ABSTRACT

Title of Thesis:	STADIUM SURVIVAL: ADAPTING STADIUM SITES TO URBAN CENTERS
	Andrew John Macek, Master of Architecture, 2022
Thesis Directed By:	Michael Binder, School of Architecture, Planning & Preservation

This thesis explores the survival of existing stadiums through the revival of the traditional stadium site into new urban centers. The importance of this project is clear through its historic isolation of traditional stadium sites, resulting in urban fabric deserts. Stadium site revival is implemented through the utilization of undeveloped hardscape to increase urban density and the application of new community connections. This creates a new recreational urban center that uses stadium adjacent context during a wide time range rather than as vehicular circulation and storage for stadiums.

STADIUM SURVIVAL: ADAPTING STADIUM SITES TO URBAN CENTERS

by

Andrew John Macek

Thesis submitted to the Faculty of the Graduate School of the
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Advisory Committee:
Michael Binder, Chair
David Cronrath
Michele Lamprakos

Preface

The inspiration for this thesis is rooted in my love for sports. The beauty of sports aligns with my love of architecture through their need for details which can create a collective composition that works in unison. These often-ignored patterns of success inform our movement into the future at the scale of everyday life.

Foreword

Stadium architecture is one of the largest scales of work in the field, so it has one of the largest design opportunities for progress. Stadiums cannot have a net negative or net neutral effect on their urban fabric host. The current status quo of site design does not push the expected standard of quality of many other building types. The failure of this building type can cause catastrophic damage to the hosting urban fabric.

Dedication

The completion of this thesis would not be possible without everyone who has supported me throughout my life. My family, who have always believed in me, taught me important values including determination. My educators taught me how to learn and apply new ways of thinking. My extracurricular leaders taught me how to be responsible and lead others. For all your guidance, I am forever grateful.

Acknowledgements

I would like to express my gratitude to my professor and chair of my committee, Michael Binder for his insightful feedback and commitment to my success. I also could not have progressed this thesis without the critique of David Cronrath and Michele Lamprakos. Additionally, this endeavor would not have been possible without my thesis professors Lindsey May and James Tilghman. Finally, thanks to additional experts in the architectural field including M&T Bank Stadium Architect Jeff Spear, Baltimore City Design Planner Renata Southard, Architect Fred Hiser, and Architect Cynthia Frank.

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Chapter 1: Mission and Background

1.1 Traditional Stadium Site Archetype

The stadium is a wonder of modern construction. The traditional stadium archetype is a venue containing a field and seating that provides mass fan entertainment and experience. As stadiums currently exist, they possess a single main use, to host events. The common archetype is an object building within an urban context. They are dependent on cars for audience access[1], so they become surrounded by large parking lots that isolate them from their urban context. They lose their relationship to their context and become another bowl form standing out in a city. Past site location decisions typically destroyed communities[2] as seen in Figure 1. The traditional stadium is only utilizing its capacity once a week during parts of the year. For such extreme costs, stadiums are replaced regularly with no legacy plan[3], completely wasting massive amounts of embodied energy[4].

[1] (Humphreys and Pyun 2017)
[2] (National Museum of American History Behring Center)
[3] (Paulas 2018)
[4] (Laskey 2019)

Figure 1, Dodger Stadium, 1961 (Source: Security Pacific National Bank Photo Collection/Los Angeles Public Library)

1.2 Stadium Survival Analysis Methods

The traditional stadium site archetype should be subject to analysis regarding its successfulness. We will be able to determine if stadiums should survive by analyzing them through the lenses of sustainability and resilience. Sustainability is

divided into environmental, social, and economic[5]. Environmental sustainability is the responsible use of natural resources through active and passive design. Social sustainability is the identification and management of stakeholders including users and local communities. Economic sustainability is the ability of the stadium to be constructed and ran at an efficient cost. Stadium architecture must be sustainable because of its relevance in the field of architecture. The scale of stadiums sets them apart from most building types, so their responsibility is far greater[6]. Resilience is the system's ability to prepare for threats, to absorb impacts, and to recover and adapt after disruptive events[7]. Stadium architecture is an opportunity to set new precedents for design.

1.3 Adapting Stadium Site Typologies

New sustainability needs require revival strategies to be used on existing traditional stadium site archetypes. On the building scale, these revival strategies are renovation, adaptive reuse, and redesign. Renovation is the restoration of broken, damaged, or outdated buildings. Renovation has the least economic burden because it presents the least change. It builds off the existing use and infrastructure by adding new technology and program to meet current and future needs. Adaptive reuse converts an existing building to have a new purpose. It changes the mission of the building while keeping the existing structure. Reuse is a strong environmental option because it the amount of new construction is significantly reduced. It is a response to

[5] (Circular Ecology)
[6] (Shvili 2021)
[7] (Orr and Kellison 2020)

social sustainability because the people's needs dictated a new use. Redesign is the replacement of an existing stadium with a new construction. Redesign provides an opportunity for a new programmatic typology for the future. It can directly combat the traditional stadium site archetype's past unsustainable designs. This revival strategy is the least short-term sustainable but could be the best long-term sustainable option.

On the site scale, master planning can be used to convert the surrounding context into a new urban center. A walkable area for economic, environmental, and social factors introduces the concept of the twenty-minute neighborhood that promotes sustainable and resilient living conditions[8]. Urban centers focus on providing adequate connections to adjacent sites. Utilization of stadiums as a new urban center can join adjacent sites and provide stronger links to residential stakeholders (Figure 2). Opportunity for new development of urban centers and supporting urban fabric arises through existing undeveloped hardscape and urban decay (Figure 3).

[8] (Steuteville 2021)

Figure 2, M&T Bank Stadium - New Residential Connections

Figure 3, M&T Bank Stadium - Undeveloped Hardscape

Chapter 2: Site Criteria

2.1 Urban Center Potential

The urban center potential for each site is determined by finding the ideal threshold number for urban center size (Figure 4). Through research on the twenty-minute neighborhood, a one-mile radius around the designated stadium was placed for the establishment of a new urban center. The need for direct walking connections to support new urban center creates the strongest opportunity for stadium survival.

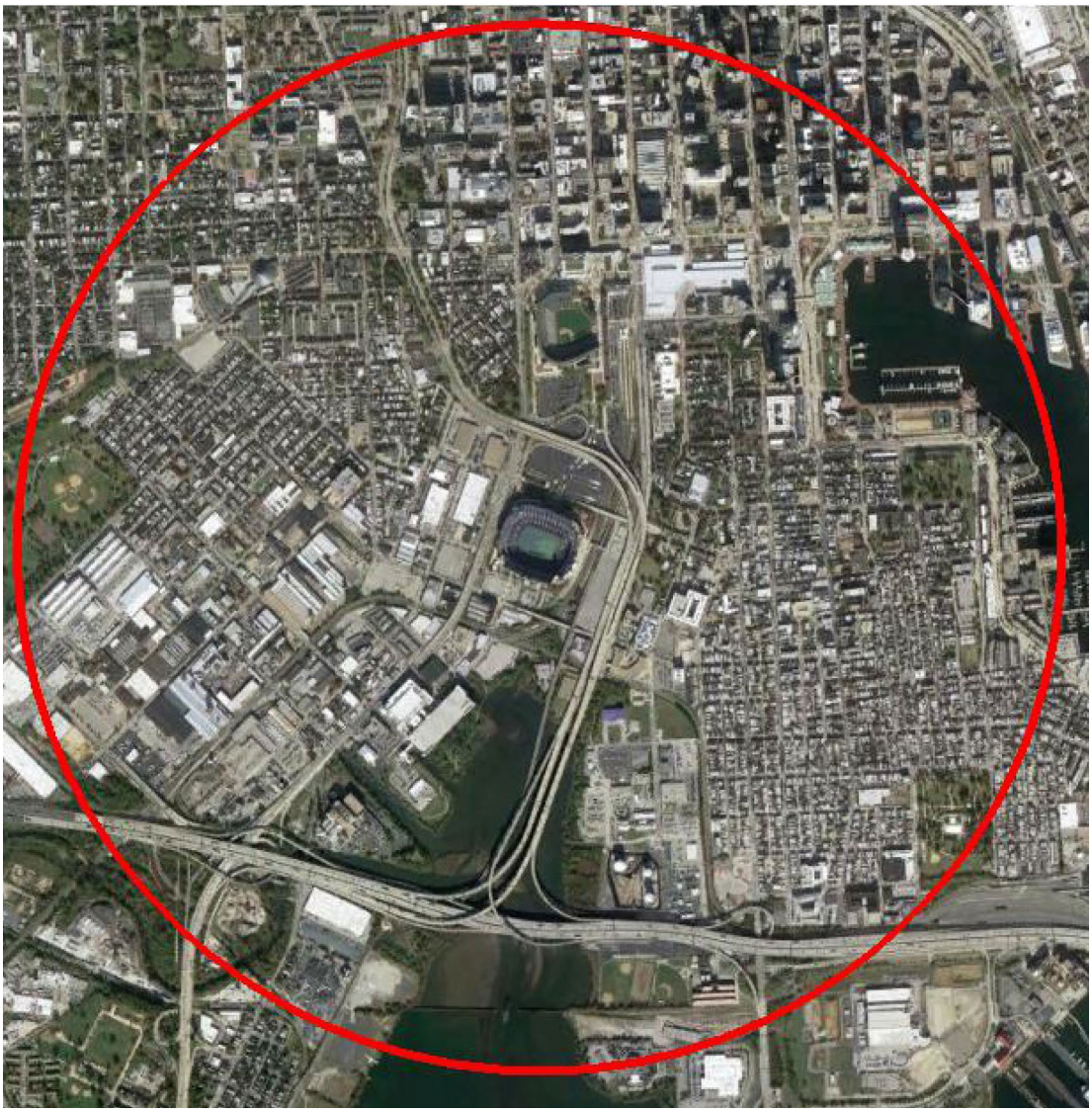

Figure 4, Urban Center Potential - 1 Mile Radius (Source: Drawn by Author)

2.2 Design Efficiency Criteria

The site's proximity to the designer dictates travel time when visiting for analysis. A convenient travel time would allow the designer to exist within the site when necessary for design instead of only witnessing it through the limited frame of technology. Next, the site should be a professional sport stadium to allow for design freedom uninterrupted by collegiate master plans that replace commercial and mixed-use facilities with educational facilities.

2.3 General Sustainability Criteria

There current use status of the stadium incorporates all three sustainability methods. An abandoned status means a loss of embodied energy, social use, economic value. The goal of all stadiums should be to remain in use and avoid additional economic and social measures needing to be taken for revival from abandonment. The status of a stadium as embedded or object impacts all sustainability methods. An object stadium provides opportunity for the building to be embedded into an urban context, bringing new environmental, economic, and social benefits to the stadium. An embedded stadium utilizes mixed-use program, has occupancy more often, and removes previously polluting parking lots. An urban site provides opportunity for environmental, economic, social sustainability through the implementation of urban growth patterns into future stadium development and master planning. Urban sites permit high density construction which increases the efficiency

with which services can be provided, creating new economies of scale, and preserving the surrounding natural environment.

2.4 Environmental Criteria

Environment criteria include energy analysis such as embodied energy of the construction, life cycle analysis of the building, LEED analysis, and Living Building Challenge analysis. Parking lot area or undeveloped hardscape in context creates an urban fabric desert that is environmentally unsustainable (Figure 3). The opportunity from this criterion comes from it being easily destructible site for new urban fabric replacement.

2.5 Social Criteria

Social criteria include the stadium's audience capacity and proximity to population density. These criteria target the two main stadium stakeholders: active users and local communities who will interact with the stadium site. Social criteria also include site access through times of travel without personal vehicular use. Existing public transit systems and public transit usage numbers aid in portraying their effectiveness in the site (Figure 6).

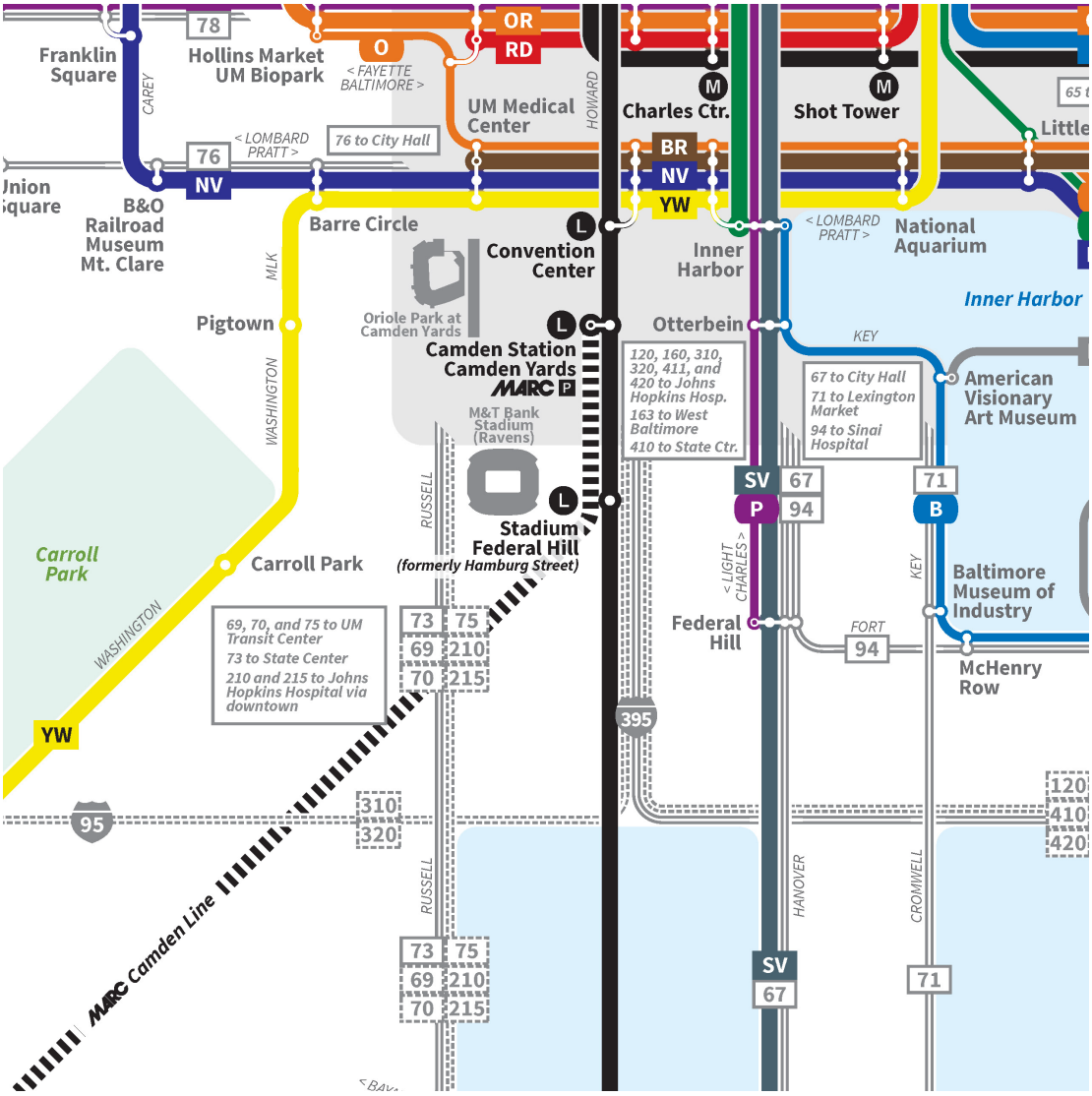

Figure 5, Baltimore Link System Map (Source: MTA Maryland Transit Maps)

2.6 Economic Criteria

Economic criteria include the cost/value of the stadium with inflation and the proximity to the urban base. The urban base can act as a means of building off existing infrastructure to support the stadiums future development and growth. Existing commercial and industrial use portrays a healthy existing infrastructure.

2.7 Resilience Criteria

Resilience criteria include the Climate Resilience Screening Index (CRSI) which is an assessment of resilience to acute meteorological events and selected natural hazards[9]. A lower resilience rating in Figure 6's map below means more opportunities for resilient design.

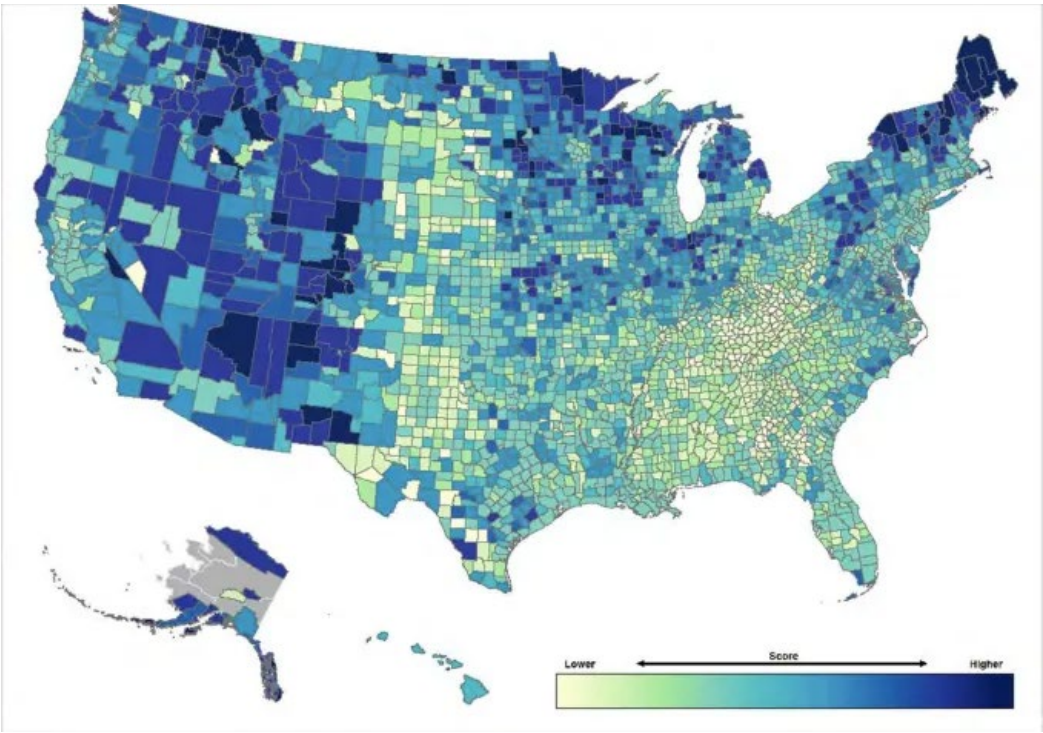

Figure 6, Resilience across the U.S., broken down by county. Darker colors show a higher CRSI score, and therefore greater resilience to climate change. (Source: Environmental Protection Agency)

[9] (Summers, et al. 2017)

Chapter 3: Site Analysis

3.1 Site Selection Data

Potential site locations vary between Maryland, Pennsylvania, Virginia, and West Virginia. Majority of the sites are professional stadiums. Construction dates are between 1931 and 2010 while most come since 1998. All potential sites are currently occupied. All sites are object buildings, disconnected from the urban fabric. All sites exist is urban fabrics, but the scale of those fabrics changes juristically from large cities to college towns. The sport type is spread between football, soccer, and baseball but when comparing to audience capacity, football has by far the most stakeholders. Major renovations seem constant for all stadiums with the oldest renovation being in 2014. Majority of potential sites provide some information regarding sustainability efforts in their original design, the most impressive being LEED Gold. Stadium cost with inflation ranges from $86 million to $845 million. The greater the stadium cost, the more need to secure its value through revival strategies. Most sites possess around 600,000 square feet while a few have around half that number. Once again, the greater the area, the more need to secure the value. All potential sites are within four miles of an urban base. Being further from an urban base provides more opportunity and reason to connect back to it, but the further the connection extends, the less feasible it becomes. The sites have a wide range of parking area in their context, ranging from 660,000 square feet to 10,500,000 square feet. The parking area represents the opportunity of easily reusable urban fabric. The more parking area, the more urban fabric desert, the more need for a revived connection to the urban base. Proximity to population density shows that majority of stakeholders are within two

miles of their respected site. The closer the population, the more likely they are to regularly interact with the site. Data breakdown is found in Figure 7 below. A visual program breakdown overlay on each main potential site can be found in Figure 8-11 below.

									
Site Selection Matrix	**Sites**	**M&T Bank Stadium**		**Lincoln Financial Field**		**Heinz Field**		**MetLife Stadium**	
General Criteria									
Location Proximity		Baltimore, MD	+	Philadelphia, PA	/	Pittsburgh, PA	/	East Rutherford, NJ	/
Audience Capacity		71008	+	69796	+	68400	+	82500	+
Cost (2021 dollars)		$614 Million	/	$845 Million	+	$621 Million	/	$1.9 Billion	+
Urban Center Potential Criteria									
Public Transit Types		Heavyrail, Lightrail, Bus, Boat	+	Heavyrail, Bus	/	Lightrail, Bus, Boat	+	Heavyrail, Bus	/
Public Transit Daily Ridership (Pre Covid)		260,000 Rides	-	840,000 Rides	+	180,000 Rides	-	730,000 Rides	+
Public Transit Service Population		7,810,000 People	+	3,430,000 People	/	1,420,000 People	-	10,590,000 People	+
Commercial Presence		16,520,000 Sq. Ft.	+	4,200,000 Sq. Ft.	-	9,840,000 Sq. Ft.	/	4,390,000 Sq. Ft.	-
Industrial Presence		7,850,000 Sq. Ft.	+	10,760,000 Sq. Ft.	+	4,480,000 Sq. Ft.	-	6,150,000 Sq. Ft.	/
Residential Population		30,000 People	+	7,500 People	-	16,000 People	/	500 People	-
Residential Presence		20,430,000 Sq. Ft.	+	5,380,000 Sq. Ft.	-	20,480,000 Sq. Ft.	+	140,000 Sq. Ft.	-
Environmental Presence		7,740,000 Sq. Ft.	-	22,528,081 Sq. Ft.	+	13,960,000 Sq. Ft.	/	37,410,000 Sq. Ft.	+
Undeveloped Hardscape		6,500,000 Sq. Ft.	/	11,300,000 Sq. Ft.	+	3,300,000 Sq. Ft.	/	9,700,000 Sq. Ft.	+
Climate Resilience Screening Index		-0.192	+	0.12	/	1.435	-	1.184	-
Total			**+7**		**+3**		**-1**		**+2**

Figure 7, Site Selection Matrix (Source: Drawn by Author)

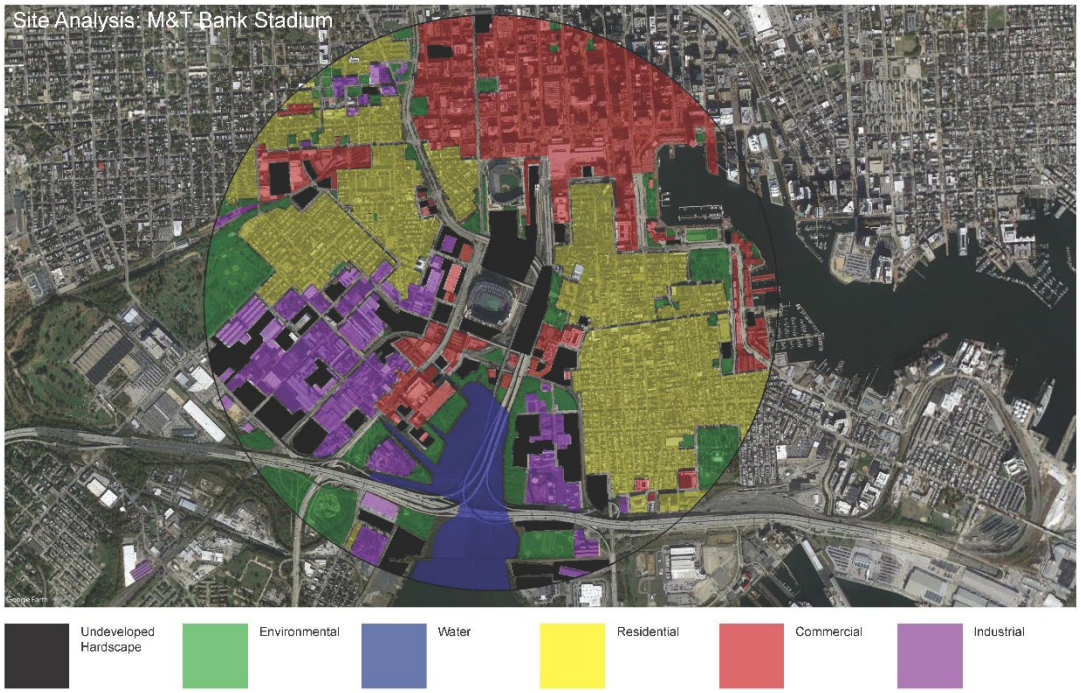

Figure 8, M&T Bank Stadium Program (Source: Drawn by Author)

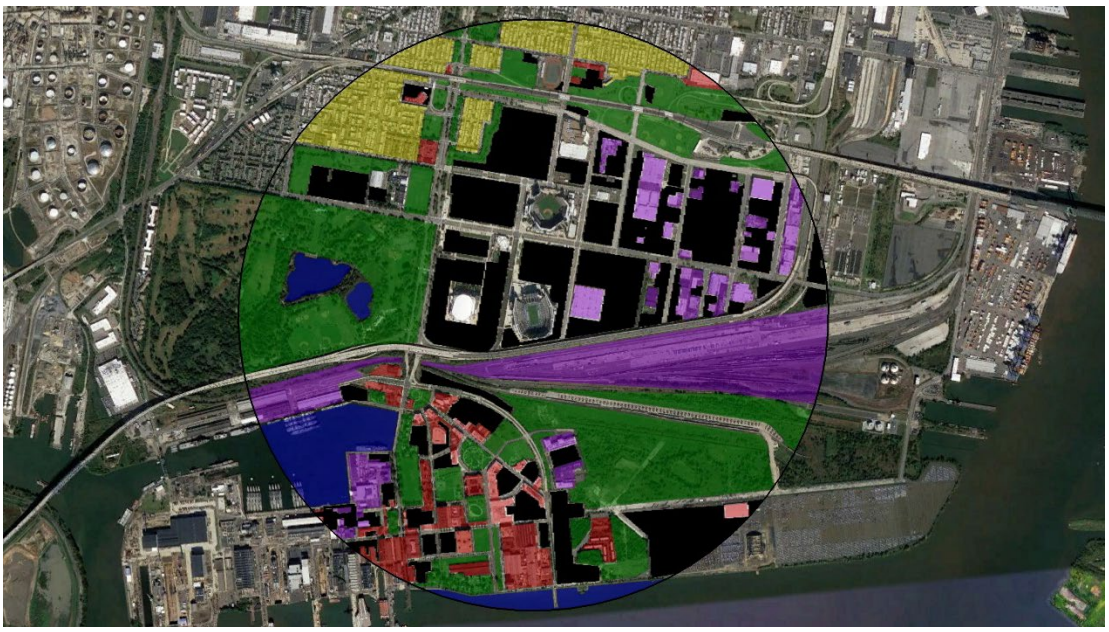

Figure 9, Lincoln Financial Field Program (Source: Drawn by Author)

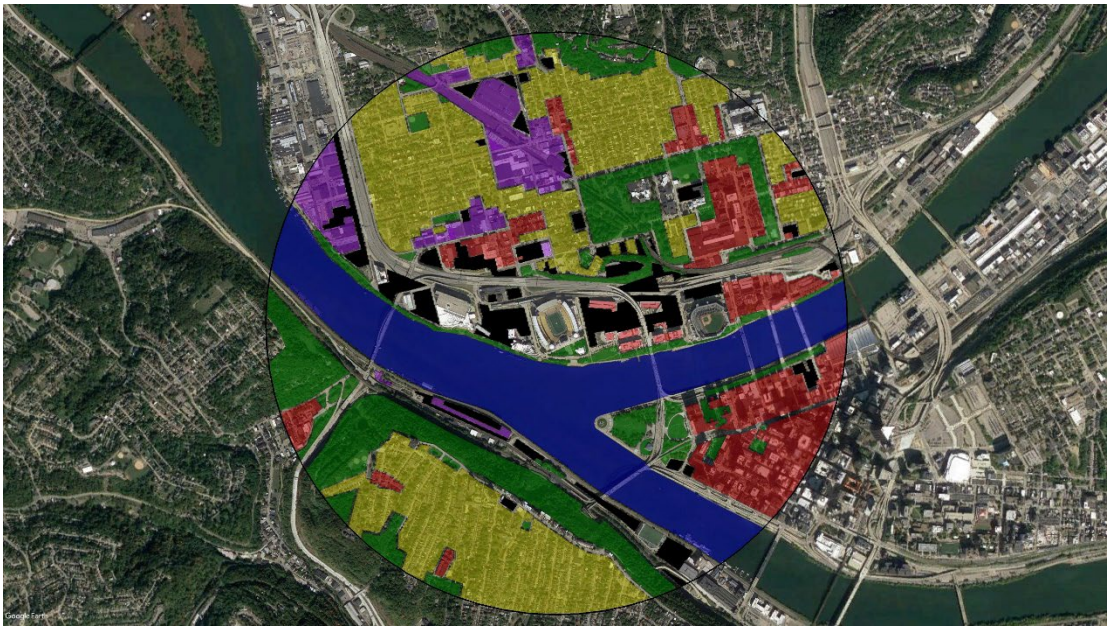

Figure 10, Heinz Field Program (Source: Drawn by Author)

Figure 11, MetLife Stadium Program (Source: Drawn by Author)

3.2 Site Selection Process

M&T Bank Stadium in Baltimore, Maryland was selected as the project site because of its score, determined in the matrix found in Figure 7. It is the closest site to the designer. M&T Bank Stadium is the current host of the Baltimore Ravens professional football team in the National Football League. Constructed in 1998, it was one of the earlier current generation of stadiums. Renovations have kept it technologically updated. It is an object building, standing out from the fabric of Baltimore. It has the most stadium capacity of any potential site. Additional stadium capacity means that in the event of reduction, the seating could be replaced with new mixed-use program. M&T Bank Stadium possesses LEED Gold, it is useful to know that this stadium is already active in designing for sustainability. Existing systems can be pushed further to make stadiums more sustainable. M&T Bank Stadium is just outside of the most expensive potential sites at $614 million. It has one of the larger building footprints at 600,000 square feet. The urban base at the inner harbor is within

one mile. The short proximity to the current urban center combined with the transition into a historic industrial base provides a great opportunity to enrich the urban fabric with a proposed western center of Baltimore. The parking opportunity is moderate in comparison to alternative sites but adequate in terms of implementing a connecting urban fabric from the Inner Harbor to M&T Bank Stadium. M&T Bank Stadium is isolated two miles away from Baltimore's population density. This provides a unique opportunity to bring residential buildings into the site, diversifying it, connecting its urban fabric, and bringing people from the east and west closer to the new urban center.

Chapter 4: Precedent Analysis

4.1 Capitol Waterfront Master Plan

The Capitol Waterfront Master Plan provides urban fabric connections to greater Washington D.C. (Figure 12). The master plan possesses two venues, Nationals Park and Audi Field. These venues are embedded into the urban fabric, feeding off the life it provides, and always creating places of activity. In Figure 13, the program breakdown reveals similar use conditions to the chosen project site, M&T Bank Stadium. The master plan attempts to reserve the waterfront for environmental space.

Figure 12, Capitol Riverfront Development Map, DC (Source: Capitol Riverfront Resource Library, 4Q 2019, https://www.capitolriverfront.org/about/resource-library)

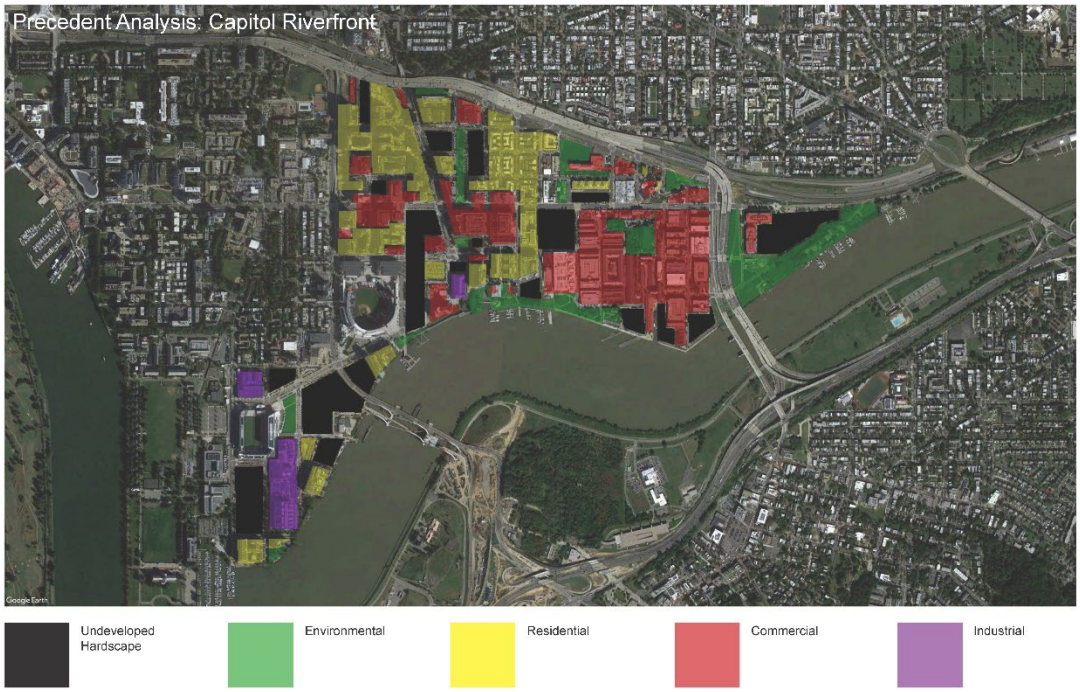

Figure 13, Capitol Riverfront Program (Source: Drawn by Author)

Chapter 5: Design Process and Proposal

5.1 Revival Strategy

The stadium site revival strategy is engrained in the history of the M&T Bank Stadium site. Existing site conditions dictate site problems or challenges that are adapted into opportunities. In 1830, the B&O Railroad was established in Baltimore. It acted as a commuter train system. The diagram map in Figure 14 shows how this ground train track layout interrupts the M&T Bank Stadium site. The site is divided into east and west zones while consistently being blocked from the waterfront of the Middle Branch Patapsco River. The MARC Railway established in 1984 continued the use of these train tracks which are still active in 2022.

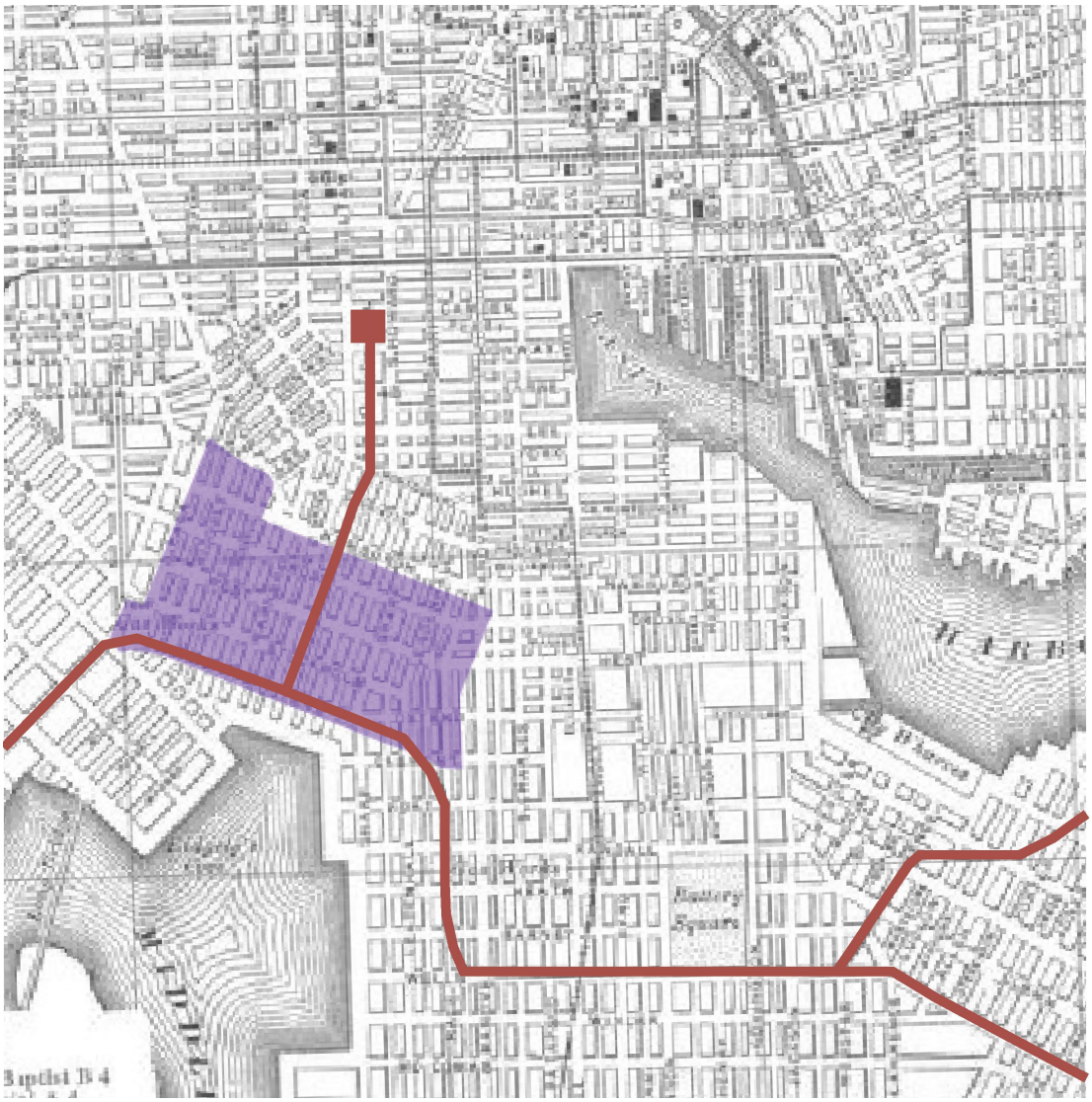

Figure 14, Site History - 1881 – B&O Railroad / MARC Rail (Source: Drawn by Author)

In 1957, the I-95 highway was constructed in Baltimore and was later followed by the I-395 highway in 1983 which directly linked I-95 into Baltimore City. Figure 15 reveals the further constriction of the M&T Bank Stadium site by I-395 running north parallel to the existing railway. The elevated nature of this highway means that it creates large zones of shaded undeveloped hardscape below. The

separation of ramps permits intermittent lighting to slip between this elevated highway system.

Figure 15, Site History - 1994 – I-95 / I-395 Baltimore Construction (Source: Drawn by Author)

In 1992, Camden Yards was constructed as a new baseball park (Figure 16). It exemplifies urban renewal through its adaptation of the historic B&O Warehouse Train Yard. It is closely located to the existing urban center at the inner harbor with

one side being adjacent to high density urban fabric. The railway concludes at the Camden Station to the east and the I-395 highway descends to a ground level street.

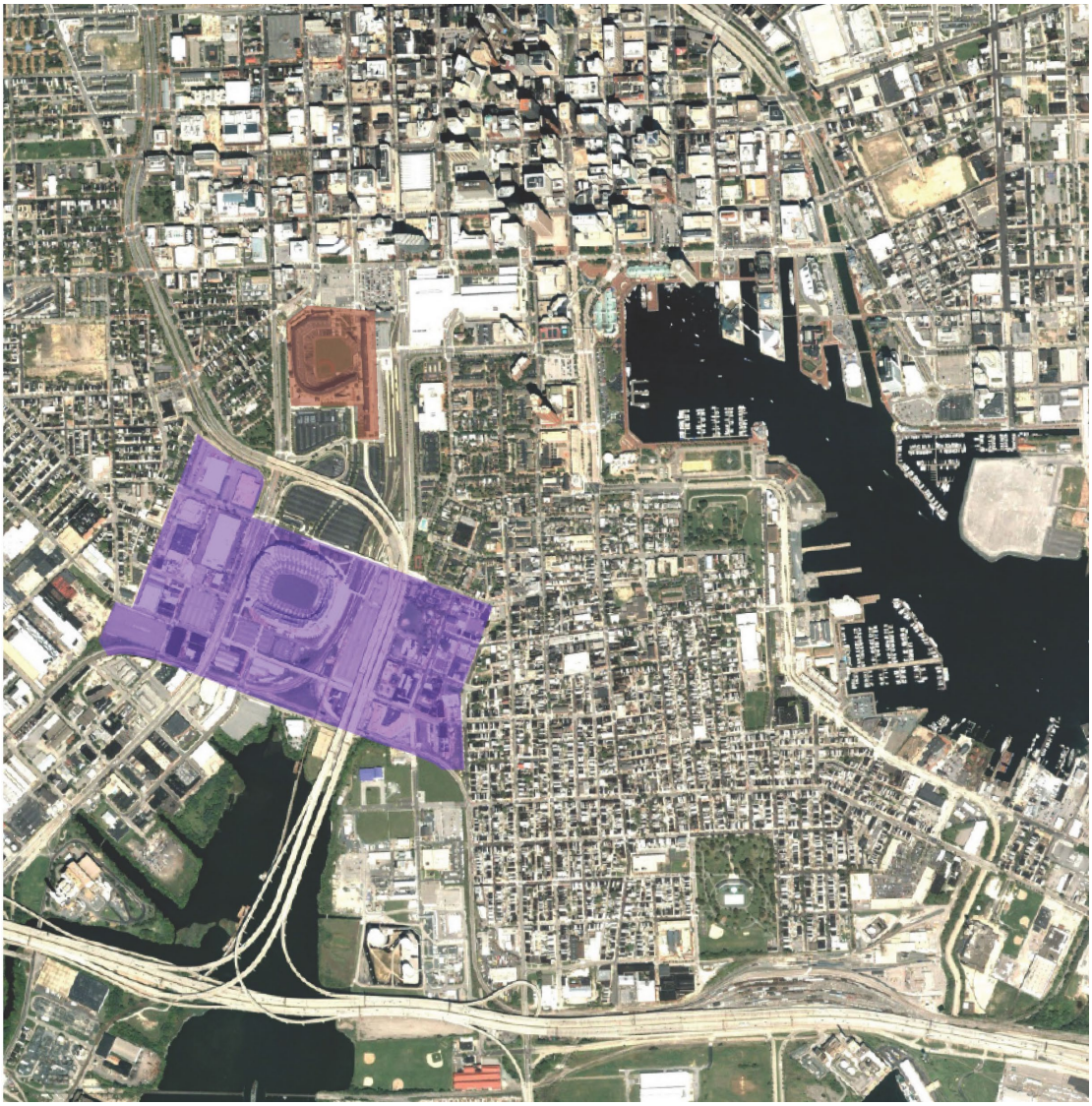

Figure 16, Site History - 2002 – Camden Yards (Source: Drawn by Author)

M&T Bank Stadium is constructed in 1998 on the existing undeveloped hardscape that came with the Camden Yards construction (Figure 17). This venue location was out of convenience. It planned to link into the existing commuter networks established in the past while neglecting that these networks run past the

stadium and up to Camden Yards. The become a barrier between the stadium, the urban fabric to the east and west, and the waterfront to the south. In summary, this site was always meant to be a venue for commuters, in direct dispute with the pedestrian strategy of this thesis. If any transition can be made for a more pedestrian prioritization, then it must begin with adapting these existing commuter network from barriers into more porous, pedestrian friendly fabric.

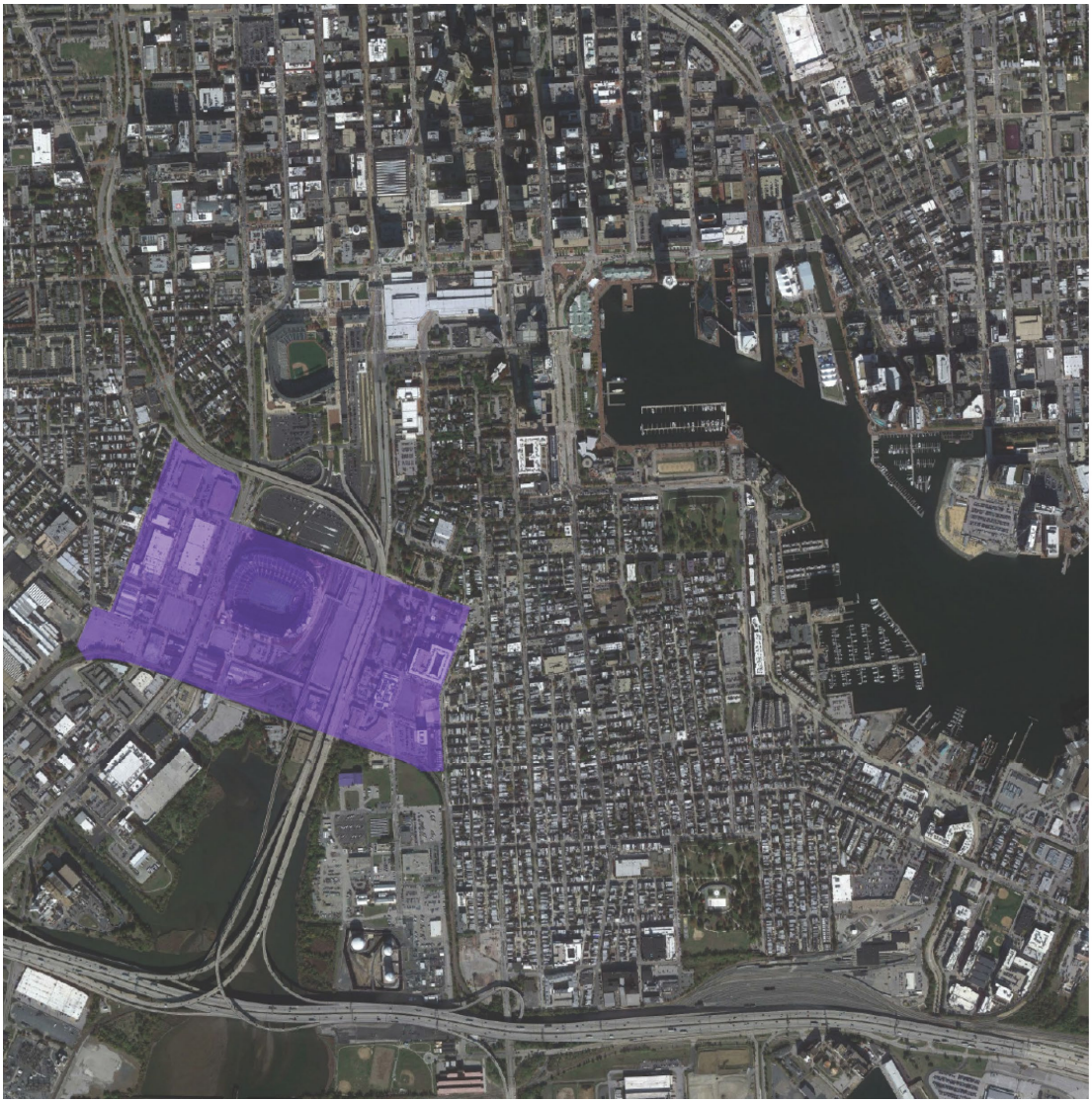

Figure 17, Site History – 2022 – M&T Bank Stadium (Source: Drawn by Author)

5.2 Process

The project design process initiated with a site precedent program data translation from the Capitol Waterfront to M&T Bank Stadium (Figure 18). This translation will act as a code or cypher into an urban environment that can be reapplied to alternative sites to set a baseline for necessary program interventions. Program area in square feet was taken for the precedent and chosen site to find the area percentage of each given program type within their given master plan. This is visually represented as scaled blocks in Figure 19 and 20. The percentage positive difference of the Capitol Waterfront precedent over the existing M&T Bank Stadium program would be used as a ratio of program type and proportion to apply into the undeveloped hardscape in the M&T Bank Stadium site (Figure 21-22). The new program code can then be applied in differing strategies as shown in Figure 23-25.

Capitol Riverfront Site Program	Area	Area % of CR Site	M&T Bank Stadium Site Program	Area	Area % of M&T Site	Area % Positive Difference for CR Site	Area % Difference scaled into M&T Bank Site Undeveloped Hardscape Total
Environment	1,950,000 Sq. Ft.	21%	Environment	7,740,000 Sq. Ft.	15%	6% = 40%	2,600,000 Sq. Ft.
Residential	3,120,000 Sq. Ft.	33%	Residential	20,430,000 Sq. Ft.	39%	0% = 0%	0 Sq. Ft.
Commercial	3,840,000 Sq. Ft.	40%	Commercial	16,520,000 Sq. Ft.	31%	9% = 60%	3,900,000 Sq. Ft.
Industrial	580,000 Sq. Ft.	6%	Industrial	7,850,000 Sq. Ft.	15%	0% = 0%	0 Sq. Ft.
Total	9,490,000 Sq. Ft.	100%	**Total**	52,540,000 Sq. Ft.	100%	15% = 100%	6,500,000 Sq. Ft.

Figure 18, Capitol Riverfront Program / M&T Bank Stadium Program Data Translation Table (Source: Drawn by Author)

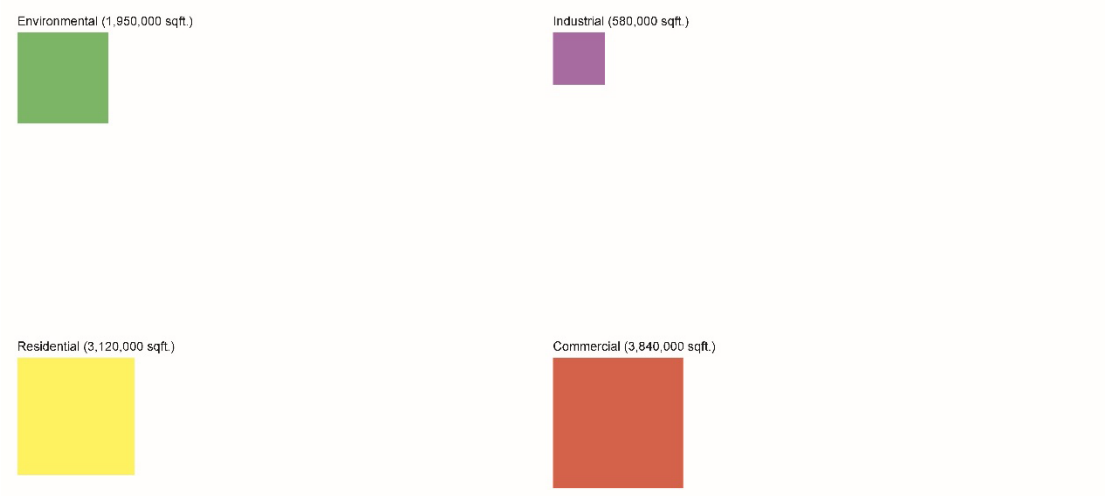

Figure 19, Capitol Riverfront Program Scaled Areas (Source: Drawn by Author)

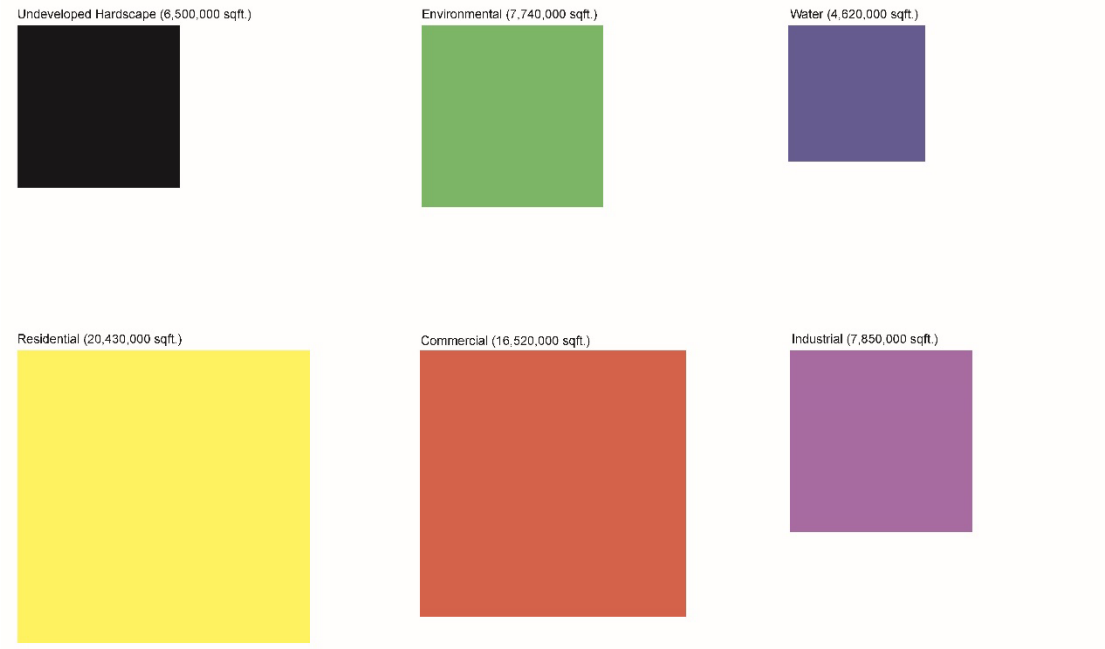

Figure 20, M&T Bank Stadium Program Scaled Areas (Source: Drawn by Author)

Figure 21, M&T Bank Stadium Undeveloped Hardscape Reception for New Program (Source: Drawn by Author)

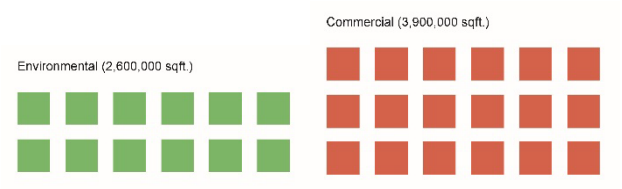

Figure 22, Capitol Riverfront Positive Difference Program Scaled Areas (Source: Drawn by Author)

Figure 23, M&T Bank Stadium / Capitol Riverfront Program Difference Input – Grouped Commercial / Environmental (Source: Drawn by Author)

Figure 24, M&T Bank Stadium / Capitol Riverfront Program Difference Input – Stadium Environmental (Source: Drawn by Author)

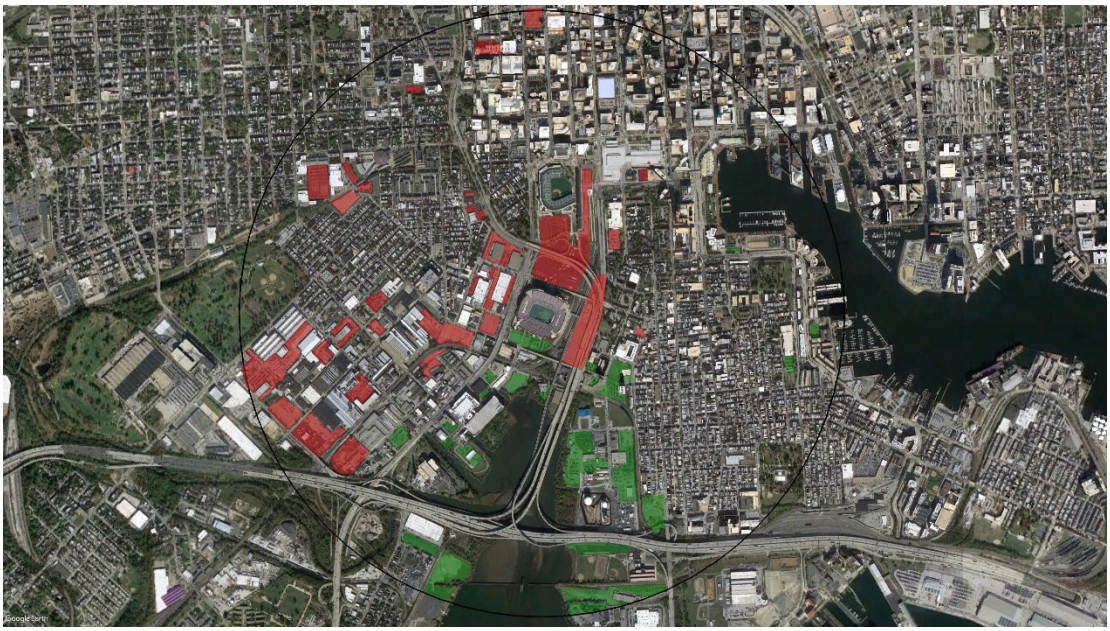

Figure 25, M&T Bank Stadium / Capitol Riverfront Program Difference Input – Waterfront Environmental (Source: Drawn by Author)

5.3 Proposal

5.3.1 Master Plan

The proposal begins with the demolition of decayed single-story commercial, industrial, and low-rise residential in Figure 26 provides an opportunity to increase urban density and turn stadium context into a new urban center destination. The demolition area is determined by locating zones that do not efficiently utilize their area, interrupt stadium to residential use connections, or restrict the Middle Branch Patapsco River connection to the stadium.

Figure 26, Master Plan - Site Plan - Demolition (Source: Drawn by Author)

Mid-rise perimeter blocks with inspiration from Le Corbusier's Radiant City[10] fill in undeveloped hardscape and decay while being a transition to a new urban center (Figure 27). Underpass recreational zones create a more pedestrian friendly urban fabric. The urban center is formed to the south of the stadium creating an east-west connection.

[10] (Le Corbusier and Etchells 1929)

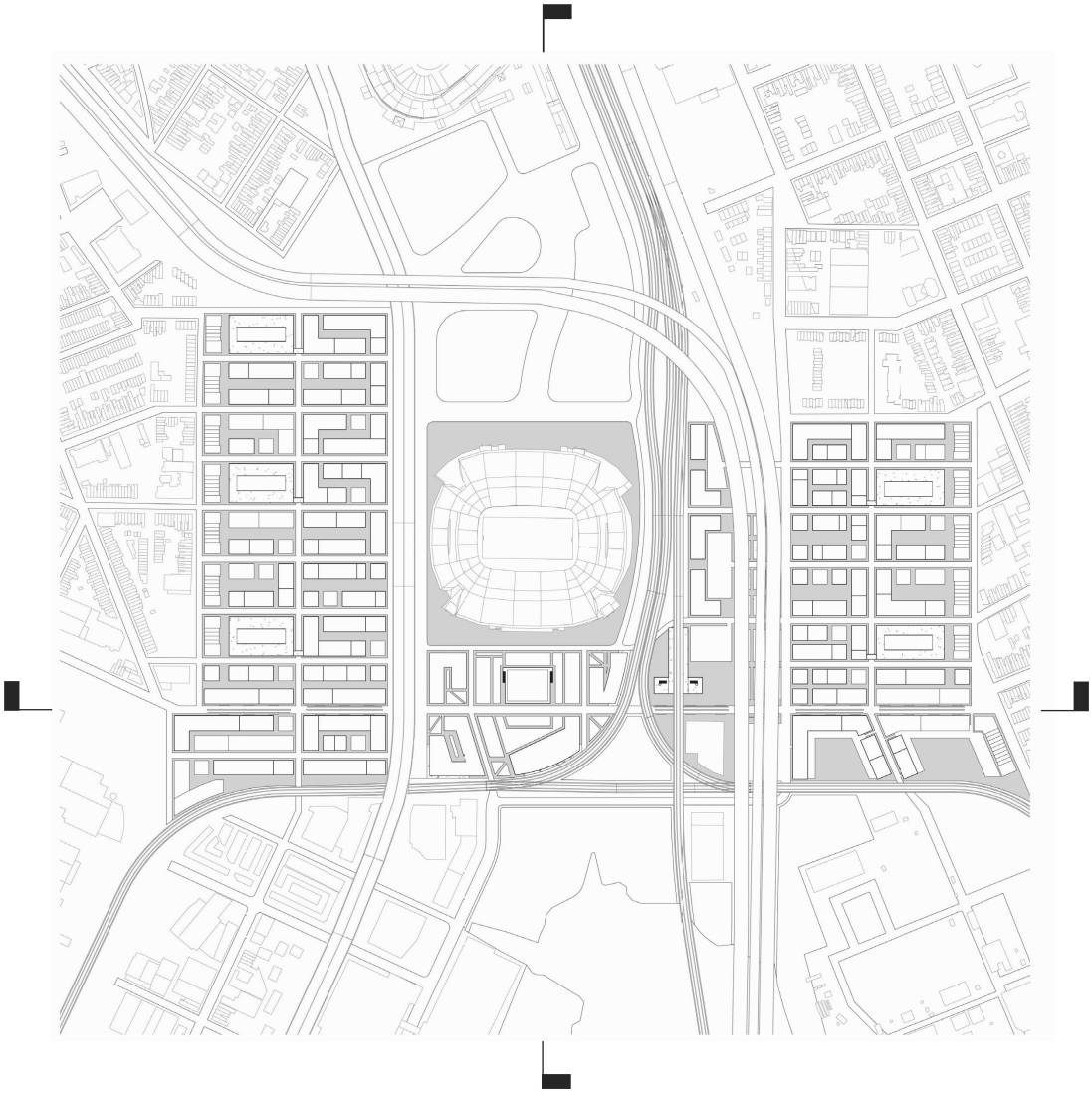

Figure 27, Master Plan - Site Plan - New (Source: Drawn by Author)

Pedestrian circulation is prioritized in the project proposal through the elevated train tracks and perimeter site parking. This opens the ground level for pedestrian use (Figure 28). Car circulation is directly to primarily use the outer streets on the east and west side to leave the urban center fabric free. The MARC elevated railway will implement a new station adjacent to M&T Bank Stadium for more direct access. Bus transit runs on major streets heading north and south on each side of the

master plan. Pedestrian are shifted from parking garage entry toward the stadium to the east and west until encountering the underpass linear parks. These underpass parks act as primary pedestrian circulation south to Ostend Street where people reorient to reach the stadium adjacent urban center.

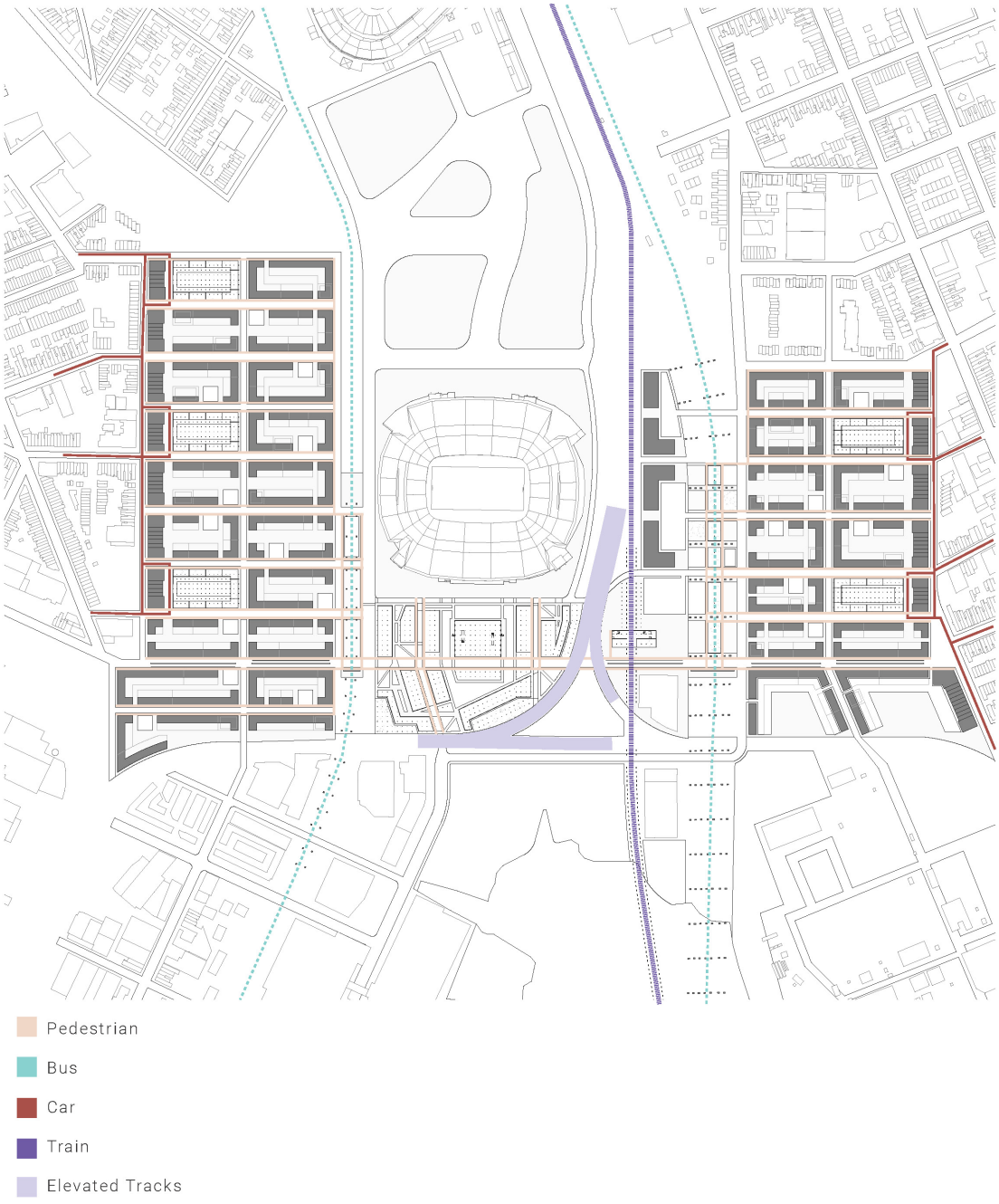

Figure 28, Master Plan - Site Plan - Circulation (Source: Drawn by Author)

A conservation zone, pocket parks, roof gardens, and central parks transform undeveloped hardscape into connected, adaptable space (Figure 29). The conservation zone surrounds the Middle Branch Patapsco River. A central park at the urban center provides a focal point for pocket parks and roof gardens which spread throughout the linear blocks in the master plan proposal. Green streets link these lesser fabric parks to the central park zone.

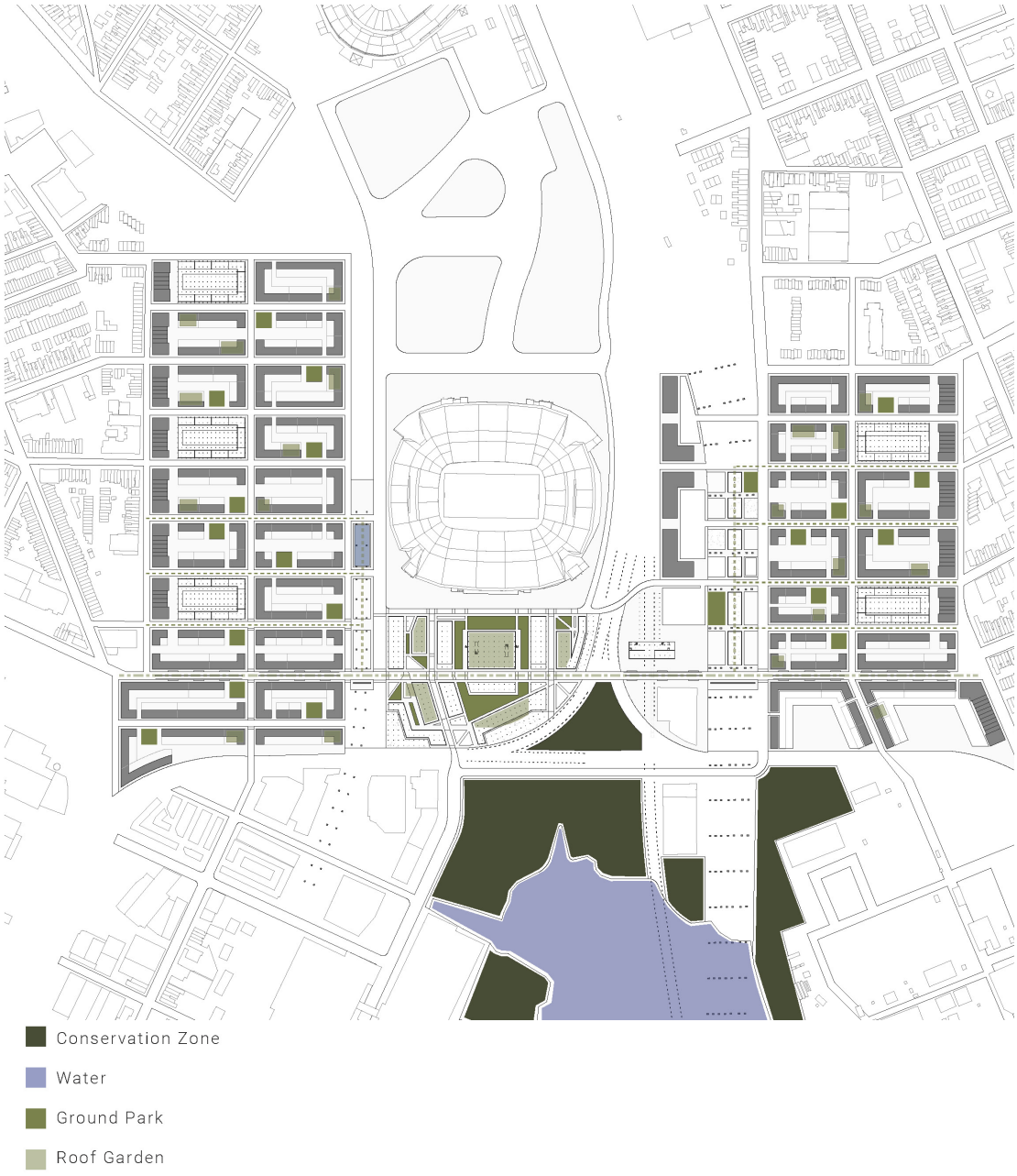

Figure 29, Master Plan - Site Plan - Environmental (Source: Drawn by Author)

The Camden Water connection in Figure 30 reveals another goal of the master plan. These adjacent zones from should aspire to link the Middle Branch Patapsco River to entire venue zone concluding at Camden Yards.

Figure 30, Master Plan - Site Section - Camden/Water NS (Source: Drawn by Author)

To create a more harmonious transition from low-rise residential housing to the stadium, Figure 31 shows a terracing of buildings that scale up in height from low-rise towards the stadium. This creates a less harsh and sudden urban fabric adjacent to the stadium.

Figure 31, Master Plan - Site Section - Terracing EW (Source: Drawn by Author)

The master plan consists of four major focus areas. Figure 32 shows the locations of the stadium as a monument in the center of the master plan, the recreational urban center below it, the M&T Bank Stadium MARC train station to the

east, the underpass areas to the east and west, and the perimeter block urban fabric that acts as a transition to existing context.

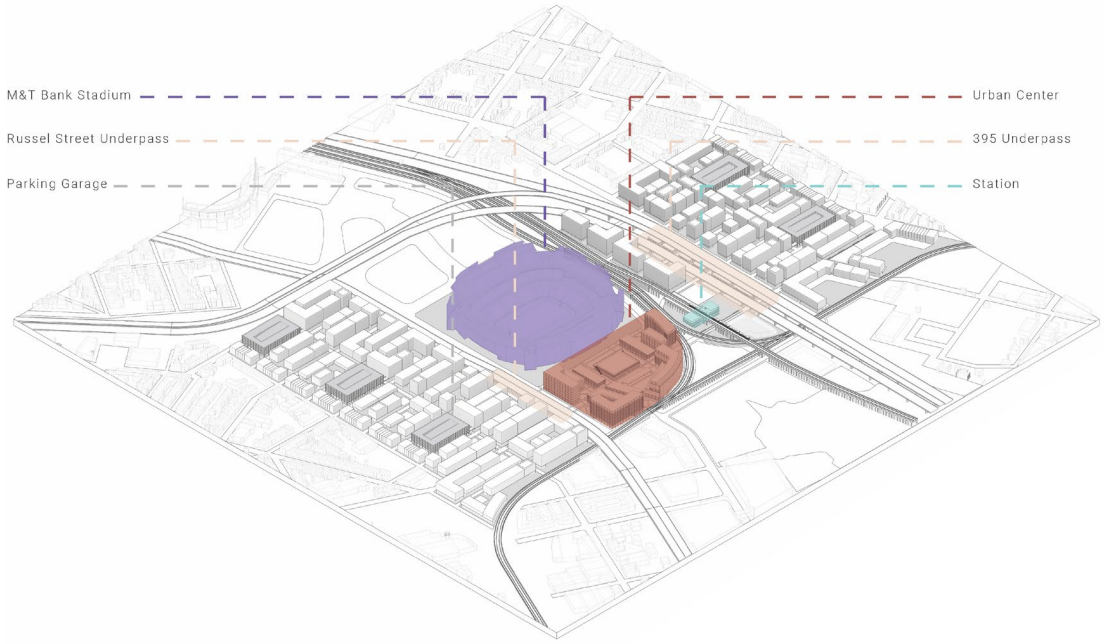

Figure 32, Master Plan - Site Axon - Program (Source: Drawn by Author)

5.3.2 Perimeter Block

The perimeter block is broken down into three building types (Figure 33-37). Low-rise residential links adjacent existing low-rise residential to the new construction and caps parking garage blocks. Parking garages offer a density increasing variation to the undeveloped hardscape previously existent on the site. They are constructed with mixed-use ground floors and interior ramps to parking above. Parking garages offer alternative access to adjacent mid-rise buildings through overpass bridges to reduce initial pedestrian/vehicular contact. Finally, the mid-rise building have mixed-use ground floors with multi-family housing above. Ground floors have reduced footprints to provide parking in the perimeter block interior. Pocket park are located within the mixed-use residential blocks while green roofs are located above.

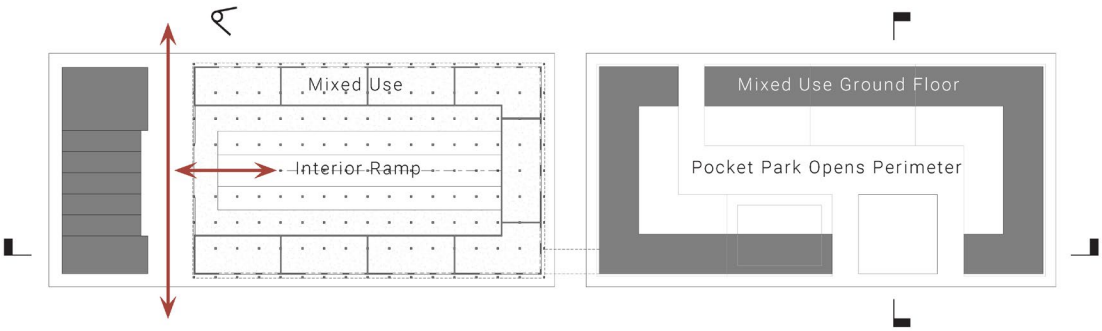

Figure 33, Perimeter Block - Enlarged Plan - Ground Level (Source: Drawn by Author)

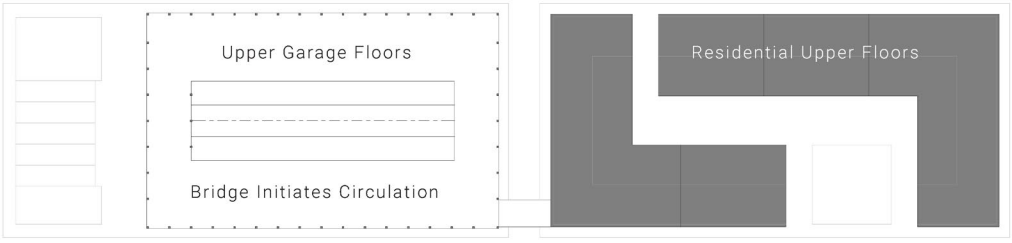

Figure 34, Perimeter Block - Enlarged Plan - Upper Level (Source: Drawn by Author)

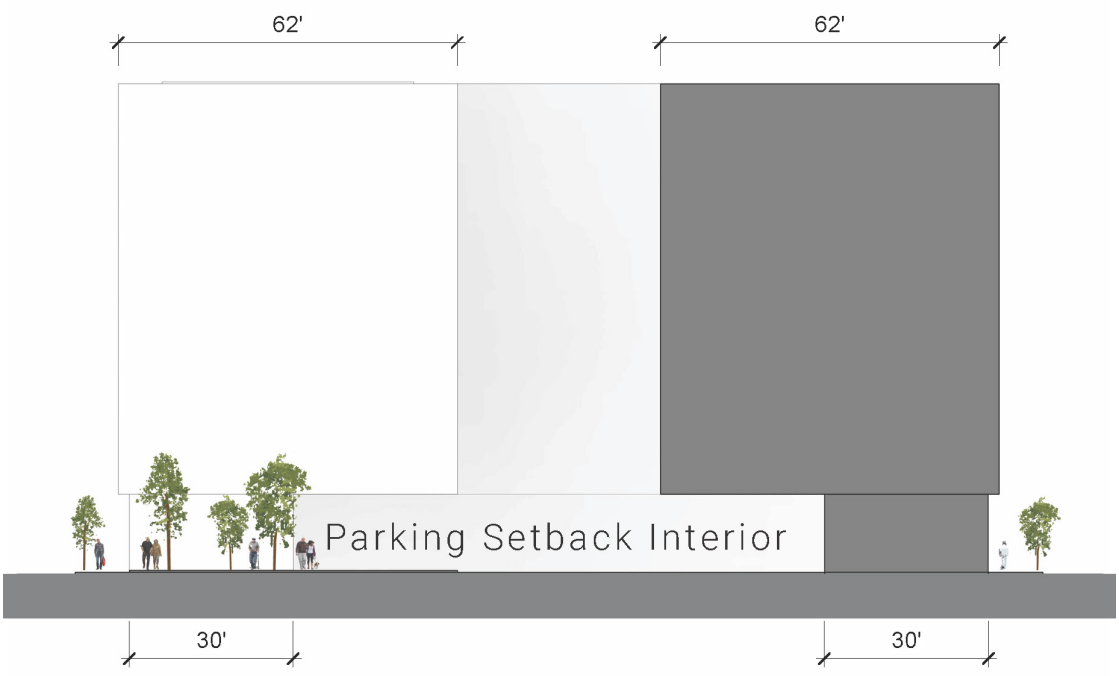

Figure 35, Perimeter Block - Section - NS - Mixed Use/Multi Family (Source: Drawn by Author)

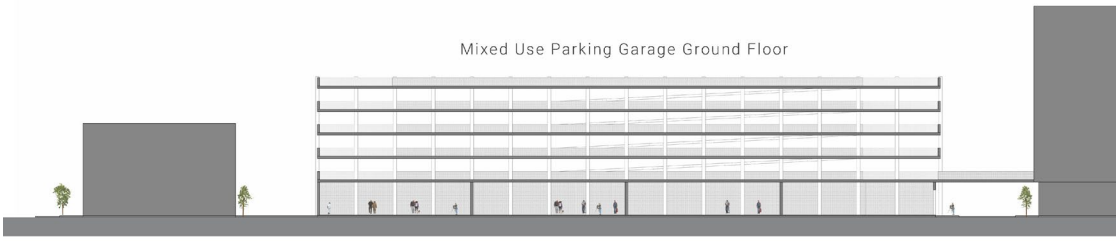

Figure 36, Perimeter Block - Section - EW - Parking Garage (Source: Drawn by Author)

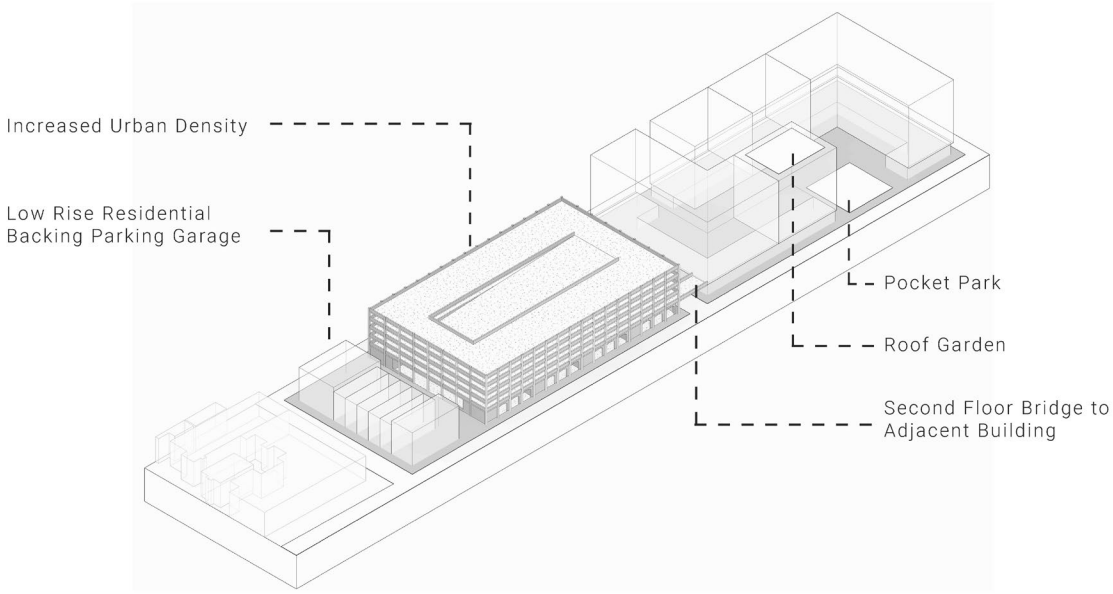

Figure 37, Perimeter Block - Axon - Program (Source: Drawn by Author)

The new perimeter block design for the transitional urban fabric of the master plan offers peering views to M&T Bank Stadium with a lively, pedestrian friendly ground level supported by mixed-use program (Figure 38).

Figure 38, Perimeter Block - Perspective (Source: Drawn by Author)

5.3.3 Underpass

Underpass conditions are underutilized zones. Underpass conversion into an active public space requires adequate lighting, supportting program, and a clear connection to its adjacent context (Figure 39-40). Access routes continue from the perimeter block system leading into the north-south oriented underpass recreation focus area. This area provides space for activity, circulation and supporting program transforming a past propagater of undeveloped hardscape.

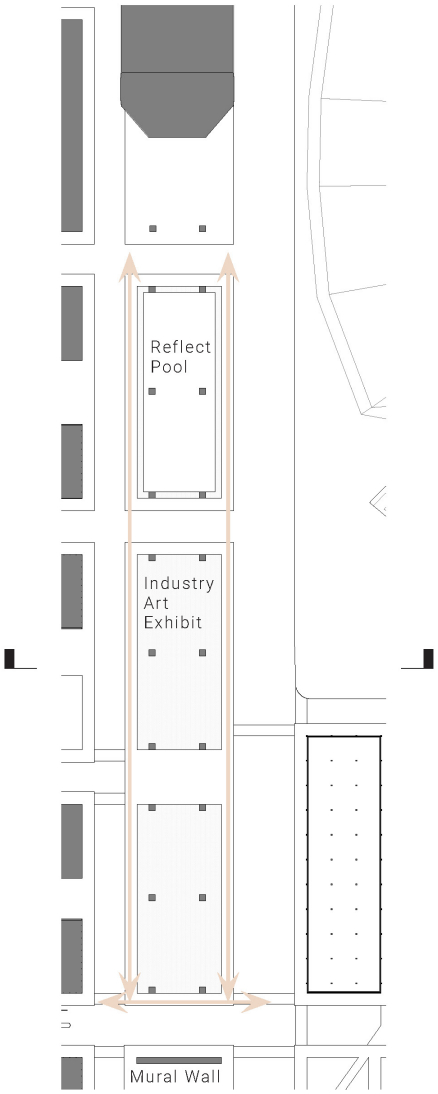

Figure 39, Underpass - Enlarged Plan – Russel Street (Source: Drawn by Author)

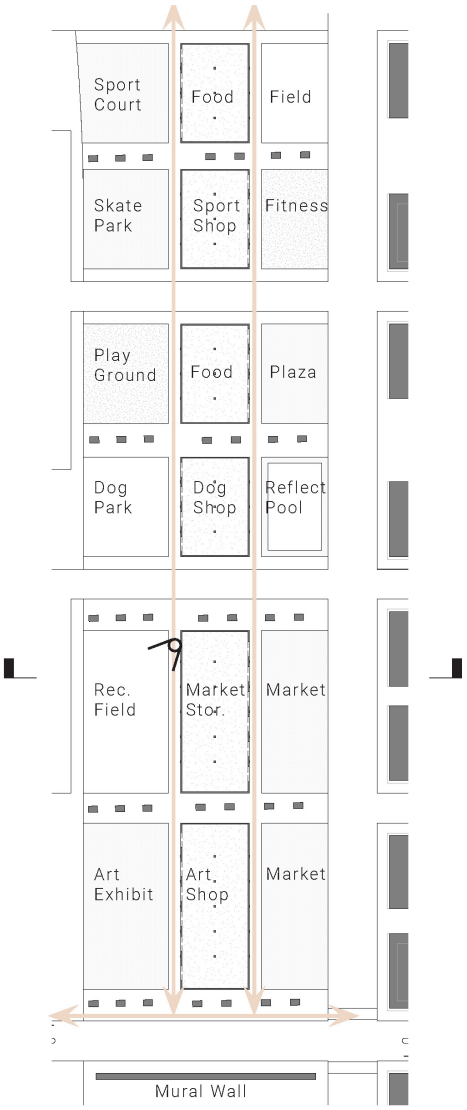

Figure 40, Underpass - Enlarged Plan – 395 (Source: Drawn by Author)

The sections in Figure 41 and 42 explain how circulation areas are located within well-lit zones. Supportting program buildings are located centrally to provide access from both sides leaving the spaces open.

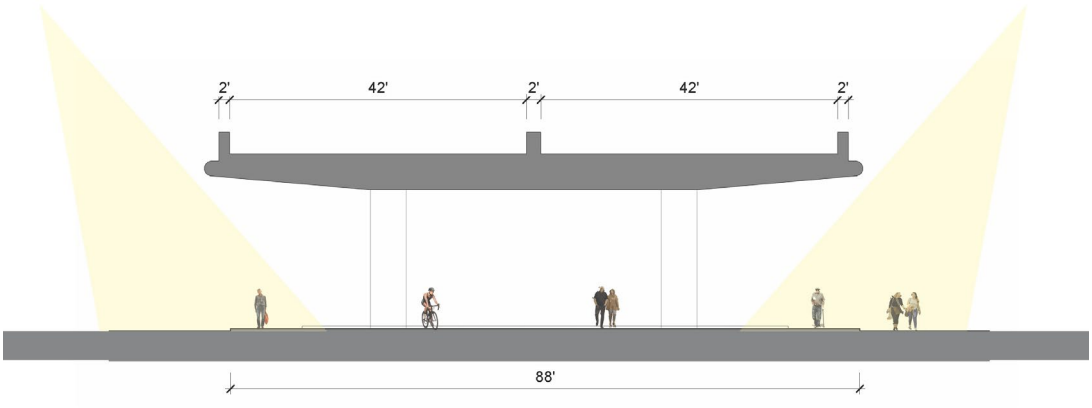

Figure 41, Underpass - Section - EW – Russel Street (Source: Drawn by Author)

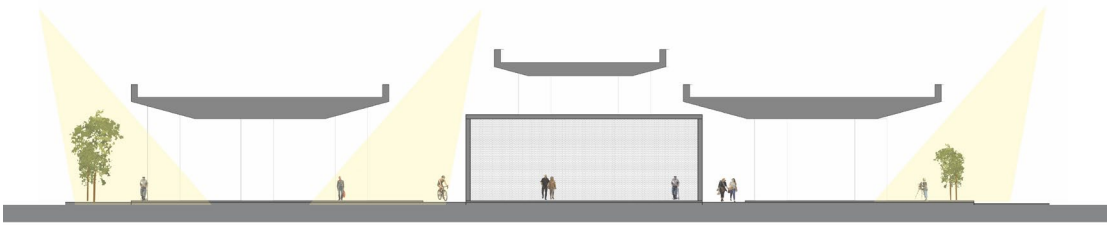

Figure 42, Underpass - Section - EW – 395 (Source: Drawn by Author)

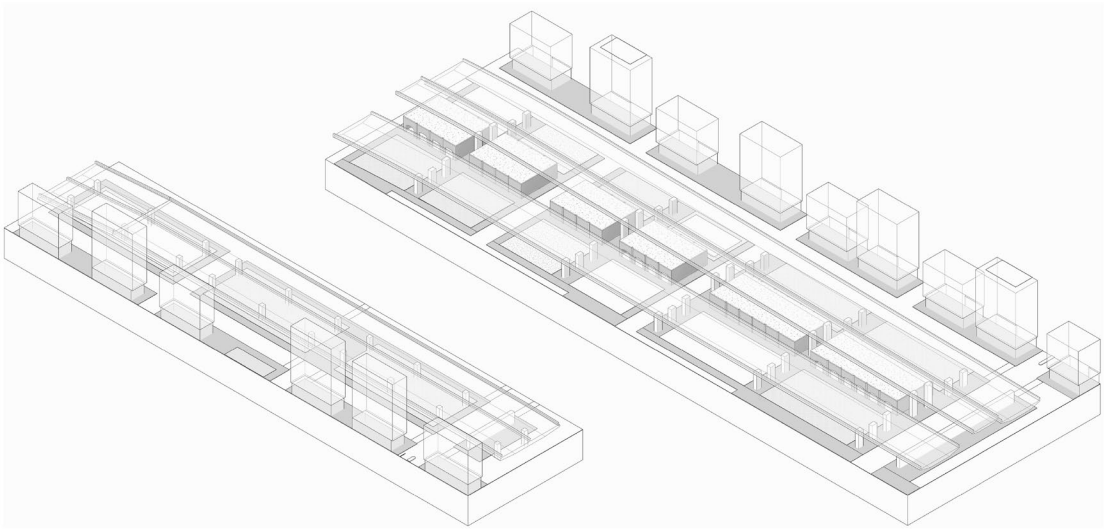

Figure 43, Underpass - Axon (Source: Drawn by Author)

The underpass perspective in Figure 44 reveals the view from the underpass circulation. It shows supportting program space to the left, activity space below the highway, the train station to the right, and the conclusion of the underpass recreation focus area at the Ostend Street mural wall which reorients the pedestrians along its east-west axis towards the urban center.

Figure 44, Underpass - Perspective (Source: Drawn by Author)

5.3.4 Train Station

A new MARC train station is located adjacent to M&T Bank Station to provide a direct public transit connection to the venue. Ostend Street to the south of the station connects the station to the urban center in Figure 45. At arrival on the platform, commuters possess elevated views to the stadium, urban center, and underpass. Exiting the station orients pedestrians east towards the urban center and stadium.

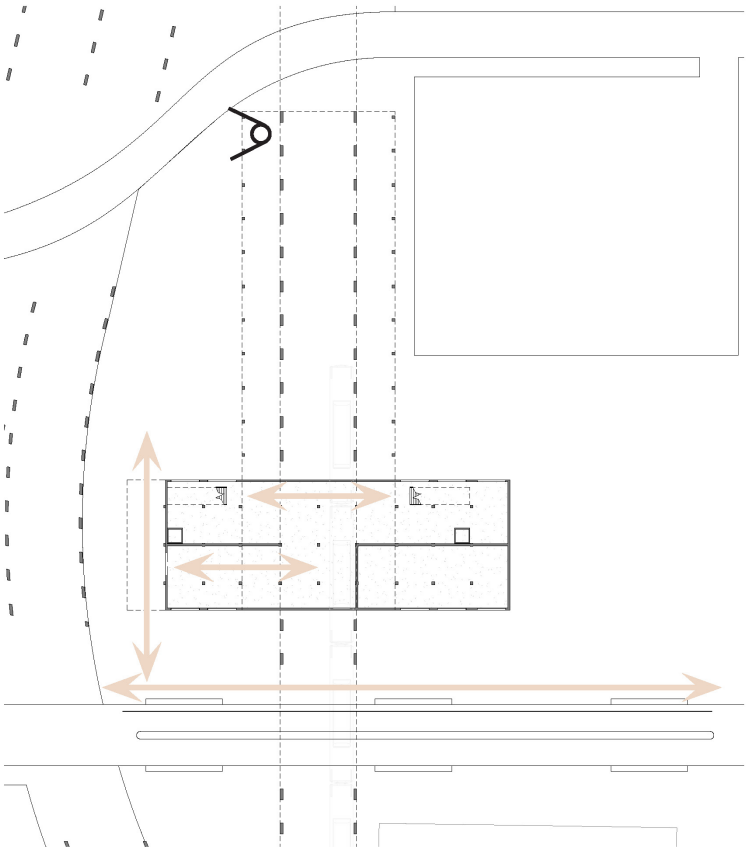

Figure 45, Train Station - Enlarged Plan – Site Ground Level (Source: Drawn by Author)

Entry into the station provides access to ticketing services then vertical circulation to the middle level. In Figure 46, the middle level acts as a transitional

space between station service on the ground and the platform on the upper level. This transitional space consists of a majority transparent façade for exterior views from a lounge space.

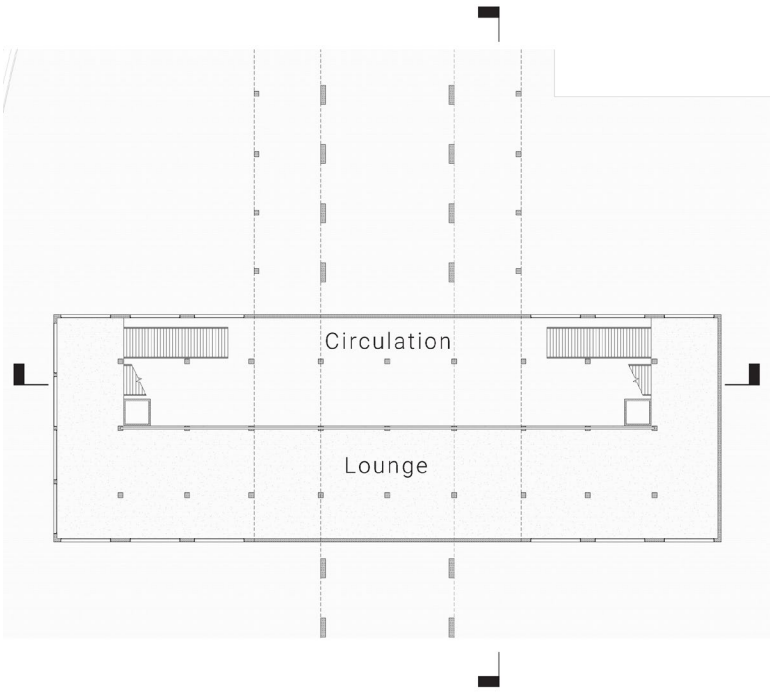

Figure 46, Train Station - Enlarged Plan – Building Upper Level (Source: Drawn by Author)

The entry is covered above by a cantilevered upper level (Figure 47-48). The station design is symmetrical around the elevated railway and platform. Double height space provides views from the ground level up into the lounge transition level.

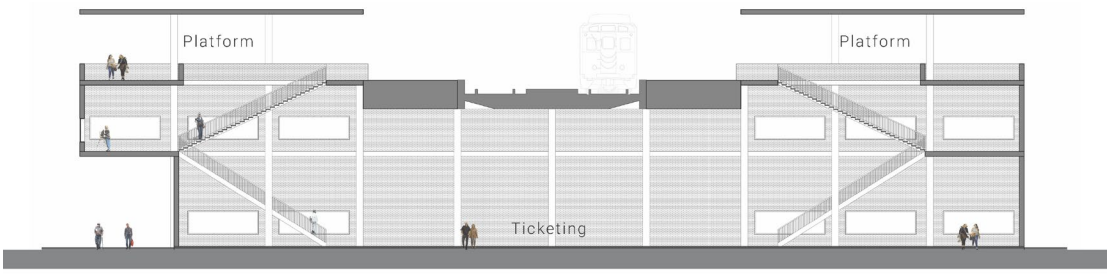

Figure 47, Train Station - Section - EW – Building and Platform (Source: Drawn by Author)

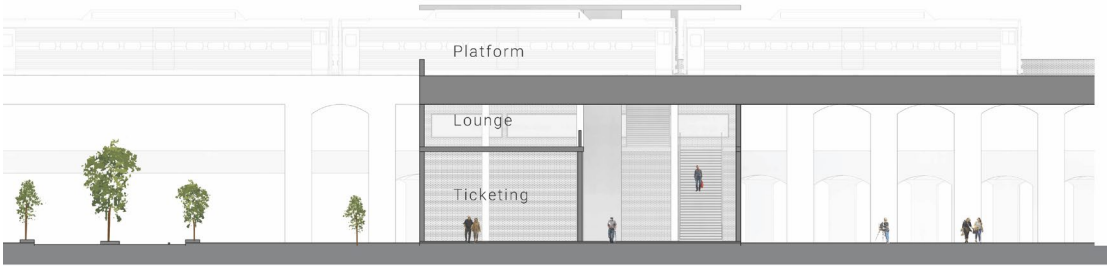

Figure 48, Train Station - Section - NS – Ostend Street (Source: Drawn by Author)

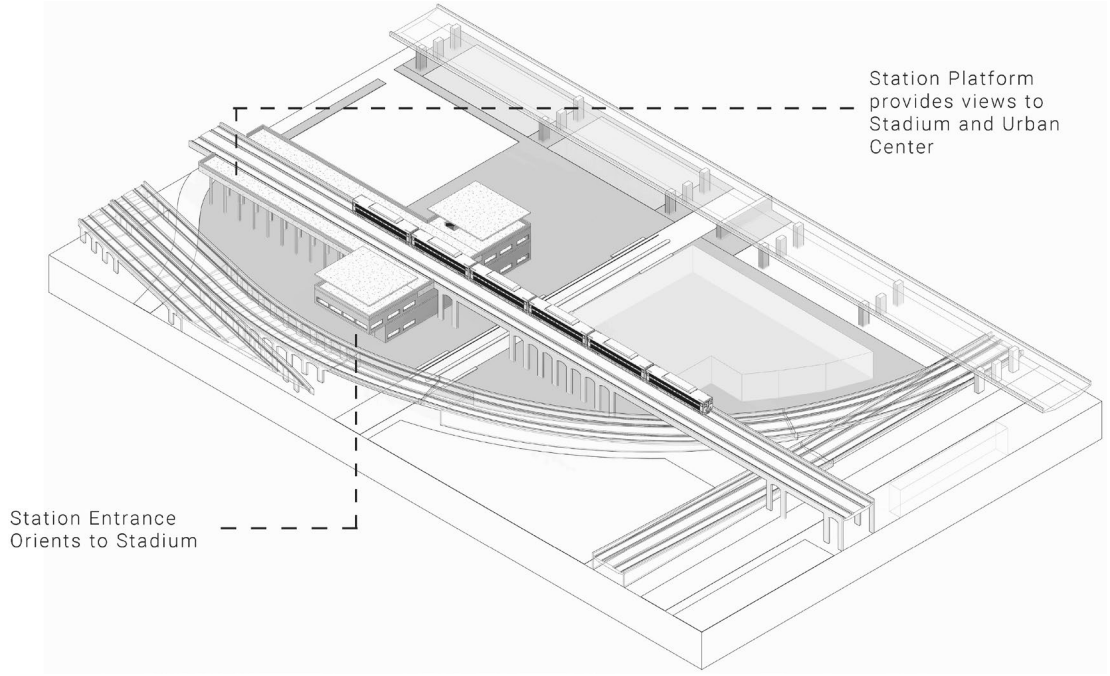

Figure 49, Train Station - Axon - Program (Source: Drawn by Author)

The perspective in Figure 50 brings light to the platform arrival experience of a commuter looking at the stadium and urban center. Railways wrap the urban center and give peering views through the stadium alcove which acts as an extension of the stadium.

Figure 50, Train Station - Perspective (Source: Drawn by Author)

5.3.5 Urban Center

The urban center is designed as a series of massing buildings that extend to the edges of the stadium footprint (Figure 51). These buildings utilize column construction and provide perimeter parking on the ground floor to keep the central zone uninterrupted by vehicular traffic. Ostend Street runs east-west through the heart of the urban center and connects it to the residential zones on each side of the master plan.

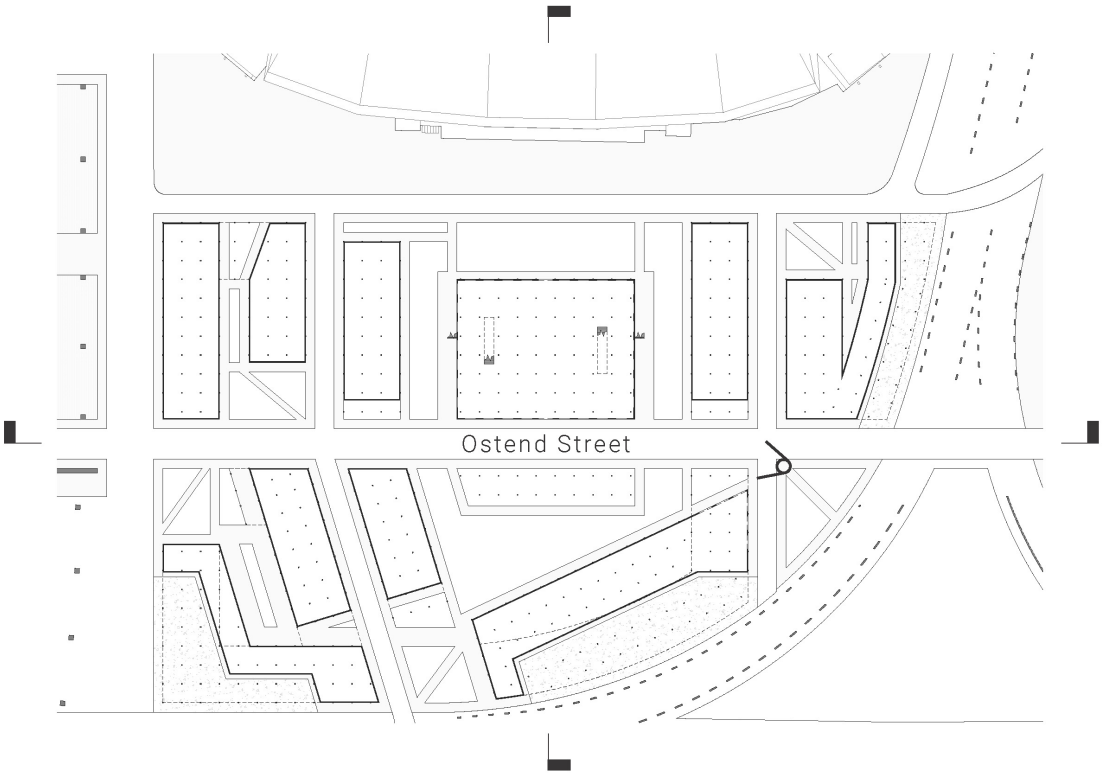

Figure 51, Urban Center - Enlarged Plan (Source: Drawn by Author)

Figure 52 explains the alcove plan design of the urban center in red, the perimeter car circulation in red, and the pedestrian circulation in tan. The urban center design wraps the stadium and extends off its perimeter. Openings in the alcove provide circulatory opportunities. Pedestrian circulation routes are directed to

secondary and tertiary stadium entrance on its southern façade. Plazas and central parks fill in void space between the buildings.

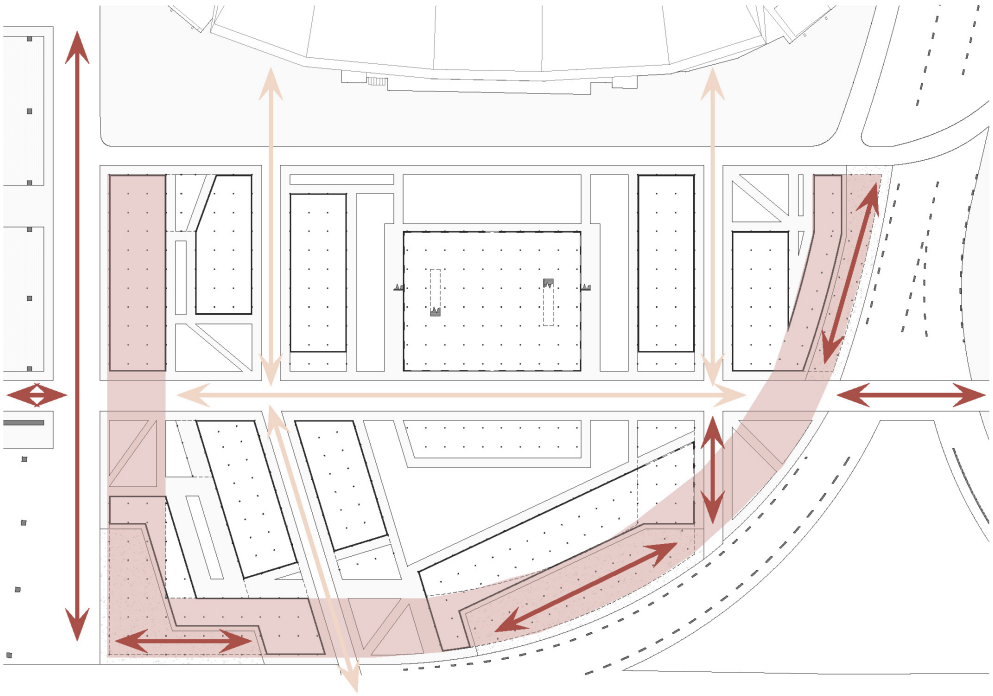

Figure 52, Urban Center - Enlarged Plan – Alcove/Circulation (Source: Drawn by Author)

The urban center provides a direct connection to the Middle Branch Patapsco River and Conservation Zone shown to the right of Figure 53. This adjacency means the green space is extended from this zone up into the urban center where green space takes an active role in the urban fabric.

Figure 53, Urban Center – Section – NS – Ostend Street (Source: Drawn by Author)

Figure 54 reveals the amphitheatre strategy of the urban center terracing. Perimeter urban center buildings have the tallest building height then gradually decrease into the urban center. Active roof space provides views down into the middle of the urban center. Alleys cut through the urban center fabric as pedestrian circulation and ground level green space.

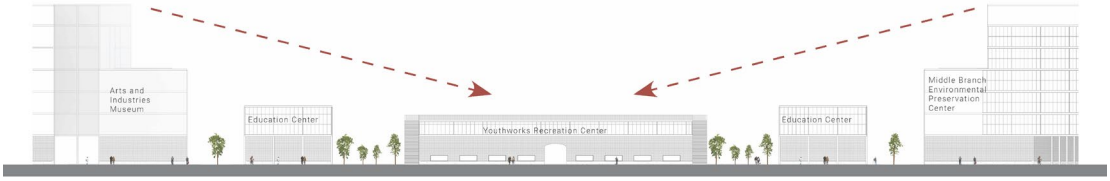

Figure 54, Urban Center – Section – EW – Terracing (Source: Drawn by Author)

The recreational urban center program is rooted in existing Baltimore City history, resilience, and conservation strategies as shown in Figure 55. The central object building will be used as a Youthworks Recreation Center. Youthworks is a program in Baltimore that assists and guides youths to get access to new opportunities and jobs. Supportting education centers are spread out within the urban center to assist the Youthworks intiative. Next, the Enoch Pratt Library is a library system that runs throughout Baltimore providing free access to books. A main location at this urban center would solidify the establishment of this new urban center. Its location in the urban center would provide unique, unobstructed views into the conservation zone and waterfront. Furthermore, the creation of an Arts and Industries Museum in Baltimore takes inspiration from the Smithsonian use in Washington D.C. As the home of the first commercial railroad industry and a strong art background, this urban center location would take advantage of the city's historic route. The historic use of the new urban center site was industrial and a specific example of this is the past use

as the home of Knabe Piano. This piano industry started in Baltimore in 1837 and was located where the stadium is located in 1869. Moreover, the creation of a Middle Branch Environmental Preservation Center could act as a headquarters for environmental conservation around the Patapsco River. This location places it adjacent to the river and provides views to it where preservation efforts could be witnessed and overseen. Finally, a hotel space in closer proximity to the urban center is used as a pedestrian base to provide people to interact with this urban center.

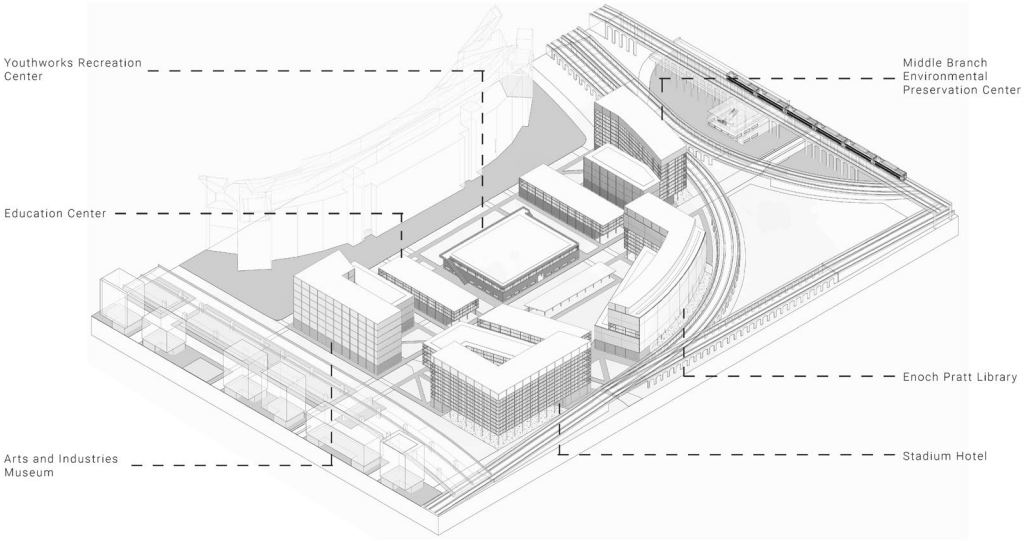

Figure 55, Urban Center - Axon - Program (Source: Drawn by Author)

Figure 56 shows the an urban center perspective from Ostend Street looking west to the Youthworks Recreation Center and beyond into the perimeter blocks. It represents the active green space conditions, stadium façade inspiration for the urban center structures, and amphitheatre building height design.

Figure 56, Urban Center – Perspective (Source: Drawn by Author)

5.4 Conclusions

In conclusion, this thesis raises a great question about the survival of stadiums through the adaptability of their sites. The framework of the thesis strategy allows the application to traditional stadium sites, so a new urban center design is formed. A need has arisen to reevaluate the density of the urban center and perimeter block system depending on the intentions of the project. This project focused on the reduction of vehicular circulation while a more realistic approach may utilize a parking to person ratio as a baseline for parking instillations. The density of the urban center could also be increased through building heights to utilize skyscrapers that overshadow the stadium and provide view down within. Additional study has shown that this thesis is consistent with the actions being taken at new venue master plan designs but there is no singular system that is applied to achieve a basis for these designs. The question remains, is this thesis effective at adapting existing venues to urban centers?

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