ABSTRACT

Title of Thesis:	STATIONS AS DESTINATIONS: A NEW TRANSIT HUB FOR PITTSBURGH, PA
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In the 20th century, the urban fabric and place of many American cities was destroyed for the functional and efficient future promised by the automobile. While this has brought about great advancements in mobility and access, this prioritization has resulted in crippling car dependency, worsening conditions for other travel modes and, in some cases, reduced accessibility. A car-centric future makes sustainable development more difficult. As urban mobility evolves, public transit must improve efficiency while remaining accessible, inviting, and activated. While design is only one factor influencing travel behavior, improving the convenience, desirability, and connectivity of public transit can encourage more use. This thesis explores how architecture can: (1) create multi-functional, human-centric public places, (2) remediate damage done by the automobile, and (3) improve the efficiency, convenience, and desirability of public and multi-modal transportation.

STATIONS AS DESTINATIONS:
A NEW TRANSIT HUB FOR PITTSBURGH, PA

by

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Chapter 1: Introduction

In the 20th century, the urban fabric and place of many American cities was systematically altered, and often destroyed, for the functional and efficient future promised by the automobile. This created a sprawling country that was slowly rebuilt around the freedom and rapid movement that cars offered. But rather than cars becoming a quicker alternative, they soon became the primary method of transportation. According to the 2022 Pittsburgh Regional Transit Annual Service Report, only 4.5% of the geographic area of Allegheny County, or 19% of the population, has access to frequent public transit service. Frequent service implies service at least every 15 minutes for at least 15 hours a day and every 30 minutes for an additional 5 hours, every day of the week. This points to severe car reliance in the US. Leading experts recommend densification as an imperative for sustainable development, but this is hindered by current car reliance. City streets are already congested with traffic and many struggle with a lack of parking. Further density will worsen these issues without multi-modal transportation improvements and opportunities.

Smart mobility technology improvements, such as autonomous vehicles (AVs) provide opportunities for safer, more efficient, and more environmentally friendly mobility alternatives. However, AVs risk escalating this car prioritization even further depending on their adoption and they still don't address many of the equity, land use, and experiential challenges that mobility is faced with today. If privatization continues to be prioritized, sustainable development, densification, and

equitable land use goals will likely be impeded further. This brings up the question this thesis aims to answer: how can a fragmented transportation hub be transformed into a connective and desirable public destination?

Architects need to be actively engaged in the process of remediating infrastructure damage and adopting new mobility technology so that buildings successfully connect with transportation technology while preserving the character of places and promoting multi-modal transportation. Most Americans choose their preferred mode of transportation based on the convenience and the desirability of the system. In the United States, design failures, a lack of investment and improper placement often render public transit stations inconvenient, undesirable, and therefore underutilized. Most stations lack publicly available seating, have little to no multi-functionality, or they are only safely accessed by car. Design offers improvements through spatial organization, ambient conditions, access to resources, and views. The physical environment's desirability is determined by the opportunities it provides, the meaning it holds, and the control it offers to occupants; Successful design optimizes these factors to create enjoyable and functional spaces. Design has the potential to transform transit stations into convenient, enjoyable, and multi-dimensional public destinations. These may help alleviate car reliance, promote sustainable dense development, and provide reclaimed public places for economic, environmental, and societal opportunities in American cities.

The main motives of this thesis are to create harmony for all system components on the site, shift the American culture by providing equitable experiences for those that choose not to depend on private car travel, and activate vibrancy

through public engagement and placemaking. The goal is to remediate damage done by automobile infrastructure to the urban fabric of a particular site and create an immersive architectural project that is grounded in the place it occupies. The site selected to showcase this intervention is in Pittsburgh, PA, situated on the lots surrounding the historic Union Station. The site is near the Allegheny River and sites between the Strip District, Downtown District, and the Hill District neighborhoods. This location was selected for its proximity to a variety of transportation networks, its current lack of connectivity and pedestrian accessibility, and the undignified experience that the current train and bus stations create as part of the arrival to the city of Pittsburgh. Designing on this site will demonstrate how a transit station redesign, selective urban interventions, and a reprioritization of users can make a difference in the human experience and access of the city for locals and visitors alike.

Chapter 2: Literature Review

Goals of the Literature Review

This literature review aims to unpack the research available on the complicated relationship between transportation, infrastructure, and architecture. It will define key terms used throughout this thesis and provide a background on transportation methods, particularly in American cities. Given its prevalence, the automobile, notably its origins and historic impact on cities, will be given particular attention. Additionally, this review will look at advancements related to smart mobility, particularly autonomous vehicles (AVs). It will briefly discuss where we are today, and what theorists are predicting for AVs impact on the urban form and resulting architecture. In an effort to alleviate the symptoms of car-centric urban design, this review will share literature related to multi-modal and public transportation, and the benefits that these systems provide to cities. Finally, the review will share strategies that encourage a more connected environment and will warn of public design pitfalls that should be avoided for holistic success.

Defining Terminology

Place

Place is often a misunderstood term. In conversation, it is typically considered interchangeable with *space*. *Place* in the context of this thesis refers to the intangible cultural, emotional, and sensory relationship of a particular location with its surroundings. The definition provided by Parsaee et. al. is relevant for this

exploration: "...place is…a location or a part of space which obtains its particular identity through the factors inside it and has a meaning and value."[1] This is contrasted to the definition of space: "The perception of *space* is only possible in the presence of perceptible objects therefore space is the relation among objects" [2] This distinction is important and relevant given the erosion of place within American cities. While *space* remains, the essence and *place* of the public realm is being stripped away.

American culture has struggled to balance efficiency with the importance of leisure and enjoyment: "The pull towards optimization is strong. It's fueled by societal pressures, technological advancements, and a pervasive culture of productivity."[3] This focus on productivity has led to a disdain for anything considered inefficient or 'inconvenient.' This has had a profound effect on the design of urban spaces and architecture. As dissected by Dirlik, "A modernity driven by capitalism has rendered places into inconveniences in the path of progress to be dispensed with, either by erasure or, better still, by rendering them into commodities."[4] What this means is that more and more places are becoming focused on efficiency and monetary value instead of the social value they may offer. Efficiency could mean more multi-functionality and inter-usage, but in the United States, it is resulting in individualism and privatization.

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[1] Parsaee, Mojtaba, Mohammad Parva, and Bagher Karimi. 2015. "Space and Place Concepts Analysis Based on Semiology Approach in Residential Architecture." HBRC Journal 11 (3): 368–83. doi:10.1016/j.hbrcj.2014.07.001.

[2] Parsaee, Mojtaba, Mohammad Parva, and Bagher Karimi. 2015. id

[3] Sustainability Directory. "Could Over-Efficiency Diminish the Joy of Living?" Sustainability Directory. March 29, 2025.

[4] Dirlik, Arif. "Place-Based Imagination: Globalism and the Politics of Place." Place-Based Imagination: Globalism and the Politics of Place, Research Foundation of the State University of New York, 2001, pp. 184.

The erosion of the meaning of *place* and the prioritization of efficiency has resulted in the physical removal of public *place* in the United States. Casey refers to this as the "death of the public realm… an absence of concrete, perceptible locales that allow for bodily ingression as well as for the collective historicity."[5] Public places may not bring in money, or may result in rerouting of traffic, but "rough-edged places"[6] provide connection to the past, opportunity for memory and reflection, and help attach people to their surroundings. *Space* and *place* are not interchangeable because while *space* cannot be removed or destroyed, *place* is very much under threat of extinction.

Accessibility

Accessibility is an ever-evolving topic that should be at the forefront of any architectural intervention. In the context of this thesis, *accessibility* refers to this equitable physical access for all individuals, and the perceived access of a given place. These next few paragraphs will outline how accessibility denotes physical inclusion for those with disabilities, access in terms of the opportunity to reach more locations with increased efficiency, and inclusion across demographics.

A current issue with transportation infrastructure is the lack of accessibility for people with disabilities. Transportation methods either require riders to use stairs to mount a bus, or reaching the platform requires the use of stairs or incomplete sidewalks. According to data from the Federal Transit Administration in 2019, 20%

[5] Casey, Edward S. "Smooth Spaces and Rough-Edged Places: The Hidden History of Place." The Review of Metaphysics, vol. 51, no. 2, Dec. 1997, pp. 291
[6] Casey, Edward S., id

of transit stations in the U.S. are not ADA compliant.[7] This can cause people with disabilities to rely on support from others more than if transportation was accessible. It can exacerbate isolation and make day-to-day life even more difficult. Transportation infrastructure should be designed or improved in such a way that it is equitable accessible for all. Equitable access also relates to the social equity of transportation design.

When designing mobility systems, accessibility for all goes further than just all levels of physical ability; It denotes accessibility across socioeconomic backgrounds and demographics. Yuko Aoyama and Luis F. Alvarez León emphasize the possibility for innovation in mobility to promote equity and social justice. They argue that social equity potential for improved transportation is given less attention when compared to the environmental impacts.[8] Where transportation improvements are made directly impacts the equity and justice of a project. If a project runs through a neighborhood but doesn't provide any stops or access to transport, this may unfairly burden the community without providing any potential benefits from the system. It isn't acceptable for transportation improvements to only be made in higher socioeconomic zones, or for routes to be designed in a way that prioritizes high-income stops and burdens lower-income neighborhoods with longer commute times.

Perceived access, ease of usage, and social acceptance within the infrastructure are also important components of accessibility. Geurs and Van Wee

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[7] Jason Plautz, "A $10B Federal Proposal to Improve Transit Station Accessibility," *Smart Cities Dive*, May 27, 2021, https://www.smartcitiesdive.com/news/a-10b-federal-proposal-to-improve-transit-station-accessibility/600880/

[8] Brail, Shauna, and Betsy Donald, editors. Urban Mobility: How the iPhone, COVID, and Climate Changed Everything. University of Toronto Press, 2024.

define accessibility as, "the extent to which land-use and transport systems enable (groups of) individuals to reach activities or destinations by means of a (combination of) transport mode(s)."[9] This definition sheds light on the capability of systems in being usable. If the design of connection points are prohibiting usage then these would be considered inaccessible. If the current transportation system design is restricting activities or discouraging public transportation use, then this is an opportunity for design intervention to improve the accessibility and usage of these systems.

Hostile Architecture

Another term relevant to the context of this thesis is *Hostile Architecture.* Hostile architecture is a method of limiting or restricting behaviors through design in public spaces. It is also known by the term *Defensive urban design* or *Exclusionary architecture*. The main goal of these techniques is, "To guide or restrict behavior in urban space as a form of crime prevention, protection of property, or order maintenance."[10] There are three main methods employed to achieve this goal: modification of existing elements, or addition and/or removal of objects.[11] Modification is employed to make elements more difficult to use than they were

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[9] Geurs, K.T.; van Wee, B. Accessibility evaluation of land-use and transport strategies: Review and research
directions. J. Transp. Geogr. 2004, 12, 128.

[10] Cara Chellew, "Defending Suburbia: Exploring the Use of Defensive Urban Design Outside of the City Centre," *Canadian Journal of Urban Research* 28, no. 1 (2019): 19–33, https://www.jstor.org/stable/26757401, **quoted in** Anika Rosen, "Hostile Architecture and Abrasive Laws: The Illusion of Public Space," *JUST* 7, no. 2 (2023), Trent University, https://ojs.trentu.ca/index.php/just/article/view/404/232

[11] Karl de Fine Licht, "Hostile Urban Architecture: A Critical Discussion of the Seemingly Offensive Art of Keeping People Away," *Ethics, Policy & Environment* 23, no. 3 (2017): 283–301, https://doi.org/10.1080/21550085.2020.1778794

before. This is commonly seen as swapping out benches for resting poles or using benches with additional armrests, both with the intent of prohibiting someone from laying down. Objects may be added to areas. The classic example of this is spikes added to windowsills to deter resting or small bumps added to benches to prevent skateboarding. And finally, *hostile architecture* also employs the removal of objects from public specs to prevent people from using them.[12] This often means turning off fountains or removing benches. All of these techniques negatively affect the place-making of public places. Adding spikes or removing benches directly expresses to occupants that they are not welcome to stay here, and this disproportionately impacts certain populations, while altogether degrading the value of the public place.

Figure 1: Design Against Humanity. Photo by National Coalition for the Homeless, https://nationalhomeless.org/design-against-humanity/

Figure 2: Hostile Architecture. Source: Re-Thinking the Future, "Anti-Homeless Architecture | 15 examples of Hostile Architecture," re-thinkingthefuture.com

While some may attempt to argue that *Hostile architecture* is well-intentioned, it negatively impacts everyone. Unhoused populations and those relying

[12] de Fine Licht, "Hostile Urban Architecture,"

on public places for private needs are the most impacted.[13] While these techniques may be successful at preventing certain behaviors, they do not remove the *need* for these behaviors to occur. So instead of providing services or solving the issue by meeting the needs of those exhibiting "undesirable" behaviors, this approach removes the possibility of human needs being met in the given location.

On a less dire but still important note, *hostile architecture* is also negatively impacting younger populations. Patrick O'Keeffe makes a great argument about how design features being used in public transport spaces is explicitly used to regulate and control young people in public.[14] Being that young people often aren't able to drive, the current sprawl of many cities, young people are reliant on adults or public transportation for mobility. Because of this, with the degradation of public space, they have less and less opportunities for social interaction and life-experience opportunities. "...Public transport hubs are key sites where young people are able to socialise without being under the direct supervision of adults. However, as public space becomes gradually enclosed due to encroaching private interests, young people, perceived as non-financial participants in these spaces, are frequently constructed by authorities, governments, and policy makers as recalcitrant."[15] Removing age, gender, race, and socioeconomic status diversity from public places is the opposite of what the goal should be for public design. As many American cities continue to struggle with physical and mental health crises, particularly among homeless and

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[13] Anika Rosen, *"Hostile Architecture and Abrasive Laws,"*

[14] Patrick O'Keeffe, "From 'Hanging Out' to 'Designed Out': How Hostile Design Is Used Against Young People in Suburban Railway Stations in Melbourne," *Journal of Applied Youth Studies*, May 21, 2025, https://doi.org/10.1007/s43151-025-00138-3.

[15] O'Keeffe, "From 'Hanging Out' to 'Designed Out.'"

younger populations, the solution isn't to exclude them from the public. The approach should be to design in a way that can alleviate some of these difficulties and improve quality of life for all city dwellers.

Smart Mobility

There has been a recent trend towards adding the prefix *smart* to topics to imply the prioritization of forward thinking and efficiency of systems. *Smart* cities, for example, are defined by Lukas Neckerman as "...ones that are willing to fight against the century of car-centricity, and for a refocusing on quality of life."[16] Many researchers have attempted to define *smart mobility*. A few are outlined by Can Bıyık's literature review of Smart Mobility[17]: a technique grounded in communication, information, and technological instruments[18], a path to reductions in economic costs incurred by the environment and time,[19] a call to citizens to relate to their surroundings in a smart and rational way[20], and raising the quality of transportation in a manner that is environmentally friendly.[21] While there is not a universally accepted definition, *smart mobility* in the context of this thesis will focus

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[16] Neckermann, Lukas. "Smart Cities, Smart Mobility: Transforming the Way We Live and Work." Thought-leadership article, Neckermann Strategic Advisors, June 28 2017. https://www.neckermann.net/thought-leadership/smart-cities-smart-mobility/

[17] Can Bıyık et al., "Smart Mobility Adoption: A Review of the Literature," *Journal of Open Innovation: Technology, Market, and Complexity* 7, no. 2 (2021): 146, https://doi.org/10.3390/joitmc7020146

[18] Tomaszewska, E.J.; Florea, A. Urban smart mobility in the scientific literature—Bibliometric analysis. Eng. Manag. Prod. Serv. 2018, 10, 41–56.

[19] Aletà, N.B.; Alonso, C.M.; Ruiz, R.M.A. Smart mobility and smart environment in the Spanish cities. Transp. Res. Procedia 2017, 24, 163–170

[20] Allam, Z.; Newman, P. Redefining the smart city: Culture, metabolism and governance. Smart Cities 2018, 1, 4–25

[21] Gabrys, J. Programming environments: Environmentality and citizen sensing in the smart city. Environ. Plan. D Soc. Space 2014, 32, 30–48

on the integration of transportation systems that support environmental, social, and economic balance and that elevate cities towards inclusivity, safety, resiliency, and sustainability.

Table 1: Summary of meanings from Smart Mobility Adoption: A Review of the Literature by Can Bıyık, Ahmad Abareshi, Alexander Paz, Rosa Arce Ruiz, Rosaria Battarra, Christopher D. F. Rogers, and Carmen Lizarraga.

Table 1. Meanings of smart mobility.

Meaning
Smart mobility is a significant element of a smart city plan.
Smart mobility is the pinnacle of a smart city and is associated with a municipal verdict and technique grounded in communication, information, and technological instruments.
Smart mobility contains a number of actions that enhance users' mobility by foot, public or private transportation, or any other means of transport. It leads to a reduction in economic costs that are incurred by the environment and time.
Smart mobility is not just the embedding of technology into an urban infrastructure, it also calls for citizens to pursue and relate to their urban surroundings in a smart and rational way.
Smart mobility is generally an approach that aids in the reduction of poisonous fumes expelled into the atmosphere by vehicles and human congestion. Equally, smart mobility aids in raising the quality of transportation in a manner that is environmentally friendly.

The Impact of the Automobile on American Cities

Origins of Reliance

Efficiency and conservation of human energy have always been a priority; they were essential to survival in the beginnings of humankind. However, even as resources became abundant, the prioritization of efficiency and convenience remained. And the personal automobile unlocked a level of efficiency and convenience never before seen. The mass-produced automobile was introduced in the early 1900s, Americans were excited for an easier future filled with new technology. By the time the Great Depression and World War II were coming to a close in the 1940s, Americans were ready to live life more fruitfully, and car manufacturing

companies were more than happy to capitalize on this. Within the decade, car and oil companies convinced the United States public that highway-centric urbanism was the way to a better future. General Motors traveled across the country with a "Futurama" parade that featured models of gigantic skyscrapers cut around by multi-lane highways. They advocated for urban demolition and highway construction in order for communities to be "prepared for a future of research" and prescribed demolition and disposal as a way to fuel the economy.[22] Automobile companies were, "...pleading with Americans to plow freeways through the hearts of their old-fashioned towns and embrace the car as a necessity of daily life. The dramatic rise of state support for…highways in the mid-1950s suggest the message was heard."[23]

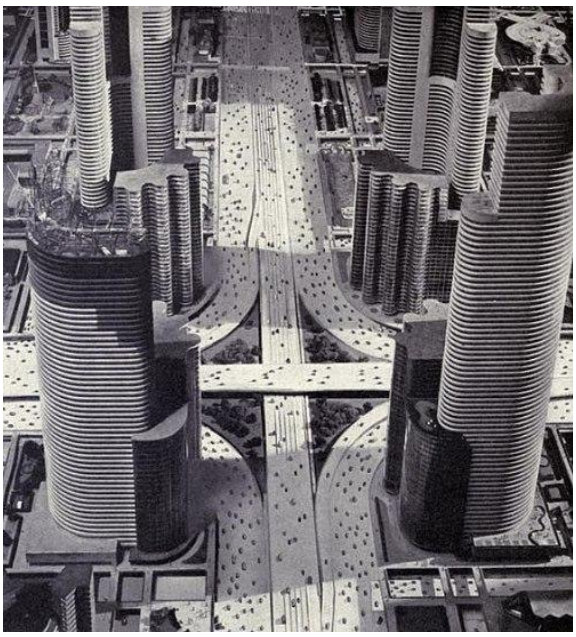

Figure 3: "Detail of the Futurama diorama, 1939, showing a model of elevated multi-lane highways and futuristic cityscape." Photograph. In Futurama (New York World's Fair), Wikipedia article, accessed September 30, 2025.

There were, of course, other factors at play: during World War II, the United States saw the German force's efficiency of movement and President Eisenhower felt the U.S. needed to catch up[24]. However, this doesn't discount the fact, "At the heart

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[22] Walker, Nathaniel Robert. "American Crossroads: General Motors' Midcentury Campaign to Promote Modernist Urban Design in Hometown U.S.A." Buildings & Landscapes: Journal of the Vernacular Architecture Forum, vol. 23, no. 2, Fall 2016, pp. 89-115. University of Minnesota Press, doi:10.5749/buildland.23.2.0089.

[23] Walker, Nathaniel Robert. id.

[24] U.S. Senate, "Congress Approves the Federal-Aid Highway Act," *Senate.gov*, Senate Historical Office, June 26, 1956, www.senate.gov/artandhistory/history/minute/Federal_Highway_Act.htm.

of [General Motor's] campaign was a desire - publicly articulated by one of GM's top executives- to remake the North American landscape so that the automobile was elevated to a required necessity of daily life,alongside housing, clothing, and food."[25] And shortly after the Federal-Aid Highway Act of 1956 was passed, General Motors closed their urban design campaign. Judging by the state of most American communities today, the campaign was successful.

Trolley Problem

In addition to this campaign for highways, sources also suggest that large corporations had vested interest in the failure of public transportation systems, and therefore monopolized services and slowly deteriorated them to make car use more appealing. In the mid-1900s, General Motors, Firestone Tire, Standard Oil of California, Phillips Petroleum, and Mack Trucks were accused of systematically buying street trolley systems and purposefully degrading them so that they could be replaced with their buses and automobiles. In 1949, "...after more than a month of sworn testimony, a jury convicted the corporations and several executives of criminal antitrust violations for their part in the demise of mass transit."[26] This conviction provides legitimacy to the conspiracy and counters the commonly held belief that the demise of public transportation was inflicted solely by the natural progression and public preference to automobiles. As Kwinty points out, is it also, "...a fine example of what can happen when important matters of public policy are abandoned by the

[25] Walker, Nathaniel Robert. id.
[26] Jonathan Kwitny, "The Great Transportation Conspiracy," *Harper's Magazine* 262, no. 1569 (February 1981), 266

government to the self-interest of corporations…"[27] This is relevant today in relation to smart mobility advancements and the autonomous vehicle industry. If transportation is once again left to the responsibility of tech corporations and private agendas, mass transit could sustain another significant blow and ultimately be harmful to the public good.

Urban Fabric and the Architectural Implications of the Automobile

Even before automobiles were mass-produced, they began taking over human spaces. For example, in Pittsburgh, PA, the East Liberty Market, built in 1898 for produce and trade, was quickly renamed Motor Square Garden in 1915 with the automobile craze. It served as a site for auto shows, and these shows drew large crowds: "Again the automobile beams in the spotlight, voicing loud its demand for attention, and Father Pitt, eyes bright with admiration, makes haste to give response"[28] Even today, the historic building retains its characteristic shell, but houses a AAA car insurance building. This building in a way serves as a metaphor for how quickly the car commandeered human-centric places and never gave them back. Some shifts in use are inevitable over time, and thankfully the building's exterior is still able to contribute to the overall urban fabric of the East Liberty Neighborhood. But this replacement contributes to an increasingly diminishing public "place" in American cities and prioritization of the automobile.

[27] Kwitny, "The Great Transportation Conspiracy."
[28] "Auto Enthroned in Renamed Palace." The Gazette Times, 6 Apr. 1913, p.1,6

Cars didn't just replace humans within existing buildings, they became a primary consideration as well for new modernist architecture. As discussed in Esperdy's book "American Autopia: An Intellectual History of the American Roadside at Mid-Century," car-centric spatial realms created new possibilities and challenges for architects.[29] New types of architecture arose from the age of the automobile and technology. One such style was the "Googie" style. [30] Googie was heavily influenced by the car-centric urban design that was developing, and its sleek design and emphasis on exciting curves showcased the positive connotation automobiles had begun to establish. New typologies also emerged such as service stations, car dealerships, and garages. Many criticized these and claimed they weren't deserving of the label Architecture[31]. In recent years, however, there has been more of an effort to preserve these significant structures. Regardless of whether or not this era in architecture should be preserved, these typologies quickly spread and started to interrupt the knitted urban fabric of towns and cities. With each new type, typology, and car-inspired design, efficiency and functionalism started to replace phenomenology and the culture of place. More

Figure 4: "Motor Square Garden, East Liberty," photograph, April 28 1960. In "The Motor Square Garden in East Liberty," East Liberty Development Inc. (blog), accessed September 30, 2025.

[29] Esperdy, Gabrielle. American Autopia: An Intellectual History of the American Roadside at Mid-Century, University of Virginia Press, 2019

[30] Hess, Alan. *Googie Redux: Ultramodern Roadside Architecture*. Revised ed., Chronicle Books, 2004.

[31] Esperdy, Gabrielle. id.

and more, the experience visiting a building started in a space for machines, not humans. And more and more, the needs of the automobile dominated the needs of people.

With the Federal-Aid Highway Act passed, automobile infrastructure rapidly carved up and destroyed American cities and the car obsession continued. These projects often targeted predominantly black neighborhoods and lower socioeconomic areas, further marginalizing underserved communities. Because the automobile allowed people to travel further, faster, zoning and different land uses were able to spread further. Urban sprawl began to spread rampantly. Cars were soon not just a convenience but a necessity in most American communities. This led to a cultural shift.

Cultural Implications

As mentioned previously, the automobile brought in a new era of architecture that correlated to the praise and celebration of its vehicular form and the new freedom and optimism it provided. Automobiles began to have meaning and impact within all facets of human life: "...the industrially manufactured object of the car, its social meaning as one major item of consumption, its economic meaning within the involved industries, services and patterns of dwelling, its dominating position with regard to other modes of movement and transportation, its cultural associations as well as its ecological impacts" (Fraedrich, 2015). As the knitted urban fabric was disrupted, and architectural designs favored those arriving by personal vehicle, urban sprawl flourished. As shown in the General Motors' Futurama, the human experience

at the street level was less of a concern. And this greatly impacted the public perception of city streets as unsafe and undesirable and many planners and sociologists raised large concerns at this. Jane Jacobs heavily discussed the degradation of the American public street. Her criticism included that of top-down city planning and high-rise housing that further disconnected people from the street. One of her main arguments was that without utilizing walking as a main form of transportation, there would no longer be casual public contact and interaction. "The sum of such casual, public contact at a local level…is a feeling for the public identity of people, a web of public respect and trust…the absence of this trust is a disaster to a city street."[32]

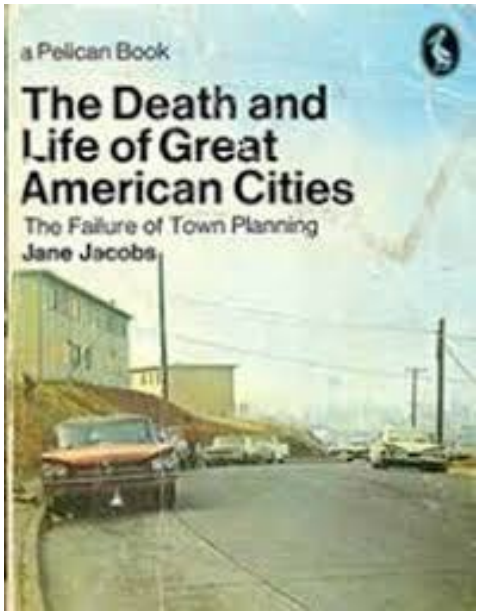

Figure 5: Jane Jacobs (1961), Death and Life of Great American Cities, Pelican Book Cover.

The Benefits of Multi-Modal Transportation

This section will cover the three main categories of sustainability- social, environmental, and economic- for multi-modal transportation.

Social Benefits

Increasing multi-modal transportation options come with a lot of benefits for society. Multi-modal allows increased opportunities for all. It provides increased

[32] Jacobs, Jane. The Death and Life of Great American Cities. Random House, 1961.

independence for those without the ability to drive a car, such as young and elderly people, or those with disabilities that prevent them from operating a vehicle. Investment in multi-modal enhances accessibility and equity of access, allowing those from various socioeconomic backgrounds to utilize an affordable transportation method. This blending of different backgrounds lends itself to greater social interaction and street activation. According to Jane Jacobs, "The sum of such casual, public contact at a local level…is a feeling for the public identity of people, a web of public respect and trust…the absence of this trust is a disaster to a city street."[33] Many multi-modal options also provide opportunities for a healthier lifestyle. Integrating walking or biking into a daily commute can come with significant health benefits.[34] As many Americans struggle with finding opportunities to integrate physical activity into their daily lives, a more active commute may prove beneficial. The epidemic of loneliness exacerbated by COVID-19[35] could also be mitigated by increased interaction among people, which is more likely to be found on public transit or public places as opposed to the confines of a car.

Environmental Benefits

In the discourse surrounding reduced car use, the environmental benefits are likely the most discussed. Cars are notorious for releasing greenhouse gases (GHG) and pollutants contributing to a decline in human and environmental health. "GHG from

[33] Jane Jacobs, *The Death and Life of Great American Cities* (New York: Random House, 1961).
[34] John Pucher and Ralph Buehler, "Walking and Cycling for Healthy Cities," *Built Environment* 36, no. 4 (December 2010): 391–414.
[35] Alan Greenblatt, "Loneliness Epidemic: CQR," *CQ Researcher*, vol. 33, no. 16 (May 5, 2023), accessed October, 31, 2025, https://www.woodhullfoundation.org/wp-content/uploads/2023/05/Loneliness-Epidemic_-CQR.pdf

transportation accounts for about 28% of total U.S. greenhouse gas emissions, making it the largest contributor of U.S. GHG emissions."[36] Large car infrastructure such as highways also contribute significantly to noise pollution, creating zones within cities and neighborhoods with incessant and unsafe levels of noise. While some public rail systems may be loud, they are often intermittent, rather than the constant drone of a highway. Something else important to consider is the environmental impact of the miles of roads required for a car-reliant system. Every year, the U.S. spends $27 billion on road expansion alone, adding about 40,000 miles of road a year between 2005 and 2013.[37] This increased access brings with it increased pollution, contamination of natural areas, and more roadkill incidents.

Economical Benefits

Road expansion costs the U.S. and taxpayers billions of dollars each year, and road maintenance increases this spending further, but has proven hard for the U.S. to keep up with. For the first time since 1998, the Infrastructure Report Card did not give the U.S. a D- in any categories. However, transit was one category that still received a failing D rating.[38] This rating was achieved even despite the U.S. spending

[36] U.S. Environmental Protection Agency, "Carbon Pollution from Transportation," *EPA*, accessed October 31, 2025, https://www.epa.gov/transportation-air-pollution-and-climate-change/carbon-pollution-transportation

[37] Daniel Iacofano and Mukul Malhotra, *Streets Reconsidered: Inclusive Design for the Public Realm* (New York: Routledge, 2019).

[38] American Society of Civil Engineers, *Report Card for America's Infrastructure*, accessed October 31, 2025, https://infrastructurereportcard.org/

$52 billion on highways in 2022,[39] and estimating that an annual $61 billion would be needed between for the next 10 years to maintain roads at a 2016 performance and condition. (Roads in 2016 received a D+ rating by the American Society of Civil Engineers). As of 2025, the Department of Transportation has allocated $108 billion towards the Federal Highway Administration, but only $57 billion towards the Federal Transit Administration.[40] Despite spending billions, roads are still not functioning efficiently. If this money was instead invested in public transportation, we may see improved connectivity and a more efficient use of taxpayer money.

In addition to being an expensive responsibility for the government, a lack of investment in public transportation also results in more expensive travel for Americans. Increasing multi-modal transportation would increase ridership opportunities, therefore allowing public transit options to become more affordable. Public transit use would also significantly reduce travel congestion on roads, more people travel within a single bus than most cars for example, and this could lead to increased productivity for workers and improved transportation of goods. More pedestrians on the street has also been found to increase commerce for businesses,[41] which could be particularly beneficial for small businesses. Multi-modal transportation allows for increased interaction between people, which can be socially

[39] Congressional Budget Office, "The Status of the Highway Trust Fund: 2023 Update," testimony by Chad Shirley (October 18, 2023), accessed October 31, 2025, https://www.cbo.gov/system/files/2023-10/59634.pdf

[40] U.S. Department of Transportation, *Budget Highlights: Fiscal Year 2025* (Washington, DC: U.S. Department of Transportation, 2024), https://www.transportation.gov/sites/dot.gov/files/2024-03/DOT_Budget_Highlights_FY_2025_508.pdf

[41] Daniel Iacofano and Mukul Malhotra, *Streets Reconsidered*

and economically beneficial, and it provides more efficient and environmentally friendly transport options.

Smart Mobility: Where we are now and what is means for the built environment

One of the largest, and most eye-catching, advancements made within the smart mobility realm in recent years is autonomous vehicles. This section will focus on the status, impact, and preparation needed for autonomous vehicles within the context of the built environment.

Brief explanation of Autonomous Vehicles

Autonomy refers to a vehicle's ability to perceive, decide, and act without any human intervention. There are currently five levels of autonomy, as outlined by the Society of Automotive Engineers, that range from 0- no automation- to 5- full automation.[42] Currently, there are 291,000 autonomous vehicles operating at a level 3- conditional automation. This means the vehicle can complete certain tasks under optimal conditions, but a human must be available to take over when needed. Autonomous tasks such as lane assistance, adaptive cruise control, and even self parking have started to become more and more available in a variety of car models. While Level 5 automation has not been realized yet, robo-taxis have started to emerge as 4- high automation vehicles that can perform all necessary operations within a defined environment.

[42] Markus Maurer, J. Christian Gerdes, Barbara Lenz, and Hermann Winner, eds., *Autonomous Driving: Technical, Legal and Social Aspects* (Berlin: Springer, 2016).

Autonomous Vehicle Advancements

In the United States, robo-taxis have started to emerge in technology-focused cities. San Francisco, for example, has started to see more and more Waymo robo-taxis on the streets. This has been met with mixed reactions from the public, with some excited and optimistic about a safer, easier and cheaper way to travel. But others are skeptical of the autonomous system and raise concerns about conflicts with emergency services or when things go wrong with a trip. Waymo is currently operating within four prominent cities in the U.S- Phoenix, San Francisco, Los Angeles, and Austin- and plans to expand to Atlanta, Miami, and Washington D.C. in 2026.[43] This expansion brings the U.S. even closer to automation becoming prevalent and this can have big impacts on the way cities are designed.

Autonomous Vehicle Opportunities

Since the beginning of the invention of the automobile, there has been research and discourse surrounding how to create autonomous vehicles. Today, as we are closer than ever to it being realized, theorists are attempting to dissect what this will mean for urban conditions. There are two main pathways that theorists gravitate towards when it comes to the future of cities with autonomous vehicles (AVs). One projection is that AVs will increase walkability and reduce car reliance. AV adoption will allow parking to be removed from city cores, fill the first and last mile gap of public transportation, and people can share cars, rather than owning their own,

[43] The Waymo Team, "Scaling Our Fleet Through U.S. Manufacturing," *Waypoint (Waymo blog)*, May 5 2025, https://waymo.com/blog/2025/05/scaling-our-fleet-through-us-manufacturing

reducing the total number of cars on streets. According to the U.S. Department of Energy, “Household vehicles were driven an average of 64.6 minutes on a typical day in 2022…park marked for the remainder of the time (95%).” This has large implications for land use patterns and could reduce the necessary parking and car storage space significantly. While I think parking and car-dominated spaces can be reduced, I don’t necessarily foresee complete removal of privately owned and human-operated vehicles in the near future, so the full benefits of automation will not be fully realized yet. The flexibility of being able to access an individual car when needed may allow people to start their journeys with other modes of transportation and resort to private vehicles only if necessary, ultimately reducing the amount of drive time and car reliance. However, other theories predict a less optimistic outlook for the future.

Autonomous Vehicle Challenges

Figure 6: “Image of the Waymo Driver vehicle in service,” photograph, in Waymo Driver: The world’s most experienced driver™, Waymo website, accessed October 31, 2025, https://waymo.com/waymo-driver/

The alternate trajectory for urban design with autonomous vehicle integration is exacerbated urban sprawl, longer commute times with more traffic, and worsened urban conditions. If riders are not required to pay attention to the operating of the vehicle, commute time is able to be utilized in different ways, reducing the value of travel time. This may seem like a benefit, but for urban sprawl it could spell disaster. “The reduced aggravation associated with commuting may lead to an increased acceptable commuting radius, increasing overall VMT and inducing additional GHG emissions related to urban

sprawl."[44] There is also the potential for the "outsourcing" of parking outside of the city core to further exacerbate disparities along the socioeconomic backgrounds of neighborhoods: "less desirable areas" may end up with concentrations of parking lots, similar to the way public utilities are treated. Or, cars may end up circling the streets with no occupants while waiting for a passenger, further increasing the presence of cars and the associated environmental and social harms. These two trajectories both shed light on the importance of preparing the built environment for some form of AV integration to mitigate the harmful effects and reap the most benefits.

Areas of Urban Impact

While there are two main theories, realistically autonomous vehicles will likely be integrated in a blurred, in-between scenario that manifests outcomes from either trajectory. Because of this, it's important to understand the areas that AVs will likely impact. The main disruptions as listed by Yigitcanlar, et. al. are, "urban transport, land use, employment, parking, car ownership, infrastructure design, capital investment decisions, sustainability, mobility, and traffic safety."[45] There will be a shift in building typologies, as car-based spaces, such as gas stations, repair shops, and dealerships, become less commonplace. This presents new real estate opportunities, and hopefully can improve the functionality and human-centric nature

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[44] Shelie A. Miller and Brent R. Heard, "The Environmental Impact of Autonomous Vehicles Depends on Adoption Patterns," *Environmental Science & Technology* 50, no. 12 (2016): 6119–6121, https://doi.org/10.1021/acs.est.6b02490

[45] Tan Yigitcanlar, Mark Wilson, and Md Kamruzzaman, "Disruptive Impacts of Automated Driving Systems on the Built Environment and Land Use: An Urban Planner's Perspective," *Journal of Open Innovation: Technology, Market, and Complexity* 5, no. 2 (2019): Article 24, https://doi.org/10.3390/joitmc5020024

of these locations. It will also be tempting for AVs to increase urban sprawl, regardless of preparation made, because of the decreased value in commute time they offer. This will have to be carefully monitored and will require active engagement from public policy leaders, urban planners, developers, and community members to mitigate the potential consequences of increased sprawl. Preparing urban design for an autonomous future indicates a focus on land use, public place investment, and public transportation improvement.

Related Urban Planning Strategies

There are many urban planning strategies that, while they don't focus on the specifics of smart mobility advancement, are relevant because of their focus on human-centric design and holistic approaches. While some of these strategies and terms may be new, the principles date back to the beginning of successful civilizations. Connectivity and accessibility are vital for vibrant communities and can be achieved through a variety of methods. This section will discuss the concept of proximity-based planning, multi-functionality, and planning based around modes of transportation.

The 15-minute City

One prominent proximity-based planning method is "The 15-minute City" by Carlos Moreno, a Franco-Colombian researcher, scientist, and professor. His book, "The 15-Minute City: A Solution to Saving Our Time and Our Planet" discusses how, "Cities should be designed or redesigned so that within the distance of a 15-minute walk or bike ride, people should be able to live the essence of what constitutes an urban life."[46] This approach of urban planning focuses on ecology, proximity, solidarity, and participation from communities and could reduce car reliance. Moreno works as an urban planning advisor to the mayor of Paris and through this role, has helped Paris take steps towards decentralization, multifunctionality within districts, and investment in alternative modes of transportation. One of Moreno's main arguments relevant to this thesis is that cars present a time-saving fallacy: the current design of many American neighborhoods enable cars to be quicker than travel by other modes of transportation. However, living in a car-reliant society enables services and activities to be more spread out,

Figure 7: "15-minute City, Mastering mobility with the 15-minute city, EIT Urban Mobility, January 3 2025, accessed October 31, 2025, https://www.eiturbanmobility.eu/knowledge-hub/mastering-mobility-with-the-15-minute-city/."

[46] Carlos Moreno, "The 15-Minute City: A Solution to Saving Our Time and Our Planet," *C40 Cities*, February 11, 2021, https://www.c40.org/news/15-minute-city/

which ultimately results in more time wasted on commuting. Implementing a decentralized and more multi-nodal approach to urban design could improve convenience for all modes of transportation.

Designing for Walkability

Even with a 15-minute city design, many Americans are still utilizing cars for trips that by distance alone should be walkable or bikeable. This is in part a result of cultural preferences and habits. But it's also due to the fact that many American neighborhoods are not safe for walking or biking. More walking and biking needs to be encouraged through pedestrian-centric planning strategies. Many urban planner researchers have proposed design solutions for walkability. Michael Southworth, professor emeritus of City & Regional Planning, and Landscape Architecture & Environmental Planning at UC Berkeley proposed six criteria for successful pedestrian networks: "(1) connectivity; (2) linkage with other modes; (3) fine grained land use patterns; (4) safety; (5) quality of path; and (6) path context."[47] Rania El Messeidy, an associate professor of Architecture and Urban Design in Egypt, cites that a decline in walking is a result of high-speed, loud traffic, an absence of quality pathways, and a lack of continuity in paths.[48] American streets will not be used by pedestrians unless they are designed to provide safe, enjoyable, accessible, and connected networks for people.

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[47] Michael Southworth, "Designing the Walkable City," *Journal of Urban Planning and Development* 131, no. 4 (December 2005): 246–257.

[48] Rania El Messeidy, "Towards Better Cities: Improving Walkability in Terms of Seven Principles," *Journal of Urban Research* 33, no. 1 (July 2019): 154-171

Living Streets

On the topic of street design, one relevant concept that has been developed in recent years is *Living Streets. Living Streets*, "...recognizes that, as a priority, streets should be designed with living and community interaction…a living street aims to balance the needs of residents, businesses, pedestrians and cyclists with cars…"[49] Activating the street improves safety and creates multi-functionality opportunities. Other urban planners, such as Daniel Iacofano and Muku Malhotra in *Streets Reconsidered: Inclusive Design for the Public Realm,* advocate for increasing pedestrian and biker safety through changes in street materiality, removing curbs and signage, and adding objects and vegetation in the street.[50] These are important considerations to help reclaim a land area that takes up about 20-25% of urban space,[51] but that is typically restricted to automobile-use only.

Regional Connectivity

Another strategy for urban design that supports effective public transportation is closing the gap in regional connectivity. "The current mobility culture is characterized by the fact that only private cars can provide individual and flexible mobility" (Hörl et. al., 2016). While larger cities especially along the U.S. northeast corridor have developed regional connectivity, other regions of the U.S. are severely

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[49] Mohammad H. Refaat and Nezar A. Kafafy, "Approaches and Lessons for Enhancing Walkability in Cities: A Landscape Conceptual Solution for Talaat Harb Street, Cairo," *International Journal of Educational Research and Reviews* 2, no. 6 (June 2014): 301–22,

[50] Daniel Iacofano and Mukul Malhotra, *Streets Reconsidered*

[51] Erick Guerra, Gilles Duranton, and Xinyu Ma, "Urban Roadway in America: The Amount, Extent, and Value," *Journal of the American Planning Association* 91, no. 1 (2024): 102–16, https://doi.org/10.1080/01944363.2024.2368260

constrained by car reliance for "out of network" travel. For example, below is a comparison of car travel versus public transit travel between city centers for a few prominent cities in the northeast and Midwest. All are roughly similar travel distances, and all except New York City to Washington, D.C. show the car as 30% faster than transit. This simple calculation also doesn't represent the amount of time it then takes for passengers to travel from the city center to their final destination, something that isn't part of the equation for car travel. This points to a lack of publicly available regional connectivity at an urban scale outside of the northeast corridor but also highlights how improving station accessibility may help reduce the overall transit travel time to allow it to better contest with car travel. While 30% less time is appealing, if transit can offer other conveniences, or the burdens of getting to public transit can be lessened, it may be seen as a more viable option. Philip H. Lewis Jr.'s analysis on this in "Tomorrow by Design" is insightful. He showcases how Wisconsin's railways are disconnected from regional and national railways, reducing opportunities for public transit use.[52] Simple design interventions for station location, accessibility, and

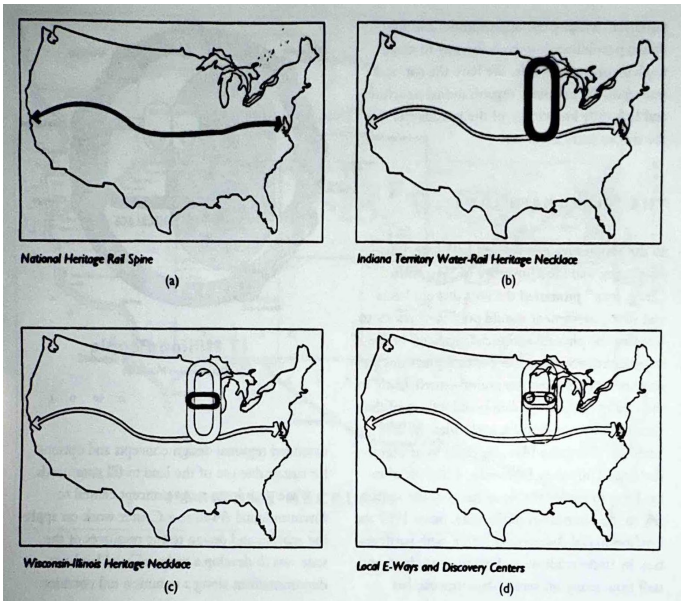

Figure 8: "Opportunities for Regional Connectivity," photograph, in Tomorrow by Design: A Regional Design Process for Sustainability, by Philip H. Lewis Jr. (Washington, DC: Island Press, 2015), 130.

[52] Philip H. Lewis, *Tomorrow by Design: A Regional Design Process for Sustainability* (New York: Wiley, 1996), 120

interconnectivity could prove impactful for regional and national travel.

Place-making and Cities for People

Lastly, as discussed in the section on the meaning of "place," urban design strategies need to integrate the development of authentic places rather than focusing solely on economic and time-oriented goals. " As Jan Gehl discusses in his book, "Cities for People" , enjoyable urban places promote versatility, complexity, and spontaneity.[53] Places should promote, "...overlapping and frequent shifts between purposeful walking, stopping, resting, staying, and conversing. Unpredictability and unplanned, spontaneous actions are very much part of what makes moving and staying in city space such a special attraction."[54] Overlap of usage, ability to be spontaneous, and opportunities to interact with people outside of normal social networks is vital for human health.

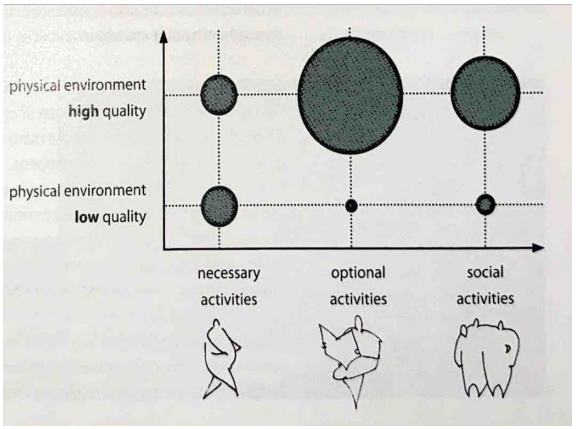

Figure 9: "Walkability requires supporting a variety of activity types," diagram, in Cities for People, by Jan Gehl (Washington, DC: Island Press, 2010), 21.

Conclusion

Simply removing cars from the equation without developing an infrastructure that allows for people to traverse without them will result in failure. Cities and neighborhoods have been carefully crafted to rely on cars, and this will take multi-disciplinary effort to undo. If car-dominated streets are converted into pedestrian

[53] Jan Gehl, Cities for People (Washington, DC: Island Press, 2010).
[54] Gehl, *Cities for People*, 20.

only, but pedestrians cannot afford to live close enough, there aren't public modes of transportation opportunities, or there is no reason other than recreation for people to occupy these places, then I believe they will be unsuccessful in American cities. This is especially important for considering a future with smart mobility and autonomous vehicles; these advancements don't have to lead to worsened city conditions. If affordability is prioritized, public transportation systems are expanded and invested in, and there is multi-functionality within walkable spaces, I believe American cities can become accessible, regain a sense of place, and allow social, environmental, and economic opportunities to flourish for everyone.

Chapter 3: Methodologies

Introduction to Research Approach

Unlike many other disciplines, a thesis in architecture can take on a variety of forms. The subjective and multi-disciplinary nature of architecture introduces more complexity. A successful architectural thesis can result in a spectrum of visual, spatial, and experiential outputs, and is oftentimes a proposition, not a final conclusion or result. This makes the approach and research intent that much more pertinent to the objective of the thesis. The research methodology dictates and directly influences the outcome of the project and so it is important to be intentional and critical with selection. The method of research used for this thesis aims to support a discourse on the historical, cultural, and architecture implications of transportation in the United States.

Theoretical Framework

The framework for this thesis revolves around a dialect. It focuses on the relationship between transportation and architecture for the future, and how, especially in the United States, there is a dichotomy between which way transportation innovation should progress. One route is advancing individual car use and technology that allows autonomous vehicles to provide safer, environmentally-friendlier and more efficient and accessible transportation. The other approach is focusing more on urban design principles that improve transportation, and further investment in public transportation infrastructure. This thesis will examine a

synthesis of these ideas, with the intent of showcasing urban fabric remediation, a reprioritization of users, and connectivity, accessibility, and improvement of multi-modal transportation. As Lucas mentioned, establishing the dichotomy is not, "...a blending of the two poles, but a true resolution of the issues raised by the dichotomy."[55] This approach will also incorporate a critical discourse analysis. Architecture shows cultural influences and societal prioritizations, reflecting the social context that it exists within. The resulting design and synthesis will aim to comment on this influence and reflect a more progressive shift and equitable approach to transportation and mobility.

Literature Review

A primary method of research for this thesis is a comprehensive literature review. This review starts with defining key terminology pertinent to the thesis topic. Given the multi-disciplinary nature of the architecture of mobility, this ensures key terms and concepts, or the perspective of them in relation to this thesis, are understood. The literature review also introduces a theoretical perspective on the importance of place and its relationship to architecture and transportation. Finally, there is a review of the cultural implications, societal attitudes, and leading theories and methods of interventions that highlight the variety of perspectives that people have towards the future of transportation.

[55] Raymond Lucas, Research Methods for Architecture (London: Laurence King Publishing, 2016), 24.

Site Selection and Analysis

The site itself was selected based on its type and uniqueness. As Lucas mentions, assessing what the site provides through its type, and its uniqueness so that it can comprehensively contribute to the thesis. The site selected showcases station design, highway interventions, parking lots, and the issue of creating walkability. It is unique because of the site's particular history with transportation, its ability to serve as an arrival to the city of Pittsburgh, and Pittsburgh's identity being closely related to mobility and transportation connectivity (think bridges, inclines, and steps).

The site analysis methodologies used encompass field studies, data collection, data collection, and short-term ethnographic studies. This gives a holistic view of the site and allows for the most informed design process. The field studies allowed a direct observation and diagramming of the site. I went to the site multiple times to observe how time of day, local events, and the time of year impact the use of the site. Using a sketchbook, I was able to sketch diagrams and record my observations. I also utilized a camera to photograph and video record various arrival points on the site, the circulation of the site and surrounding area, and the atmospheric conditions of the site. While conducting fieldwork, I also was able to conduct on-site interviews with passersby: a woman who lived in the apartments within the adapted Union Station building, a college student using the Greyhound Station, and a local Pittsburgher unaware of the Amtrak opportunities that the site offered. Finally, I collected data about the site, its history, and additional maps and views through online research, Google Earth, and Pittsburgh's historic records.

Precedent Analysis

Precedents were selected for their ability to showcase pertinent themes within the thesis. These themes include multi-functionality programming, typological similarities, organizational geometry and form, and site, climate and urban responses. Many of the precedents explored have an overlapping of these themes. For example, Yokohama International Passenger Terminal in Yokohama, Japan is an example of multi-functionality within a transit-programmed structure and also highlights ways that the architecture can relate to the site through form. Some precedents also serve as critical warnings of what not to do. Moynihan Train Hall in New York City for example is a precedent of a multi-transit station typology and for adaptive reuse. However, it also showcases some key failures of placemaking and public promenade. Precedents are examined through diagramming, images, and contextual research to understand how the projects related to their environments. They will be used for lessons learned, design insight, and architectural inspiration.

Interviews and Expert Analysis

Another component of research for this thesis is interviews with professionals and experts across the field of architecture, transportation, and planning. These interviews have given valuable insight into both the practical and theoretical aspects of transit design. Interviews are conducted primarily via video call and are conversational in nature. The intended goal of each is to gain additional perspective into how transit design is approached across disciplines. Oftentimes, interviewees share additional resources that I have been able to integrate into my literature review.

There have also been similarities among viewpoints, which add emphasis to particular elements in the design. Differences of opinions also point to opportunities for synthesis, discourse, and the development of my own perspective.

Conclusion

The goal of defining the applicable methodologies of research used throughout this thesis is to create an understanding of the outcomes and the direction of research. Overall, the methodology supports a dialect and cross-disciplinary approach, aiming to understand a variety of perspectives and the cultural context of the architecture so that the resulting design can be informed, effective, and commentary in nature. By utilizing a range of methodologies, the thesis will be comprehensive, allow for qualitative and quantitative reflection, and the hope is to encourage educated and insightful discussion about the future of transportation and architecture.

Chapter 4: Precedent Studies

Introduction

In order to have a better understanding of how I can develop a remediative and connected transportation hub, I looked at a variety of architectural precedents that span across project types. I reviewed a variety of transportation-focused buildings: airports, train stations, bus hubs, and port terminals. My search expanded outside of transportation as well, researching successful public buildings, parks, and adaptive reuse projects. The focus was not on a specific time period, geographic location, or project type. The six precedents that I chose to prioritize reflect this diversity. This

section will share the architectural significance of each case study, my rationale for including them in my research, and the discoveries I made throughout my analysis.

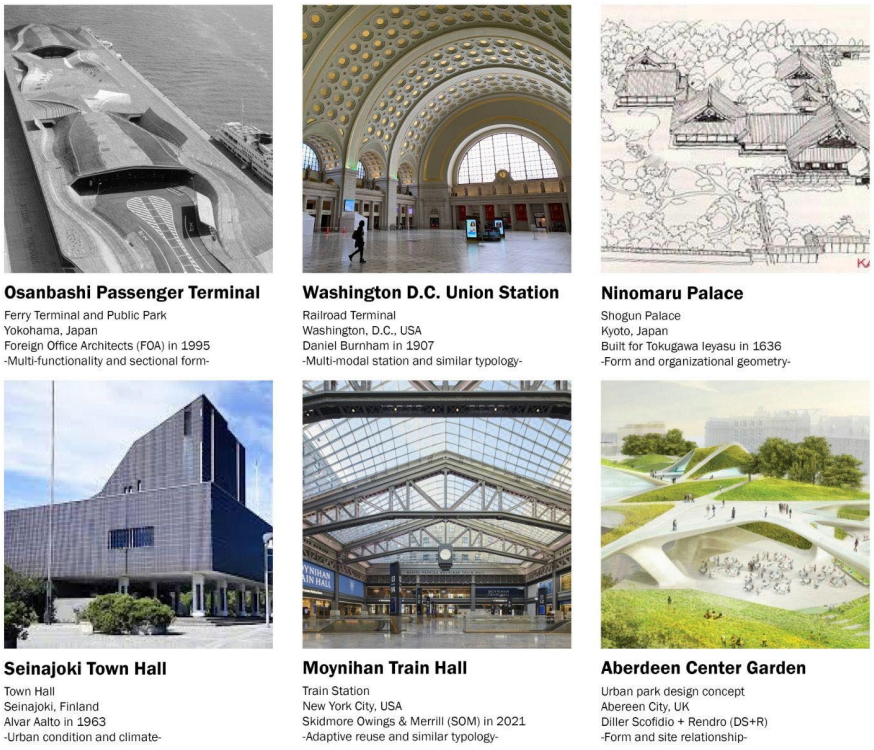

Figure 10: Overview of precedents analyzed. Created by author

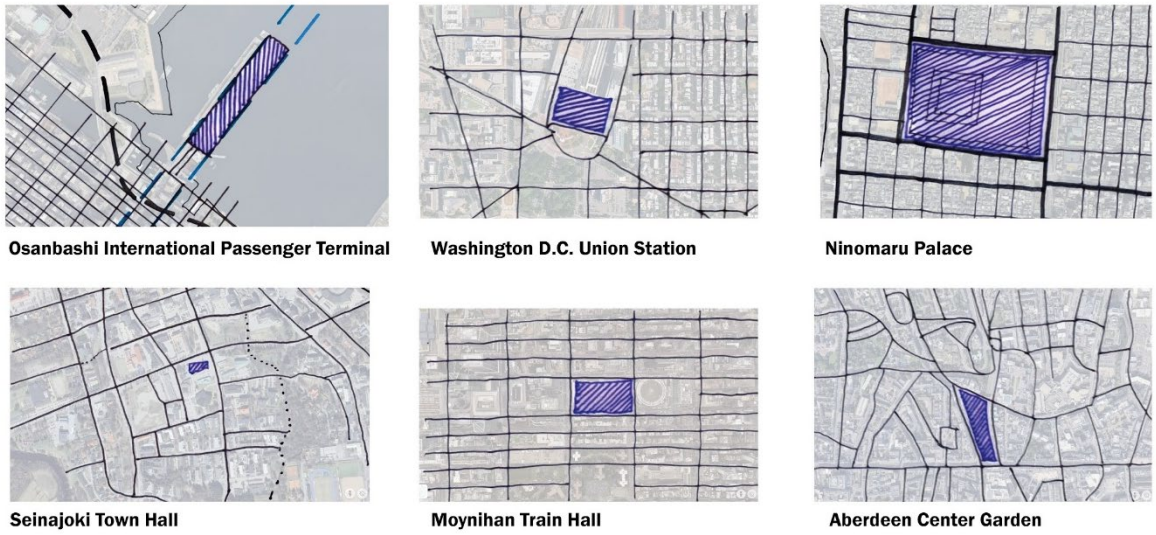

Figure 11: Shows urban fabric and plan scale comparison across the examined case studies .Graphics created by Author with Google Earth image underlays

Osanbashi International Passenger Terminal

The Osanbashi International Passenger Terminal located in Yokohama, Japan was designed by Foreign Office Architects (FOA) in 1995 and is a waterfront park and cruise port. This project is successful at drawing in the public outside of passengers. The terminal incorporates a variety of restaurants, event spaces, and an impressive park on its roof with views of Yokohama and the bay. The Terminal is very location specific and although it has civic and industrial purpose, it's also a public place that serves as a destination for people to experience freely. It

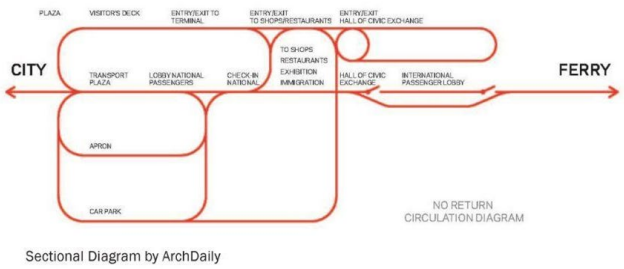

Figure 12: Sectional diagram provided by ArchDaily shows the interconnected circulation and how the ferry building ties into the city.

successfully combines multiple modes of transportation, while still prioritizing the pedestrian experience.

I selected the Terminal for its ability to combine a transportation typology with other interesting programming to create an activated space. The audience for the project isn't just the people using the port, although it greatly improves their experience as well. A port, which often can be very industrial and unwelcoming compared to other waterfronts, becomes a place. The overall form is visually captivating in section, plan, and throughout the circulation, but the footprint maintains a rectilinear shape that allows for efficient use. If it wasn't used for water travel, the project could even be integrated into a gridded system if needed because of the exterior platonic form. It capitalizes on the unique views offered by the site, and the form creates concentrated zones for activation. Pathways guide people to circulate and congregate in specific places, instead of creating a fully greened roof with no direction. The size of the project is likely successful because of the density of Yokohama, and this scale may not be as successful if it was located in a smaller or less dense city.

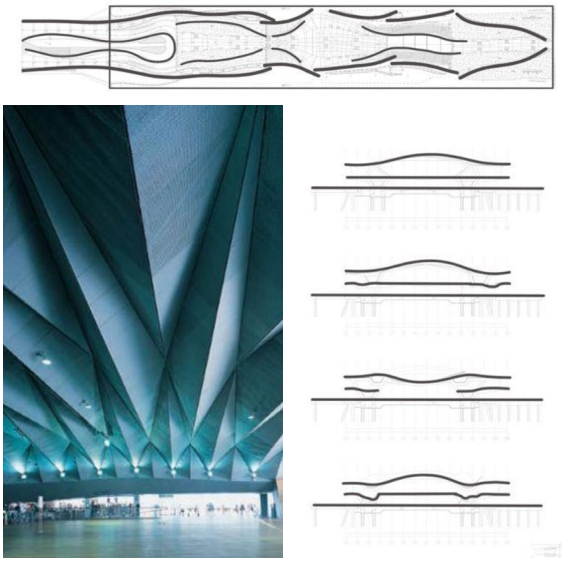

Figure 13: Folded plate ceiling and organic section create an engaging interior experience. Images from ArchDaily. Diagrams created by Author.

I have been to this park a few times and enjoy the activity level and visual interest of the architecture and landscaping. This building is interesting in that it fits

into the context without drawing attention away from the other views and landmarks in the area. I appreciate the materiality and form working as ornamentation. The simplistic materials match the context of the project and create a unifying piece that masks the detailed joints of the structure. These characteristics make the project feel organic and natural. The Yokohama Terminal is also a good example of integrating multiple forms of transportation arrival. While cars, buses, bikes, and pedestrians all arrive at the front of the building, the experience for each is thoughtful and enjoyable.

Washington D.C. Union Station Terminal

Union Station is one of D.C.'s largest transit hubs and serves as a train station, bus station, metro station, and public shopping and dining center for locals and visitors. In 2008 it was named one of the Great Public Spaces in America by the American Planning Association. The main lobby provides an interesting visual of crisscrossing pedestrian circulation. Union Station was designed by Daniel Burnham in the early 1900s. He utilized classic precedent and ornamental Beaux-Arts style for his design. Throughout the years, renovations and improvements have been added to incorporate multi-functionality, such as the addition of shops and restaurants, and to promote pedestrian and bike access, such as the addition of the bicycle transit center.

I chose D.C.'s Union Station for its location, architectural significance, and programming. Daniel Burnham is known for his impressive station designs and Washington, D.C.'s Station is no exception. While I admire the architecture, there are significant lessons to be learned from the functionality and use of the station. The station currently has no public seating available; All seating is privately managed and

restricted. This proves to be problematic when designing a public place and does not encourage people to activate and occupy the space long-term. A fairly recent renovation introduced a bike station near the main entrance to encourage multi-modal transportation, but it was converted into a police station. There is currently little to no bike parking available. Most of the retail programming found within the station also caters to visitors and tourists, rather than shopping that is helpful to those living in D.C. Some of the programming makes sense given that it is a transit hub and is a main arrival point for the city. However, a lack of programming for locals reduces the public activation of the space. The commercial and infrastructure/civic programming is interwoven and layered well within the building. There is also very easy access between the metro, bus stations, train station, and taxi pick-up. The pick-up station outside does reduce the pedestrian safety and comfortability, however, and the approach to the site from the exterior is mostly car-dominated.

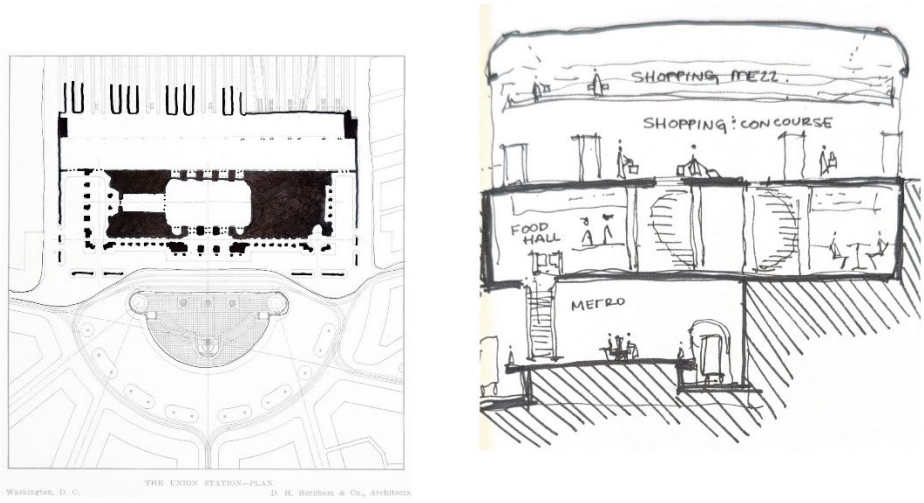

Figure 14: Figure shows public space vs. poche on the left and a field sketch showing the programming. Diagram created by Author over floorplan and Field sketch by Author during visit to Union Station.

Washington D.C.'s Union Station was helpful in gaining understanding of how a significant multi-modal transit station is operated within the U.S. I believe a lot

of the programmatic issues noted are a result of a lack of investment in public transportation. In this case, it is not a failure of the architecture but a failure of management and utilization. Increased formal surveillance may feel necessary in a station that is isolated and underutilized. But design that enables natural surveillance can increase perceived safety as well.[56] Seating and prolonged occupation of the space, such as restaurants and shops that are conducive to lingering, improves perceived safety and comfort. Removing seating and providing convenient food options may seem like an opportunity to reduce undesirable behaviors and improve efficiency, but it actually contributes to a hostile environment that feels less welcoming, less safe, and less desirable to everyone.

Ninomaru Palace

The Ninomaru Palace was built in the 1600s in Kyoto, Japan and served as the Palace for Tokugawa Ieyasu. I chose this building because of its ability to showcase an interesting gridded system, its relation to nature, and its geometry and organizational properties.

While the building is ordered, the overall form created is not just a box. The grid evolves and scatters the massing to create a form that is asymmetrical but balanced. I appreciate that the Palace is situated in a very dense city, and the outer perimeter adopted this gridded shape. The moat and site walls create a border that

[56] Jennie Perey Saxe, Crime Prevention through Environmental Design (CPTED) for Public Transit Stations (Newark, DE: University of Delaware; prepared for the SMARTER Center, Morgan State University, September 2024).

protects the inner natural haven. Despite a rigid exterior, the interior is allowed to form freely. It also has interesting circulation and indoor/outdoor relationships. The entire compound is layered, alternating between walls, living space and non living space. It's important to remember the purpose of this building, and that the architecture was heavily influenced by the need to protect its occupants. While the Palace has a very different typology, and restricted entry is not an objection of mine, the geometry and ordering principles are still admirable and relevant to architectural design.

Figure 15: Interesting grid with smaller intermittent zones as thresholds between the larger main spaces. Spaces are layered and overlapping. Diagrams created by Author.

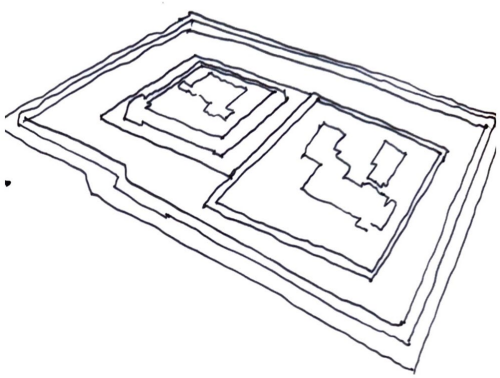

Figure 16: Diagram created by Author showing the layers of water, earth, and plant on the site

The main takeaways from this building are its geometry and form relationship to the surrounding natural elements. The building fits well within the context both on the urban level and the garden level without exactly replicating elements. I also think the use of an organizing grid and platonic shapes to create an overlapping unique form could be adopted well within a complex transit station.

Figure 17: Photos of Ninomaru Palace. The building mimics the height and form of the surrounding trees. Photos by Author.

Seinajoki Town Hall

Seinajoki Town Hall was the second of two architectural competitions that Alvar Aalto won for the center of Seinajoki, Finland. This gave him the unique opportunity to relate the projects to each other through the design of an urban center. Aalto was said to be inspired by Italian piazza's: "...the square appears as a forum, with an Italian-inspired seating area, the piazza, in the background."[57] The enclosure matches the urban space and signifies the primary destination through a change in height. The Town Hall is also a great example of creating a promenade and experience on the way to the building that revolves around pedestrian use. Aalto aimed to create a public square that invited discourse and interaction. It is interesting and related because of its ability to connect multiple civic buildings through a series of public squares. The architecture is humble through its size and materiality, but still conveys particular significance through the massing. I also chose this building in the hopes that it would provide insight into designing outdoor public spaces in a climate that isn't always comfortable. Aalto is successful at creating a building that is civic but isn't so monumental that it doesn't fit within its context. Being able to design much of the context helped with this. The main space is highlighted by popping up in elevation and massing. The form is also very bioclimatically motivated. The main space massing maximizes daylighting from the West, and the large overhand at the front prevents a build up of snow. This building is a good example of matching the

[57] Alvar Aalto Foundation, "Seinäjoki Civic Centre," Alvar Aalto –säätiö, accessed October 15, 2025, https://www.alvaraalto.fi/en/architecture/seinajoki-civic-centre/

context and street network without being restricted by the grid. Seinajoki's streets are fairly organic but still have some semblance of a grid to them. Aalto is respectful of this, but the footprint is still very additive in its massing rather than consuming the entire lot provided for the building.

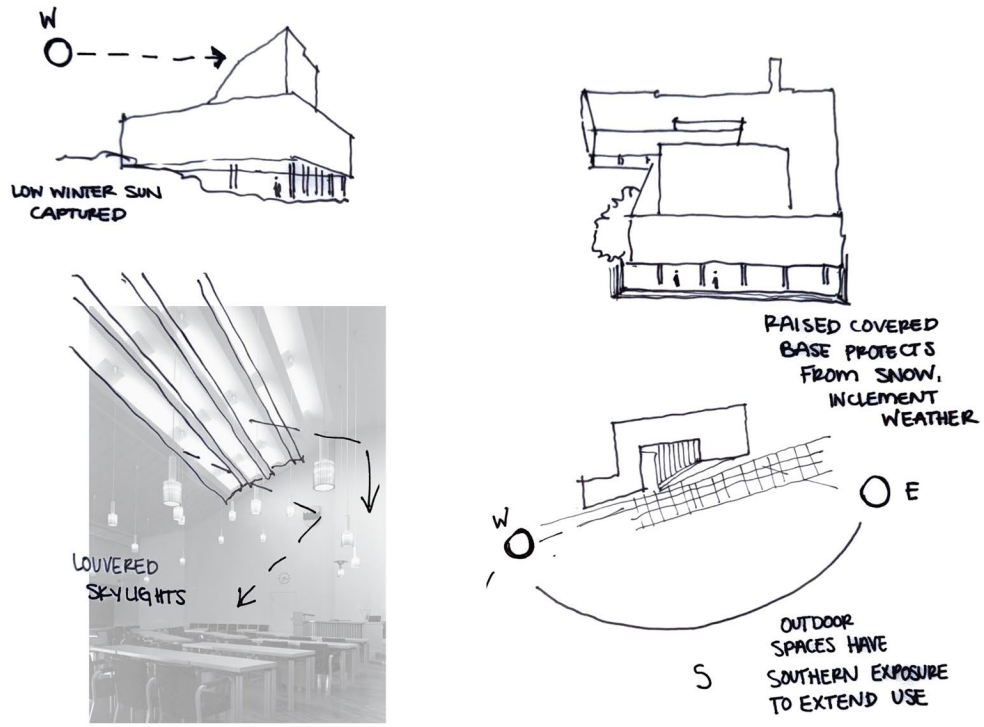

Figure 18: The Town Hall captures as much sunlight as possible, diffusing it to the main spaces. The outdoor spaces are oriented for solar exposure, and the base is lifted and covered to avoid snow. Diagrams created by Author.

New York City Moynihan Train Hall

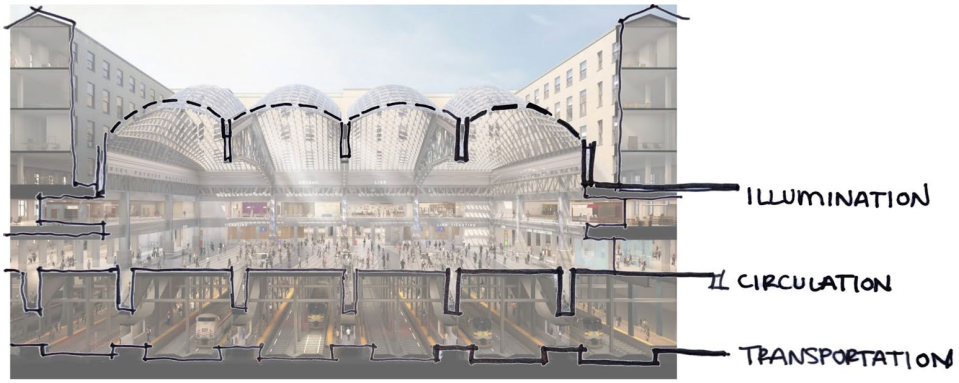

Figure 19: Layers of profiles seen in the section of Moynihan Train Hall. Diagram by Author over Section Perspective from ArchDaily.

The Train Hall renovation's main purpose is to create a new sense of arrival into the city, preserve the character of the original station, and activate the station through additional multi-functionality. The original Penn Station was tragically demolished in the 20th century, and replaced with the Farley Building. The Farley Building sat above the still running platforms below, but was predominantly empty. This renovation revived the Farley building as a transit and commercial space. The main concourse space exposes the original steel trusses of the building, and floats a dynamic skylight above them to provide a contrast between the old and the new. The building intentionally incorporates civic spaces, public art displays, and public circulation within the station that connects to developments that neighbor it.

I chose this building for its ability to adaptively reuse a building and transform it into a multi-functional transportation hub. I appreciate its careful intervention and ability to preserve the historic elements of the building while creating a lively public space. I really enjoyed the layers of sectional profiles found in the cross-section of the building. The top skylight created a profile that mixed the new skylights with the old

steel trusses, the middle plane was given a similar, interesting profile through the punctures of the escalators down to the platforms, and finally the sub-ground profile is created by the rise and fall pattern of the platforms and tracks.

While I appreciate how this building mixes functions with the train station, it seems to have some of the same issues as Union Station in Washington D.C. The oversized public space doesn't feel as interconnected as it could be. I noticed a lack of public seating within the main concourse, which seems to detract from the placemaking intention of the project. However, there are a lot of different types of restaurants and shops, and they are intermixed within the transportation spaces. This is an improvement over Union Station's programming. Despite this, a lot of the interiors look too polished, blank, and open. I think incorporating more human elements, seating, and smaller elements that people can congregate around in the main concourse would make the space feel more inhabited and welcoming.

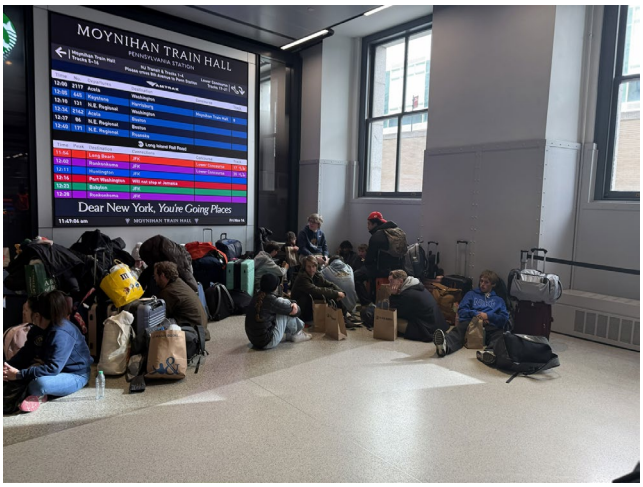

Figure 20: Passengers waiting for trains sit on the floor due to the lack of public seating. Photo taken by Author November, 2025.

Aberdeen Center Garden

This project is the winning entry for a competition for the design of the Aberdeen Center Garden in the UK. Diller Scofidio + Renfro designed a space that

was sensitive to the context and culture, was innovative, and could become an urban auditorium for the city.[58] While the community was initially hesitant to the design, they grew to love it. But, ultimately, the city government disapproved of the design and the funds were used elsewhere. This project was never fully realized, and the site still remains an underutilized park.

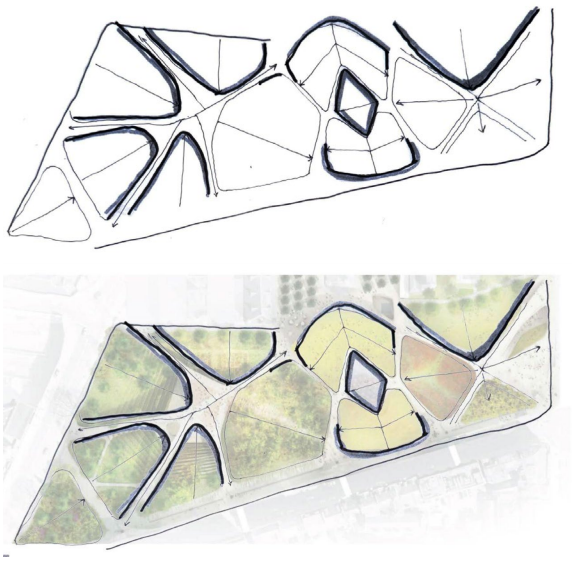

Figure 21: Landscape design acts as an interconnected web to reconcile the topography changes and provide outdoor spaces. Diagrams created by Author.

I chose this project for its ability to act as a web for an urban fabric tear in Aberdeen City. The interwoven form is visually interesting and provides multi-sectional opportunities that relate to the demands of a multi-modal station. I appreciated this project's ability to reconcile the steep topography changes on all sides of the site. There appears to be three different levels, and the form allows an interwoven web that interlocks the topography change. It is unclear what the underground interior programming would be, but the partially covered pavilion is inviting and seems like it would create an enjoyable environment for the entire park. One concern with a project such as this is there are a lot of private areas away from the street. This may create safety concerns. I am unsure what the

[58] "Aberdeen City Garden Trust," Archello (website), accessed December 4, 2025, https://archello.com/project/aberdeen-city-garden-trust

relative safety is for Aberdeen City, but this sort of form in an American city may pose a problem without careful consideration of visibility and access.

Conclusion

Through this case study analysis, I have developed a tool set of various architectural elements and features that can apply to a transportation hub design. The Osanbashi International Passenger Terminal is a successful example of multi-functionality within a transportation-oriented structure. Its form and sectional properties are useful at creating enjoyable spaces for transit users and the general public. Washington, D.C.'s Union Station and Moynihan Train hall both provide insight into functioning transit stations in the United States. Union Station was built in the 20th century, and so the architectural language and organization reflects the grandeur that was associated with train travel at the time. Moynihan Train Hall is a recent development and showcases the creative reuse and reignition of an existing train station to create an exciting, multi-functional experience. However, each has its flaws related to programming and place-making that inspire a slightly different approach for this thesis. Although not transit-oriented, Seinajoki Town Hall and Aberdeen Center Garden bring inspiring precedence for public place design. Both projects relate well to their context, and are appropriately designed for climates that are similar to my site location. Seinajoki Town Hall treats light as a previous resource, and creates outdoor spaces that can still be enjoyed despite the colder months in Finland. The Town Hall is designed at an urban scale, similar to the scale of intervention I'm proposing. Aberdeen Center Garden, although not fully realized, is a unique topographical reconciliation and inspires the form and site relationship I

am striving to create. Finally, the Ninomaru Palace, despite being different in typology, use, and time period, provides a refreshing look at organizational form and simple geometry. Its rugged exterior relates to the dense urban fabric of Kyoto while carefully providing interior spaces that relate to the organic gardens protected within. Together these precedents inspire architecture that relates to the site topography, climate, and nature, provides multi-functional, human-centric places, and is visually interesting and aesthetically distinct.

Chapter 5: Site Selection

Introduction

Examining how architecture can transform transit stations into convenient, enjoyable, and multi-dimensional public destinations requires a very contextual and site-driven approach. There are a multitude of factors that contribute to transportation accessibility and utilization: availability, safety, density, geography, socioeconomic backgrounds, and even culture. Since architecture is typically something that occupies a given place and is often (quite literally) anchored to the ground, designing in a way that is compatible with a site's context is important. The site will be selected with the intention of showcasing an example of strategies and design interventions, providing an alternative to the typical approach. It can potentially inspire replication in other situations, but it will not be a prototype that can be exactly copied.

Site Positioning

In order to demonstrate the impact architecture can have, the site will need to meet criteria in geographical location, contextual opportunities, relationship to transportation, and existing conditions.

Geographic Location

For the geographic location, the site will need to be located in a general urban to urban core zone. While the project may develop "tendrils" with smaller interventions in sub urban or more rural areas, it will not be a successful demonstration of the potential for public transit if the focus is in a very spread out area. A successful site will also have some topographical challenges that may provide interesting opportunities for public transit to serve a role. For example, walking is sometimes undesirable because of steep hills or waterways. These are opportunities for public transit to alleviate some of the responsibility of a car. The ideal site will be in a medium-sized metropolitan area with adequate density to support a transportation system and potentially unique topography opportunities.

Contextual Opportunities

This leads into the next category of criteria: contextual opportunities. In order to exemplify the solution, the site will need to either already support walkability or have the potential proximity to support walkability but the current design is preventing it. This means that site selection will be influenced by the surrounding amenities. A mix of existing land use will make the project integrate better. For

example, I will be looking for an area that has already begun to develop commercial and residential properties within proximity to each other. An entirely commercial district may not be as successful because it would require me to address the need for housing as well as transit. The ideal site will have a mix of commercial, residential, and civic or public typologies nearby, but may not be easily accessible without the use of a car in its current arrangement.

The culture of the site is also an important contextual factor. I don't think a transit-oriented design would be as successful in an area that is incredibly individualistic and lacks any utilization of public transportation. A city like Arlington, Texas, which has no public transportation, would not be an ideal candidate because there wouldn't be any cultural inclination to tap into. I also don't think a city that is already inherently public-transit oriented would be as impactful either. New York City, for example, has areas that could be improved, but because it is already fairly integrated, the cultural shift wouldn't be as profound. I will be looking for a site in a city such as Baltimore, MD or Pittsburgh, PA where there is currently a reliance on cars, but it is not necessarily out of preference. Both cities also foster a culture that supports community-scale infrastructure, localism and collective care that may be more open and excited for a shift towards public transit.

Relationship to Transit

In addition to land use variety, I will also be looking for a variety of existing transportation systems. Given that this is an architectural thesis and not a transportation planning project, I will aim to focus on the architecture that interacts

with the systems and less on redesigning the transportation itself. The ideal site will have at least two different modes of public transportation that intersect or are close by. The project is agnostic to the main form of public transportation used as the goal is to destigmatize the general use. However, given the often disruptive impact that trains can have, I think the inclusion of rail travel would be interesting.

Site Existing Conditions

To showcase the success of an intervention, the existing conditions of the site need to be unsuccessful. Intervening on a fully functional site will not necessarily prove anything and will be less impactful. I will be looking for a site that has transit infrastructure, but it is either in poor condition or not operating effectively in its current state. For example, maybe there is a robust public transit system that is used frequently, however it requires driving to access or is hostile to everyone except paying passengers. I will be looking for a site that lacks key place-making elements such as seating, vegetation, or walking safety measures. This is not an essential criterion because I intend on incorporating these elements regardless of the existing condition, but a lack of them would provide an opportunity for further improvement. And lastly, I think it's important for the site to show evidence of damage or impact from automobiles. A key element of my thesis is that this project can help to remediate damage done from the car-centric planning of the 20th century. A site that either is near, under, or divided by a highway would be helpful to illustrate remediation tactics. It would also be emblematic to utilize land that was devalued by highway construction in a way that benefits the public. A site with excessive parking lots is also a consideration. This project intends to improve public transit and reduce

car reliance in the hopes of also reducing the need for so many parking lots. An ideal site would be located at or nearby to dysfunctional transit stations and some form of car infrastructure that is currently creating undesirable conditions for its neighbors.

Site Documentation

Given the criteria shared above, the site selected is located in Pittsburgh, PA surrounding the existing Union Station. This section will introduce the site and share contextual, geographical, and bioclimatic background information on the site and its surroundings.

Justification for Pittsburgh, PA

The city of Pittsburgh was selected for the exploration of this thesis because of its identity intertwined with transportation and infrastructure. The steep topography, river convergence, and the steel industry created unique opportunities for mobility solutions. For example, the incline, a funicular system that traverses hills, is still used today to access Pittsburgh neighborhoods, as well as public steps and prolific bridges. Pittsburgh was also severely impacted by the urban renewal highway infrastructure of the mid-1900s. Downtown Pittsburgh is wrapped by highways, and there are highways up and down the riverfronts that often block resident access to the water.

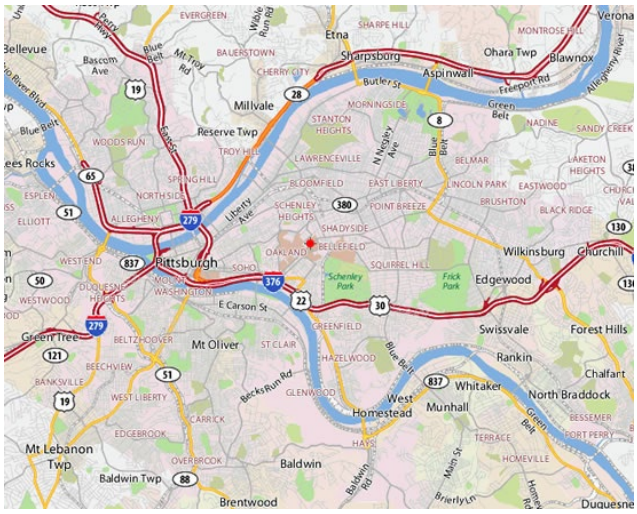

Figure 22 shows the highway infrastructure lining the riverfronts and circling around downtown Pittsburgh, PA. Image taken from ArchGIS by Author.

Pittsburgh also has the opportunity to be more of a regional connector as it sits between Chicago, IL and the American Northeast corridor. The current Amtrak frequency is lacking between Pittsburgh, but Amtrak has expansion plans to create more connections between Pittsburgh and Chicago, IL, Philadelphia, PA, and Washington, D.C. The current infrastructure of Pittsburgh's station would not support these improvements very well and further necessitates an intervention.

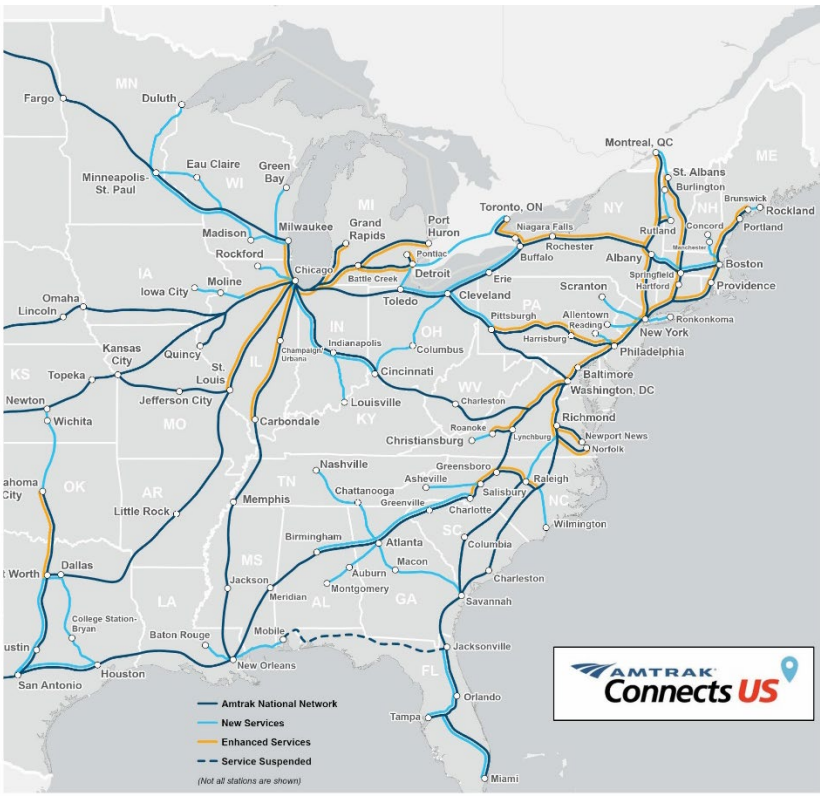

Figure 23: Planned Amtrak Expansions. Image from Amtrak Connects US

Finally, Pittsburgh's current infrastructure creates an opportunity to close the gap in experiential quality between city arrival via private car and via public transportation. When arriving to Pittsburgh from the airport or from the west of the city, the approach goes through Fort Pitt Tunnel. This tunnel goes underneath Mount Washington and at the end of the tunnel, travelers emerge on one of the many bridges above the three-river convergence and with a great view of the Pittsburgh skyline. This experience utilizes the concepts of conceal/reveal and compression/expansion to create a powerful sense of arrival. However, this is experienced by car. The arrival to Pittsburgh via other modes of transportation is not as grand. One of the main reasons for this missing sense of arrival is the delipidated architecture and undignified urban

design surrounding the public transportation arrival hubs. This created an opportunity for architectural interventions to improve this experience.

Figure 24: The Pittsburgh Arrival via Amtrak Train. Photos taken by Author.

Neighborhoods and Surrounding Context

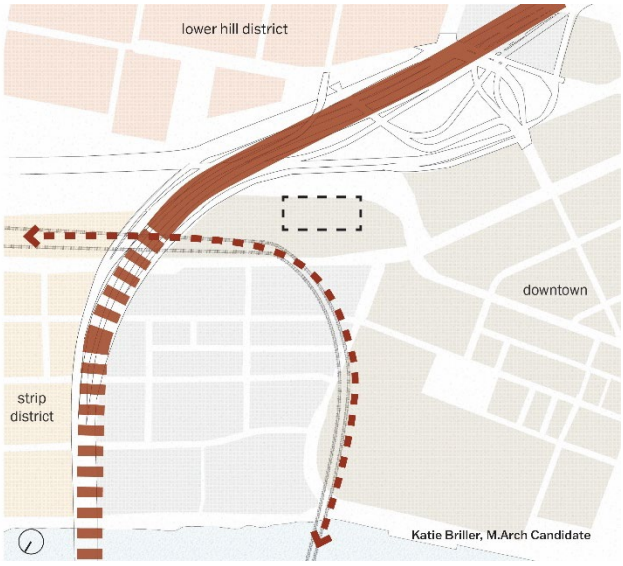

Figure 25 shows the neighborhoods divided by the highway and railway infrastructure. Diagram created by Author.

There are three neighborhoods that converge at the selected site: the Strip District, Downtown Business District, and the Lower Hill District. Each has starkly

different demographics, making this convergence an important node for connectivity and rebuilding an equitable experience across all three.

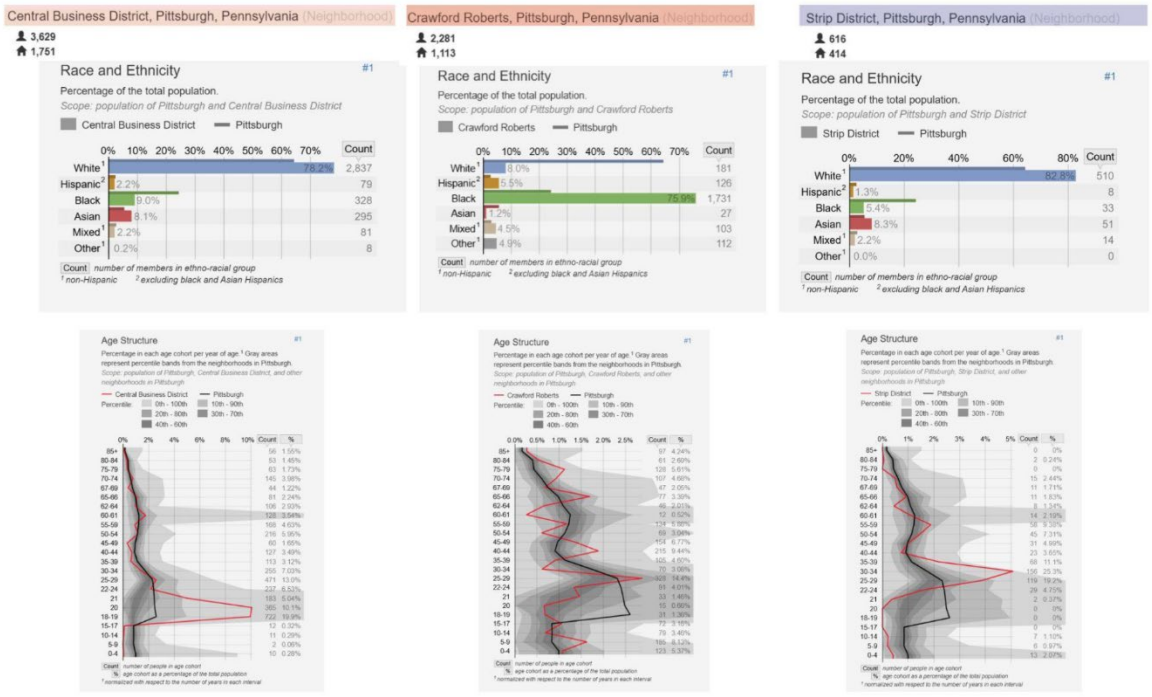

Figure 26 shows the race, ethnicity, and age structure for the three neighborhoods that surround the selected site. Data and charts were collected from Statistical Atlas and the US Census Bureau

The Lower Hill District/Crawford-Roberts Neighborhood

The Lower Hill District, or Crawford-Roberts Neighborhood, consists of about 2,200 residents, is predominantly black, and has a rich cultural history. This community was unfortunately failed by the urban renewal period. The highway and renewal projects of the mid-1900s divided the Hill District from Downtown, severing connection and harming the economic and cultural prosperity of the neighborhood. Today, Crawford Roberts has one of the lowest median household incomes across all Pittsburgh neighborhoods with a median annual income of $18,900. The age structure shows

there is a spectrum of ages, indicating that many households consist of families with children.[59]

Strip District

The Strip District used to be mostly industrial and freight yards. In recent years, it has slowly seen more investment and adaptive reuse of existing industrial buildings for commercial and residential purposes. It is predominantly white and consists mainly of young professionals. The population is low at about 600 residents, but this is quickly growing. It currently has one of the highest median household incomes in Pittsburgh at $93,000 a year.[60]

Downtown/Central Business District

Downtown, or the Central Business District, is home to "the Point" or where the three rivers converge. Most of the programming is civic, commercial, or educational in nature, but post-COVID-19, more residential and mixed-use buildings are being integrated. There are approximately 3,600 residents, that are predominantly white and between the ages of 15-25 years old.[61]

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[59] "Overview of Crawford-Roberts, Pittsburgh, Pennsylvania," Statistical Atlas, accessed November 15, 2025, https://statisticalatlas.com/neighborhood/Pennsylvania/Pittsburgh/Crawford-Roberts/Overview.

[60] "Overview of Strip District, Pittsburgh, Pennsylvania," *Statistical Atlas*, accessed November 15, 2025, https://statisticalatlas.com/neighborhood/Pennsylvania/Pittsburgh/Strip-District/Overview

[61] "Overview of Central Business District, Pittsburgh, Pennsylvania," *Statistical Atlas*, accessed November 15, 2025, https://statisticalatlas.com/neighborhood/Pennsylvania/Pittsburgh/Central-Business-District/Overview

Programming Nearby

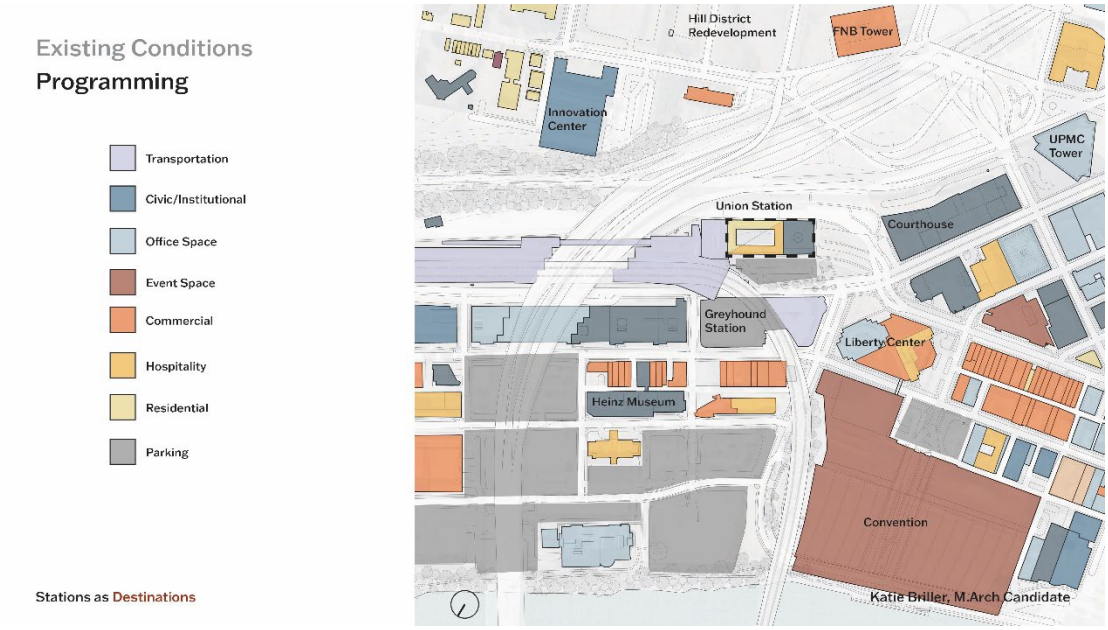

Figure 27 shows the existing conditions and programming surrounding the site. Diagram created by Author.

While the historic Union Station is no longer used for transportation, the transit remains within the area. The train shed and service areas behind the building now house the Amtrak train station. Directly across the street is a six-level parking garage that houses the Greyhound regional bus station on the ground floor. Located to the south of Union Station are the Martin Luther King Jr. Busway stops, and an abandoned T-Line station. These transportation hubs will be discussed in greater detail in the following sections.

The broader area shows a variety of programming, largely civic, commercial and hospitality-focused. There are many skyscrapers visible from the site, including Pittsburgh's tallest building, UPMC tower, as well as the newly finished FNB tower to the south. The David L. Lawrence Convention Center designed by Vinoly Architects is located to the northeast along the Allegheny River. Surrounding the

Convention Center are various hotels and a wide swath of parking lots utilized for events.

Current Transit Infrastructure and Transportation Options

The Existing Union Station

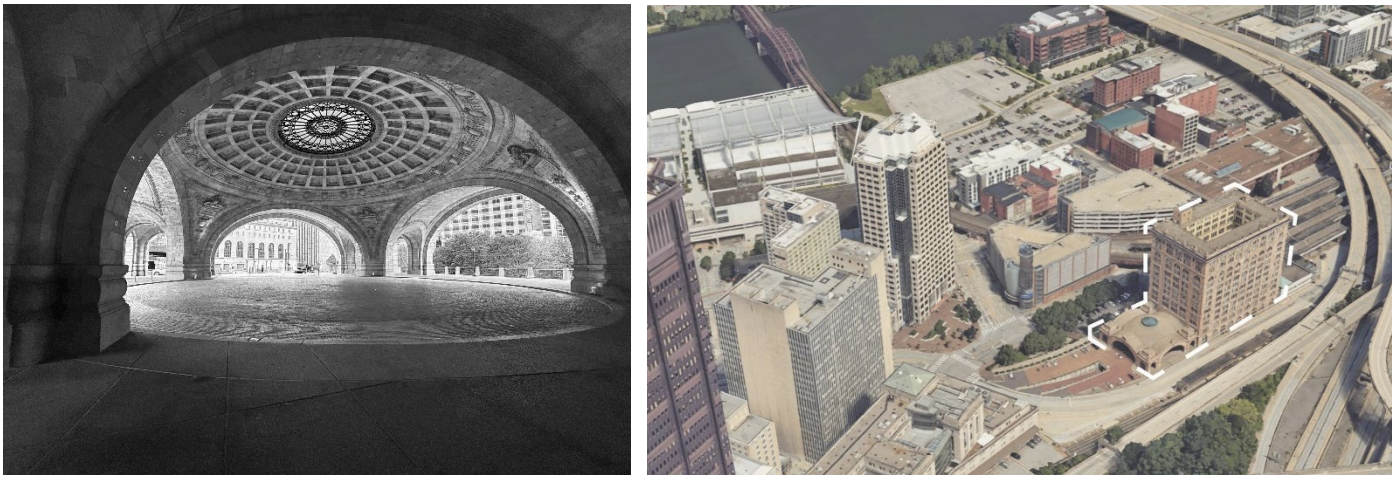

Figure 28: To the left is an image of Union Station's Rotunda taken by the Author. To the right is a 2025 Google Earth image of Union Station the main intersection

The original train station was designed by Daniel Burnahm towards the end of the 1800s. It was designed to replace the station that was burned down during the Pittsburgh railroad strike of 1877. One of the prominent features of the building was the front entry rotunda that created a grand arrival to the city of Pittsburgh. The location of the station was very prominent as it sat at the convergence of the grid.

This gives the site direct access to many of Pittsburgh's landmarks and connects it directly into the urban fabric of the city.

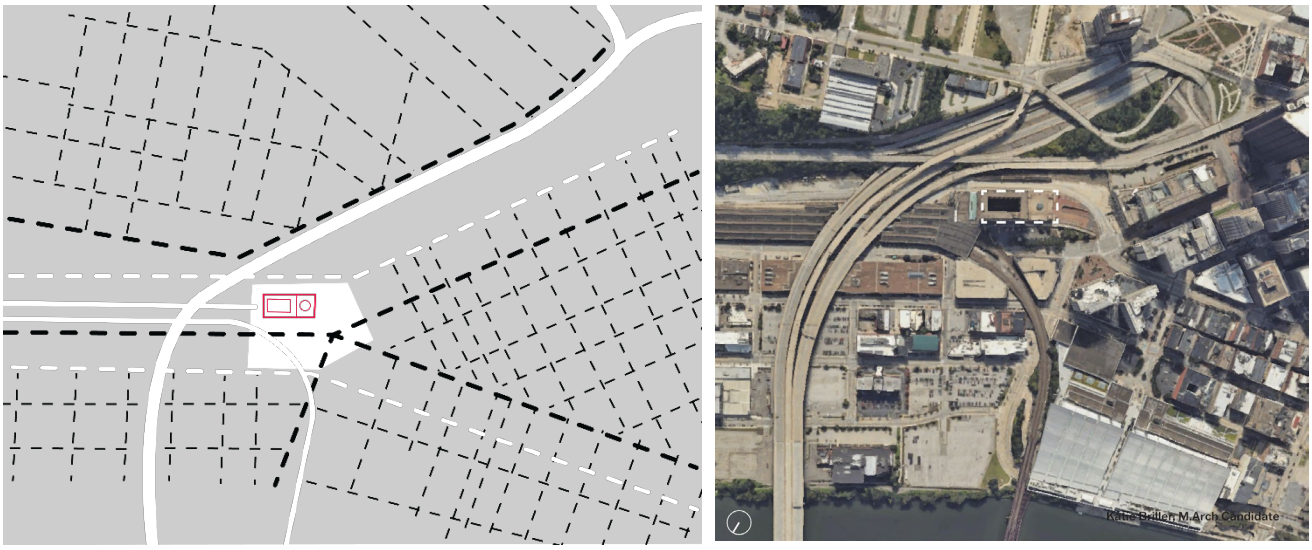

Figure 29:To the left shows the original Union Station in red, situated at the convergence of the urban grid. To the right is an aerial image of the site with Union Station outlined in white. Diagram created by Author, aerial image taken from Google Earth.

Modes of Transit

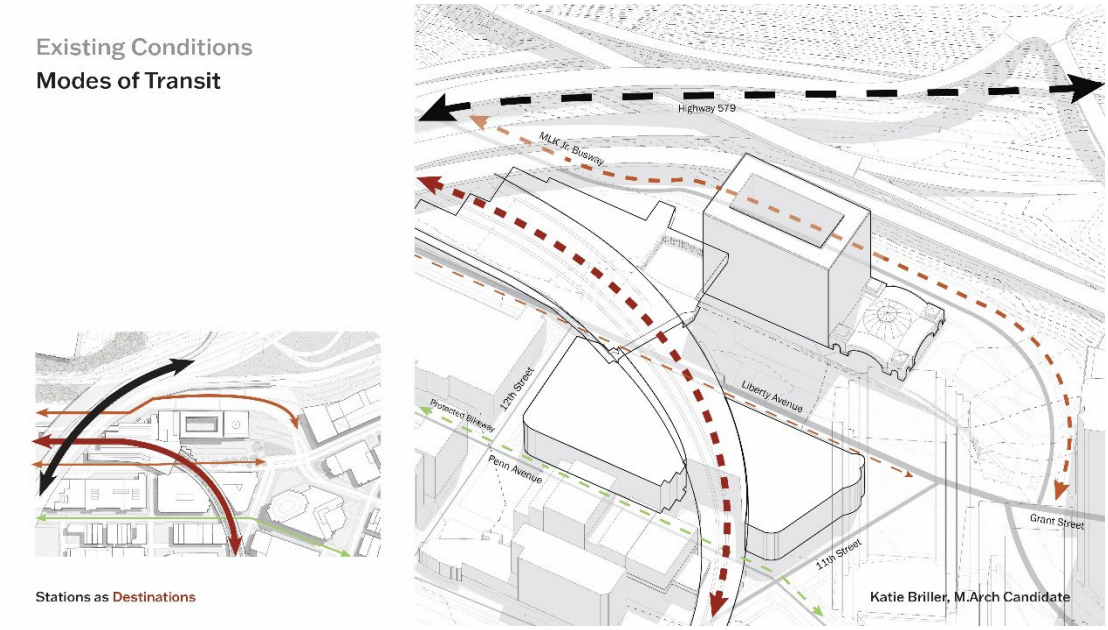

Figure 30: The modes of transit that run through and along the site. Diagrams created by Author.

There are various networks that run through the site. The two main roads are Liberty Avenue and Penn Avenue. To the north is Penn Avenue bikeway that runs from the suburbs of Pittsburgh all the way to Point State Park. Liberty Avenue serves as a main route for local bus lines, and the Martin Luther King Jr. Busway runs behind the Union Station building and terminates at the intersection in front of it. This busway is a bus rapid transit line that goes from the suburbs into downtown Pittsburgh. The railway runs over the existing parking garage and Greyhound bus station. Finally, Highway 579 curves along the south side of the site.

The Regional Bus: Greyhound Station

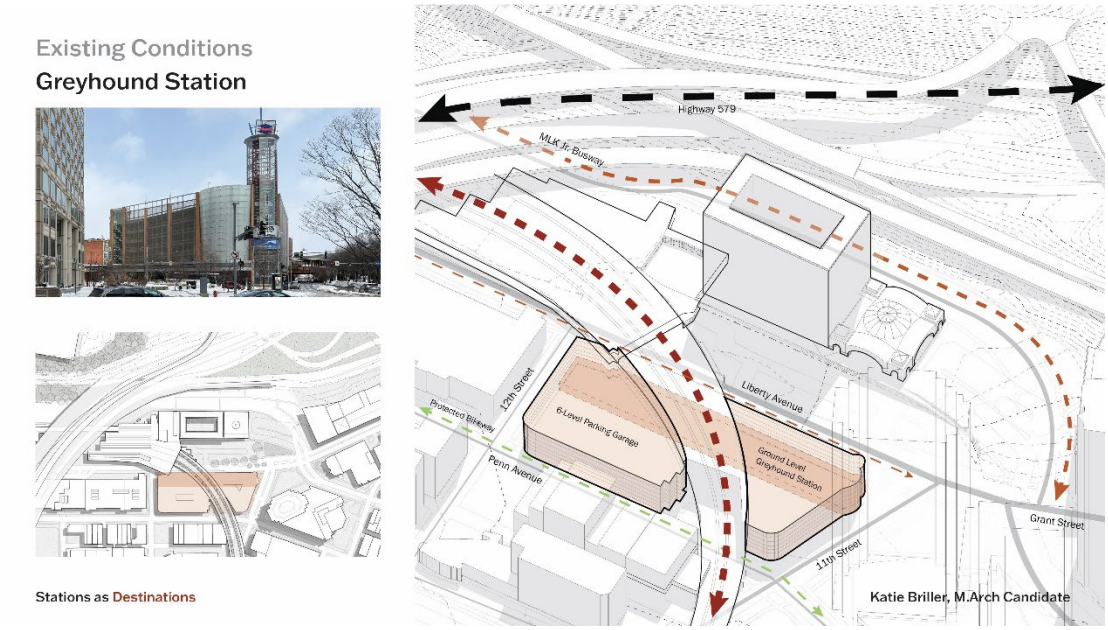

Figure 31: The Greyhound Bus Station. Image taken by Author and diagrams created by Author.

The greyhound station occupies the ground level of a six-level parking garage between Liberty Avenue and Penn Avenue. It sits at the direct convergence of the urban grid and remains largely underutilized. Greyhound buses enter along 11th Street, park and load underneath the railway structure, and exit on 12th Street. The

existing Greyhound station has no windows to the exterior, creating an undesirable street and waiting experience.

The Train: Amtrak and Railway

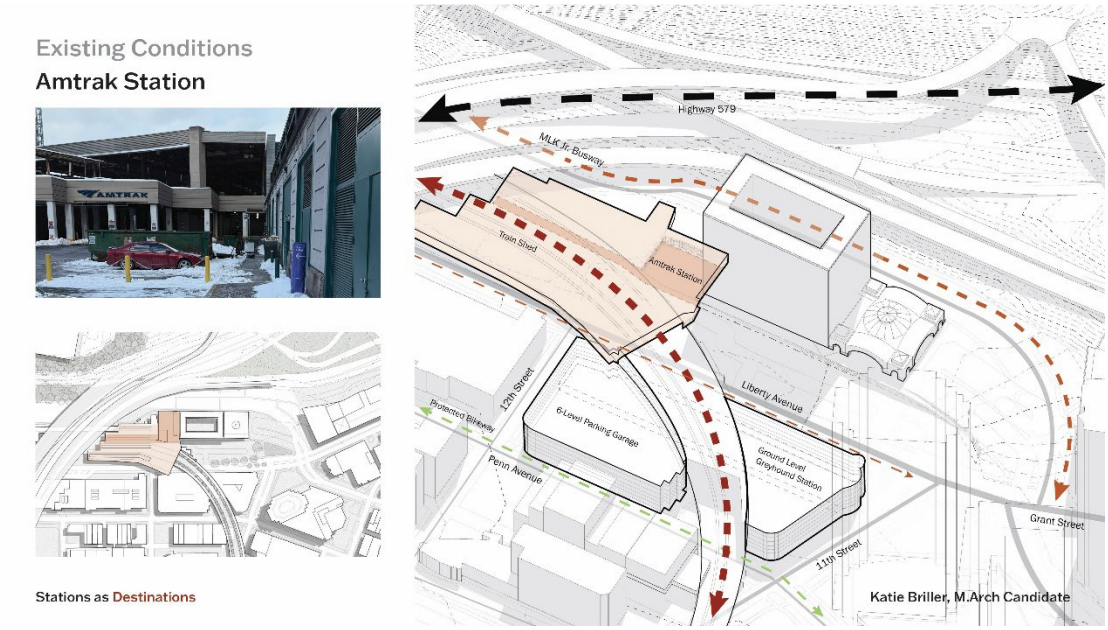

Figure 32:The existing Amtrak Station. Photo taken by Author and diagram created by Author.

The existing Amtrak station occupies the service areas of the original building. The entrance is located behind a loading dock and private parking lot and underneath the exposed railway, contributing to a lack of arrival and an undignified experience. The station has a small, windowless waiting room with an escalator, stair, and elevator up to the platform on the level above. There are two active railways that run through the station and 1 terminal rail. The existing infrastructure used to have five through-rails, meaning it is oversized for current needs.

The Local Bus: The MLK Busway

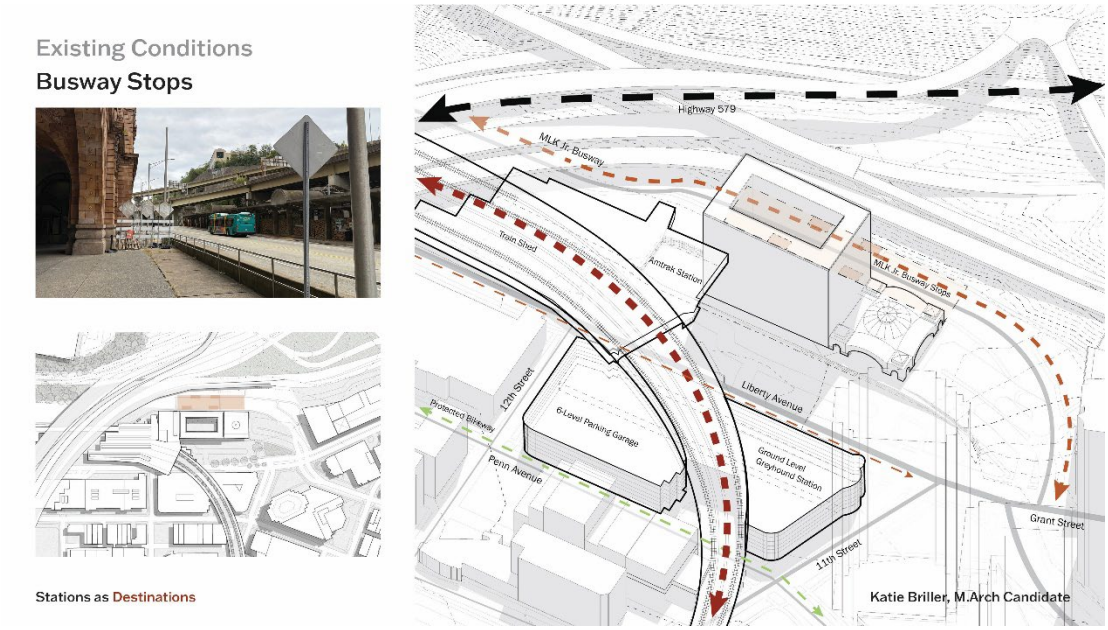

Figure 33: The existing busway stops. Photo taken by Author and diagrams created by Author.

The busway stop sit along the busway behind the Union Station building. The sidewalks leading to the stops have been closed for years, forcing people to either walk in the street to access the stops or technically trespass through the now privately-owned rotunda.

Bioclimatic and Topographical Study

Weather Conditions

Pittsburgh, PA is known, and even celebrated, for its abundance of water. It consistently ranks among the top 10 rainiest and snowiest cities in the United States.[62] This means that the proposed design will need to accommodate accumulated

[62] Statista Research Department, "Major U.S. Cities with the Most Rainy Days 1981–2010," Statista, published December 31, 2011, accessed May 21, 2026.

precipitation and will need to offer spaces that can still be enjoyed in inclement weather.

Topography

Figure 34: 12' topography contours. Diagram created by Author.

The site is located at the bottom of the Hill District, which appropriately earned its name from the steep topography that it sits upon. The elevation of the site is 742 feet above sea level, roughly 30 feet above the Allegheny River. The Lower Hill redevelopment projects are between 830 and 930 feet above sea level, indicating a steep climb from the site to the Lower Hill District. This means that connecting across the highway also requires reconciliation of the steep grade change.

The site itself has a grade change that the proposed design will need to accommodate. The MLK Jr. busway and railway run 16’ above Liberty Avenue. The grade slopes down behind and in front of Union Station to meet the intersection of Liberty Avenue and Grant Street. The existing Amtrak Station reconciles this grade change with an entrance at the level of Liberty Avenue, and vertical circulation that takes passengers up to the level above. In addition to this jump in elevation, there is a 2’ grade change across the site between Penn Avenue and Liberty Avenue.

Conclusion

Due to the site-drive nature of this thesis, the proposed solution will need to accommodate the topographical changes and weather challenges of the site. It will need to artfully weave the complex transportation networks together in a way that prioritizes pedestrian and bike access, all while complementing the surrounding programming and existing historic attributes. Achieving this harmony is a driving force for the project.

Chapter 6: Zones and Program

Program Abstract

The United States needs to further invest in public and multi-modal transportation, especially with the development of autonomous vehicles, to ensure an accessible, sustainable, and equitable future. Currently, the U.S. is very car-centric, and the urban fabric is heavily disrupted by urban sprawl. Rather than autonomous vehicles making this worse, a multi-functional transit hub can integrate autonomous vehicles into the system while still encouraging shared rapid transit systems, walking, and biking. This thesis will explore the design of a multi-functional transportation hub that integrates personal, public, and non-motorized transportation. Many stations outside of the U.S. integrate mixed-use development and provide public centers for cities in addition to transportation. Unlike other countries, transit stations in the U.S. often serve a single purpose: to access transportation. I believe creating a transportation center that could serve as a public place and destination for users outside of just transportation riders would increase the use, efficiency, and desirability of public transportation. My goal is to prove that investment in quality architecture that supports efficiency, easy access, and human-centric, enjoyable experiences within transportation centers can increase public and multi-modal transportation use and develop public places for human interaction.

Program Introduction

The programmatic elements of a transportation hub are inherently site-specific. There are certain abstracted programmatic goals that must be considered in order to create a transportation hub that serves as a public destination and supports convenience, enjoyment, and multi-dimensionality within mobility. A sense of arrival and connectivity is vital to improve regional connectivity and use. This quality focuses on how architecture can announce arrival or act as a portal. The station can serve as a physical connector through the transportation options, but also as an urban fabric connector by bridging gaps. A successful public destination should also harness programmatic qualities of a public plaza. This programming focuses on human-centric design. Many plazas within cities today are focused on the aesthetics and are simply meeting a city requirement for public space. Public places should be framed as places that provide respite, awe, relief, and opportunity. This can contribute to the experience, integration, and connectivity of the transportation hub.

Another important programmatic factor for any approach to a transportation hub is the platform or stop. It is the arrival point for the visitor, the visitor's first interaction with the place, and is often highly frequented. The platform should balance the needs of transportation systems with the needs of people. Platforms or stops need to be efficient and enjoyable for daily users, but also interesting and experiential for newcomers. Finally, a successful multi-functional transportation hub needs programmatic elements that support its multi-functionality. This particularly sector of programming is heavily dependent on the schematic approach of the thesis. For example, a main theme within this thesis is reducing car-reliance, and this can be

exemplified in a variety of architectural interventions. To support this theme at the selected site in Pittsburgh, PA, programming could cater to the increase in new residential occupancies in the Downtown District. A grocery store or market would be applicable so that those living Downtown do not have to commute via car for groceries. However, an architectural intervention could also exemplify a reduction in car-reliance by focusing on the visitor's experience and prioritizing the needs of regional travelers. A hotel or food hall would be more applicable to this approach as it creates enjoyment and improved convenience for those that choose to travel without a car.

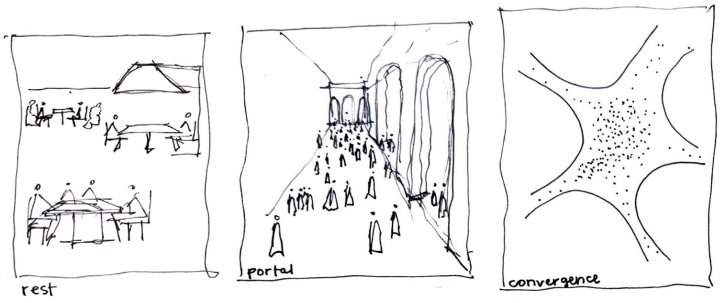

Figure 35: Themes of a Concourse by Author

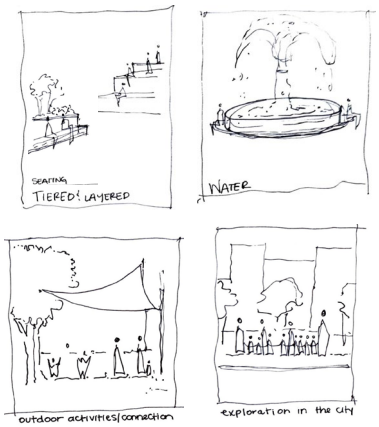

Figure 36: Qualities of a Public Plaza by Author

Because of the broad spectrum of uses that a multi-functional station can provide, I have outlined three schematic approaches to consider for the overall concept and main station functions: station as a bridge, station as a convergence, and station as a network. Each approach responds to the site selected and showcases the main themes of the thesis, but the specific program will vary slightly. Despite variations, each approach incorporates roughly the

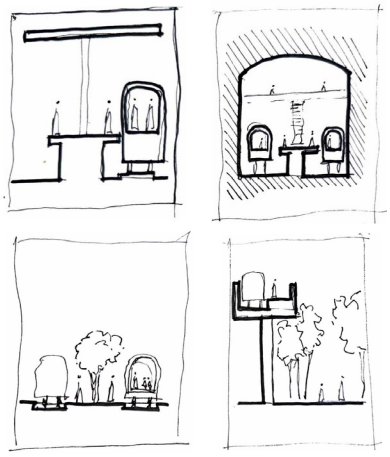
Figure 37: Platform Experiences by Author

square footage shared in the accompanying figure. The main differences would occur in the programming function for elements such as the market or daycare: the

Figure 38: Multi-functionality Features by Author

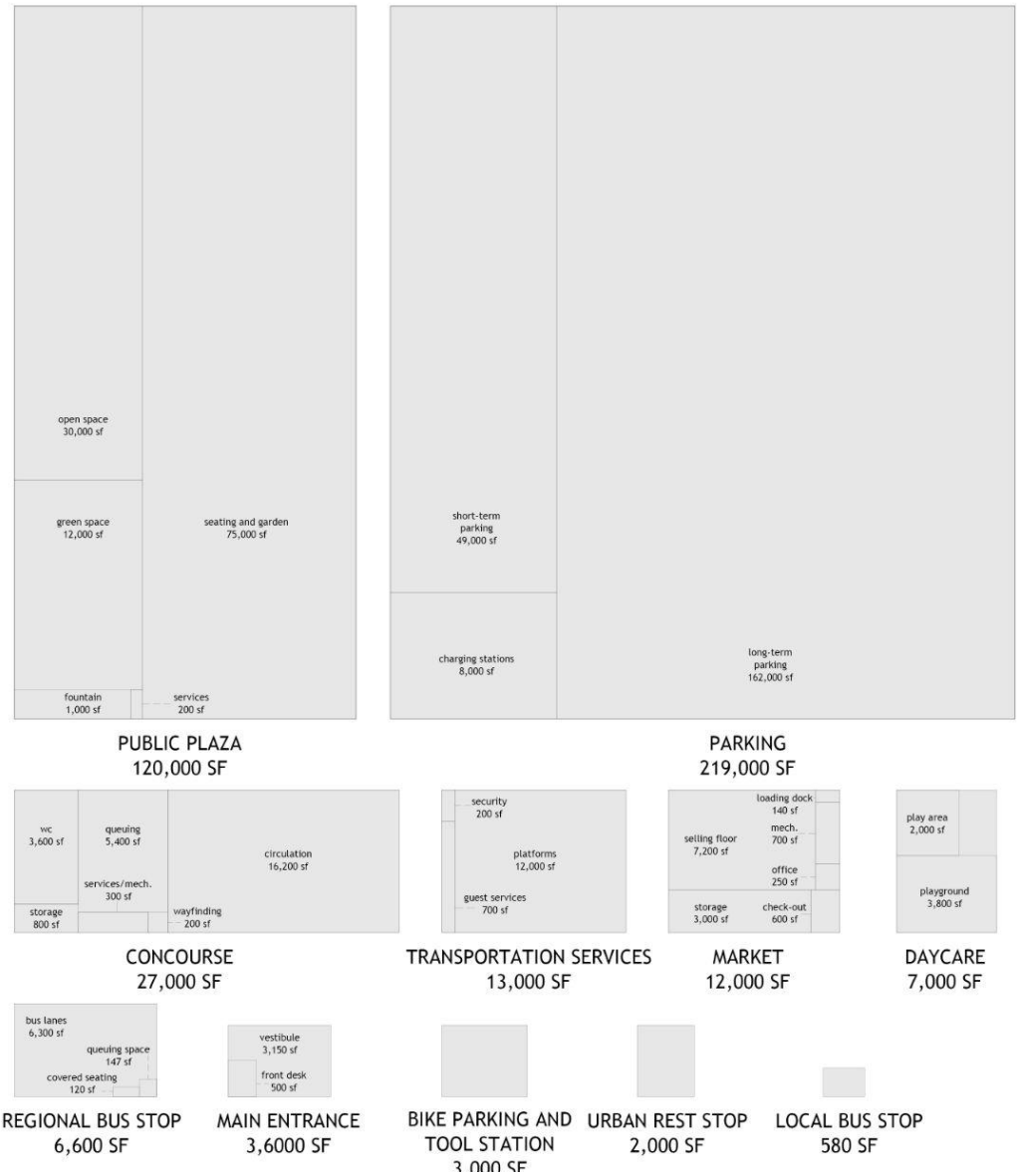

Figure 39: Graphic representation of proposed square footages for programmatic elements. Created by Author.

square footage that these amenities occupy will remain similar. These three concepts will be investigated further in the following chapter.

Washington, D.C. Union Station: Reverse Engineered

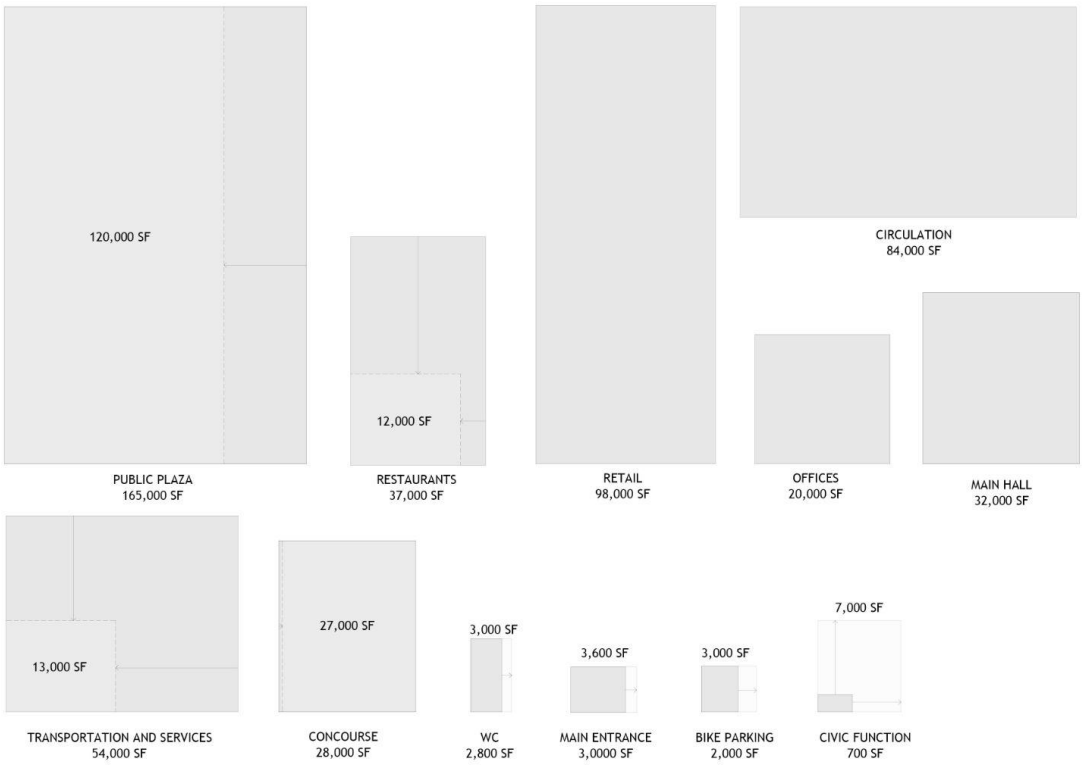

Figure 40: Washington D.C. Union Station Graphic Representation of Programming Square Footages. Created by Author.

In an effort to understand the programming of a typology similar to the proposed design solution, I reverse-engineered the programming of Washington D.C.'s Union Station. Coincidentally, both Pittsburgh's and D.C.'s Union Station were designed by Daniel Burnham, but this wasn't the reason I chose Washington D.C. 's station for a programming deep-dive. I chose D.C.'s Union Station for its

similarities to the Pittsburgh Union Station, my knowledge and understanding of its scale, and the multi-modal and multi-functional programming it houses. As shown in the supporting figure, both Union Stations are similar in size, but their programmatic square footages are surprisingly different. Still, because of the relative similarity in scale, it felt like a good starting point for programmatic understanding. This thesis will showcase the design of a transportation hub that incorporates many modes of transportation but also emphasizes the urgent need for mixed-use, density, and pedestrian-centric design surrounding transit stations. D.C.'s Union Station incorporates a range of programming and is located in the heart of the city.

This exercise was insightful and convinced me to stay open-minded about the potential sizing for various programmatic elements. There are a couple programmatic elements within Union Station that I chose not to include in my programming studies: retail, offices, and a main hall. Based on the programming studies I've conducted on my selected site, there is an abundance of office and retail space nearby so this would not be a helpful addition to the Pittsburgh transit station. Union Station also had significantly larger restaurant space. Again, because of the nearby programming, this seems to be less needed. The public plaza is larger than what I am currently estimating; I believe this makes sense given that D.C. is a larger city and Union Station is traversed by significantly more people than Pittsburgh's station. Finally, the transportation and service spaces provided at Union Station was significantly larger than what I was previously estimating. Because of this, I decided to increase my estimated space for this programming to ensure that the multi-modal elements of the design have adequate room.

There are also programmatic elements at Union Station that are smaller than what I am planning for: the bathrooms, bike parking, and civic functions are significantly smaller. I believe these increases in programming are necessary to support a more enjoyable and accommodating experience. For example, there are very limited bathrooms in Union Station and this creates less desire for people to linger. One of the intended goals of the proposed design is to provide more public places so programming that supports this is necessary. Additionally, the increase in bike parking is in response to the prominence of biking in Pittsburgh and the nearby "bikeway." Finally, the small increase in concourse square footage compared to Union Station is likely due to my grouping of the main hall in this category instead. While Union Station has a smaller concourse than what I am proposing, it has a much larger main hall and circulation space. This seems appropriate given the larger population in D.C.

Chapter 7: Discovery Phase and Conceptual Testing

Introduction

This chapter will showcase the preliminary testing of the concepts and approaches outlined in the previous chapter. The first three sections discuss the initial conceptual approaches, each with specific programmatic focuses. Next, this chapter will share the conceptual testing conducted at the beginning of the design process. Finally, it will share conceptual iterations explored throughout the design process,

and end with the proposed conceptual approach. While the design process included extensive iterations not included here, this chapter will highlight the most prominent of the process and share how they contribute to the final proposal.

Station as a Bridge

Station as a Bridge explores how the arrival to Pittsburgh, PA via public transportation is not celebrated like the arrival by car. The focus is on regional and neighborhood connectivity and a sense of arrival contributing to the use and enjoyment of multi-modal transit. The concourse is grand and may need additional square footage. Including a platform that seamlessly transitions and is easy to access is important. Taxi and rideshare services should be easily accessible, but ideally buses and bikes are more appealing. The public plaza may be smaller and more about connecting; the station can serve as a portion of the public "plaza." Additional multi-functionality would focus on hoteling or amenities that cater to visitors, such as a food hall or shopping.

Station as a Convergence

Station as a Convergence explores how the site is currently an area of ambiguity but is surrounded by amazing architecture and important programming. The site is fractured and vehicles are prioritized at the expense of all other occupants' experience. All of the programmatic infrastructure is present for the site to serve as a convergence of multi-modal transportation; however, it is not currently functioning as such. This schematic approach focuses on how a transit station can serve as a convergence and a connector within Pittsburgh, PA, reducing the need for individual

car use. A focus on centrality and fixing the fractured nature of the current site means the concourse should be connected. While arrival is important, the building may be more about supporting the existing landmark status of the existing Burnham building rather than its own landmark. The public plaza in this approach would be essential to improve the existing connectivity and lack of placemaking that current plazas have nearby. Similar to the Bridge approach, platforms should be easy to get between, and this approach will concentrate on connectivity to the Hill District via alternate modes of transportation. Additional programming would be a market and a daycare facility for commuters. Also, a hygiene station would provide commuters and those in need of services with easy access to showers and restroom facilities.

Station as a Network

Station as a Network explores the station as a network of tendrils. The focus will be on creating a more nodal system rather than the current radial system that many U.S. transportation systems have adopted. The site selected will house the predominant intervention, however the site boundaries are more blurred, and the interventions do not address the entire site, but rather smaller, surgical changes. This acknowledges the strong architecture already present and addresses the lack of human-connectivity brought on by the destructive highway infrastructure. It also promotes pedestrian-centric architecture and urban design to further reduce car reliance. The programmatic elements within this schematic approach are not centralized at the site and are based on neighborhoods' needs. Similar to the Convergence approach, the concourse is less about sense of arrival and more about connectivity. Platforms are less involved and very easily pedestrian friendly. The

public plaza would become smaller, dispersed interventions at each station, improving neighborhood access to parks. Additional programming would be dependent on the needs of the neighborhood that each station is located in. A Downtown station would have a grocery store near the Lower Hill District redevelopment, a daycare at the Union Station design, and a simple bus stop improvement in the Strip District.

Conceptual Iteration

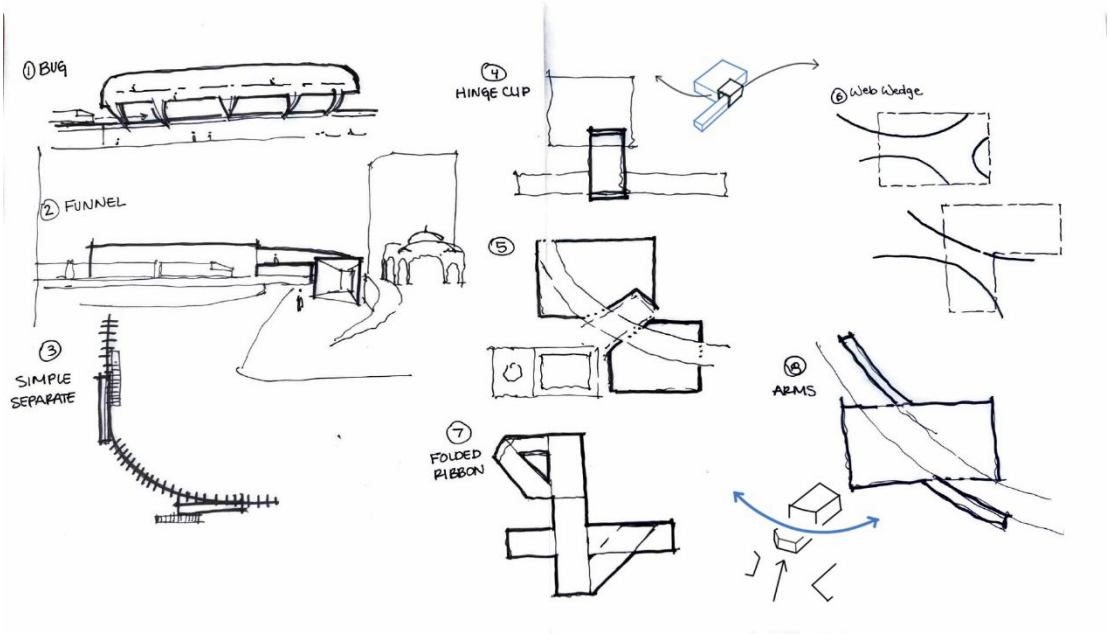

Figure 41: Concept Sketches. Created by Author.

"Simple and Separate"

This concept approached the transportation hubs as small interventions that could align with the existing circulation flows on the site. It focused less on creating a single, multi-functional station and instead drew inspiration from stations in Chicago, IL and Switzerland and creates separate stations that are still easily accessible. One station is located near the Allegheny River and the Convention Center. This allows

easy visitor access from the Convention Center and the riverwalk trails. The other station sits near the existing train station location, allowing easy access to the busway and station from the Union Station side plaza. While this approach worked well within the context, it didn't address the lack of presence that the current public transportation current had. This solution works well in cities that already have a well-established transportation system that is commonly understood and utilized; it doesn't seem to be the best approach for disrupting the norm and creating prominence for public transportation. Finally, this concept did not address the need for a public place or sense of arrival.

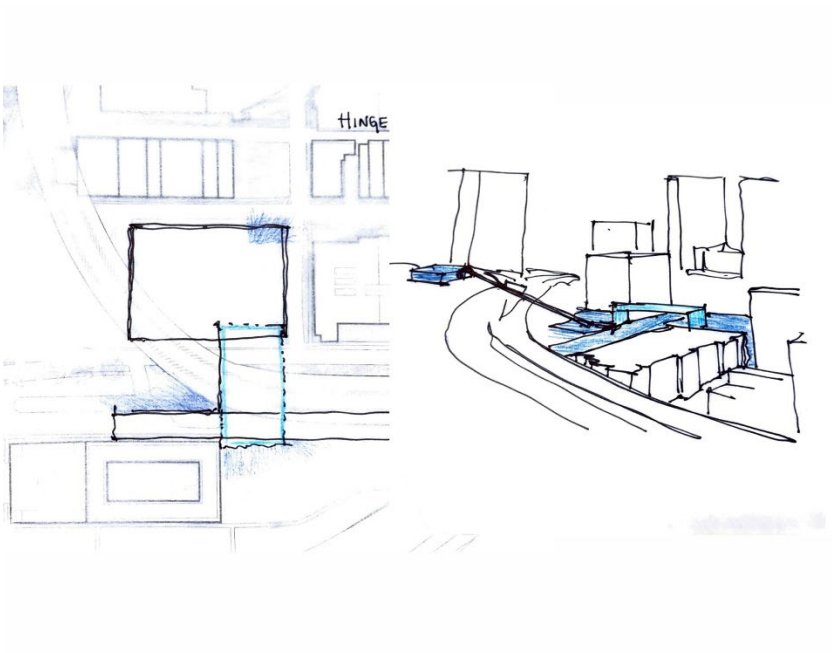

Figure 42: Hinge clip concept sketches. Created by Author.

"Hinge Clip"

This concept focuses on improving the connectivity of the site, particularly across the railway and the highway. Through an iterative process, I explored the three main approaches to traversing the tracks: going above them, going below them, or

puncturing through them. “Hinge Clip” creates a prominent figural gesture that arcs over the track, responding to the need for connectivity and the need for a transportation presence on the site. It also sets up a language that can be used to navigate connectivity across the highway as well. The programming in this scheme occupies both sides of Liberty Avenue, and addresses the track at this location, but it does not occupy the front portion of the site along 11th Street. The entrance and arrival is unclear from the conceptual form, and the building’s relationship to the historic Union Station feels difficult.

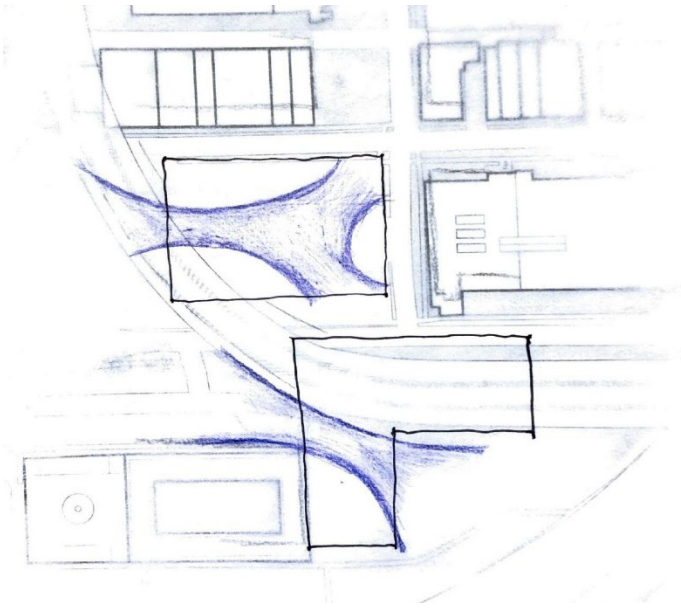

Figure 43: Concept sketches inspired by circulation. Created by Author.

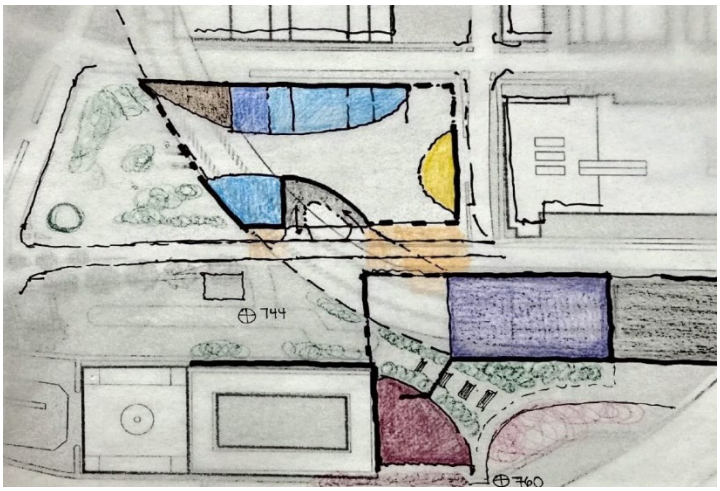

Figure 44: Connective Flow Preliminary Sketches. Created by Author.

"Connective Flow"

Connective Flow utilizes the circulation of the site to inform the building. The geometry of the railway serves as the guiding element, and the form curves along the site. The arrival up to the bus and railway elevation is prioritized and a sequence of plazas and walkways make up the main portion of this concept. The primary flaw with this concept is that it is focused in plan and gives little inclination as to what the overall massing of the project should look like. While circulation is vital given the programmatic nature of the project, this approach also still struggles to connect to the north side of the site, and may create conflicting hierarchy between it and the existing Union Station approach.

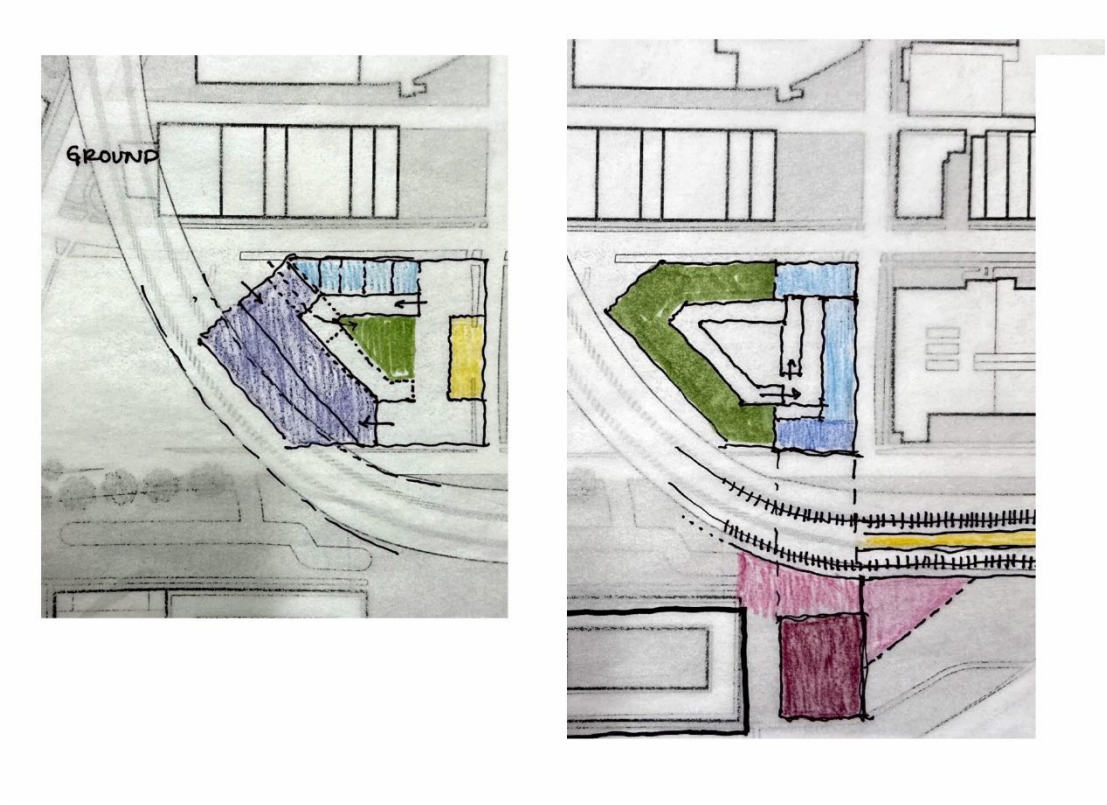

Figure 45: Folded Ribbon preliminary programming sketches. Created by Author.

"Folded Ribbon"

This concept takes the complicated geometry of the site and embraces it. The massing adopts the complex form to meet the various approaches and navigate the grade changes. It allows for easier access under and above the tracks and creates a language that can be replicated to connect across the highway. The tectonic form also responds to the steel and industrial feel of the city and creates an opportunity for visual wayfinding for easier travel through the project.

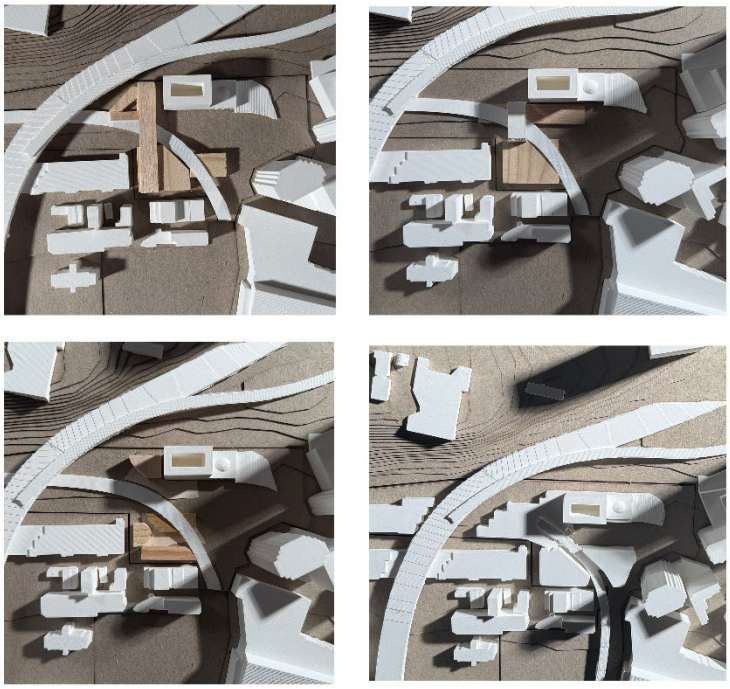

Figure 46: Massing Models for preliminary concepts. Created by Author.

Conclusion: Station as a Destination

The complex nature of the site combined with the intricate programming and contextual needs meant that the proposed concept needed to be flexible and help with visual wayfinding. Because of this, folded ribbon emerged as the most appropriate conceptual attitude.

Chapter 8: Thesis Design Solution

Introduction

The proposed design solution utilizes a mixed-use programming, access to multi-modal transit, and a focus on people instead of cars to create a more convenient, desirable, and connective transportation experience.

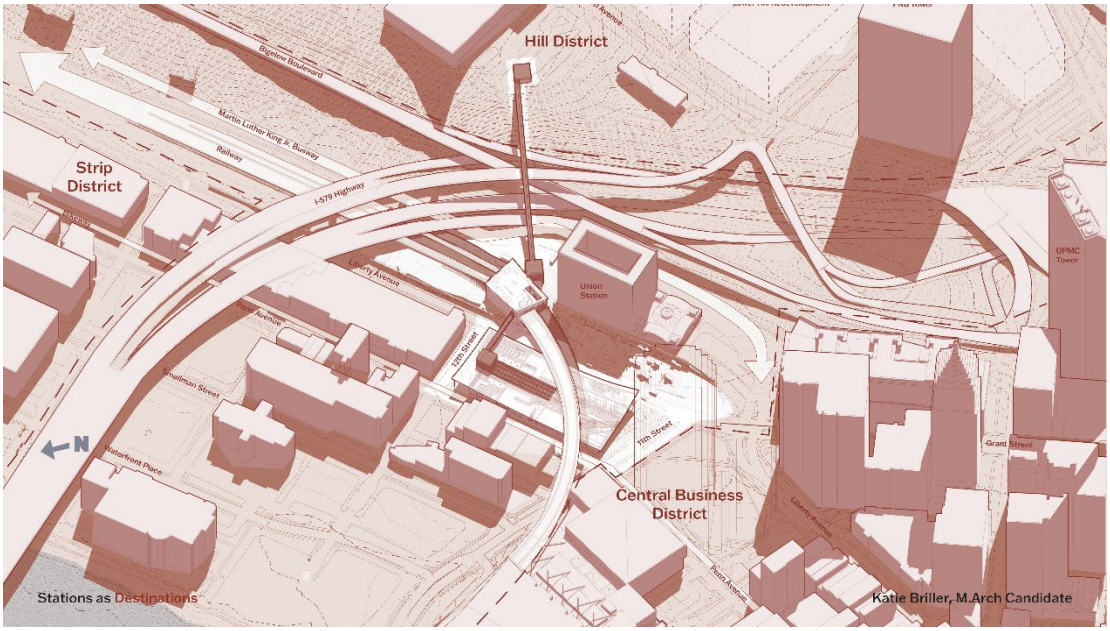

Figure 47: Isometric view of proposed design solution. Created by Author.

Addressing the Site

To improve conditions, the proposed design first integrates a series of subtractions from the existing site. The first is removing the existing Greyhound Station, the parking structure and the Amtrak train shed.

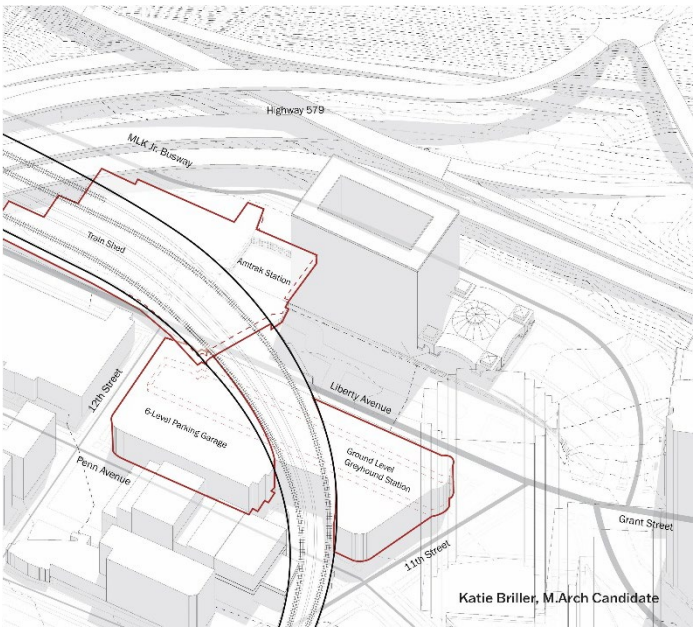

Figure 48: The removal of existing structures. Diagram by Author.

Next, is reducing the width of the railway to the appropriate size for the two current active rails and 1 terminal rail. This creates a better on-street experience with less overhead structure.

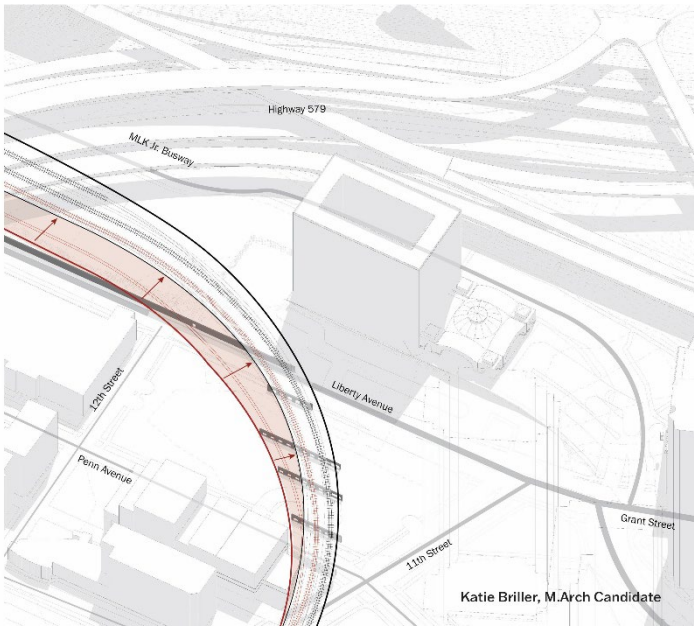

Figure 49: The proposed design reduces the width of the railway. Diagram by Author.

Finally, the proposed design reduces the width of Liberty Avenue and 11th Street for traffic. Liberty Avenue is adjusted from four lanes to 3 lanes- 1 lane in each direction with a middle turn lane. Liberty Avenue will also incorporate new and improved bus drop-offs on either side. Two lanes on 11th street will be reallocated as passenger drop-off lanes. Both the bus stops and passenger drop-off are located at the front of the intersection for a similar and equitable experience across travel modes.

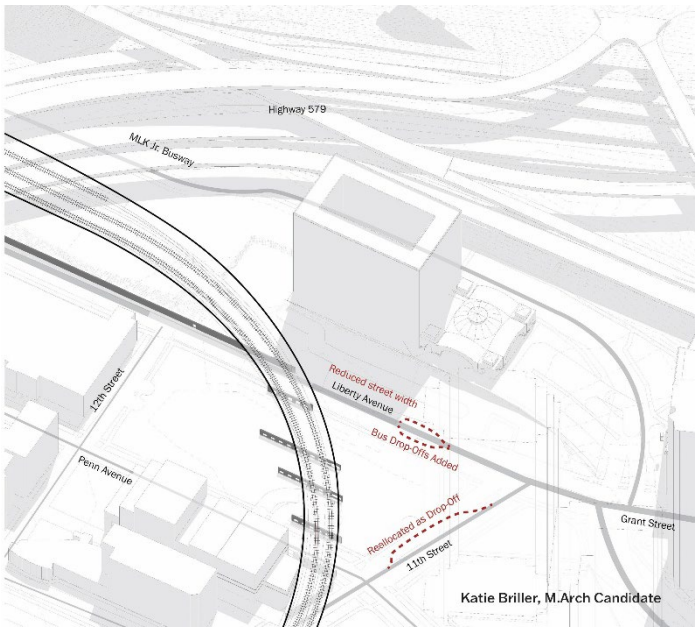

Figure 50: Reduced street widths. Diagram by Author.

Addition and Relocation

This section outlines the series of steps taken to realign site elements with the intentions of the thesis. To further improve the pedestrian experience, the existing side parking lot is converted into a welcoming, green plaza.

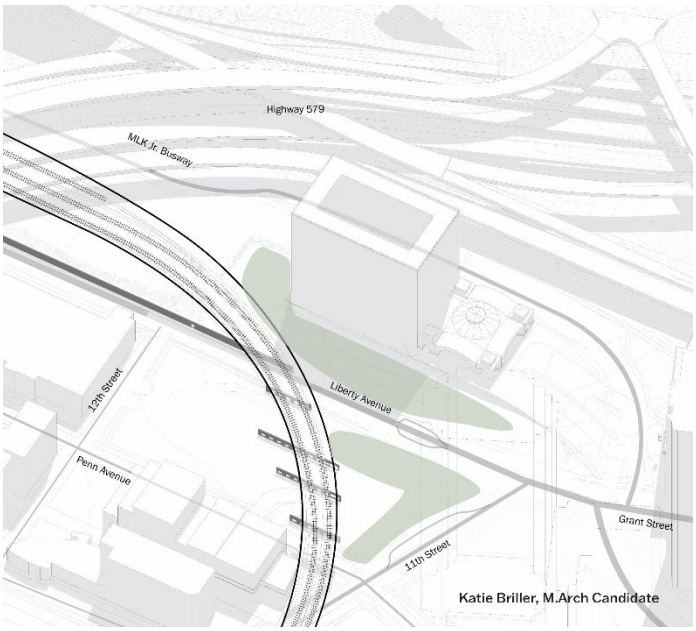

Figure 51: Green plazas added. Diagram by Author.

Rather than centering on cars, the proposed design pushes parking off-site and introduces multi-functionality at the direct convergence of the grid.

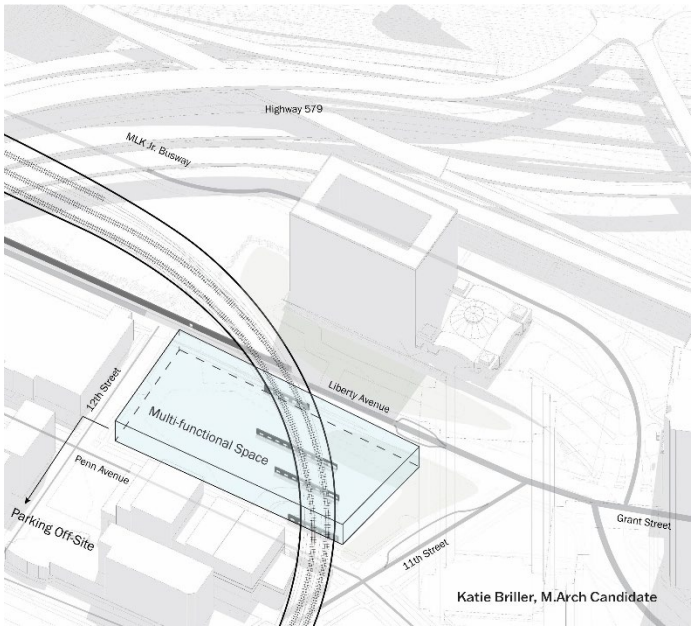

Figure 52: Recentered on people. Diagram by Author.

To make inter-modal travel more convenient and equitable across modes, the Greyhound Bus Station and Amtrak Train station are combined into a single

structure. The busway stops are relocated to be closer to this new structure, and a better, landscaped access is designed between the platforms and the green plaza. Finally, an incline is introduced to connect across the highway.

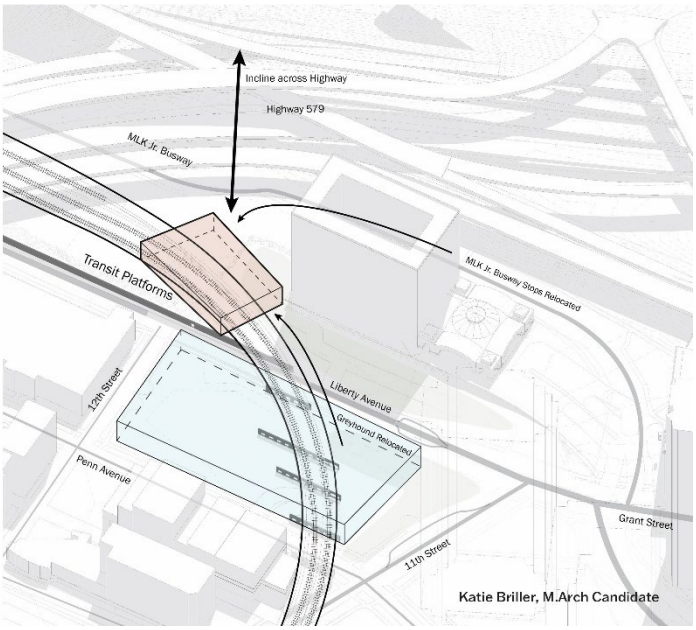

Figure 53: Relocating and Connecting. Diagram by Author.

Design Progression

This section outlines the series of design interventions made to create the proposed solution. To start, through site exploration, it was revealed that the railway structure created a rhythm along the site. The structure is made of thick, concrete, arched walls; these are used to inform the grid of the site. Although the track above is reduced in width, the length of the structural walls remains largely intact, and their presence is integrated into the architectural experience.

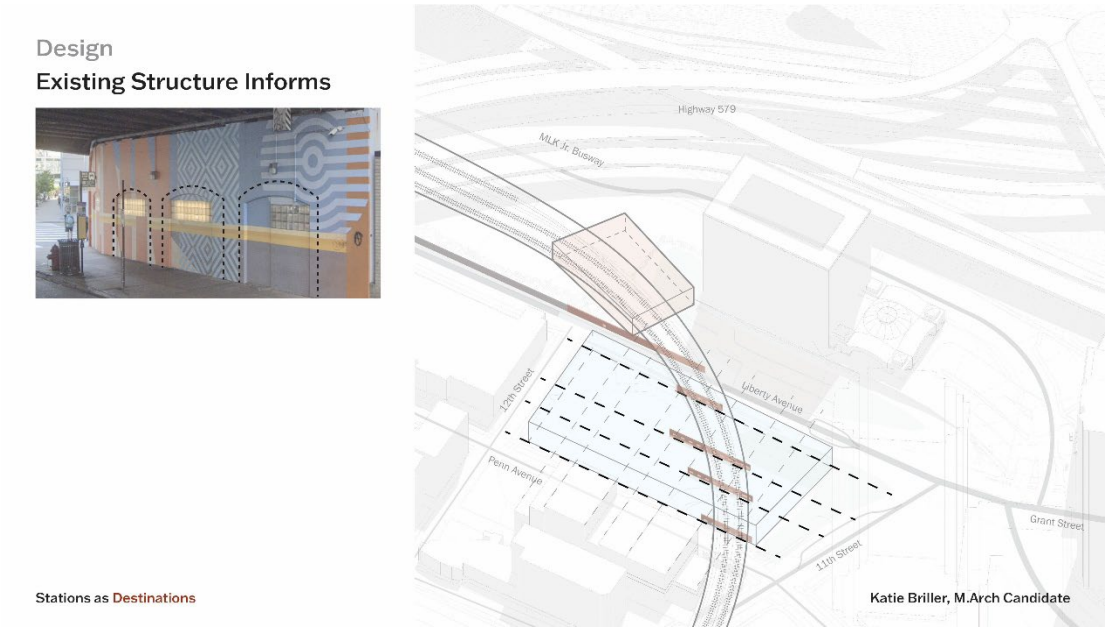

Figure 54: Existing structure informs the grid. Photo taken from Google Earth Street View. Diagrams created by Author.

Next is the focus on the approach. Each of the three neighborhoods has a beacon that serves as a landmark and wayfinding element for the approach to the station. This way each arrival is celebrated. The downtown-facing approach is visitor-focused, the Strip District entrance is along the Penn Avenue bikeway and so is therefore more local and commuter-focused, and the Incline arrival from the Hill District serves as a neighborhood connector.

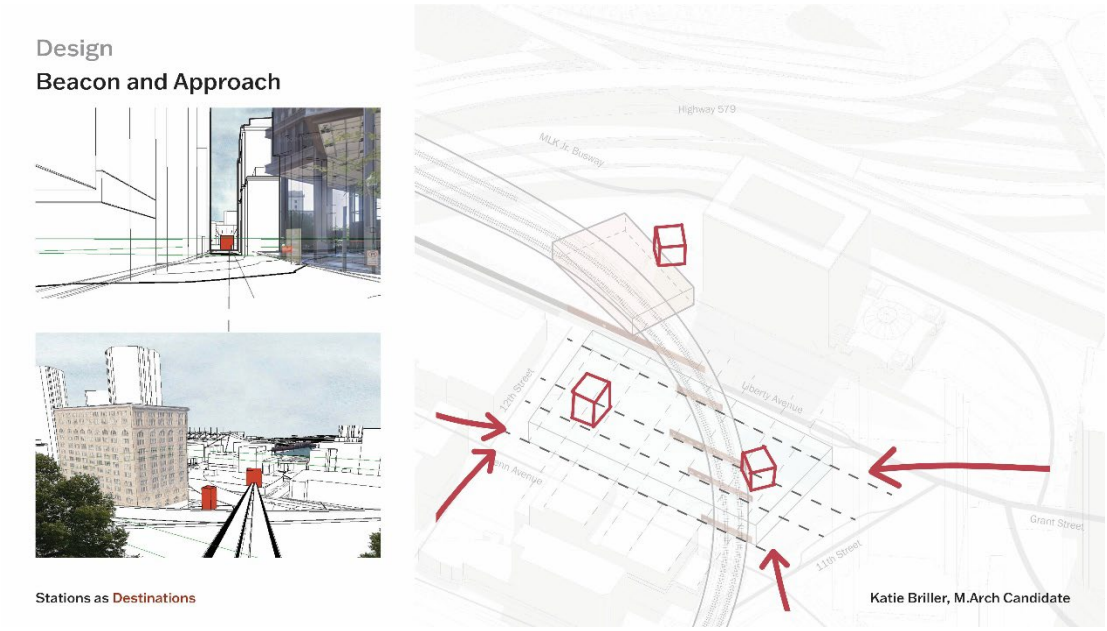

Figure 55: Beacon and approach from each neighborhood. Diagram and images by Author.

While a regularized grid is used to organize the plan, the impact of the railway on the form could not be ignored. Throughout the process, various roof forms were explored. The design initially started with a more shed-inspired roof, with the towers puncturing through. To emphasize the station, draw attention to the entrances, and properly address the railway, the design progressed towards a hyperbolic roof form that directly responds to the railway's insertion. It that conceptually swoops

underneath to improve the under-track experience. The corners turn up to welcome in visitors approaching from either side on foot.

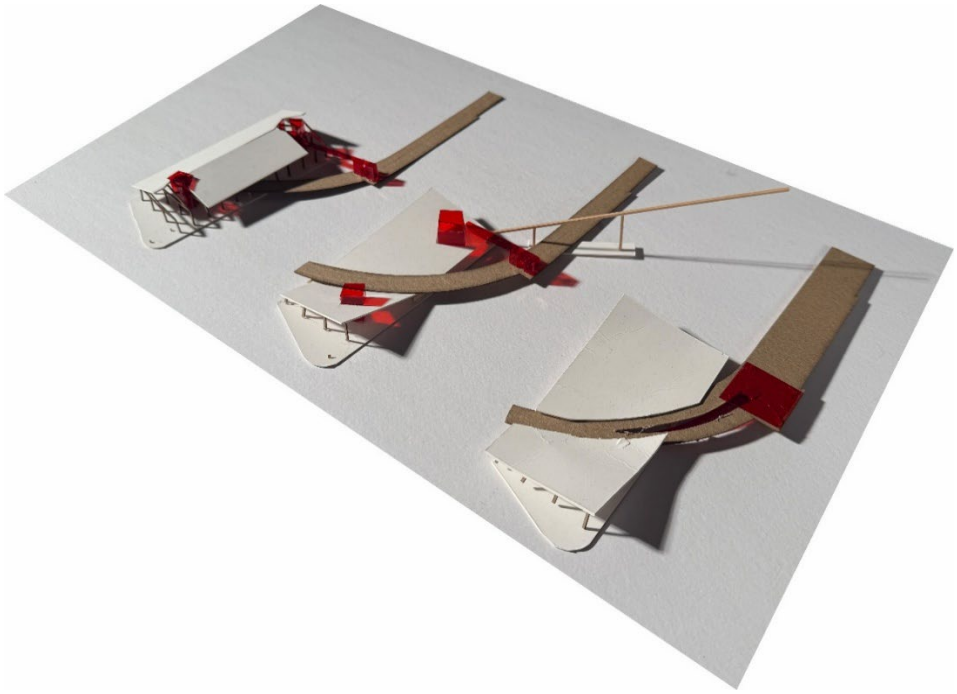

Figure 56: Models studying the roof form and structure. Created by Author.

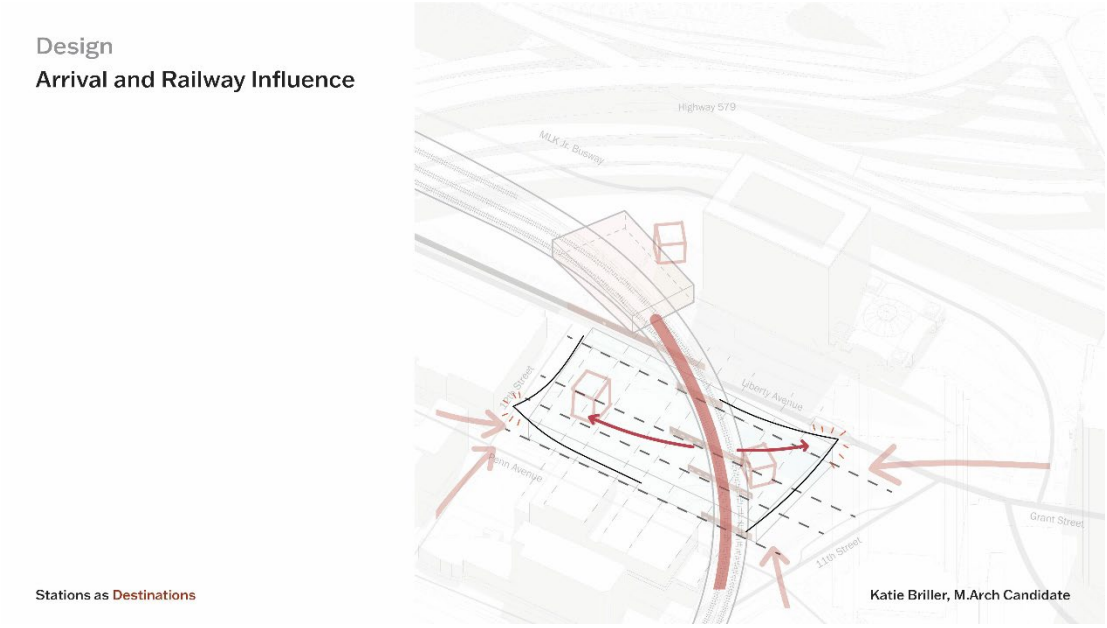

Figure 57: Arrival and Railway Influence on Roof Form. Diagram by Author.

Proposed Programming

Programming ultimately falls into two categories: mobility-focused and functionality-focused. From there, each category is organized into three types: "spaces" "zones" and "points." "Spaces" have required square footage that was determined through precedent analysis and research. "Zones" need their own square footage to operate, but that square footage is flexible, and can be determined based on the needs of the project rather than through specific precedence or requirements. "Points" do not necessarily require their own square footage, and can adopt the square footage of nearby spaces or zones. "Points" indicate specific locations for necessary programmatic elements.

Spaces

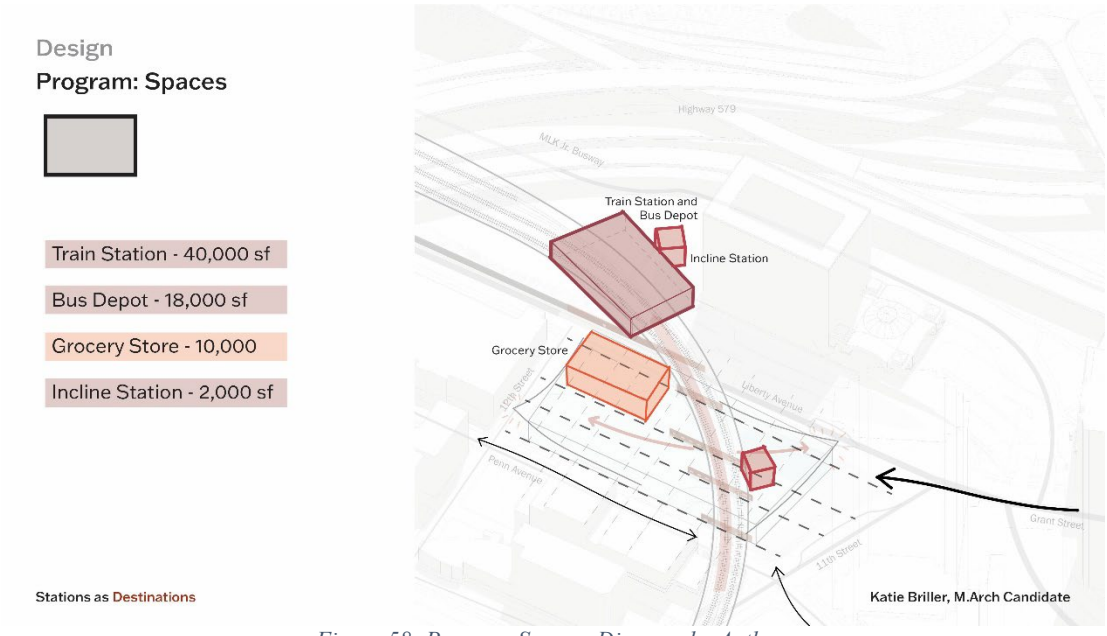

Figure 58: Program Spaces. Diagram by Author.

The proposed spaces are a train station, a bus depot, a grocery store, and an incline station. The various mobility-focused elements are sized by examining comparable stations through the United States. Raleigh, NC, Charlotte, NC, and Ann

Arbor, MI were particular helpful with appropriate sizing that served the current usage of the station but could also accommodate aspirational larger usage. In line with multi-functionality goals, the proposed design incorporates a grocery store. The closest grocery store for this area is roughly 20 minutes across the river and essentially requires the use of a car. Incorporating a medium-scale grocery store encourages further residential growth and may help reduce car reliance for locals in the area.

Zones

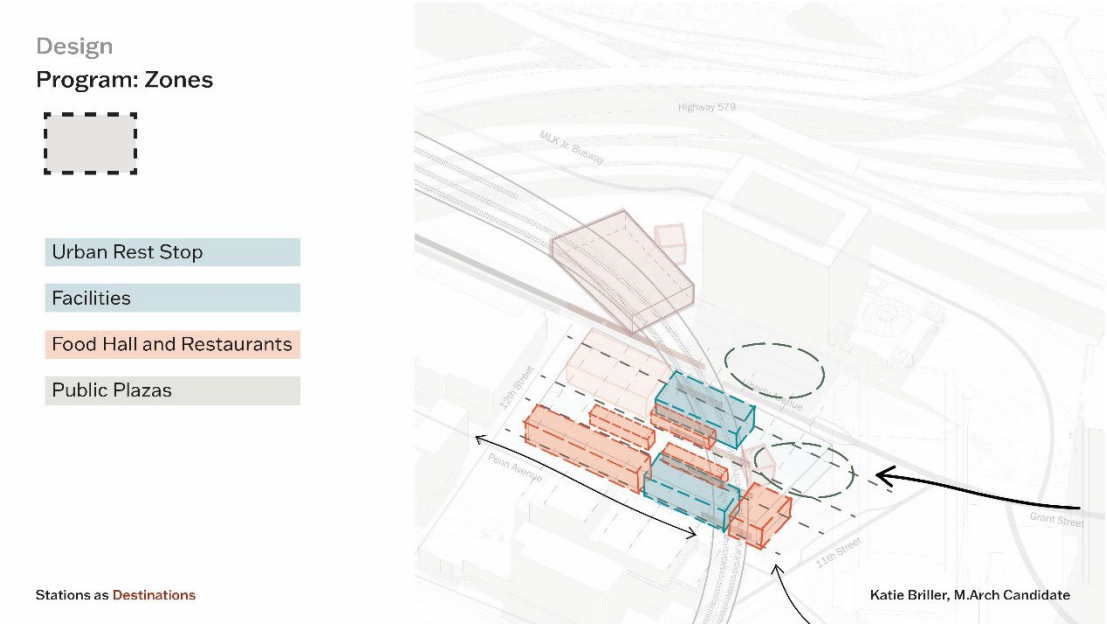

Figure 59: Program Zones. Diagram created by Author.

The zones incorporated into the design solution are an urban rest stop, bathroom facilities, a food hall, restaurants, and public plazas. An urban rest stop provides showers and laundry facilities for those that either don't have access or for commuters using active transportation modes. The food hall and restaurants provide opportunities for visitors and locals alike. And the public plazas create spaces for

arrival and outdoor activation. The plaza near the downtown entrance is mostly covered by the roof. This allows for use even during the frequent inclement weather in Pittsburgh.

Points

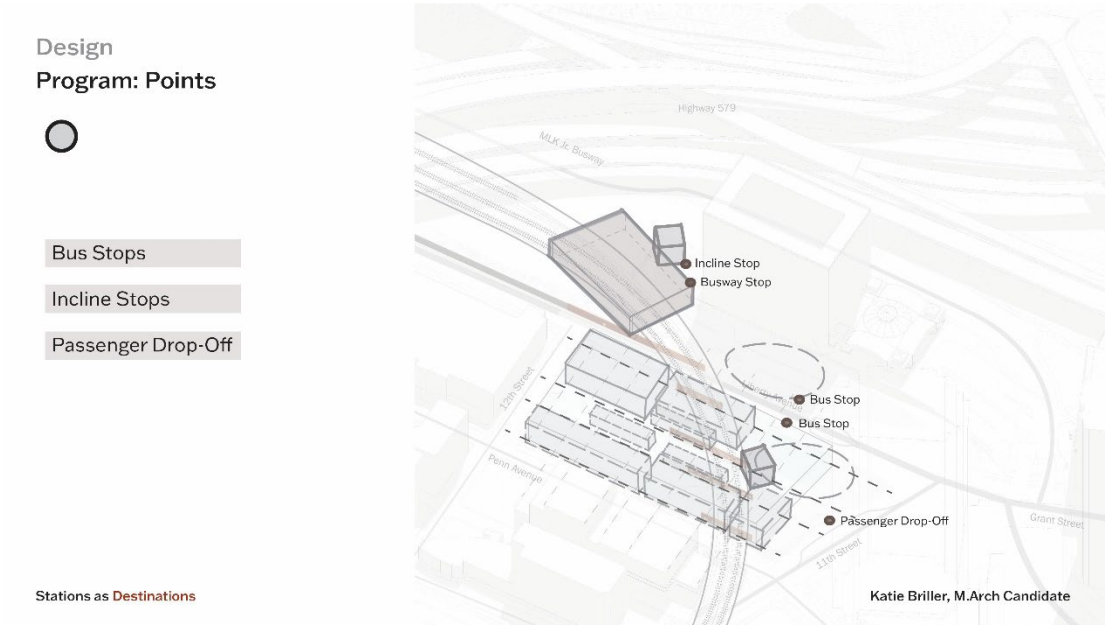

Figure 60: Program Points. Diagram by Author.

Points include the bus stops, the incline stops, and the passenger drop-off.

Introduction to Pittsburgh's New Transit Hub

This section will walk through the proposed design solution.

Figure 61: Entry approach from downtown. Created by Author.

Starting with the downtown entry approach, the new plaza along the existing Union Station creates opportunities for events and community engagement right at the nexus. In Figure 53, the Corten towers peek out from underneath the roof and above it in the background. The grand ramp follows the railway over Liberty Avenue, putting the access to transit in the foreground.

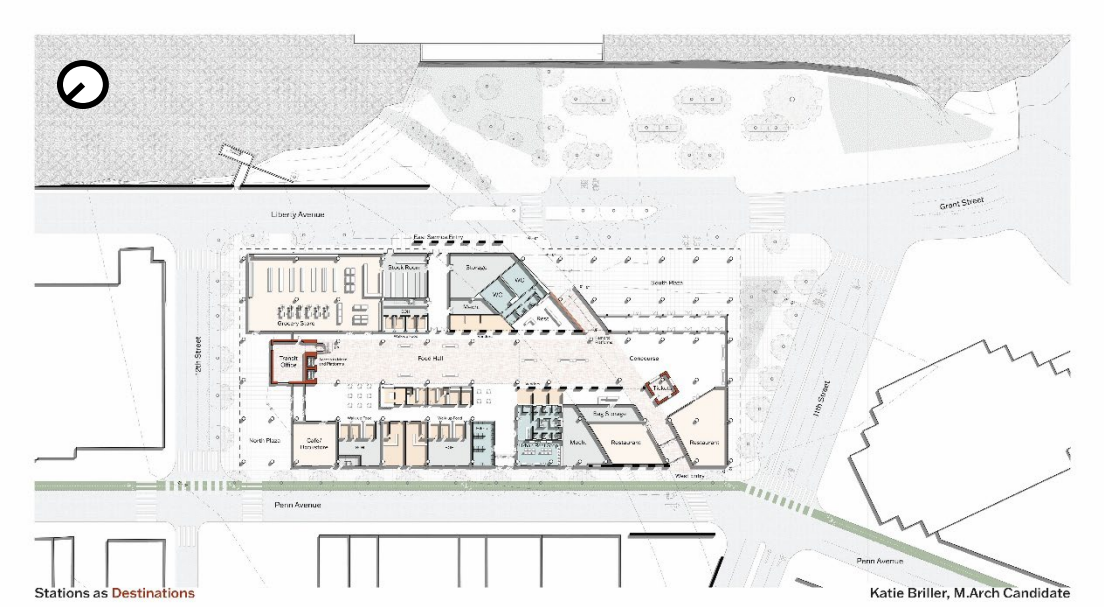

Figure 62: Street Level Plan. Created by Author.

Looking at the Street Level plan shown , the Miesian-inspired layout sets up a regularized plan that follows the grid created by the track structure. The plan runs underneath the track. On the right side of the track is the downtown entrance; the programming on this side is more catered towards visitors with the station concourse and restaurants for easy access to the commercial and hospitality buildings nearby. Underneath the track, the structural arches create portals for various vendors, transit services, and restroom facilities. The plan noticeably cranks underneath to follow the form of the railway above. On the 12th street side of the tracks is the food hall and grocery store. The large Corten tower frames the end of the promenade and houses elevators and a stair. This entry side is more focused on neighborhood and commuter arrival, with the urban rest stop situated along the Penn Avenue bikeway for easy access. The transit platforms can be accessed by the elevators and stairs in the tower as well as the front ramp on the other side of the plan.

Figure 63: Main Concourse View. Created by Author.

Upon entering the main concourse, the main architectural systems used for the building are visible: (1) the Corten ribbon is in the foreground, serving as the ticket kiosk before wrapping the underside of the railway and guiding to the ramp, (2) the existing railway structure lines the promenade underneath the rail and creates portal entries into vendor and facility spaces, (3) the swooping roof is overhead, held up by round steel columns, and (4) the rectilinear glass enclosure follows the grid.

Figure 64: Longitudinal section through the concourse and food hall. Created by Author.

While the roof conceptually flows underneath the track, and the enclosure barrier is maintained under and separate from the track structure, the roof pops up at the railway with a clerestory. This allows for a visual connection to the railway above.

Figure 65: Food hall promenade with Corten Tower at the end. Created by Author.

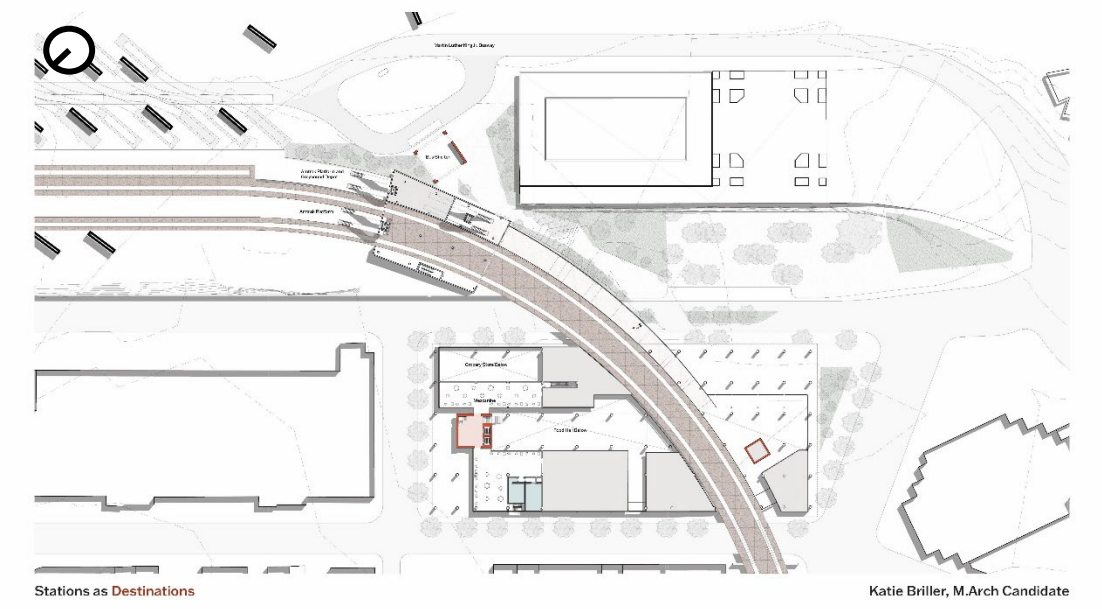

Figure 66: Mezzanine and Platform Level Plan. Created by Author.

On the upper level to the north is a mezzanine with additional seating and an overlook of the food hall. The ramp along the railway and landscaped ramp along the Union Station provide access up to the level of the busway and platforms.

Figure 67: Section perspective. Created by Author.

Figure 59 shows the south side of the site with various transit platforms and the railway passing underneath the upper concourse. On the north side is the grocery store, food hall, and the neighborhood-focused north entry approach along Penn Avenue. Also seen in Figure 59 the upper-level concourse and incline platform, as well as the sky bridge above Liberty Avenue.

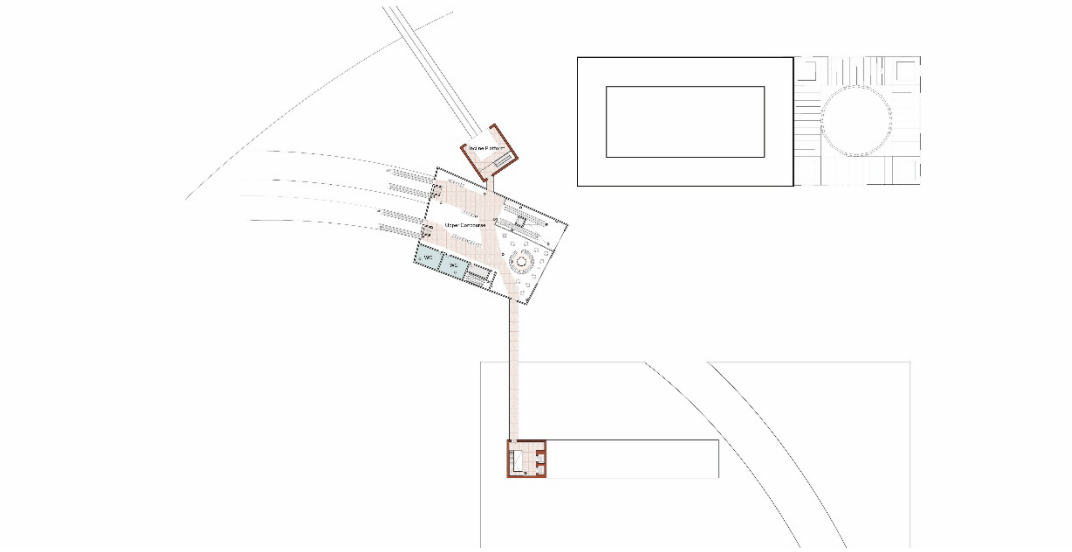

Figure 68: Upper Level Plan. Created by Author.

The upper level sits 23 feet above the railway with enough clearance so that trains can pass underneath.[63] This upper level provides access to all the transportation platforms: down the escalator or elevators to access the Greyhound bus depot and Amtrak train platforms, or across to the Incline platform.

Figure 69: View of arrival from Hill District Incline. Created by Author.

Importance of Arrival

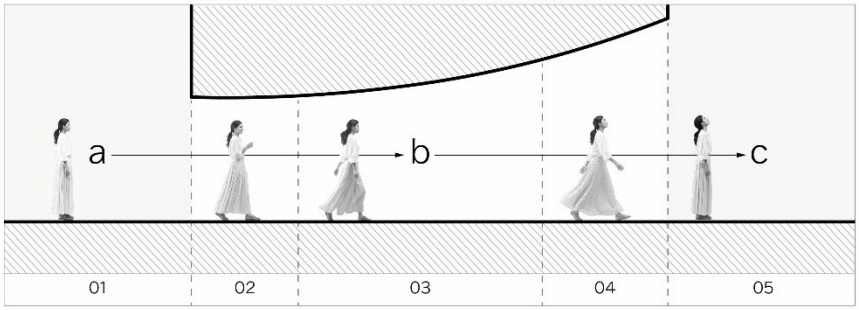

Figure 70: Diagram showing threshold and arrival sequence. Created by Author.

One of the key conditions necessary for a space to be considered a *place* or a destination is the sense of arrival. This experience can be created with architecture through techniques of threshold, compression and release, and conceal/reveal. As

[63] Pennsylvania Public Utility Commission, "Rail Clearances," accessed March 22, 2026, https://www.puc.pa.gov/rail/clearances/

discussed during the site analysis chapter, the arrival to Pittsburgh via public transportation was lacking, especially compared to the arrival via private vehicle. The goal is to create a sense of arrival through architecture that becomes a memorable part of a visitor's experience. While the original Union Station designed by Daniel Burnham was awe-inspiring and signaled arrival to anyone who reached its grand rotunda, the Amtrak and Greyhound stations today signify unimportance and a lack of priority to visitors using these methods of travel. With the new design solution, what had become an undignified, uncelebrated, and car-centric arrival to Pittsburgh became an arrival that starts with hints of the city beyond, progresses to a celebrated ramp that guides visitors over Liberty Avenue, and creates a threshold through the structural portals of the track into an activated and human-focused place. This ultimately leads to a more dignified and grand arrival to Pittsburgh right at the convergence of the grid.

Figure 71: A four image sequence of the new arrival to Pittsburgh. Images created by Author.

Conclusion

At the public presentation of this thesis, the feedback was largely positive, focusing on the scale of the project and the success of the design intervention. The jury debated the height and presence of the new building at the corner. Some argued that a larger building may have been more successful and would provide an opportunity for residential or additional commercial space above, while others argued that the subtlety and empathetic approach responded better to the neighborhood scale and prioritized the transportation over other programming, as the thesis intended. There were discussions around the tectonic reading and materiality of the proposed structure, and how emphasizing the steel more could help create a very authentic

arrival to “Steel City” Pittsburgh. Jury members shared their appreciation for the multi-functionality and careful consideration of the types of programming included, and appreciated that both the site and the programming drove the narrative rather than one having more emphasis.

A new sense of arrival, improved connectivity, and human-centric design that considers the specific context were all essential components for creating a station that serves as a destination. This thesis does not allow for simple “copy and paste” to another site with similar issues. Rather, it serves as an example of the potential of these forgotten places created by haphazard highway infrastructure projects and the prioritization of private vehicles. Challenging sites should not be ignored simply because they are messy, especially if they are located within the urban fabric that we should be striving to densify and repair. If we hope to create more human-centric futures with equitable and sustainable mobility, we must continue to wrestle with the complex, messy spaces that we’ve created, approach them with dignity and empathy, and create many more destinations for everyone to enjoy and experience.

Figure 72: Boards for Public Presentation. Taken by Author.

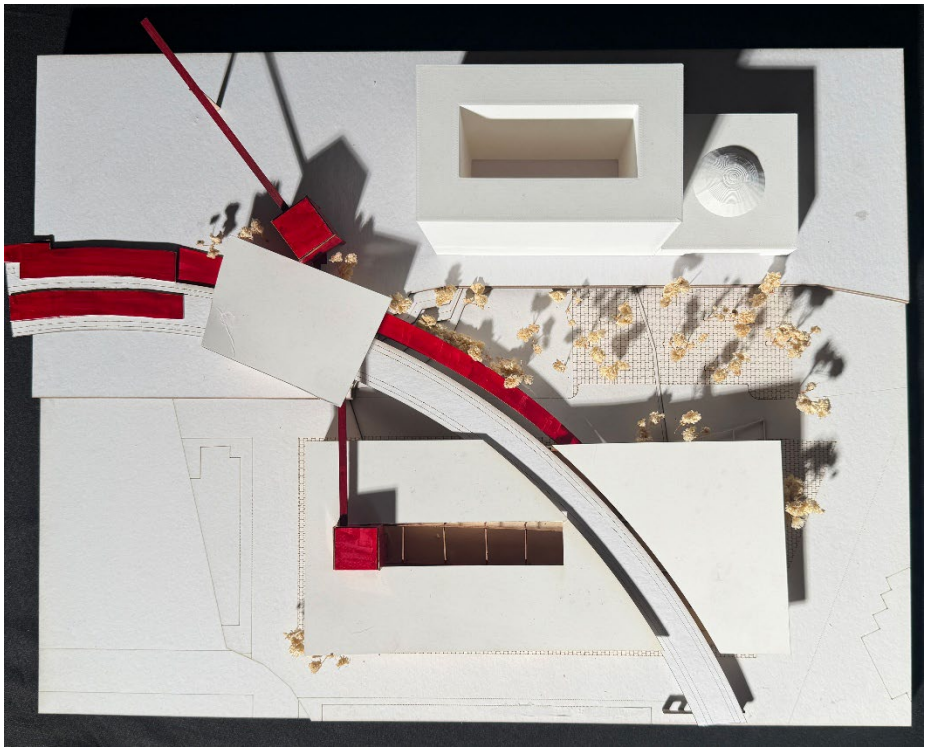

Figure 73: Physical model for final presentation. Created by Author.

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