

DISOBSOLESCENCE:
An Approach to Obsolete Industrial Sites within the Rust Belt

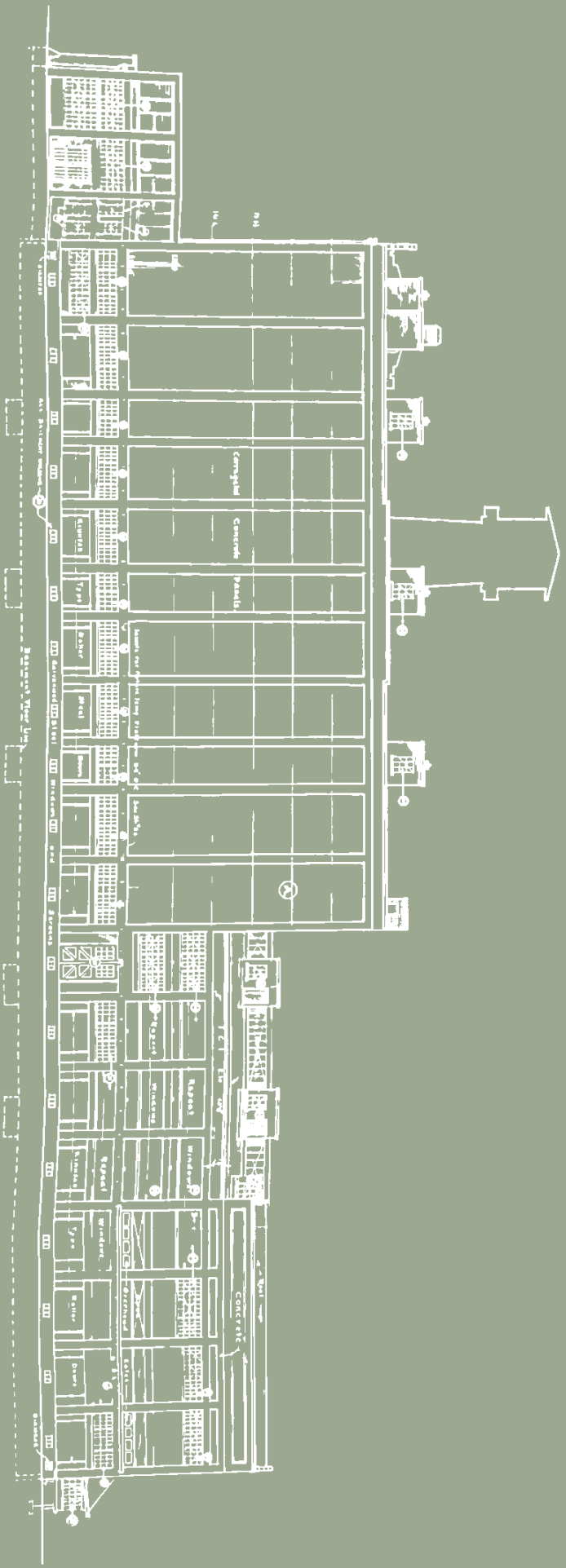
A Thesis
Submitted to the
Faculty of Miami University
In partial fulfillment of
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Department of Architecture and Interior Design

By
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Miami University
Oxford, OH
2024

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OTTAWA STREET ELEVATION.
SCALE 1/8" = 1'-0"

DIS- OBSCOLESCENCE

An Approach to Obsolete Industrial Sites within
the Rust Belt

WILLIAM T. MONROE

Architectural Thesis
Miami University: M. Arch 2023-2024

Committee:

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I extend my heartfelt thanks to my family for their love, patience, and belief in my abilities. Their encouragement and understanding have been a constant source of motivation, inspiring me to pursue my passions in the built environment.

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I am deeply appreciative of everyone who has played a role, however large or small, in the completion of this thesis. Thank you for being a part of this significant milestone in my academic and professional development.

Trust me, it gets better

Bayleigh - To the moon and back

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Figure 1

“The greenest building is one that is already built.” - *CARL ELFANTE, 2007*





ABSTRACT -

THE RUST BELT region of the United States, a once prosperous industrial epicenter for the world, suffered from rampant disinvestment, deindustrialization, and a shrinking population since its height in the postwar period. Paired with post-war urban sprawl, urban centers in the region have been in constant decline until recently when re-investment efforts have begun gaining widespread popularity. Given this, my thesis explores the viability of rehabilitating the numerous former industrial buildings throughout the region. Specifically, I will look to Toledo, OH, and the Great Lakes Terminal Warehouse as a design case study built upon identified principles for redevelopment.

While many redevelopment efforts are hampered by a lack of community and market demand and bureaucratic procedures that require a site to be either fully occupied or fully vacant, my proposal offers a range of possibilities for postindustrial sites depending on specific conditions. While some sites may be fully viable for adaptive reuse, others present opportunities to retain meaning for surrounding communities through various uses beyond traditional market-based development practices or community-based rehabilitation strategies. My thesis will explore these options in the context of the Great Lakes Terminal Warehouse, and project their possibilities on sites throughout the Rust Belt.

To analyze these possibilities, I will create a framework for analysis that can be applied to a series of sites throughout the region that could be tailored to any given city, site, and building conditions. Additionally, I will explore the more ephemeral and material nature of these buildings as historical artifacts and explore their possibility to convey larger narratives around local and regional identity, along with how buildings' material and historical identity affects a consumer's direct relationship with such facilities.

AUTHOR'S ANECDOTE -

15 minutes from where I grew up in rural Northwest, Ohio, there was a long-abandoned mine and refinery called the Uretech Factory. Built in the early days of WWII, the Uretech Factory was used to mine Beryllium - a metal-like element used to make thermal control equipment, missiles, and other projectiles; along with nuclear bombs during the Cold War. This specific site was eventually abandoned in 2004 after it was discovered that Beryllium was wildly radioactive and could leak carcinogens and arsenic into groundwater; potentially risking the health of thousands that rely on a nearby stream for clean water.

As a child, I remember driving past the abandoned factory countless times with my parents and always being inquisitive about what the complex was used for. 'Surely there is something that can be done about this massive, abandoned factory.'

Now that I have moved to Southwest, Ohio just outside of Middletown, I live within walking distance of one of the largest Steel Plants that I have ever seen. While this complex is still operating, based on my previous experience with abandoned industrial sites, I find it difficult to not imagine what the site would look like if one day everyone decided to abandon the site and leave everything as is; just as the people of the Uretech Factory had in 2004.

While these two examples are anecdotes, they serve as a basis for my interest in the topic of industrial facilities and their ever-declining conditions throughout the Rust Belt region of the United States.



Figure 2

NARRATIVE -

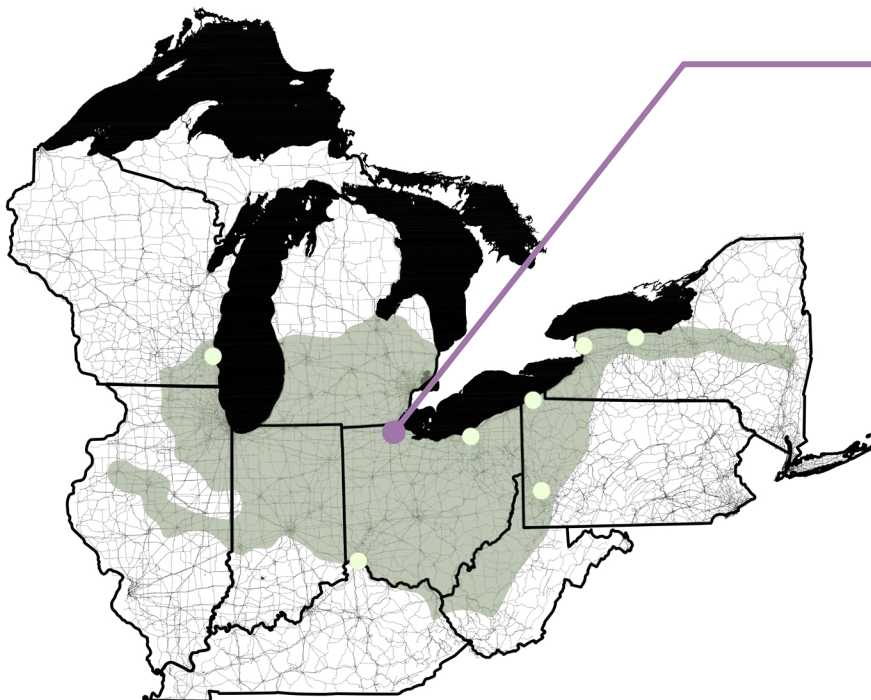
During the Industrial Revolution, the Midwest region of the United States began to boom with industrial demand due to the availability of resources and transportation of goods through the Great Lakes, Mississippi River, and Ohio River. This industrial demand led to the region being dubbed the “Rust Belt”. The Rust Belt stretches from parts of Northern New York and Pennsylvania to Northeast Illinois, with the entire state of Ohio falling squarely in the middle.

At this time cities began to struggle to adapt to several adverse economic and social conditions that led to the eventual downturn in status in the area. In the 1970s - 1980s the US Federal Reserve raised interest rates to 19%, which was unprecedented at the time, and caused the dollar to appreciate. This in turn caused US goods to become more expensive to produce and export; turning foreign buyers away from US products and

ensuring the foreign goods would be cheaper for US citizens. Along with the pricing inconsistencies, industrial jobs began another migration to foreign markets as their economies were seen as less volatile and much more promising. This migration in tandem with the appreciation of the US dollar began a decades-long snowball effect that eventually led to our current situation; with US products as a whole being much more expensive to produce and distribute than foreign markets. These factors led to a mass abandonment of industrial buildings in the United States and in many cases provides a look into the mid-20th century in a way that otherwise may not have been possible.

In modern contexts, the architectural environment of the Rust Belt was dramatically impacted by its economic nosedive. Some may argue that some architectural styles

THE RUST BELT



TOLEDO

- 1837 - Toledo Founded
- 1850s - Drainage of the Black Swamp
- 1888 - Toledo becomes 2nd Largest Railroad Center in the US
- 1920s - Toledo becomes 2nd Largest Automobile manufacturer in the US
- 1940s - Unemployment reaches 80%
- 1950s - Suburbanization and Expansion
- 1970s - All Fortune 500 comps leave Toledo
- 2020s - Revitalization efforts expand

may be more prevalent within the Rust Belt – including the Victorian and Craftsman homes of suburbs, Bungalows of cities like Chicago, and Beaux-Arts and Neoclassical government facilities of the inner cities. No other style is more widely prevalent and consistent than Industrial Architecture. This is due to the abandonment of industrial facilities within the Rust Belt during the late 20th century as previously mentioned.

Industrial Architecture of the Rust Belt can be denoted by its Large-scale, function-over-form design strategies, wide-open interior spaces, use of sturdy construction materials like brick, and large windows to encourage natural light. While individually these design elements may not seem too interesting, or may even be mundane, when combined, they form the identity of Rust Belt architecture. Kevin Lynch, an American urban planner and author known for his analysis of Urban Form and Identity along with conceiving mental mapping, argued in his 1960 book *The Image of the City*:

“Elements and attributes become remarkable in terms of their setting in the whole.”

The establishment of a Rust Belt identity of industrial architecture, along with the other aforementioned styles that may be seen, introduced a distinct design vernacular. With an accepted design vernacular in place, it is now the role of the public and other interested parties to compound that vernacular and protect it when needed. Jane Jacobs, the journalist, author, theorist, and activist, was one of the first advocates that laid the groundwork for such efforts. When her neighborhood in New York City, Greenwich Village, was threatened with Urban Renewal by Robert Moses, the urban planner and public official, she greatly resisted preserving its heritage. Her opinion on architectural heritage is expressed

perfectly in her 1961 book, *The Death and Life of Great American Cities*:

“Cities need old buildings so badly it is probably impossible for vigorous streets and districts to grow without them. [...] Old ideas can sometimes use new buildings. New ideas must use old buildings.”

While the design vernacular may be different, the sentiment is still the same. The industrial heritage of the Rust Belt has already been abandoned once, and we now must ensure it doesn't happen again. This can be done primarily by implementing adaptive reuse design strategies.

Adaptive Reuse is generally defined as the reuse or retrofitting of a building for a secondary use that it was not initially intended to serve. Many believe that approaching any building with an Adaptive Reuse approach will yield a better outcome than demolition or improper operation. An Adaptive Reuse approach is all but required in the case of abandoned or obsolete industrial buildings. Unless the site is completely uninhabitable, chemically, physiologically destroyed, or has some other form of irreparable damage, the exploration of the feasibility of an Adaptive Reuse approach should be highly encouraged. Some of the potential benefits could be, but are not limited to, material cost savings, historic preservation, cultural identity perseverance, and ease of use for community members. While Adaptive Reuse may not always be feasible, due to factors like financial requirements or local jurisdiction, one should always attempt to preserve a space as well as can be expected. That includes obsolete or abandoned industrial complexes throughout the Rust Belt.

PRECEDENTS -

Exploring proper precedents projects is paramount to the successful development of a thesis project, especially one that considers so many impacts to the final design, including Site History, Appropriate Building Usage, Cultural and Societal Implications, Materiality, Sustainability, etc. Exploring a multitude of projects that have successfully navigated such considerations will provide a foundation of understanding for the development of this exploration. While more projects will surely be explored, the collection outlined here explore all avenues that are expected to have a direct influence on a project exploring disobsolescence of industrial buildings within the Rust Belt and the approaches that any such project may have throughout the region.

NEUES MUSEUM

Architect: David Chipperfield
Location: Berlin, Germany
Year: 2009
Inspiration: Materiality Juxtaposition



Figure 4

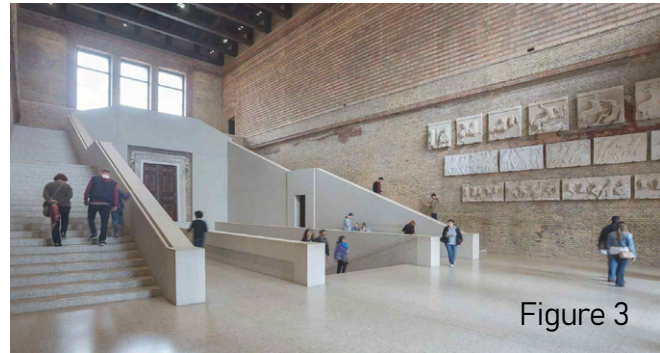


Figure 3

The Neues Museum is a renovation project primarily to repair damage incurred during World War II. After being left to the elements for decades Chipperfield was awarded the project in 1997 due to their celebration of the original building materials and spatial contexts. The damage sustained during the war was not seen as a scar to be repaired, but yet a learning opportunity that should be pointed out and respected. By focusing on the story of the building's damage a designated journey is created. All of the design approaches create an inviting and interesting space to be respected for years to come.

FACTORY 52

Architect: MSA Architects
Location: Cincinnati, Ohio
Year: 2023
Inspiration: Historically Inspired



Figure 6



Figure 5

Factory 52 is a mixed-use community that occupies the historic grounds of the former home of the United States Playing Card Company. After the complex was abandoned in 2009, revitalization efforts were put in place that MSA Design spearheaded. The design celebrates the rich history that the complex has with the surrounding community, the diversity of uses found on the site, and the availability of amenities to any interested parties. At Factory 52 one can find Office Spaces, Apartments, Restaurants, Boutiques, Art & History focused educational spaces, and numerous recreation opportunities.

ZEITZ MOCAA

Architect: Heatherwick Studio
Location: Cape Town, South Africa
Year: 2017
Inspiration: Form Grandiosity



Figure 8



Figure 7

The Zeitz Museum of Contemporary Art Africa was originally built between 1921 to 1924 as a cluster of 42 Grain Silos that served a majority of Cape Town's population. The designers, Heatherwick Studios cut into the silos to fit floor plates into the cylindrical forms along with creating a large central atrium with glazing capping the silos. Infiltrating natural light from above creates a "cathedral-like" interior. On the exterior, the inclusion of pillowed glass panels spotlights the intentional juxtaposition in both material and form.

NELSON-ATKINS MUSEUM

Architect: Steven Holl Architects
Location: Kansas City, Missouri
Year: 2007
Inspiration: Facade Design



Figure 9



Figure 10

The Nelson-Atkins Museum of Art, designed by Steven Holl challenges what it means for a visitor to occupy a museum space by allowing for a seamless transition between light, art, architecture, and landscape. The facades' multiple layers of translucent glass gather, diffuse, and refract light, at times materializing light like blocks of ice. During the day the lenses inject varying qualities of light into the galleries, while at night the sculpture garden glows with their internal light.

GLASS CITY RIVER WALL

Artist: Gabe Gault
Location: Toledo, Ohio
Year: 2022
Inspiration: Historic Celebration



Figure 11



Figure 12

The 28 silos that house the Glass City River Wall were originally built in the early 20th century by Archer Daniels Midland (ADM), one of the largest food processing companies in the US. After sitting dormant for decades, in 2019 a group of local artists and investors began the project with the help of artist, Gabe Gault of Southern California. The mural celebrates local history and is over 170,000 sf, considered the largest mural in the US.

FAHLE GALLERY STREET

Architect: LUMIA & studio ARGUS
Location: Tallinn, Estonia
Year: 2020
Inspiration: Nature Integration

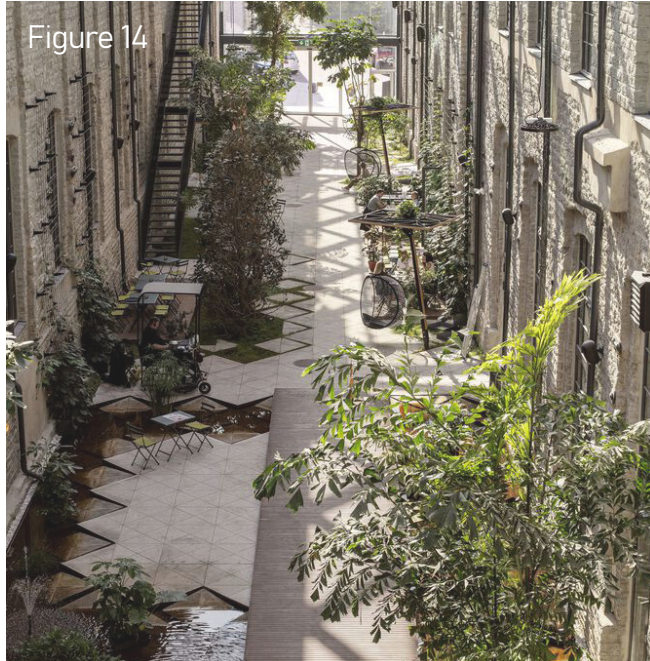


Figure 14



Figure 13

Found nestled between two historic buildings in Tallinn, Estonia, the Fahle Gallery Street is an alleyway that intends to create a cozy and welcoming environment through the usage of greenery and modern space layout concepts. Completed in 2020, the street is a perfect example of how one can integrate nature with historic contexts in a way that created an enjoyable environment for all users.

ZOLLVEREIN KOHLENWÄSCHE

Architect: OMA
Location: Essen, Germany
Year: 2002
Inspiration: Historic Preservation



Figure 16

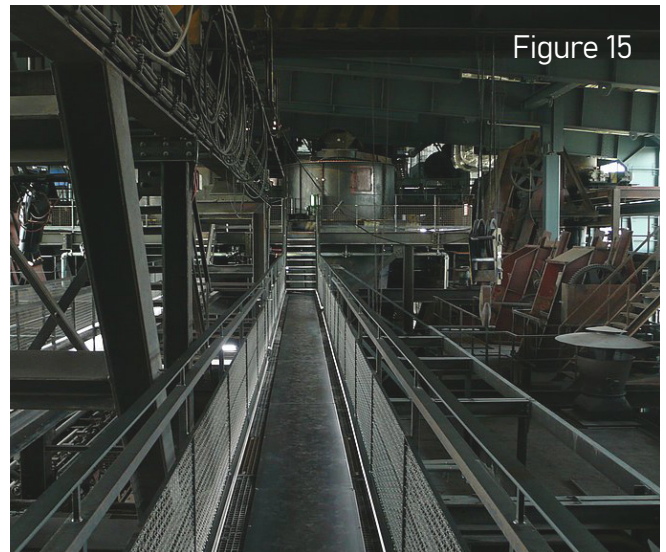


Figure 15

Built in 1847, the Zollverein Kohlenwäsche was at the time the largest coal washery in the world due to the adoption of Fordism. The plant operated successfully until it's closer in 1986. In 2002 Rem Koolhaas and his firm OMA presented a masterplan for the site. The newly formed Ruhr Museum celebrating natural history and local culture opened in 2010 and has seen over 1.5 million visitors to this day.

BIBLIOGRAPHY -

A Remarkably Simple Idea to End the Cycle of Abandoned Factories

Badger, Emily. "A Remarkably Simple Idea to End the Cycle of Abandoned Factories." Bloomberg. Last modified July, 2013. <https://www.bloomberg.com/news/articles/2013-07-01/a-remarkably-simple-idea-to-end-the-cycle-of-abandoned-factories>.

The recurring issue of abandoned factories throughout the country is addressed in this article written by Emily Badger, a journalist primarily from the New York Times that covers urban policy. Badger outlines the descent of abandoned sites throughout the US and the possible solutions that would address such sites. Badger found that the best solution to solve the issue of abandoned sites would be to require the previous tenants of such sites to take out insurance policies on said sites and require them to clear the site before abandoning it. This was a useful source for finding a solution to the issue before trying to add any more infrastructure to the site, like apartments or offices.

Architecture Reborn: Converting Old Buildings for New Uses

Powell, K. (1999). Architecture reborn converting old buildings for new uses. Rizzoli.

This text, written by Kenneth Powell, an architectural critic, and historian with numerous books centered around British architecture, is a collection of works that have taken on a secondary purpose separate from its original design. This text is organized not by category or usage type, but by the activity that the users will be engaging in once inside; those being Living & Working, Leisure & Learning, Museums Transformed, and The Future. This broad definition of such projects allows for open interpretation of the successes or failures of any one given project. This work was helpful for my design as a collection of strategies that designers have taken in the past when addressing such projects but also served as an example of how someone's interpretation of said project may influence the perceived success of that project.

Cradle to Cradle

Braungart, M., McDonough, W., & Kroese, H. S. (2011). Cradle to Cradle: Afval=Voedsel. Search Knowledge.

Written by Michael Braungart (German chemist) & William McDonough (American architect) this text provides the baseline understanding of the idea of Cradle to Cradle design. The idea is that an object should be reused or recycled for a secondary purpose rather than being thrown away. This text is used to support the general argument that reusing buildings will always be a feasible approach to design.

Formerly Urban: Projecting Rust Belt Futures

Czerniak, J. (2013). Formerly urban: Projecting rust belt futures. Syracuse University School of Architecture and Princeton Architectural Press.

Edited by Julia Czerniak, a professor of architecture and landscape architecture at Syracuse University with a focus on Urbanist Design. This text comprises a series of essays presented at the Formerly Urban Conference at Syracuse University, October 13th -14th, 2010. "Collection of essays grounded in the belief that design, in all its manifestations, must play a central role in the revitalization of shrinking cities in America." Many of the essays have some degree of focus on Ohio and the surrounding area for the analysis of specific arguments. This text is used to comprise a series of strategies to approach obsolete industrial sites throughout the Rust Belt.

How to Kill a City – Gentrification, Inequality, and the Fight for the Neighborhood

Moskowitz, P. (2018). How to kill a city: Gentrification, inequality, and the fight for the neighborhood. Public Affairs.

Written by Peter Moskowitz, a freelance journalist who has written for the Guardian, New York Times, New Republic, Wired, Slate, and many others, this text addresses the role that Gentrification has in the destruction of many different major cities throughout the US. It also investigates affecting factors like inequality, racism, generational wealth, economic opportunity, and political influence, among many other factors, all through the lens of first-hand accounts. This text is used to support historical analysis that led to deindustrialization throughout the United States.

New Uses for Obsolete Buildings

Gause, J. A., Hoch, B. M., Macomber, J. D., & P., R. J. F. (1996). New uses for obsolete buildings. Urban Land Institute.

This work, written by multiple individuals within the Urban Land Institute, a cross-disciplinary organization dedicated to shaping the future of industry and appropriate land usage, is a compendium of Adaptive Reuse oriented projects throughout the United States. Within, you will find information regarding land use, construction types, building approaches, cost analyses, and everything else that needs to be considered when re-utilizing a building for a secondary purpose. This text was useful as a collection of projects that have all been successfully re-utilized and provided numerous different approaches and strategies that may be used.

Re-Architecture: Old Buildings/New Uses

Cantacuzino, S. (1989). Re architecture: Old buildings, new uses ... Thames and Hudson.

This text, written by Șerban Cantacuzino, a Romanian architect and founder of the Pro Patrimonio Foundation (which specialized in historic preservation of architectural works), is a collection of works throughout the world that have all adapted an Adaptive Reuse approach to some obsolete or abandoned building or site. The projects within are organized by project types, being Offices, Industrial, Commercial, etc. This text was very helpful for this project as it was used as a resource for collecting industrial-centered Adaptive Reuse projects and provided numerous strategies used by their designer to create the foundation for my theory and subsequent redesign of the Great Lakes Terminal Warehouse.

Retrofitting the City in ‘Ecological Urbanism’

Leland D. Cott. *Retrofitting the City in Ecological Urbanism*, Zurich: Lars Muller Publishers, 2016.

This small article found within the larger editorial ‘Ecological Urbanism’ - edited by Mohsen Mostafavi and Gareth Doherty is written by Leland D. Cott, who himself is a Founding Principal Emeritus of his Architectural Firm in the Boston area named Bruner/Cott. This text outlines all of the possible benefits of focusing on retrofitting old buildings into more appropriate uses when compared to focusing on new build projects. This essay supports the argument that it would be more appropriate to use adaptive reuse for many projects when compared to new construction.

Ruin and Redemption in Architecture

Dan Barasch. *Ruin and Redemption in Architecture*. London: Phaidon Press Ltd., 2019.

The idea of Lost, Forgotten, Reimagined, and Transformed buildings is addressed in this text written by Dan Barasch, the Co-Founder and Executive Director of the Lowline - a conceptual project that aimed to use innovative solar technology to reinvigorate an abandoned train terminal in the Lower East Side of New York City into a stunning park system. When addressing the included projects they are broken down into the current conditions or future approaches to each project and how they serve as an example of Lost, Forgotten, Reimagined, or Transformed architecture. This is useful for my argument as the text outlines why each building may have failed or succeeded and provides vital information to support the methods outlined in my text.

SynergiCity – Reinventing the Postindustrial City

Kapp, P. H., & Armstrong, P. J. (2015). *Synergicity: Reinventing the postindustrial city*. University of Illinois Press.

Edited by Paul Hardin Kapp, associate professor of Architecture at the University of Illinois at Urbana-Champaign, and Paul J. Armstrong, an associate professor of Architecture at the University of Illinois at Urbana-Champaign. This text “Presents a holistic vision for restoring industrial cities suffering from population decline back into stimulating and productive places to live and work.” Using cities like Detroit, St. Louis, Peoria, and others throughout the Rust

Belt, this text makes the argument that through environmentally and economically sustainable restoration efforts of industrial areas and warehouse districts, such cities can be an inspiration.

Tabula Plena: Forms of Urban Preservation

Roberts, Bryony, editor. *Tabula Plena: Forms of Urban Preservation*. Lars Mueller Publishers, 2016.

Edited by Bryony Roberts, an architectural designer and scholar that earned her B.A. from Yale University and her M.Arch from Princeton University, as a collaboration of the Oslo School of Architecture and Design and Columbia University's GSAPP. This text “considers strategies and possibilities for tabula plena — urban sites that are full of existing buildings and systems that have accumulated over time.” Using Oslo’s government center redesign as a case study for implementing its presented strategies, this text supports my argument that large geometric changes can provide a space with a new meaningful identity.

The Death and Life of Great American Cities

Jacobs, Jane. *The Death and Life of Great American Cities*. New York City: Random House, 1961. https://miamioh.instructure.com/courses/178468/pages/thursday_-_oct-27?module_item_id=3986434.

This popular work by Jane Jacobs - a writer and activist who studied urban environments in the 1950s - argues that urban planning policies of the time are responsible for the decline of many American cities. The text argues that approaching architecture and urban planning in a rationalist mindset completely ignores the needs of its inhabitants and oversimplifies city designs. This book serves as a very useful source when addressing what proper urban design should be, instead of large sprawling projects like factories that do nothing to serve the inhabitants of the cities. This book provides examples of what could be done in an urban environment instead of such large-scale projects from a more human perspective.

The Divided City: Poverty and Prosperity in Urban America

Mallach, A. (2018). *The divided city: Poverty and prosperity in Urban America*. Island Press.

Written by Alan Mallach, “a city planner, advocate, and writer, nationally known for his work on housing, economic development, and urban revitalization”. This text investigates the numerous factors that contribute to a city being divided based on economic development, social implications, and political context. After historical analysis, Mallach offers many strategies to “foster greater equality and opportunity”. This text is one of the earliest examples of a comprehensive collection of strategies that provides a grounded image of the transformation of historical industrial cities within the United States. It also aims to provide a balanced perspective on the past and future of American industrial cities with an attainable goal. This text is used to continue analyzing historical influences that led to deindustrialization in the Rust Belt.

METHODOLOGY -

Research Phase:

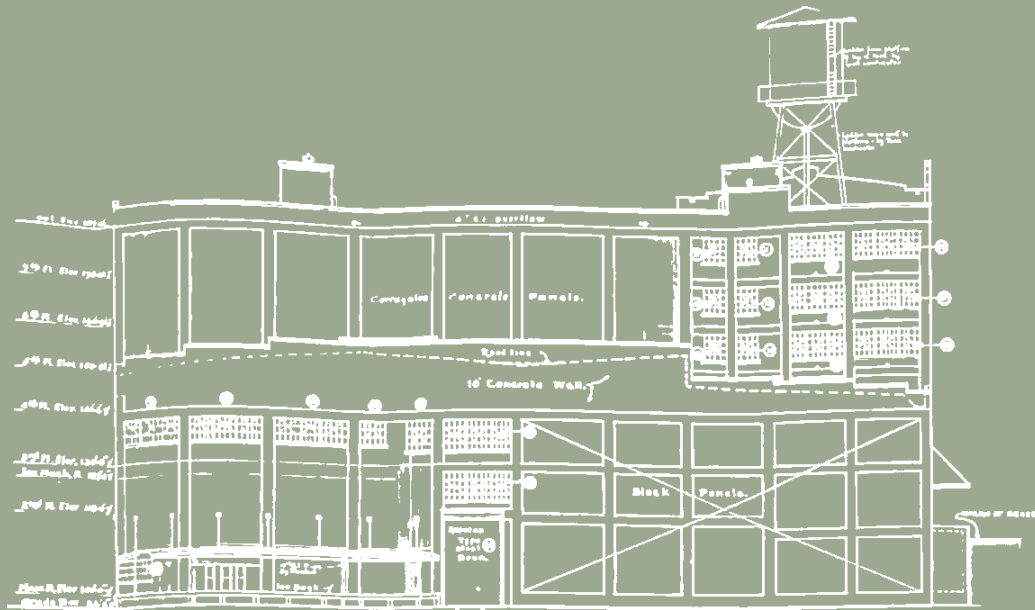
During the Research Phase of the thesis (Primarily during the ARC 701 course) these methodologies, and numerous others, were used to further my design.

- Literature - Large collections of texts, research projects, and precedence projects provide a deep foundation of knowledge to support theoretical arguments.
- Interviews - Conversations with community members affected by the GLTW (including owners and patrons of adjacent businesses, Middlegrounds Metropark visitors, and local historians), formed the basis of my design and the integration of civil spaces in my new design.
- Original CDs - Collecting the original Construction Documents from the GLTW provides detailed existing conditions of how the building stands today – along with providing insight into the detail and care with which the GLTW was designed.
- Brainstorming - Intentional brainstorming sessions with peers and professors provided a range of ideas that I otherwise would have missed.

Design Phase:

During the Design Phase of the thesis (Primarily during the ARC 702 course) these methodologies, and numerous others, were used to further my design.

- Field Trips - Conducting multiple site visits to accessible design precedence, Toledo and its larger context, and the GLTW provided first-hand experience that served invaluable in my project development.
- Mapping - Mapping exercises aided development by informing my diagramming, historic connectivity, and larger site analyses.
- Virtual Modeling - Virtual modeling of the existing conditions of the GLTW based on the found Construction Documents will provide an accurate schematic of the building's current condition.
- AI Visualization - Exploring what my design could look like by implementing emerging AI Visualization technologies provided the most accurate visuals that I am able to create with my current knowledge base.



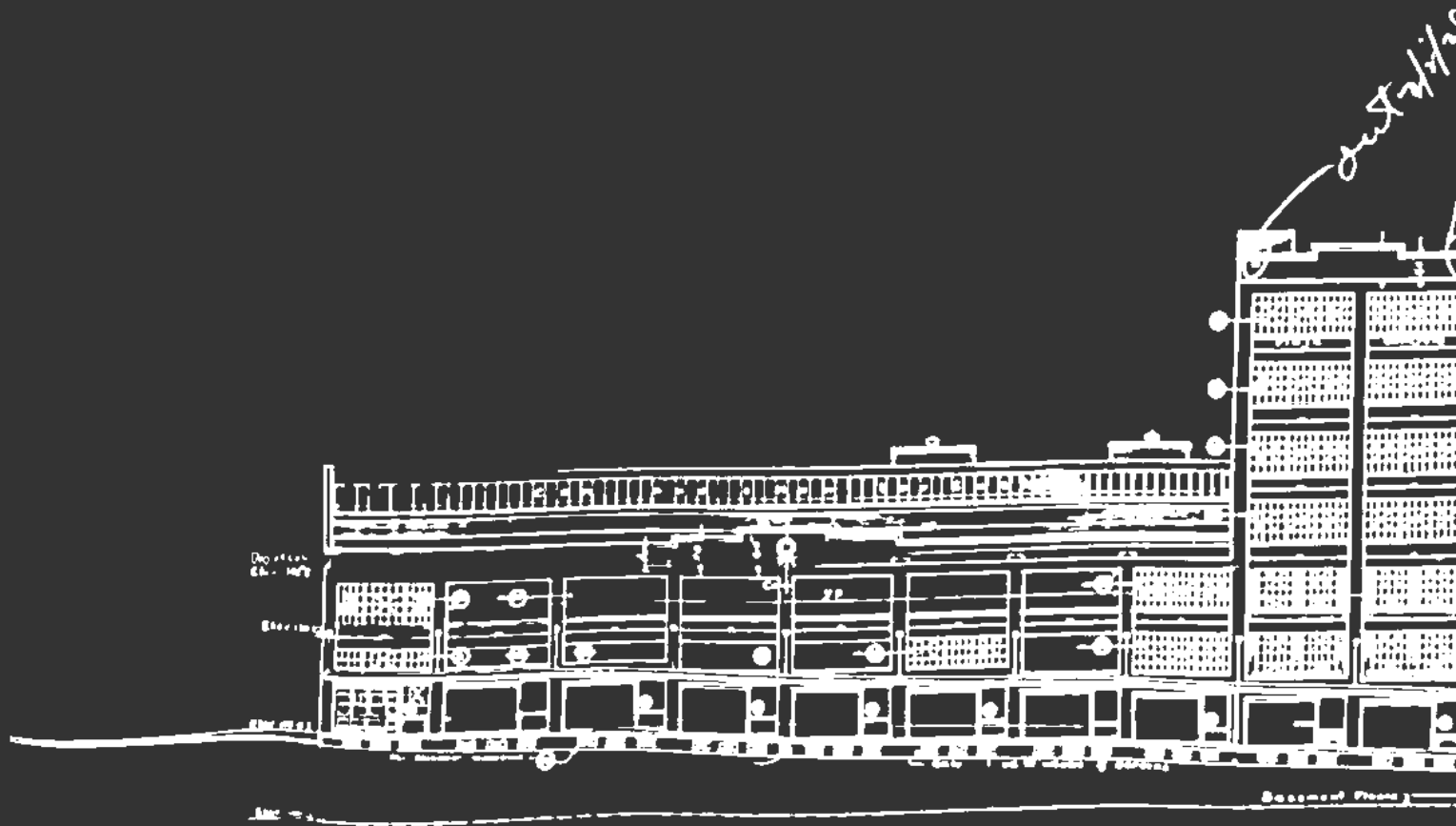
NORTH ELEVATION.



SOUTH ELEVATION.

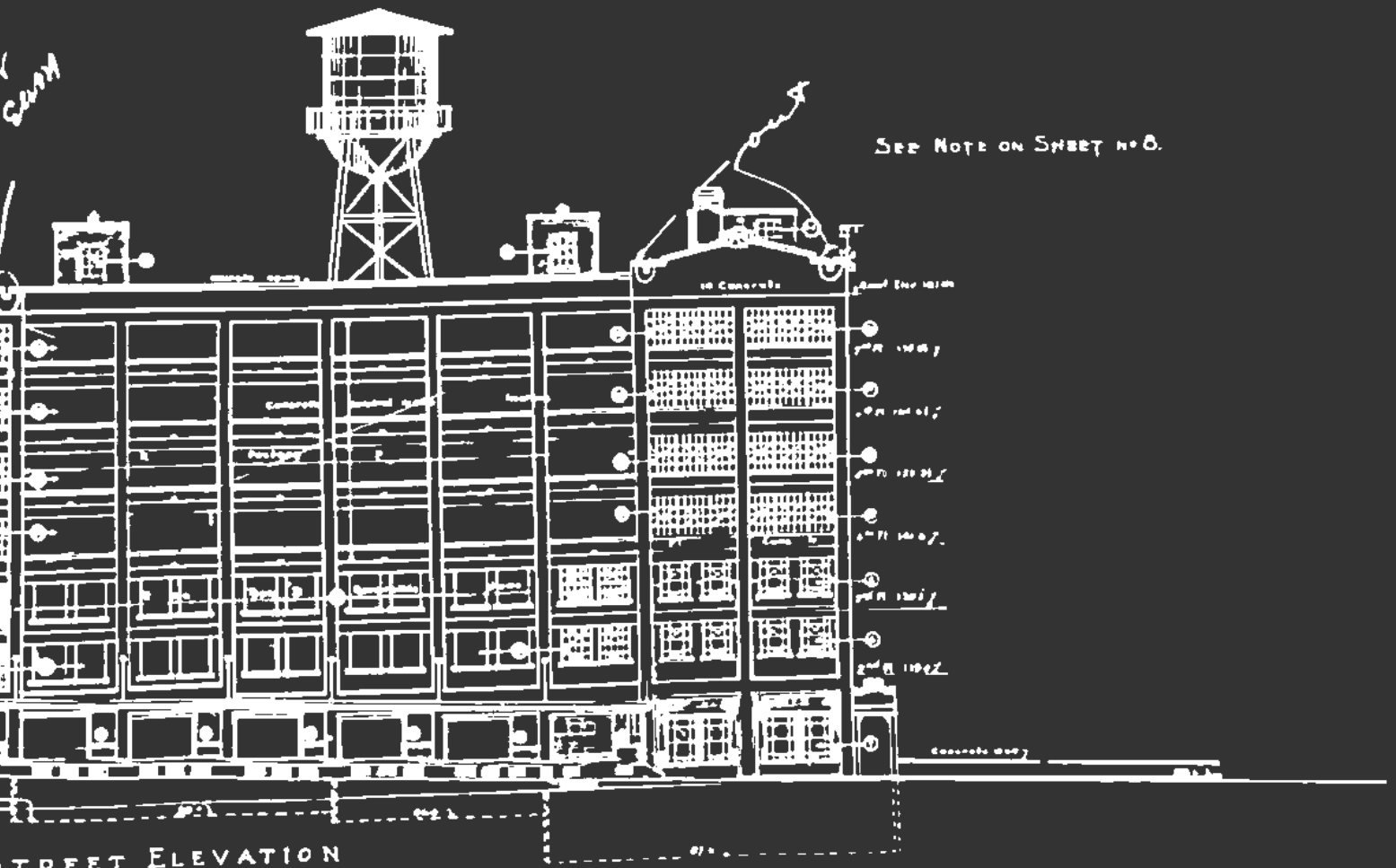
GREAT LAKES TERMINAL

- Toledo, Ohio



MORRIS S
SCALE

MINAL WAREHOUSE



STREET ELEVATION

PLATE NO. 10.

HISTORY -

Location: 355 Morris St, Toledo, OH 43604

Timeline: 1927: Built by a firm out of Detroit
1970s: Largely abandoned

Usage: Originally designed as a Cold Storage Facility and a Distribution Center for Commercial Goods (mainly produce and other agriculture)

Owner: 1927 - 1989: Great Lakes Terminal Warehouse Co.
1989: Foreclosed by Genoa Bank
1993: Bought by SETO INC. for \$180,000

Community: Today, members of the community have a generally favorable impression of the Great Lakes Terminal Warehouse, with many seeing it as an important and historic landmark within Toledo. Many community members, including the current building owners, want to see some degree of revitalization efforts put towards the building, with some semi-serious propositions being put forward.

Future: As of right now there are no plans put in writing for the future of the Great Lakes Terminal Warehouse, but the building owner and community members all have their individual ideas for what would be the most appropriate use for the next phase of the building's life.

Toledo Statistics:

POPULATION -

271,000+ TOTAL
-5.1% avg POPULATION CHANGE
35.5 avg AGE

ECONOMY -

\$41,671 avg HOUSEHOLD INCOME
\$87,400 avg PROPERTY VALUE
24.5% in POVERTY

DIVERSITY -

57.3% WHITE
27.7% AFRICAN AMERICAN
4.42% MULTIRACIAL
2.54% HISPANIC
1.25% ASIAN
6.79% OTHER

EMPLOYMENT -

1. INDUSTRY (GLASS & AUTO)
2. HEALTHCARE
3. EDUCATION
4. RENEWABLE ENERGY

Figure 17



Figure 18



GLTW Resources -

Parks -

Historically, Toledo has not been known for the celebration of their park system. Like the disinvestment found with Industrial Buildings in the Rust Belt, Toledo went long without allocating funds to its park system (outside of the larger Metroparks). That is until the Glass City Riverwalk reinvestment and construction project began in the spring of 2020. This led to over 300 acres of green space (with about 90 acres being remediated from abandoned industrial sites) being placed on the banks of the Maumee River. The project itself has cost about \$200 million to date and is currently in development and construction. This investment project includes Middlegrounds Metropark, located directly across the street east of the GLTW. Middlegrounds Metropark has become a focal point of outdoor recreation in recent years and has led to reinvestment becoming much more commonplace in the Warehouse District in which the GLTW is placed.

Grocery Stores -

Currently, the Warehouse District of Toledo, just south of Downtown, is home to the Toledo Farmers' Market. While it may hold a special place in the heart of locals, realistically it is only open for 4-6 hours every week and it does not solely provide the available resources that the population of inhabitants in the area may require. The closest Grocery Store with regular hours is a Kroger in a more residential area 4 ½ miles away. From the Great Lakes Terminal Warehouse and the surrounding Warehouse District, it is a 10-minute drive, 26-minute bike ride, or 1 ½ hour walk due to there being minimal transportation infrastructure. The only form of Public Transportation available between the two points is a TARTA (Toledo Area Regional Transit Authority) Bus that runs every 30 minutes. Outside of the time spent buying groceries, the whole transportation process would take close to an hour.

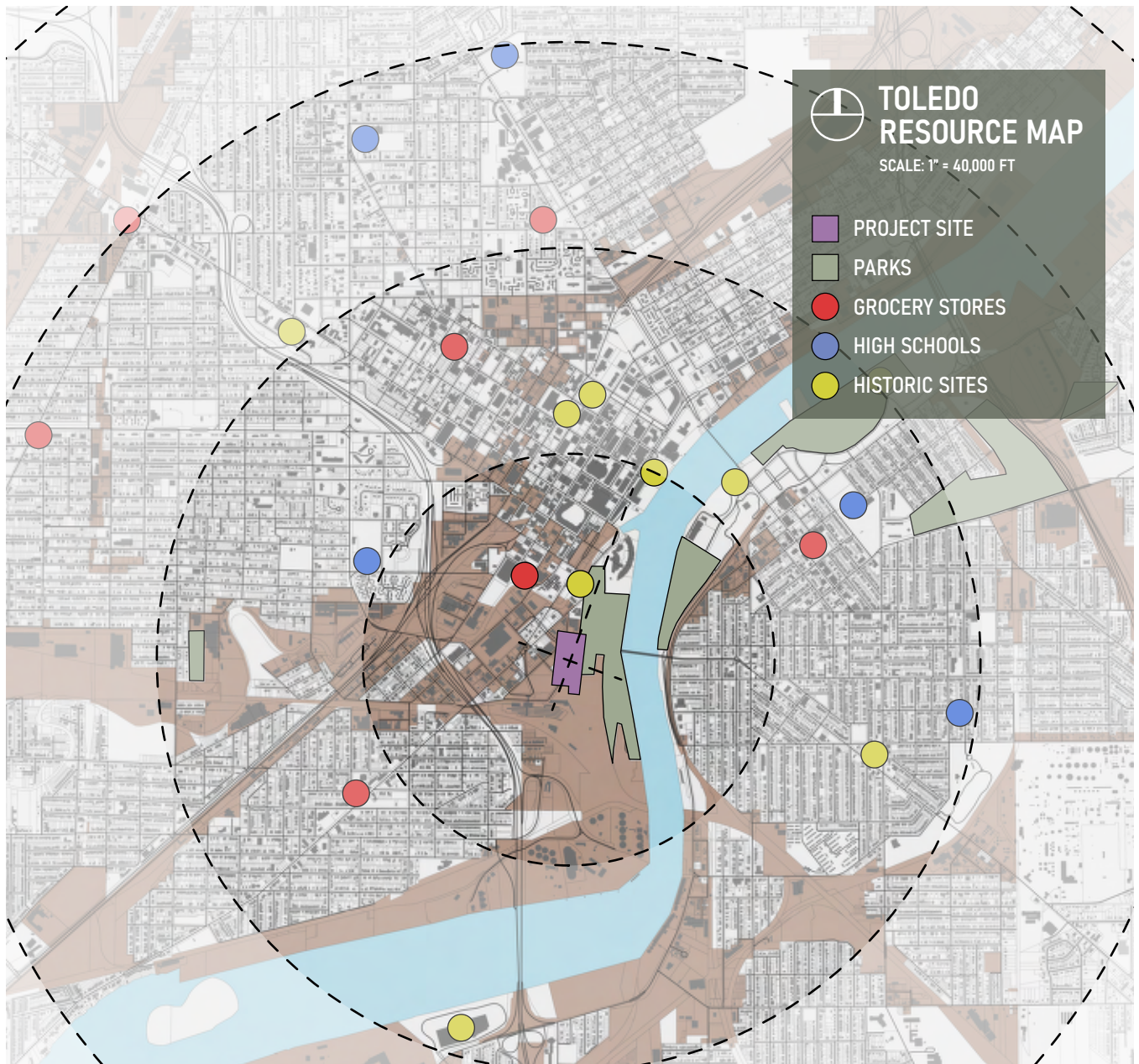
Education -

Like the food desert in the Warehouse District, the same area lacks available K-12 schools (specifically trade schools). The only Trade School in the area that offers hands-on experience is Penta Career Center in Perrysburg, OH (about 15 minutes south of the GLTW). While Penta is an invaluable resource to Toledo, it currently does not hold any agreement with Toledo Public Schools. Establishing a satellite school for Penta Career Center in the Warehouse District and the larger context of Toledo would make trade schools available for thousands of students and could be the first step in establishing a deeper connection to practical education in the area.

Historic Sites -

Within a 30-minute walk of the GLTW, countless historically and culturally significant sites a few that are consistently open to the public. Some such examples include:

- Oliver House
- Promenade Park
- Glass City Metropark
- Toledo Lucas County Main Branch Library
- Lucas County Courthouse
- Hollywood Casino Toledo
- National Museum of the Great Lakes
- Toledo Museum of Art



GLTW Site Visits-

On April 22nd, 2023, and July 1st, 2023, the building owner, Frank Dietrich, allowed me to tour the Great Lakes Terminal Warehouse and explore the space that almost no one, outside of Mr. Dietrich himself and a few contractors, had experienced for the past 50 years. The hours spent within the GLTW completely opened my eyes to the opportunities found within such an enticing space. These tours allowed me to experience the GLTW firsthand in a way that allowed me to truly appreciate the patina, history, texture, and intrinsic character of an industrial space that's laid dormant for the last half-century and truly inspired my theoretical approach and practical interactions with the thesis itself.

Figure 19



Figure 20



Figure 21



Figure 23

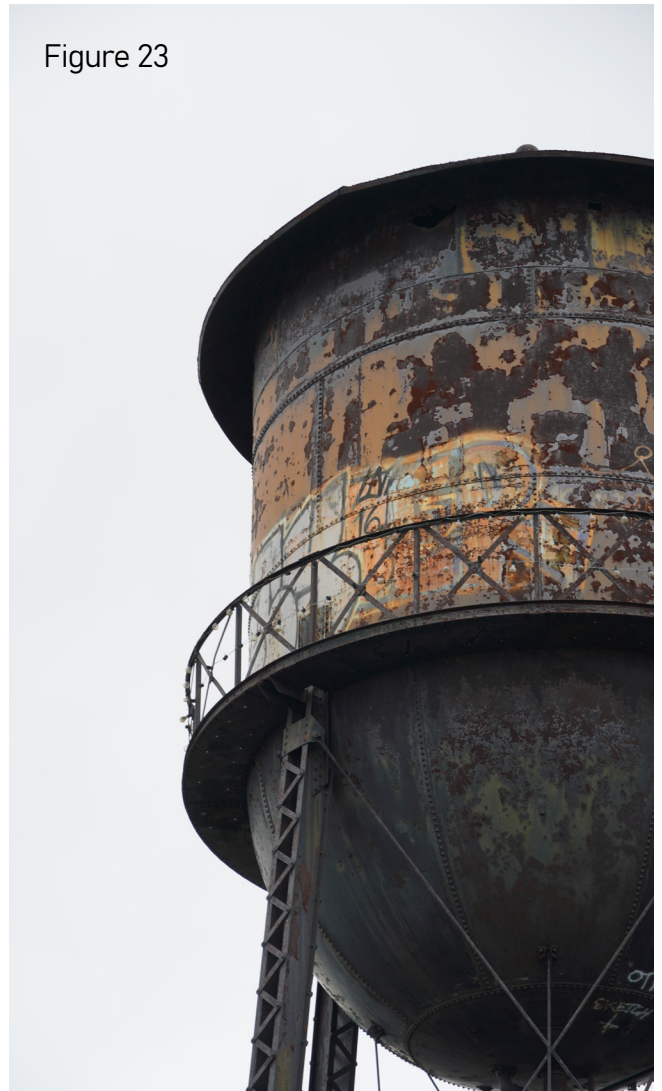


Figure 22



GLTW CONSTRUCTION DOCUMENTS - (DATED 07/01/1927)

During the Field Visit on April 22nd, 2023, Mr. Dietrich made it known that there is an office on the second floor filled with Construction Documents that are almost a century old. After exploring and organizing the drawings for a couple of hours, a few sets of drawings were able to be condensed. Over 50 pages of historic Construction Documents have been collected, including all of the essential drawing types like Floor Plans, Elevations, Sections, Reflected Ceiling Plans, Structural Details, and much more. These drawings provided a foundation of understanding when beginning the Virtual Modeling phase of the project.

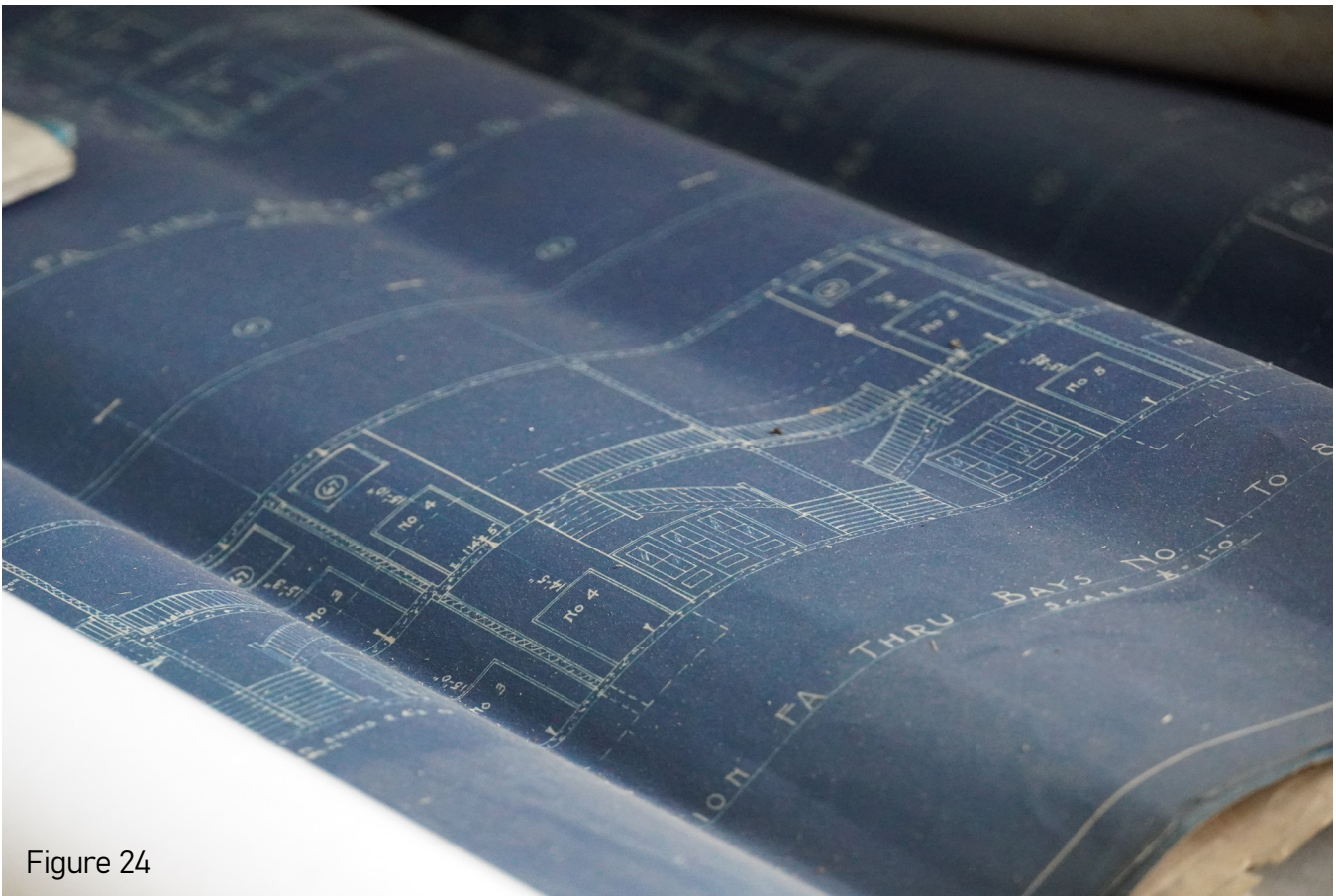
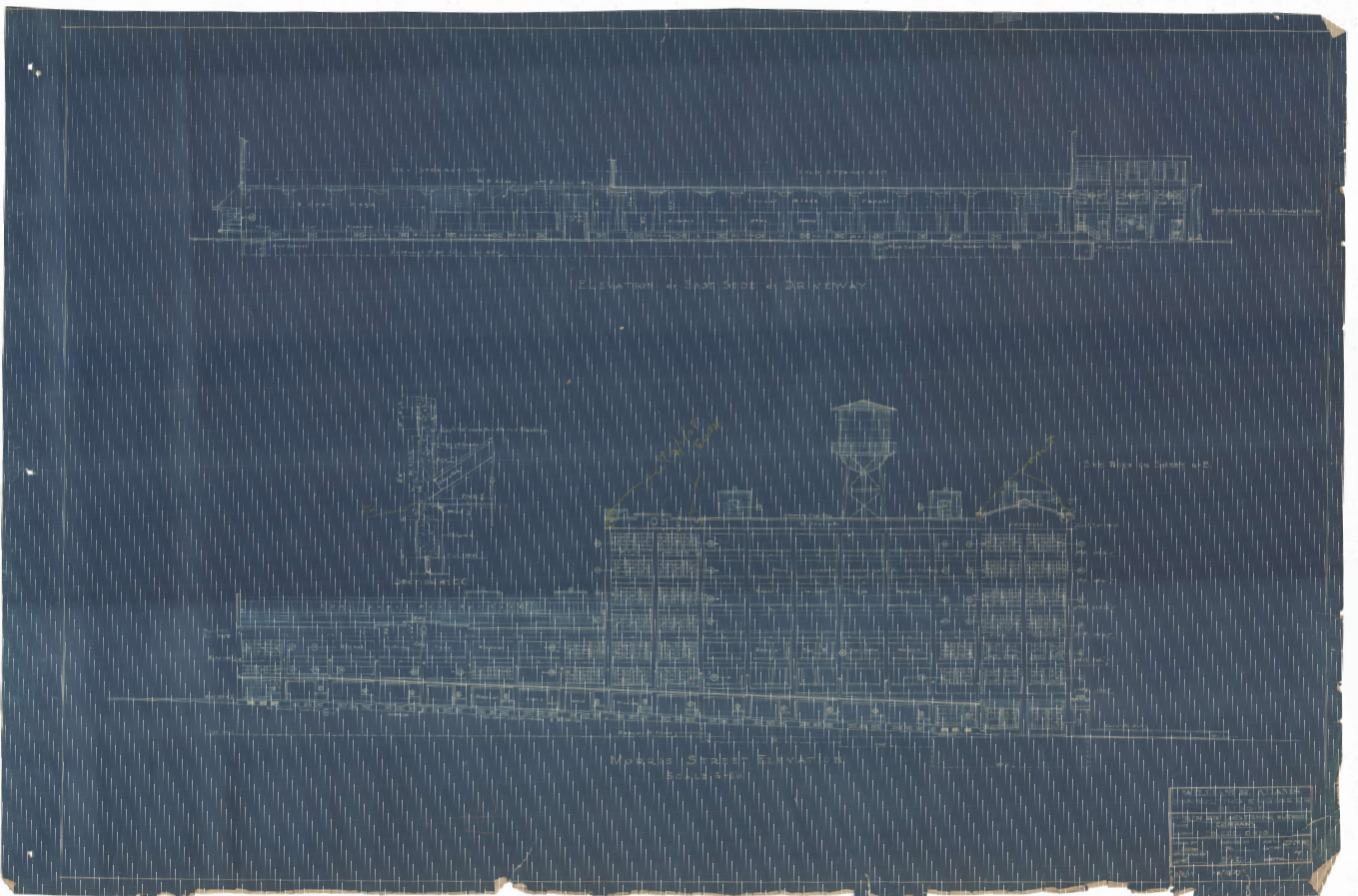
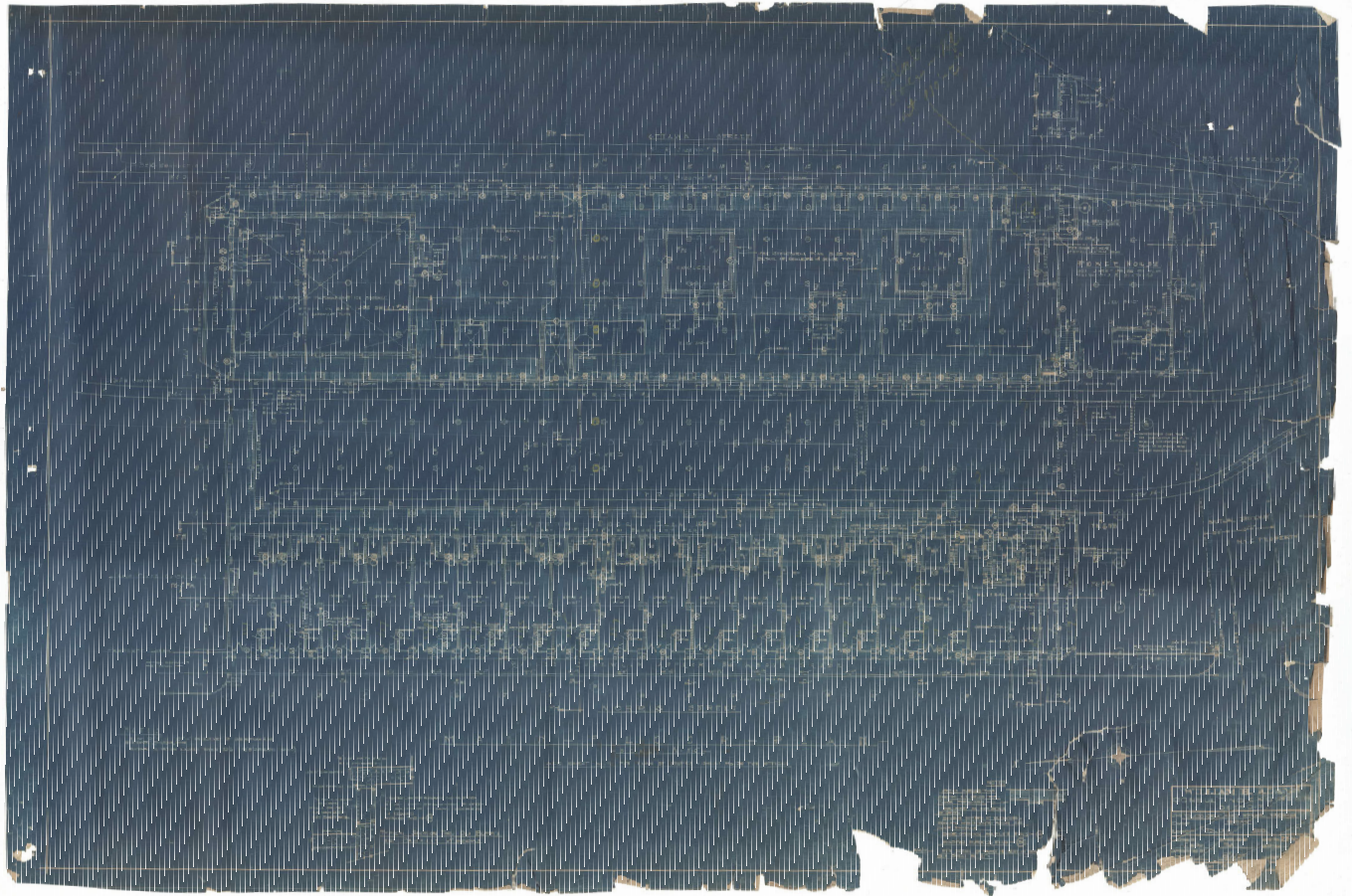


Figure 24

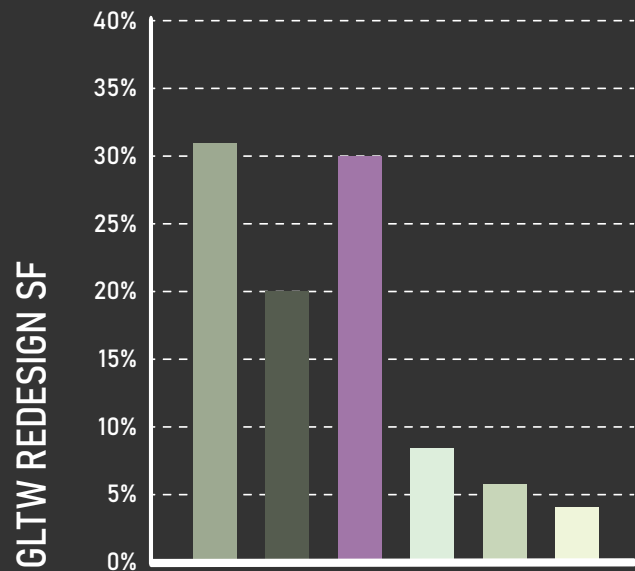
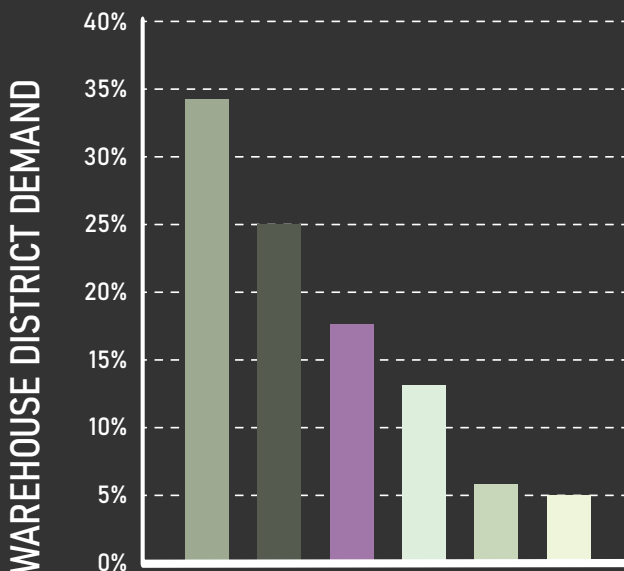


PROGRAM -

When beginning the redesign of the GLTW, one of the very first things I did was consider the uses that the building should serve. I first did this by turning to the surrounding community. I gathered and joined as many Facebook Groups as I could find that concerned Historic Buildings in the greater Toledo area. I posed the question as to what role the redesign should serve and received hundreds of responses with varying levels of seriousness. While some were requesting an amusement park on the roof or a skate park in the basement, most responses seemed relatively feasible. I then compiled the feasible responses, categorized them, and organized the information by the prevailing suggestion. This allowed me to produce a set of figures to use as a baseline that informed the mix of uses that I used in my redesign. The comparison of program demand and my supplied program design can be seen below.

The demand established through the Facebook study was largely followed with the exclusion of Civil spaces. This is done intentionally as I wanted the new design to serve as a civil connector for the community to reestablish interest in the Warehouse District of Toledo.

	HOUSING	- 34% DEMAND	- 31% FULFILLED	- 103,600 SF
	RETAIL	- 25% DEMAND	- 20% FULFILLED	- 66,300 SF
	CIVIL	- 17% DEMAND	- 30% FULFILLED	- 101,060 SF
	ENTERTAINMENT	- 13% DEMAND	- 8% FULFILLED	- 28,100 SF
	OFFICE	- 6% DEMAND	- 6% FULFILLED	- 20,300 SF
	EDUCATION	- 5% DEMAND	- 4% FULFILLED	- 15,000 SF



RADICAL JUXTAPOSITION -

Throughout my research and project progression, I developed a design theory and approach that I feel truly encompasses the essence of my argument. This strategy, called Radical Juxtaposition, allows for both the old and new design elements to be celebrated in the way that they deserve. Radical Juxtaposition is defined as:

“The deliberate and striking placement of contrasting elements or styles within a single architectural composition.”

This technique involves combining disparate forms, materials, textures, or spatial arrangements in a way that challenges conventional design principles and creates unexpected visual or experiential effects. Radical Juxtaposition can be used to provoke thought, evoke emotions, or express complex ideas about context, history, or culture within the built environment. This is in an effort to push boundaries, challenge conventional norms, and create more dynamic and memorable spaces.



GREAT LAKES TERMINAL WAREHOUSE REDESIGN



SITE PLAN -

Project Site -

- North:**
- In Toledo proper while still removed from the city center
 - Desirable view of Downtown Toledo
 - Highway runs immediately above the site in certain areas
- East:**
- Large Metropark directly across the street
 - Desirable view of Maumee River & Anthony Wayne Bridge
- South:**
- Close access to major roadways
 - Proximity to train station integrates historical identity
 - Buildings are industrialized, dilapidated, or abandoned
 - Obsolete, yet historic railway station across the street
 - Undesirable view
- West:**
- Buildings are industrialized, dilapidated, or abandoned
 - Undesirable view



Building Design -

Exterior:

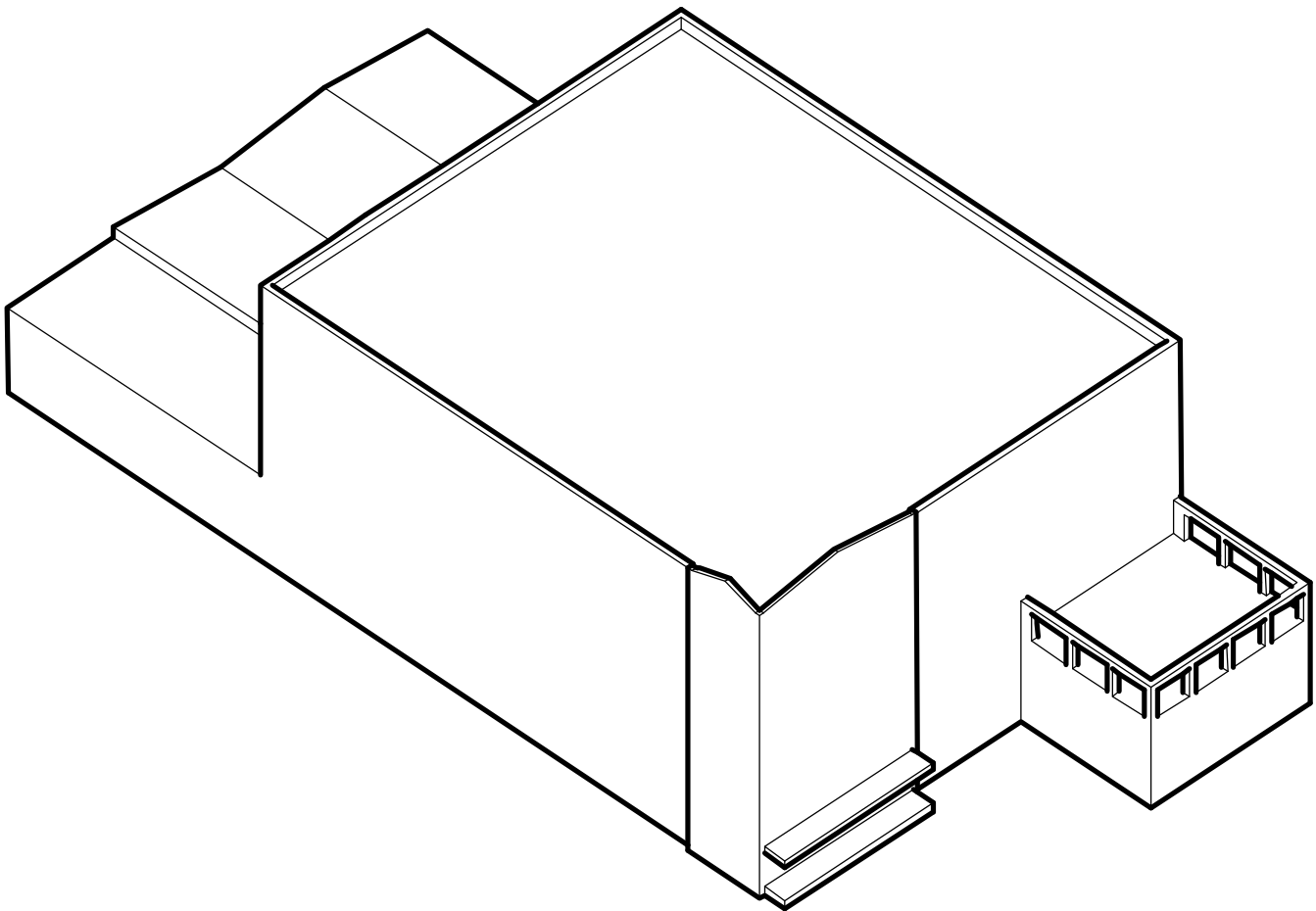
- Large site gives ample opportunity for development
- Varying elements create interesting facades and approaches

Interior:

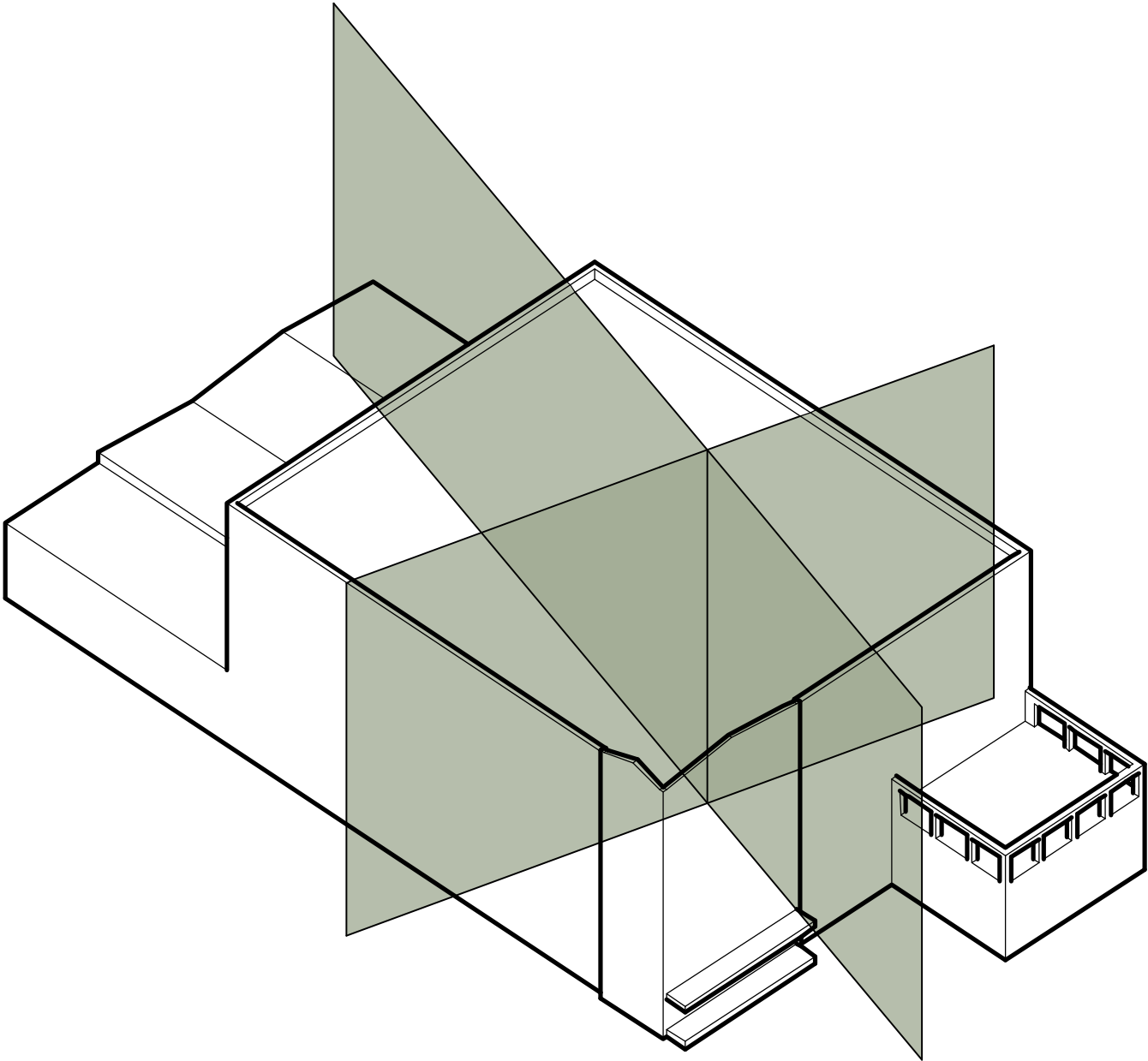
- Central warehouse creates interesting opportunities
- Historic influences on Industrialism and Toledo



DIAGRAMS-

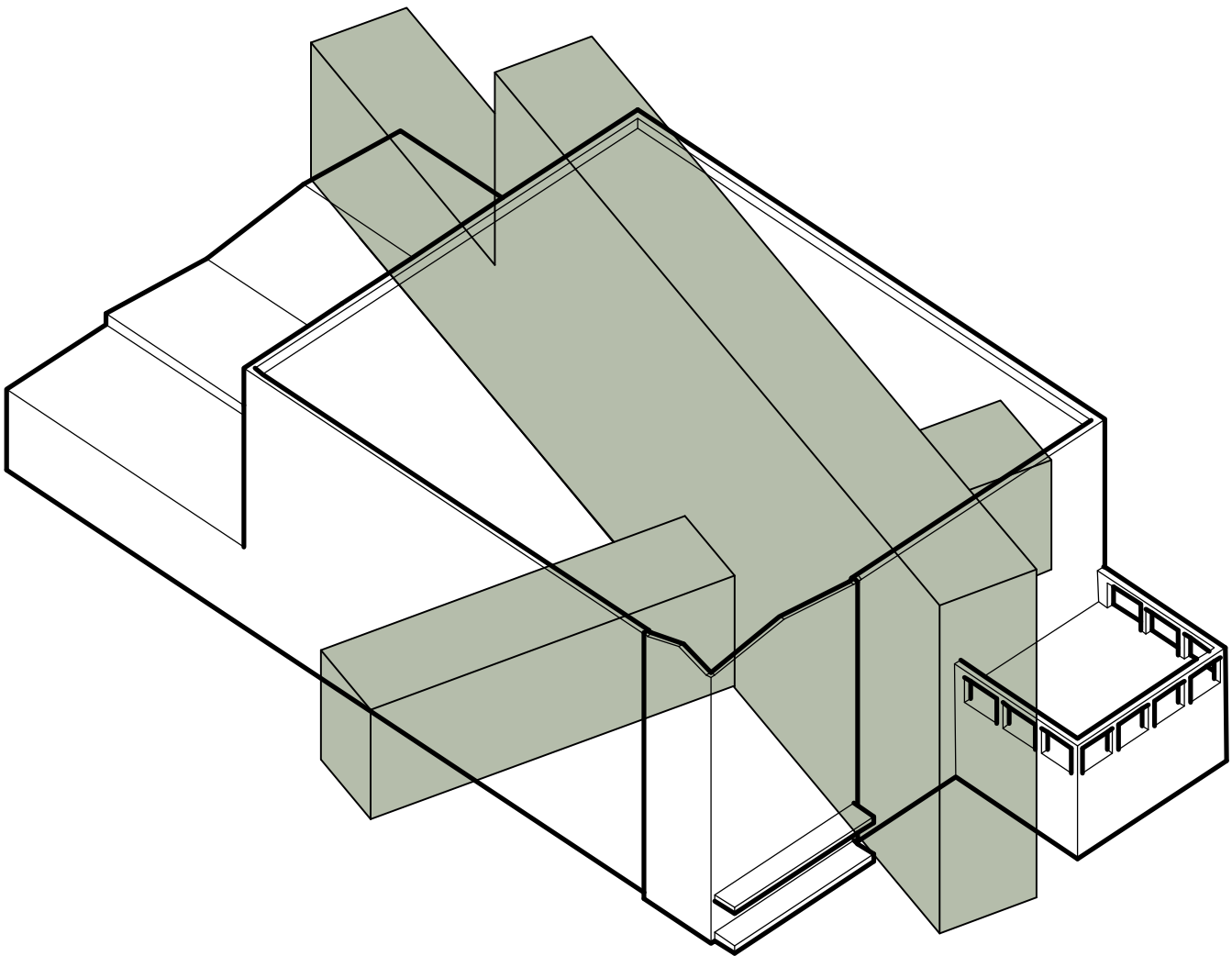


MASSING

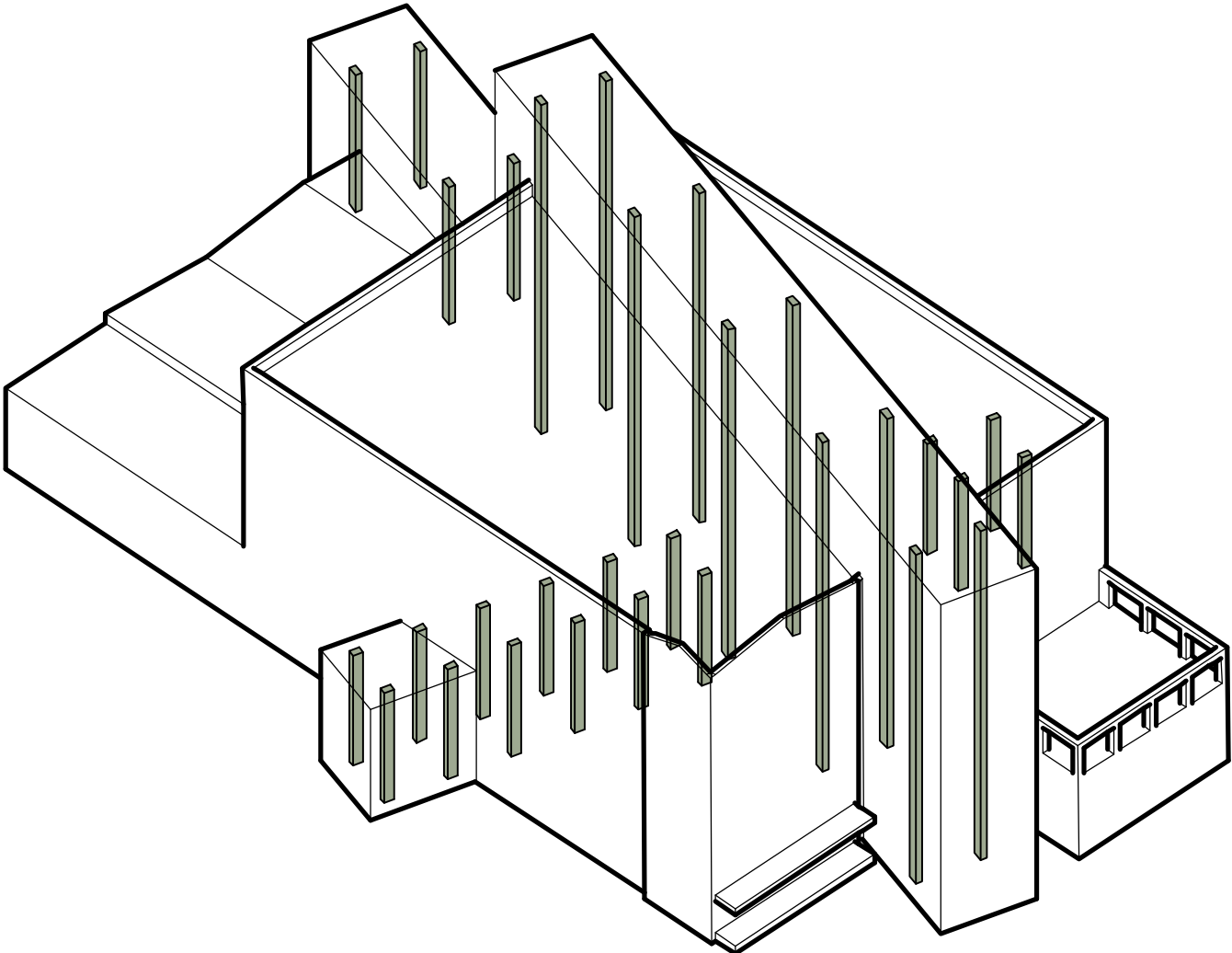


AXIS

DIAGRAMS (CONT.) -

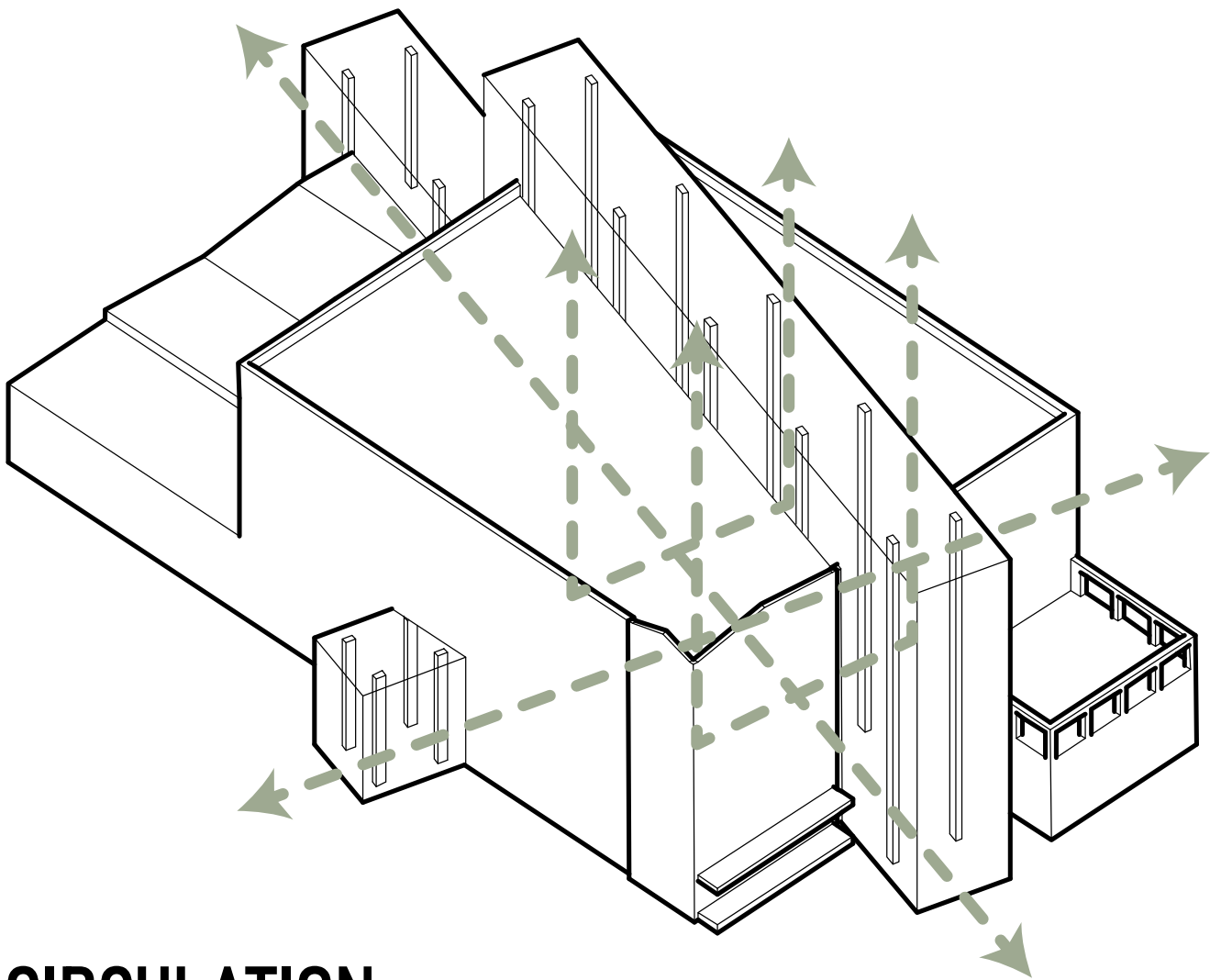


ATRIUM FORMATION

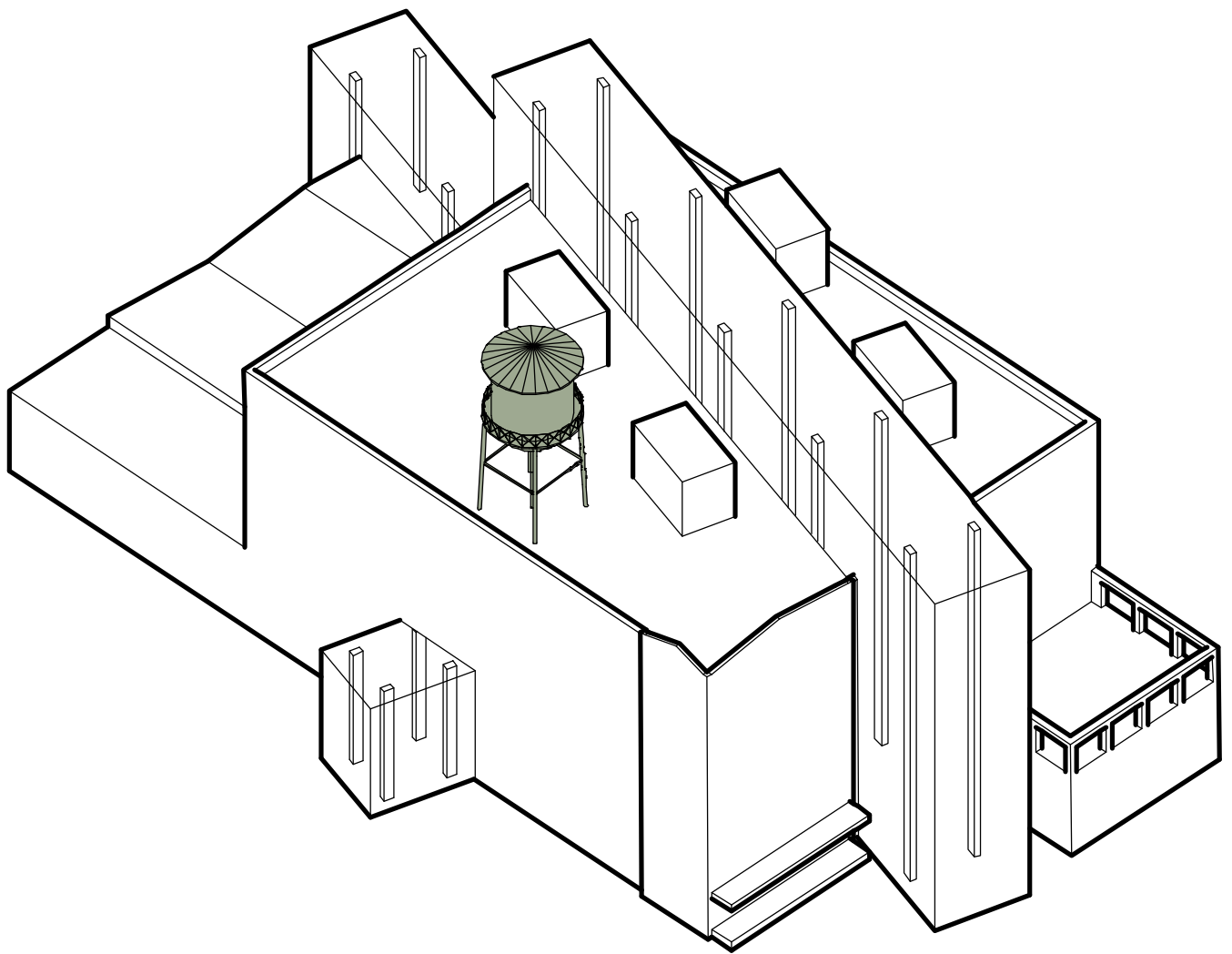


STRUCTURAL INFILL

DIAGRAMS (CONT.) -



CIRCULATION



HISTORIC PRESERVATION

FLOOR PLANS-

Basement - 48,800 SF Total

Admin - 5,500 SF

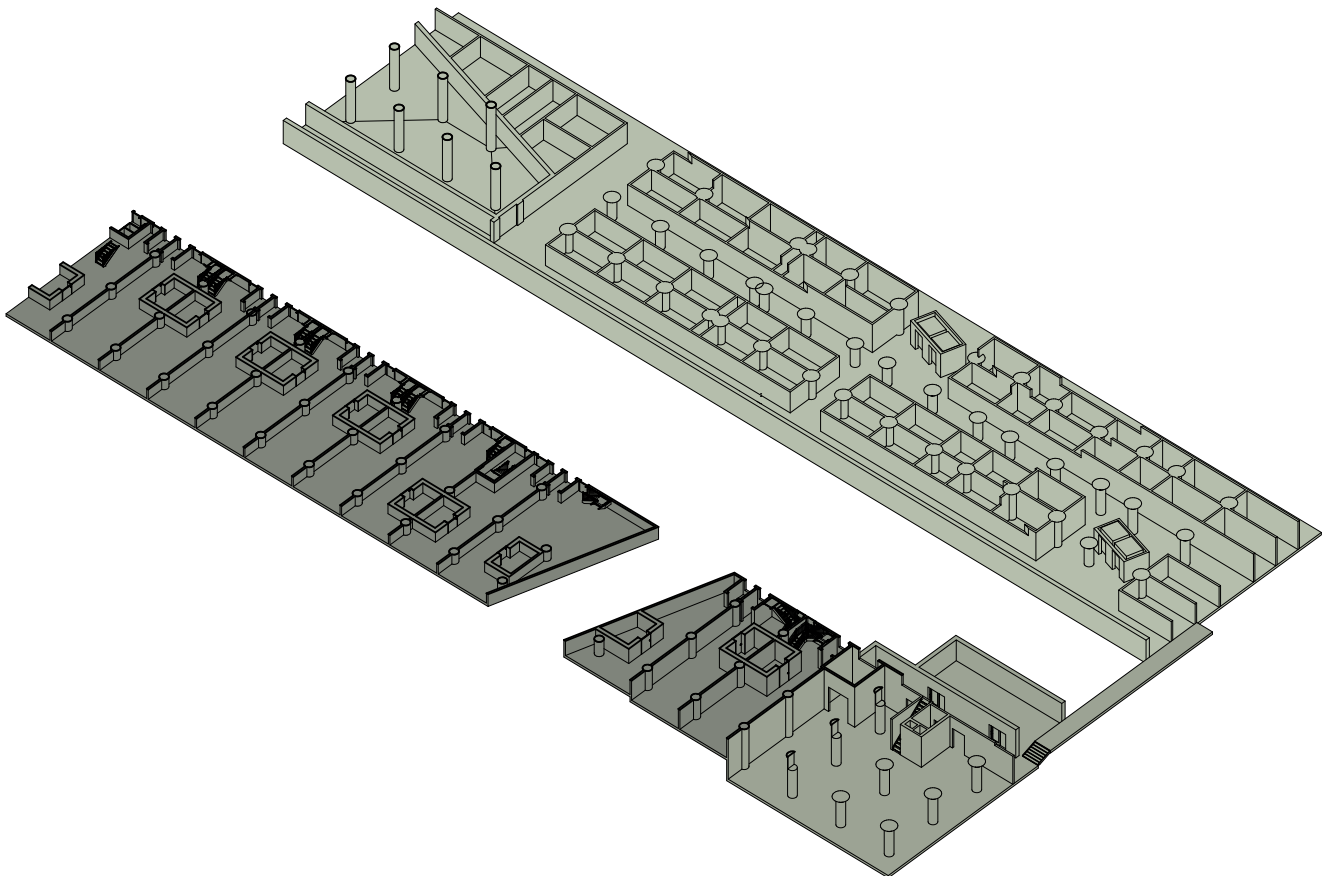
Boiler Room and General Storage with an underground walkway leading to the main Administration space on 1st Floor

Apartment - 28,000 SF

52 individual storage spaces of varying sizes for Apartment tenants.

Retail - 15,300 SF

Storage spaces with stairs and large coolers with access directly to the main Farmers Market Space on 1st Floor



1st Floor - 72,600 SF Total

Admin - 11,700 SF

Main Administration space with a Gym, Mail Room, and Office space for the building owner and staff - with a Conference Room, 15+ Desk Spaces, Kitchenette, and Library.

Atrium - 24,000 SF

Civil space open to the public and tenants alike. Natural light and vertical structural elements accentuate the height of the Atrium to encourage users to feel at a much larger scale.

Education - 15,000 SF

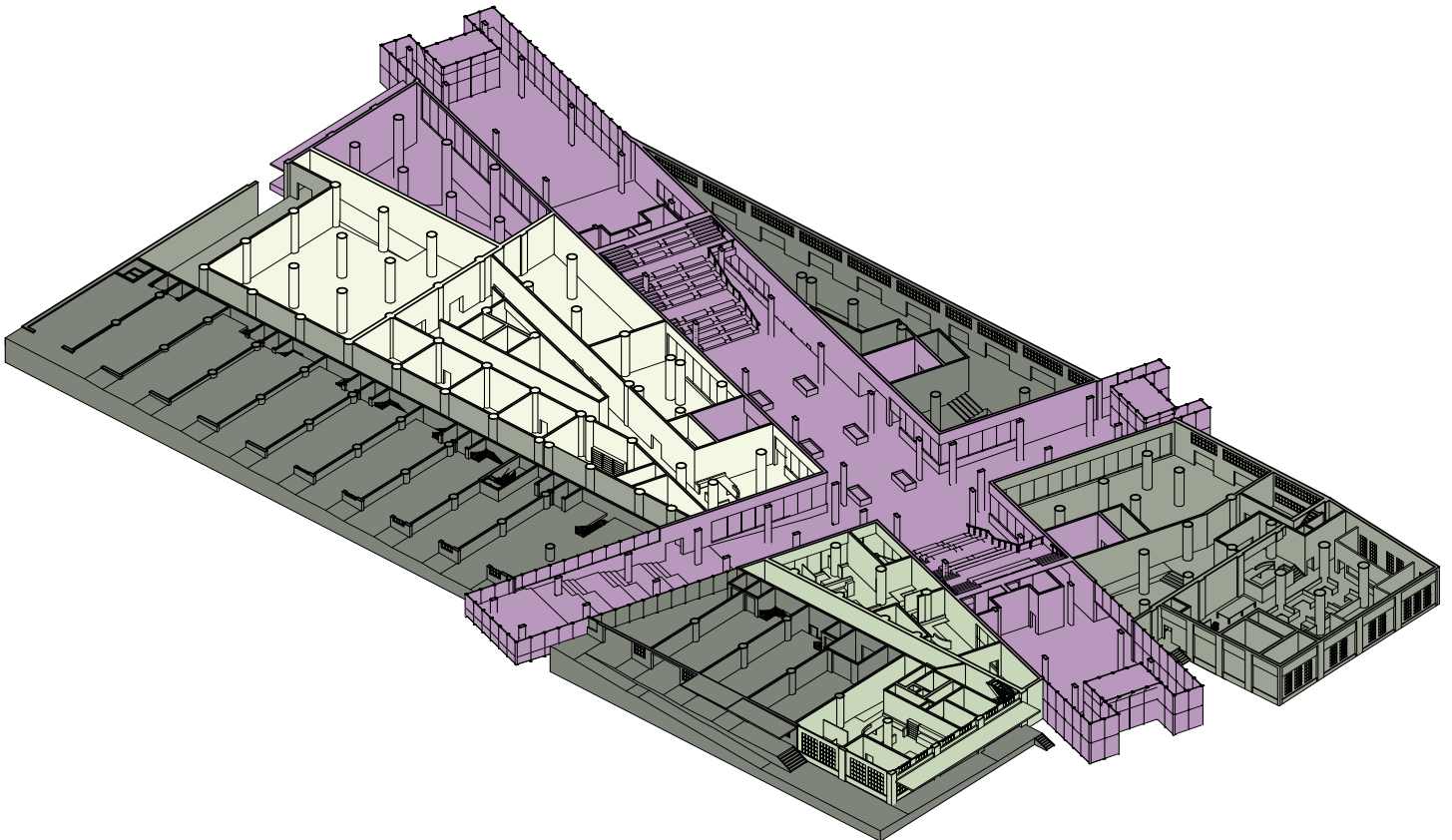
Satellite school for Penta Career Center with classrooms and workshop spaces for their Medical, Culinary, and Building Technologies programs.

Office - 3,500 SF

Two small office spaces with about 5 desks each. Kitchenette, Conference Room, Bookshelves, and Private Offices are all included.

Retail - 18,400

Historically accurate and restored Farmers Market on the West façade that served as a focal point in early Toledo History. A Café on the East façade that serves as a connection point between the GLTW and Middlegrounds Metropark.



2nd Floor - 50,100 SF Total

— Atrium - 26,300 SF

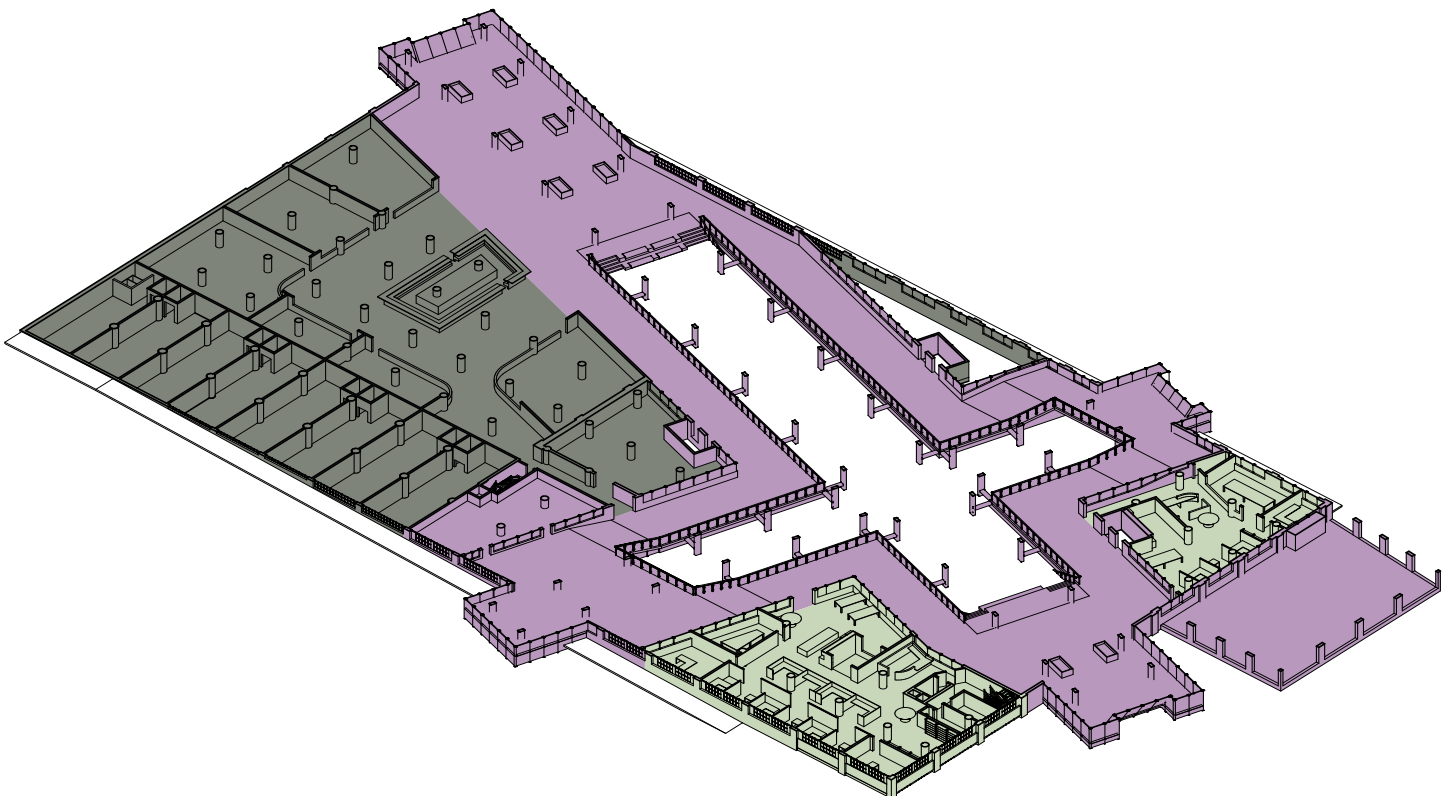
Open-air walkways around the perimeter of the Atrium creates a track of public interaction. At the termination of each axis, a node is placed to encourage hesitation, gathering, and enjoyment of the available views.

— Office - 8,400 SF

Lower Floor of a couple of larger 2-story office spaces. 10 to 15 Desks, a Kitchen, a Conference Room, and a Library are found on this level of both offices.

— Retail - 15,400 SF

On the North side, a central Bar is surrounded by 6 Kitchens and storage spaces forming a large open-air Cafeteria with direct access to the walkways and exterior views that surround the Atrium.



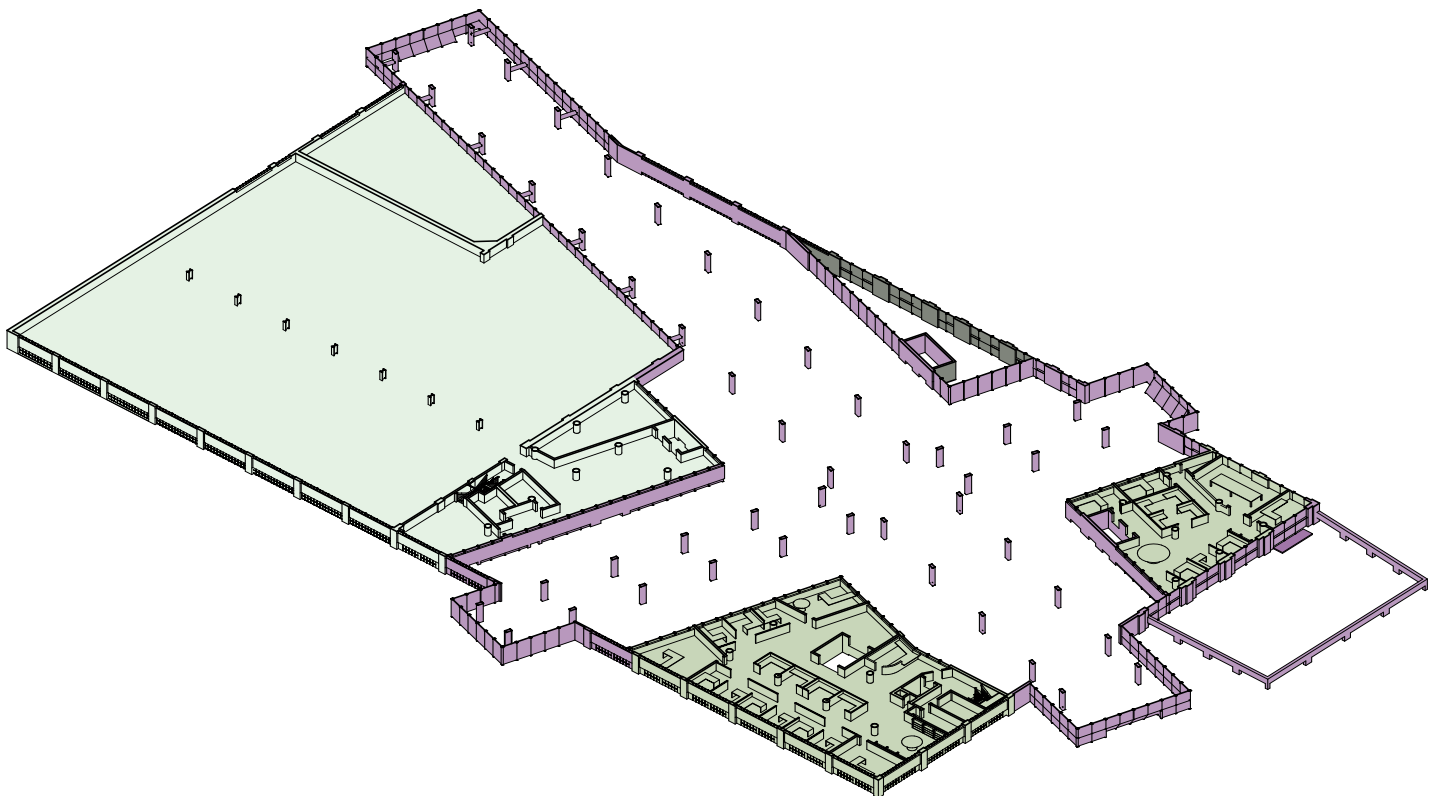
3rd Floor - 28,100 SF Total

Event - 28,100 SF

Expansive and uninterrupted floor space with breathtaking natural light and originally used purely for storage, this converted Event Space will serve as host to Weddings, Conferences, Concerts, and other events with direct access and views to the Atrium.

Office - 8,400 SF

Top Floor of a couple of larger 2-story office spaces. Numerous desks and meeting places inhabit this level of the office spaces.



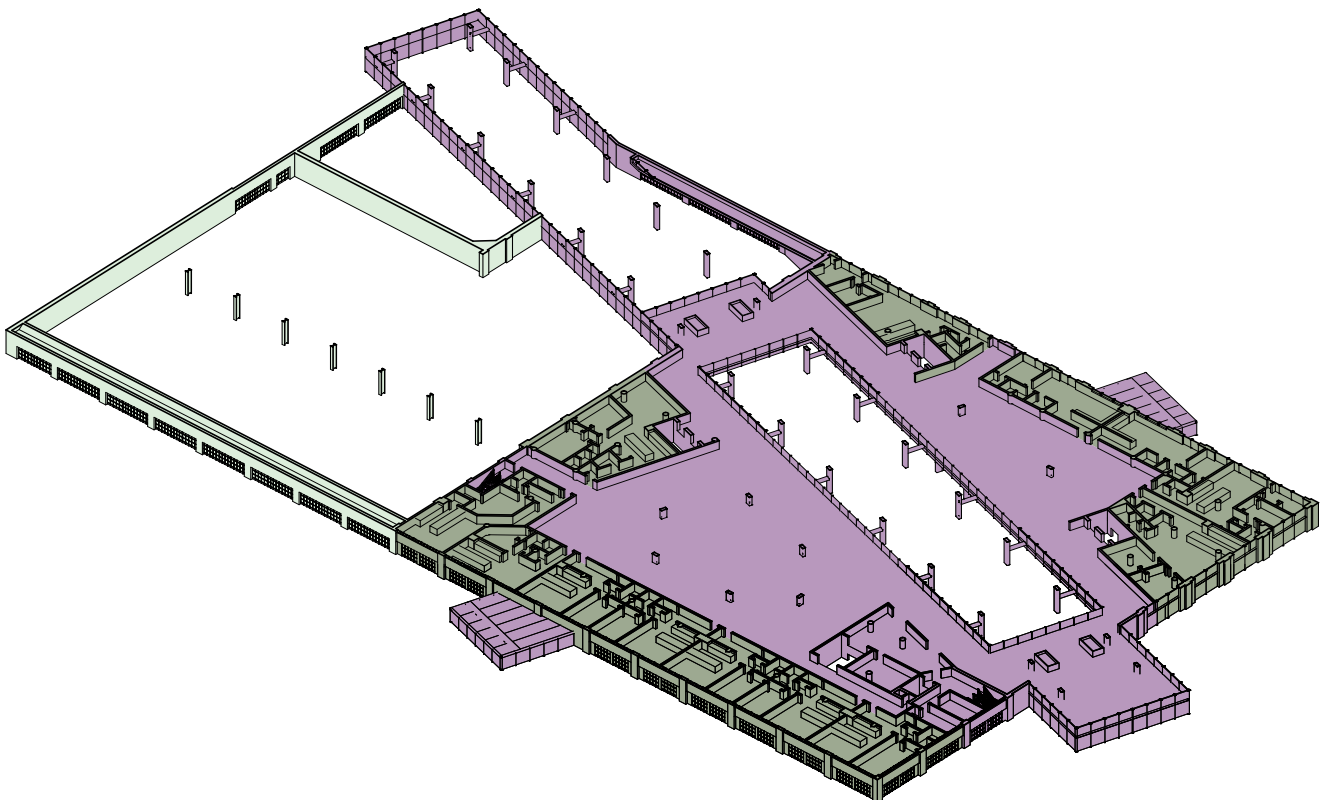
4th Floor - 33,400 SF Total

Apartment - 28,800 SF

13 units (ranging between 700 SF and 1,200 SF each) inhabit the perimeter of the GLTW and leave amenity space towards the interior.

Atrium - 4,600 SF

A similar design intention as on the 2nd Floor is utilized here with circulation space arranged around the perimeter of the Atrium with nodes for gathering at either end. Green spaces are also available at the foot of each courtyard and provide the Apartment tenants with private greenery removed from the general public.



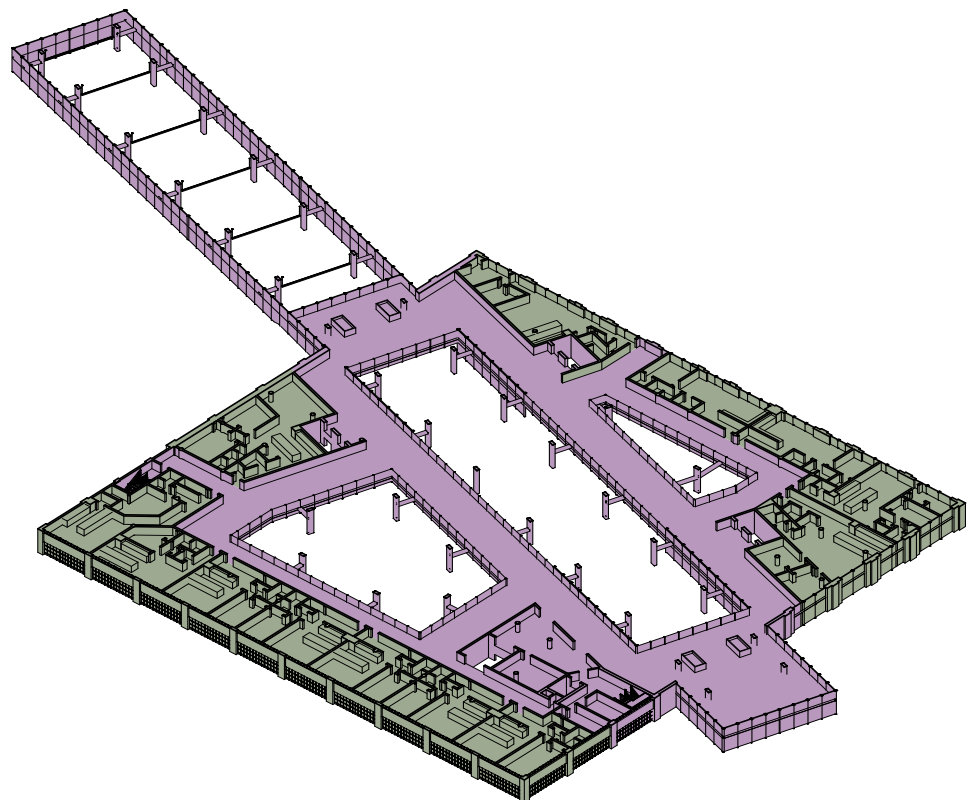
5th, 6th, & 7th Floor - 28,800 SF Total (each)

— Apartment - 28,800 SF

13 units (ranging between 700 SF and 1,200 SF each) inhabit the perimeter of the GLTW and leave amenity space towards the interior.

— Atrium - 4,600 SF

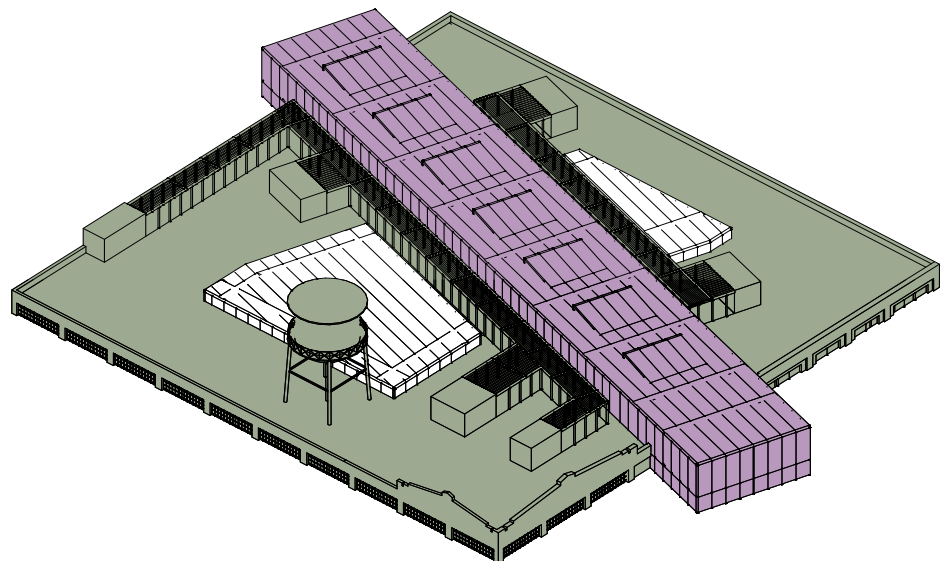
A similar design intention as on the 2nd Floor is utilized here with circulation space arranged around the perimeter of the Atrium with nodes for gathering at either end. Green spaces are also available at the foot of each courtyard and provide the Apartment tenants with private greenery removed from the general public.

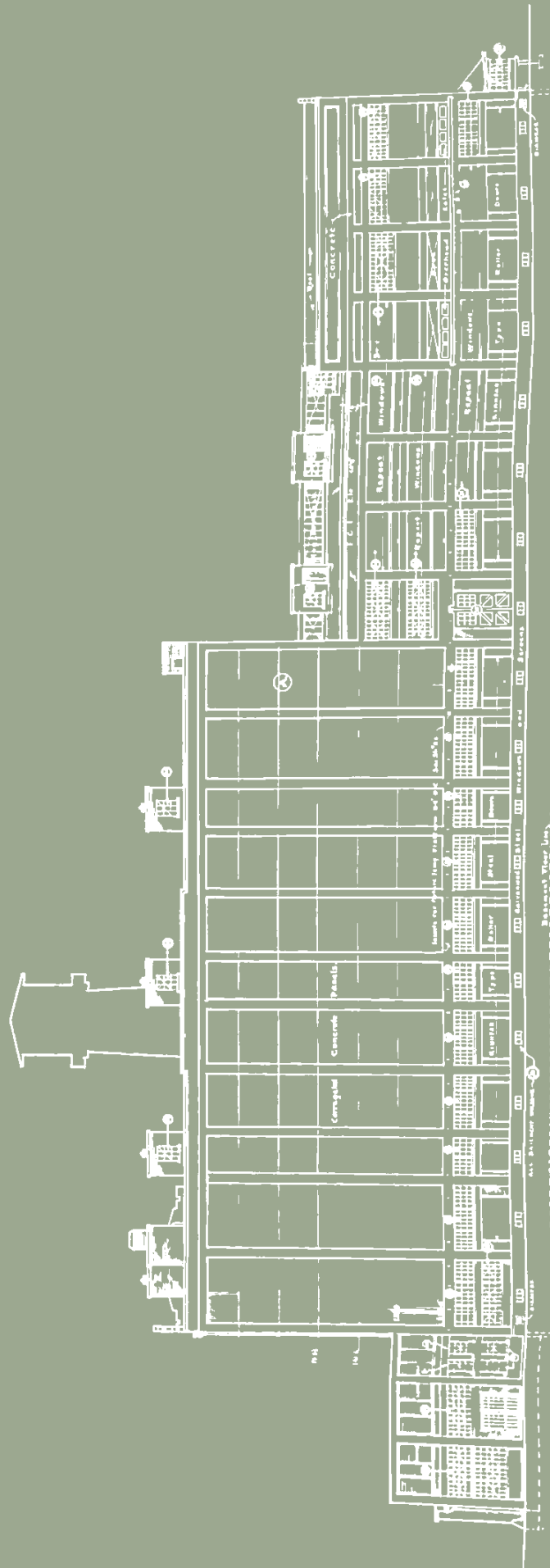


Roof

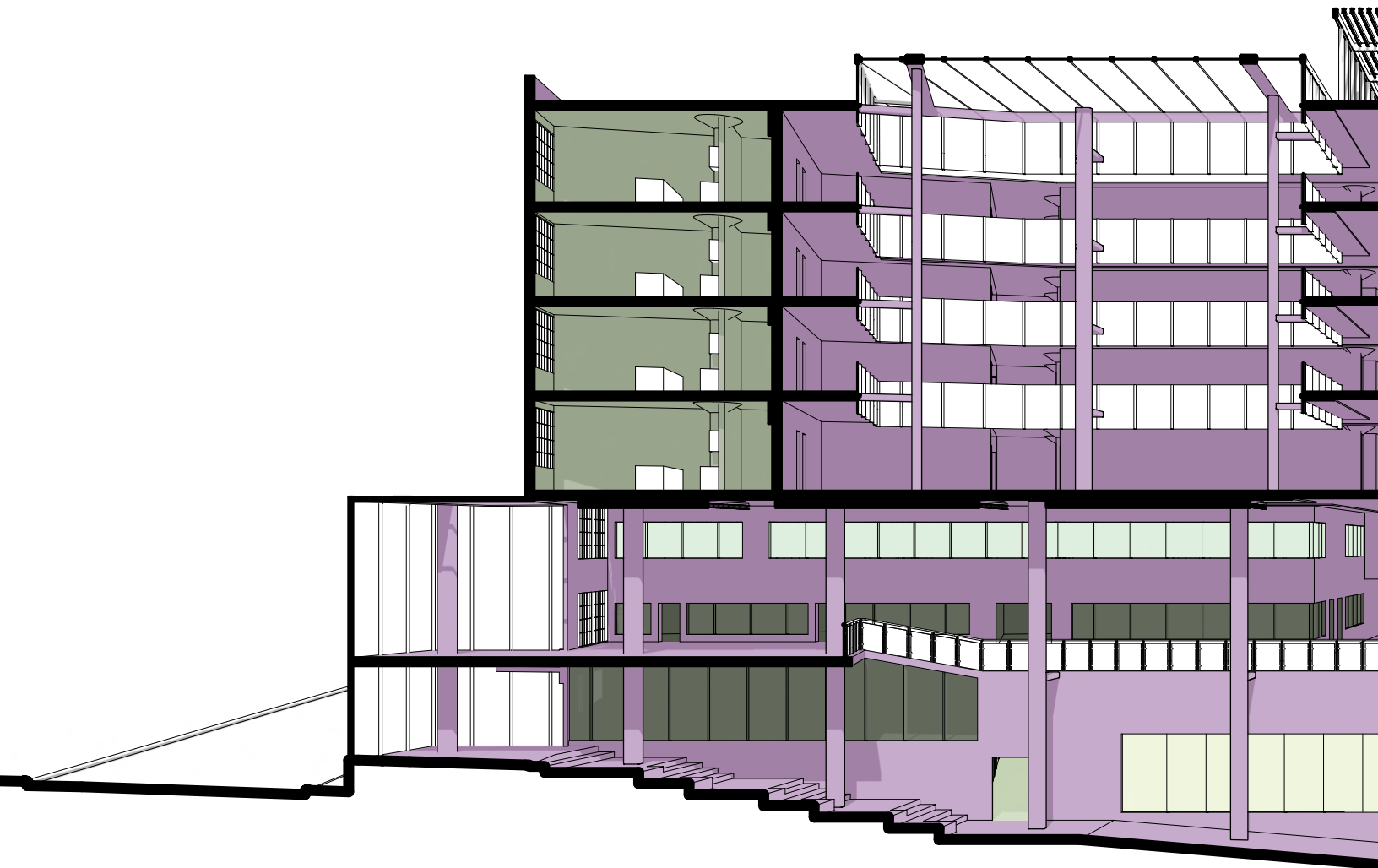
Common Space -

Covered walkways define paths of travel between stairways and elevators, and uncovered spaces provide flexible usability whether an Apartment tenant wants to host a party with a view of Downtown Toledo or if an outside organization wants to hold a seminar under the shadow of the historic Anthony Wayne Bridge to the Northeast.



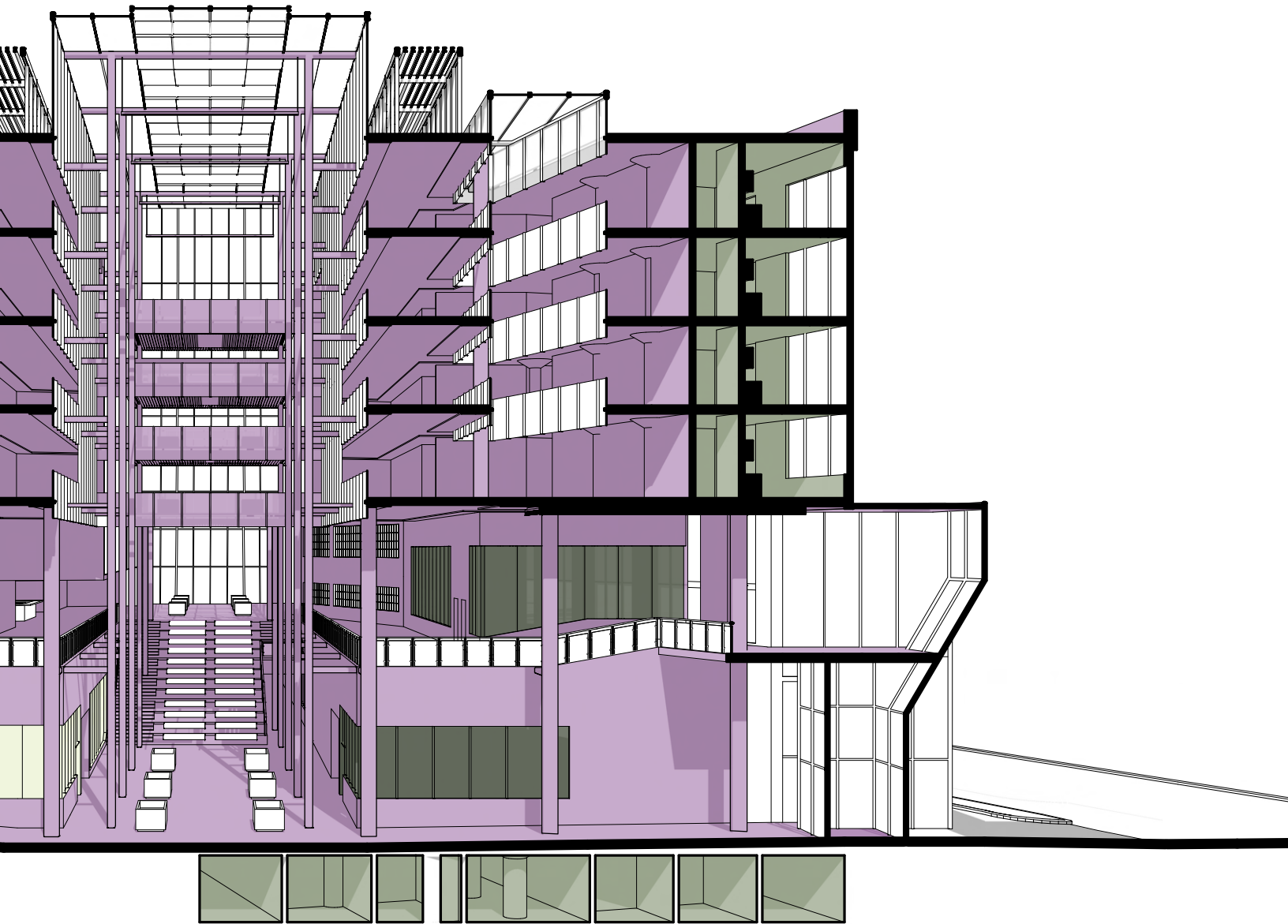


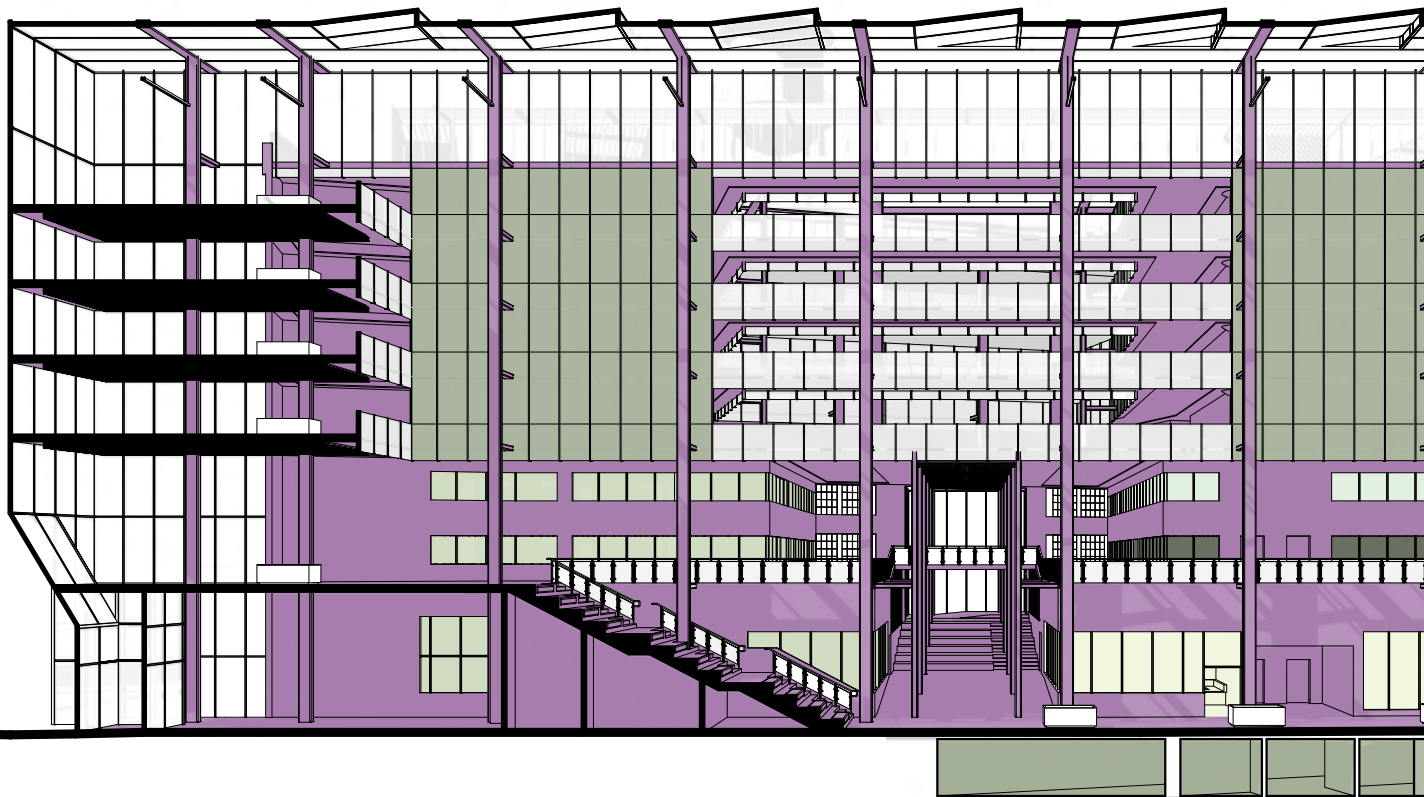
OTTAWA STREET ELEVATION.
SCALE 1/4"=10'



TRANSVERSE SECTION

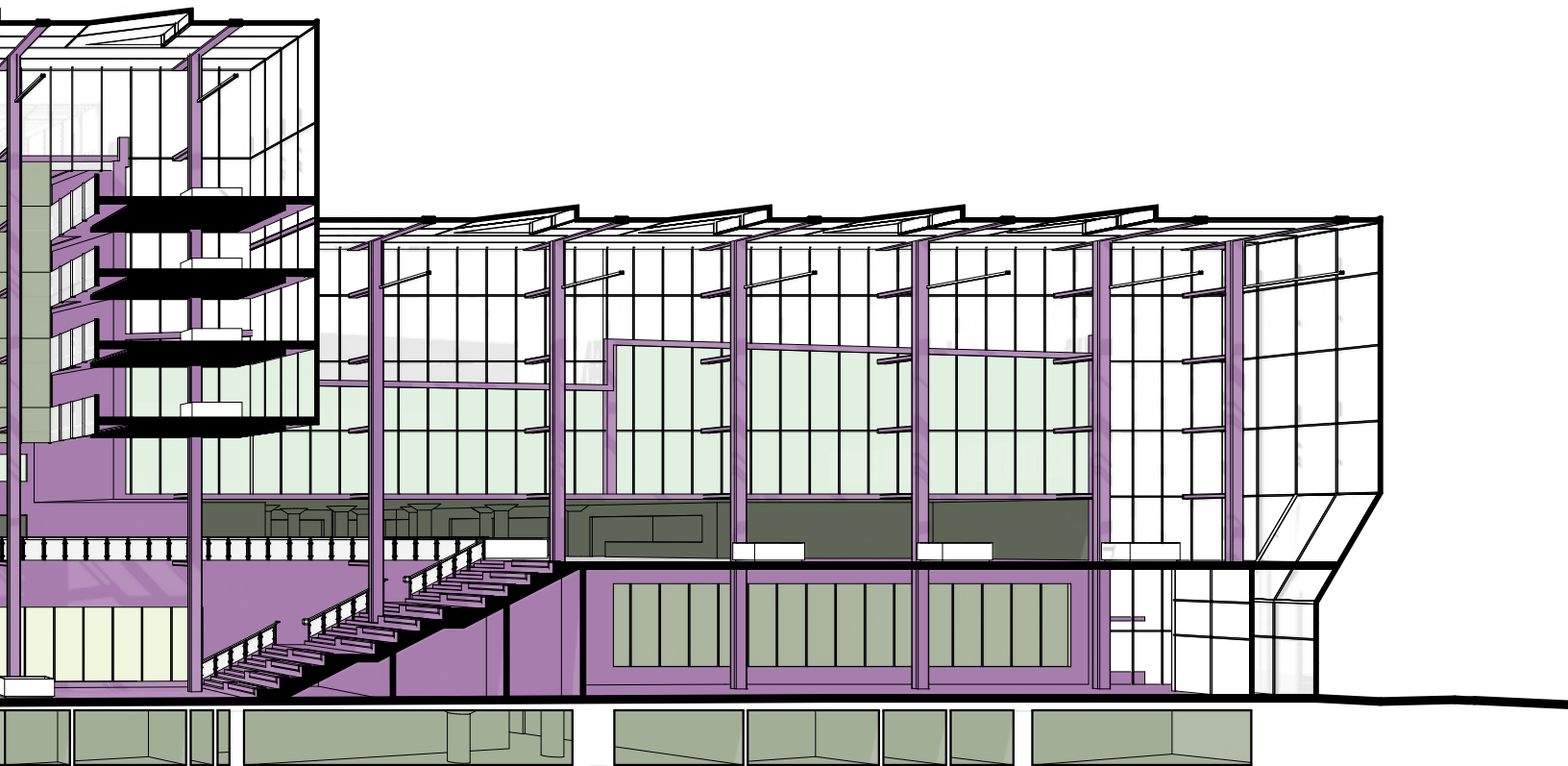
SCALE: 1" = 20' - 0"





LONGITUDINAL SECTION

SCALE: 1" = 35' - 0"































FEEDBACK -

On April 24th, 2024, my cohort and I presented our theses to a group of Guest Jurors. Anya Sirota (Architectural Designer, Associate Professor, and Associate Dean of Academic Initiatives at Taubman College of Architecture and Urban Planning at the University of Michigan), served as our main thesis respondent. Other jurors included Jennifer Van Horn (Director of Park Planning and Capital Projects for the Toledo Metroparks, and Chair of the Toledo Design Collective) and Roderic Walton (Principal, Healthcare Project Leader at Moody Nolan). These three jurors, along with my friends, family, and Miami University faculty provided profound feedback during my final presentation and illuminated countless perspectives to consider when reevaluating my thesis. The main points that I was encouraged to consider are as follows:

1. Deepen research on Economic Feasibility
2. Mitigate the Heat Island Effect due to the large Glass Atrium
3. Utilize more AI Visualization tools if that is a personal interest
4. Implement more patina and dilapidation in Interior Renderings
5. Use more warm tones in the Interior Renderings
6. Place contrasting columns (New and Old) in a common space
7. Activate the Rooftop as a public space

REFLECTION -

Personally, I am, and always will be, proud of my final design. I wanted to push the boundaries of standard design conventions when addressing obsolete industrial buildings, and I feel like I accomplished just that. This bar none has been the most challenging yet fulfilling project I have conducted throughout my entire education. While I am profoundly proud of the content I presented and that is found in this document, I do not believe this to be the end of the development of Radical Juxtaposition or my personal interaction with the Great Lakes Terminal Warehouse. I plan on continuing my research and theoretical expansion on both subjects for the foreseeable future. The feedback that I received on April 24th, 2024, from the jurors and others alike will form the foundation of my continued efforts for years to come. My theoretical exploration and design interventions found within this project have fortunately led to me receiving a job offer that would allow me to work on projects of similar theory and design, and I believe that this project is only the first step in a long journey of Adaptive Reuse and Radical Juxtaposition focused explorations.

NEXT STEPS -

Interaction with abandoned or obsolete buildings within the Rust Belt is an everyday occurrence for members of the community. Similar large-scale obsolete buildings are found in almost every medium to large size city in the region, making it almost impossible for citizens to not have some relationship with said spaces. With this being such a widespread problem, not only does a proposed solution need to address and solve the presented issues, but the approaches need to be in the form of a reproducible product all over the Rust Belt. Proving that it can be done is helpful, but providing guidelines that one can follow in almost any similar situation begins to solve the issue itself, and not just bandage it. As a result, the first major expansion of this project will come in the form of a Guidebook or Manual comprised of a “kit of parts” that provides numerous strategies anyone could use to approach any such project fitting this description.

The form of such a Guidebook will be organized similarly to the text *The Architecture Reference + Specification Book* by Julia McMorrough.

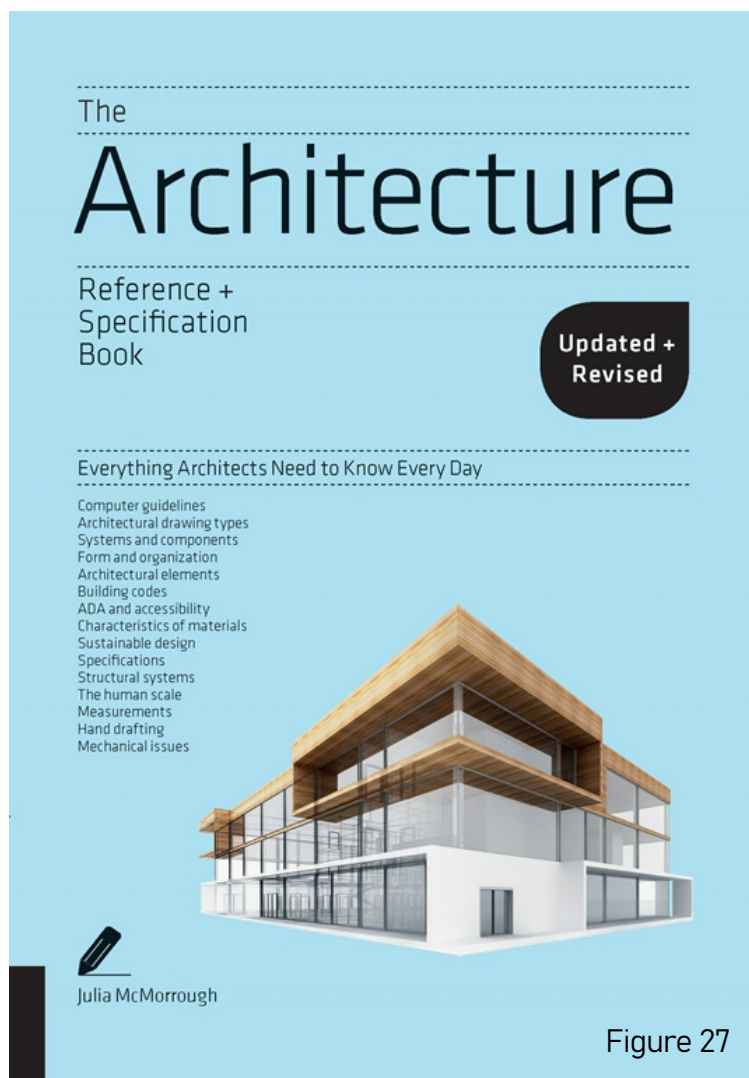


Figure 27

Julia McMorrough is an Architect and Associate Professor at the University of Michigan's Taubman College of Architecture and Urban Planning, where she teaches classes on Architectural Design, Architectural Representation, and Disability Studies. Her book, *The Architecture Reference + Specification Book* is seen as a staple within learning environments due to its comprehensive overview of numerous topics within the built environment.

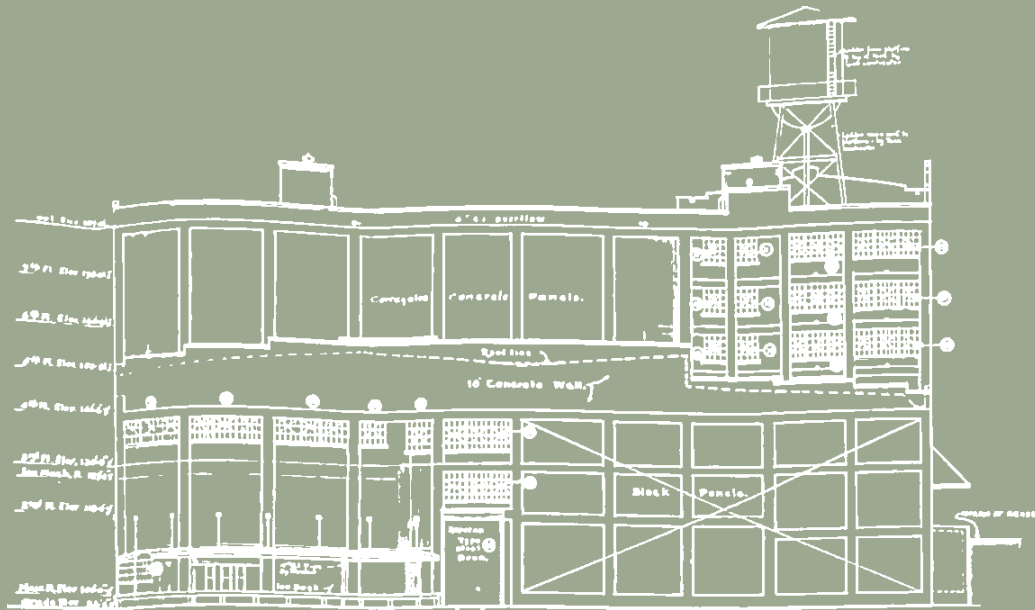
Using *The Architecture Reference + Specification Book* as a reference will ensure that the Guidebook produced will be a organized, structured, and detailed outline for many aspects of an Adaptive Reuse approach to obsolete industrial buildings within the Rust Belt. This is in an effort to streamline the design process, along with ensuring feasibility of any such project.

Simultaneously, I plan to implement the suggestions I was provided during my final presentation into the redesign of the GLTW. Reevaluating my design intervention to include more economically considerate materials and strategies, along with ensuring that more sustainable design practices are implemented. When reforming the visuals of my GLTW redesign, I will be sure to make it feel like a more inviting interior space that emulates the true character of the GLTW by including more warm tones, and detailed textures showing dilapidation by using emerging AI Visualization technologies.

Following the completion of the Guidebook and the reintegration of further details into my redesign of the GLTW, a comparison of the arguments found in the Guidebook and my redesign will be made. This will be done to show that not only can the Guidebook provide valuable information concerning such buildings, but that the principles found within apply to real-world situations. I hope that the comparison of the Guidebook's findings and its comparison with the GLTW redesign will form a basis for future approaches for abandoned or obsolete industrial complexes throughout the Rust Belt, and will hopefully ensure that this issue is squarely an issue of the past.

FIGURES -

1. Christopher Fletcher, November 25th, 2019
2. Christopher Fletcher, November 25th, 2019
3. <https://www.smb.museum/en/whats-new/detail/tenth-anniversary-of-the-reopening-of-the-neues-museum/>
4. <https://www.archdaily.com/921320/david-chipperfields-new-museum-island-gallery-opens-in-berlin/5d2f31a3284dd11870000af-david-chipperfields-new-museum-island-gallery-opens-in-berlin-photo>
5. <https://www.bizjournals.com/cincinnati/news/2020/12/02/plk-selects-name-builder-for-us-playing-card.html>
6. <https://cincinnatiawards.com/entry/factory-52-redevelopment/>
7. <https://www.cntraveler.com/activities/cape-town/zeitz-museum-of-contemporary-art-africa>
8. https://www.archdaily.com/879763/zeitz-museum-of-contemporary-art-africa-heatherwick-studio/59bc17a6b-22e38ff0100037f-zeitz-museum-of-contemporary-art-africa-heatherwick-studio-photo?next_project=no
9. https://www.archdaily.com/4369/the-nelson-atkins-museum-of-art-steven-holl-architects/500ef18f28ba0d-0cc7000ef6-the-nelson-atkins-museum-of-art-steven-holl-architects-image?next_project=no
10. https://www.archdaily.com/4369/the-nelson-atkins-museum-of-art-steven-holl-architects/500ef1c028ba0d-0cc7000efe-the-nelson-atkins-museum-of-art-steven-holl-architects-image?next_project=no
11. <https://www.facebook.com/GlassCityRiverWall/>
12. <https://www.toledoblade.com/a-e/art/2021/10/14/photo-gallery-work-continues-on-the-glass-city-river-wall/stories/20211014119>
13. https://www.archdaily.com/986923/fahle-gallery-street-lumia-plus-studio-argus/62f29dfbd0893a0170d3e516-fahle-gallery-street-lumia-plus-studio-argus-photo?next_project=no
14. https://www.archdaily.com/986923/fahle-gallery-street-lumia-plus-studio-argus/62f29df7d0893a0170d3e514-fahle-gallery-street-lumia-plus-studio-argus-photo?next_project=no
15. <https://ruhrmuseum.de/standorte/auf-zollverein/ruhr-museum-in-der-kohlenwaesche>
16. https://en.m.wikipedia.org/wiki/File:Ruhrmuseum_Kohlenw%C3%A4scheanlage_Coalwash_Zeche_Zollverein_Essen.jpg
17. <https://www.13abc.com/video/2021/11/18/throwback-toledo-great-lakes-terminal-warehouse/>
18. <https://www.13abc.com/video/2021/11/18/throwback-toledo-great-lakes-terminal-warehouse/>
19. Christopher Fletcher, November 25th, 2019
20. Christopher Fletcher, July 1st, 2023
21. Christopher Fletcher, July 1st, 2023
22. Christopher Fletcher, July 1st, 2023
23. Christopher Fletcher, July 1st, 2023
24. Christopher Fletcher, July 1st, 2023
25. <https://metroparkstoledo.com/discover/blog/posts/middlegrounds-was-center-of-transportation/>
26. <https://www.google.com/maps/@41.6272905,-83.5418038,817a,35y,14.81h,65.69t/data=!3m1!1e3?entry=tту>
27. <https://www.amazon.com/Architecture-Reference-Specification-updated-revised/dp/163159379X>



NORTH ELEVATION.



SOUTH ELEVATION.