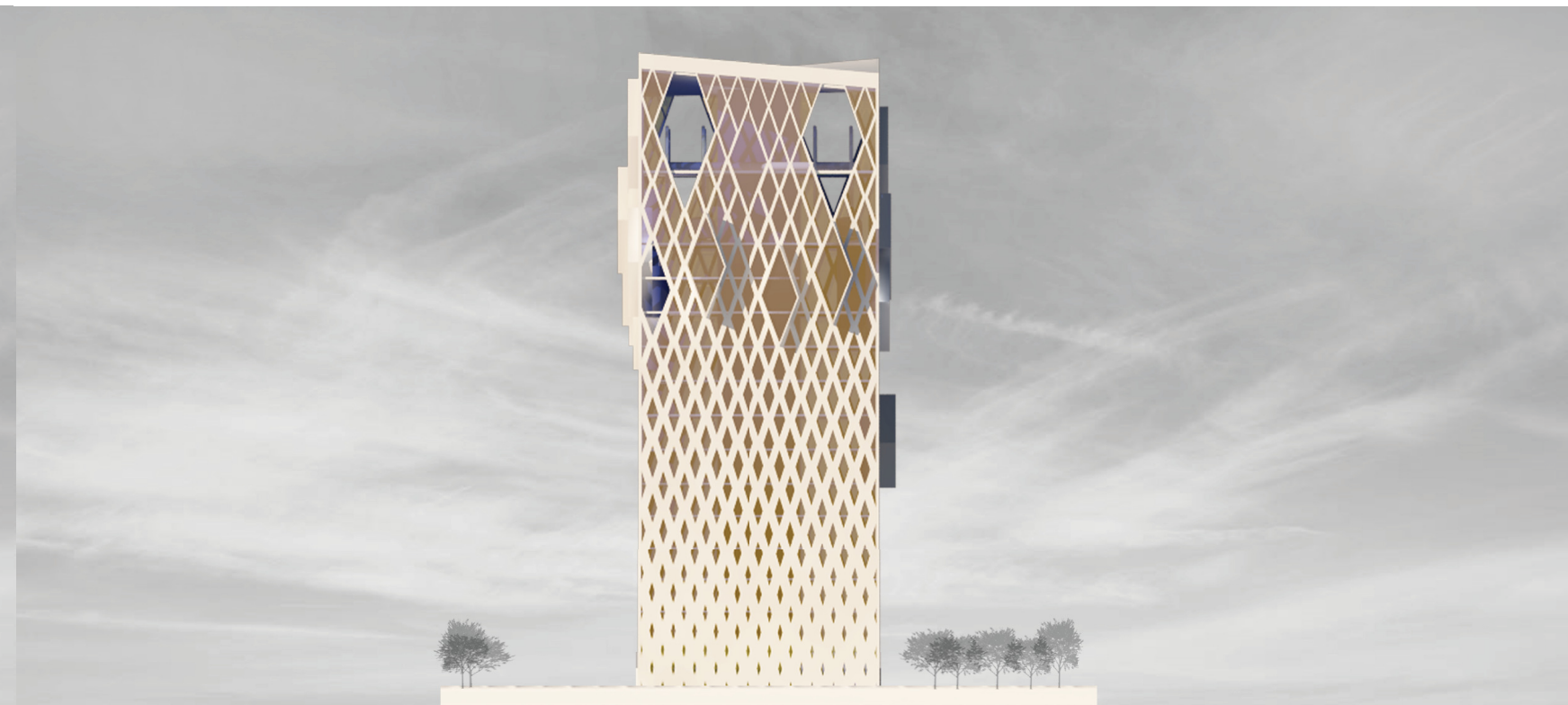




On its decent from the 48222 hotel and residencies, the Funitel travels roughly 1340 feet to the base station in Windsor, Ontario. From there, the bar and restaurant district is a few blocks away and with the integrated bus station patrons afforded the freedom to travel anywhere in the city they need to go. With capacity to accommodate up to 2000 riders an hour, the Funitel can compete with automotive travel in speed, effeciency and cost. Also, by travelling without a car, individuals are not constrained by the need to find safe, affordable parking and there is less of a wait time at customs with extensive car searches eliminated.

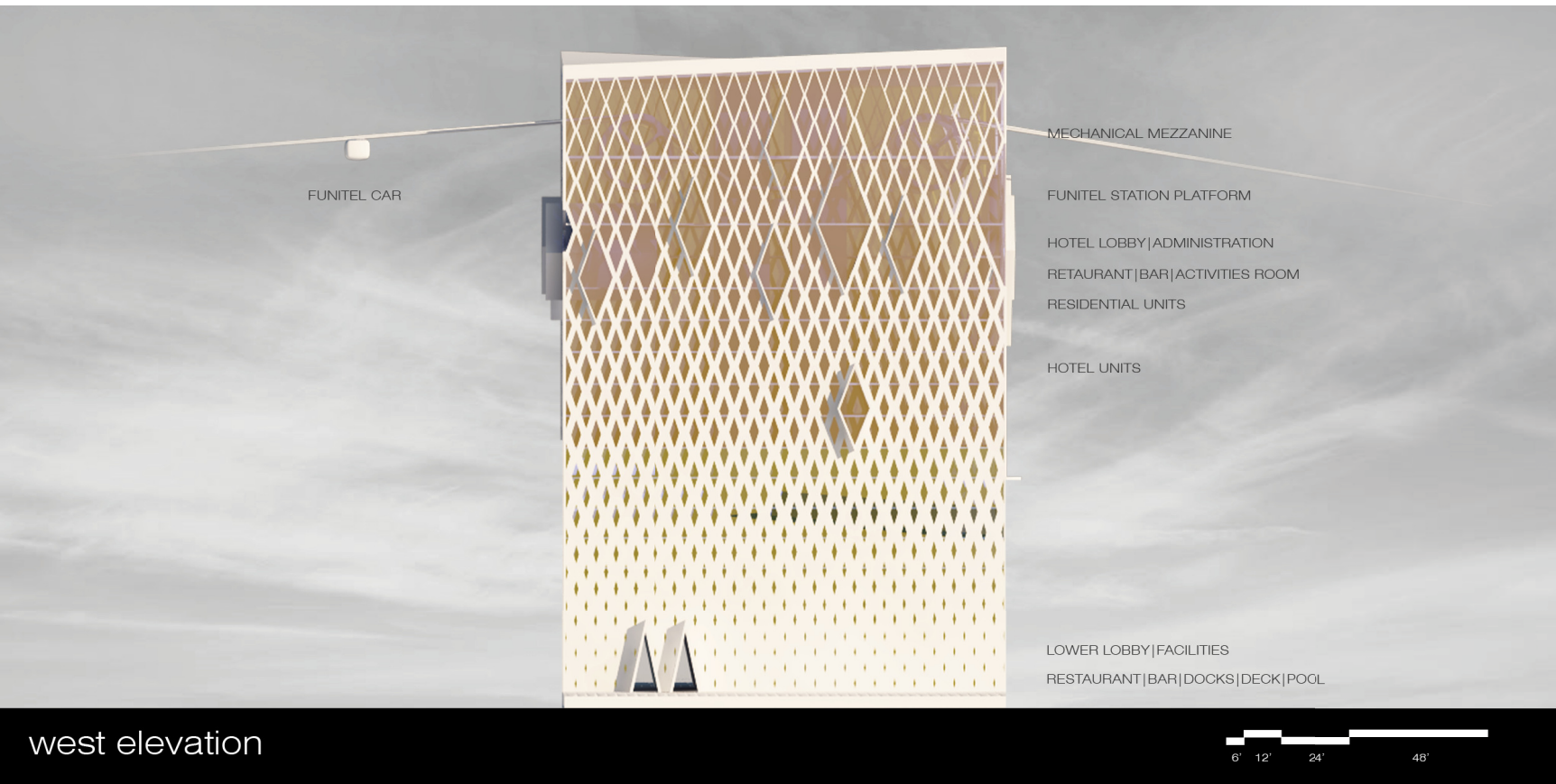


east elevation

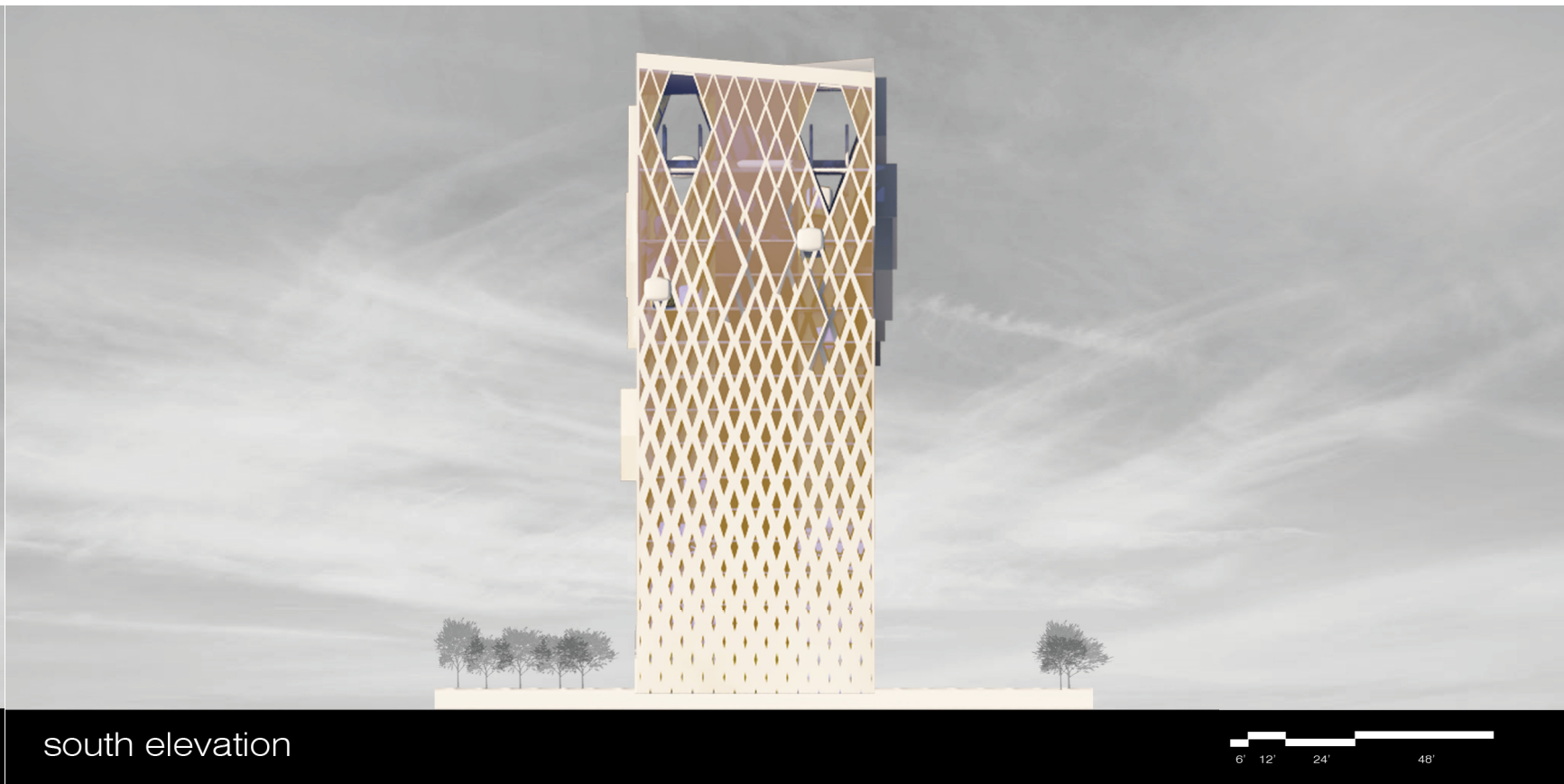


north elevation

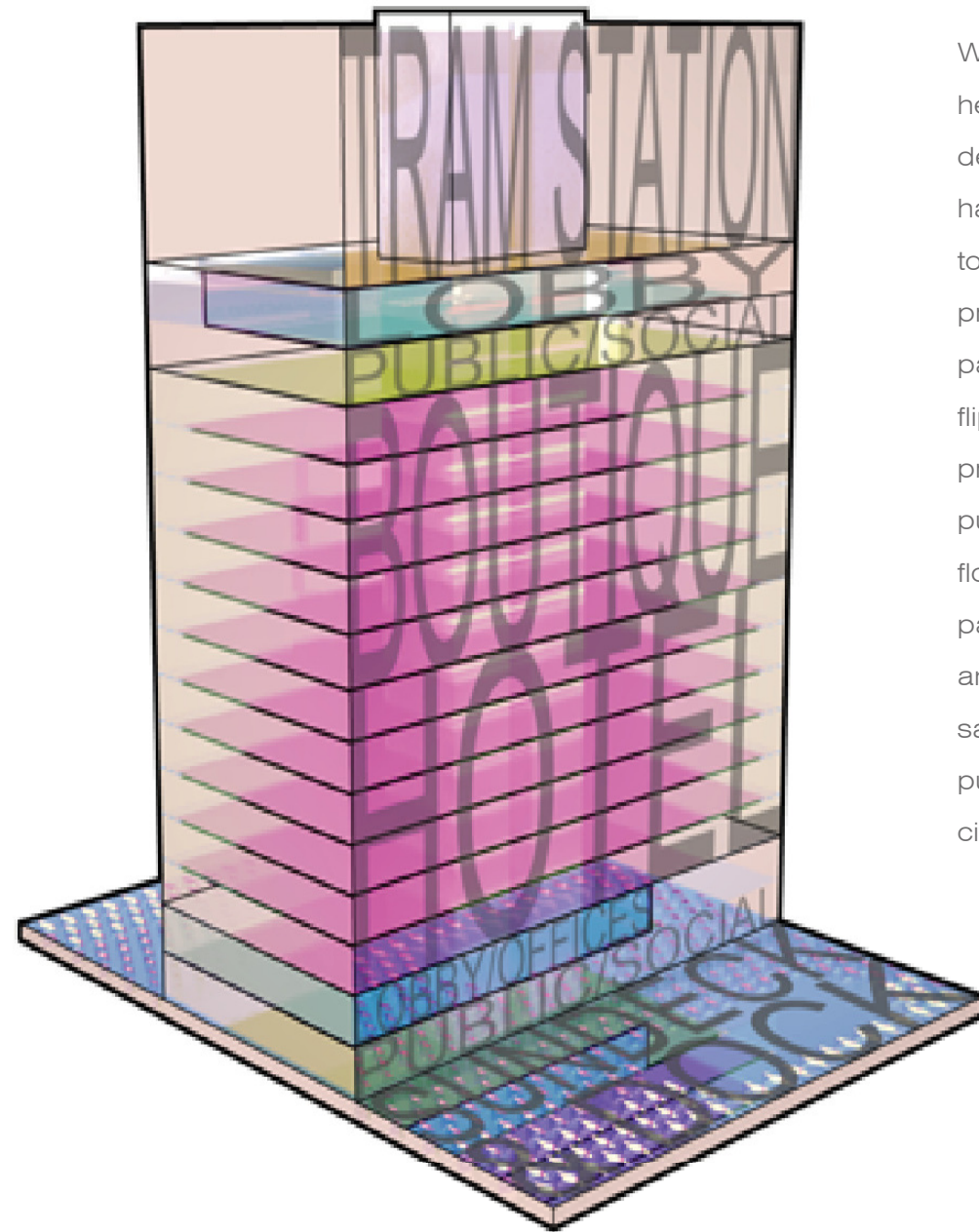
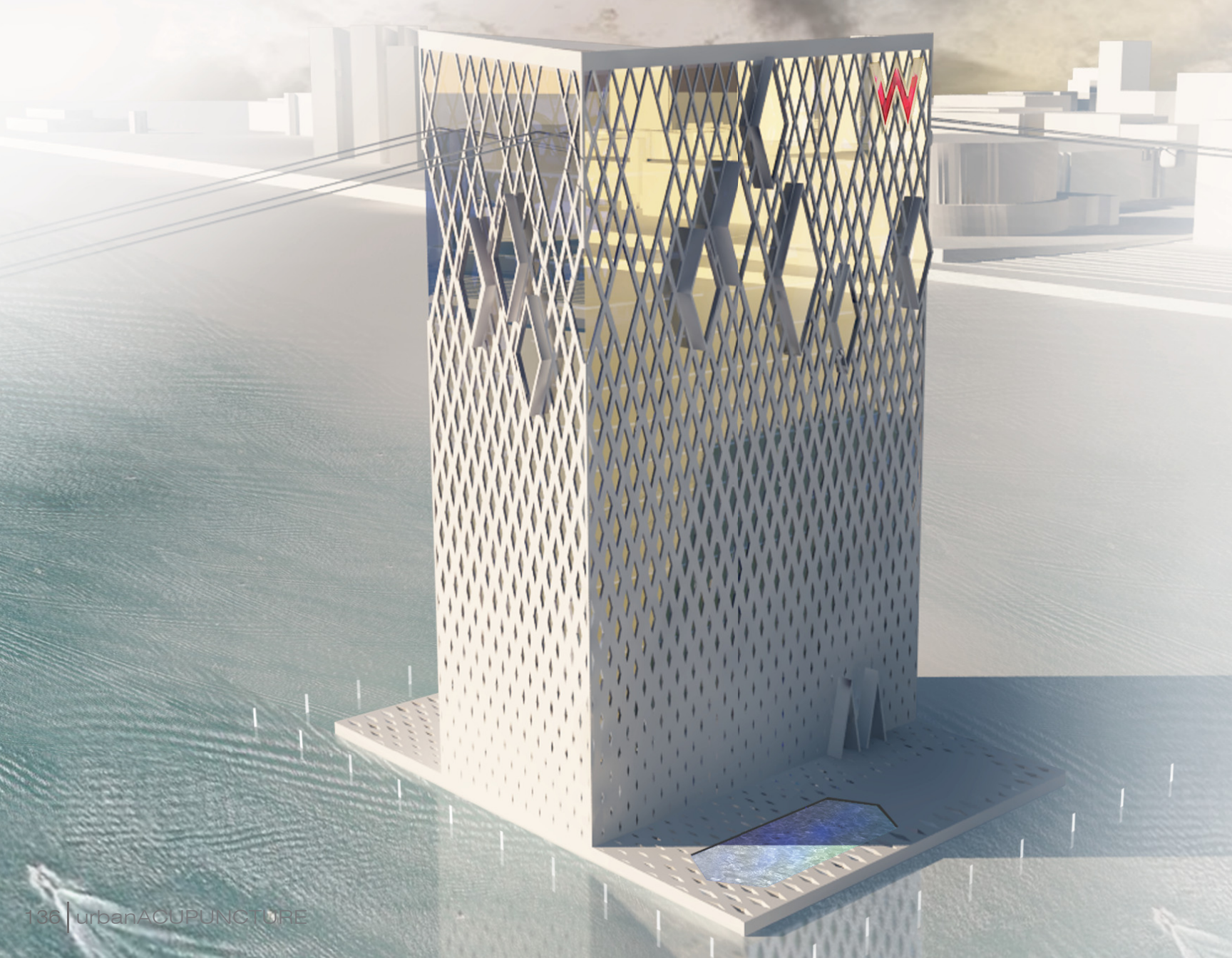




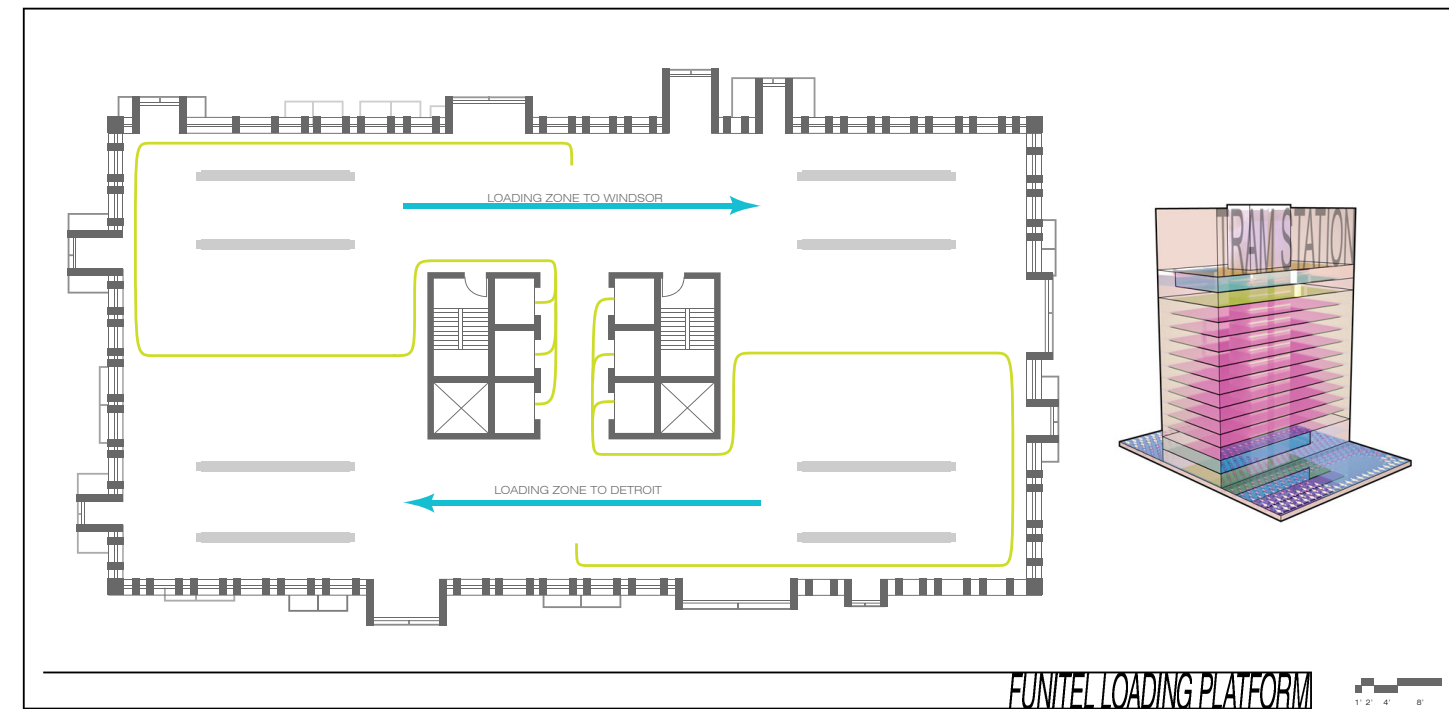
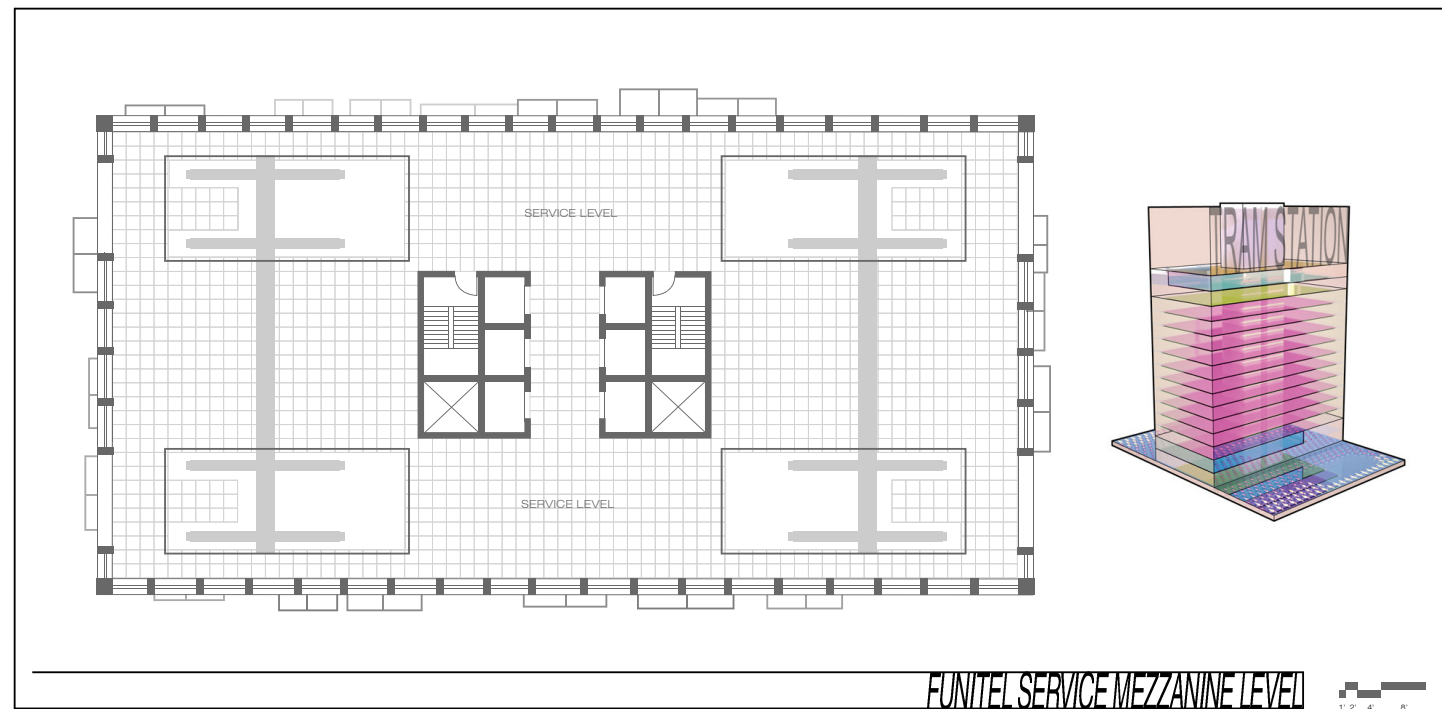
west elevation

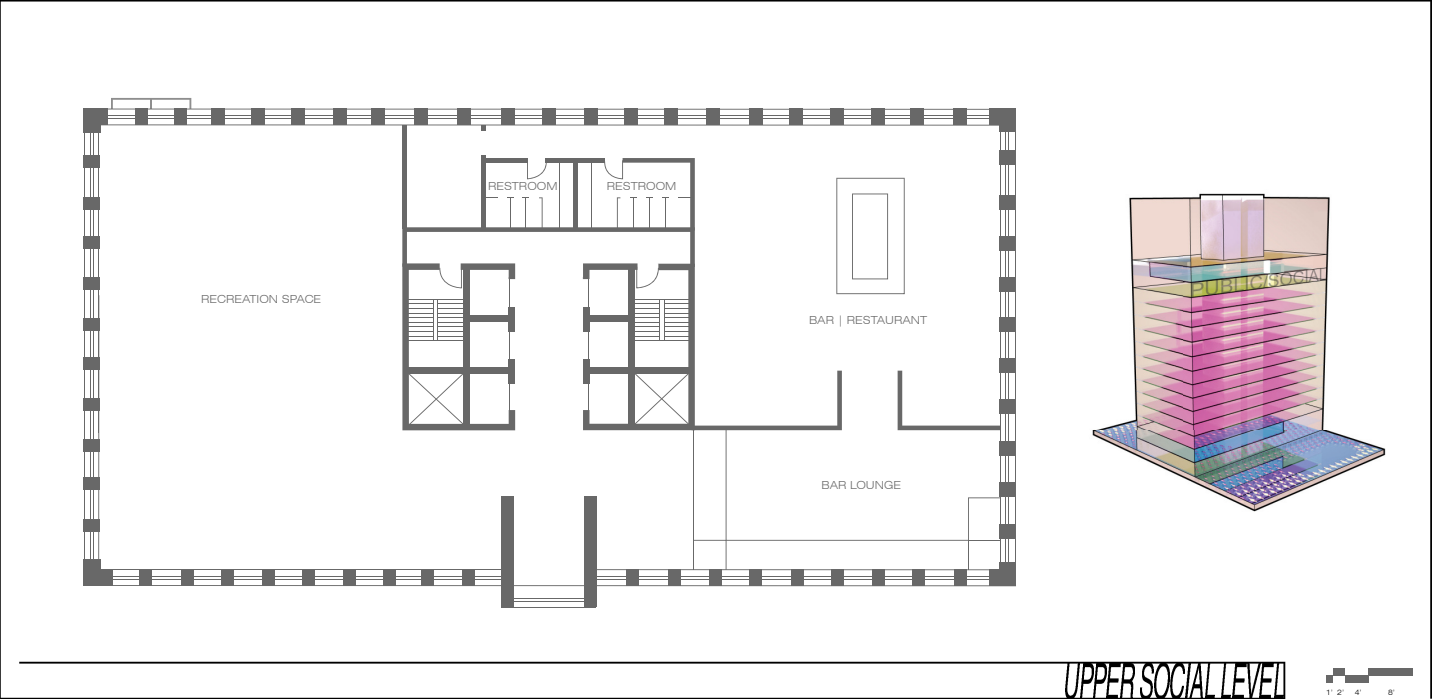
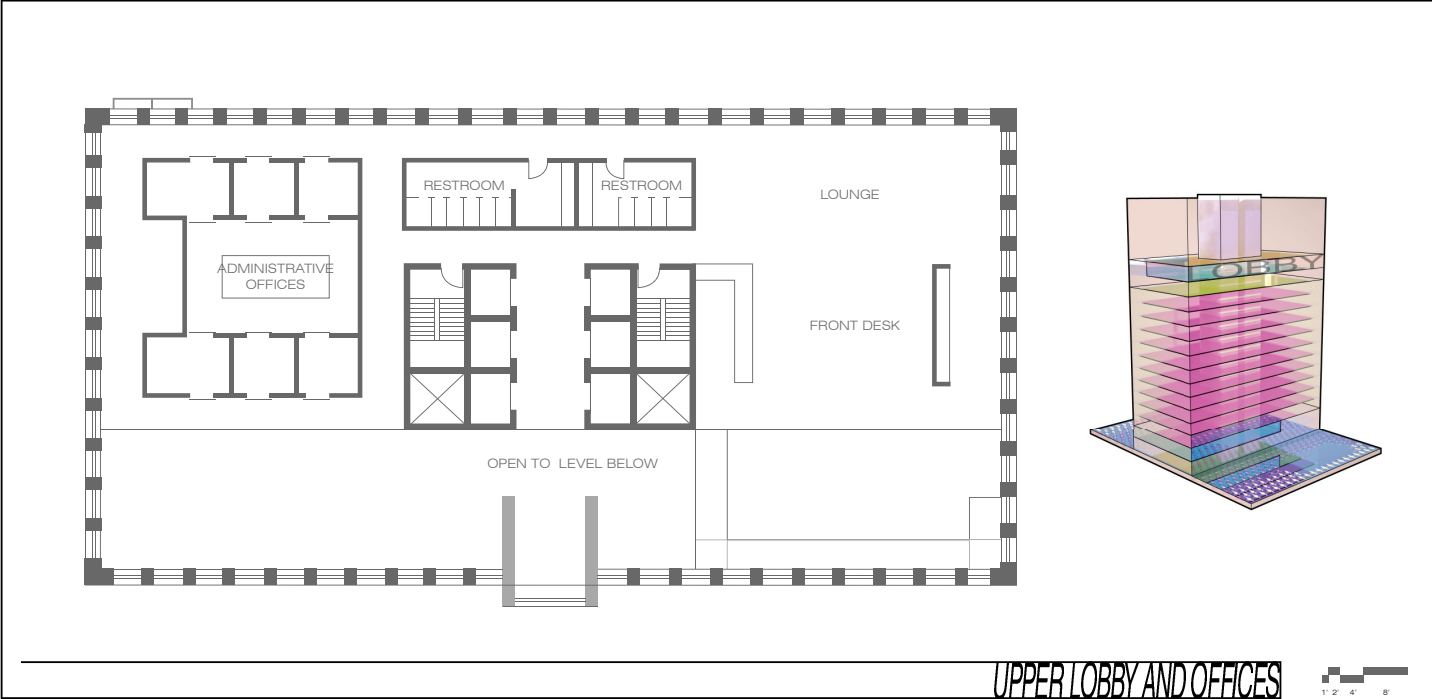


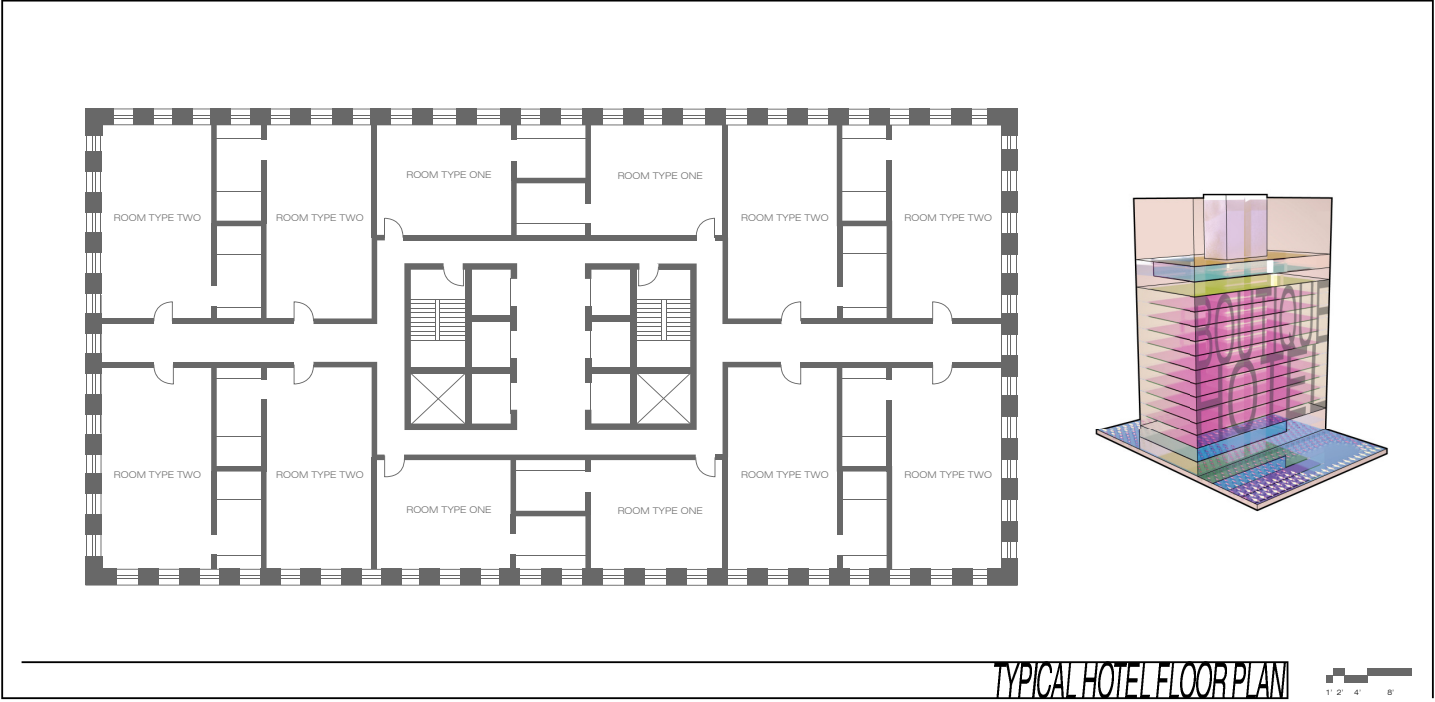
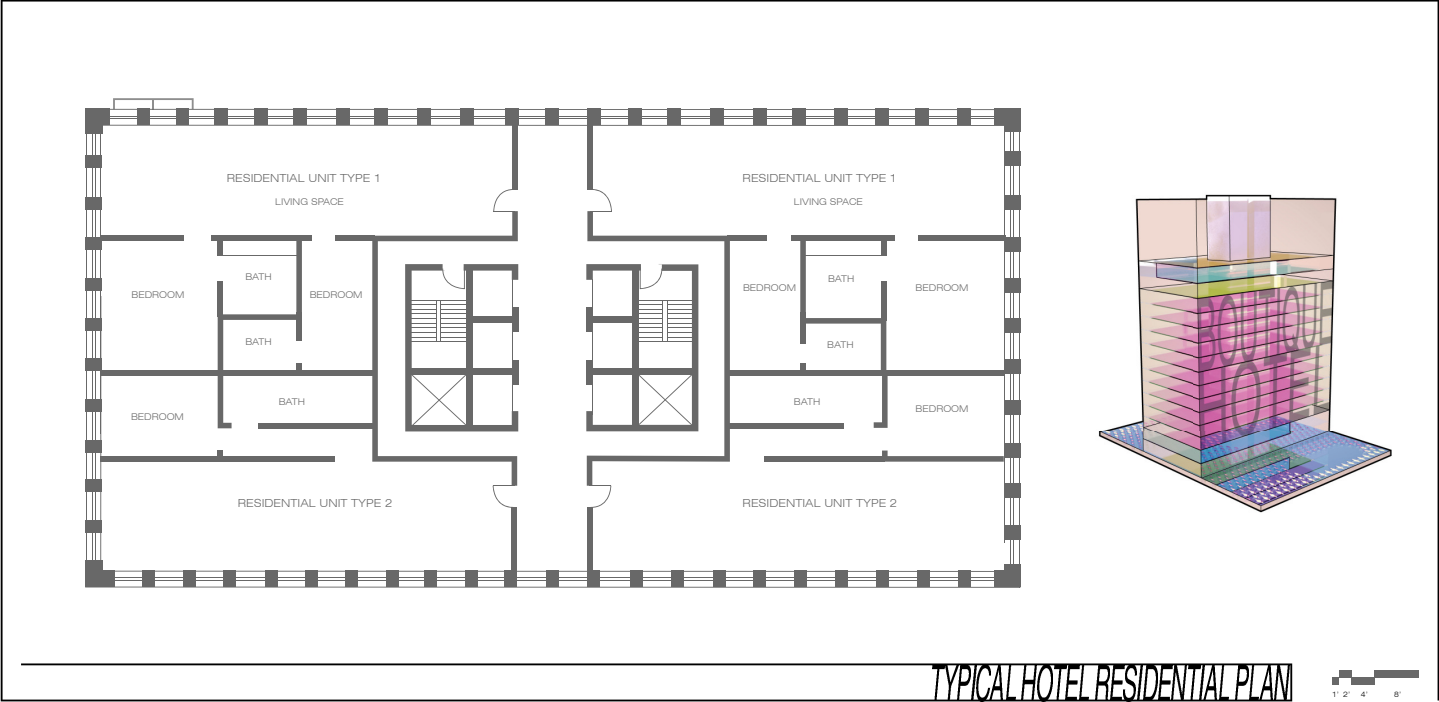
south elevation



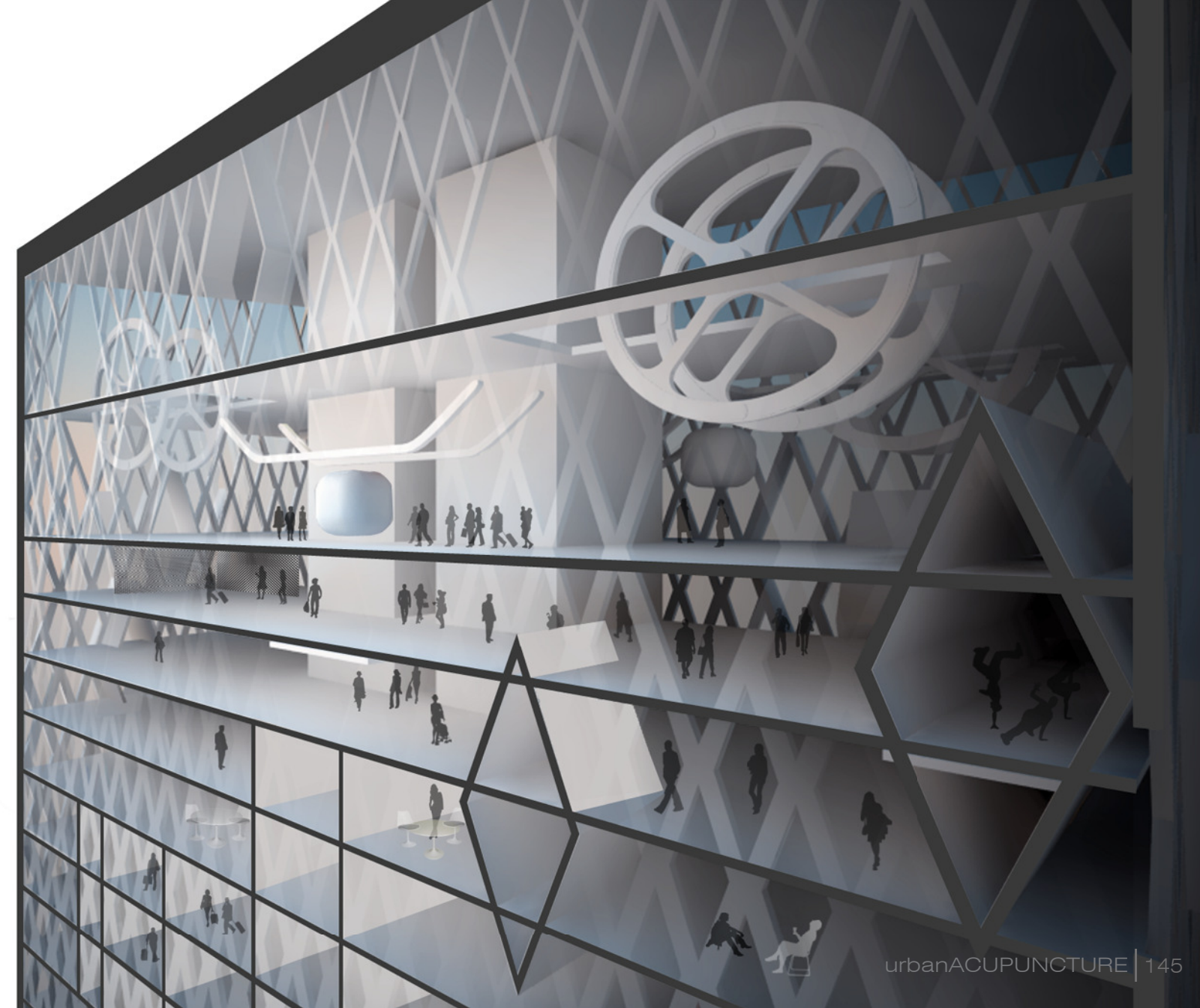
With the 180' minimum height requirements of the Detroit River, the tram station had to be located at the top of the hotel tower. This primary function dictated the part of the rest of the tower, flipping the typical hotel programming upside down, putting the lobby at the upper floor below the funitel where patrons arrive. The hotel and residential rooms are sandwiched between shared public spaces, providing city views and water level activity.





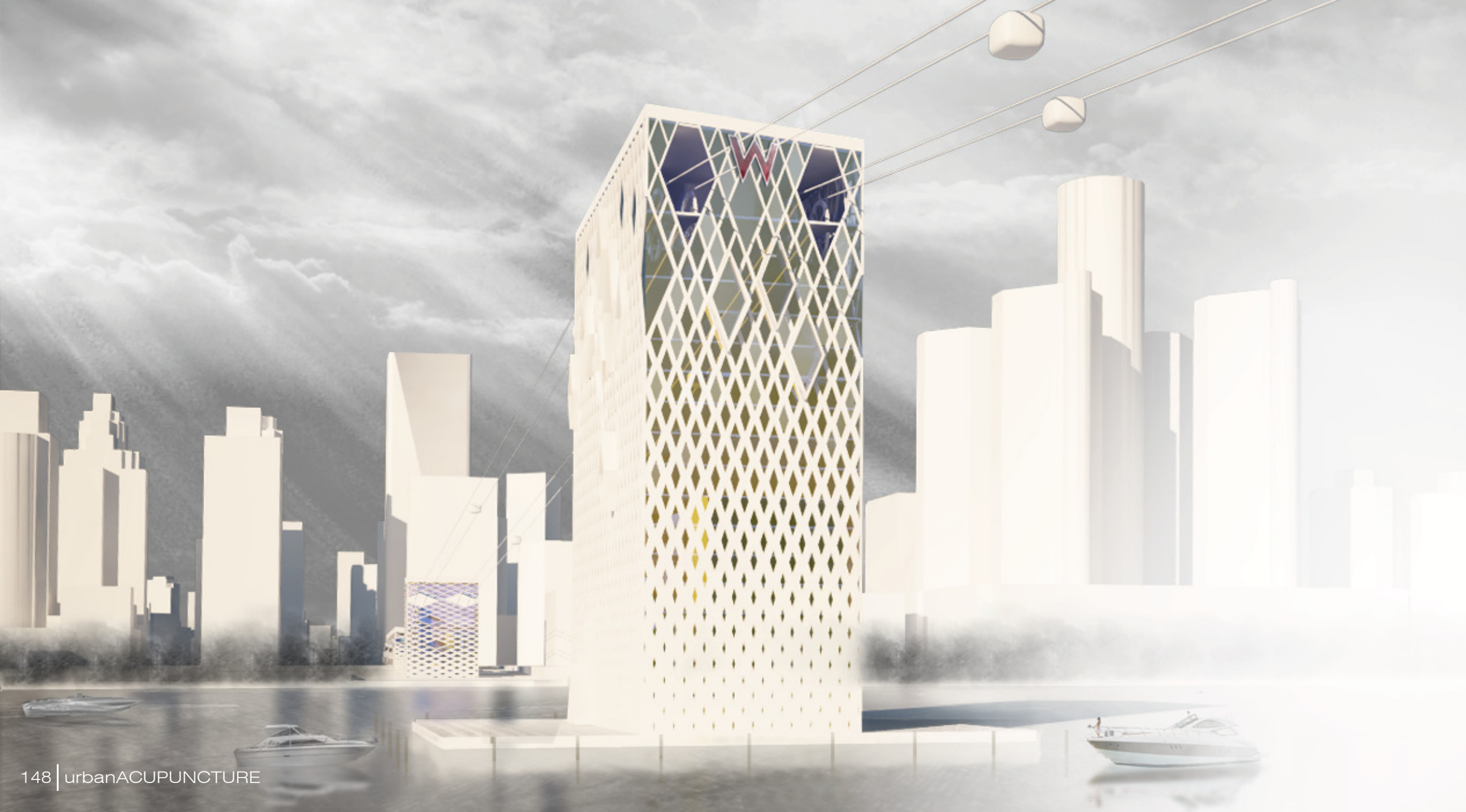


The mechanics of the “ferris wheel’s” in the hotel tower operate a bit differently than the valley stations in Detroit and Windsor. Since the hotel has to behave as a stop and not just an intermediate structural tower, the cables have to run continuously to the end stations. Instead of wrapping 180 degrees, the gondola cables wrap roughly 60 degrees around the flywheels to the loading and unloading level one floor below. After loading, the gondola cars wrap back up and out of the hotel, then back toward the valley stations on either side of the river.



The upper lobby level is the first interaction that riders have with the hotel aspect of the building. The apertures that protrude outward from the facade also protrude inward, creating intimate social pockets of activity for programs like the bar and restaurant. Given the peculiar site of an international border, any number of activities could occur within these private pockets.





The international, intermodal funitel transit system gives the cities of Detroit and Windsor, the Detroit River and 48222 a new, powerful sense of identity in an otherwise ordinary region. Furthermore, the system expands upon plans being put into action which can strengthen the international tie between the U.S. and Canada. This acupunctural point on the Detroit River can be the catalyst which launches a collaborative, dual city-wide public works effort to unite these twin cities beyond the automobile with a pedestrian-friendly transportation network.

Urban acupuncture is an architectural approach that focuses on an all encompassing analysis of the city in an effort to find a singular idea which can spawn beneficial repercussions that resonate through the cities social, political and economic stratum. The relationship of Detroit and Windsor with a shared international waterfront border is an interesting condition not found in many locations around the world. With further exploration into the potential of the river as an acupuncture point in the nervous system of the city, unique information started to emerge, particularly in the discovery of the 48222 zip code; the only floating zip code in the country.

After honing in on this particular idea which asks questions of how we socialize and interact in spaces that aren't necessarily governed by one set of policies, or even one government for that matter, other parallel situations came into question. What architectural interventions would

CONCLUSION

occur on sites bisected by state lines? or time zones? or other socio-political issues such as dry and wet county lines? If the bar closes at three, do you just go to the other side from the eastern to central time zone to stay out an extra hour? This thesis has provided a distinctive approach to understanding the implications that architecture can have on the city and how people operate within it. By peeling back the layers of the city to uncover a concise idea, this thesis has opened up other opportunities, sites and situations to which urban acupuncture can be applied.



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