PUBLIC TRANSIT SYSTEMS AND COMMUNITY PLANNING:
Reconnecting the City

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Public Transit Systems and Community Planning

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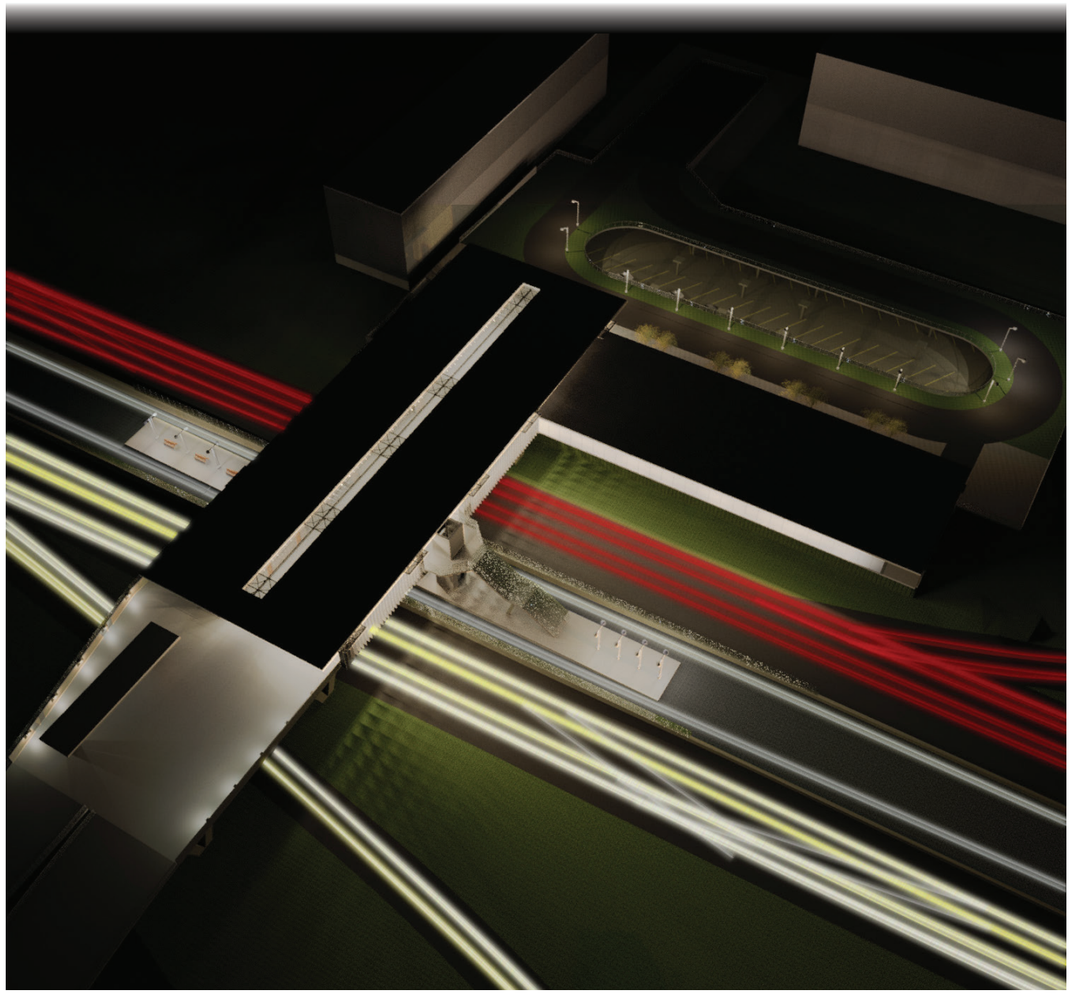
Reconnecting the City

A study in public transportation, community planning, and the architecture at the intersection of these projects.



Public Transit Systems and Community Planning

Reconnecting the City

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ABSTRACT

How do you get from point A to point B within a city? The most obvious answer would seem to be to get in your car and simply drive there. This works for many commuters and seems to do well enough. But what if you don't have a car or traffic is a burden to navigate? You could go by walking, biking, bus or rail, depending on distance to the destination. However, these options rely on major urban planning in order for the systems to be an attractive option. Why does it matter that we rely on systems beyond cars? This essay will delve into the benefits of a well-integrated city transit plan as well as propose a new plan for a typical sprawled Midwest American city - in this case, Cincinnati, OH. Problems arise from the disconnection of communities and over-reliance on cars. Neighborhoods become isolated and priorities are set for cars rather than people. This study looks to overcome these issues by researching the successes and failures of different city transit means as well as the community and city plan integration into the systems. Studies include American systems, such as the Chicago transit systems, as well as more creative answers, like the Medellin gondola system, the Metrocable. From these case studies and urban planning research, I will synthesize a community planning method that could be applied to update an existing one. I will then design specific community and transit plans for a portion of Cincinnati to show how the plan would work in action. With a revitalized transit and community plan ideology, Cincinnati could flourish equally for all its citizens, and this study could help get it there.

Public Transit Systems and Community Planning

Reconnecting the City

ELIAS LEWIS
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MY CHICAGO EXPERIENCE

In 2012, I moved from home city of Cincinnati to Chicago. I was just hired for an architecture firm that agreed to expand my education in partnership with the University of Cincinnati. This was the first time I ever moved out of my home city for an extended period of time, and I was anxious to see how much my lifestyle would change in the big city of Chicago. I was given plenty of tips on how to make the most of my time in Chicago, such as places and trails I needed to visit. But the most common advice I kept hearing was to learn and take advantage of the L and the CTA. Sure, I understood the helpfulness of public transit. I already planned my work commute form my apartment to the office and didn't think much of it. What I soon experienced surprised me on what the L really meant to the city. After only a few weeks of learning the system, I was riding the trains to neighborhood block festivals with ease. I explored the city on my bike, then easily found a bus line that could get me home as the sun set. I could easily get to the opposite side of the city to visit my friends without having to worry about gas, directions, traffic, or other car issues. This network of trains, subways, and busses connected the entire city so well, I rarely ever touched the car I thought I would need to use. When I moved back to Cincinnati to finish my undergraduate year, I realized that I nearly forgot how to drive. My entire mindset had changed while I was away. I was more inclined to ride my bike or walk, and I was more willing to take a bus. I came to realize that a city did not have to be a series of isolated events, but could be a one connected experience just a bus ride, bike trip, or walk away.

THE PROBLEM

Chicago is a great example of how a city can connect its residents, work places, and entertainment districts. However, a bit further out from the city, the region faces a problem many other cities face, the problem of sprawl. Many of these cities are built with the automobile as the heart of the design, meant to move individuals who own their own automobiles. They push out people as the primary design factor favors cars allowing for designs for unfriendly walking districts, or large shopping centers that only seem accessible by car. Simple livability becomes a challenge, and those without cars feel unwelcome. The issue of "carless families" only makes the situation worse, as combined with the problem of food deserts, families are cut off from easy access to healthy foods and lifestyle choices. At the turn of the 21st century, the important urban questions are asked – How can the city link with its disconnected communities to the urban core, and how should the neighborhoods be planned in order to mitigate sprawl? Cities must always evolve to keep up with its citizens, else it could fail and deteriorate, both socially and physically.

METHOD

To find ways to understand the issue, the study will be narrowed down to one city: Cincinnati, OH. This Midwest city has been undergoing plan redesigns and major proposals the last couple decades while trying to fix its predicament with community isolations and disconnectedness. Historically, it has faced several hurdles when trying to deal with transit. Cincinnati is notorious for its unfinished, never used subway. The streetcars and funicular inclines were all shut down and replaced with motor busses. When the Interstate Highway was built in the 1950s, it destroyed entire neighborhoods. In 2000, a major rail transit proposal was struck down again. Only recently has a significant project, the Downtown Streetcar, been able to show promise of change, and only by a narrow margin, as the newest city council and mayor tried to cancel it during construction. As the Cincinnati tries to recreate itself, its suburbs are suffering from inconvenient connectivity, areas with low car ownership, and unwalkable districts. This is where new planning and design must step in. As the city tries to reconnect itself, communities should be remodeled to complement the transit and become more livable.

This paper is an urban development study of Cincinnati, Ohio, specifically as related to the transit system and qualities of livability. The first study is a historical survey of the city that made the city what it has become today. Cincinnati's transit roots can show why this city has focused so little on public transit and centralized urban development. The findings can then be compared to the national standard as seen in other American cities. The second portion of the study is a collection of case studies on successful metro systems and transit planning. The case studies include insights on Chicago and Portland's transit plans and implementation. This section also includes

a look at the transit experience, or what riding public transit can offer beyond moving riders from one place to another. These unique experiences are seen in places like Seattle, Washington and Medellin, Colombia, where topographic challenges demand uncommon answers. The third part of this study zooms in on a few hubs of the transit system to consider how a community is planned around the transit system. This section will also be supported with case studies as well as research on the theories behind them, such as the "livable cities" plan by Robert Cassidy and transit oriented development. This portion the study will also include personal experiences and interviews with planners and community leaders. Examples in this section include the Glenview community in Chicagoland and the new plan for Denver, Colorado. The goal of this part of the study is to prepare for hypothetical community design plans that can be placed in specific locations in Cincinnati along the proposed transit system based on the findings from the interviews and research.

CINCINNATI'S TRANSIT HISTORY

The first part in this study is the transit history of Cincinnati and the current issues that stand today. By establishing the path that created this city, we can begin to see parallels with other cities and see where they diverted to succeed and where Cincinnati failed. Prior to the turn of the twentieth century, Cincinnati was undergoing several changes in terms of urban transit. The city was growing along with its industry and canal usage, becoming one of the ten largest cities in America.[1] Roads became routes for omnibuses and streetcars to connect residents that lived further away from the city core. The historical inclines were built to link the lower valley areas with the growing uptown suburbs, bringing growth to communities like Clifton and Price Hill. These neighborhoods became known as streetcar suburbs. By 1910, the streetcars were running throughout the city along 222 miles of track. While these routes connected the city neighborhoods and their residents, they were relatively slow and always packed with riders. The streetcars also had to compete with growing traffic on the streets. More efficient means of transit were needed to shuttle people to and from the downtown district. When the canal lost profitability as a main form of interstate transit, new ideas were proposed to utilize the city asset in new ways. In 1910, Cincinnati decided to turn the canal into an underground railway with a paved boulevard above.[2] When the proper assets were transferred from the state to the city and the $6 million budget was allocated by 1917, the country entered World War I, shutting down any public projects in the city. After the end of the war in 1918, the estimated cost of the subway had doubled. Undaunted, the city began construction in 1920, hoping to raise more money along the way. But as the city dug the tunnels and built stations, more shifts in transit methods began to hinder subway development along with the existing means of public transit. By the 1920's, the automobile was a hugely popular method of transportation that pushed residents further away from the city, outside the reaches of the streetcars and the subway route. Interurban rail to satellite

cities, such as Hamilton and Lawrenceburg, declared bankruptcy or closed down. When a new mayor and council were elected in 1925, Cincinnati adopted a new master plan, focusing on rerouting streetcars and widening roads. The subway was stamped as a poor use of money compared to the new plan. While construction was stalled during negotiations, the stock market crashed and the country entered the Great Depression. This effectively killed the project. There was a small renewed interest in the late 30s, but it was squashed again by World War II and the reallocation of resources and workers for the war effort. After the end of the war, the need for the subway had faded away. Buses outnumbered streetcars by 1947, as they were slowly replaced during this time.[3] Automobiles were

Figure 1: Race St. station
upload.wikimedia.org

more popular than ever and became a status symbol. The proposed Millcreek expressway followed along the subway route, making the major connection track redundant. Cincinnati's planning from then on became focused on automobile transit with wider roads and expressways. City sprawl became more prevalent as communities spread out without having to tie back to a transit line or orienting corridor. With more spread out communities, the neighborhoods became harder to connect with efficient public transit. After the last efforts of the subway, and the construction of the highways, not much changed in Cincinnati transit and city planning. The city has remained mostly decentralized in terms of livability and automobile ownership is virtually a must for full city participation. There was an effort to plan a new mass transit system in 2002, but the effort was struck down at the ballot box. A smaller urban circulator, a new streetcar system, is a hope that would revitalize public transit in the city.

While Cincinnati has undergone a major shift in its transit focus, from permanent rail and planned subway to automotive free-for-all, this drastic shift was not felt by Cincinnati alone. During the 1940s and 50s, many several cities suffered the loss of its rail transit in favor of the car. However, rail plans were failing before then as well. In the 1920s in Detroit, a new rail rapid transit plan was created to extend the under-serving streetcar lines.[4] This plan was meant to work with the streetcars with 65 miles of rail. While planning was far along, arguments and debates hindered progress towards actual construction. After so much time had passed, the automobile had taken priority in planning and cost was rising too high. As Detroit grew even more spread out, the automobile seemed to be the best means of transit and the massive public transportation plan was let go. Los Angeles did not fare much better during this period. By 1925, plans were called out to relieve road congestion with a

citywide transit plan.[5] While enthusiasm was high at the beginning, plans were not forward thinking enough and the plan was feared to be obsolete not long after completion. Instead, the city went on with a different plan of decentralization that used automobiles along wide streets as the main form of transit. Among American cities, Chicago was the only city to build a subway during the 1930s as a plan to complement or replace the "L".[6] Other major transit plans were replaced with a focus on superhighways and decentralization. It seems only cities with established heavy systems by the 1910s were successful in improving public transit plans. No major systems were constructed until the 1970s, with the Washington D.C. Metro and the San Francisco Bay Area Transit. With these new systems, a shift in city planning followed with it. The resulting changes in community and livability are studied below.

CASE STUDY: CHICAGO CTA AND METRA

One of the most important symbols of Chicago, The third most populous city in the United States[7], is the elevated train that rumbles through the downtown area in the area known as the Loop. The name of the district comes from the train system as the tracks turn around above the city streets. This historical train system has been running since 1892 and is one of the first systems that come to mind when thinking about major American rail systems outside of New York City.[8] Rightly so, as it shuttles 1.6 million rides every average weekday, carrying commuters, residents, and visitors.[9] As mentioned before, the L was supplemented by new subway lines that run through downtown. Though the heavy rail metro trains run through most of the city, this system is not the only method that links the city together so well. The city has grown outside of its own boundaries, and these new satellite cities are more opportunities for sprawl. This is where the commuter lines come in. The METRA rail and South Shore

Figure 2: Forest Park intermodal transit station Chicago-L.org

lines extend beyond the city limits and give more connections to those who live further away but still wish to commute by public transit. These lines see over 300,000 riders every weekday. Satellite communities, like Glenview and Park Ridge, have built up density around the stations and provide resources and livable planning for residents. Specifically, Glenview contains a central plan around the southern station and located its downtown district there. The local library, businesses, higher density residential and other mixed developments are located a short walk or bike ride away from the station. These traditional methods provide great connectivity as a hub and spoke system, as anywhere along the corridors is an easy ride away from the center of the city. Shuttles and alimentary busses serve locations away from the corridor so they

are not isolated from the rest of the system. This part of the system uses the stations as miniature hubs as they reach out to the spreading density. The busses run on schedules that work with the trains so that riders are never waiting too long for the next ride. The shuttle fleet is so large that the frequency between rides could be less than ten minutes during peak hours. As far as connectivity goes, this mixed-modal system doesn't leave much of the city's population to fend for themselves. But as thorough as this system is, Chicago offers more options for people who prefer non-traditional methods or wouldn't want to use the public system but still do not wish to use a car. Bicycle infrastructure is another integral part of the transit system that connects the city. There are over 200 miles of bike lanes and trails, including the Lake Shore trail, that allow for safer travel for leisure or commute.[10] Car and bike sharing are other methods of transit that shouldn't be overlooked in the Chicago system. ZipCar and Enterprise provide short auto rentals for personal use, such as larger loads or a further off ride. This minimizes need for additional car purchases for a family. Shared cars are located in a central location in the community, like next to the neighborhood's train station. Bike share stations follow the same idea, and are usually found in the dense downtown area. These bikes provide a boost for users that may be going to a destination that is a bit more than a walk away. The bike share, coupled with the favorable bike infrastructure, help minimize car and taxi needs and reduce the amount of cars congesting the downtown streets.

CASE STUDY: PORTLAND, OR

For a city study on a smaller scale, Portland, Oregon offers a successful transit plan that can be observed. Historically, it went through the same issues that hit the rest of the country: streetcar lines closed down as ridership declined with the rise in automobile usage[11]. Transit service was so underused that the primary transit company threatened complete shutdown if it could not raise fares. In 1969, the company was absorbed by the city and run publicly as TriMet. In the 1970s, several factors aligned that turned around the perception of public transit in Portland. First, a major highway proposal was stopped by local protest and a portion of the funds was transferred to transit development. The State of Oregon passed a law that required its cities to create plans that would restrict sprawl[12]. Also during this time, Metro, the first elective metropolitan council in the country, was created to direct regional transit and planning across the multi-county region. These factors culminated to the first major development in the region: the MAX light rail, the first of several light rail corridors. Public transit usage was also boosted by the designation of the Fareless Square, where no fare is collected on busses or rail within the downtown area. Public transit continues to grow today with several new means where the needs arise. TriMet today consists of 5 light-rail lines, a commuter rail line, 2 downtown streetcars, and over 70 bus routes.[13] Another form of transit, the Portland Aerial Tram, was built recently with joint funding from the Oregon Health and Science University. This aerial tramway

connects the downtown area with the hilltop hospital and university campus. With such a high rate of accessibility, about 45% of downtown commuters take public transit during rush hour.[14] 1 in 4 trips on the system are for shopping and leisure. Along with the wide coverage, TriMet also works with the local communities to help improve other forms of transit. Using studies around the stops and stations, TriMet collaborates with the local governments to improve pedestrian access and cycling ways around stops for better integration and safer conditions[15]. With all of the integrated systems and collaboration with city plans, TriMet and the city it serves receive many honors, including one of the best cities to live car-free in the US (by Sunset Magazine and 24/7 Wall St.)

THE TRANSIT EXPERIENCE

Sometimes transit should be more than just a way to get from point A to point B. Significant obstacles may present issues to traditional methods, but thinking beyond these methods can be quite interesting and may even make the act of traveling just a little more interesting, even for daily commuters. This topic is researched by Darrin Nordahl, an urban writer and proponent for transit and comprehensive urban planning. Nordahl correlates rider-enriching experiences and public transit situations. He delves into the more unorthodox methods of transit and finds how public transportation can benefit by thinking outside the box.[16] The following examples study the public transit methods of the city through his analysis and identify the benefits of these particular methods. A seemingly old method of travel, the funicular, moves people or vehicles up steep slopes at upwards of 30 degrees steep. While removed in cities like Cincinnati, a few are still in use today, even by commuters. Two "inclines" currently operate in Pittsburgh and connect the cliffside community of Mt. Washington to the bus and light rail lines as well as the entertainment district in the valley below. Other interesting systems include the water taxis and ferries in Seattle and San Francisco. Not every body of water must be traversed with a permanent structure like a bridge or tunnel. Moving along the water may be slower than driving straight across, but it provides for an experiential event. The act of moving together, seeing awesome sights and traversing an obstacle, humanizes the trip and can make transit more enjoyable. One of the more exciting examples of transit in difficult situations is outside of the United States, the cable cars of Medellin, Colombia. This city is the only city in Colombia with a metro system, and it runs through the city linearly through the valley. One of the challenges of the city is the poorer neighborhoods up in the hills of the valley that are disconnected from the rest of the public transit. The solution is a gondola system that climbs the steep hill to get to the neighborhoods. This method allows for a steep rise as well as minimal ground disturbance. The neighborhood stations become community focal points and the bottom of the line integrated into the metro stop seamlessly. Several stations include community rooms and miniature libraries open to the public. The Spanish Library is even located by the terminal station in the last neighborhood. The construction of this line reduced the travel time from the top neighborhood to the spine of the valley from two hours to fifteen minutes.[17] The first line was so successful that a second and third line were built elsewhere along the metro line to other hillside communities. Banks and businesses have also followed the success up the lines and built branches in these neighborhoods.[18] These systems see many riders and are considered extremely successful for reconnecting the disconnected neighborhoods.

Figure 3: Medellin Metrocable and station ihttp://gondolaproject.com/

Having a wide covering or efficient transit system can only work if the community planning around it supports the mobility. The following section discusses urban planning based around the transit lines in successful locations. The urban plans have succeeded using several methods, including livable cities and transit oriented development. Of these variations, the main theme that constantly appears is ease of connectivity through accessibility and raising density around public areas and transit.

CASE STUDY: GLENVIEW, IL

As mentioned in the study of Chicago, satellite cities arranged themselves along other routes for better accessibility and centralized locations. One example mentioned was the village of Glenview. Downtown Glenview, located next to the commuter rail station connecting to Chicago, contains the town's popular businesses and markets that can be visited just after getting off the Metra train. The village library and several civic offices are also located here to centralize the village services and make resources more easily available to its citizens. The town park is also located next to the downtown area, and the pool and playfields are only a few blocks to the west, offering public space for local sports. As the village grew, another station was built up to the north a few miles north along the line. Around this station, densely arranged townhomes and apartments were built for easy access to public transit and connectivity. A large land parcel (1,121 acres) purchased from the formal naval air base provided for another interesting TOD design in northern Glenview. The development, called the Glen, was built as a dense mixed use community with homes, offices, and retail spaces. Some of the former buildings on the base, such as a hangar and control tower, were preserved and renovated as part of the retail area. This neighborhood has been hailed as a successful district, marked as a popular shopping, eating, and entertainment destination. Residents have also benefited from the location and development, as 35%-45% of those surveyed

commuted to work using the Metra rail at the station close by.[19]

CASE STUDY: DENVER'S METRO VISION

Figure 4: Union Station Master Plan
http://www.thedenverrealestatebroker.com/

Another informative study is the system in Denver Colorado. Recently, Denver and Colorado have been growing at some of the fastest rates in the country, with the state growing at twice the national rate[20]. With the sudden increase in population, the city has sprawled out and was the fourth worst city in terms of commute delay increase in the mid-2000s. As a response, Denver has turned to new city planning policies in *Metro Vision 2020* and *Blueprint Denver*, a transit and hub improvement plan and local community layout policy, respectively. With these policies in place, Denver has been continually upgrading and expanding the city light rail transit and redeveloping neighborhoods along the rail lines. One of the largest areas getting a TOD renovation is the Lower Downtown, or LODO neighborhood. This neighborhood acts as a new hub for the light rail and bus lines for the town core. Focused around the historic, and still operating, Union Station, this community is a dense mixed-use neighborhood that draws in many of visitors, workers, and residents without requiring a private automobile. It is currently set to continue growing and connect existing infrastructure into one major district. Within one mile of Union Station, there will be high-rise apartments, office towers, riverside parks, along with present infrastructure like Coors baseball field, the city arena, and Elitch Gardens amusement park. The community also works on a pedestrian scale, as pedestrian malls and plazas contain storefront businesses that bring life to the streets. While the recent developments are a reaction to sprawl and still very new, it would still be useful to study how the plans turn out and inspire new points in the system.

BRINGING IT TOGETHER

Looking at these case studies and theories help synthesize an idea for what is needed in a community that relies less on personal cars. Several gains and opportunities line up to suggest what could be done in a new community. For a centralized location, a community needs intermodal transit system that is focused on getting its users to their destinations as quickly and conveniently as possible. The mode of transit offers an experience for the users that keeps them invested in and proud of their city and the public service. These modes of transit must be well integrated with each other and with the services they connect to. Commercial, residential, leisure, and other classes of use are tied in with the transit system and could even be identified with the system. This co-identification and integration can be based on

location, marketing, culture, and other ties. If a business, community, or otherwise is identified with the transit, the two can benefit from each other as a convenient and well thought out plan. These ideas help make the city center a place to ride together and increase the favorability of public transit a little more over cars.

On the plan for of satellite communities, several like concepts line up to make public transit a viable option, as seen in the examples. The station or stop is reminiscent of the old village square in the center of the town that linked the community to the big city. Like the centralized plan, services and residences are associated with the town center and provide convenient connections to the transit users. The center also becomes a mini hub for further transit connections and accessibility if the community is large enough to support it. Multiple design scales are used in the plan for the community so residents and visitors are not alienated from the buildings. Bikers, pedestrians, and drivers all can use the roads and malls with ease and comfort.

POSSIBILITIES IN CINCINNATI

The next goal would be to find suitable locations for TOD interventions in Cincinnati, OH. Following the examples posed in this study, two types of locations will be selected for hypothetical community redesigns: central and satellite. The locations would need to foster room for development as well as provide existing infrastructure that can provide a good base to start from. These design proposals aim to help with the transportation issues rather than start from scratch. The proposed designs will include the transit system, urban planning, and individual architecture. The new community design should help combat Cincinnati's issues of traffic, pollution, and sprawl.

The first location is the core in Downtown Cincinnati. Good attributes to look for in the central location are accessibility to the city core, available space for development and growth, and a connection to transit infrastructure, both existing and proposed. With these parameters, two locations appear as interesting candidates. The first is inspired by Denver, CO's Union Station redevelopment. Found in the West End neighborhood of the city center valley is the historic Union Terminal. Formerly the city train station and main backbone of transit, now it houses the Cincinnati Museum Center and Omnimax Theater. It now holds the station for the one intercity passenger train line that serves Cincinnati. The front of the historic building is a large surface lot for the museums. The building also lines up on an axis to another historic city icon, Music Hall. The culture of this building and space available gives an interesting location for a new intervention in the central community. The axis aimed at Music Hall and the densest part of the city offers an opportunity to grow and make a gateway to the city from incoming employees and visitors.

The second central location is a currently growing development on the riverfront of the

city. Located closer to the city center, This stretch of land between the two professional sports stadiums, known as the Banks, is an up and coming residential, business, and leisure destination. Already containing several popular restaurants and the relatively new National Underground Freedom Center, this renovated district is developing really well. There are still many more opportunities for urban interventions. One unused facility on the site, the Riverfront Transit Center, would serve as a formal base for the new city transit system that would connect the outer city to the core. The still empty southern blocks of the city provide the space for new interventions and incorporates existing infrastructure that gives enough of a foundation for the redesigned community.

In the search for satellite communities, many neighborhoods offer interesting opportunities for expanding TOD. A good existing infrastructure to use for Cincinnati is the radial roads from the core. The city metro system is already using some of these roads for future transit studies, such as the Reading Road, Hamilton, and Glenway Corridors among a few others.[21] These corridors are interesting in that they go through a few neighborhoods that are currently losing value and quality as they go towards the terminals beyond the city limits. A development in the exurbs, such as Union Township on the far east, could present an interesting opportunity for intervention. At the fringe of the growth, it is currently acting as a jumping off point for more sprawl further from the metropolis. Currently, it is a popular draw for shopping as it is the site of Eastgate Mall and several large retailers. However, the community is spread apart and connectivity is virtually only possible through private automobile. Walkability is low and bike infrastructure is nonexisistant. A development on a more human scale with connectivity as a focus could inspire and slow the uncontrolled growth that demands the proliferation of car culture.

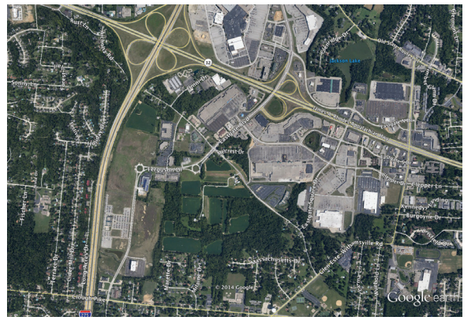


Figure 5: Union Township and Eastgate Mall
Google.com/maps

[1] Singer, Allen J. *The Cincinnati Subway: History of Rapid Transit*. Chicago, IL: Arcadia Pub., 2003. Print.
[2] Ibid.

[3] Singer, Allen J. *The Cincinnati Subway: History of Rapid Transit*. Chicago, IL: Arcadia Pub., 2003. Print.
[4] Foster, Mark S. From Streetcar to Superhighway: American City Planners and Urban Transportation, 1900-1940. Philadelphia: Temple UP, 1981. Print. 85

[5] Ibid. 89

[6] Ibid. 165

[7] http://www.census.gov/popclock/

[8] Nordahl, Darrin. *My Kind of Transit: Rethinking Public Transportation in America*. Chicago: Center for American Places at Columbia College in Association with the Elizabeth Firestone Graham Foundation, 2008. Print. 109

[9] "CTA Facts at a Glance." *CTA*. Chicago Transit Authority, Winter 2014

[10] http://www.cityofchicago.org/city/en/depts/cdot/provdrs/bike.html

[11] http://trimet.org/about/history/index.htm

[12] Senate Bill 100 required local or county governments to create their own plans, but the plans must be in line with the state's goals. These goals focused on land usage and appropriation, restricting development from removing too many resources. Other priorities include public resources, such as schools, utilities, and transit.

Macpherson, Hector, and Norma Paulus. "Senate Bill 100: The Oregon Land Conservation and Development Act;." Willamette Law Journal 10.1 (1974): 414-21. Hein.

[13] http://trimet.org

[14] http://trimet.org/ataglance/

[15] http://trimet.org/projects/pednetwork/index.htm

[16] Nordahl, Darrin. *My Kind of Transit: Rethinking Public Transportation in America*

[17] interview with Carlos Ortiz Espinosa of Metro de Medellin, interviewed by author

[18] ibid

[19] Cervero, Robert. Transit-oriented Development in the United States: Experiences, Challenges, and Prospects, 294

[20] Ibid. 321

[21] http://www.go-metro.com/about-metro/greaters-cincinnati-bus-rapid-transit

Site Images


KOHL'S


EASTGATE
MALL
SEARS
BUFFALO
WINGS & RINGS


JUNGLE JIM'S
AMERICAN STEEL WORKERS


ADVERTISE
HERE
Easigate
PIERCING Pagoda

Concept Precedents

New Urbanism - White Marsh Park

St. John Properties

Creative Solutions - Hovenring

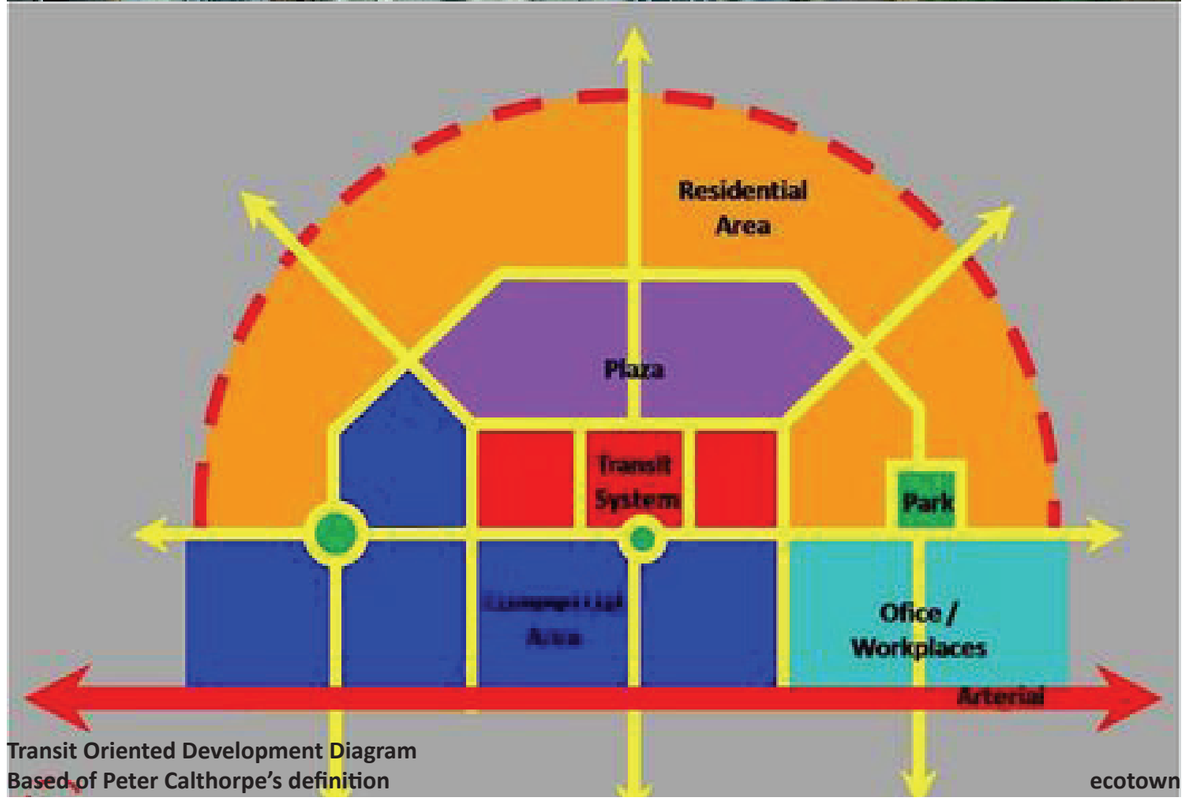
Ipv Delft

Complete Streets - New York concept

NYC Complete Street

Transit Oriented Development - Bayfront Project

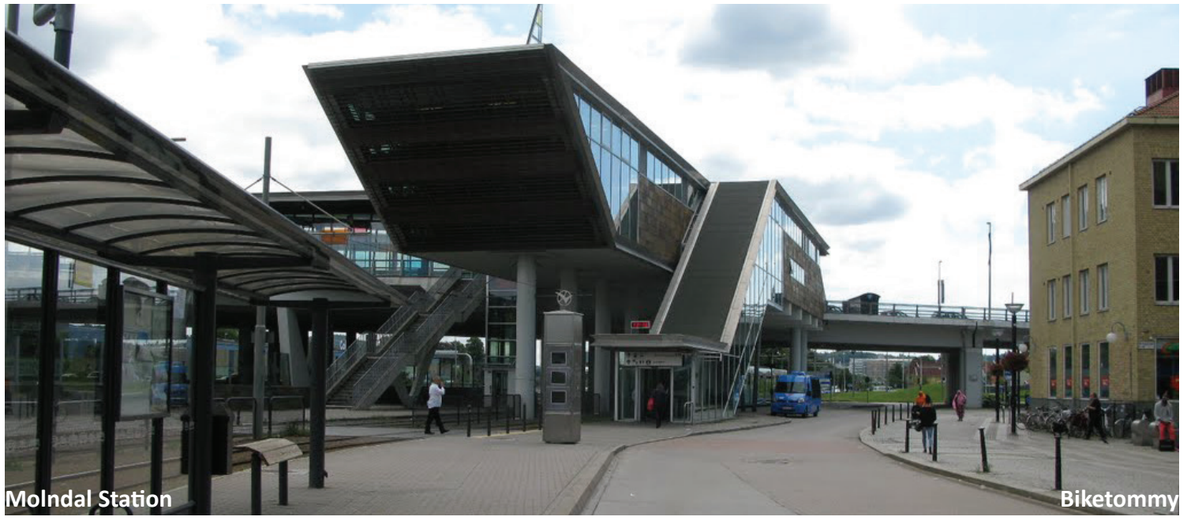
Jersey City Redevelopment

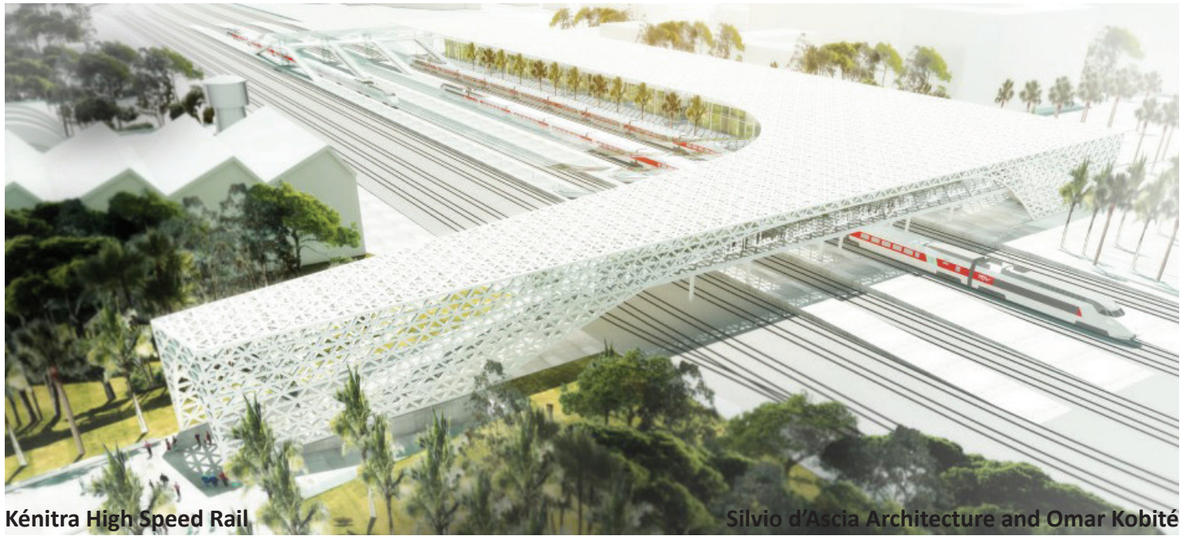


Transit Oriented Development Diagram
Based of Peter Calthorpe's definition

ecotown

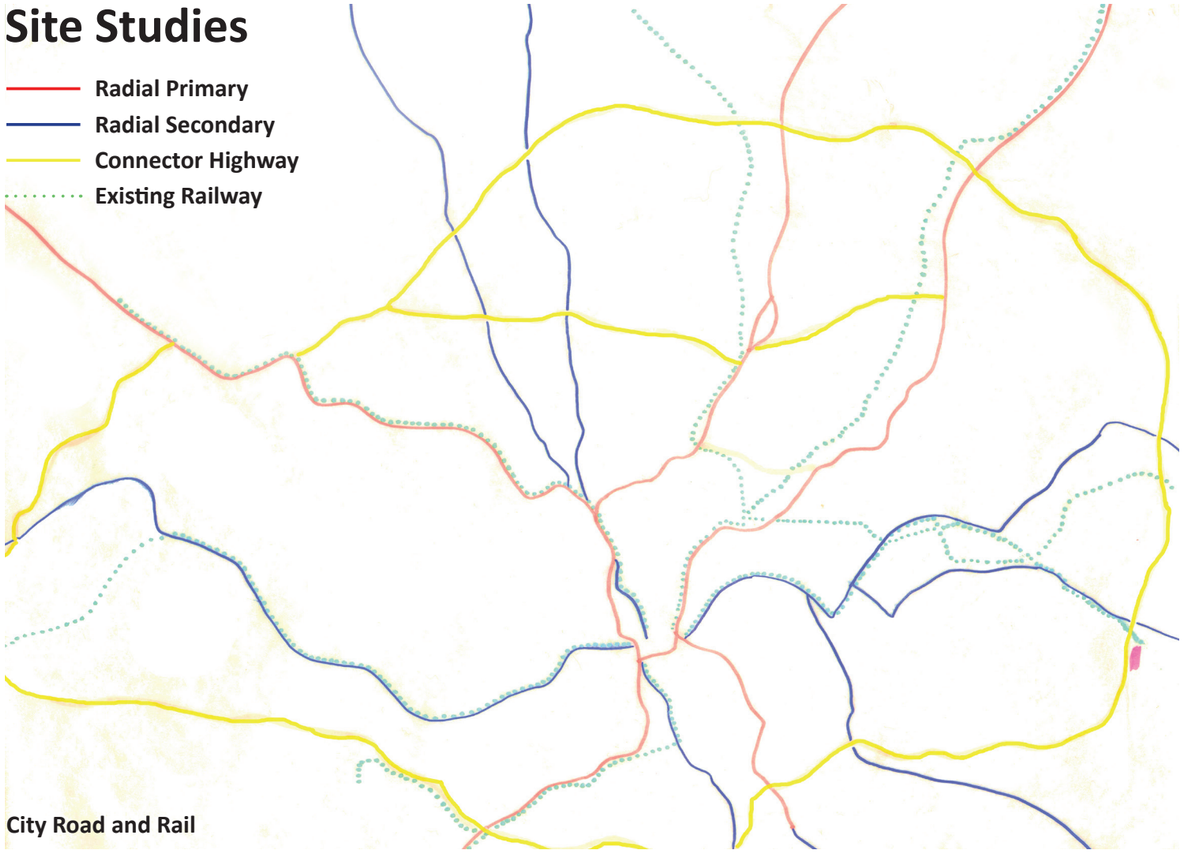
Station Precedents



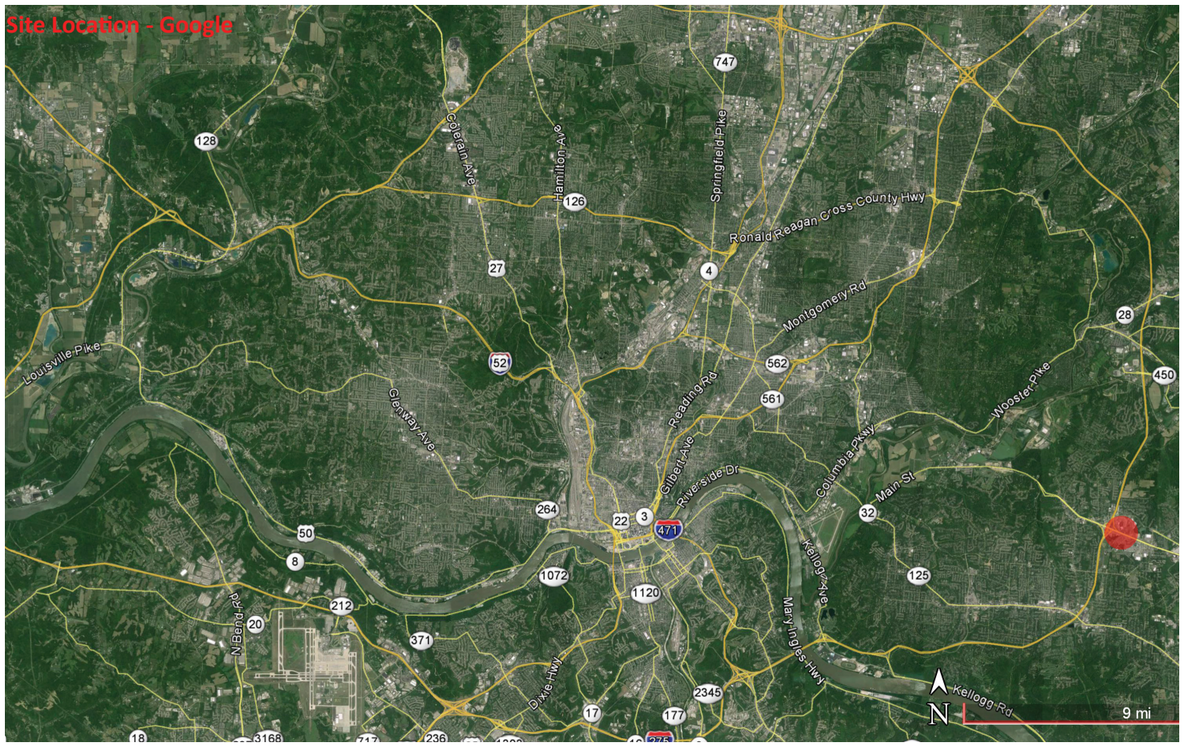


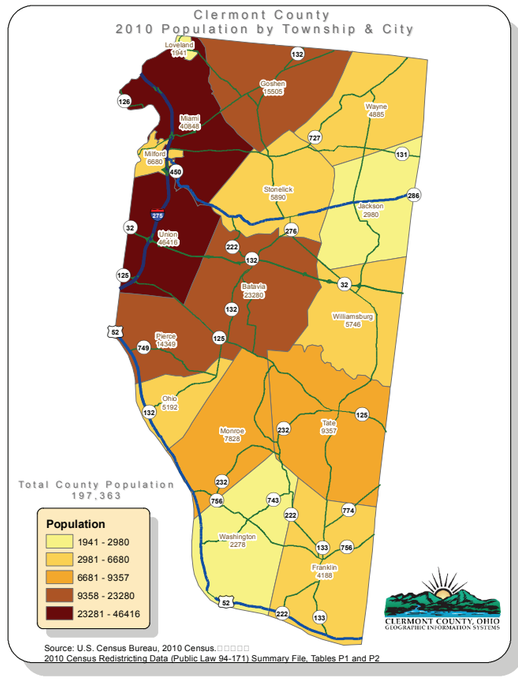
Site Studies

- Radial Primary
- Radial Secondary
- Connector Highway
- Existing Railway



City Road and Rail



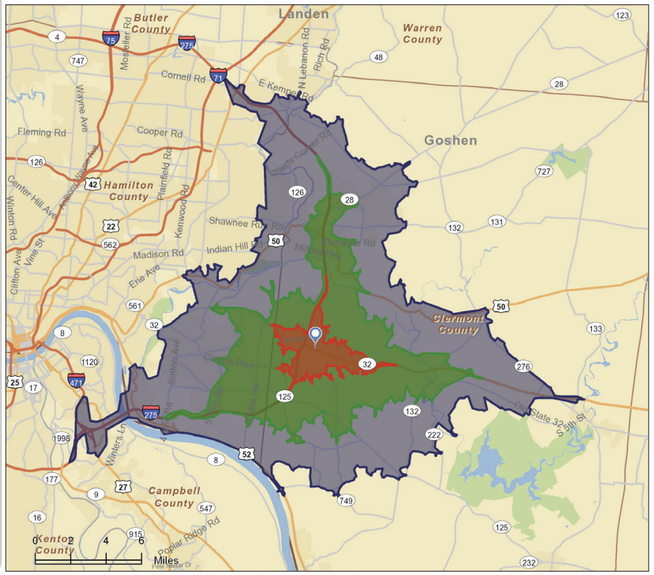


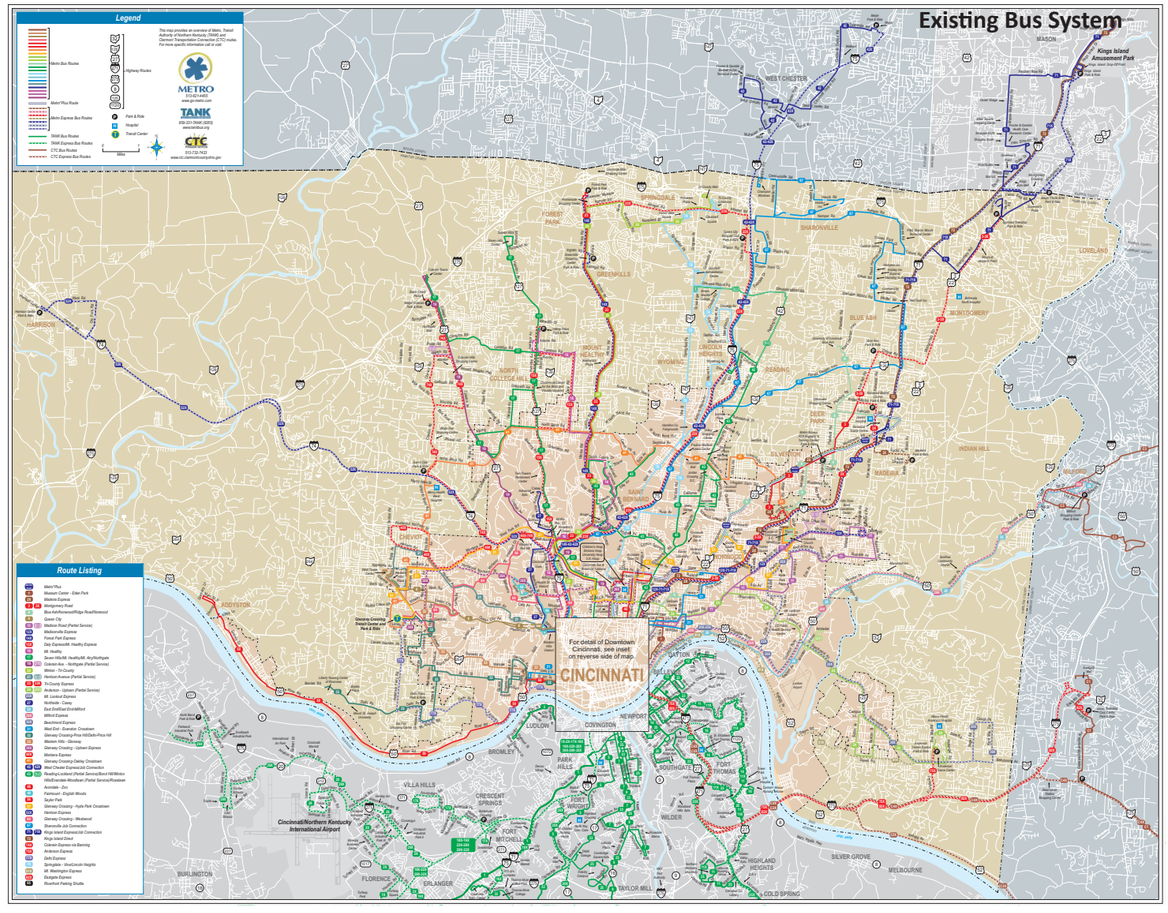
CLERMONT COUNTY, OHIO
ECONOMIC DEVELOPMENT

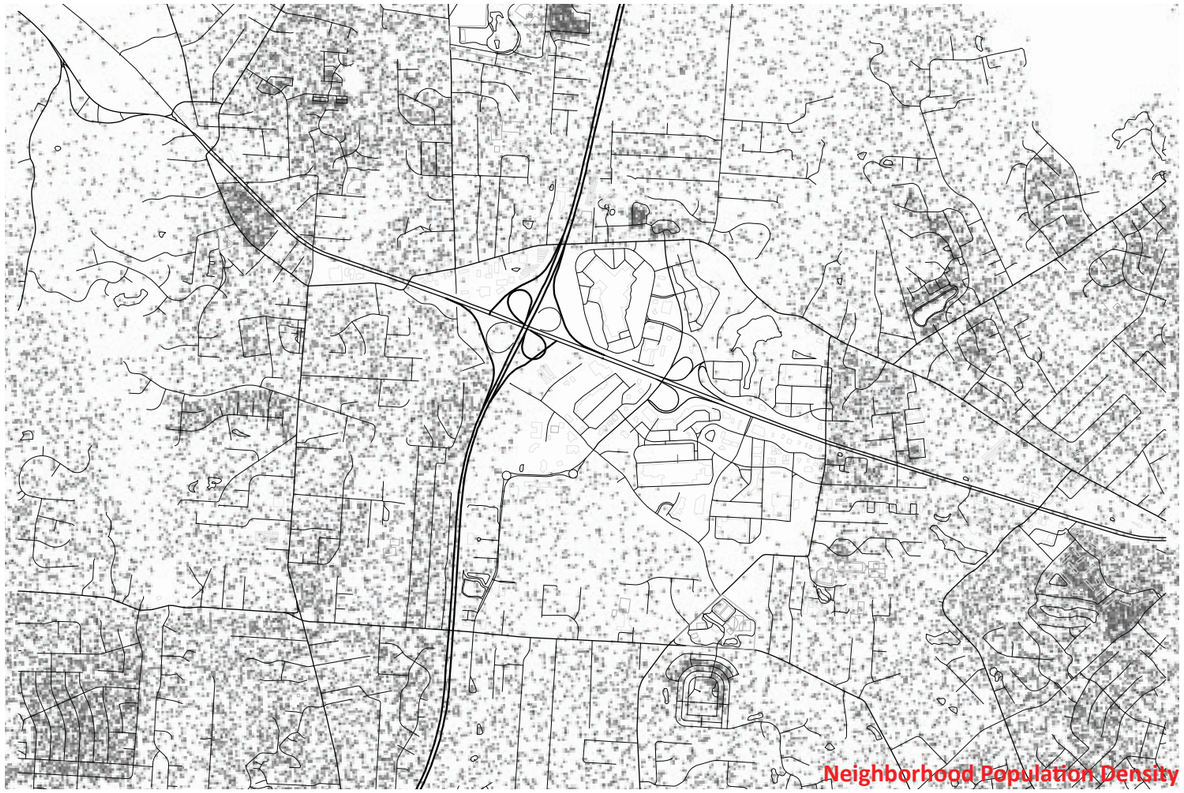
Site Map

Eastgate Area
Eastgate Blvd, Cincinnati, OH, 45245
Drivetime: 5, 10, 15 Minutes

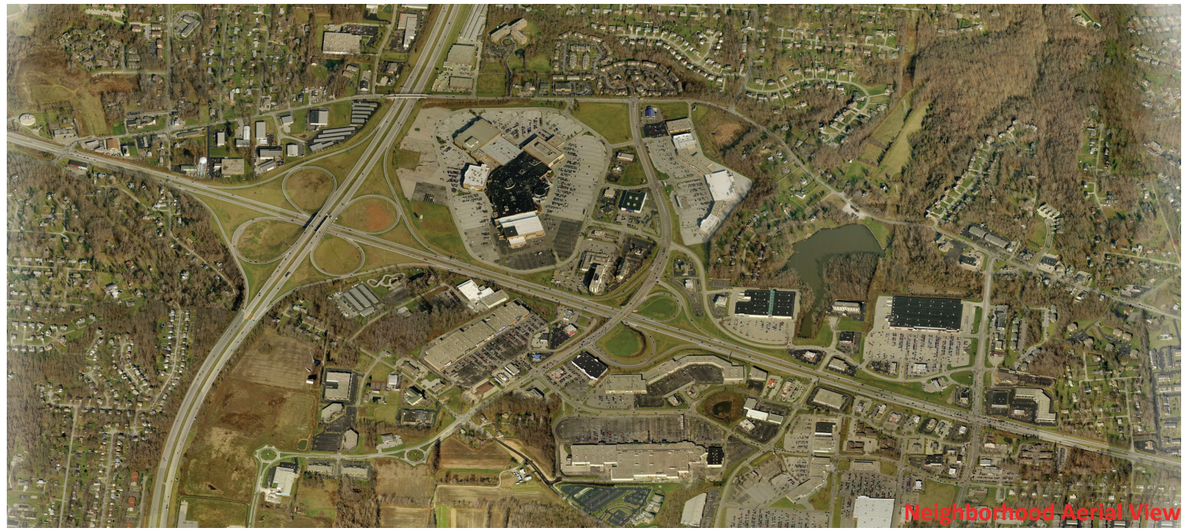
www.ClermontCountyOhio.biz
Latitude: 39.0987
Longitude: -84.27417



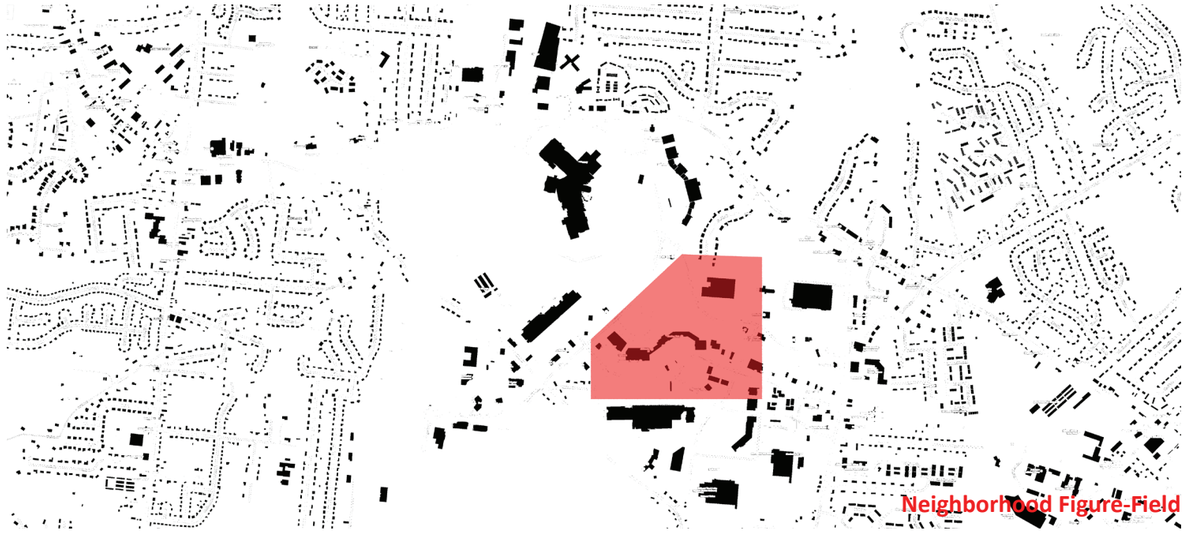




Neighborhood Population Density

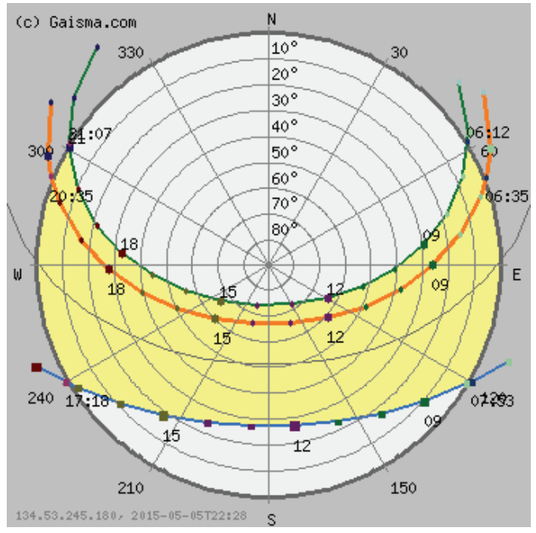


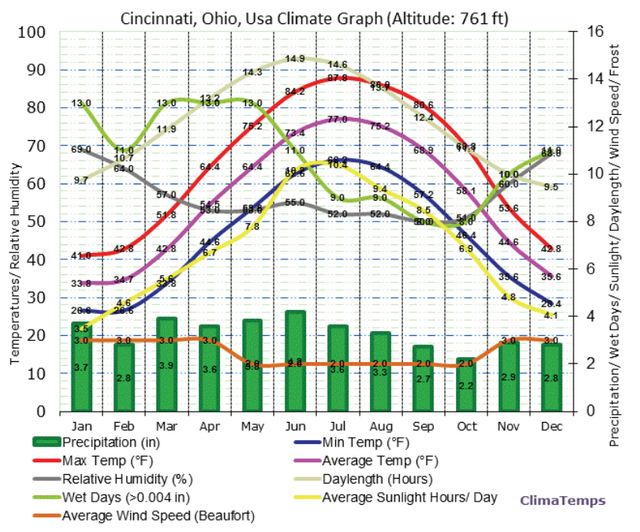
Neighborhood Aerial View



Neighborhood Figure-Field

Topography





Process Work

Program Narrative

The Daily Commuter: Summerside Resident

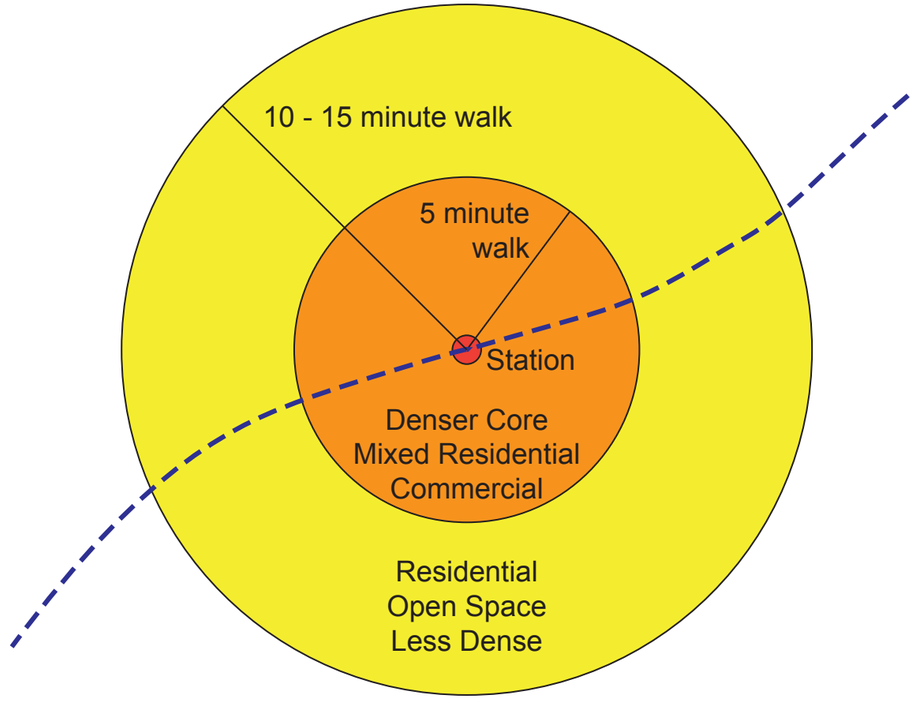
Early morning, he departs from his home in Northwest Summerside. He makes it to his bus stop just in time for his ride. He takes the Eastgate shuttle, which loops through the rest of his neighborhood, picking up several more riders on his way to the station. As the bus parks at the station, he disembarks with enough time to grab some breakfast while he waits for the train. In the food court area, he picks up a Subway sandwich and walks towards the platform. He taps his commuter card and passes through the turnstile with no hurry. The train is already waiting at the platform, so he speeds and boards just in time. The ride to the city is very relaxing and he catches a nap on the ride to work.

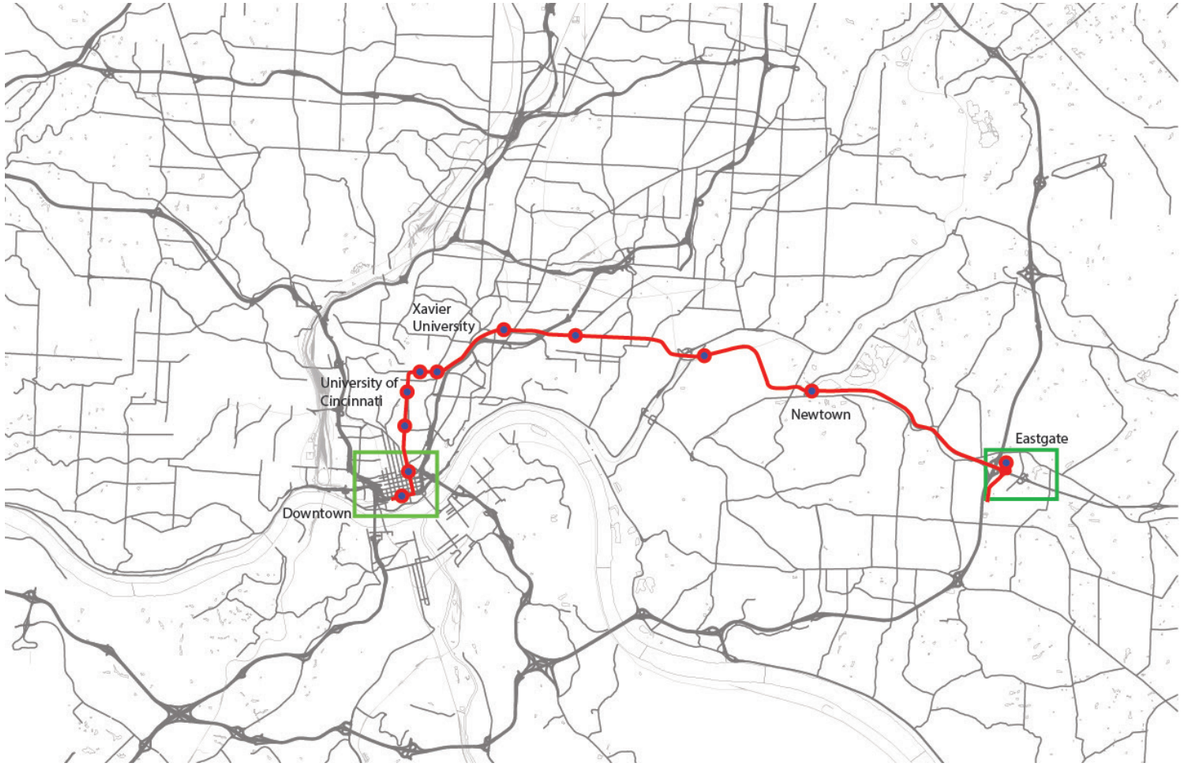
City Weekenders: Visitors to the Mall and Jungle Jim's

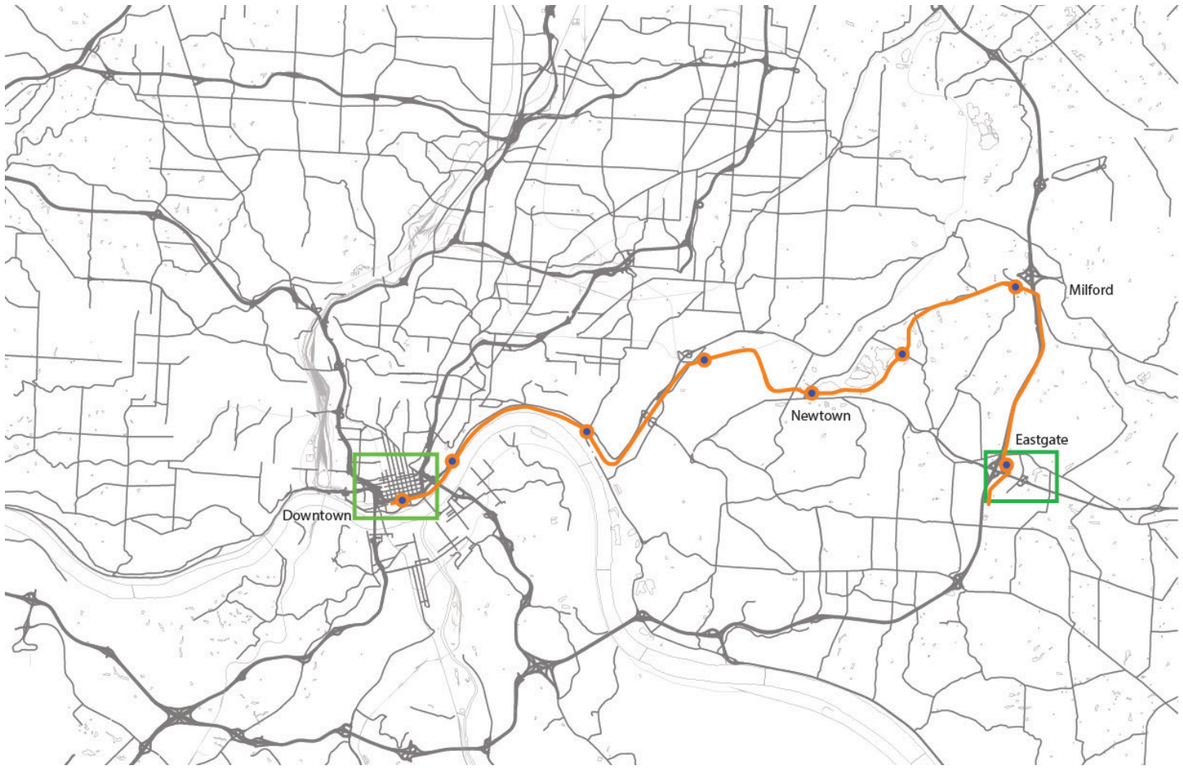
After a smooth train ride from Downtown Cincinnati to the end of the line, this couple gets off the train, ready to go shopping. They have a full Saturday afternoon to kill. After using the restroom, they walk to the connected mall and meander through the shops and department stores. Finishing up their haul, they go to enjoy a late lunch at the food court where they notice an ad for the neighborhood circulator and Jungle Jim's International market. They put their purchases in a rental locker back in the station and head over to the connected bus shelter. They get on the bus and ride over to the market, where the bus drops them off at the old Metro structure. After another good shopping experience at this market, it's about time to return home. They take the circulator back to the station and pick up their stuff from the locker. They buy a return ticket from the counter and pass through the turnstile to the waiting room, where the man grabs a coffee from the café kiosk. The train arrives shortly and they prepare to board.

Stay at Home Mom: Avid Biker

While her kids are at school and her husband is working, she departs on a bike ride. This is her favorite time to ride during the brisk fall months. The idea of biking was farfetched with the old plan, but the new neighborhood layout allows for plenty of walking and riding. As she rides up Eastgate Boulevard, she makes a turn to Jungle Jim's to pick up some fitness shakes. She often stops here on the way to the gym. As she rides, she does not have any trouble with the cars, as she has easy connectivity on the slow roads and plenty of bicycle paths. She has to cross the highway, but the new connector fly-over makes this a breeze. She stops at the green space at the top of the arc to catch a view of the cars driving by before continuing to her destination. She arrives just in time to see her friend walk in too. They spend about an hour together working out, talking about recent events and the new city plans. She goes back on her way home just before the traffic rush returns in the afternoon. Back home, she cooks dinner, then gets in her car to go pick up her son from soccer practice. Not long after returning, the husband arrives on his bike.




Xavier
University
University of
Cincinnati
Downtown
Newtown
Eastgate


Milford
Newtown
Eastgate
Downtown


Office
Retail
Residential
Entertainment
Hotel
New Construction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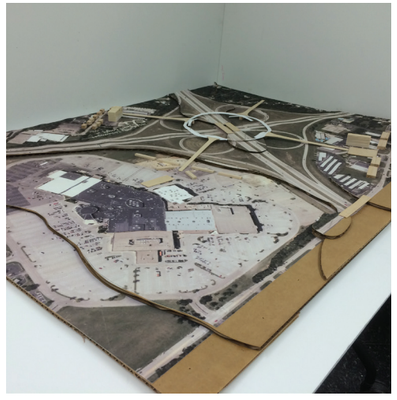
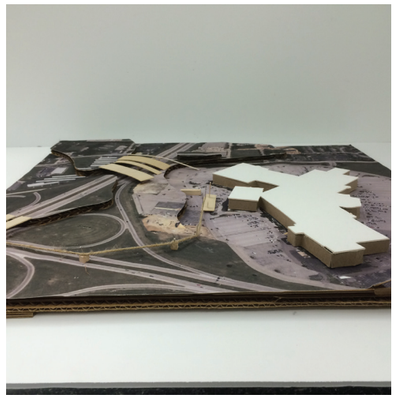
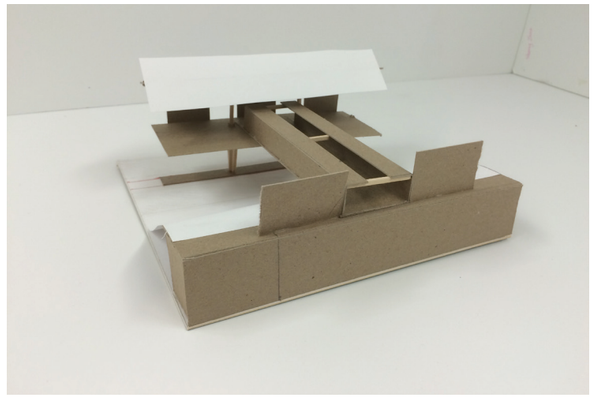
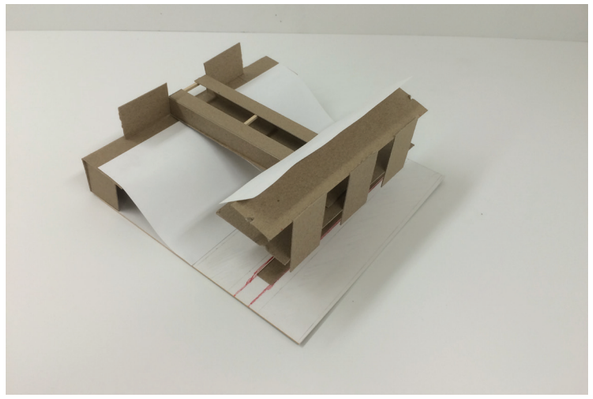
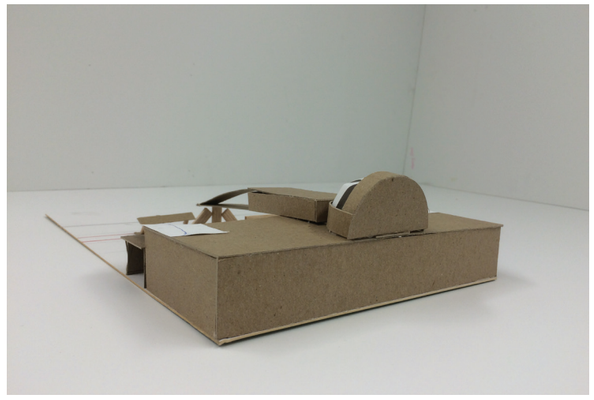
© 2014 Google

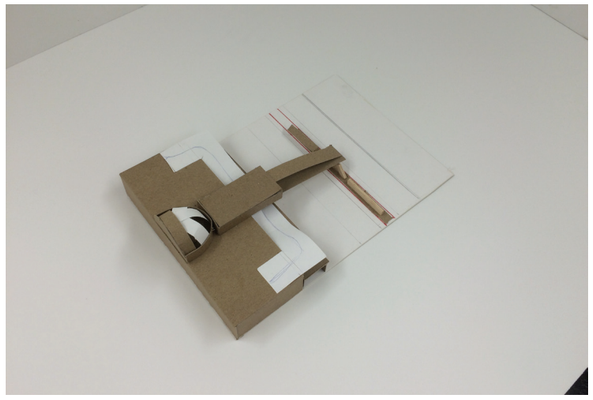


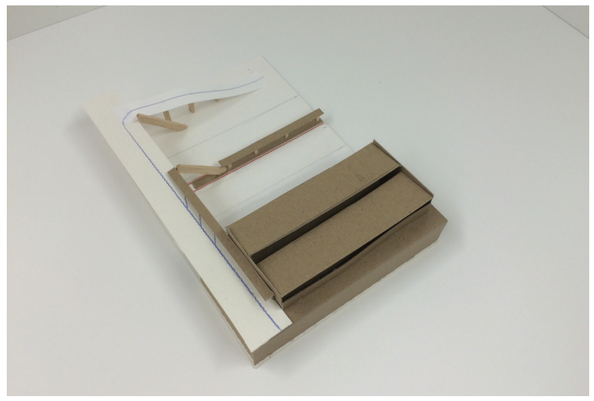


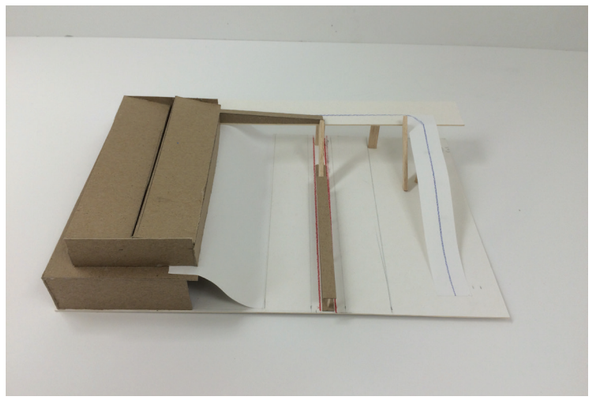












Community Planning and Mobility

Community Design is based with many types of users in mind.

Priority is removed from automobiles and more equal attention is given to every form of transit and traversal.

The community is designed with its own requirements in mind so that it need not rely on outside resources for basic support.

While at the same time, connectivity is upheld within itself and to communities outside of it.

The community is designed for as much accessibility as possible.

Options are provided for the residents and visitors so that not one form of transit or traversal is overcrowded or ill maintained.

Pedestrians and bicyclists should not be forgotten or treated as secondary users on a road.

And neither should the buildings alongside the road. Travelers of the space and uses built there all contribute to the road's character.

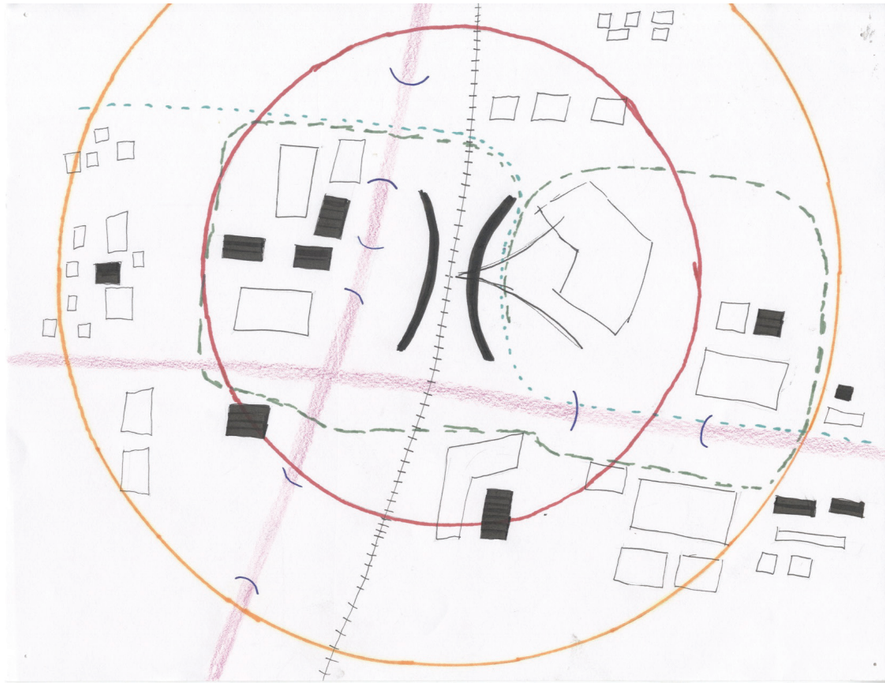
In order to compete with conventional transit, public transit or physical mobility must provide a convenience and several advantages over automobiles.

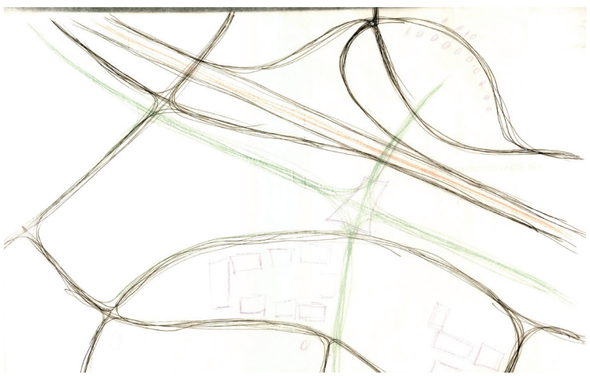
Community cooperation and self-investment is encouraged through the design and urban layout.

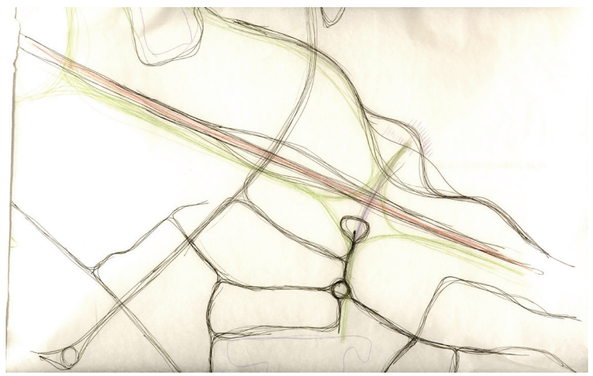
Effort that is put into community care returns as a pride and protection from residents and employees of the community.

Mobility is one of the most important parts of self-worth and dignity and should be protected as a right. Physical mobility provides a portion for social mobility.

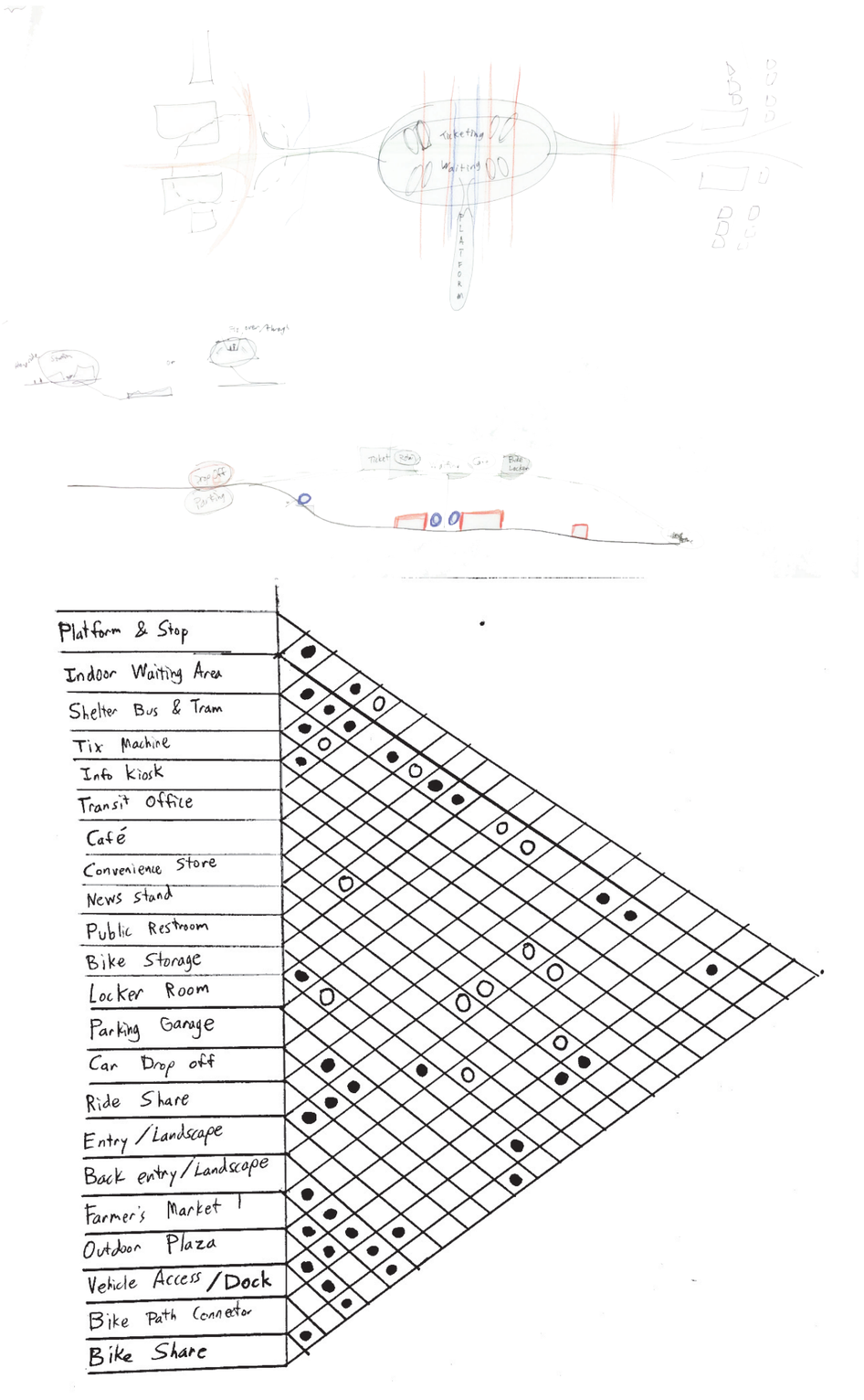
Outside influences from visitors and neighbors are important and must be open to connection, but priority is given to the residents.







Program Studies



Technical Spec Considerations

STADLER
We Track Clever Solutions

GTW DMU 2/6 Low-floor

Light-Weight Diesel Rail Vehicle for Capital Metro, Austin, Texas, USA

By spring 2008 Capital Metro in Austin, Texas, had received six low-floor Diesel rail vehicles that opened up a new era of greatly enhanced passenger rail service. Each vehicle is self-propelled by two diesel electric drive systems and is capable to start and stop faster than traditional commuter rail vehicles. Each GTW has a capacity of 200 passengers, 108 seated and 92 standing, as well as spaces for passengers with wheelchairs (fully ADA compliant) and bicycles. The low-floor access, the high-quality interior and the very low noise level offer a comfortable travelling. The rail vehicle communications system includes visual and acoustic passenger information, a video recording system and a wireless LAN infrastructure.

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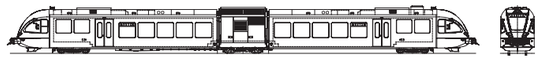
We Track Clever Solutions



Technical features

- Bright, friendly interior with large windows and plush seating
- Fully ADA compliant with wide entrance doors
- Ready to fulfill FRA alternate compliance
- EPA compliant
- Passenger compartment with 75% low floor section providing level boarding at all passenger doors
- Enhanced air conditioning systems (fully redundant) for passenger compartments and driver cabs. Systems designed for ambient temperatures up to 40°C (104°F)
- Unique and very efficient crash absorption system for the protection of driver and passengers (fulfills European crashworthiness standards)
- Air-suspended motor and trailer trucks
- Ergonomically designed driver's cab
- Traction equipment housed in a separate power car, efficiently insulating the passenger compartments from noise
- Redundant traction power system consisting of two units, each with a diesel engine, asynchronous generator, IGBT power converter and asynchronous drive motor
- Glass fiber reinforced front section with automatic coupling
- Car body of end cars incorporates an extruded aluminum super structure
- Car body of power car incorporates a steel superstructure
- Latest generation of vehicle control systems including detailed diagnostic features
- Multiple-unit control for up to three vehicles
- CCTV equipped
- Event recorder monitoring of on board systems
- Fire detection and suppression systems
- Emergency roof access system
- Emergency intercoms in passenger sections
- Luminescent emergency decals installed within interior to aid with emergency egress

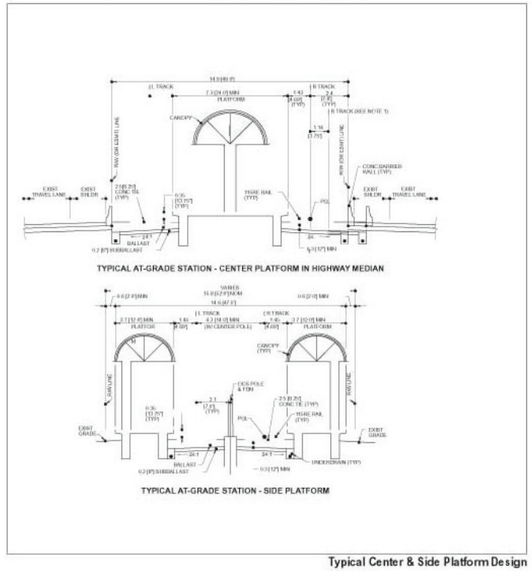
Vehicle data

Customer	Capital Metropolitan Transportation Authority, Austin, Texas, USA	
Line operated	Austin-Leander	
Gauge	1435 mm	(56.5")
Axle arrangement	2'Bo2'	
Number of vehicles	6	
Seating capacity	96	
Flip up seats	12	
Standing capacity	92	
Floor height		
Low floor	600 mm	(23.6")
High floor	1000 mm	(39.4")
Door width	1300 mm	(51.2")
Longitudinal strength	1500 kN	
Overall length	40890 mm	(134–1.8")
Vehicle width	2950 mm	(9–8")
Tare weight	72 t	
Bogie wheelbase	2100 mm	(82.7")
Powered wheel diameter (new)	860 mm	(33.9")
Trailer wheel diameter (new)	750 mm	(29.5")
Maximum power at wheel	470 kW	
Starting tractive power	80 kN	
Acceleration (0 - 20mph)	0.9 m/s²	(2.03 mphps)
Brake rate service/ emerg/ max	1.3/ 2.2/ 2.4 m/s²	(2.91/4.9/5.4 mphps)
Maximum speed	120 kph	(75 mph)

GCAP1007e

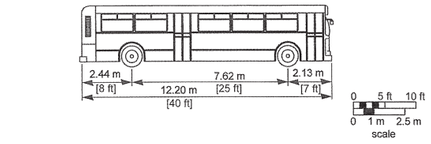
HRT Hampton Roads Transit

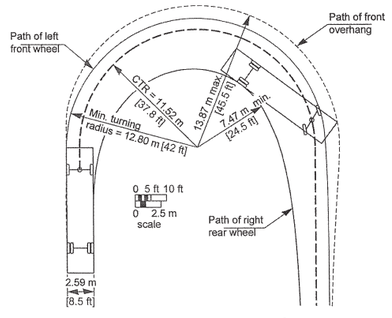
NORFOLK LIGHT RAIL TRANSIT PROJECT
Final Environmental Impact Statement



Typical Center & Side Platform Design
Figure 2-16

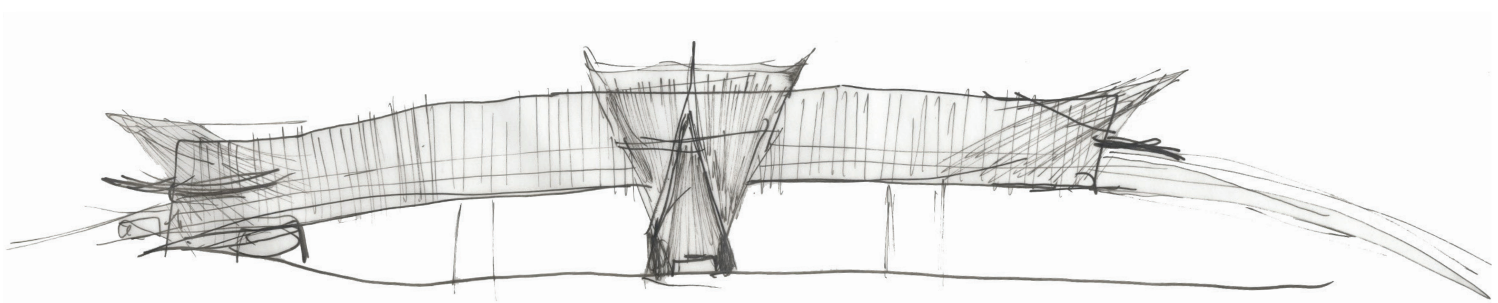
Prepared by
The URS/PB Team

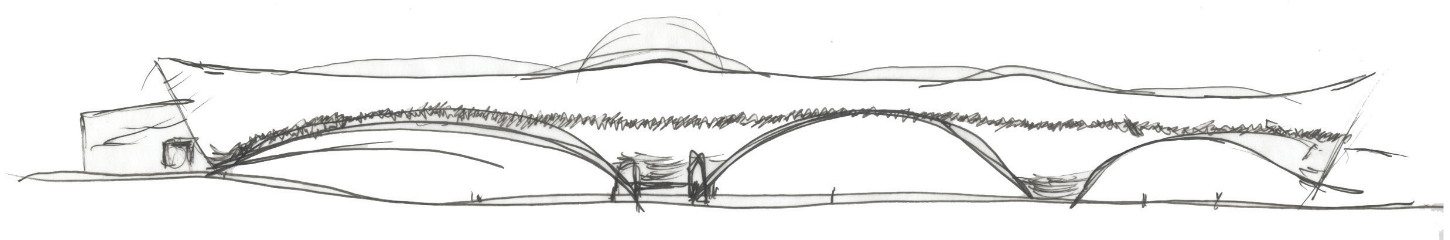


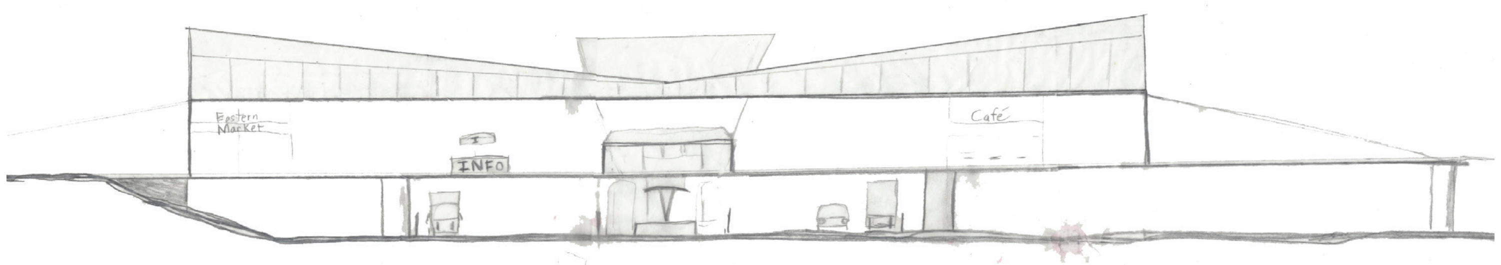


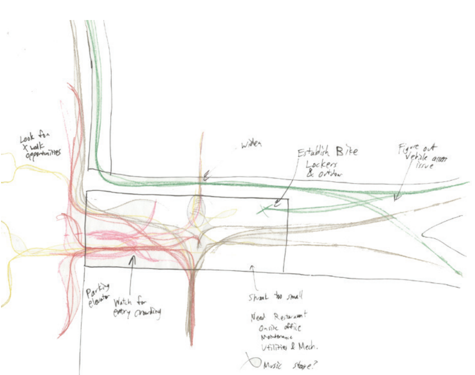
- Assumed steering angle is 41°
- CTR = Centerline turning radius at front axle

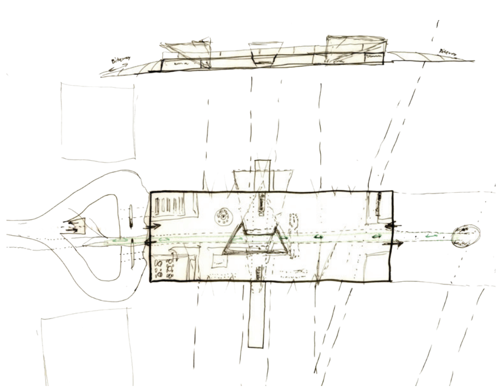
Exhibit 2-7. Minimum Turning Path for City Transit Bus (CITY-BUS) Design Vehicle

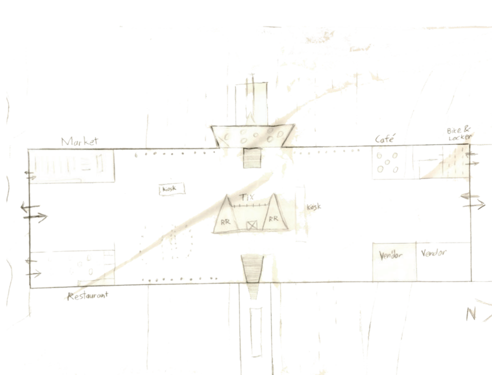


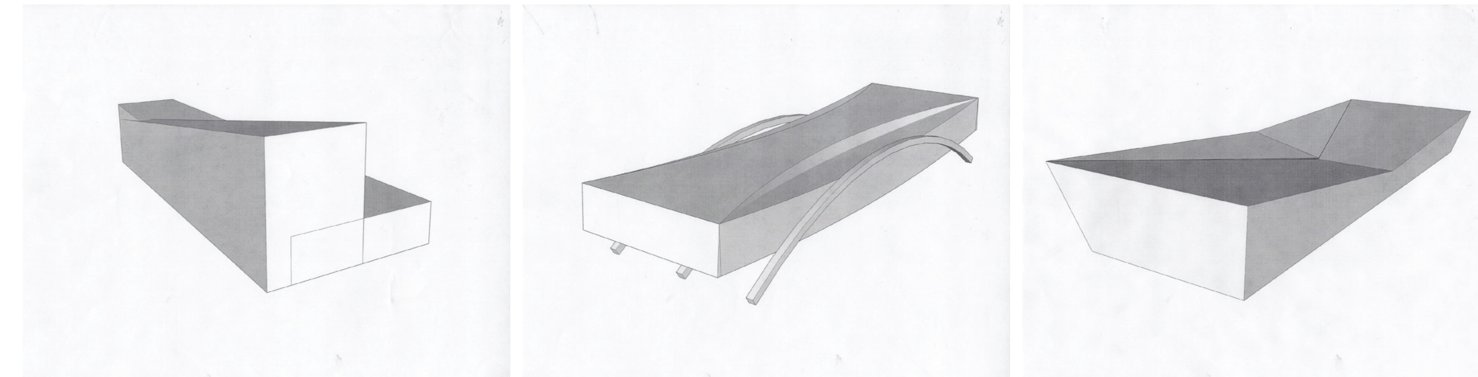


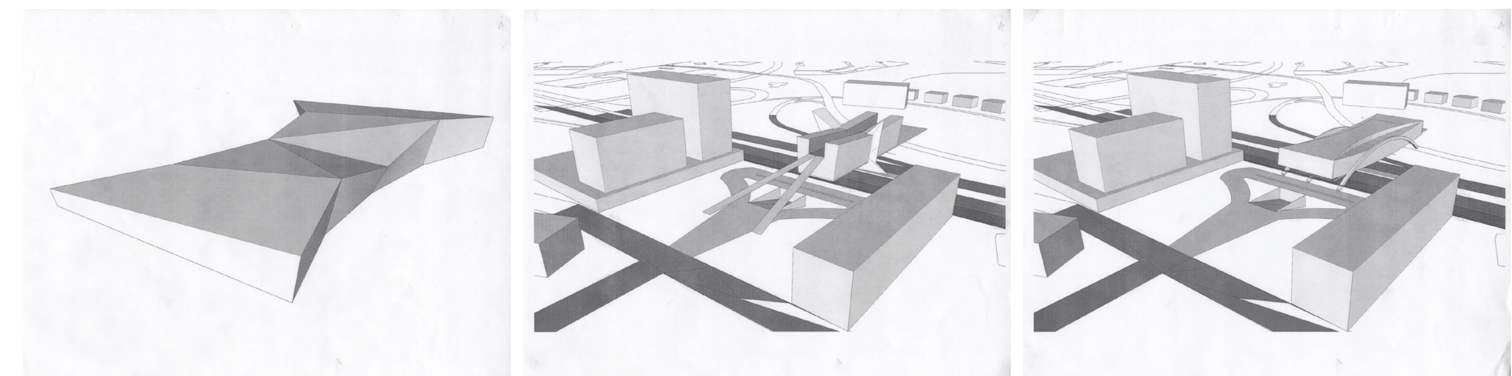

Eastern Market
Café
INFO

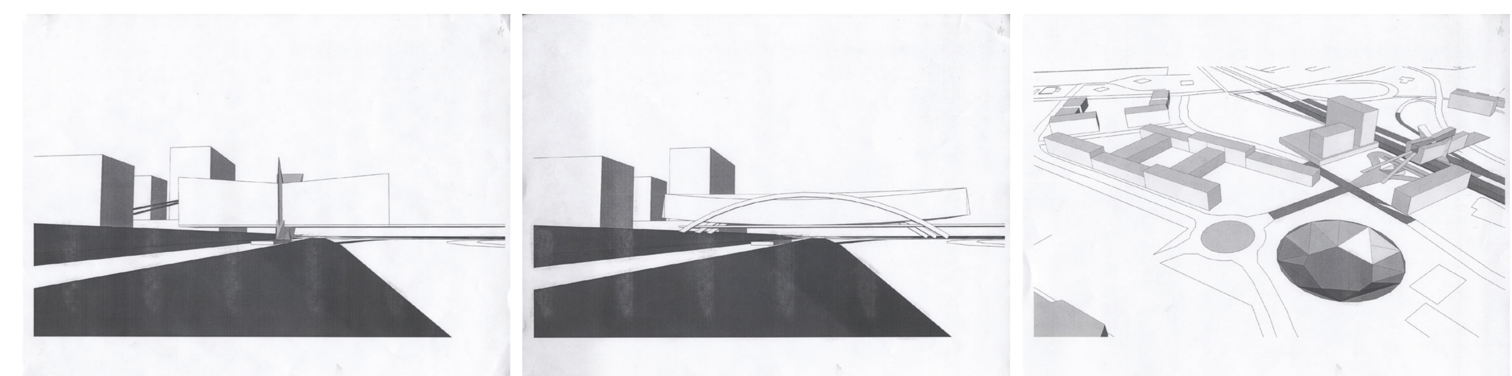


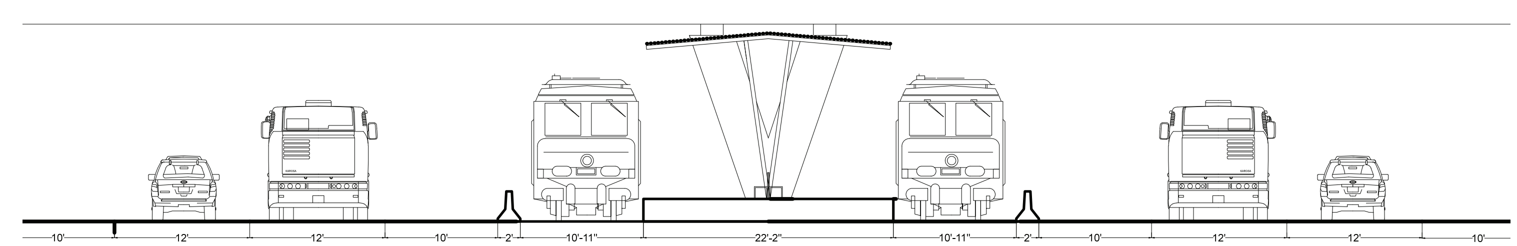


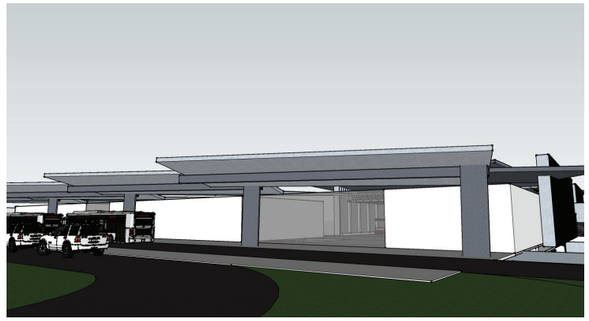


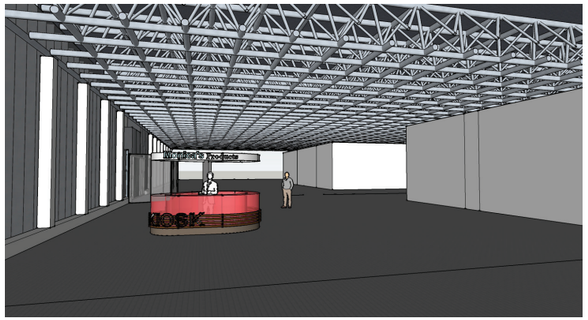


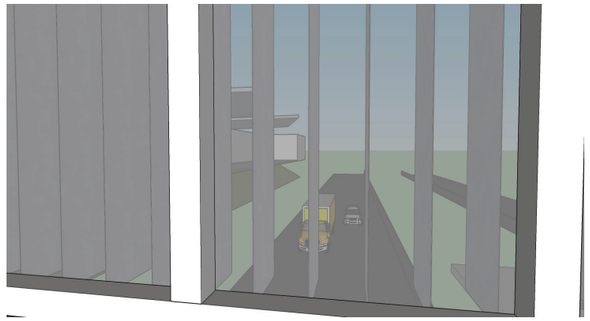


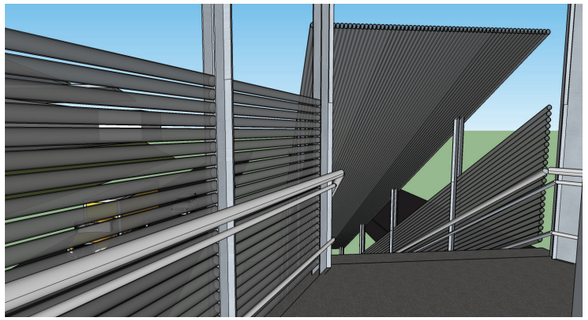


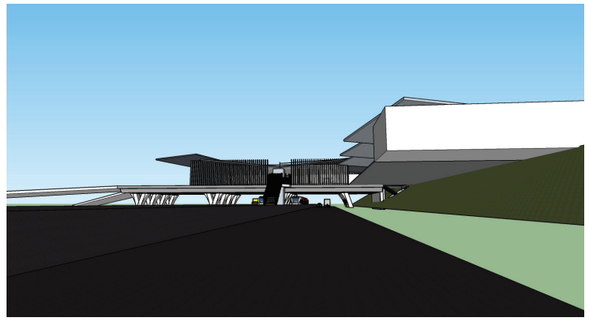

10'
12'
12'
10'
2'
10'-11"
22'-2"
10'-11"
2'
10'
12'
12'
10'

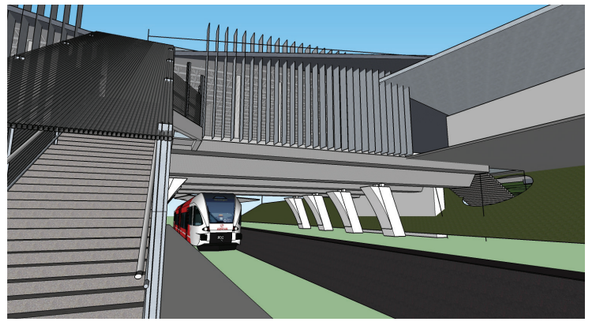


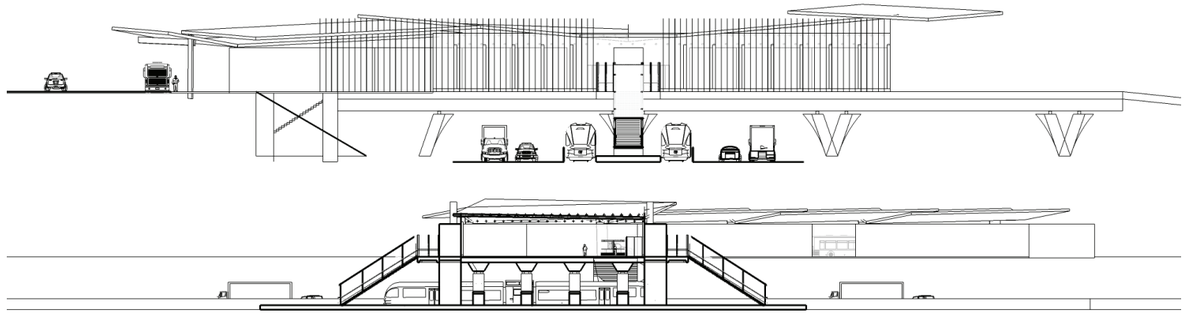


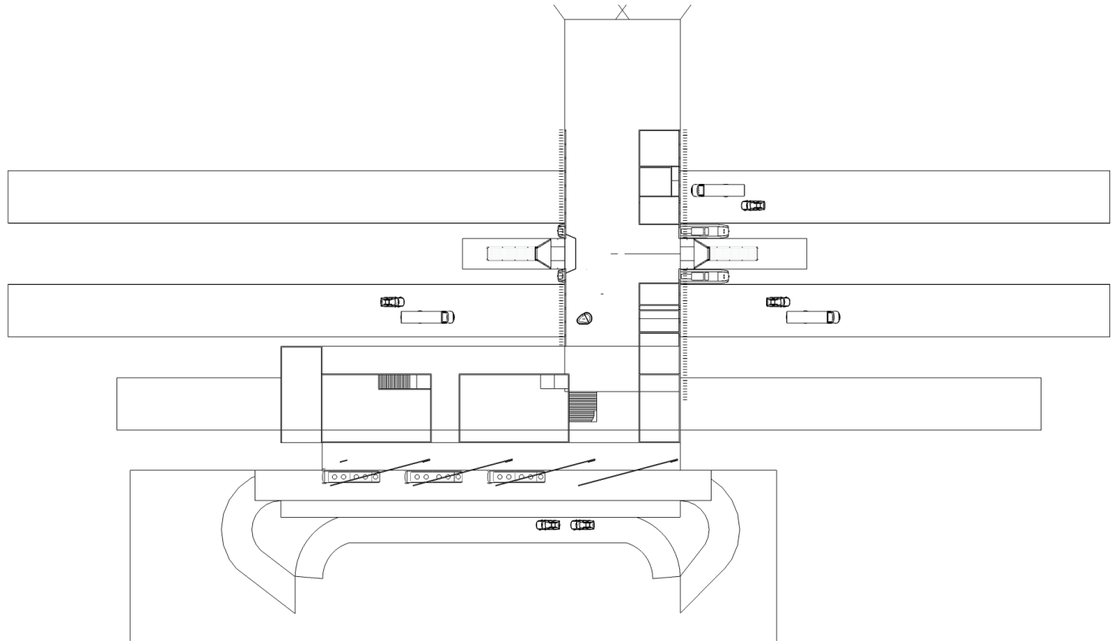


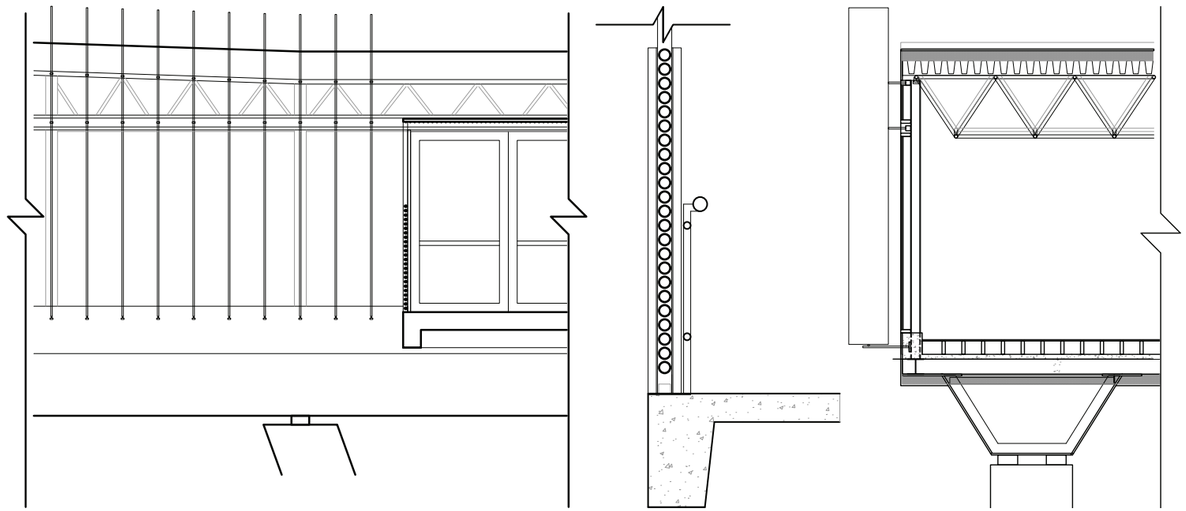












Presentation Boards

Public Transit Systems and Community Planning

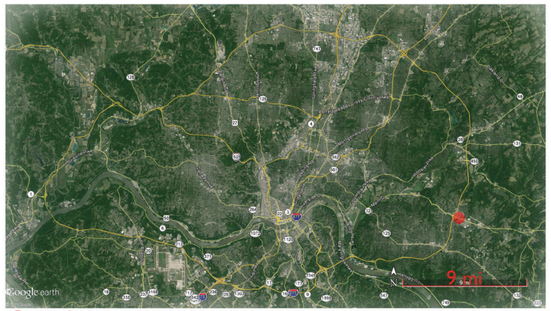
Elias Lewis

Reconnecting the City

A study in Transit Oriented Development and Architecture. A new community in East Cincinnati with a commuter rail station as the central point of connection.

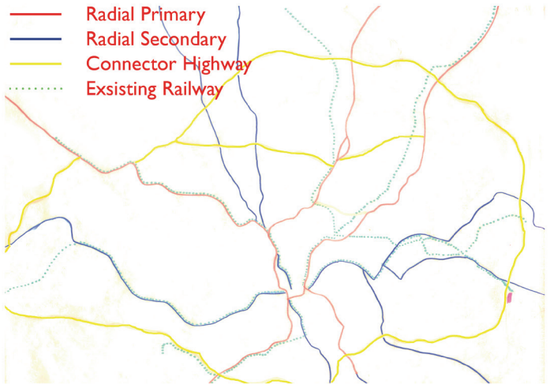
The Eastgate Station and Neighborhood

Site Analysis



City Location

Existing Neighborhood Program

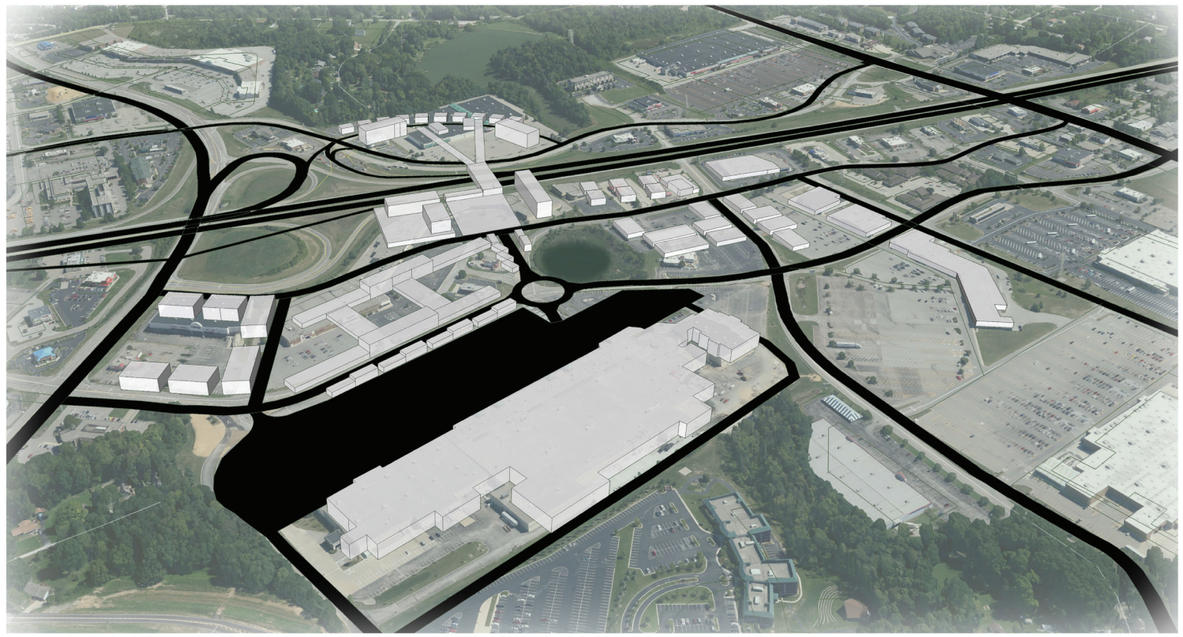


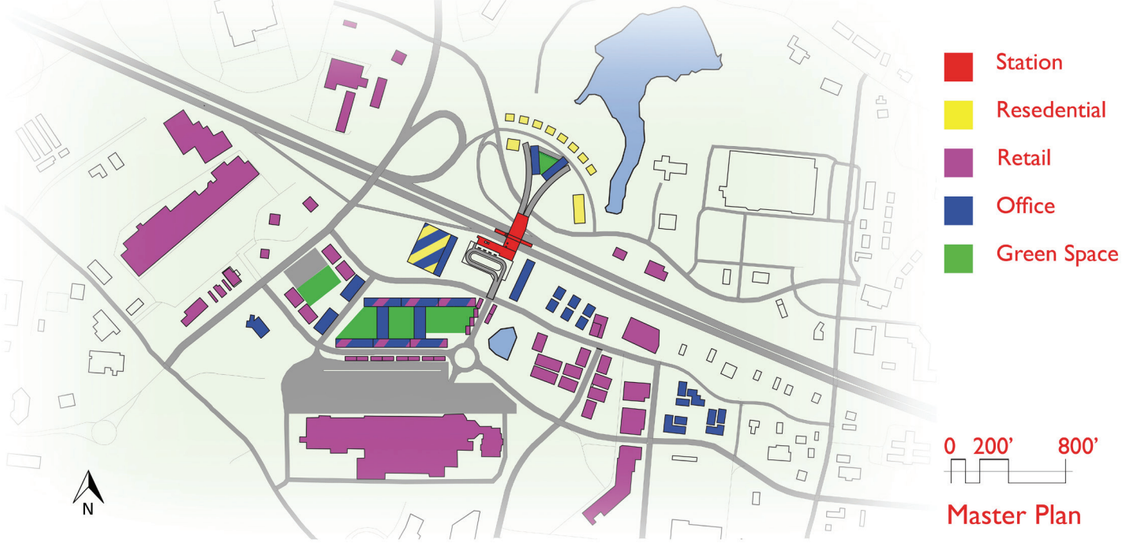
City Road and Rail

Local Population Density

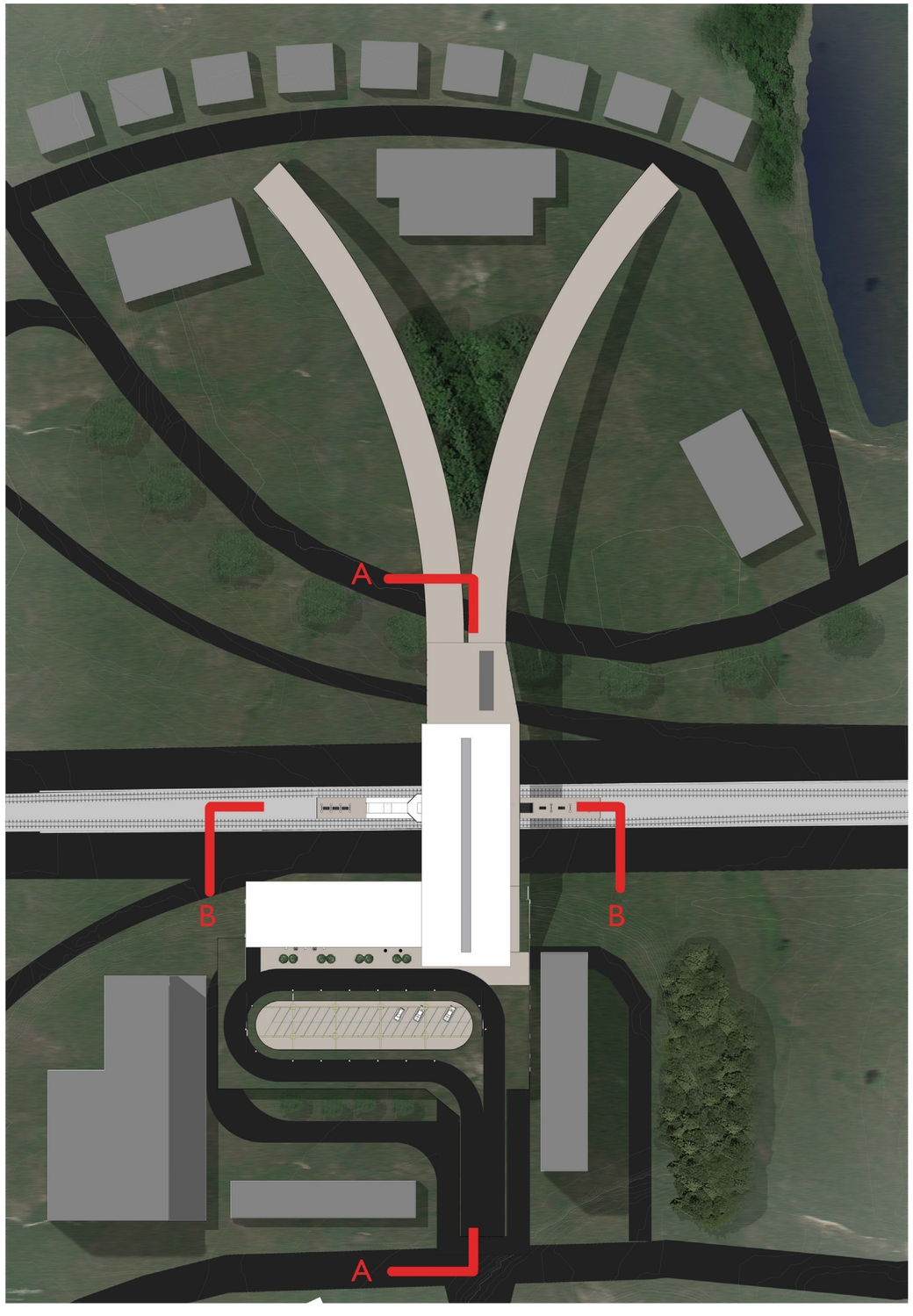
Topography

Site Figure-Field





Master Plan



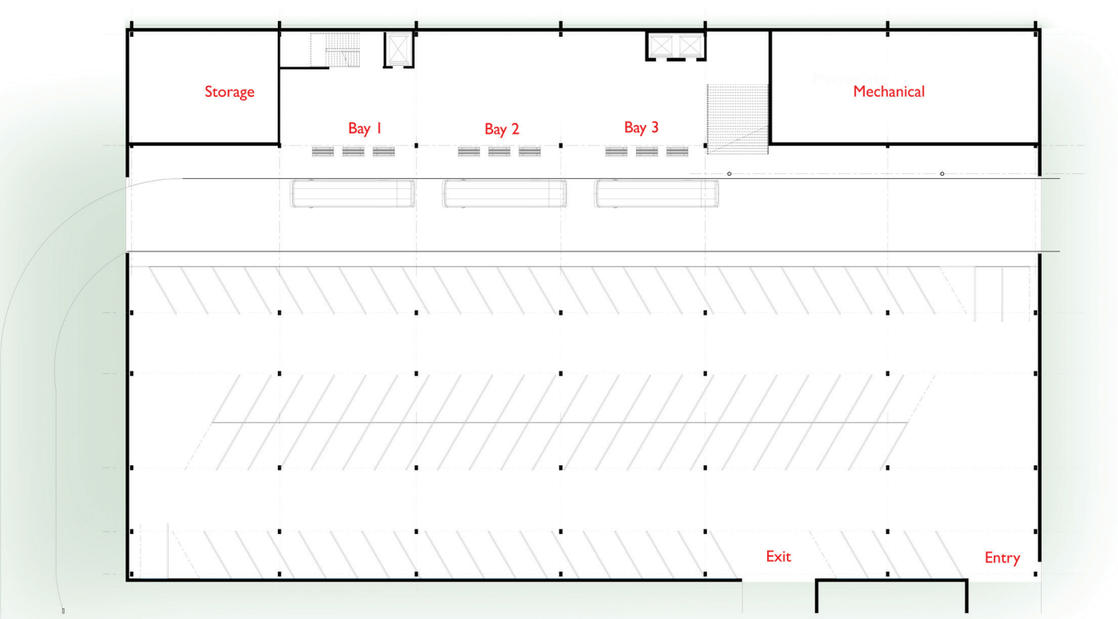
Site Plan

0 40’ 160’

N

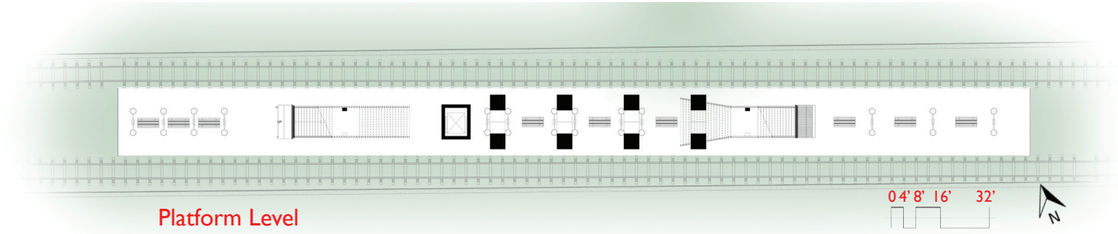
Ground Floor

0 4' 8' 16' 32'



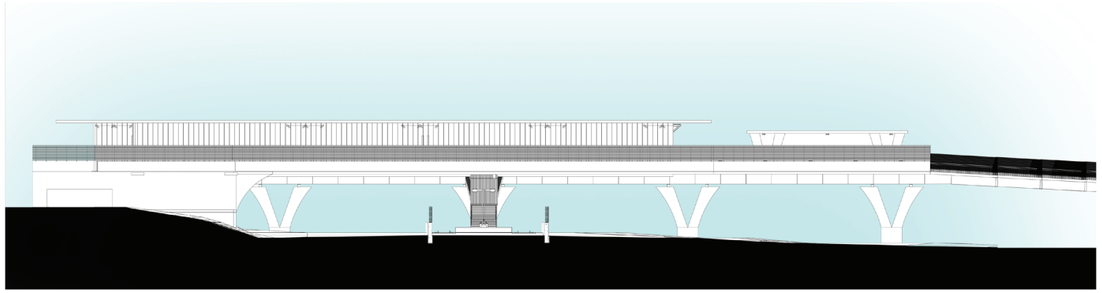
Garage Level

0 4' 8' 16' 32'

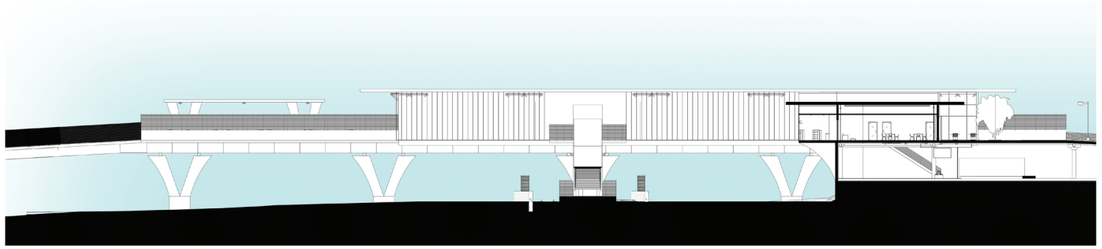


Platform Level

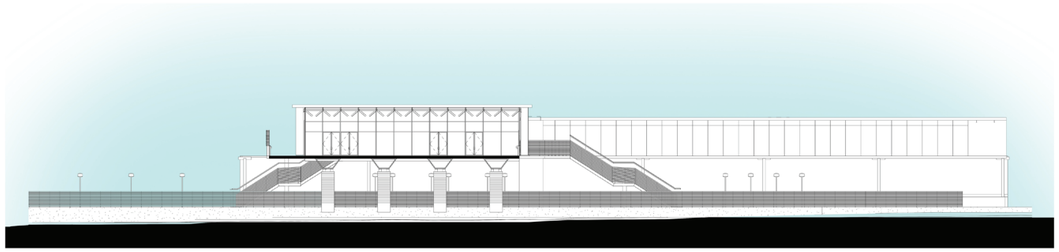
0 4' 8' 16' 32'



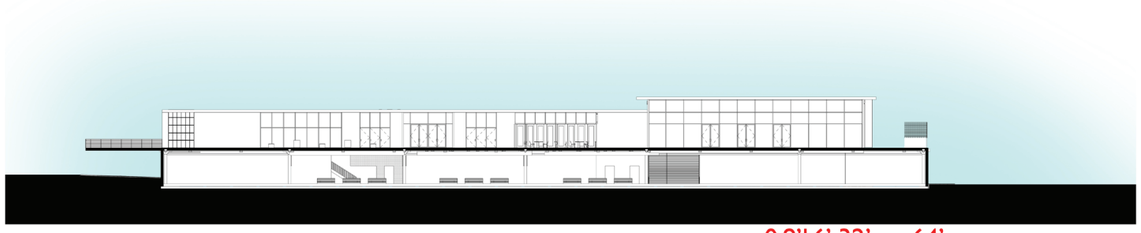
East Elevation



West Elevation

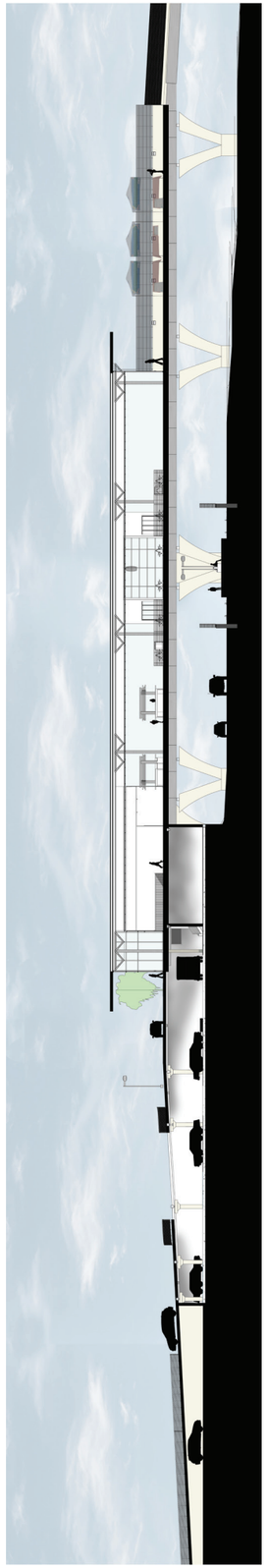


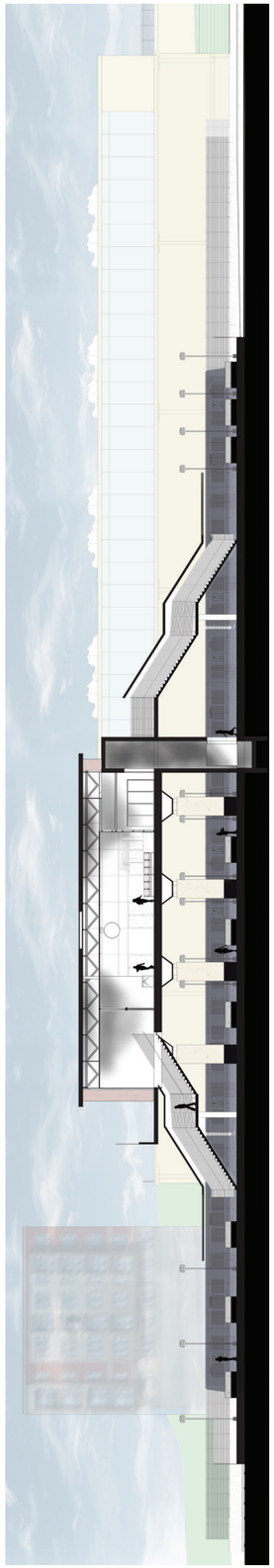
North Elevation

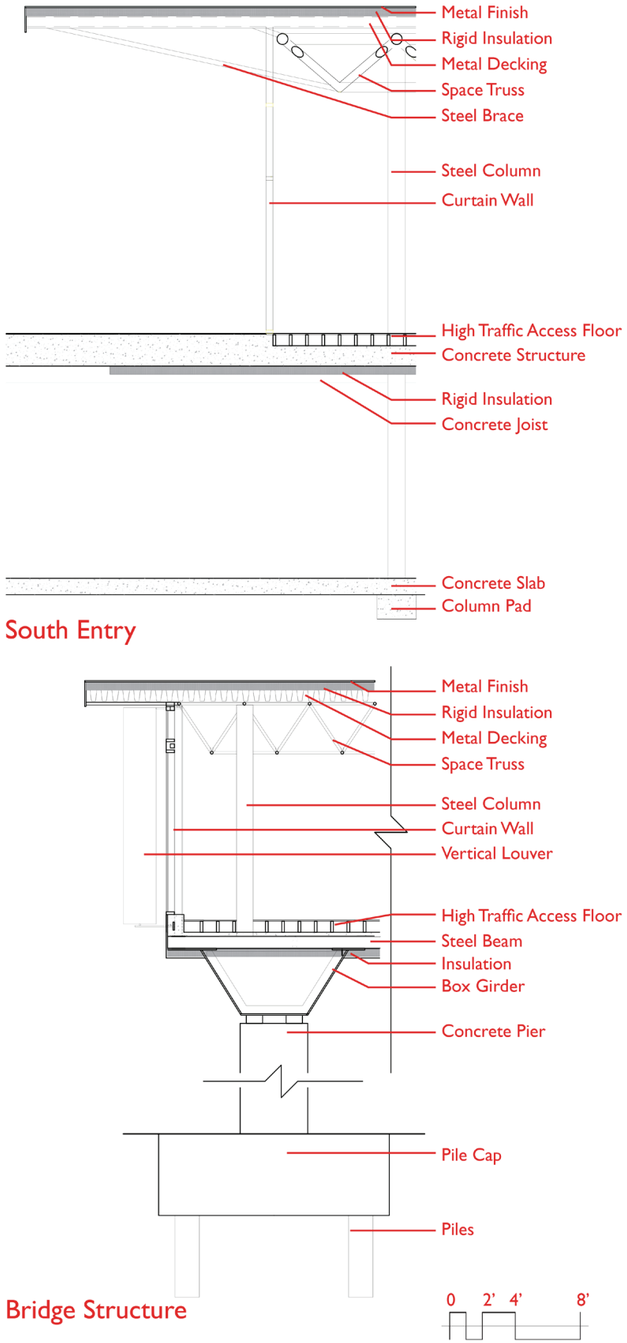


South Elevation

0 8'16' 32' 64'

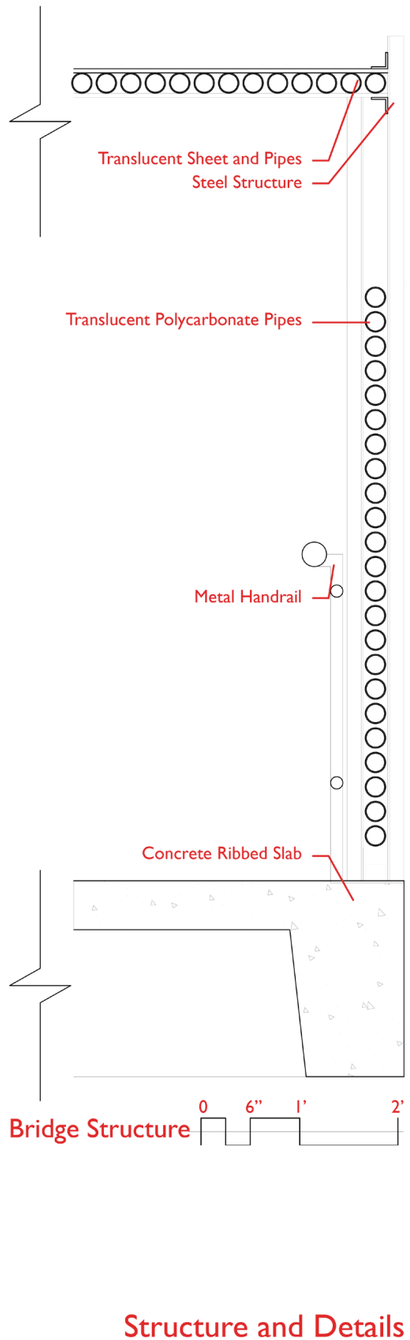






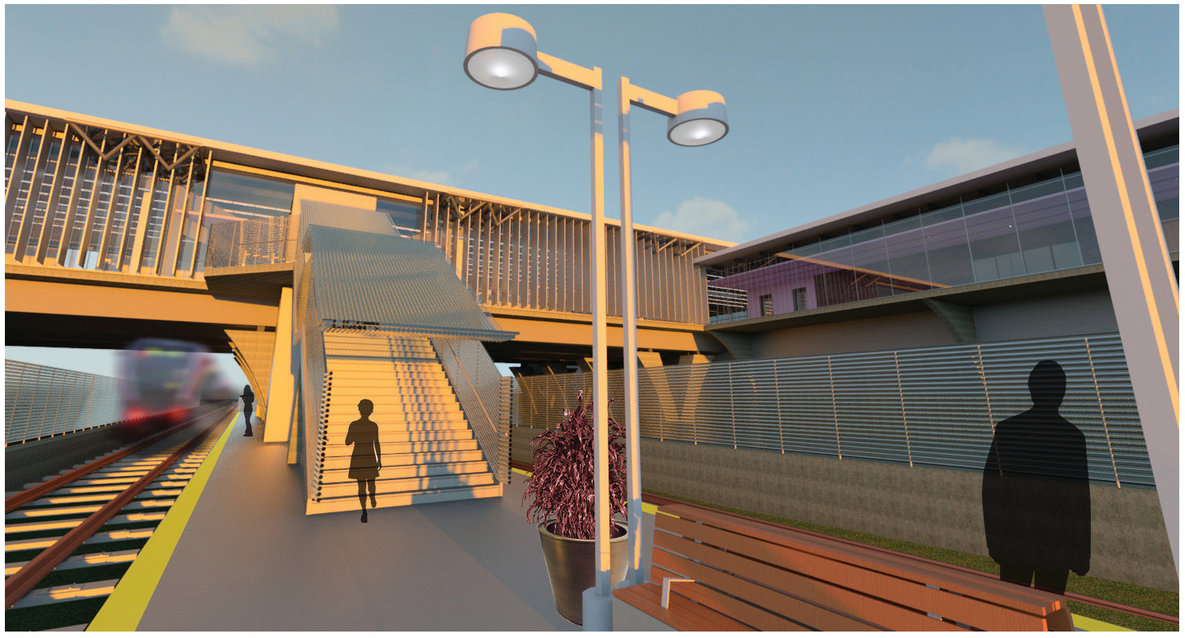
South Entry

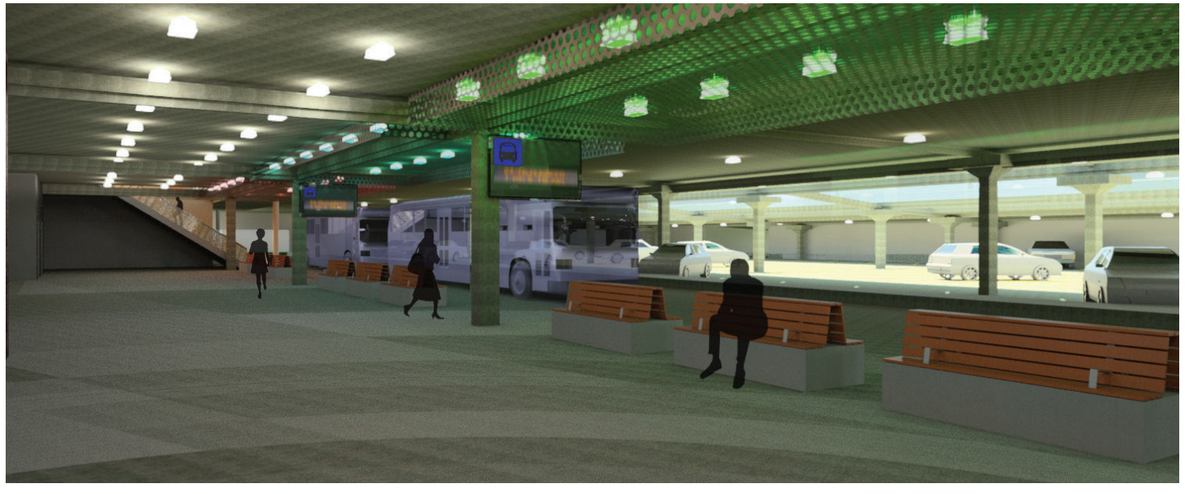
Bridge Structure



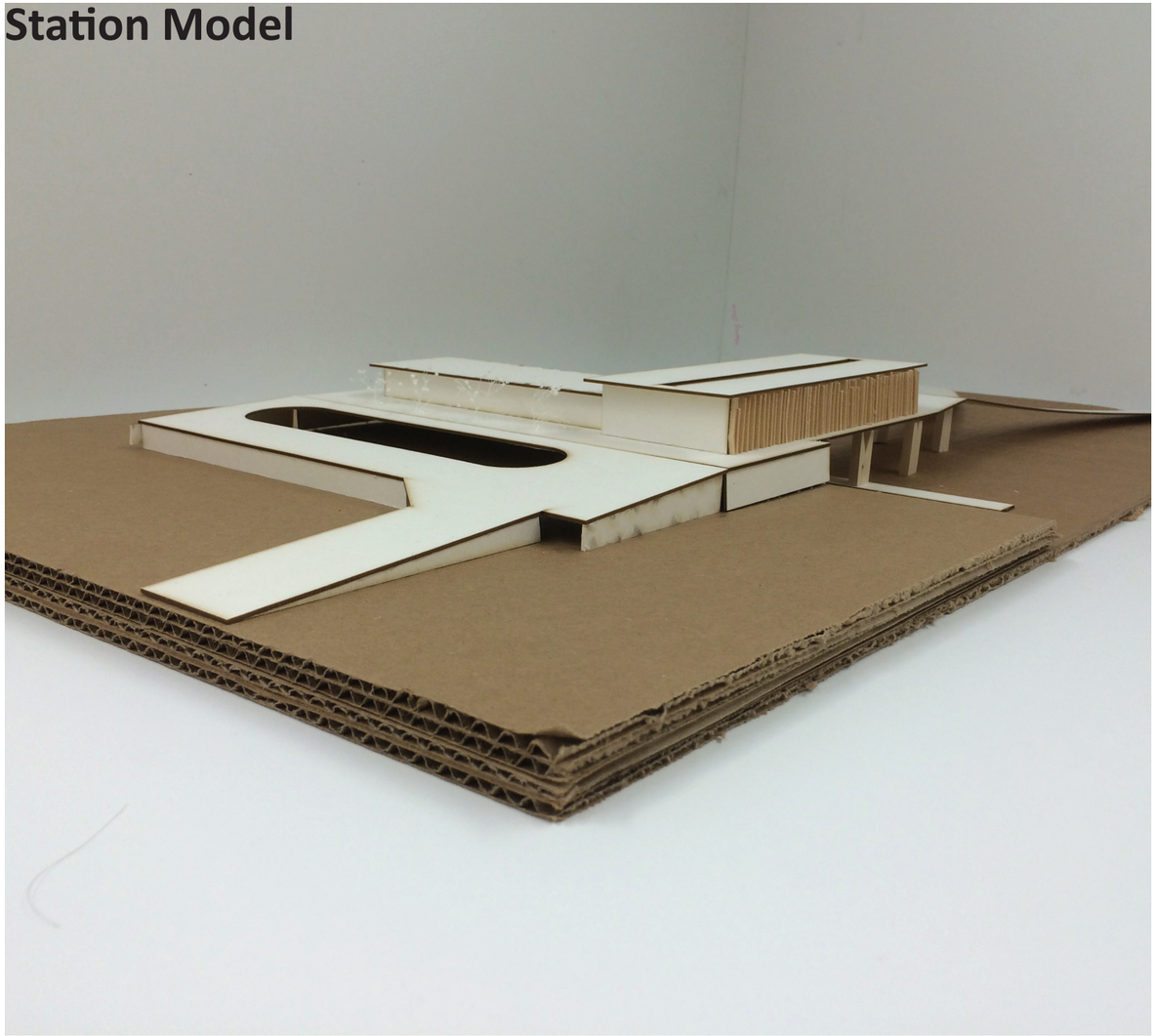
Bridge Structure

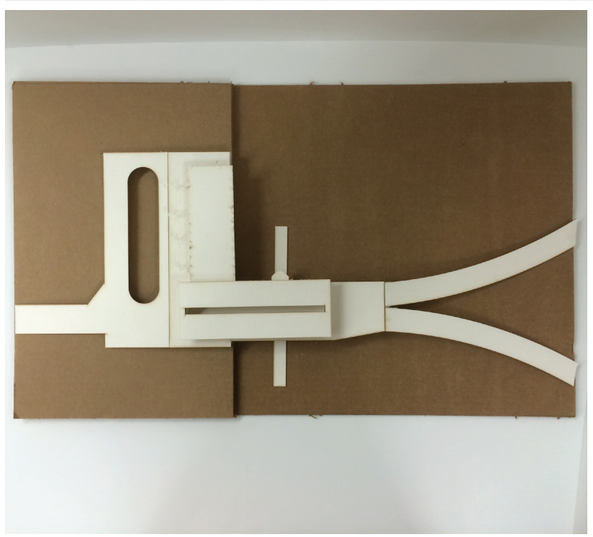
Structure and Details

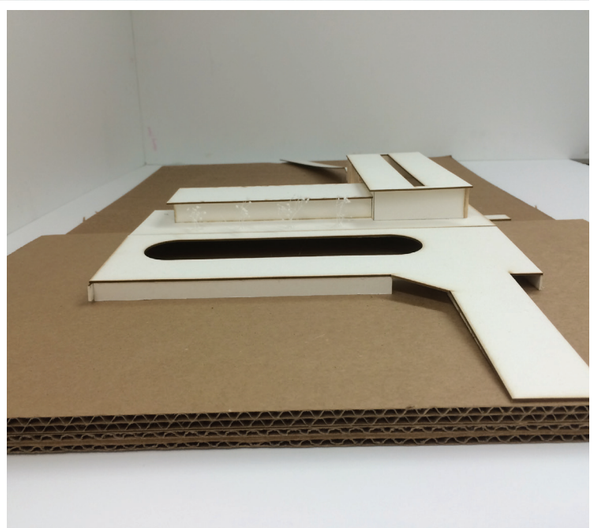


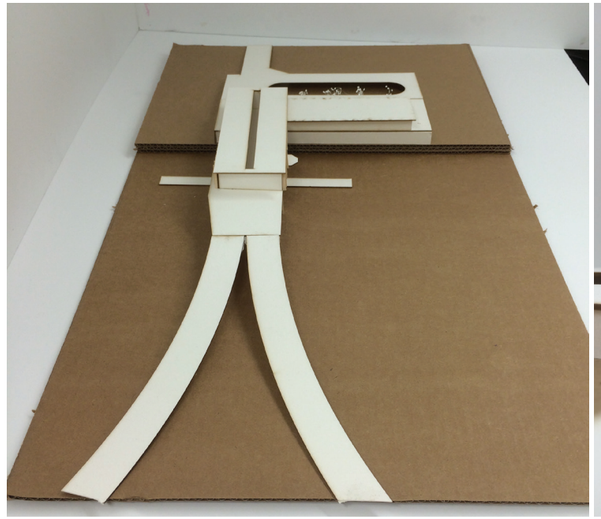


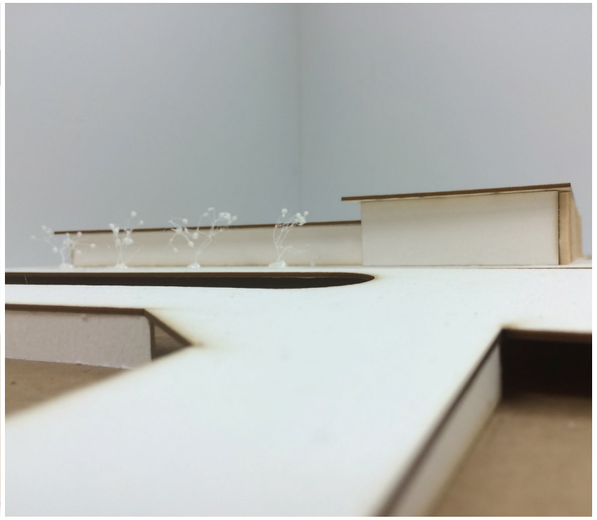
Station Model











Public Transit Systems and Community Planning

Reconnecting the City

ELIAS LEWIS
Miami University

POST WORK ADDENDUM

In my thesis paper and during my design process, I asked: How can the city link with its disconnected communities to the urban core, and how should the neighborhoods be planned in order to mitigate sprawl? I took this as a challenge to design a place, a community, which rejects the disconnectivity associated with car culture. This focus led to an urban design for an edge neighborhood with a central core dedicated to mobility. With a central transit hub, the community is connected to the central city core as well as points within itself by using several transportation methods, both public and private. The focus of the design also evolved to include studies of functionality, technicality and conveniences of transit stations. The design would reach its goal with a developed combination of the two focuses.

At the end of the design period, the project was presented to a panel of architects and professors. From the critique, the strongest points of the design were the station's scale and multi-purpose functionality. As the heart of the community, it would stand out well and provide for a jumping point for how the community could develop in the future. The critique stemming from this is that the community design could do well from seeing more of this development in its layout and use. Also, the community design should be viewed in more scales in order to understand how the system works and connects from the micro and macro levels. Another critique is that in order to solve such a massive problem, the solution must be backed up with enough evidence or theories in order to suggest that the design is possible and not too idealized. Other presentation skills and imagery were also discussed for improvement

As I move on from this project and look to the future, I see mobility developing in several exciting new directions. Tests have begun on personal autonomous vehicles and early plans are being rolled out on alternative high-speed methods. In the meantime, my interest in architecture's ties with mobility and connectivity continues to grow. I plan to develop my focus through future work and practice.