

**Urban Infrastructure Reconnection:
Recuperating the Riverfront of Cincinnati.**

**A Thesis Presented for the
Master of Architecture
Degree
The University of Tennessee, Knoxville**

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ABSTRACT

Transportation infrastructure has created divides within cities, but as cities continue to grow again, these spaces can be recuperated, utilized, and integrated into the urban fabric to reconnect neighborhoods, engage people in urban culture, and insure long-term viability of cities. Cincinnati is a city that has been divided by convergent highways cutting the riverfront from the downtown and surrounding neighborhoods. These large voids of space must be activated to develop a reconnection that once existed between the city and its riverfront. Connectivity will create an abundance of pedestrian flow which will increase growth and economic opportunities for the city. Infrastructure makes up a large part of the city's footprint and serves only one purpose: transportation. This space can be reclaimed by the pedestrian and be activated by the downtown community. Transportation does not have to be hindered by this process, but can become integrated into the urban network. Cities are growing again and they need to create new connections and repair old ones as they transform.

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CHAPTER 1

CINCINNATI THE CITY

Cincinnati, Ohio is one of the three major metropolises in Ohio (Ohio History Central, 2015). The city is growing again and many millennials find it a desirable place to live because of the diverse culture and urban lifestyle.

Cincinnati has a unique history and a rich culture, because of the people and the hills making up its landscape. The downtown area has become more office oriented and civic over the years because of people moving to the suburbs. People are moving back to the downtown area, but divisions have been created and the city needs to look at how future generations can activate these spaces. Many of the spaces in the downtown and riverfront are destination spots instead of daily activated spaces. The urban culture needs to be reinstated into this area.

Figure 1.1 shows the condition of Fort Washington Way and the Downtown's connection to the riverfront. This area has the potential to connect areas together that have been separated since flooding became an issue. It has become a main artery, but completely unused by the pedestrian on most occasions because of the barrier it creates both physically and mentally to the residents.

Cincinnati was first settled in 1788 and figure 1.3 shows how the city developed



Figure 1.1. Cincinnati Riverfront Aerial. Source: Wikipedia

in its first 14 years. The plan originates from 1802. It has many connections to Rome by being built upon seven hills and getting its name from the Roman, Cincinnatus. The invention of steamboats created many opportunities for Cincinnati being on the Ohio River in 1811. This created opportunities of trade to St. Louis and New Orleans down the Mississippi River. It became a city in 1819 after becoming the pork processing center for the region, which is how it received its nickname of Porkopolis (Ohio History Central, 2015). More business came to town after major railroads and a canal connected Cincinnati to more cities. There was a labor shortage during this period until many Irish and German immigrants came to the area in the 1840s. As the city grew, they laid out six streetcar lines that were originally drawn by horses to help transport people around the city in 1859. The German and Irish immigrants brought a new industry with them and by 1890, Cincinnati was the third largest beer producer in the country. Cincinnati was able to weather the Great Depression better than other cities because of its size and river trade. A common problem to the city was flooding, so after The Flood of 1937, which destroyed many homes and buildings in the area, a protective flood wall was built (Ohio History Central, 2015).



Figure 1.2. Figure Ground of Cincinnati.
Source: Urban morphology

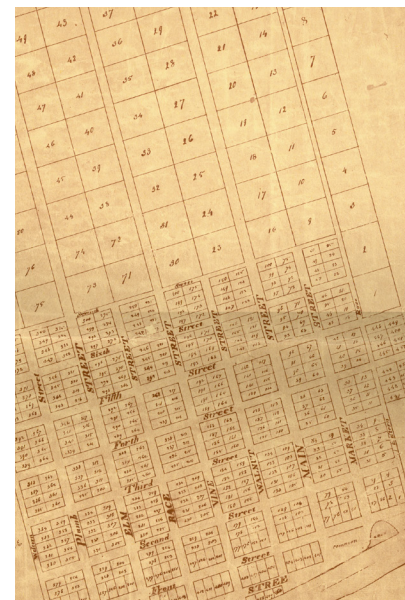


Figure 1.3. Cincinnati City Map of 1802. Source: Sandman Cincinnati

The Site

The city is framed on the south by the Ohio River and then on its other sides by the Interstates I-71 and I-75. In figure 1.4, it can be seen how the city has been created around its hills. The density and patterns of buildings show the edges of the hill that separate each neighborhood. Also, the figure shows how important rail was to the city with its large rail yard just east of the city's downtown.

A large majority of the city's attractions are in the heart of the city. The riverfront has the two main professional sports teams of Cincinnati. However, people do not linger in this area before or after games. Different attractions can be seen in figure 1.5 that shows their diversity and location.

The riverfront does have to deal with flooding from time to time. This does effect the type of program that is placed here. As mentioned before, a flood wall was created in order to prevent such disastrous damage again. The flood plain goes along the south side of Fort Washington Way, as can be seen in figure 1.6. The Banks is the name of the area between the two stadiums and the city has begun to develop it. However, there has been great criticism in the type of buildings being developed and their designs. The buildings are adding no significance to the skyline. It can be said that the city was more focused on getting mix-use programs into the spaces with little concern for design (Is the Banks, 2015). This location has the ability to be a destination place and create a lasting image in the mind of residents and visitors. The opportunity needs to be taken advantage of before its too late.

Demographics and Culture

Cincinnati hit its peak population in the 1950s, just as did many other cities in the United States. Figure 1.7 shows the population trends of Cincinnati over its existence.

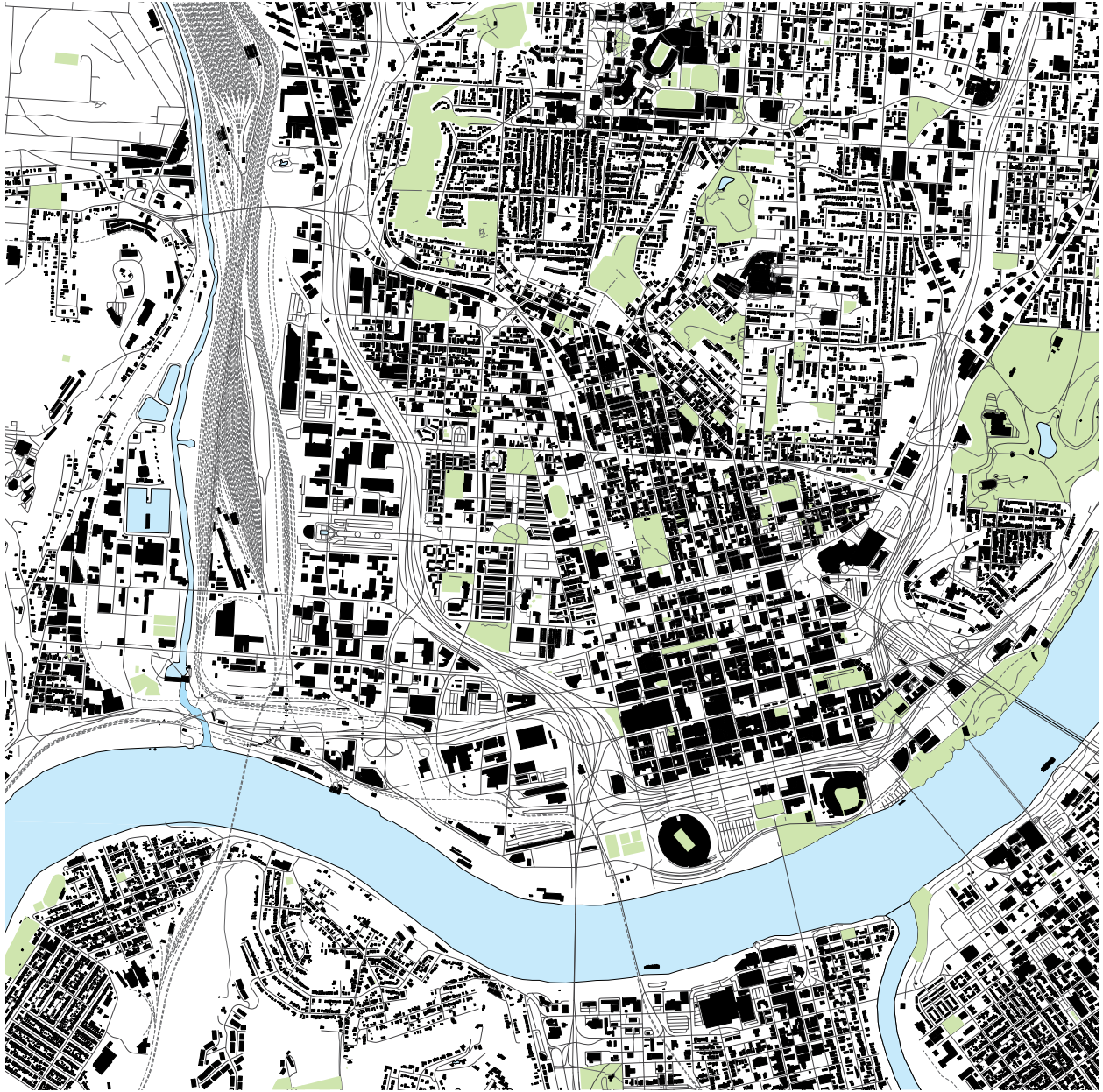


Figure 1.4. Cincinnati Site Plan - Current Day

- 01. Paul Brown Stadium
- 02. Underground Railroad Museum
- 03. Smale Park
- 04. Great American Ballpark
- 05. Sawyer Point Park
- 06. Lytle Park
- 07. Taft Museum
- 08. Taft Theater
- 09. Fountain Square
- 10. Duke Energy Convention Center
- 11. Contemporary Arts Museum
- 12. Arnoff Center Performing Arts
- 13. Piatt Park
- 14. City Hall
- 15. Cincinnati Main Public Library
- 16. Hamilton County Courthouse
- 17. Horseshoe Casino
- 18. School for Creative and Performing Arts
- 19. Washington Park
- 20. Cincinnati Music Hall
- 21. Findlay Market
- 22. Union Terminal

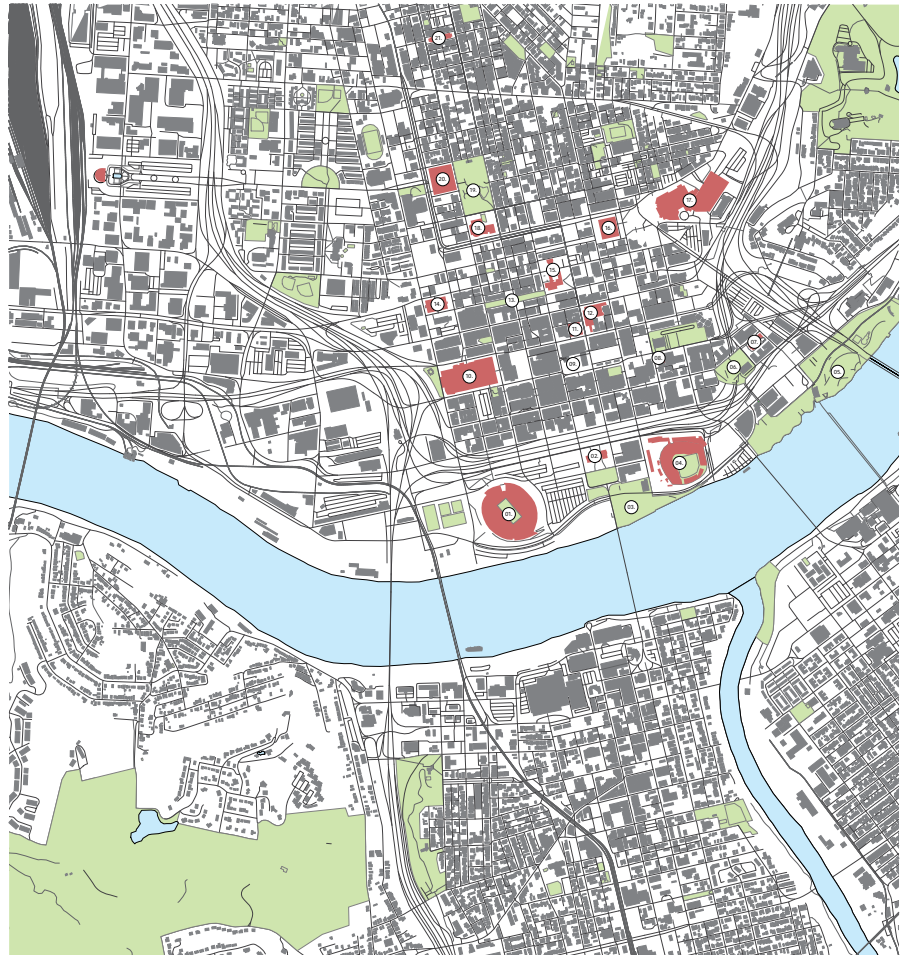


Figure 1.5. Cincinnati Attractions

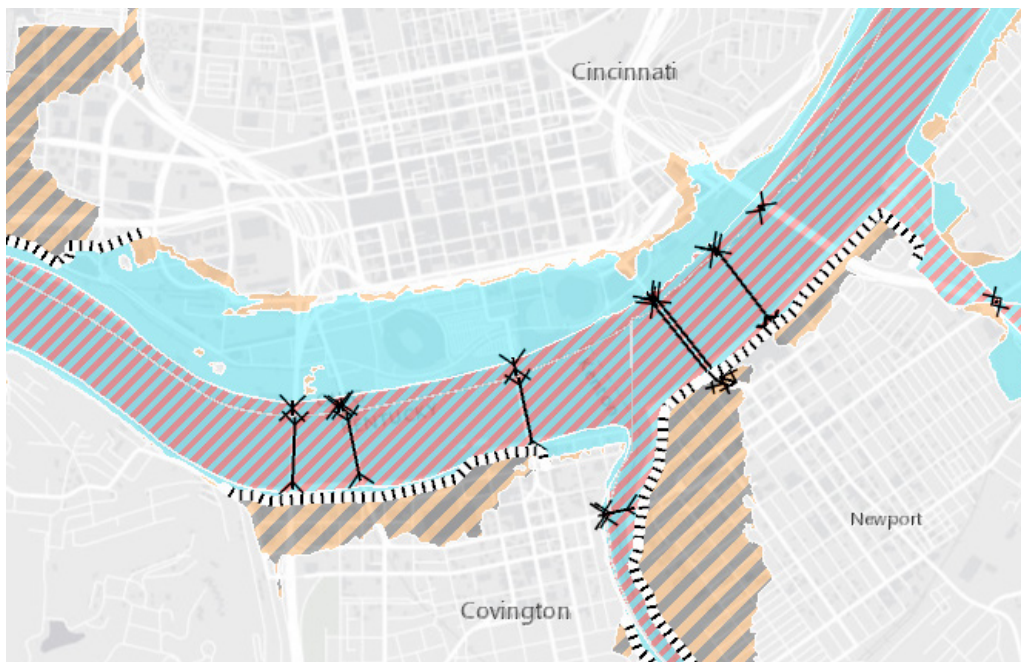


Figure 1.6 Site Floodplains. Source: FEMA Maps

It got as high as the 6th largest city in the U.S. and was hypocoristically named “Queen of the West” at one point, which is how it got its term of endearment as the “Queen City” (Plan Cincinnati, 2012). The city has been in steady decline since the 50s until the past two years. Population has risen due to the multiple industries and the importance of Cincinnati on the Ohio River (Plan Cincinnati, 2012).

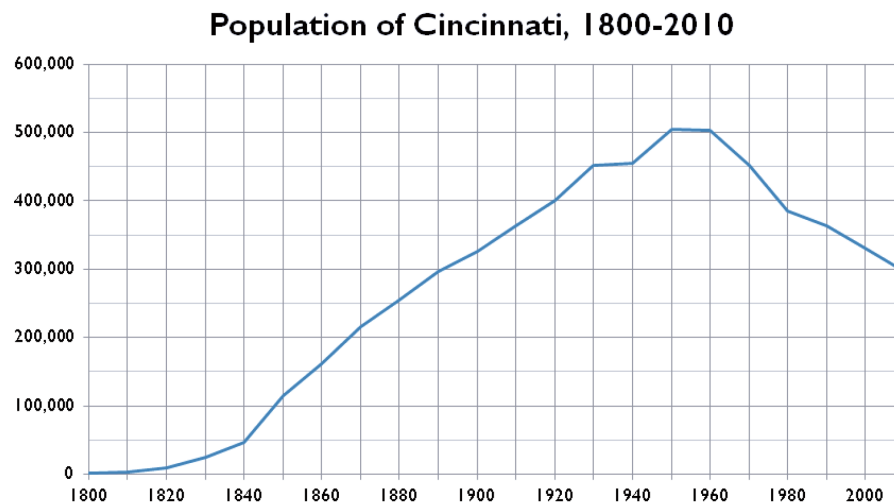


Figure 1.7 Population Trends. Source: Plan Cincinnati

In 2014, Cincinnati had an estimated population at 296,000. The population density is 3,810 Cincinnatians per square mile (Plan Cincinnati, 2012). People are moving to Over-the-Rhine and just north of downtown, but downtown growth is still minimal. The north side has had most of the city’s attention, which correlates with the growth of the population of the area. The graph to the left shows the downtown versus directly surrounding neighborhoods to the north. It indicates the northern part of the city is currently more desirable than the downtown for the population. 77% of the people who work in the city live elsewhere (Plan Cincinnati, 2012). The millennial generation, however, desires to live in the city, but the problem is the issue of affordability. Over 40% of the city’s population is below poverty rates (Plan Cincinnati, 2012). There is a large amount of construction happening in the Cincinnati area to accommodate growth, but most of it does not address the issue of affordability.

An 11% population increase between 2010 - 2030 is projected by the Urban Land Institute (Plan Cincinnati, 2012). In order to make the downtown and riverfront area a diverse community, historical buildings and new construction must address affordability. Cities are constantly looking at what needs to happen to accommodate the next generation. Millennials want an urban lifestyle combined with the green space of the suburbs. Cincinnati housing density is currently very similar throughout the city and suburbs, but this needs to change in order to accommodate future generations. Increasing density and affordability will promote future growth to the downtown and riverfront areas.

The riverfront is the location for all the professional sports teams in Cincinnati and creates a lively atmosphere on game days. Baseball culture is very important to Cincinnati, as it was the first major league baseball team, as seen in figure 1.10. However, there are few places on the riverfront to enjoy before or after the games

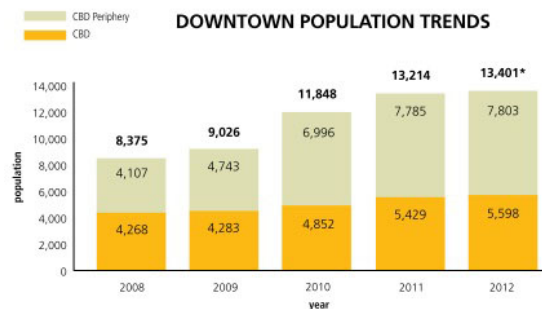


Figure 1.8 Downtown Population Trends.
Source: Plan Cincinnati

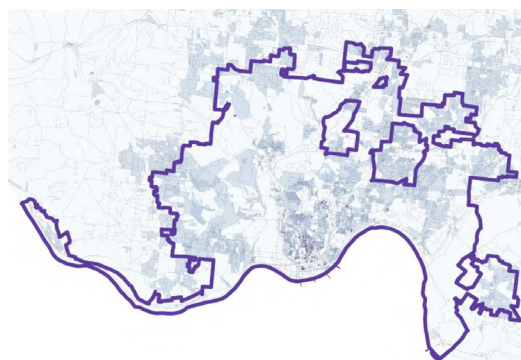


Figure 1.9 Population Density.
Source: Plan Cincinnati

because baseball does not have the same tailgating culture as football.

Sawyer Point is a popular picnic area and festival location on the riverfront. It is a popular starting and finishing spot for athletic events. Many of the features have historical reference, such as the serpentine wall representing the Serpentine Mounds, just east of Cincinnati, and a water fountain marking the great floods of Cincinnati.

Fountain Square attracts over two million people every year to its special events, such as concerts, festivals, and tailgates. It is also a common location to meet downtown or have a coffee and eat lunch. The fountain located in the square has been standing since 1871. The space serves as a commercial, civic, and social space for Cincinnatians to enjoy.

Washington Park was just recently renovated and is home to many public events, shown in Figure 1.13. It serves as an important civic space, and expands the Music Halls connection with the community through an outdoor performance space.

Findlay Market is one of the oldest running markets in the U.S. It is open on a daily basis and is the daily grocery store for many in Over-the-Rhine. It is also the site of many events hosted by the community and city.

Cincinnati has a large arts culture that is mostly on the North side of the city. Pictured is the Contemporary Arts Museum which was designed by Zaha Hadid, a top destination in the city.



Figure 1.10 Cincinnati Reds Gameday.



Figure 1.11 Sawyer Point



Figure 1.12 Fountain Square



Figure 1.13 Washington Park



Figure 1.14 Findlay Market



Figure 1.15 Contemporary Arts Museum

Transportation Fort Washington Way

Fort Washington Way was renovated in 2000 to improve the traffic through downtown. It did improve the traffic, however, the pedestrian scale was not satisfactorily addressed. At the time of construction, the discussion of decking was proposed, so piles were driven, but a deck was never built due to funding. There are three rows of 250 piles at 28 ft. apart stretching 1200 ft (Cincinnati-Transit, 2015). This decision will save costs because little excavation will have to happen. This runs directly alongside of the abandoned subway and current Riverfront Transit Center. This road was originally created as a levee for flooding in the downtown region. There is one remaining problem with the new Fort Washington Way, how it disrupts Broadway Street and its connection to the riverfront. This space has the opportunity to connect and reclaim the area back to the city, instead of the expressway.

Streetcar and Bus

Currently a streetcar is being inserted into the Cincinnati core to connect the north and south side of the downtown together. The streetcar will begin transporting passengers in early 2016. This project will promote the use of public transportation and increase connectivity between the riverfront and the north side. Because this area



Figure 1.16 Ft. Washington Way Piles and Spacing



Figure 1.17 Fort Washington Way

will have less of a need for vehicles. More parking lots can be developed and create development within the region. The streetcar creates development because developers will invest because less money will need to be spent on parking and more square footage will be leasable (Background & Benefits, 2015). These areas get high traffic, and the millennial generation wants to live in walkable, multi-modal transportation areas.

A multi-million dollar venture was spent developing the riverfront transit center below 2nd Street (Cincinnati Transit, 2015). However, the city only uses it for private buses on game days. This space needs to be utilized in the future because of its location. Little has been done to update and improve the public transportation in Cincinnati, which is partly due to the lack of use by most people. The city is looking into how it can reconnect its communities together cities as it once did. The new streetcar will be the first improvement made to begin connecting communities together. What might be the next system added to the city? It would make the most sense that a light rail/commuter rail be next in connecting the multiple communities of Cincinnati together. Cincinnati has to look at its intracity bus system and see how it can further connect the city as well. This must happen first before mass transit can be placed. Then Cincinnati must look at the regional scale and how they can begin to connect with cities like Chicago, Pittsburgh, St. Louis, and Atlanta. How can the existing infrastructure be



Figure 1.18 New Street Car



Figure 1.19 Street Car Route.
Source: Plan Cincinnati

utilized in the ventures? Upgrading the transportation system would be a responsible choice by Cincinnati because as oil prices increase and cities become larger, a bigger strain will be put on public transportation. Multi-modal system cities open themselves to more economic development because of number of neighborhoods it can serve.

Subway

In the early 1900s, Cincinnati wanted to ease the traffic congestion downtown by creating an underground railway that would loop around the edges. The proposal was to reuse the Erie Canal as the base for the project (Mecklenborg, 2010). The proposed loop would stretch just over 16 miles. The project came to a halt in 1928 after some economic hardship and a change in leadership for Cincinnati (Mecklenborg, 2010). Figures 1.20 and 1.21 show the proposal compared to how much of the rail was completed. Many people live outside of downtown today and travel over an hour to get to work each day. If this project was completed the commutes would be shorter and traffic would be less congested overall. This system still remains today and sits empty under a good portion of the city. If this proposal or a similar one was reopened today, what might be the problems and benefits? Because a large portion of this subway is already built, renovations would be easier and more cost effective than building new. Cities like Chicago and Boston have effectively used their subway, and many people find it easier to use it than driving. This could help citizens engage with public transportation in Cincinnati that many are so reluctant to use today.

Proposed transit loop and stations

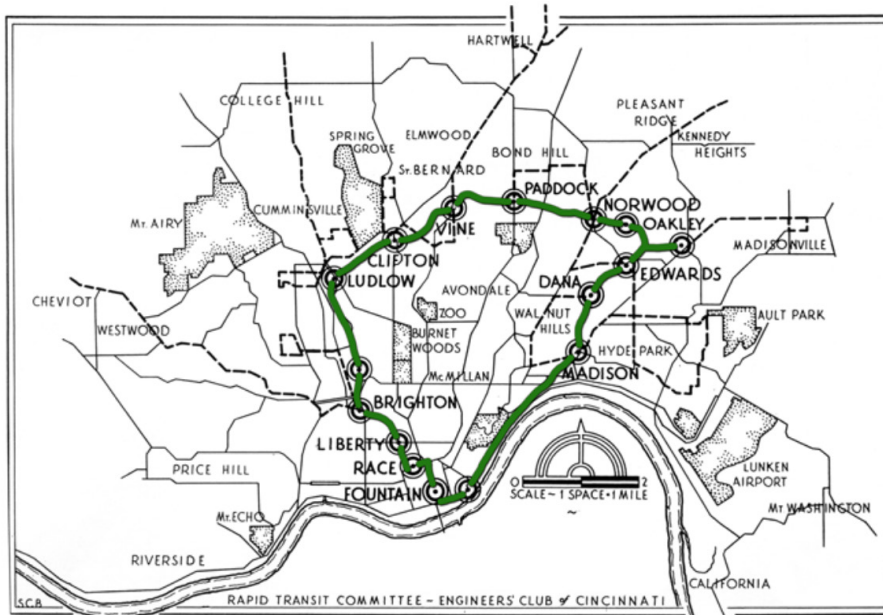


Figure 1.20 Proposed Subway Route.
Source: Cincinnati's Abandoned Subway.

Actual route completed

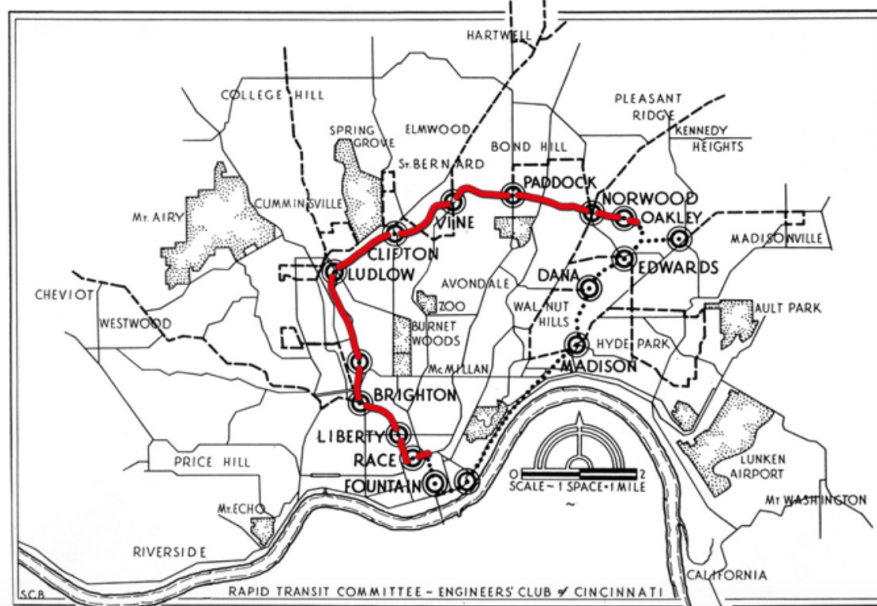


Figure 1.21 Actual Subway Constructed.
Source: Cincinnati's Abandoned Subway.

CHAPTER 2 CURRENT TRENDS

Highway Capping

Proposals for highway capping are becoming more readily explored, because growing cities are trying to reclaim land. The reason for this is because of all the benefits of capping a highway, with only downside being cost (Bonjukian, 2015). A major benefit is the lessening of noise and air pollution within an urban core. These issues are becoming a major problem in Japan and China, because of the high density and industry (Bonjukian, 2015). Capping highways has also proven to reconnect communities at a pedestrian scale (Rethinking the Urban, 2013). Many of the new proposals are in large part green spaces, where a multitude of activities take place to activate the space, which in turn creates interactions among pedestrians. Green spaces within the city core are encouraging millennials and families to move to the area. There has been a shift in desires to have an urban lifestyle again. The large green spaces provide areas for families to enjoy that they so desired in the suburbs, but can now find within downtowns. Young professionals can enjoy the walkability and active lifestyle of the city while still having areas to escape and enjoy open space. Cities are making pedestrians the primary focus, instead of vehicular traffic, to promote a healthy lifestyle in the area (Farr, 2008). Programs for highway caps are becoming more and more multi-functional, with opportunities for arenas, convention centers and retail, which generate more interest and investments by developers, and make these projects more feasible (Rethinking the Urban, 2013). Cost is still the biggest problem of why these projects aren't happening in cities. Early highway caps were done through private donations, but seeing the success of these projects has cities finding ways of creating more funding. It would be interesting to see what kind of incentives and funding could be drawn from the government to make these projects happen. By adding restaurants



Figure 2.1. Chicago Cap Proposal in the Loop



Figure 2.2. Chicago Cap Proposal in the Loop



Figure 2.3. Autobahn Highway Cap Proposal



Figure 2.4. Seattle I-5 Cap Proposal

and retail near or within these areas the spaces become more dynamically activated. Large highways cutting through the city fabric create barriers, and many see them as unsafe because of the speeds at which the vehicles are traveling. The caps improve this by eliminating the visibility of the vehicle. These projects also are not hindering vehicular traffic, because the once open air highway is becoming a tunnel.

Parking Orchards

Designers and developers are always discussing first impressions, but rarely take into consideration the arrival experience of a parking lot. Vehicular transportation will be important for many years to come, but we can design these spaces to be more than just a place for the car. These spaces can add to the experience and provide beneficial systems for buildings and environment surrounding it. The parking lot in the urban setting must become a multi-purpose space (Land For Vehicles, 2015). Can these spaces become ways to generate energy or improve storm-water management? Parking must become more integrated into the urban culture. How does this space grow and change over time? Also, how can these spaces function without vehicles? In many cases, parking lots are used for event functions and sit mostly empty otherwise. How can these spaces be activated when an event is not happening? Could these spots be utilized during markets and festivals? The point is that it does not have to be a sea of asphalt. It has the potential to contribute to the quality of life in the urban setting. Impervious pavers can help with hydrological functions and tree canopies can contribute to heat island mitigation (Farr, 2008). Parking garages exist all throughout cities and add little value besides parking. The rooftops and facades of these existing buildings can be activated by adding parks, recreation, and green space. Urban parking needs to be taken advantage of to improve the quality of cities.



Figure 2.5. Solar Parking.
Source: Local Ecologist



Figure 2.6. Permeable Parking.
Source: Build A Better Burb



Figure 2.7. Garden Parking.
Source: Build A Better Burb

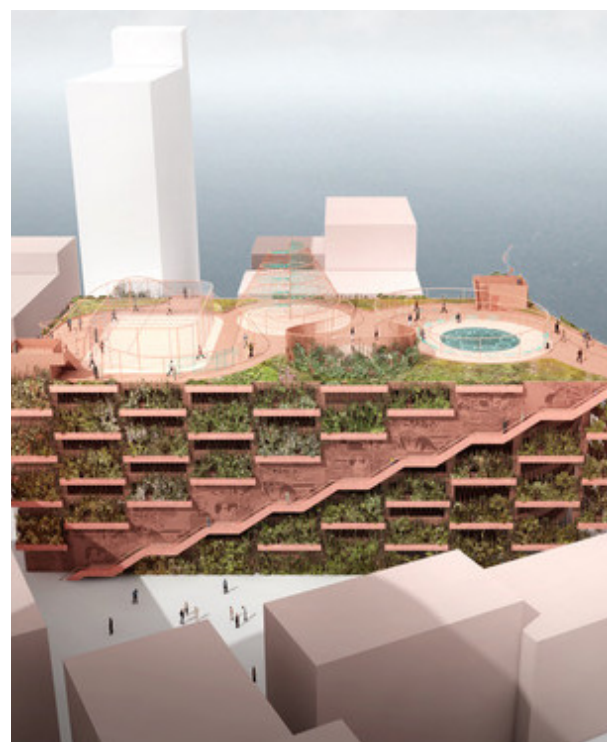


Figure 2.8. Multi-purpose Parking.
Source: Build A Better Burb

Infrastructure

As more cities are growing again there appears to be a problem of space. What cities don't realize is the space that is available. Existing space just needs to be better utilized. Cities need to focus on preserving ecosystems and natural habitats that exist (Gehl, 2010). How does the space underneath and above highways become activated by the pedestrian instead of just the vehicle? Many other spaces come to mind when thinking of underutilized space, such as between off-ramps and on-ramps and even alleyways. In most of these spaces a community focused program makes the most sense. How these spaces are bridged and connected with the rest of the community will determine if they become activated or sit empty. Our highway infrastructure, in general, works well for vehicles, but how can the pedestrian become integrated? How do these large infrastructures become multi-modal with multiple programs? The architecture firm, BIG, looked at how modes of transportation should integrate into the city. They asked questions such as, when should the vehicle or public transit be underground, above ground or at street level? Many cities continue to build new and tear down the old, which is very energy intensive (Gehl, 2010). Cities need to be conscious and retrofit the old and begin to see the layers of systems and history that were once there. What qualities of space does this provide? All of these questions were looked at through this thesis.

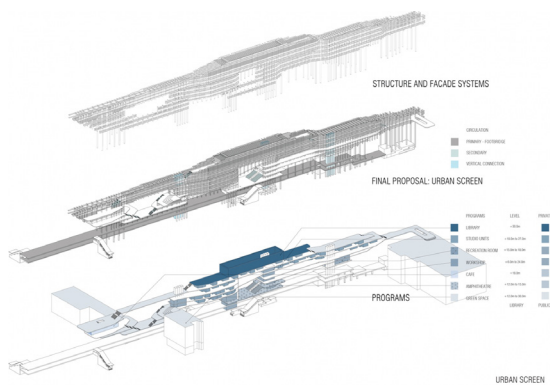


Figure 2.9. Urban Spine. Source HKU Architecture



Figure 2.10. Loop City. Source: BIG

CHAPTER 3 CASE STUDIES

The Westside Project

This project in Bern, Switzerland reinvents the mix-use project, because of an all in one program established for the proposal. This is a 1.5 million sq.ft. project that has retail, entertainment, recreation and residential designed by Daniel Libeskind. The project is integrated over the top of the highway and acts as a gateway into the city. The Westside concept creates a city inside a city. It is connected by all modes of transportation making it livable as well as a destination for other residents. It has a 24-hour lively atmosphere, which provides spaces for everyone at all hours. This project was designed at multiple scales to be integrated into the city.



Figure 3.1. The Westside Project.
Source: archdaily



Figure 3.2. The Westside Project.
Source: archdaily

Klyde Warren Park

Dallas, Texas is one of the most recent highway capping solutions in the United States, designed by James Burnett. It reconnects the mixed-use neighborhood with the cultural district in downtown at a pedestrian scale. The program creates multiple types and scales of interaction between event spaces, gardens and meeting spots. It doesn't just reconnect the people of the city, but offers a better quality of life by reducing noise

and air pollution from the vehicles below. The structural system was the largest struggle to support all the weight, while maintaining highway clearance and keeping the park at grade. Precast concrete piles were used as well as the median spanning 200 ft. with a 6.5 ft. deep deck on top. Dallas has found this project a success, having 12,000-15,000 visitors to the park per week (Klyde Warren Park, 2012). Figures 3.3 and 3.4 show the before and after of the transformation. The park generated an increase in tax revenue in the surrounding area, which has allowed Dallas to pay for the project (Perez, 2015).



Figure 3.3. Klyde Warren Park - Before.
Source: archdaily

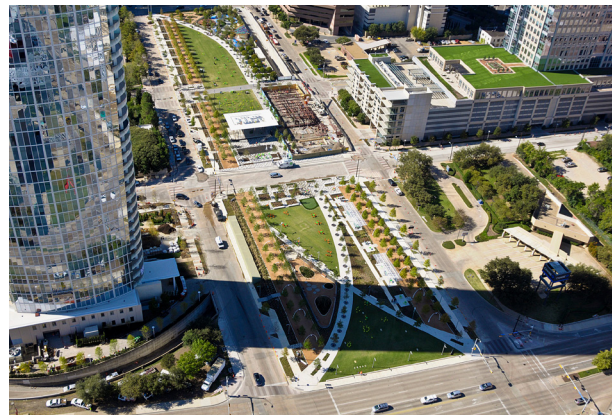


Figure 3.4. Klyde Warren Park - After.
Source: archdaily

Rose Fitzgerald Kennedy Greenway

This project is also known as the “Big Dig,” which was one of the biggest undertakings of its time, to tunnel an elevated highway 1.5 miles long. Figure 3.5 shows the entire length of the project. The total cost was around \$14.7 billion and has received a large amount of criticism for being an under-programmed park (Gelinas, 2007). It is a great project and has improved the city of Boston, but there are many more opportunities that could further activate the space. What this project did right was to begin looking at the pedestrian scale and creating safer environments within the urban core. Figure 3.6 shows some of the park program, the entries and the exits from the highway below.

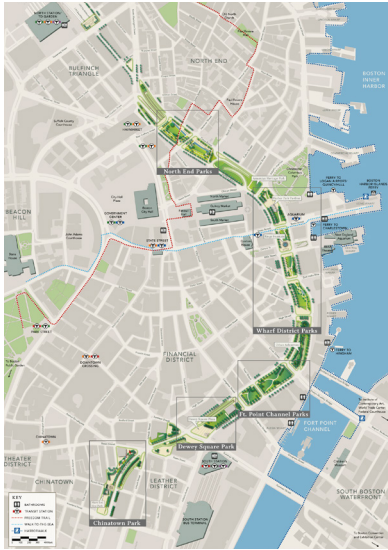


Figure 3.5. The Big Dig.
Source: CLCC



Figure 3.6. Highway Entry/Exit and Park. Source: archdaily

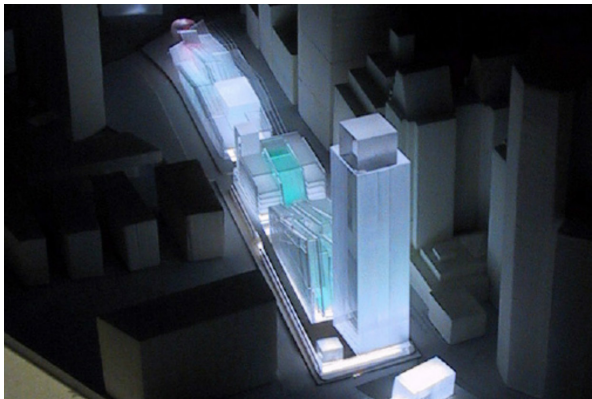


Figure 3.7. Model of Garden Under Glass.
Source: Koetter + Kim

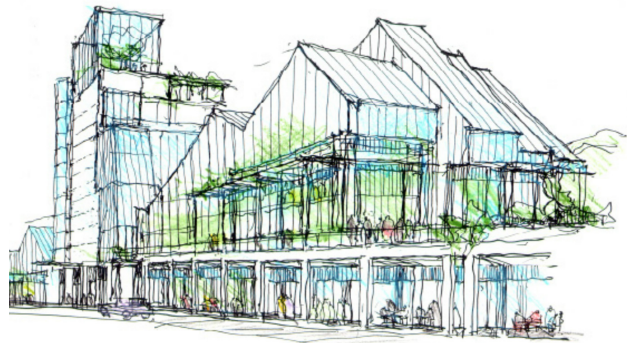


Figure 3.8. Rendered Perspective.
Source: Koetter + Kim



Figure 3.9. Activating Our Highways.
Source: infra eco logi urbanism

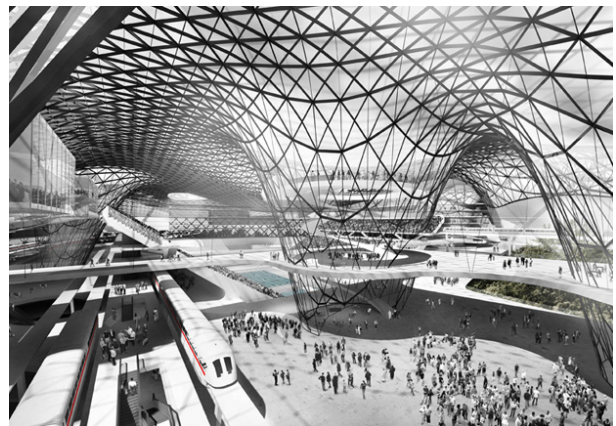


Figure 3.10. Multi-Modal Linking.
Source: infra eco logi urbanism

Garden Under Glass

This was a proposed part of the Rose Kennedy Greenway project in Boston. Koetter and Kim proposed an all-seasons botanical garden and aviary with a mix of retail, cultural, restaurants, and small businesses within the parcels. The glass structure would serve as a luminous marker within the skyline. It would become a destination spot for the greenway for both visitors and residents. The quiet, contemplative nature of the gardens would offer a space of relief from the city. Though this project was never built, figures 3.7 and 3.8 show how the buildings activate the void, which is a very similar condition to that of Cincinnati's.

The Gateway

The Gateway, designed by RVTR, is a place for the Toronto locals and visitors to interact by linking all the transportation through this location. The mix of program creates something for everyone to allow for a diverse environment. The building houses collaborative work environments, sports complexes, spiritual centers, transportation hub, and assembly halls as seen in figure 3.10. It also takes a look at how megastructures can be integrated into current infrastructures using dead space between the roads, shown in figure 3.9. In general, the space between roads are unactivated spaces that no one inhabits. However these spaces are quite large and often forgotten about by cities and planners. How much space can be reclaimed for the urban landscape by utilizing these spaces? This project, as with many other case studies, has chosen to put a prime emphasis on the pedestrian scale.

Queensboro Bridge Market

In 1977, the Bridge Market was reinstated to its original use as a market in Brooklyn. So many bridges are underutilized, with the space underneath becoming a

place in the city that people avoid. However, this example shows the potential use of these spaces. Many of these spaces have an expressive structural system that can be highlighted instead of ignored as walked or traversed by car. Generally, factors of noise and light are a problem, but not every program needs solitude, and thus can be an active spot in the community.

Seattle C.A.Pitol Hill Park

This project aims to regain the space lost to the I-5 highway that cuts through multiple neighborhoods of Seattle. The project proposes 45-acres and 2-miles worth of space lost to the highway to reconnect the neighborhoods and city core together (Seattle C.A.Pitol Hill Park, 2015). The project goes beyond many capping projects and begins to look at energy generation, noise reduction, storm-water mitigation, and emission controls. It has an integral approach looking at the culture, housing, and public/civic spaces for the city. Its a unique approach to bringing green space into a densifying area. The project looks at multiple scales ranging from the regional to the building. The greenway takes advantage of many of the views available in the region by elevating and going back to street level in many locations.

Project Under Gardiner

A 10-acre space below the highway is being transformed into a series of spaces (Project: Under Gardiner, 2015). It is broken up into a series of hubs to correlate with the surrounding communities needs. These hubs will be spaces for yoga, markets, cultural events, etc. The case study also looks at how a green space and activator can link communities together. It will serve as a connecting agent for the surrounding communities to the city core as well through trails and bike paths creating a more pedestrian friendly environment. Many areas are looking at elevated parks, such as the High Line in New York, yet this project demonstrates the activity that can happen below.



Figure 3.11. Inside Market Under the Bridge.
Source: Michael Minn



Figure 3.12. Exterior View of Bridge.
Source: Michael Minn



Figure 3.13. Park with View of Downtown.
Source: Patano



Figure 3.14. Residential with Park Roof Top.
Source: Patano



Figure 3.15. Under Bridge Perspective. Source: Under Gardiner

CHAPTER 4 PROPOSED DESIGN

Method

This project was approached at multiple scales. The practice of architecture generally looks at the scale of a building and site. What happens when architects look at how the building effects the neighborhood, the district, the city, the region, etc? This was an investigative process into urban connections and the growth of cities, focusing on how the many communities in Cincinnati could begin to connect and make the downtown and riverfront a more desirable area. Urban design, architecture, and landscape design are integrated to become a holistic design. The diagram below describes the integrative process between disciplines. The program was a key informer on how the design was drawn up. A large part of the research was on how past and proposed projects create connectivity through using their existing infrastructure. Research on the site looked at past and current planning, while taking into consideration public opinion. This was not just looking at the extrinsic, measurable items, but the intrinsic, cultural, and experiential opportunities.

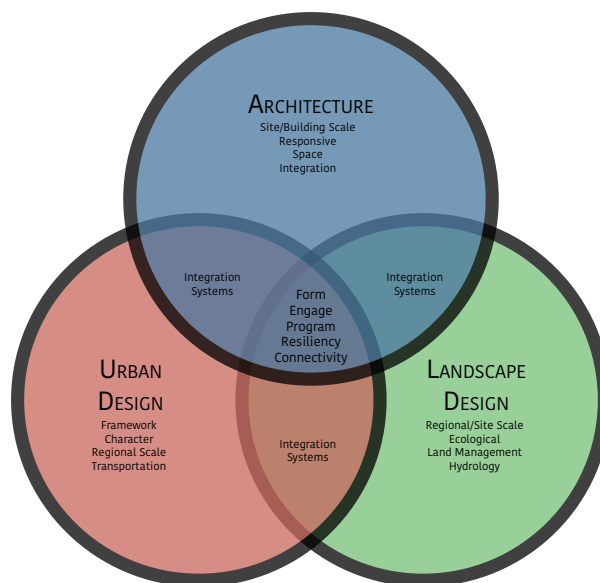


Figure 4.1. Cross-Discipline Diagram.

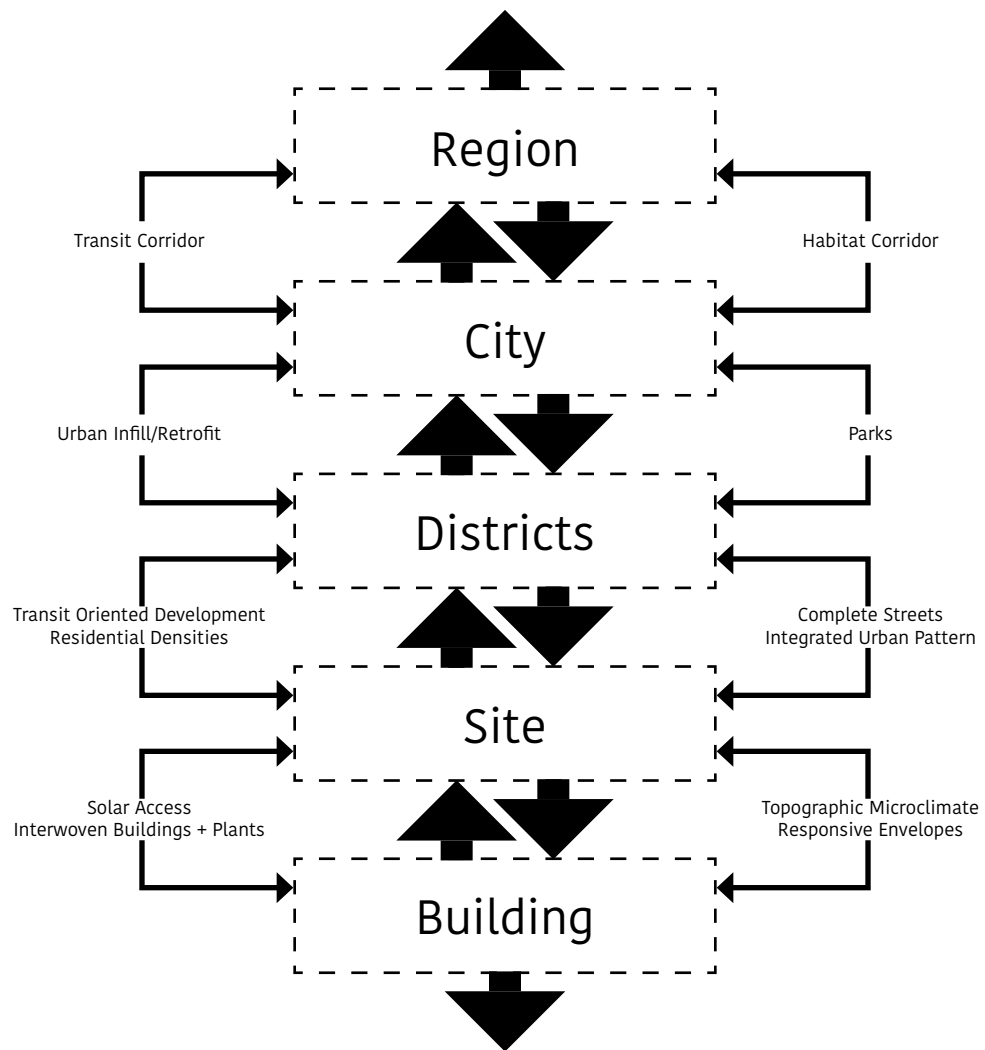


Figure 4.2. Integral Framework.

Program

The purpose of my thesis was about creating connections, where division has occurred and program can play a strong role in creating connections and bringing groups together. It was about revitalizing existing centers of activity to link the city and the region. With the extent of my site, there were multiple types of program involved to encompass the public, the industries, and the private. This diversity in program created unique opportunities for connections between the city, communities, and people. Aspects such as population, culture, and region could rejuvenate downtown while supporting existing communities. As is any project of this size, phasing was an important aspect regarding how things could come together and be populated.

The program needed to look at public transit and its supply and demand to reach people. Cincinnati is looking to improve its non-automotive transportation. This area could become a new hub to support their desires. So this site has the opportunity to become a local hub as well as a regional transportation center. It is within two blocks of downtown, a shorter distance to the riverfront, and directly along the sports arena district. This could be a location to improve bike transportation in the area as well. The downtown area is not very bike-friendly, but the riverfront is, so by extending bike awareness toward the downtown area more people might be prone to use this mode of transportation.

As a connective piece, education should be at the forefront of the discussion. Across the street is the new Underground Railroad Museum, and on the other side towards downtown is one of the oldest art museums in the U.S. The idea of this new development is not just about history, but opportunities and reaching toward new goals. This would provide an opportunity to show how architecture can connect with the community, the environment, and the people. It provides an opportunity to connect the people more

closely to their natural environment, which is not often the case in the middle of a city. New developments will respond, continually educating and improving the life of citizens.

Cincinnati does not have a strong connection to its surrounding ecosystem. However, this would be a location to start improving environmental conditions in metropolitan Cincinnati. The waterfront provides great opportunities for the environment, commerce, and residents. This project aimed to reconnect them as a whole, to create a resilient city.

An essential way to bring people to the area is housing. The population within city limits has been continually declining since 1950s, but the trend is changing and more people want to live closer to the life of the city. This would be an ideal location for it would be very close to the core of Cincinnati, and the riverfront, which is continually being revitalized. Much of this area has market rate housing or luxury housing. Bringing other forms of housing, such as affordable units based on income levels in Cincinnati, would create stronger connections between people. There will not only be housing, but mixed use spaces.

Cincinnati has a unique history and it is the people that make that history. It has a diverse population, with diverse interests in arts, history, sports, music, food, and industry. Commerce and industries are returning to Cincinnati, because they see appeal and the unique opportunity to reach a broad community. The city has many different styles intertwined among one another, creating interest throughout. This part of the city is a dead zone, where people just watch cars go by beneath them. Diversity creates forward thinking, when so many groups come together to collaborate. The key will be to keep the design infused with history and context, while pushing the boundaries to improve the quality of life and further opportunities for people.

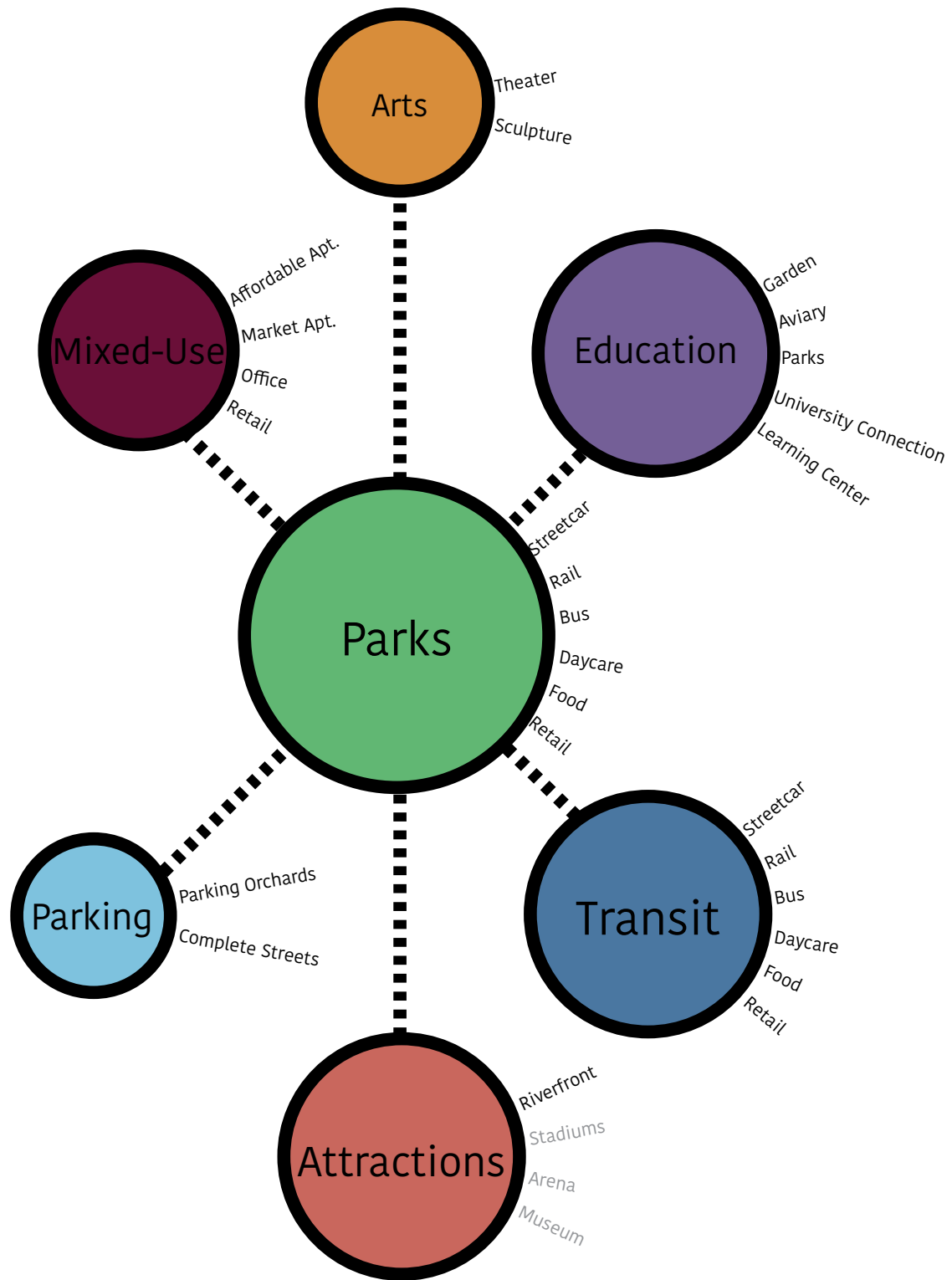


Figure 4.3. Program Diagram.

The Design

Figure 4.4 shows the existing site plan. The large void of space created by the highway can be seen here and how it splits the riverfront from the downtown. It can also be seen how the two stadiums frame the downtown skyline. In figure 4.5, the proposed site plan shows eight ideas that could change how the city interacts with its riverfront and reutilizes wasted space. The first thing this plan addresses is extending the greenway along the river to bracket the downtown. Secondly, expanding the city over the highway allows for the downtown to connect with the riverfront not just by car, but for the pedestrian as well. The third item on the list is creating a neighborhood around the stadiums. Stadiums today want to be in or near the heart of a city, because they benefit the businesses around them through advertisement and the sheer number of people that attend the games each week. Stadiums can provide a vibrant area appealing to many millenials. Fourth, this area is a prime location for a new transit center, because it can connect to all the major arteries of Greater Cincinnati. It would give Cincinnati a chance to implement bus rapid transit and light rail transit to all directions into and out of the city. The space already exists along the interstates to have these implemented. The fifth item is recuperating the parking and infrastructure. This includes capping the interstate and reutilizing existing parking. Much of the parking sits empty that is used for tailgating. However, this plan makes the spaces greener and allows them to be used for other purposes, such as festivals and markets. Also, at all tailgating parties people flock to the greenspace first, so it makes sense to incorporate this into the design as well. Housing is another concern in downtown Cincinnati as the city anticipates more people wanting to move downtown. Though the flood plain is a concern the residential components can be elevated to alleviate concerns. The seventh adjustment is the infill of urban voids at the cities edge. Many gaps exist in the edge of downtown that can be filled in to maintain the pedestrian edge and activate spaces.



Figure 4.4. Existing Site Plan.



Figure 4.5. Proposed Site Plan.

Lastly, Cincinnati has a multitude of bridges, and this new plan will celebrate these bridges at a more pedestrian scale.

The greenway will activate the riverfront and provide a place for people to escape the chaos of the city life. As it frames the downtown, it will also activate spaces under the highway at either end of the highway cap. These wasted spaces can bring life to an area. It provides a space where galleries and sculptures can be showcased, or skateparks can be made. Figure 4.6 shows the spaces and connections that will be made with the greenspaces that are proposed. It better connects the downtown to the riverfront, as well as creates a continuous greenway from west to east.

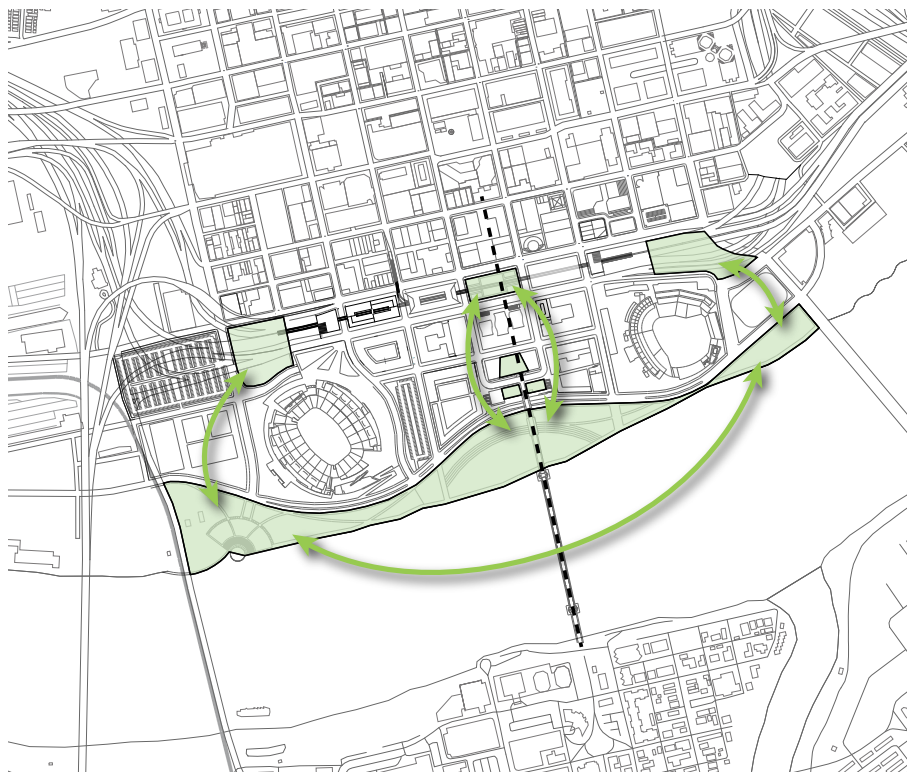


Figure 4.6. Greenspace.

Currently, the highway and the generous width of 2nd and 3rd Streets in Cincinnati create a void and undesirable space for pedestrians. The noise and traffic deter most people unless they are going to the stadiums or museum. By

capping the highway, it creates a connection at each street running north and south directly to the riverfront. This also acts as a connection area for all the east and west neighborhoods. Figure 4.7 expresses these relationships and activation spaces. This also celebrates the bridges as a pedestrian link, instead of just being for vehicles. These connections are important because the process would be costly. However, these connections add value to the area and bring in business which increases property taxes and therefore increases revenue to pay for the project.

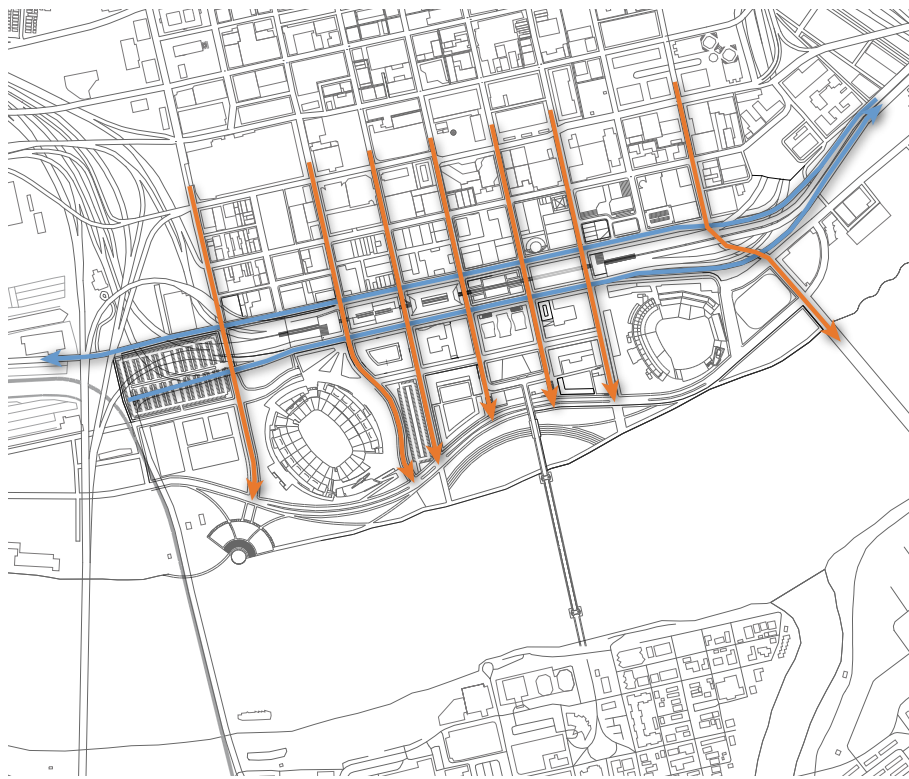


Figure 4.7. Connections.

Figure 4.8 shows the location of the cap above the highway. The most recent trend is to place just a park above the area. However, Cincinnati would greatly benefit by placing a mix of residential, commercial, office, educational, and a transit station in this location. Placing another park cap here would take away from the greenway only two blocks away. Also, placing buildings in this location better connects the downtown to the riverfront. The light rail will be on grade and run

directly through the cap. This will highlight the same directionality that is being displayed below from the highway. This also creates a unique interaction between the light rail and the pedestrian.

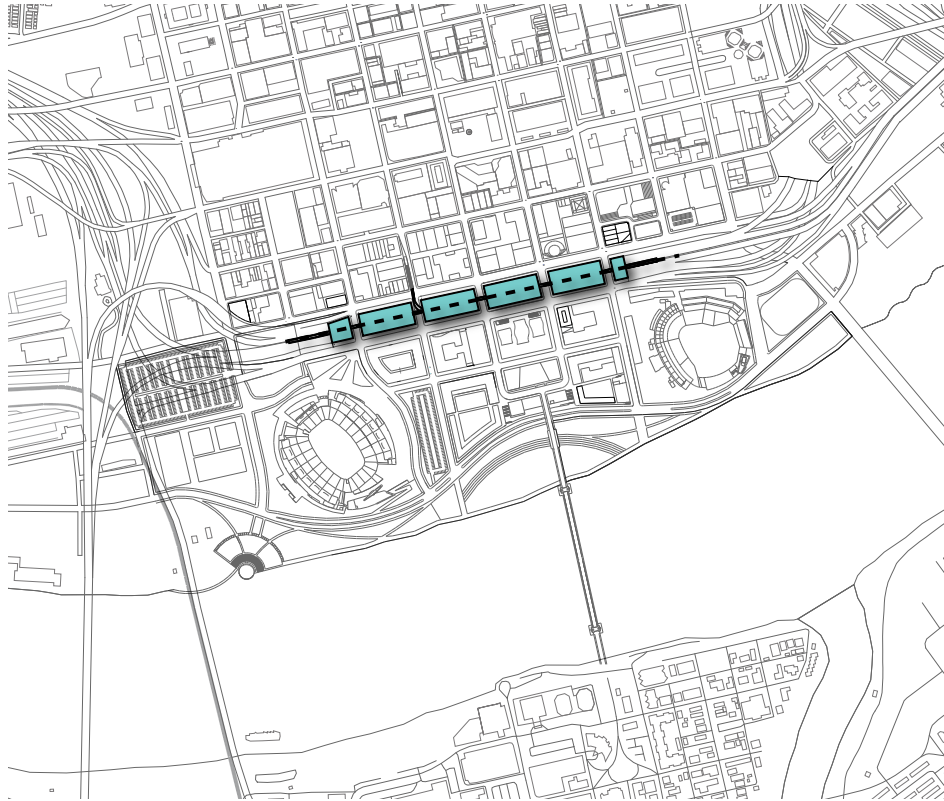


Figure 4.8. Cap Location.

Parking with this large influx of people to the area is a concern. However, the riverfront has been raised up in order to be elevated above the floodplain. Therefore, the area below the new buildings would become garage space to help elevate the commercial and residential buildings above the floodplain. The area around the football stadium would become surface parking for tailgating during game days. On other days it would serve the commercial institutions or be set up for festivals and markets. It would utilize pervious pavement to help with rain water management and could be fitted with solar panels and trees to provide energy and/or shade to the area. Figure 4.9 displays all the new and existing parking that will serve the area. There will be about 8,000 parking spaces added to accomodate

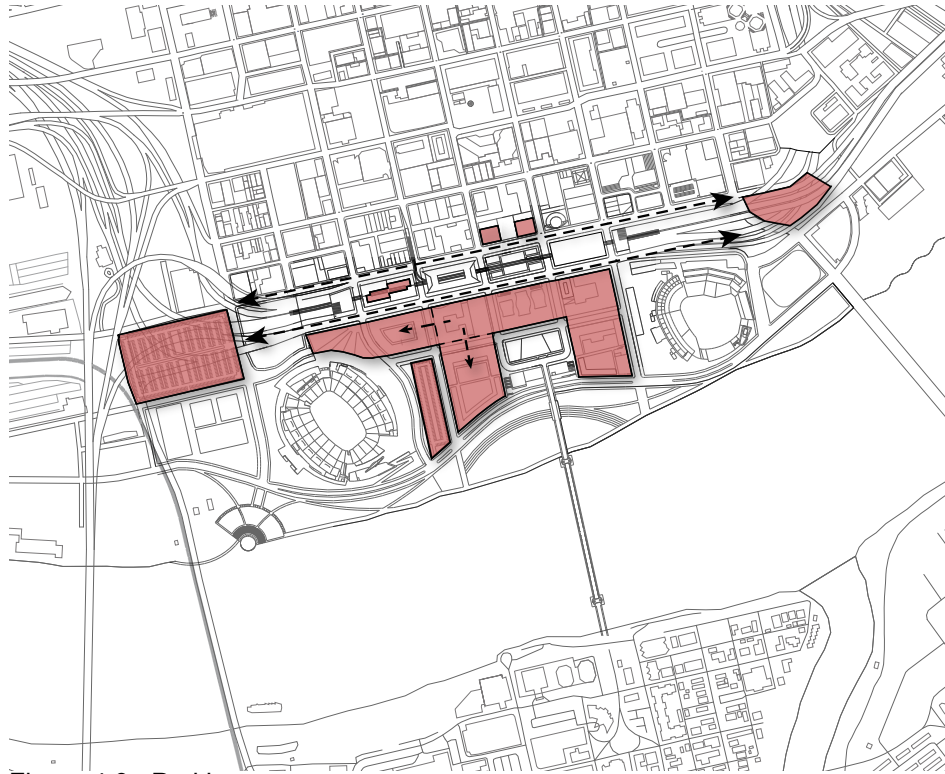


Figure 4.9. Parking.

all the new development.

Figure 4.10 shows the proposal in totality. It can be seen how the buildings frame the park in the middle of the cap. Also, the two end buildings on the cap frame the skyline of downtown. One of the concerns of the citizens of Cincinnati is detracting from the skyline by adding a multitude of skyscrapers in The Banks area. This proposal demonstrates awareness of this issue and the building heights step down as they get closer to the river. A mix-use community is placed between the two stadiums, where the bottom floor would be commercial and the upper floors would be residential. A mix of luxury and affordable housing would be developed in order to accommodate the diversity of people in Cincinnati that have a desire to live downtown. Also, an amphitheater has been added to the west side of the riverfront to support the arts and the Cincinnati Symphony. Currently their space is 30-minutes outside of Cincinnati. This space would provide a central location for them to enjoy and bring people and boats to the riverfront.



Figure 4.10. Site Perspective.

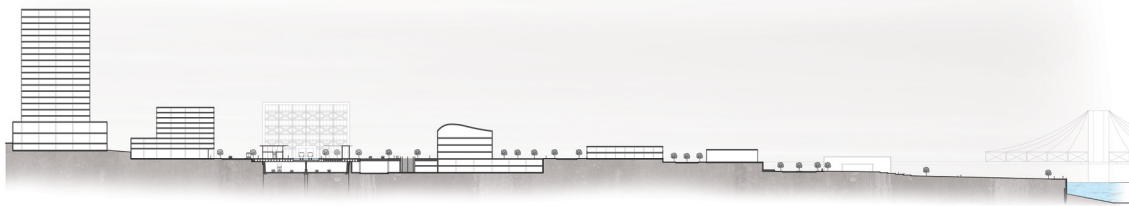


Figure 4.11. N/S Site Section.

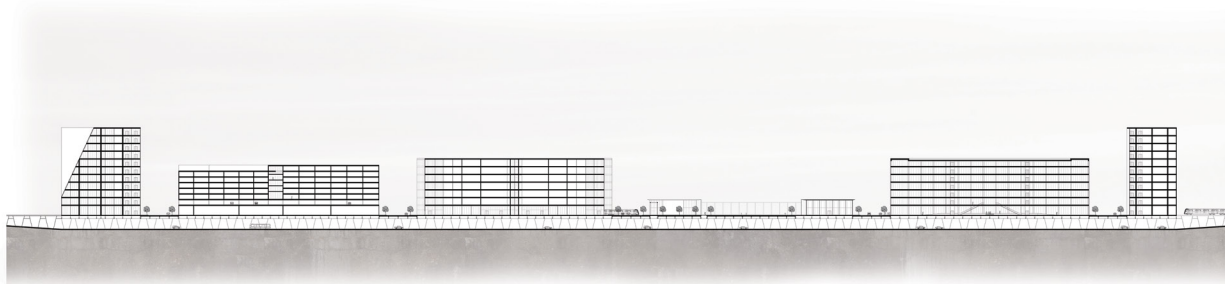


Figure 4.12. E/W Site Section.

Figure 4.11 shows the stepping height that is created to not interrupt the skyline and view of the bridges and riverfront from downtown. Underground parking can also be seen which is set on a 33 ft. x 33 ft. grid system, setting up a grid system to structure commercial and residential space. The cap structure is supported by piles that were driven when Fort Washington Way was reconstructed in 2000. Due to the span, the structure will be roughly six feet deep, which is supported on both ends and in the highways median. This will allow for a 21 ft. clearance, which is still above the required 16 ft. in an urban condition, as required by the Ohio Department of Transportation.

The cap ends on either side when the highway begins to elevate again and splits off in multiple directions. This is shown in figure 4.12. Also shown is the cap as a whole in section. The transit center is placed to the right of the park and frames the one end, while the education and office building frames it on the left. The park is a great place to enjoy while waiting for your train, or a great place to enjoy lunch at the restaurant. Trees line the streets as a canopy for the pedestrian, and link the greenway into the downtown area.

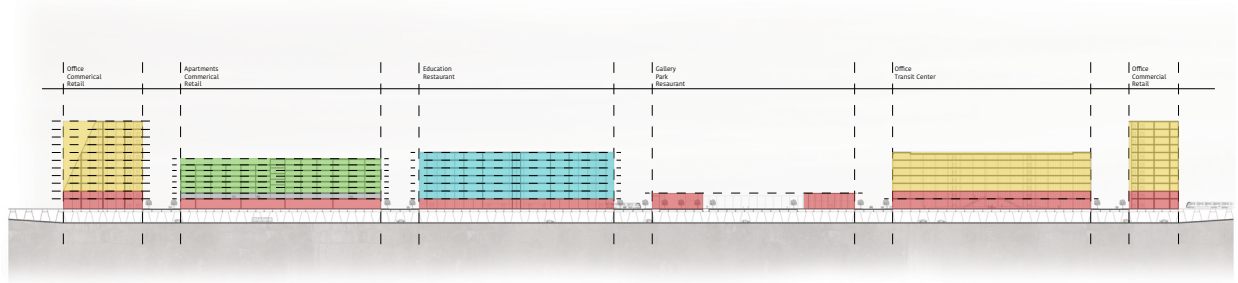


Figure 4.13. Cap Program.

Figure 4.13 shows how the cap is organized. The red is the commercial space at the ground floor of each space to activate sidewalks and provide spaces to keep people in the area before and after game days, such as bars, shopping and everyday amenities needed for the area residents. The yellow is the office space that caps both ends, and also is above the transit center. The two end caps would be class-A office space that would be highly visible from both sides of the interstate system as people enter and exit the city. The green is the residential space that would house both luxury and affordable units to create a diverse atmosphere in the area. The teal is the education space that would connect the University of Cincinnati and Xavier University to downtown. If not all that space is required for them, the extra space is also dimensioned to become office space. The program would all bring added taxes to the area increasing the revenue that the city would receive to help pay for the capping.

The ground plane is highlighted in figure 4.14. and shows the wide sidewalks to accommodate the large number of people coming in from the light rail, as well as game day travelers. How the light rail interacts with the streets and buildings is depicted. The light rail would be electric-powered, which makes it quiet (because it is no louder than a traveling car at 35 mph, which is the speed along the roads). Where the light rail splits is the location of the subway that is being reactivated to connect the northern parts of the city to the area. The green corridor to the south is the street connecting the two stadiums together as a pedestrian street. This would be a retail area and bring the scale down to the pedestrian scale. The park space located in the center of the cap is

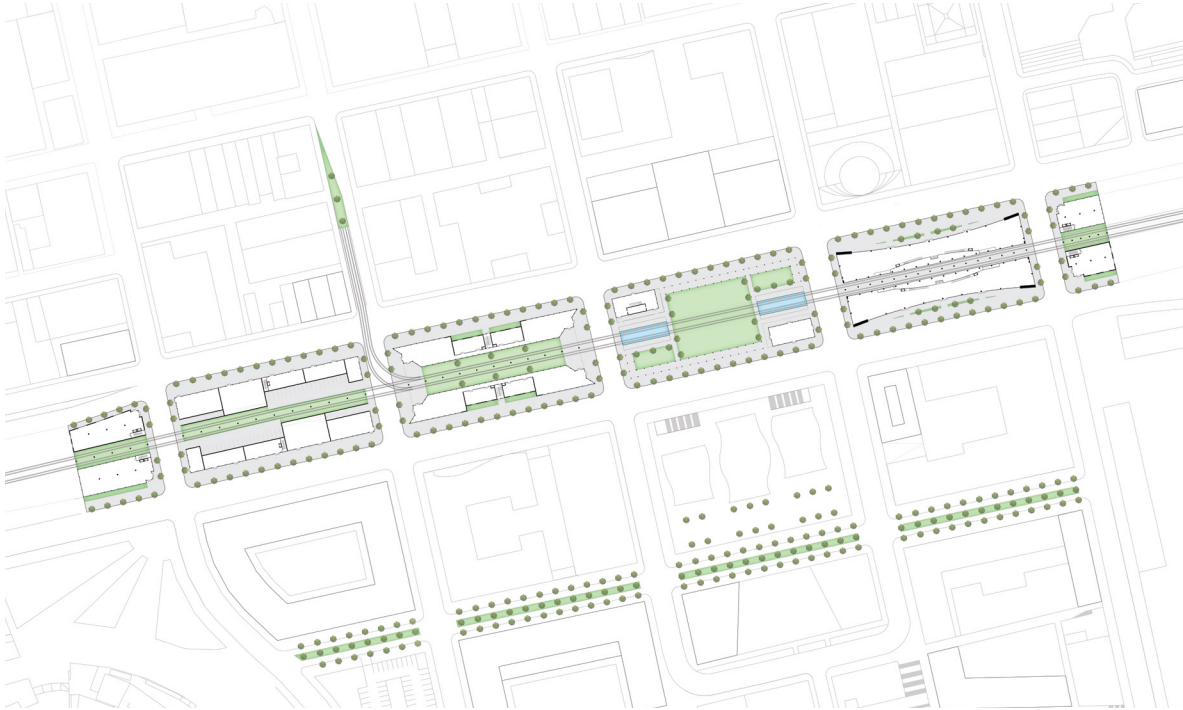


Figure 4.14. Site Ground Plan.

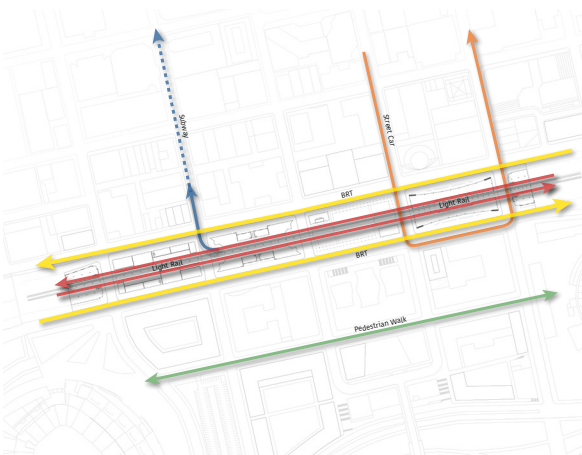


Figure 4.15. Multi-Modal Transit Diagram.

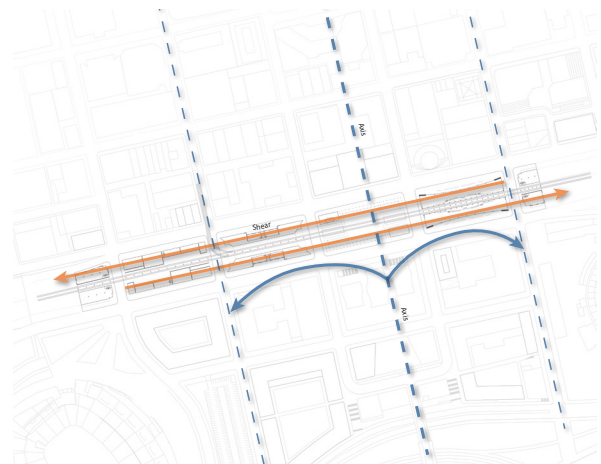


Figure 4.16. Concept Diagram.

on axis with the bridge and core of the city, and would be home to a restaurant and pavilion space that could hold a multitude of events, such as gallery showings. Figure 4.15 shows how all means of transportation coordinate within the area. This diagram helped make the decision of where the transit center should be located because all modes of transit intersect at this location. Figure 4.16 shows a concept diagram of the ground plan and the axes which the design was based on.

The design proposal also looked at the city on a larger scale, and how the transit system could be implemented in the city. The light rail would be the more important of the two to implement. In figure 4.17, multiple routes have been created based on a study done by the Transportation Department of Cincinnati in 2002. The routes follow the highways that currently exist, and are in most cases oversized, so it would be easy to run the system through the center median of the highways. These lines take care of the large majority of residents who commute to downtown each day from the outerlying areas. The purple line, the subway, is already built. It would just need updating and servicing. It would be similar to the red line of the “El” in Chicago where it is below grade at times and then above grade when space is not an issue.

Cities now are looking toward high speed rail to connect “mega-regions” together. Cincinnati would have the opportunity to be a major connector city that would bring in a large number of tourists and business to the area. They are centrally located between major cities in the Midwest and could connect directly to St. Louis, Chicago, Nashville, Pittsburgh, and Detroit. Much of the Midwest has rail service between these cities. It would be a matter of getting permission from those rail services to upgrade the rail to accomodate the high speed train. Currently they run freight trains at speeds no higher than 55 miles per hour. This would allow Cincinnati to become a major city again and draw new residents and businesses.

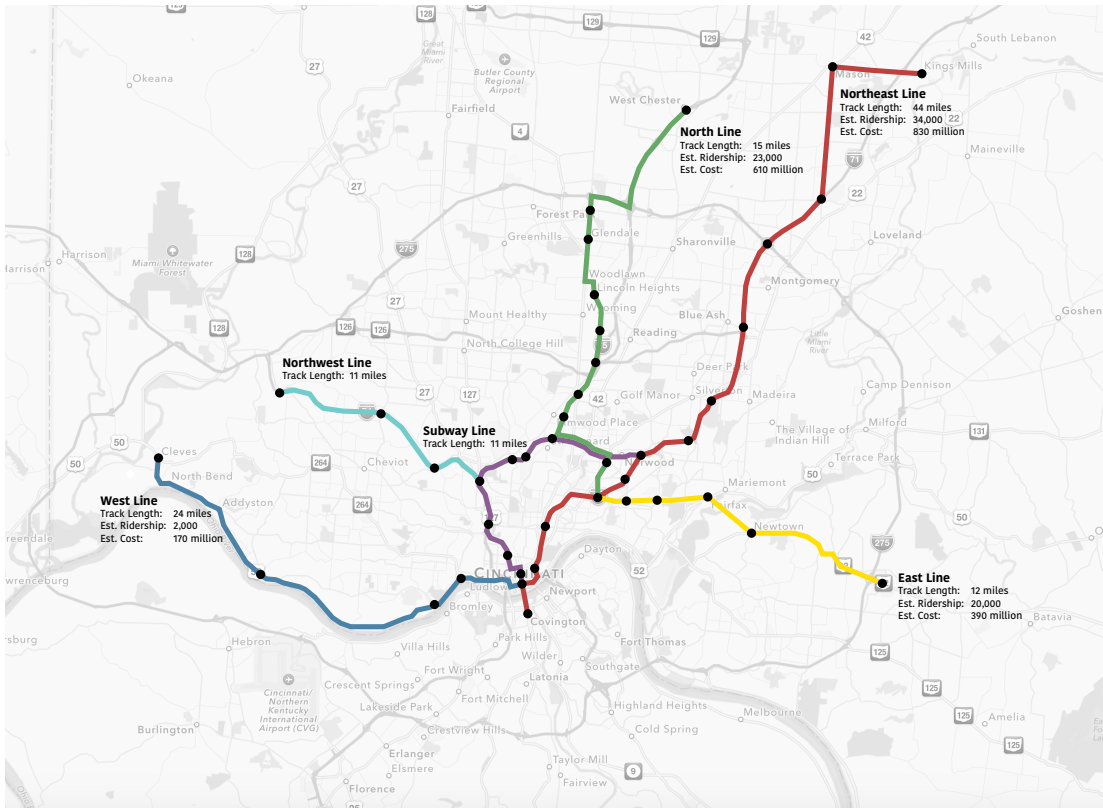


Figure 4.17. Light Rail Diagram.

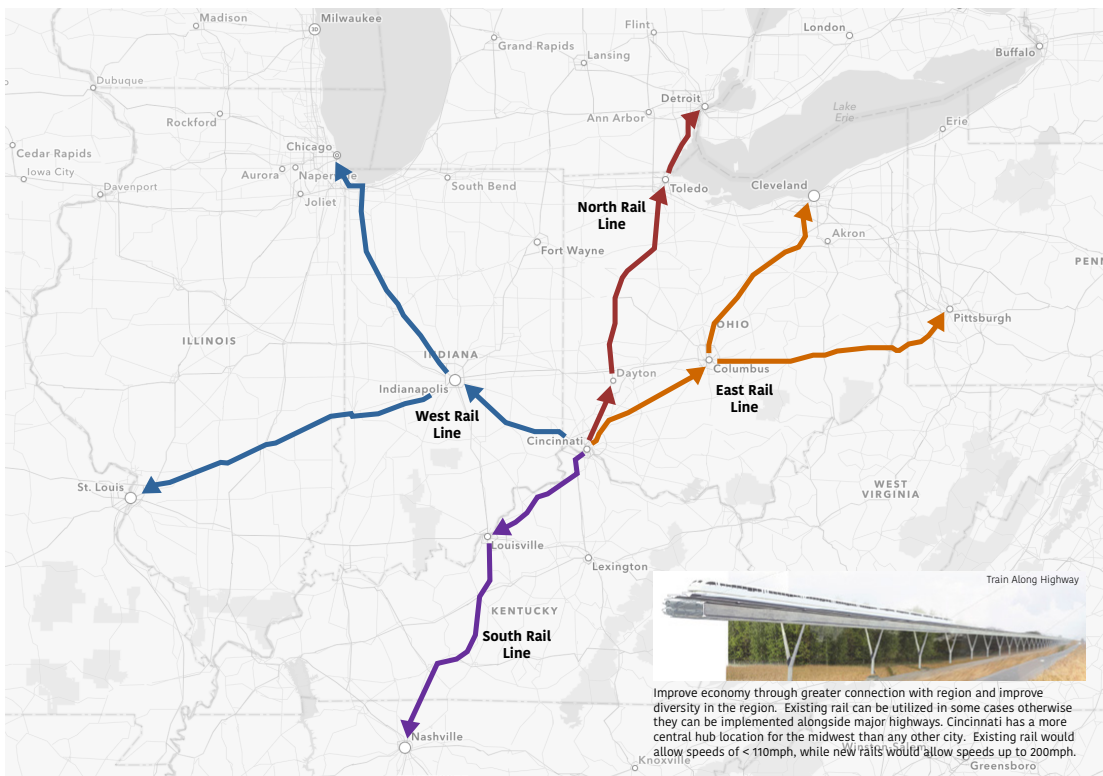


Figure 4.18. High Speed Rail Diagram.

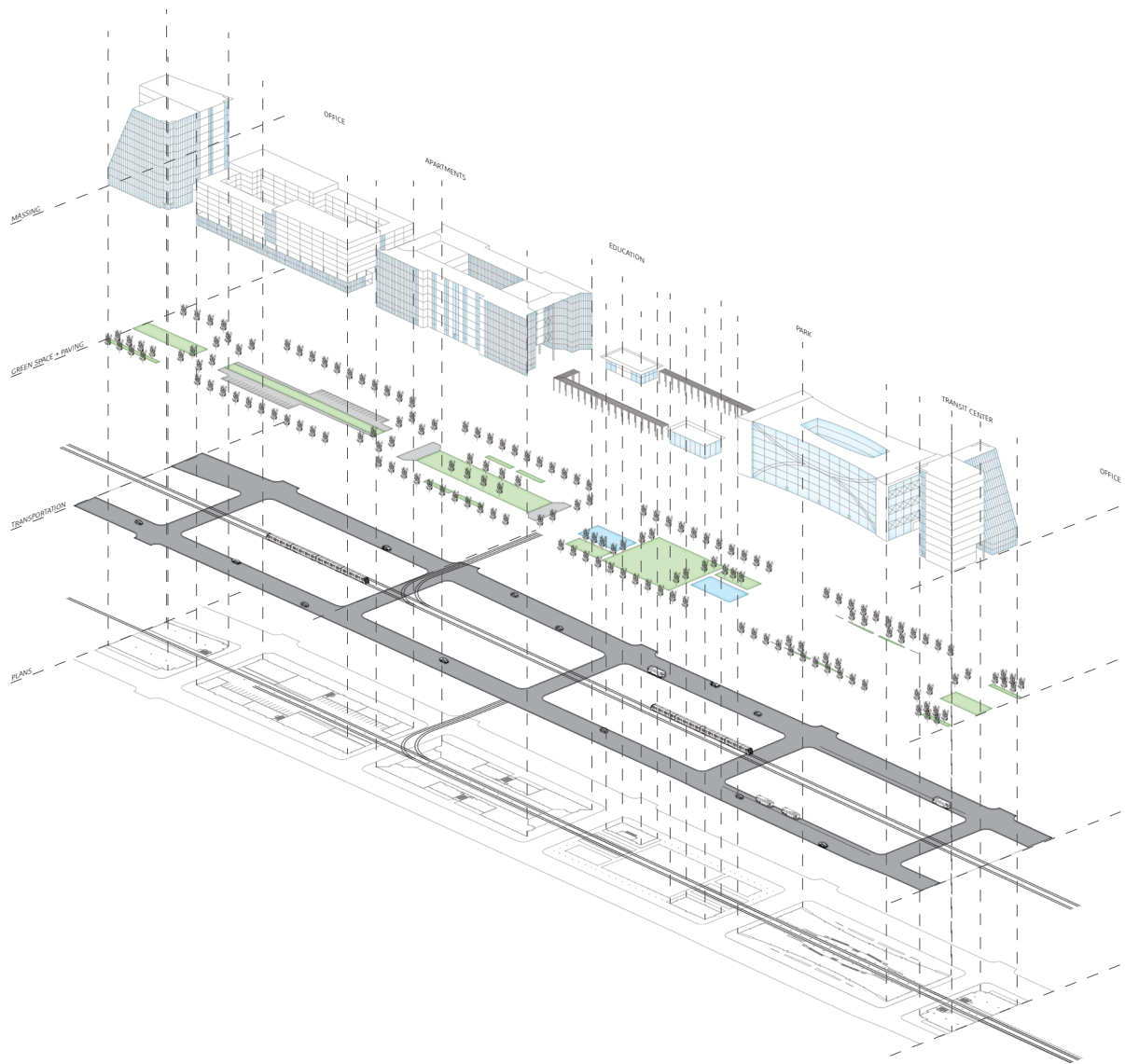


Figure 4.19. Exploded Axon.



Figure 4.20. Perspective of Pedestrian Way - Connecting Stadiums.

Figure 4.19 shows the layers of the cap and how all the modes of transportation interact with one another. The light rail runs through the middle of the cap and directly interacts with buildings and the pedestrians similar to that of King's Crossing in London. The continuous arcade of street trees create a divide between the vehicles and pedestrian, while also providing shade. It also shows the “shearing” concept on the two end buildings directly related to the bi-directional vehicular traffic below on I-71.

The pedestrian way that connects the two stadiums is shown in figure 4.20. The tree lined boulevard would provide an attractive landscape to walk around, including the provision of seating in-between the trees. The pavement would differ from that of a regular street to designate it as a pedestrian walk way. The first level of these buildings would be commercial to activate the pedestrian experience and bring an influx of people to the area. The parking lot would be for tailgating or regular parking on other days. It also provides an area for food trucks and other vendors.



Figure 4.21. Perspective of Vehicular entry to Fort Washington Way.

Figure 4.21 shows the vehicles approach to Fort Washington Way, looking at the new class-A office space on the cap. Also shown, is the light rail and how it interacts with the highway and the buildings. A large opening at the bottom of the building allows the light rail to travel straight through. This begins to link how transportation and buildings can interact with one another. The idea of them being so separate does not have to exist. This will create a new experience for the driver as well. The driver will have a unique approach to the city and visually see and interact with the infrastructure surrounding them.

The park cap has the pavilion and restaurant located on adjacent ends of the site, with a greenspace in the middle and surrounded by a trellis promenade. The park would be a space for events such as yoga classes or ice rink in the winter time. The light rail train enters and exits the site over a pool of water separating it from the pedestrian for safety reasons, while creating an tranquil pool when the train is not in the vicinity.

Figure 4.23 shows how the train will enter and exit the subway at the edge of downtown. The current four lane one-way street will become a two lane street.



Figure 4.22. Perspective of Park Cap.

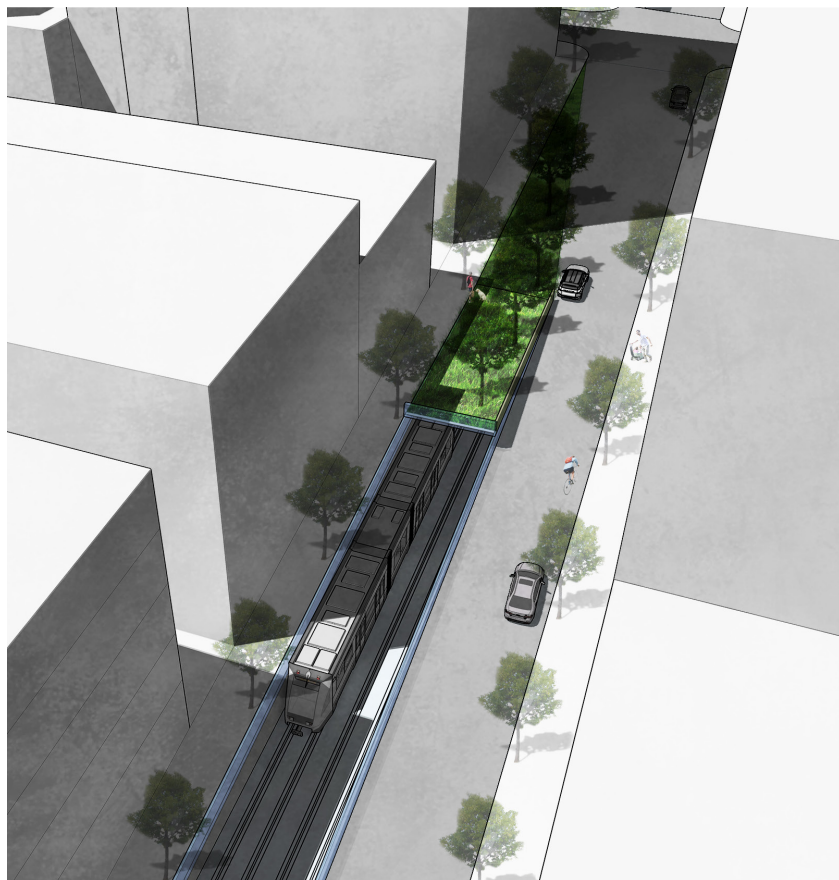


Figure 4.23. Perspective of Subway Entry.

Because of the elevation change of the city, the train will actual stay at the same grade height and then tunnel beneath it. The area directly above the train as it enters the tunnel becomes a small park area with seating and trees. Then it will narrow so the street will become four lanes again. This small pocket park is another way to add to the pedestrian experience and improve the walkability and safety of the area.

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VITA

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