

RUST BELT REVITALIZATION: RETROFITTING COMMUNITIES THROUGH TRANSIT  
ORIENTED DEVELOPMENT

A Thesis

Submitted to the  
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Master of Architecture

by

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# Rust Belt Revitalization:

Retrofitting Communities through Transit Oriented Design





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# Abstract

The American Railway system increased rapidly in the late and early 19th century altering the dynamics of surrounding cities and their role in urbanism. Railways, a product of the Industrial Revolution, fundamentally transformed the possibilities of urban growth, economic exchange, and public transportation. As a result, cities became increasingly tied together, altering perceptions of travel, and opening doors to new opportunities. This thesis project will explore the impact of railways, specifically those associated with Transit Oriented Development. This growing method in urbanism seeks to create mixed-use communities centered around high-quality transit systems to create vibrant, livable, and sustainable communities that stimulate the local economy and help to revitalize urban areas.

Currently, the geographic region spanning from New York through the Midwest is synonymous with a problem of industrial decline, loss of population density, and declining neighborhoods leading to a loss of community identity historically associated with each respected region. Once booming production hubs of steel, coal, and the automotive industry is now home to shrinking cities in need of an architectural intervention.

Recent reports regarding Transit-Oriented Development have shown it to be a critical factor in revitalizing such urban areas through access to better jobs, education, and a reduction in the area's carbon footprint. In addition, the rust belt region presents itself as a unique and special opportunity to experiment with creating a culture of transit-oriented communities that act as the generators of population growth and economic renewal to preserve each area's unique historical background.

Additionally, I will analyze key case studies and conduct site analysis through the lens of Transit Oriented Development to understand the impacts on surrounding communities. This method will provide insight into the principles of rail technology, rider participation, and critical architectural programming methods that are key factors for promoting urban growth. I will also perform an asset-based development study to understand how proximity to public transit can be crucial in creating transit-oriented communities. To conclude, this thesis seeks to explore the possibility of a transportation hub to aid in the urban revitalization of the Rust Belt region, positioning itself as a generator of equitable opportunity hence promoting social and economic growth.



# Project Description

This thesis project originated from my interest in transportation systems and their impacts on cities specifically on the urban scale. In the beginning of my research, I was very consumed with looking at various systems of urban movement such as highways, bus systems, and train lines, seeing them as the symbolic urban arteries that can facilitate a city's movement and growth. Throughout this process of analyzing and researching the impacts of these various systems I became interested in the building typologies that facilitate and organize the essential urban arteries.

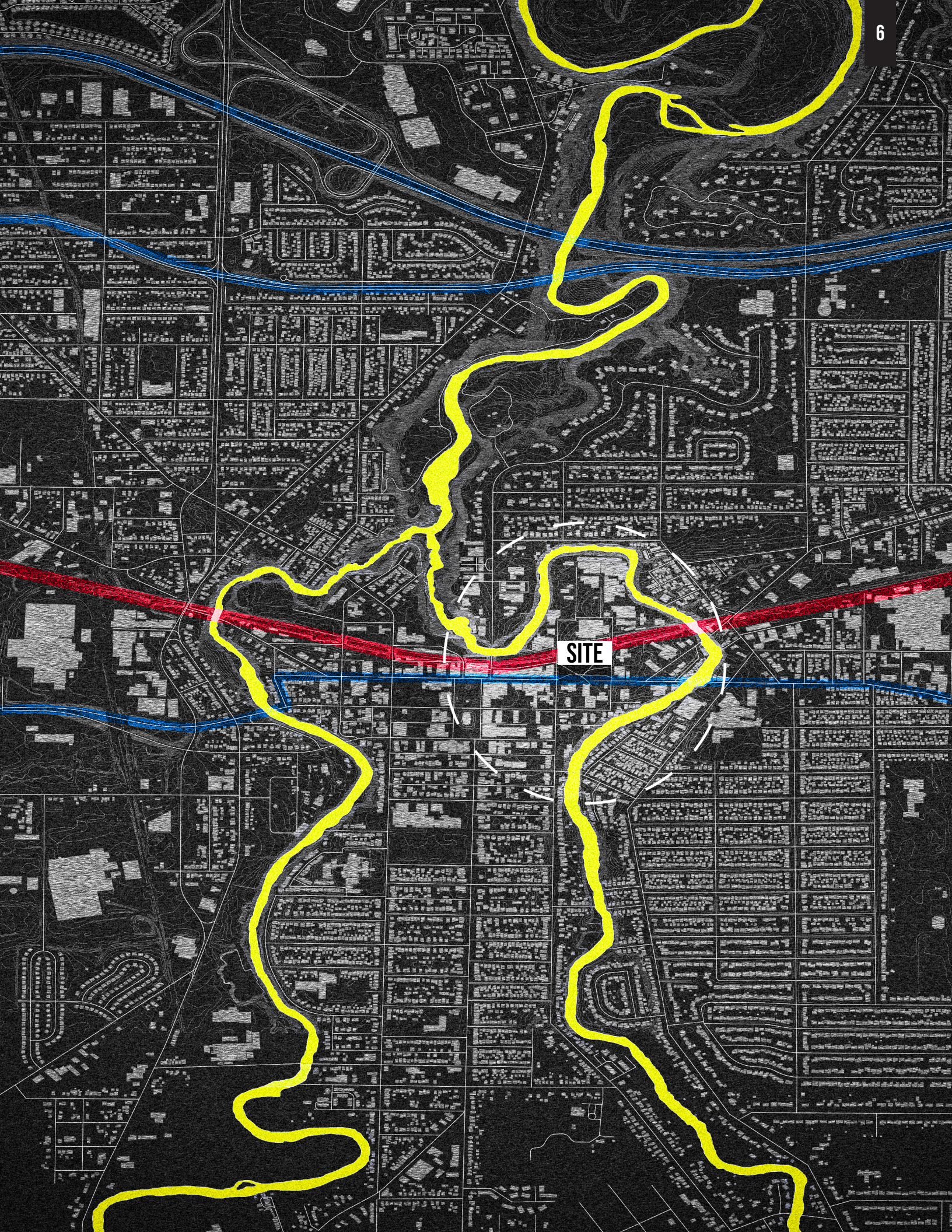
Furthermore, I began to analyze key topics around transit-oriented design and the building types that prioritize urban movement. In addition, I saw these buildings as an opportunity to act as a catalyst for divested communities by encouraging social and economic development through access to reliable transportation systems and other mixed-use programming that prioritizes the needs of the community. Understanding this concept, I started to investigate areas that could be in need of such an architectural intervention to reorganize the existing urban arteries and leverage them through a common architectural core. Advancing this notion further my research landed me in the Rust Belt region as a focal point for guiding my project development.

To further elaborate, this is the area in the Midwest that is typically associated with cities from Chicago to Boston and parts of New York. More specifically, is due to these cities being located near various natural water ways and an abundance of raw material they were able to become economic hubs of manufacturing and production resulting in a significant increase in population density and overall growth of the region throughout the Midwest. Additionally, as development rapidly increased so did the incorporation of different urban arteries such as railway systems to facilitate the movement of manufactured items and people making them important arteries in the development of the rust belt region resulting in a prominent impression on the urban landscape today.

Unfortunately, what happened in this region at the onset of the 1950's was competitive pressures both domestically and internationally in the economic sector leading to a mass exodus of jobs and people from the region, resulting in forgotten structures and once important urban arteries. As a result, today this outcome has led to many cities throughout the region to face issues of economic decline, population loss, increased levels of poverty, and overall disinvestment in the region leading to a lack of opportunity for people within those communities. In addition to these issues the tracks left behind now often act as barriers and urban dividers rather than the facilitators of new urban growth and development

**Key Words:** Transit Oriented Design, Rust Belt, Urban Arteries





SITE

# Narrative

The American Railway systems skyrocketed in the late and early 19th century altering the dynamics of surrounding cities and the role they play in Urbanism. Primarily, most of the nation's earliest railroads were built in the 1820's in the mid-Atlantic region. By the 1850's an elaborate network began industrializing and expanding into the northeastern and Midwestern United States. This trend would continue to develop as the Transcontinental railroad connected the eastern and western sides of the country. As a result, passenger transit expanded as well connecting every corner of the U.S creating mobile cities focused on the passenger travel. According to Donna R. Braden, "Between 1865 and 1920, America's railroad network increased sevenfold, from 35,085 miles to an all-time high of 254,037 miles in 1916" (1). The increase in rails led to an increase in transit architecture in which railway stations became a primary node of urban development and economic growth.

Unfortunately, American rail transit took multiple devastating hits that resulted in numerous companies abandoning lines, going into bankruptcy, and limiting the potential of what American rail transit could become for many major cities of the future. Furthermore, according to Ohio History Central, "The Panic of 1893 was a national economic crisis set off by the collapse of two of the country's largest employers, the Philadelphia and Reading Railroad and the National Cordage Company" (1). As a result, many rail lines were lost and many cities lost access to early forms of public transportation. Furthermore, Americans would turn to another form of transportation that would seemingly become a part of the culture of travel and change the dynamics of the urban environment in the United States.

In the early 19th century, the automobile industry emerged and became increasingly popular. According to Donna R. Braden of The Henry Ford, "Americans from all walks of life embraced automobiles and their advantages over railroads. By 1910, more than 468,000 motor vehicles had been registered in the United States" (7). The automobile offered many advantages over the current infrastructure offered by rail that was already in decline. Additionally, although passenger transit was highly successful in the social and economic opportunities it offered in its early stages, during the 1950's the United States invested heavily into the "Urban sprawl". Through government funded roads and highways urban development became centered around the automobile. Additionally, this resulted in spread out city planning that altered the urban fabric of how one interacts with the city.

Furthermore, the history of rail development in the United States combined with the introduction of the automobile has perpetuated many issues today surrounding urban mobility and transport in the United States. The automobile has been ingrained into American society as the main primary use of transportation resulting in less consideration for other methods of public transport. According to Michael Burrows and the American Community Survey Reports, “public transportation commuters constituted about 5 percent of all workers in the United States in 2019” (1). Although only a fraction of the overall workforce currently depends on public transport, “it played a prominent role in certain places, like the city of New York, where over 2 million people commuted by public transportation, and San Francisco, where over one third of workers did so” (Burrows 1). As a result, as cities continue to grow heading into 2050 public transit will become increasingly important to a larger demographic of the workforce and public.

### **Project Description Addendum**

*The initial project narrative focused on the historical evolution of passenger transit lines in American history and its replacement by the automobile resulting in the shaping of American cities and towns and the downfall in the popularity of passenger rail services throughout the country. Throughout the research process this led me to consider all the facilitators of urban movement throughout our cities, regarding them as the urban arteries in which cities function. With specific regards to the rust belt region and the focus site of the project Elyria, Ohio this resulted in focusing on 3 main arteries. The first being the Lake shore limited amtrack route running from Chicago to Boston and through the site. Secondly, the regional Greyhound bus system which serves the historical transportation building within the site. Lastly, the Lorain County Bus system which serves local transportation among the residence of the city. The resulting outcome and decision of the project was to relocate all the services into a central location on our site as a process to utilize and revitalizing the historic transportation center building.*

# Literature Review

One growing field within Architecture that has emerged as a prototype for urbanism and transportation is Transit Oriented Design. The theory leverages its initiatives into the urban environment to promote city growth while simultaneously countering urban sprawl through transit-oriented programming and design. Additionally, many have studied the relationship between land use and transportation and the role they play in mobility. Books have also been provided to highlight the social dynamic of public transit within the United States and other countries. Also, to provide insight on current and past knowledge regarding architecture and transportation within the urban environment.

The first source I would like to introduce is the TCRP Report 102, Transit Oriented Development in the United States: Experiences, Challenges, and Prospects. This report is sponsored by the Federal Transit Administration as a comprehensive assessment of Transit Oriented Design. The book illustrates the benefits of TOD and challenges throughout multiple major cities in the United States through in depth and elaborate case studies. This book will be useful in generating design decisions and predicting their impacts on future cities. Through the book we also are introduced to current TOD project within the United States and how they are impacting their communities and the communities around them by focusing on goals defined by TOD. Furthermore, the entire scope of TOD best practices and tools can be identified and utilized. Also, the book illustrates the difficulties and barriers that stand in the way of TOD.

The next source I would like to introduce is "Waiting Experience at Train Stations" by Mark Van Hagen. The book is an observation of what he calls the "waiting experience" which one experiences while waiting for their train or transportation to arrive. Mark Van Hagen acknowledges the phenomenon of waiting and how our surrounding context influences our perceptions of being within space. The methods and processes he describe have to do with the individual and theory that constitutes the perception of time while waiting. Divided into two sections, Mark Van Hagen breaks down the waiting experiences through theory and practice and in his second half describes the way the environment changes on perceptions. I thought this book was a good source in acknowledging the fact that transit hubs introduced us to a different perception of travel that might be foreign and new to us. What I also felt was useful in the book is Mark Van Hagen does not only break down the physical environment that can be seen but describes other sensory feelings that change or alter our perception of time and waiting.

In addition, a study into how oneself or humans perceive time while waiting and how external factors can enhance cognitive experiences could be very useful information when dealing with public transit design within an urban landscape that seeks to serve and produce economic and urban opportunities within a city.

Regarding public transit currently in the United States it is often underfunded, underutilized, and reduced to bad planning and methods. Contrast to this situation outside the United States in other European countries that have successfully implemented strategies and methods that have rendered successful for the community. In regards, the next source I would like to introduce is titled "The Modern Station" by Brian Edwards. This source breaks down and analyzes the new generation of railway architecture that has exploded in Europe and other countries. Described as the "renaissance" of the train station, the book articulates the building type and its changes throughout its development. I believe this source could connect to my overall interest in the urban scale and how modern stations are doing more than serving a place of waiting. Overall, the book brings together some of the social, functional, and technical aspects that form the train station typology and type. In addition, the book hopes to act as a manual for future railway design and architecture. To fully understand successful public transportation design there must be an understanding of different types of urban transit. Brian Edwards in "The Modern Station" acknowledges this and goes into detail about the different types such as town stations vs light rail and international vs. mainline stations. This information is important to my research as it helps to identify a city and implement a system that will work within that urban environment. It also helps to identify some of the technical aspects that affect programmatic and functional requirements of space as it changes between different types of railway functions.

The final source I would like to introduce is titled "Cities on Rails the Redevelopment of Railway Stations and their Surroundings" by Luca Bertolina and Tejo Spit. This book looks at the Railway station from an architectural vantage point in the urban scale. The book often goes into detail about how the station serves as a "node and place" that is important to the urban fabric and can affect mobilization of movement. The authors also go into railway stations in Europe like the other sources I used and describe the ambitious methods Europe is putting in place to redevelop urban Europe. One of the concepts and or methods the authors bring up that I believe could be helpful in my research is total integration.

# Literature Review

With regards to the Urban environment and U.S cities many professionals have studied the relationship between land use and transportation. One of the most popular researchers and educators in this area today is Robert Cervero of UC Berkeley. Robert Cervero focuses much of his work on sustainable transportation policy and planning. Through Cervero's work he demonstrates how cities should prioritize land use and transportation to directly engage community development and interaction. Cervero believes today's issues are not just about reducing congestion and emissions, but also the effects of time pollution. The result of wasted time leaves people with less quality time to invest into their neighborhoods and communities leading to issues of social disaffect. Building upon Robert Cervero's work the transportation hub ideally acts as a node within the city. Concurrent with the principles of TOD and the philosophy behind Robert Cervero the hub becomes a compact space of mixed-use development. Additionally, it further engages community activation and participation through programmatic relationships that attract individuals and play a part in day-to-day services (Benfield 4).

The next source I would like to introduce is "Garden Cities of To-Morrow" by Ebenezer Howard. The book is a proposed path of urbanism in which Howard believes to be crucial for how cities should be laid out and planned. The main elements of his philosophy include proximity of agriculture for land use, compact planning surrounded by rural areas, focus on residents within the city, and limiting the growth of the city's extension. The premise behind the book is to create cities that are centered around core principles of being self-sufficient, healthy, and mobile cities. In the book Howard proclaims his theory of how land use and ownership should operate in the urban environment as a rebuttal to the current state of industrialized 19th century England. Within the text we can start to understand how the incorporation of transportation nodes has become important to the success of a city. Although the book by some is considered an originator of suburban sprawl, I believe Howards remarks to understanding different scales within the city is an important topic to consider in the further development of this project.

The next source I would like to introduce is “Tactical Urbanism and Sustainability: Tactical Experiences in promotion of Active Transportation” by authors Aline Fernandes Barata and Adriana Sansao Fontes. With respect to urban transport and how we are moving around our cities, the main piece of the article is the overvaluation of the automobile and how it has robbed pedestrians of the city. To further explain, the automobile has become the determiner of circulation in many cities, taking away the streets from the public and causing an urban battle between the person and the automobile. The idea behind the paper describes as “Tactical Urbanism” means to activate space within a city through applied methods of planning to reconstitute public spaces and urban mobility. The paper puts oneself as the driver of main circulation in the city and uses active transportation methods such as walking and cycling to define movement and mobility. I thought this was an interesting perspective that might add to the story of my thesis in understanding what our future cities could be and how we should proactively design for them. I also thought the perspective of taking cars out of our cities was interesting and could contribute to further understanding how to design cities of the future for the person rather than the vehicle.

The next source I would like to introduce is sustainable architecture and urbanism by Dominique Gauzin Muller. Gauzin Muller introduces concepts of European design methods and strategies that have been implemented and successful. One thing he notes important in this context though is the commitments made to sustainable development which have resulted and yielded their results. Aside from the political commentary Gauzin Muller also describes public transit and car traffic in European nations and how these differ from large scale cities in the United States. In addition, this acknowledges that fact that different social and urbanistic aspects alter applied methods that can be used in design. Moreover, I believe this text could possibly connect to my research and further questions as it relates to urbanism and its possible effects on economic expansion and sustainable design for cities. Although it does not directly describe transit hubs there are fundamental concepts of sustainable city design that could be applied with further research into the source.

Overall, the five sources I choose describe a relationship between a very large scale of the city and very small scale of the human and how we can seek to better design to serve the function of oneself in the city. In addition, I believe there is some connection between transportation and how we are circulating our cities that is very important to the economic and social success of future cities. I believe transportation hubs are a direct connection to this link of perceived scale and function between the human and the city and should be further articulated in urban design.

# Precedent

## Transbay Transit Center

Project Type: Transit Hub

Location: San Francisco

Architect: Pelli Clarke Pelli

One example of a project built today that demonstrates the principles of TOD design methods is the Transbay Transit Center in San Francisco. The Transbay Transit Center brings together eleven Local, regional, and statewide transit systems that serve both commuter rail and high-speed rail. Programmed into the space the development includes a 5.4 – acre rooftop park, commercial space, and many other passive and active spaces for the public to enjoy. The projects willingness to incorporate new and current rail technologies alongside unique programmatic elements has allowed the hub to act as a catalyst for new development in the downtown center. In addition, the Transbay becomes not only a transportation hub, but a consumer hub that subscribes to the ideal design goals of TOD. The goals that the project demonstrates include increased ridership, promoting economic development, enhancing wellbeing of citizens, and creating safe and active civic space around transit. In conclusion, the goals and achievements of the Transbay Transit Center should be extended into other major cities that lack economic and community development to alleviate current problems surrounding transportation today.

Figure 2: Perspective Section



Figure 3: Interior Render







Figure 1: Exterior of Transbay Transit Center

# Precedent

## Hong Kong West Kowloon Station

Project Type: Transit Hub

Location: Hong Kong

Architect: Andrew Bromberg at Aedas

The next example of a project that is currently built outside that United States that demonstrates principles of TOD design methods is the Hong Kong West Kowloon Station. The Hong Kong West Kowloon Station designed by Andrew Bromberg at Aedas is one of the largest underground train stations in the world. The large station allows for thousands of passengers to easily flow through the space uninterrupted to access the high-speed rail that utilizes the station as an urban gate way to mainland China. The roof structure of the building bends into the sky acting as a walkable footbridge to enable people access to views of the city further connecting the passengers into the fabric of the city scape. The multiple juxtaposed roof elements featuring linear windows combined with slanted columns on the interior are meant to mimic the experience of being deep inside a forest which was a key aspiration of the designer. The Hong Kong west Kowloon station can serve as precedent for my research and future project by understanding the connections and gestures the architects make in the project by enabling passengers to connect with the city both visually and physically. The architects allow views from the building to the city as well as direct transportation that quickly and smoothly allows the public to move within the city. In addition, the architect describes the architecture as an opportunity for people to discover new connections in Hong Kong enabled through multiple modes of transportation that are housed within the station. Also, through the incorporation of new rail technology the station can shorten the trips currently offered by planes while greatly reducing the environmental impact of transportation.



Figure 4: Exterior View of Station

# Precedent

## Christchurch Bus Interchange

Project Type: Transit Hub

Location: Christchurch, New Zealand

Architect: Architectus

The Christchurch Bus Interchange was designed by the team of architects at Architectus. The project is located in Christchurch New Zealand and was constructed in the year 2015. The project demonstrates how transport interchanges can play a significant role in the economic and social viability of cities. The project was part of a process to act as a catalyst for revitalization of the central city of Christchurch. The facility moves over 1000 bus interchanges a day while also incorporating good urban design by prioritizing pedestrian movement through space. The L shaped design of the floor plans allows the buses to be routed to the back of the building while the station facade fronts the main streets allowing a seamless circulation between the surrounding city and the station. Through this layout the interior concourse of the building is able to become an extension of city life allowing pedestrians to move quickly in and out of the building without the inconvenience of vehicular traffic. Through this project it demonstrates the ability to prioritize pedestrian circulation while facilitating bus movement and infrastructure.

Figure 5: Interior View



Figure 6: Plan View

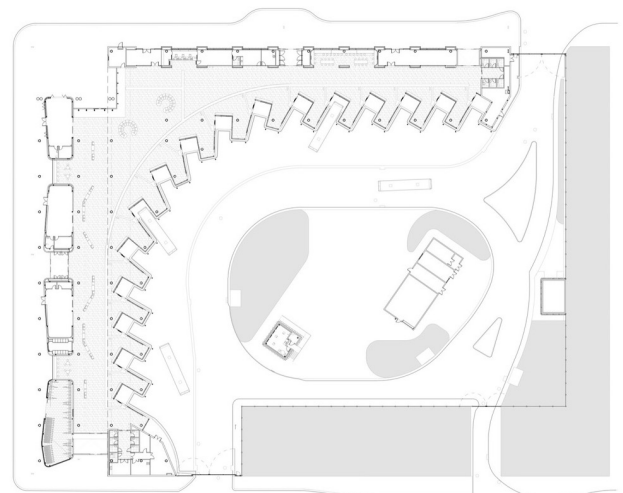




Figure 7: Exterior View of Station

# Research Methods

In the development of my project, I plan to deploy certain research methods into the field of my study to further acquire visual and numerical data to move my project to realization. These methods primarily explore the collection of existing data through means of digital mapping and diagramming to further understand the relationships between land use and transportation within the city. By utilizing these methods, I hope to reveal a primary site location and narrow in the scope of my thesis intervention.

## Mapping

### MAPPING

The first design research method that will be employed is the process of mapping. Mapping both urban city grids as well as rail networks will inform and visualize important adjacencies that can be recognized as places of intervention within the sector of public infrastructure and transportation. From this method I hope to acquire visual and numerical data that is representative of a cities-built constraints and deficiencies. By utilizing mapping to understand and acquire data on urban grids and existing transit routes I will be able to identify possible locations where interventions are needed. From this data I also hope to learn and acquire information that will further my understanding of existing systems that are working within the urban fabric. Once a site is choose I will use mapping to understand further how the city is interconnected. In doing so I hope to express though this method how the different adjacencies are experienced by the traveler and how they can be understood.

## Diagramming

### DIAGRAMMING

This research method will be utilized to further communicate moving systems in the city. From this process I hope to visualize and further learn how circulation patterns of pedestrian, transit, and vehicular traffic operate at different scales. By utilizing this method, I will also be able to visually communicate my intervention into the field within transit and urban systems. By utilizing this method, I hope to further learn how systems across the city work together and or against each other. Diagramming will also be very important to my project as I hope it will allow me to communicate with the very large city of scale as well as the scale of transportation systems and people.

## **HISTORICAL RESEARCH / DOCUMENTATION**

This method includes both the collection of documentation and research regarding the rust belt and its cities, in addition to site specific material. I believe this method is crucial in furthering my understanding of the historical context of the place I am researching as it will enable me to further develop possible solutions that are site specific. To elaborate further, the rust belt as a whole has many factors that have altered and shaped its history and urban landscape. I believe that by gathering historical documentation of both the structures and urban arteries of the area it will reveal opportunities within the context of the region. Notable as well this research will allow a deeper understanding of both the demographics of the region and how they have changed throughout history. This process will be crucial to my thesis as it will allow the development of the final thesis narrative.

## **ADDENDUM TO METHODS**

*The initial methods of mapping, diagramming, and collection of historical documentation were utilized throughout the development of the thesis project. Throughout the process both mapping and diagramming were utilized to document and understand the relationship between the urban arteries and the rust belt region. Through this process it was identified that the lake shore limited route that runs through the city of Elyria, Ohio was a significant site in need of revitalization and redevelopment. Once the site was established the collection of historical documentation of both Elyria s history and its historic buildings were collected to understand the construction and values of the city over time. This was done through initial research and the collection of historical postcards that reveal the architectural context of the city. Through this there was a connection established between the vernacular of the downtown area and the historic transportation center building located within the site of the project.*

# Site History

In 1817 the city of Elyria, Ohio was founded by Herman Ely who became the first resident of the city. From the start of the town one of Ely's visions was for the town to become a prominent mercantile hub. The land was rich with potential as it had fertile soil, a large amount of trees, and free power from the beautiful Black River Water falls providing a free source of energy with direct water connections to other cities flowing directly into Lake Erie.

The old Red Mill which is an icon for the city became the first industry in Elyria. Built in 1819 as a soap manufacturing plant as a result of tree removal necessary to make room for the construction of the new town. Following Ely's vision Elyria quickly became a mecca for trading within Lorain county as other industries such as the Lorain Iron Company flourished providing jobs for many of its residents.

With this other industries started to pop up all around Elyria an era of public services began with the creation of the Elyria Telephone Company, and soon after inter-urban Trolley public transportation system. By 1927, Elyria had earned the reputation of a progressive manufacturing center with forty major industries making a wide range of products.

As the world moved on after World War II, Elyria experienced not only an industrial revolution, but also a educational one. Both primary and secondary education were expanded with the opening of Lorain Community College in 1963.

Today the college still evolves and continues to be on the edge of bringing new industry and technology to the area. Through its programs and commitment to educational programs specializing in alternative energy and advanced manufacturing the college continues to embrace the technological industry by creating advanced facilities on campus.

Figure 8: Red Mill Postcard







Figure 9: Elyria Waterfalls



Figure 10: Downtown

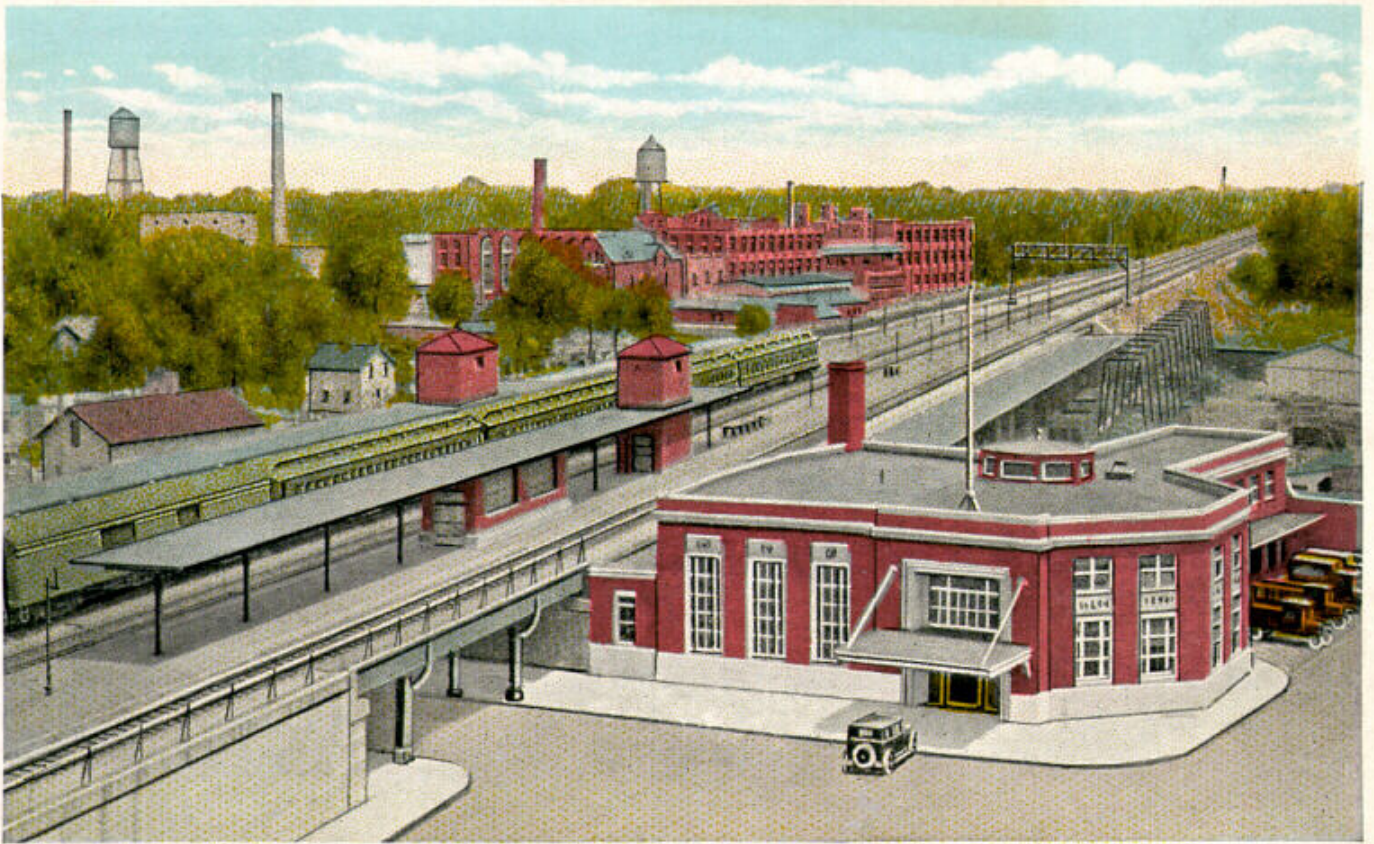
# Site History

Elyria, Ohio Central Railroad station was officially opened on April 6, 1925 by New York Designers Steward Wagner and Alfred Fellehimer. The station when opened was considered to be the finest structure on the Lake Shore Limited Line between Cleveland and Chicago. The facility occupies a two story octagonal waiting room with marble and ornamental ceilings paired with a terrazzo floor pattern with strips of brass.

The facility also opened with a main ticket office, baggage drop-off area, and other smaller office spaces. Also built into the design of the building was a passenger tunnel that provided direct access to both train platforms on the north and south side of the tracks. Included into the design as well were elevators that were used to transport passenger luggage from the terminal up to the trains. In the prime of the stations usage there were approximately 14 westbound trains and 10 eastbound trains traveling through Elyria on a daily basis. The New York Central Station became an important and prominent gateway to the city for the 60,000 passengers using it each year up until the 1950's. During the 1950's a combination of extensive roadway construction, the popularization of the automobile, and the emergence of air travel all combined to result in a decline of passenger rail transportation. As a result the New York Central Railroad was ultimately closed in 1955.

After closing for a number of years the facility was eventually acquired by the county in July of 2000 on behalf of the Lorain County Transit Authority. The purpose behind the purchase was for the property to be developed as a county transportation center. Than in 2010 the building renovations were completed to the facade. Today the building is mostly used as a community center that features the original grand waiting room as well as some space to rent out for various functions. The site currently is also by Lorain County Transit and as a Greyhound Bus Transfer point.

NEW YORK CENTRAL STATION, ELYRIA, OHIO



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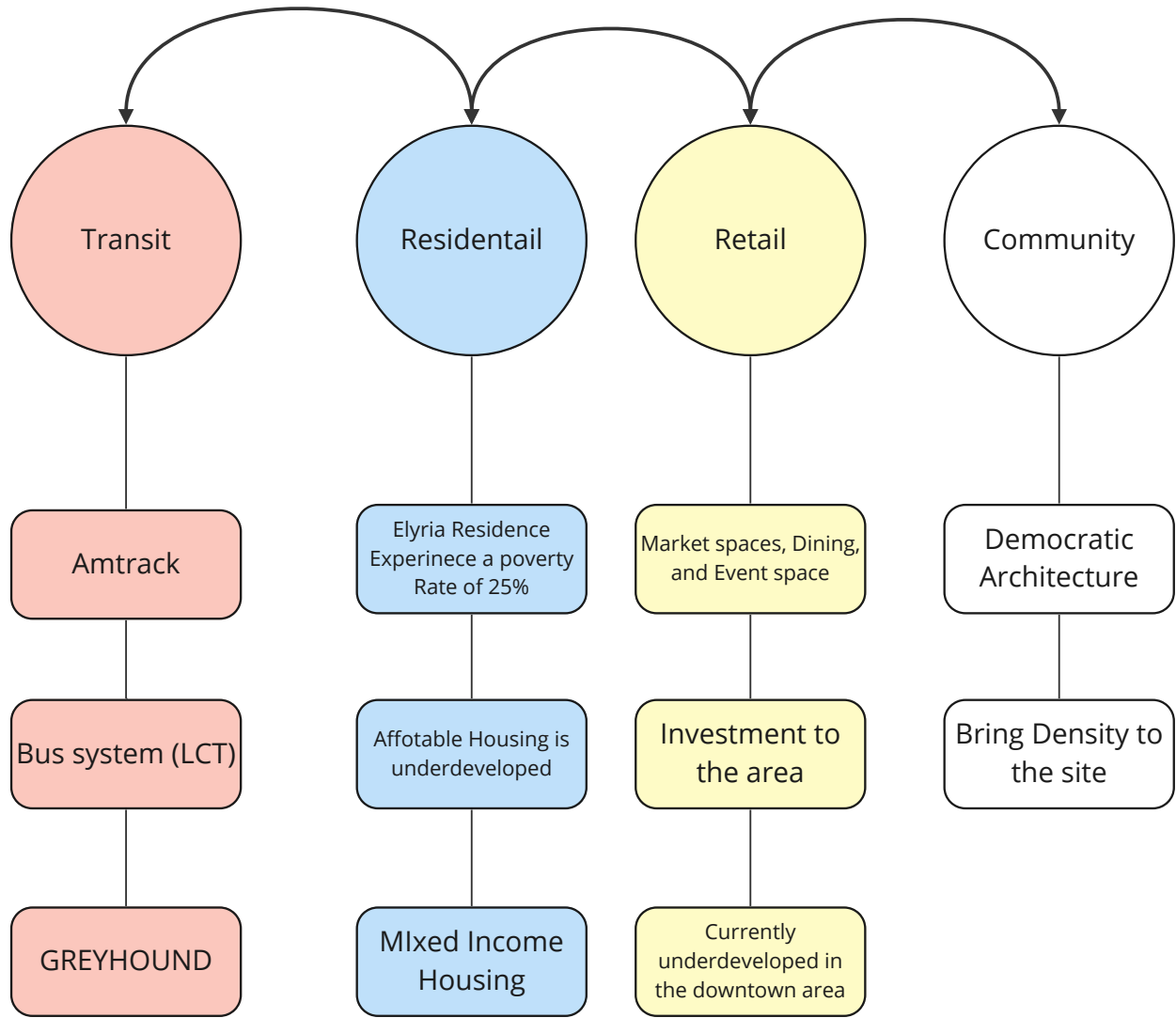
Figure 11: Elyria Transportation Center



# Program

When considering the possible functions and program of my project I think it is both important to incorporate methods that are currently in use as well as possible functions that are not yet incorporated to tackle the current issues surrounding my thesis and the urban environment. For example, many models of the transportation hub only contain the necessary program that is directly related to transport and passengers. For example, they include restrooms and waiting areas that are often dark, intimidating, and possibly unsafe as seen in areas such as the New York subways or the many Chicago L stations. Also, other issues today with public transportation include time wasted caused by waiting for unreliable transit and other methods of public transportation. Such time wasted could be better utilized and incorporated into the program that revolves around typical daily activities of a passenger. For example, the ability to have access to areas of shopping, exercising, and socializing. Overall, the goals of the programming are to bring density to the site while supporting the needs of the community.

The first component in the programming of the building is the centralization of existing transit systems in a central location. This encompasses the local city bus system, the regional greyhound bus system, and the amtrack line that runs through the city. The second component in the program is developing affordable and mixed income housing to provide a connection between housing and transportation needs directly at our site location providing a source for residents to live among reliable transportation systems. The third component is the development of retail and dining spaces as the current downtown lacks this type of development. In addition, it would provide both the community and the residence of the project with accessibility to markets and other retail spaces. The fourth component in the program is the idea of developing a community center alongside the transportation center. In doing so, this will encourage more density to come into the site in addition to providing a democratic space in which all members of the community can be connected to through the transportation systems that have been incorporated into the site.



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# Figures

Figure 1: “An Abridged History of the Transbay Transit Center over the Years.” *Curbed SF*, Curbed SF, 14 May 2020.

Figure 2: Kambitsis, Jason. “San Francisco Sees a Transit Center Revitalizing Downtown.” *Wired*, Conde Nast, 8 Jan. 2010, <https://www.wired.com/2010/01/san-francisco-transbay-transit-center/>.

Figure 3: “Transit Center.” *Transbay Program Transit Center Comments*, <https://www.tjpa.org/project/transit-center>.

Figure 4: India Block | 17 December 2018 Leave a comment. “Arching Roof Tops West Kowloon Station in Hong Kong.” *Dezeen*, 11 Feb. 2021, <https://www.dezeen.com/2018/12/17/aedas-west-kowloon-station-hong-kong-architecture/>.

Figure 5 - 7: Mena, Florencia. “Christchurch Bus Interchange / Architectus.” *ArchDaily*, ArchDaily, 16 July 2016, <https://www.archdaily.com/791283/christchurch-bus-interchange-architectus-plus-athfield->

Figure 8 – 11: “Bicentennial/History.” *Invest Elyria*,

# Design Phase





# RUST BELT REVITALIZATION: RETROFITTING COMMUNITIES THROUGH TRANSIT ORIENTED DESIGN



## Thesis Question:

Can rust belt cities be revitalized through leveraging existing urban arteries and existing structures as a catalyst of social and economic development within the region?

## Abstract:

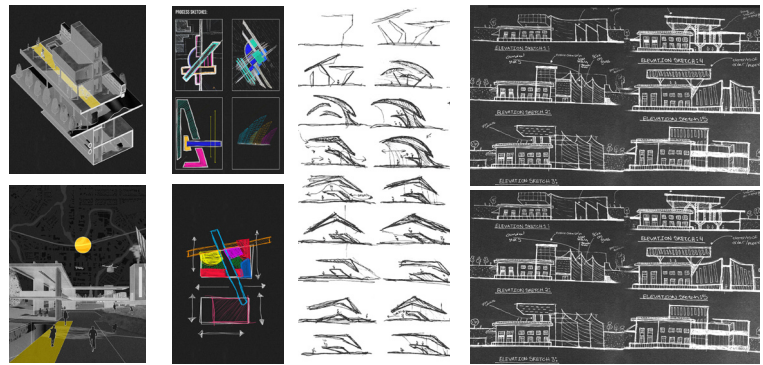
The American Railway system increased rapidly in the late and early 19th century altering the dynamics of surrounding cities and their role in urbanism. Railways, a product of the Industrial Revolution, fundamentally transformed the possibilities of urban growth, economic exchange, and public transportation. As a result, cities became increasingly tied together, altering perceptions of travel, and opening doors to new opportunity. This thesis project will explore the impact of railways, specifically those associated with Transit Oriented Development. This growing method in urbanism seeks to create mixed-use communities centered around high-quality transit systems to create vibrant, livable, and sustainable communities that stimulate the local economy and help to revitalize urban areas.

Currently, the geographic region spanning from New York through the Midwest is synonymous with a problem of industrial decline, loss of population density, and declining neighborhoods leading to a loss of community identity historically associated with each respected region. Once booming production hubs of steel, coal, and the automotive industry is now home to shrinking cities in need of an architectural intervention.

Recent reports regarding Transit-Oriented Development have shown it to be a critical factor in revitalizing such urban areas through access to better jobs, education, and a reduction in the area's carbon footprint. In addition, the rust belt region presents itself as a unique and special opportunity to experiment with creating a culture of transit-oriented communities that act as the generators of population growth and economic renewal to preserve each area's unique historical background.

Additionally, I will analyze key case studies and conduct site analysis through the lens of Transit Oriented Development to understand the impacts on surrounding communities. This method will provide insight into the principles of rail technology, rider participation, and critical architectural programming methods that are key factors for promoting urban growth. I will also perform an asset-based development study to understand how proximity to public transit can be crucial in creating transit-oriented communities. To conclude, this thesis seeks to explore the possibility of a transportation hub to aid in the urban revitalization of the Rust Belt region, positioning itself as a generator of equitable opportunity hence promoting social and economic growth.

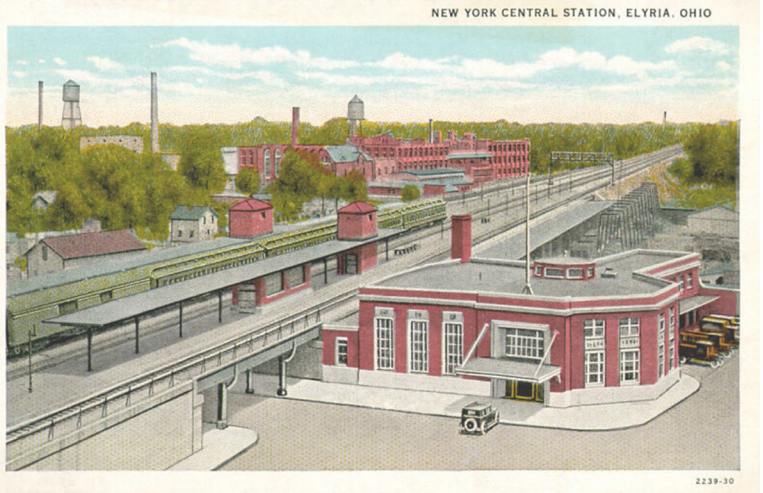
## Early concepts / Process:

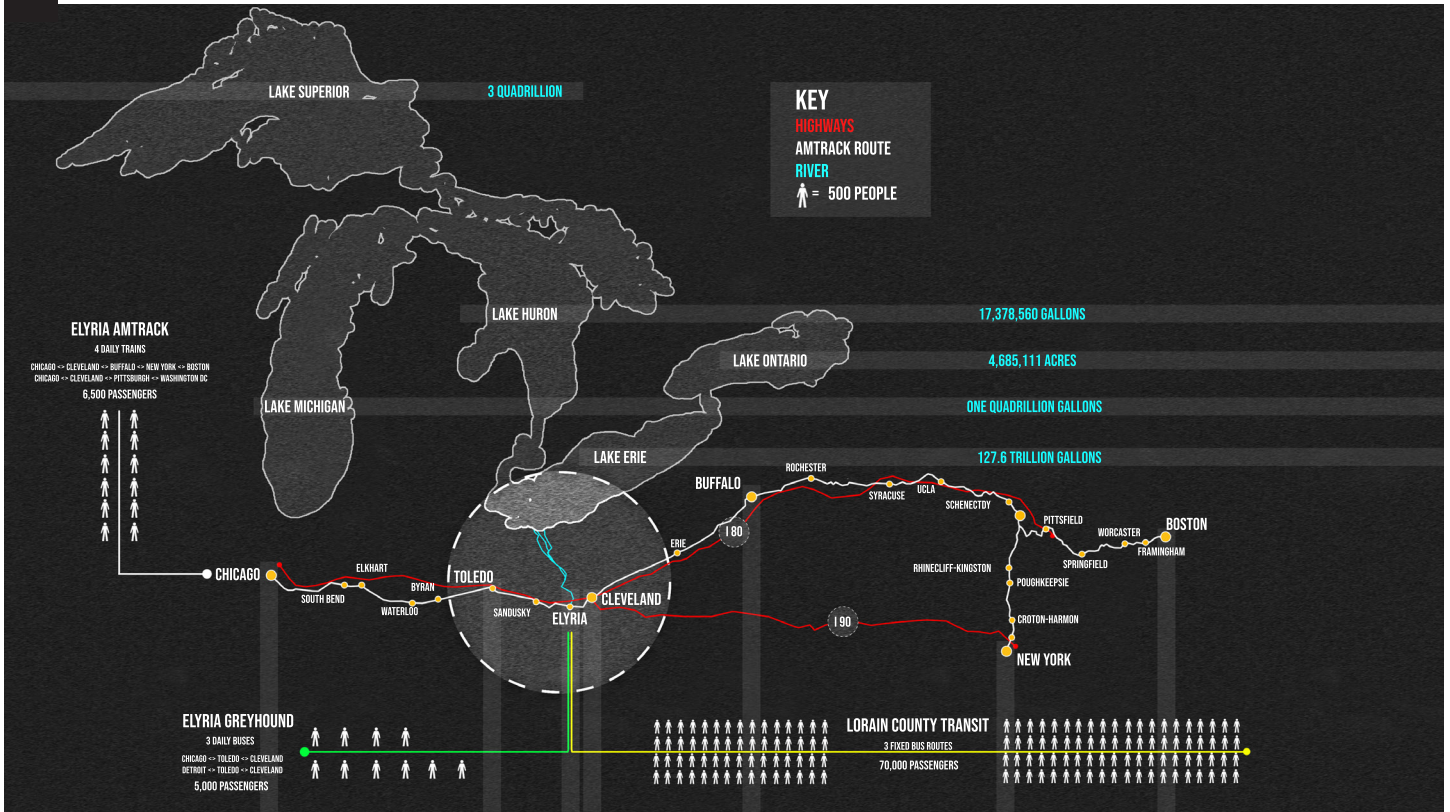


## History:

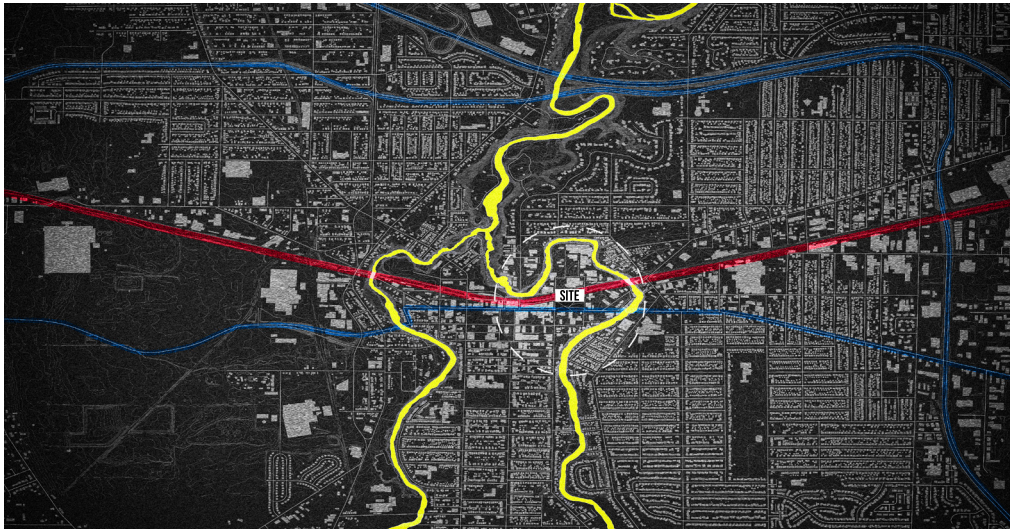


## Site Location:

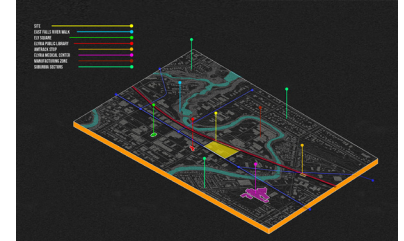




Site Analysis:



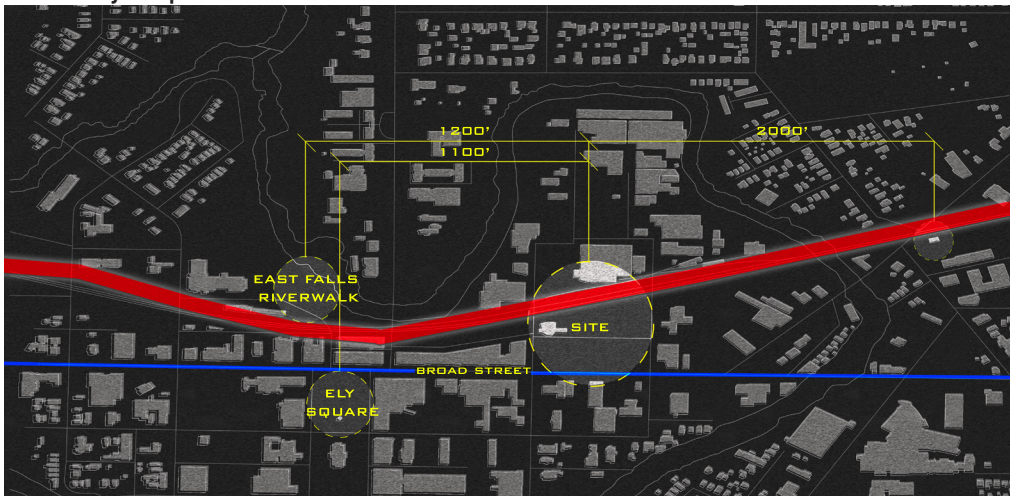
Site Connections:



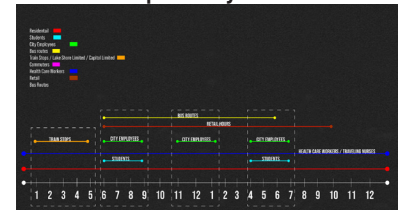
Site Photos:



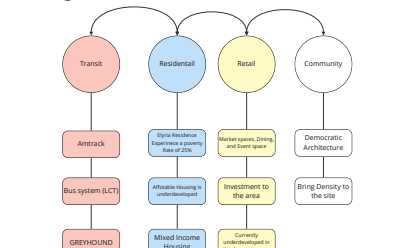
Proximity Map:

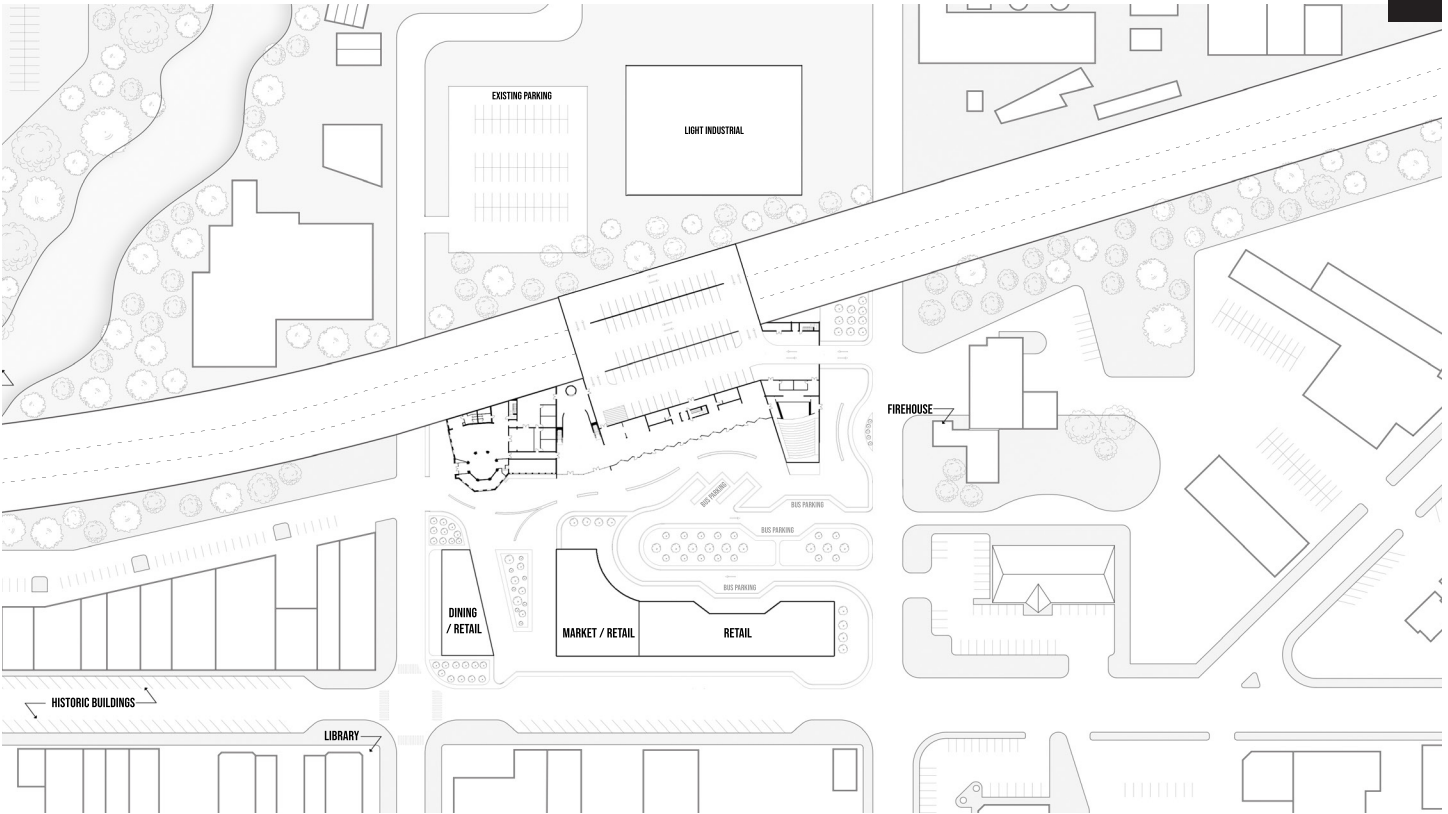


User Group Study:

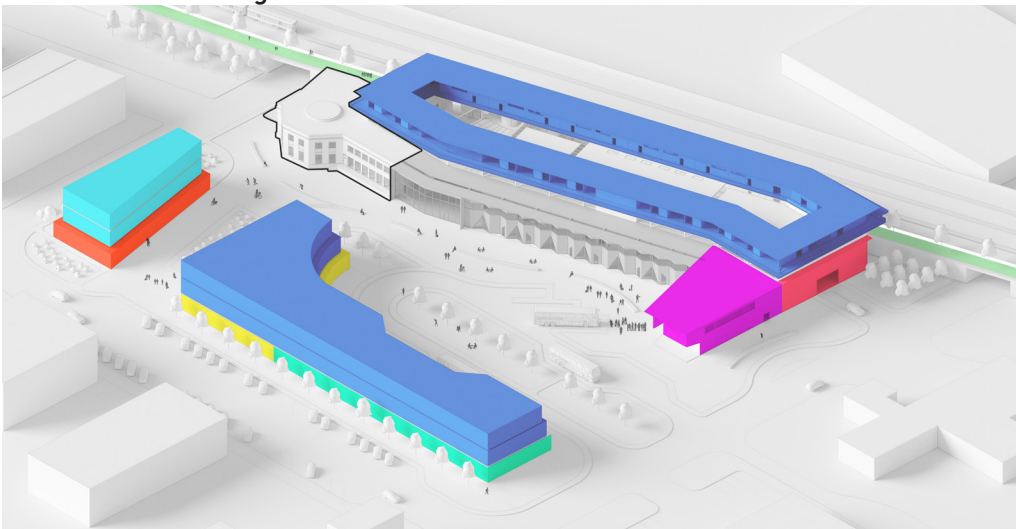


Program:



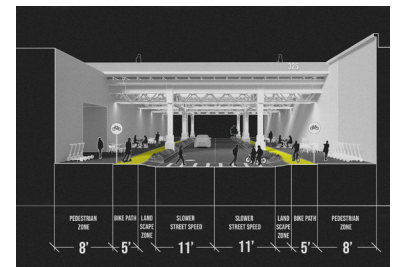


Master Plan Massing:

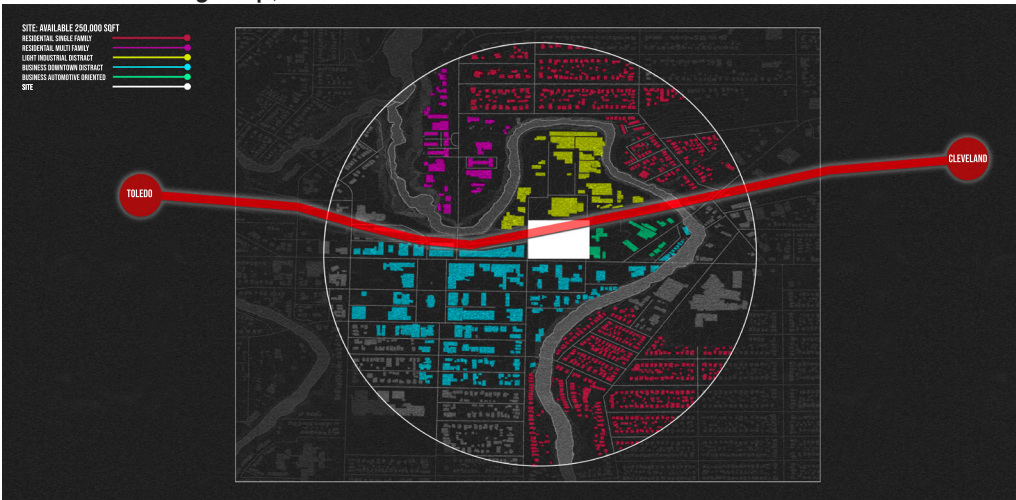


Master Plan Legend

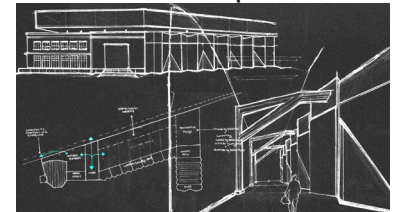
- Historic Building, 11,000 ft<sup>2</sup>
- Office, 7,000 ft<sup>2</sup>
- Residential, 65,000 ft<sup>2</sup>
- Market - Retail, 15,000 ft<sup>2</sup>
- Retail, 9,000 ft<sup>2</sup>
- Concert Hall, 4,800 ft<sup>2</sup>
- Parking, 35,260 ft<sup>2</sup> 77 spots



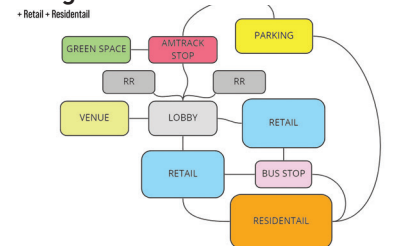
Selective Zoning Map:



Sketches / Concepts

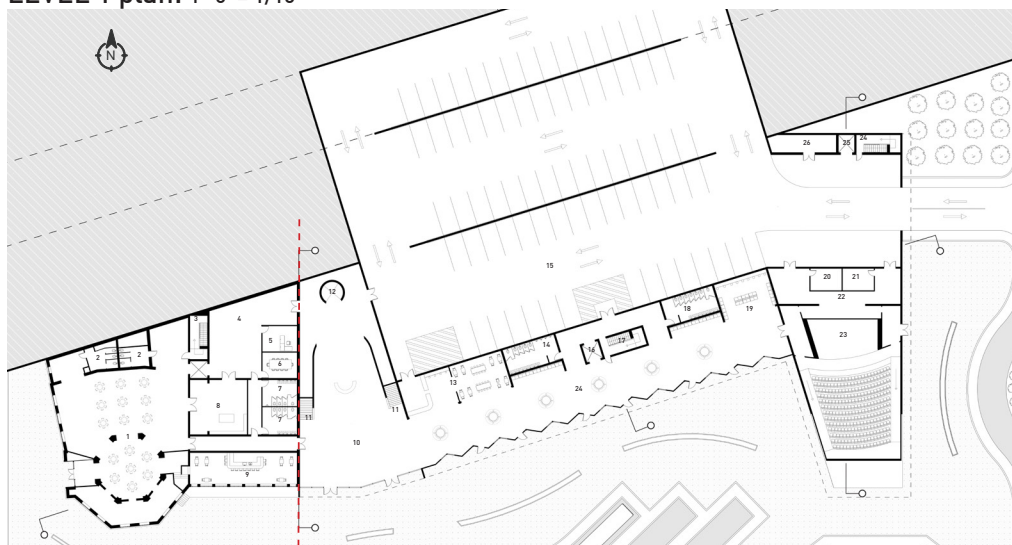


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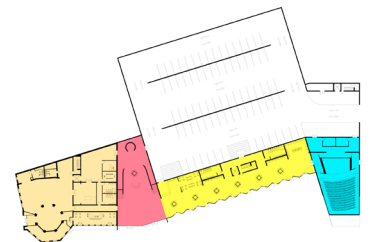


LEVEL 1 plan: 1'-0" = 1/16"

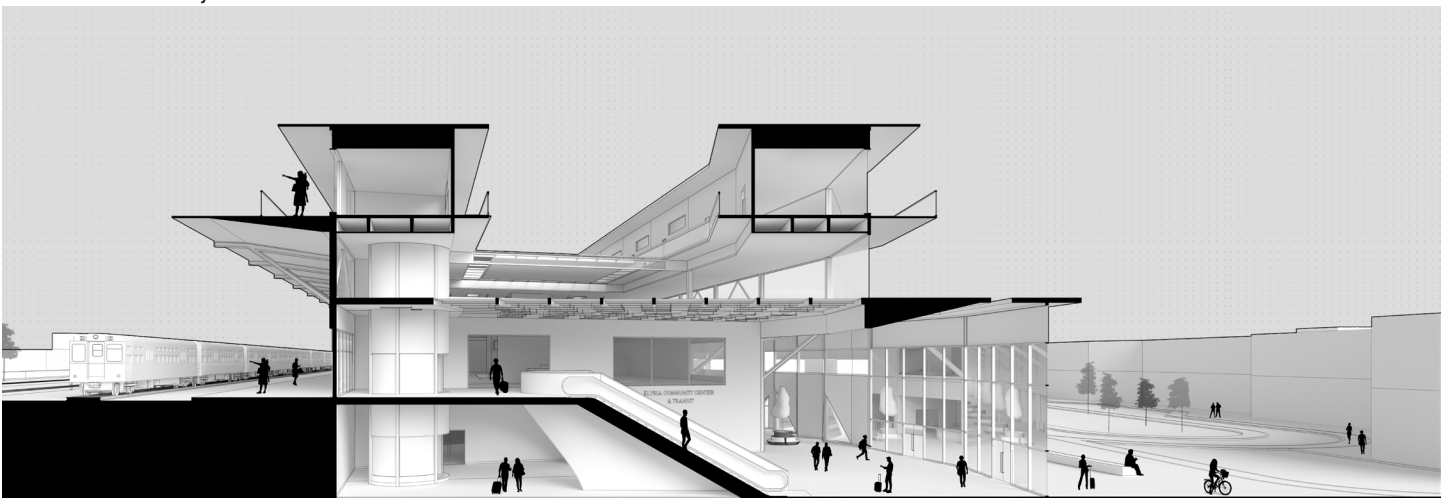


**LEGEND**

- |                 |                       |                   |
|-----------------|-----------------------|-------------------|
| 1. Venue Space  | 13. Dining Space      | 26. Bus Docking   |
| 2. Restroom     | 14. Restroom          | 27. Drop off Zone |
| 3. Egress Stair | 15. Parking           |                   |
| 4. Lobby        | 16. Elevator          |                   |
| 5. Office       | 17. Egress Stair      |                   |
| 6. Meeting Room | 18. Restroom          |                   |
| 7. Restroom     | 19. Long Term waiting |                   |
| 8. Kitchen Prep | 20. Dress Room        |                   |
| 9. Private Bar  | 21. Dress Room        |                   |
| 10. Main Lobby  | 22. Backstage         |                   |
| 11. Escalator   | 23. Concert Hall      |                   |
| 12. Elevator    | 24. Egress            |                   |
|                 | 25. Parking Services  |                   |

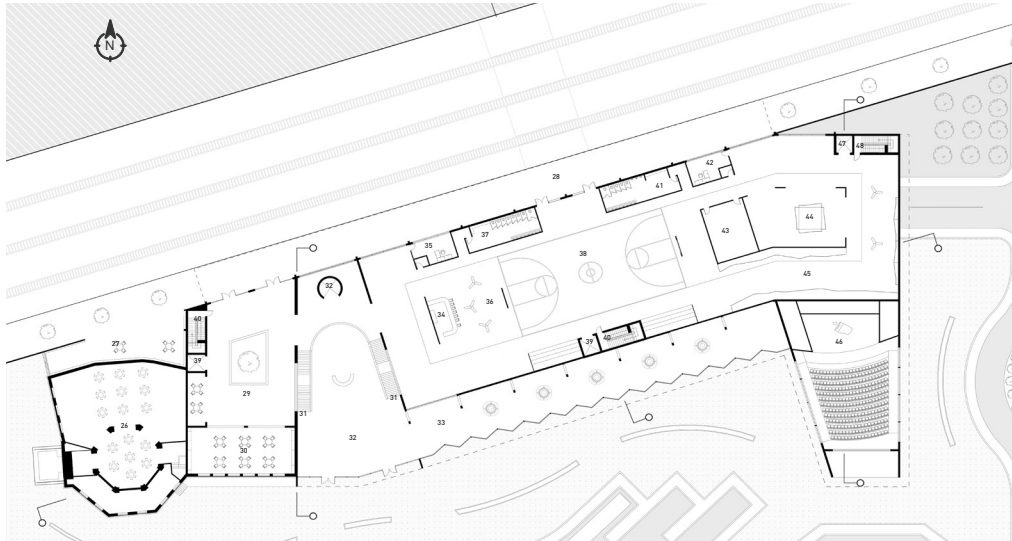


SECTION 1: Lobby



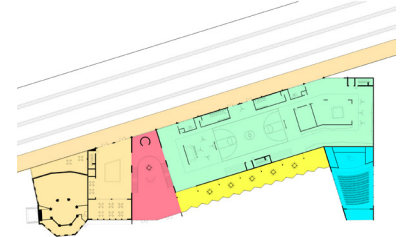


LEVEL 2 PLAN: (Platform Level): 1'-0" = 1/16"

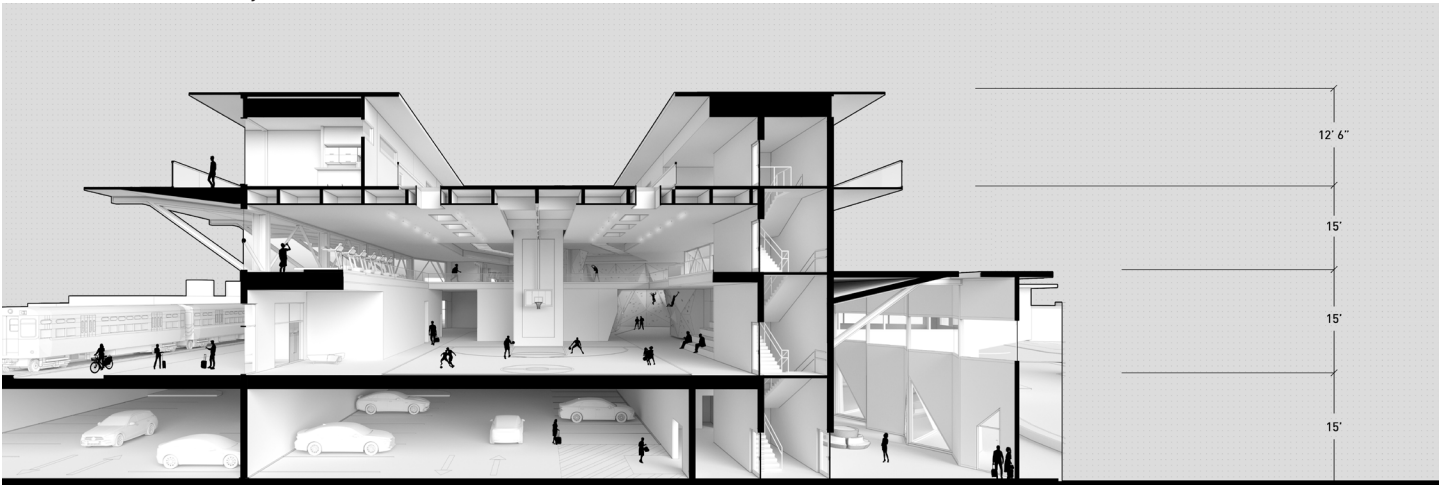


**LEGEND**

- |                           |                  |
|---------------------------|------------------|
| 26. Venue Space           | 41. Restroom     |
| 27. Transit Waiting Area  | 42. Office       |
| 28. Covered Waiting Area  | 43. Dance Studio |
| 29. Interior Waiting Area | 44. Rock Wall    |
| 30. Historic Library      | 45. Boulder Cave |
| 31. Escalators            | 46. Concert Hall |
| 32. Main Lobby            | 47. Elevator     |
| 33. Concourse             | 48. Egress       |
| 34. Smoothie Bar          |                  |
| 35. Office                |                  |
| 36. Lounge                |                  |
| 37. Restrooms             |                  |
| 38. Multi - Purpose Court |                  |
| 39. Elevator              |                  |
| 40. Egress Stair          |                  |

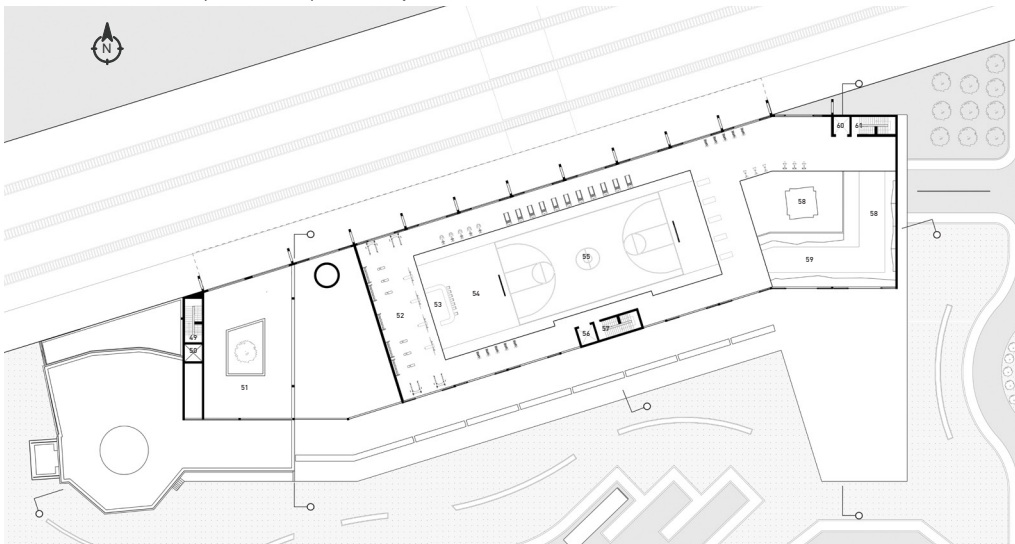


SECTION 2: Community Center



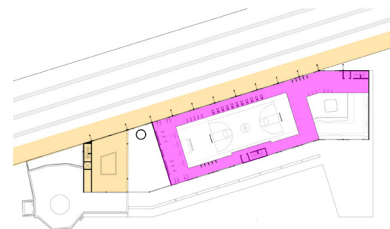


LEVEL 3 PLAN: (Mezzanine): 1'-0" = 1/16"

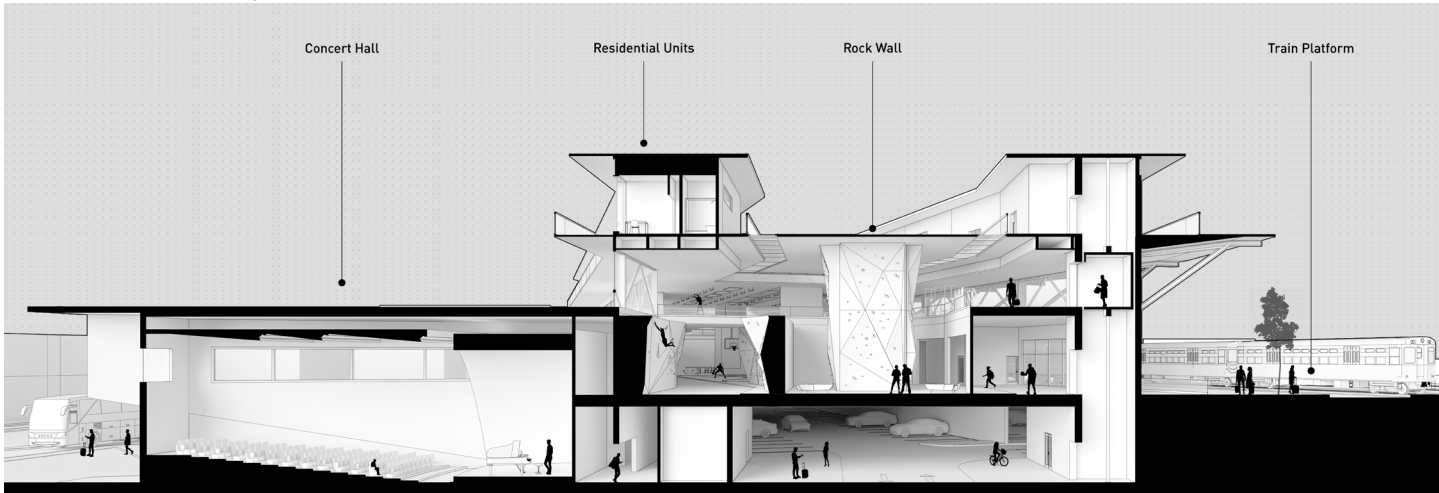


**LEGEND**

- 49. Egress Stair
- 50. Elevator
- 51. Interior Waiting Area
- 52. Gym Sector
- 53. Smoothie Bar
- 54. Lounge
- 55. Multipurpose Court
- 56. Elevator
- 57. Egress Stair
- 58. Rock Climbing Wall
- 59. Bouldering Cave
- 60. Elevator
- 61. Egress



SECTION 3: Community Center



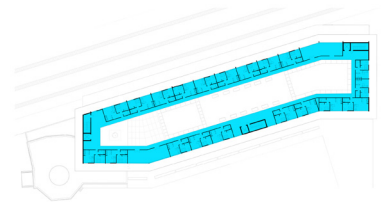
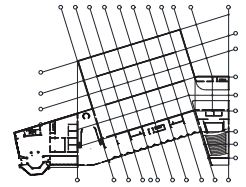


LEVEL 4 PLAN: (APARTMENTS): 1'-0" = 1/16"

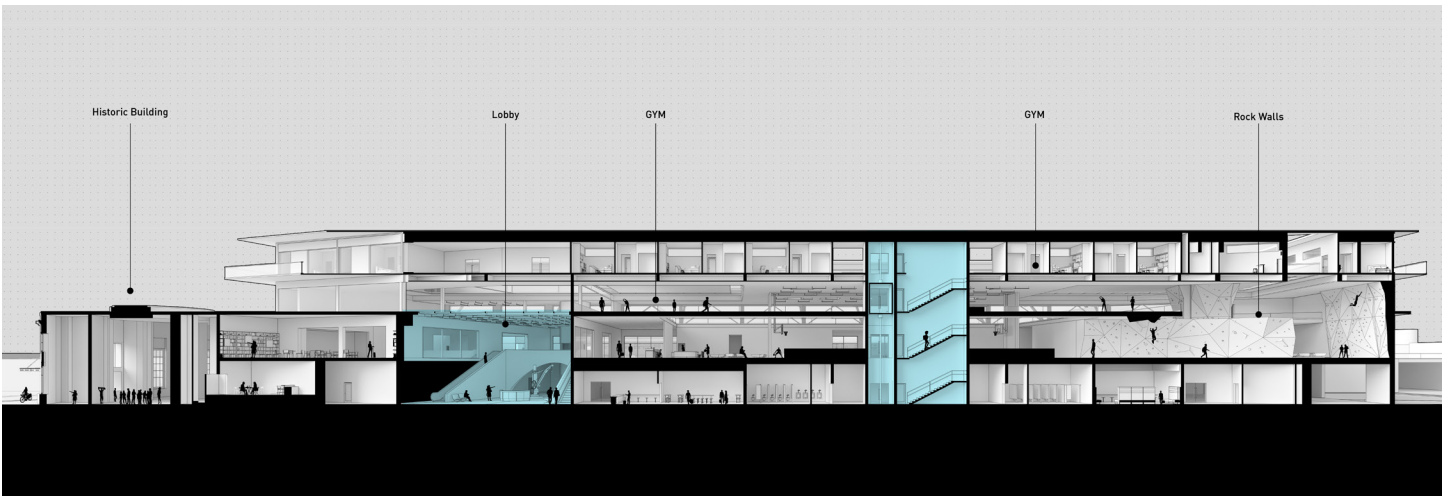


LEGEND

- 62. Egress Stair
- 63. Elevator
- 64. Efficiency Units (21)
- 65. Lounge
- 66. Elevator
- 67. Egress Stair
- 68. Co - Working Space
- 69. Elevator
- 70. Egress



SECTION 4: COMMUNITY CENTER





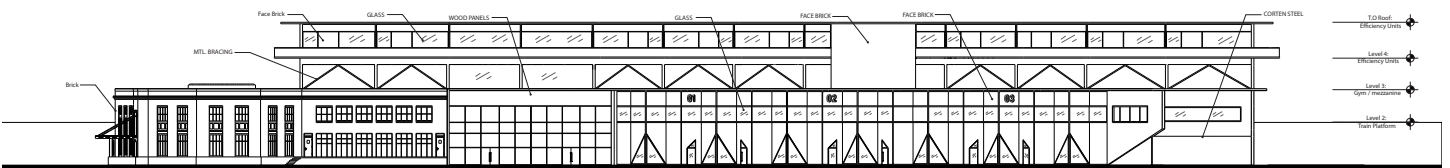
Concourse Looking East:



Community Center:



North Elevation: 1'-0" = 1/16"



North Elevation: 1'-0" = 1/16"

