

ABSTRACT

Title of Thesis: REIMAGINING RUINS:
PRESERVE|UTILIZE
INTERACT

Danielle Olander, Master of Architecture, 2016

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This thesis will examine ways to preserve ruinous structures, utilize their aesthetics, and design an interactive intervention that weaves the old and new together in a seamless way. Ruinous structures should not be seen as an eye-sore to the image of the city. In fact, it is a reminder of all the things the city has faced in the past.

This thesis analyzes different ways that previous designers have rehabilitated pre-existing structures. These methods are applied to each potential site in order to determine which typology would prove most fruitful.

Site selection followed specific criteria. The first is that the structure could not be a complete building. Second, the site should be part of a community. And third, the structure should be located in an urban area.

By the end of this journey, this thesis seeks awareness having pre-existing structures woven into new designs, and as an opportunity to inspire.

REIMAGINING RUINS: PRESERVE|UTILIZE|INTERACT

by

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Dedication

For my family, especially my mom, Garma, my dad, Douglas, and my grandmother, Sofia. For always believing in me and encouraging me to follow my dreams.

For Stephanie, Nivia, Chanel, and Brooks. For being the best friend-family I could ever ask for.

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Introduction

Derelict and half-destroyed buildings are an eye-sore to the image of the city, yet they do not have to be. Society treats buildings the same way it treats people. The slightest sign of aging and there is a quick fix to make the subject look young and beautiful again. But quick fixes only mask the aging. Eventually, issues and complications that come with age resurface. Ruinous buildings offer a glimpse into a world gone by and by tearing it down, it is the same as saying it never happened. Out of sight, out of mind. Instead of tearing down these buildings, they could be readapted into new development and truly become amenities to a community.

This thesis will look at way to preserve ruinous structures, utilize their historic qualities and aesthetics, and design an interactive design fabric that weaves the old pre-existing structure and new design intervention together in a seamless way. Ruinous structures should not be seen as an eye-sore to the image of the city. In fact, it is a reminder of all the things the city, and the community, has faced in the past: wars, economic depressions, the rise and fall of industrialization, the coming of new and innovative technologies, the implementation of styles. Ruins allow people to stare history in the face.

Chapter one will look at a handful of reasons why ruins should be preserved. It is not just for emotive reason, there are economic and environmental reasons for preserving ruins as well. Historical context as well as the design opportunities will also be examined in this chapter. Preserving ruins is not just beneficial for architectural historians and preservationists.

Chapter two analyzes different ways that previous projects have undertaken the opportunity of incorporating pre-existing structures into new design fabrics. The various methods are nesting, encompass, drape, contradiction, insert, and growth. These methods are applied to each potential site in order to determine which typology would provide the most fertile design opportunities for this thesis. What was discovered is that it is a combination or two or more of these methods that would create the most design opportunities. This idea stemmed from the precedents themselves. Although they may fall into one category or another, they have underlying subcategories as well.

Chapter three focused on the process of how buildings decay. It examines the different types of causes of decay, specifically climactic causes, biological and botanical causes, natural disasters, and humans. By identifying the most likely causes of decay, design solutions can actively combat those causes and increase the building's lifespan.

Chapter four looks at site analysis; how the potential sites were selected, why they were selected, explanations of the criteria used to selected the site, the analyses of the site and finally, which site will be pursued in this thesis. When choosing potential sites, there were three criteria that the sites needed to meet. The first is that the structure could not be a complete building. Completed buildings skew a person's perception of the property one way or another. Second, the site should be located in an urban area. Urban areas offer a greater context to work within versus a ruin in the middle of a field by itself. Also, logistically speaking, urban sites have more purpose for redevelopment versus a building located on the outskirts of a small rural town.

And third, the structure should be part of the community. By embracing a community, the rehabilitated structure can act as a node of revitalization and redevelopment for that community.

Chapter five examines how ruinous buildings undergo stabilization of their structures before any work is started. Because the property that is ultimately chosen is a ruin, stabilizing the structure is a safety concern that needs to be address. This thesis examines two of the more popular methods to stabilizing structure: bracing and tie bars. The similarities and differences, the benefits and challenges, of each method are studied and a possible stabilization proposal is set forth.

Chapter six discusses the Secretary of the Interior's Standards and Guidelines for Rehabilitation that have been in place since 1977. These guidelines suggest how to work with historic properties in ways that best help preserve their historic qualities and integrity. One of the main goals of this thesis is to weave old and new together in a seamless way. These standards and guidelines were examined and analyzed in order to resolve the disconnection between the goals of this thesis and the standards the government has put in place.

Chapter seven begins the design process. The goals of the design are addressed outright, followed by a more in-depth site analysis of the chosen site, and program analysis. The goals of the design are to create a destination site that will help to connect the site back to the city and help to revitalize the adjacent communities. Within the program analysis, reasons for choosing certain programs are discussed as well as what each element is meant to accomplish in the grand scheme.

Chapter eight discusses the major ideas that drove the entire design. There are three methods through which interaction between old structures and new designs are examined. The three methods are fall onto a spectrum regarding the intensity of their interaction: preserve, utilize, and interact. There are four design criteria that were established at the onset of the design process: 1) to respect the history of the site, 2) to connect the site back to the city, 3) to showcase the existing structure, and 4) to take inspiration from the materials and forms found in the existing structure. Each of the main programmatic elements is an embodiment of one of these methods. The main ideas driving the forms of the program elements are also addressed in this chapter.

Chapter nine describes the design proposal. There are three levels at which the design acts: the city level, the surround area, and the actual site. Each is discussed and noted how the design criteria was met. The major moves in the design and specifics of the program are discussed here.

Chapter ten offers conclusions and reflections based on the feedback given from the final defense of the thesis.

By the end of this journey, this thesis seeks to make people see the value of having pre-existing structures woven into new designs, and to stop seeing ruinous structures as a detriment to the city, and more as an opportunity for inspired design.

Chapter 1: Why Save Buildings?

Introduction

When someone hears the word ‘ruins,’ the first thing they probably think about are the buildings from the Classical ages; the Parthenon, the Roman Forum, Pompeii, etc. American ruins is not the first thing that comes to mind. And when prompted, they think of plantation houses or a 19th century estate mansions in a rural setting. They do not always think of the urban ruins. Ruins are simply the remains of a building that has been destroyed or that is in disrepair or a state of decay. Ruins are working their way into the fabric of the cities in a much more apparent way than before. The buildings that helped our country to industrialize, mills, factories, and warehouses, are becoming derelict, abandoned, and falling apart. And they offer new and different problems and opportunities than previously encountered. These buildings were constructed from wood and iron and were on a much larger scale than previous seen. These two materials cause the buildings to decay different than the masonry ruins that characterize the ruins of antiquity. Wood and iron have different biological qualities than brick and stone, and thus the science behind their decay is inherently different. This poses different issues in regards to safety, health, and stabilization.

Urban ruins are often seen as eyesores, unhealthy, and dangerous to the residents of that city. Some places are used by homeless people as a dry place to sleep. Some have drug dealers and prostitutes working out of them. Jurisdictions are quick to remove building remains after the structure has partially collapsed or burned

down. Part of the problem is that too little time has passed since their obsolescence, when their original program became obsolete; the nostalgia and appreciation of the past era of American architecture has not been strongly established yet.

All ruins have the potential to be great, urban ruins even more so. They have the ability to be more than just a memorial or museum. They are ingrained into the urban fabric as opposed to being objects in a landscape in the middle of the Italian countryside. With new design purpose, there is the potential that urban ruins will serve as more than just historical reference and context. Besides historical context, urban ruins also serve economic purposes during redevelopment, are more sustainable in their entirety, and offer unique design opportunities to explore.

Emotive

What is it about ruins that is so captivating? Ruins evoke powerful emotions in the individuals who visit them. Ruins act as a monument to the past. Monuments are intended to evoke and stir memories.¹ Ruins evoke nostalgia for days gone by.

“Nostalgia combines bitterness and sweetness, the lost and the found, the far and the near, the new and the familiar, absence and presence. The past which is over and gone, from which we have been or are being removed, but some magic becomes present again for a short while.”²

Ruins represent the dichotomy between reason and emotion. There is the sheer overwhelming emotions of seeing a structure that has stood for longer time than can

¹ Michael Thompson, *Ruins Reused: Changing Attitude to Ruins since the Laste Eighteenth Century*. (Norfolk: Heritage Marketing & Publications Ltd, 2006), 2

² Alice Mah, *Industrial Ruination, Community, and Place*, (Toronto: University of Tortonto Press, 2012), 42

be comprehended. Knowing everything that the site has been through, and still stands, is nothing short of awe-inspiring. People are compelled to capture those emotions, whether on paper or on camera. Drawings and sketches done on site, and representations done over the years give a false impression of the ruins because someone added their input into it. Someone made a decision, consciously or not, to depict the ruins in a certain way. And yet, despite the captivation with the incompleteness of the ruins, the desire to complete it is still present. To view a building as a ruin already puts a perspective on the building.³Ruins imply a passage of time, destruction, and perseverance.

Historical Context

Buildings offer a glimpse into eras gone by; what was valued, what was considered high fashion, and the ideals on how the people viewed themselves. As much can be learned about American history from urban ruins as can be learned about Roman history from sites like Pompeii and Herculaneum. Ruins are, effectively, trapped in time. For one reason or another, people stopped investing in the building and time stops for that structure. Tearing down the ruins of an Irish castle to create a multi-residential condominium building would never pass muster. Why is that same occurrence happening with urban ruins?

While time has stopped for a historic structure, it does not represent that single moment in time. “It is necessary to establish the evolution of events leading up to our present time: the spirit of the age needs to be seen not only as a single link in the

³ Mah, *Industrial Ruination*, 11

chain of evolution, but also as a growth pattern where each period has an effect on the next.⁴ Ruins evolve over time. From the moment people stop investing in buildings, time begins to peel the layers away, until only the bones are left of the structure. Ruinous structures offer windows into the time period it represents and also the patterns through history that lead up to the era. By examining ruins, the layers that time has given can be tracked and examined; the need or lack thereof for fortifications, an increase or decrease in the amount of people living and working in the home, styles becoming unfashionable, etc.⁵ Because patterns and opinions repeat themselves, by analyzing the ways of the past, predictions of how people will react can be determined. By losing those ruins, that connection is severed. Ruins serve as a “document of history, a source of information, a record, a primary source for research, evidence which can be experienced by each generation: they act as the ‘what, why, and how’ of our predecessor.”⁶ By that train of thought, to destroy a ruin is equivalent to destroying Pausanias’ accounts of Greek geography. Just as Pausanias offers his opinions on Greek cities and temples, some of them already in ruins themselves by the time Pausanias got to them in the 2nd century CE, and ruins can be used to examine how people lived their lives throughout history.

“Ruins represent a huge legacy of information, craftsmanship, design, energy and materials, and this must be protected against depreciation if the labours of our ancestors and the benefits we derive from sites are to be preserved.”⁷ By removing

⁴ James Strike, *Architecture in Conservation: Managing Development at Historic Sites*. (London: Routledge, 1994), 7.

⁵ Strike, *Architecture in Conservation*, 48.

⁶ Strike, *Architecture in Conservation*, 18.

⁷ Amanda White, “Interpretation and display of ruins and sites,” in *Conservation of Ruins*, ed. John Ashurt. (London: Elsevier Limited, 2007), 247

these links to our past, they are devalued and society is essentially saying they never happened.

Communal Significance

As communities grow, generations come and go, buildings become local landmarks to the residents of that community. They are used to help residents navigate their town and useful when giving directions to visitors. For example, telling a visiting friend to turn right at the pizzeria and then follow the road until they get to the apartment complex. These buildings become unintentional monuments and have age-value. Age value is defined as “rooted purely in its value as memory...[which] springs from our appreciation of the time which has elapsed since [the work] was made and which has burdened it with traces of age.”⁸ John Ruskin said, “[A building’s] glory is in its age...we feel in walls that have long been washed by passing waves of humanity...”⁹ To remove that structure would be removing a place that helps to define a community. Americans are not defined based on Monticello or Falling Waters. They are defined by the communities they grew up in; it is those buildings that shape their identities and perceptions. It is a part of the built heritage of that community. Residents have an emotional connection to these buildings. There are memories attached to these places. By incorporating ruins into new design fabrics, the history and the memories can be incorporated as well.

⁸ Alan Colquhoun, “‘Newness’ and ‘Age-value’ in Alois Reigel,” in *Modernity and the Classical Tradition: Architectural Essays 1980-1987*, ed. Alan Colquhoun. (Cambridge: MIT Press).

⁹ Thompson, *Ruins Reused*, 28

Sustainability

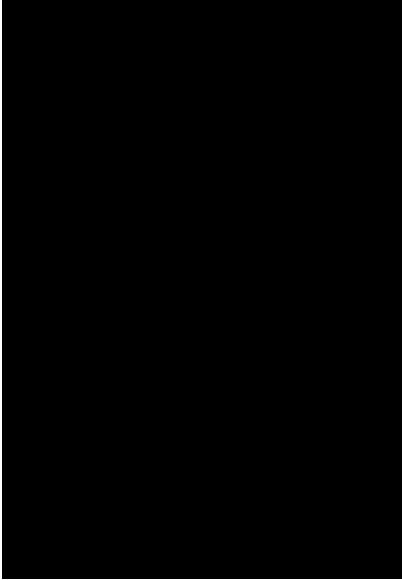
Economic Sustainability

With the rising interest in and commonplace of sustainability, keeping a ruinous structure is better for the environment than tearing it down. To completely destroy and remove the structure from the site, the owner needs to bring in machinery to both tear down the existing structure, and to cart away the debris left behind. And then, all the normal grievances of constructing a building begin; including, the machinery to dig and create the foundation and to bring in all the materials. It makes more sense, both economically and logically, to skip the step where the building is destroyed. By saving these ruinous structures, we are saving more than just time and money.

Environmental Sustainability

The machinery needed to tear down the structure and carry away debris needs to be transported to the site. Transport to the site, and operation on site, and transportation from the site when finished, wastes gallons of gasoline and diesel fuel, labor costs and overhead expenses. There will already be enough of that during the new construction; no need to add to the problem. Besides saving on gasoline, money is saved in materials. There is less new construction, less materials to transport to the site, less money spent. The ruins themselves can be reused in new ways that are functional, reminiscent, and contemporary.

Because these ruinous structures can be delicate due to their age, special precautions must be taking into account. Heavy chemical substances used for



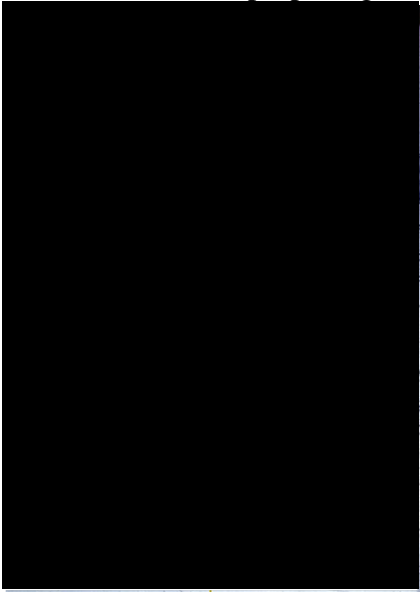
cleaning should be avoided. By avoiding hazardous chemicals, the development becomes more environmentally sensitive.¹⁰ Instead, preservationists use techniques outlined in the Secretary of the Interior’s Standards. The Standards and Guidelines for Rehabilitation will be further examined in chapter six.

Figure 1: Campidoglio, before Michelangelo source: Glenn Andres

Design Opportunities

Site Conditions

Using ruins in new design fabrics offers a unique design opportunity that is not seen in other repurposing or adaptive projects. Ruins would fall under existing



site conditions, and should be viewed as part of the history of the site. For example, the restrictions conditions on the site offer the most inspired solutions. We can see evidence of this with the Campidoglio in Rome. In Figures 1 and 2, the Campidoglio is shown before and after Michelangelo was able to work his magic. Projects with restrictions often have the most inspired

Figure 2: Campidoglio, after Michelangelo

solution. . The history of the site is an issue that

¹⁰ Orbasli, *Architectural Conservation*, 60

should be incorporated into any site analysis. Challenges that designers face during the design process result in solutions that are much richer in content.

Townscape

Buildings are inherently a part of a whole. They belong to a street front and are a piece of a town or community. When working with ruins, designers must be aware of the historical and present qualities that affect the design. When designers work as if their building is the sole focus of the area, the jurisdiction becomes a mismatched, illogical set of objects. There is no cohesion between the buildings and therefore, does not present a unified front. This reflects badly on the city this unfortunate event befalls. Buildings should be respectful of their neighboring

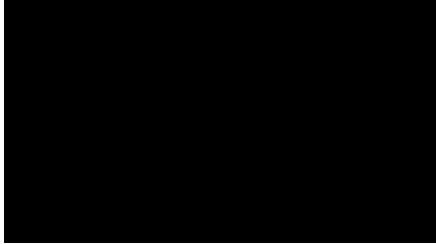


Figure 3: Peter Woodall, Buck Hosiery Mill pre-fire. Digital Image. Hidden City Philadelphia. Accessed October 28, 2015. www.hiddencityphila.org

buildings. Not only in being respectful in regards to sunlight and shadows, but in letting neighboring buildings shine. It sounds a little oxymoronic; letting the neighbors shine, while also trying to have the project building shine itself. But that is what unified street fronts

achieve; each building is unique in its own way, but still functions as part of a whole. Being respectful of neighbors as well as being respectful of the ruins is a task not many designers get to encounter. It gives the building a chance to be a work of art but within the framework of the town.

Ruins may be seen as an eyesore, but they are essential to a street front. Street fronts with a continuous façade create more power experience on the street. There is a regular rhythm that residents can feel as they walk down the street to the store, to



Figure 4: Peter Woodall, Buck Hosiery Mill post-fire. Digital Image. Hidden City Philadelphia. Accessed October 28, 2015. www.hiddencityphila.org

work, to the bus stop. Even if the ruins are not aesthetically appealing, they help keep the rhythm and continuity of the street front complete. Taken away, the site sans ruins can sit vacant for years before a developer comes along to building on it, assuming the ruins were not

torn down for new development. These sites become junk collection sites and in time, they bring the quality of the neighborhood down. The lowered imaged of the neighborhood keeps developers away, because they do not have faith that their



Figure 5: Buck Hosiery Mill now. Bing Maps. Accessed October 28, 2015

developments will succeed in a neighborhood of poor reputation, and the process snowballs.

This occurred at the site of the Thomas Buck Hosiery Mill in Philadelphia, PA. The mill had burned down in 2012. Figures 3 and 4 show how the mill looked before and after the fire.

Before the fire, the building was just a vacant, average looking, run-of-the-mill industrial building. After the fire, the potential for redevelopment was through the roof. It was no longer a derelict structure; the image had been burned away and the remains were truly a blank slate for designers to work with. Unfortunately, the city decided to tear down the remains. Three years later, the site serves no purpose other than housing a small parking lot, as seen in Figure 5. It contributes nothing of cultural or historic value to the neighborhood.

This process of tear-buildings-down-and-leave-the-lots-empty can be halted if the possibilities presented by incorporating ruins into design is brought out of the shadows. If the community realizes the potential of urban ruins, they can be proactive in what becomes of that site. Developers could realize the potential of an urban ruin. With the community and developers working together, the decline in the neighborhood's reputation can be halted.

Perception

Architecture is not perceived only through the sense of sight. Perception of

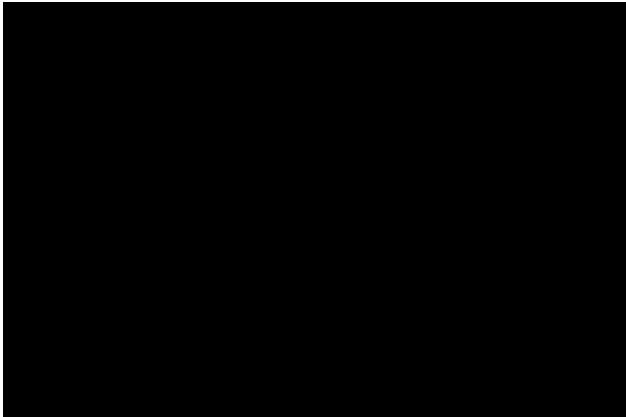


Figure 6: Paul Burk, Reused Vat at the American Brewery. Digital Image. Architecture Week. Accessed October 28, 2015. www.architectureweek.com

space also includes the signals received from the materials that are touched, how the space resonates, and what smells are present. By incorporating ruins into the design fabric, perception of the space can be altered. The smell of burnt wood can be present, or feel the

crumbling stone. It adds a truly visceral understanding of the history of the site.

“When a designer sets out to form an association between a new building and a particular characteristic, it is necessary for ‘the message’ of that characteristic to be implanted into the design. The characteristic, whatever it may be, has to be translated, through the design process, from an intellectual idea into the reality of an actual

building.”¹¹ The ruins need not be utilized in the manner they were originally intended. In fact, the project’s design might be better served if the ruins were used for something else. As seen in Figure 6, existing materials found on site, can be reused to enrich the design. Designer George Holback reused brewing vats found on site to create intriguing spaces. Visitors understand they are sitting in a former brewing vat; and therefore, understand the history of the building, but use the vats in a completely new way. By preserving pieces of ruins in place, they have their original purpose ingrained into them because of their location. This could skew a person’s perception and understanding of the site.

Ruins, or the materials from the ruins, can be readapted into something new that improves the quality of the design. Ruins have the potential to help people understand the design concepts behind the building. There does not need to be a 1:1 translation when dealing with the ruins. It can be left to the preference of the designer.

Economy

Economy can highly drive the need to keep a building instead of tearing it down. The immediate money-maker with ruins is tourism. Tourism has become a principal reason for conservation.¹² It is intrinsically linked to the perceived importance of the site. If the site is deemed important enough, due to historical qualities, technological qualities, etc., the owners will make an effort to market that. For example, to promote the site, owners will create a marketing strategy geared

¹¹ Strike, *Architecture in Conservation*, 34

¹² Aylin Orbasli, *Architectural Conservation*, (Oxford: Blackwell Science Ltd, 2008), 41

towards tourism. It is a viable strategy. But for those sites that do not meet their owner's criteria of importance, is the only option to tear them down and forget about them? The ruinous and historical nature of the structure can become an asset to the future design fabric. Once redesigned, the new fabric can include money-making businesses. One such example is the Viaduc des Arts in Paris, France. This project will be examined in more depth in Chapter two.

A building is designed for a specific purpose. Once that purpose has been fulfilled or become obsolete, the building must adapt to a new economy. If the building cannot keep up with the changing economic and growing environment around it, it gets abandoned and begins to fall into disrepair. Buildings have a difficult time recovering from being abandoned. It would appear that the perception is that it is more cost effective to simply tear the remains down and start from scratch, but fail to see how beneficial the ruins can be in the long run. By incorporating ruins into the new design, something unique and special is created, which in turn, might cause more people to visit, and bring revenue to, the new building and the local community.

Chapter 2: Typological Precedents

Introduction

Civilizations have been using and reusing buildings since ancient times. Romans would add onto the architectural accomplishments of the previous emperor. Lords in Medieval times would literally reuse ruins in their churches that reached for the heavens. The buildings of the Renaissance have layers upon layers that show how styles changed and evolved over the Renaissance and throughout Europe. In the 19th century, wealthy families would design ruins as decorations in their sprawling gardens. In present times, the reuse of industrial ruins has become a commodity. Ruins play a fundamental role in stimulating the imagination. It is their physical incompleteness that allows architects to enter into the surviving structures and exercise their own creative abilities.¹³ Influential figures like Giambattista Vico and Edmund Burk viewed the imagination as a valuable tool in the recuperation of the past, stimulating new flights of subjective interpretation.¹⁴ Ruins are inspiration for a strong imagination, and a strong imagination circles back into fascinating interpretations when working with the past.

This chapter will analyze various precedents based on theoretical and typological similarities. By analyzing the methods each of these precedents uses will help to create design solutions for the site that is ultimately chosen for this thesis. The precedents use ruins from all different time periods, from an ancient Roman

¹³ John A. Pinto, *Speaking Ruins: Piranesi, Architects, and Antiquity in Eighteenth-Century Rome* (Ann Arbor: University of Michigan Press, 2012), 3

¹⁴ Pinto, *Speaking Ruins*, 6

necropolis to grain silos from the 1960s. Each precedent uses a different method of combining the old and new. These methods will be referred to as a “typology” and will be individually named.

Nesting: DoMa Gallery

History

The DoMa Gallery is located in Baltimore County, Maryland and was constructed in 2004 by W Architecture & Landscape Architecture. The gallery is a rehabilitation of a decrepit wooden barn located on a rural estate. A private art collector owns this estate, consisting on a long, winding approach road, cultivated gardens, open meadows, a main residence, and a series of auxiliary buildings, one of which is the barn.¹⁵

Transformation

In order to transform this decrepit barn into an art gallery, designers inserted a glass box into the existing structure that cantilevers out of one end of the barn. The transparent glass allows visitors to appreciate not only the art, but the structure of the barn as well. The architects preserved the barn as is, decay and all, and then inserted their intervention.

“Ruined barns exert a strong emotional pull...The memory of a quiet and simple life combined with the reality of loss make us look at these structures with a

¹⁵ “The Doma Gallery,” W Architecture & Landscape Architecture, accessed November 5, 2015, <http://www.w-architecture.com/projects/doma>.

potent mix of love and regret.¹⁶ This intervention celebrates the past, while also moving forward. By cantilevering the glass box beyond the original perimeter of the building, the building is moving beyond the past. It is possible to celebrate the past, but impossible to live in the past.

Analysis/Conclusion

In the DoMa Gallery, the ruins are utilized as a piece of art. By making the glass box the main circulation space, it offsets visitors from the historic portion of the building. And placing the barn's walls beyond glass, it solidifies the precious nature

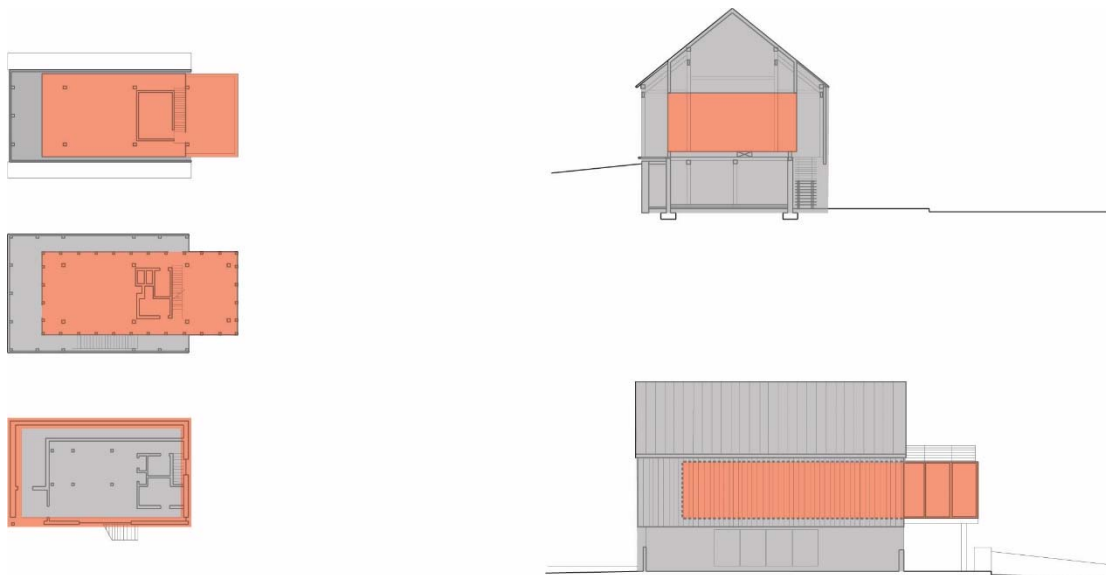


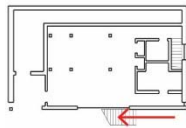
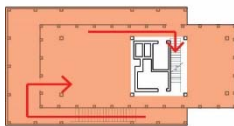
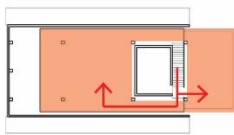
Figure 7: DoMa Gallery Old and New Elements, source: Author

¹⁶ Françoise Astorg Bollack, *Old Building New Forms: New Directions in Architectural Transformations* (United States: The Monacelli Press, 2013), 46

of the walls. Choosing glass was a smart decision on the part of the architect. Glass both separates and connects the historic barn and the new intervention.

The transparency of the glass allows visitors to imagine themselves within the barn, but it physically keeps them separate from the barn structure.

The derelict and decaying walls offer a unique element for this art gallery.



Because the walls of the barn are decaying, they no longer create a perfect separation between interior and exterior.

The light streams through the openings and perforations in the façade and create a unique light show that also acts as an artistic element to the design.

The barn structure does more for the glass box than just acting as an art installation. The gallery is situated on a rural, country estate. Visitors must travel a winding road

Figure 8: DoMa Gallery circulation, source: Author

through vegetation in order to reach the gallery. Because of the context of the site, a glass box does not fit with the landscape. Visitors would expect to come across an agricultural building, not a sleek, contemporary, glass box.

By nesting the glass structure within the wooden barn, the barn protects the nested glass from the expectations created by the surrounding landscape. However, the barn itself is raised about a story above the ground. This begs the question of whether or not the stone ground floor is original or part of the intervention. Common sense would lead someone to think that the wooden structure of the barn should rest on the ground. If the stone ground floor is part of the intervention, it is a clever way to keep

the wooden barn isolated, and therefore, safe. But it is a huge differentiation from the other part of the intervention. Glass and stone are practically opposites; transparent versus impenetrable.

Not only does the intervention distinguish, and announce itself, by protruding

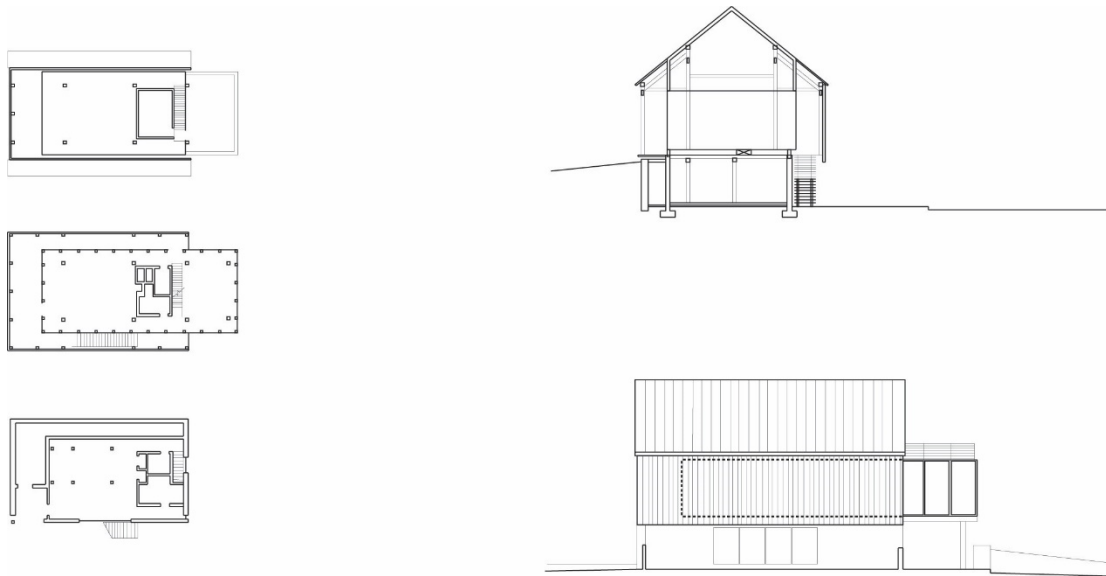


Figure 9: DoMa Gallery plans and sections, source: Author

from the barn, the contrast between materiality is a major factor. Sturdy wooden columns and beams support the main floor and wooden walls of the barn. Slim steel columns and beams support the glass box.

This thesis would classify the DoMa Gallery as a nesting typology. The glass box conforms to the shape of the barn. An analogy to Russian dolls could be made here. Each is similar in design, yet different in detail. Using a nesting typology in this way is dependent upon the remaining structure of the ruins. The barn was in decent enough shape to continue to endure weathering and human interaction. This may not be the case for other ruin projects.

Encompass: Gemini Residences

History

The Gemini Residences is located in Havnestad, the harbor town of Copenhagen, Denmark. The apartments were constructed between 2001 and 2005 and were designed by MVRDV and JJW Architects. The two silos that were the core of the new apartment complex were originally built in 1963 by Danish Soybean Cake Factory. The two were part of a three grain silo set for the company and named “Seed Silo,” “Wennberg Silo,” and “Press Silo.” These silos were naked concrete cylinders, measuring 25 meters in diameter. The Soybean Cake Factory closed its doors in

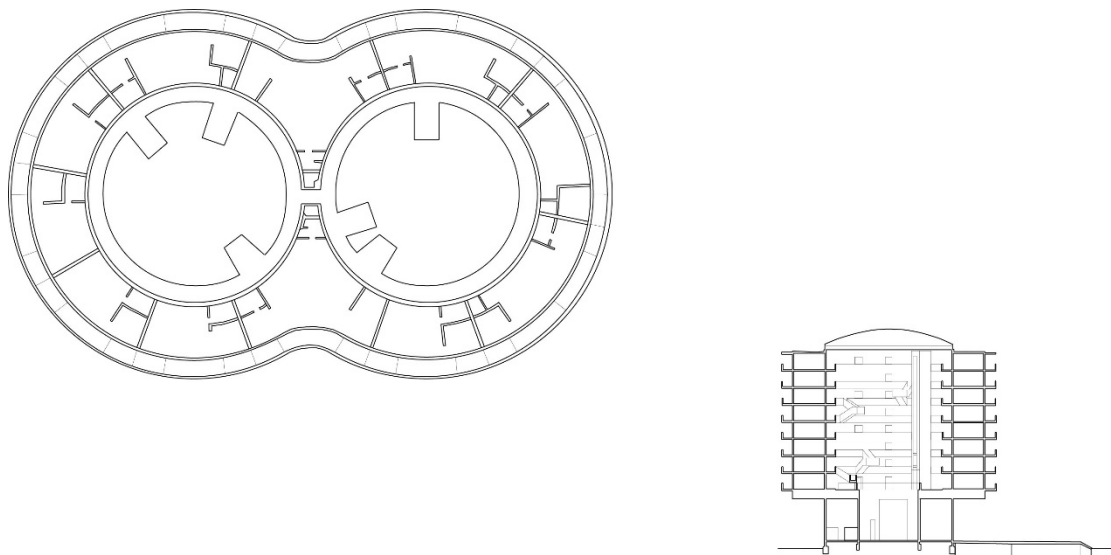


Figure 10: Gemini Residence plan and section, source: Author

1990s and the silos were abandoned. Shortly after, the area was slated for redevelopment into residential and office buildings.¹⁷

¹⁷ Bridgette Meinhold, “Mvrdv Converts Twin Silos Into Gemini Residences On Copenhagen’s Waterfront,” *Inhabitat*, March 19, 2013, accessed November 5, 2015, <http://inhabitat.com/mvrdv-converts-twin-silos-into-the-gemini-residences-located-on-copenhagens-waterfront/>.

Transformation

The silos are located in the formerly industrial district of Copenhagen along the water front. Today, the waterfront is a very desirable place to live. Because of the way the silos were constructed, thick concrete reinforced by steel bars, there were few opportunities for openings and penetrations in the structure. This fact, coupled with the desire for waterfront views, led the designers to flip the design inside out. Instead of having the residences within the silos, they were moved to the exterior of the silo structure.

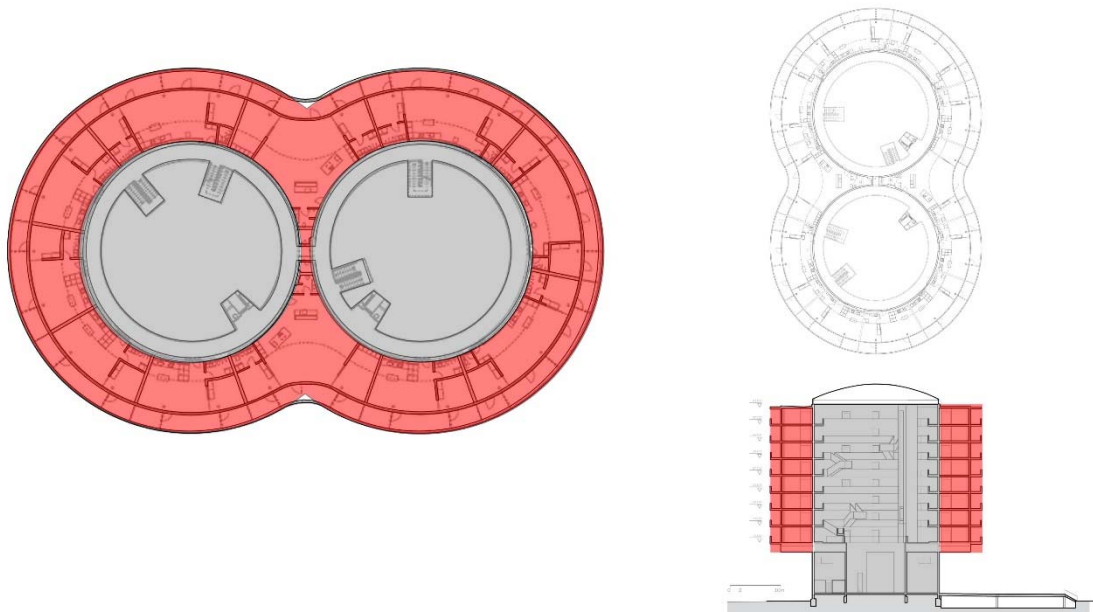


Figure 11: Gemini Residence old and new diagram, source: Author

According to the architect of the project, this structural fault ended up preserving the most impressive aspect of the silos; their emptiness.¹⁸ The open floor plans of the apartments allow for floor-to-ceiling windows that give the maximum view to the water front. The silos are used for vertical transportation and as a large atrium space. The silos have not been completely lost to the new intervention. The apartments do

¹⁸ Bollack, *Old Building New Form*, 102

not cover the entire silos, but begin about three stories above the ground. The concrete silos are exposed and the entrance to the apartments is between the two concrete giants.

Analysis/Conclusion

The main theme in the Gemini Residences is contrast. Everything is contrast: this and that. The only aspect of the project not in contrast is the form of the intervention. The apartments follow the curvilinear lines of the silos. The most immediate contrast is that of materiality; the concrete of the silos and the glass of the apartments. The separation between old and new is clearly defined by the contrast in material.

While the silos act as a core for the apartments, the residents themselves are quite removed from the core. It is only used as vertical circulation. The only interaction residents have with the concrete silos is when they travel, via a new elevator, to their apartments. There is some interaction when first entering the silos. The entrances to the apartment complexes are on the ground floor of the silos. Residents and visitors must walk between the concrete giants in order to access the living spaces. However, their massiveness is dwarfed by the overhang that hangs on about two stories above their heads. The silos lose their imposing quality because of this.

Within the complex, the private spaces are sandwiched between the more

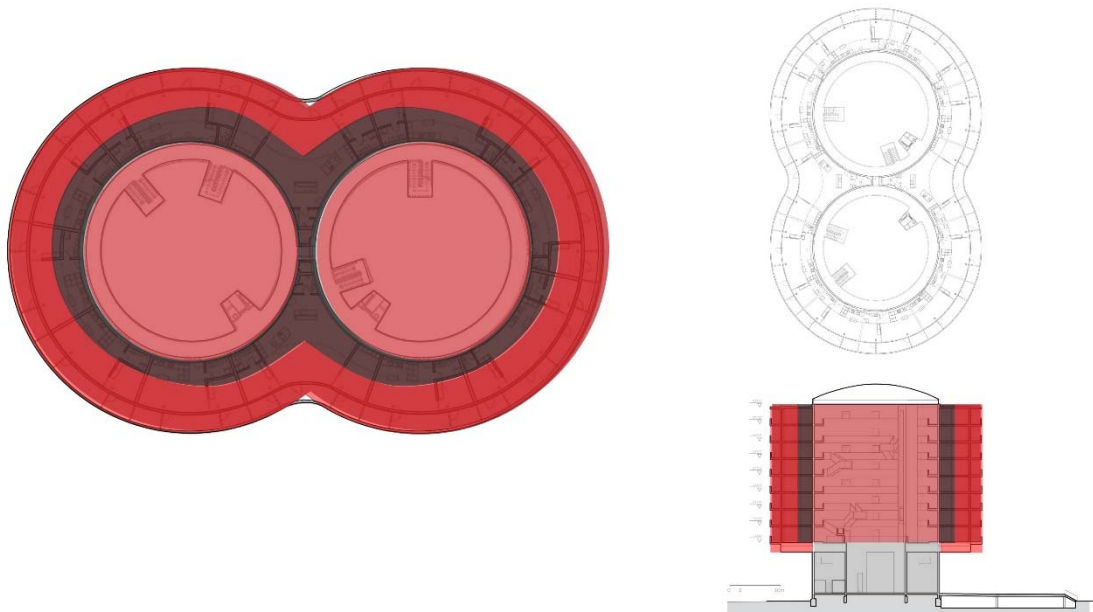


Figure 12: Gemini Residence public vs. private, source: Author
public spaces. The living spaces of the apartments are places against the interior-most walls of the apartments; against the core. Working towards the outer edges of the apartments, the spaces becomes more public, but not as public as the core of the complex. The balconies of the apartments are a continuous floor and ceiling plane, divided up by frosted glass partitions. It is not as private as one would think a balcony would be. In contrast to a non-glass partition, views and sound still penetrate between individual balcony spaces. The partitions do not run the full floor-to-ceiling length, allowing neighbors' conversations to permeate into adjacent balconies.

The Gemini Residences would fall under an encompassing typology. The apartments shroud the silos in a contemporary, glass layer. Using the encompass typology would be prudent when the designer wishes to hide part or all of the ruins. Hiding the ruins can be a positive or a negative, depending in the design concept. In the case of the Gemini Residences, hiding the, frankly, plain exterior facades of the

silos with the apartments made the exterior more dynamic and inviting. The impressive massiveness of the silos was still retained on the interior in the form of the vast atrium space created.

Drape: Santa Caterina Market

History

The Santa Caterina Market is located in Ciutat Vella (old town) of Barcelona, Spain. The renovations on the structure were constructed between 1997 and 2005 and were designed by Enric Miralles and Benedetta Tagliabue Architects (EMBT). The site itself has a long history that was uncovered and rediscovered during the rehabilitation process. The market was the first covered food market in Barcelona and originally built in the mid-1800s. During the post-Civil-War era, Santa Caterina was the main food supplier to the towns and villages on the outskirts of Barcelona. During excavations for the rehabilitation, the workers uncovered the foundations of a Dominican monastery. This monastery was the Convent of Santa Caterina and was torched in 1835 by anti-clerical Catalan revolutionaries. Upon further excavation and investigation, the remains of the first wholly Gothic church in Barcelona were discovered. These remains date to around 1241. Underneath it all, the remains of an ancient Roman necropolis were also unearthed. Some of these remains are showcased in the new, rehabilitated design.¹⁹

¹⁹ Bollack, *Old Building, New Form 128-131*

Transformation

The original market, constructed in 1848, was covered by a steel structure typical of the time.²⁰ This structure was demolished to pave the way for the new ceiling structure designed. The undulating roof structure was decorated with colorful tiles from Seville, and reminiscent of the Casa Batlló by Antoni Gaudí. The free-form vault structures that comprise the roof are supported by three massive girders that run perpendicular to the vaults, occasionally cutting through them. Because of the remains spanning the centuries found during excavation of the renovation, a museum was added below ground for visitors to view the history that literally lay beneath their feet. As well as a museum, underground parking and 59 rent-subsidized apartments were added to the complex.²¹ The original, white, masonry, arcade walls were restored and reused for the new market, and the program remained unchanging.



Figure 13: Santa Caterina Market plan and sections, source: Author

²⁰ Bollack, *Old Building New Form*, 131

²¹ Bollack, *Old Building New Form*, 128.

Analysis/Conclusion

Retaining the program and original walls gives an interesting experience to those who visit the market. The sweeping nature of the roof set the market apart from the surrounding building in the old city of Barcelona, yet the white masonry walls fall right into the vernacular of the historic town. Visitors must pass through history in

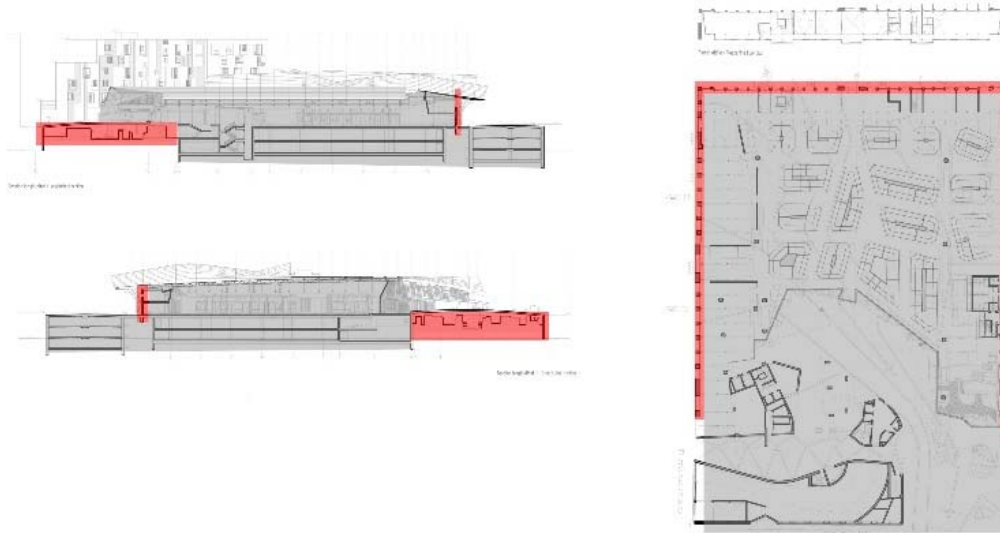


Figure 14: Santa Caterina Market old and new, source: Author

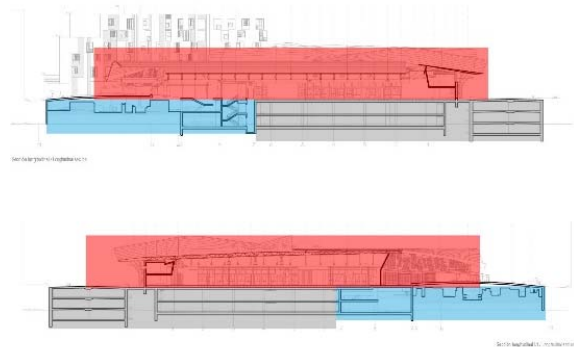


Figure 15: Santa Caterina Market Program, source: Author

order to reach the contemporary market within. Visitors are completely surrounded by a highly contemporary roof structure and about to a contemporary market. Yet for a brief moment, they are in an interstitial space that millions have passed through spanning the centuries in a city that dates back to Roman times. This precious historic element is covered and protected by the radical roof structure. But the historic nature of the

walls is mitigated by the pristine, white walls. The restored nature of the walls gives it a sense of newness.

The Santa Caterina Market has more than just the exterior walls to offer in regards to historical elements. During excavation, archeologists discovered ruins from both 17th century, Gothic, and Roman times. Only the walls of the 1845 market is proudly shown and framed by the sweeping roof structure. These ruins have been relegated to remaining hidden in an underground museum that is part of the Santa Caterina Market complex. There is no interaction between ruins and visitors other than gazing from beyond glass. There is a complete contrast between the essential 1845 market walls and the other ruins which seem to only be there because the designers could not get rid of them.

The Santa Caterina Market falls under the draping typology. The roof structure falls over the historic walls and protects it, and it defines the upper limits of the interior space within. This typology is useful for designers when they wish to protect any pre-existing structure from the elements. The draping typology is the opposite of the nesting typology examined in the DoMa Gallery. In the nesting typology, the ruins protect the intervention. In the draping typology, the intervention protects the ruins.

Contradiction: Higgins Hall

History

Higgins Hall is one of the building complexes of Pratt Institute in Brooklyn, New York. Pratt Institute opened on October 17, 1887. The complex consists of two

18th century buildings flanking a contemporary connector building. The two older buildings were both constructed in the late 1800s. The building to the north was constructed in 1869 and designed by Mundell & Teckritz, and the building to the south was constructed in 1887 and designed by Charles Coolidge Haight (citation needed). These buildings were originally part of the Adelphi Academy, Brooklyn's oldest private preparatory school (est. 1863). These buildings were acquired when John Higgins, an architect and alum of both the Adelphi Academy and Pratt Institute (Class of 1896), made a donation to Pratt. Originally there was a third building as well, but in 1996, a four-alarm fire destroyed it and damaged the other two as well. In 2005, Steven Holl designed the new connector building between the two existing structures. Bricks from the original building that were salvaged after the fire were used in the reconstruction.²²

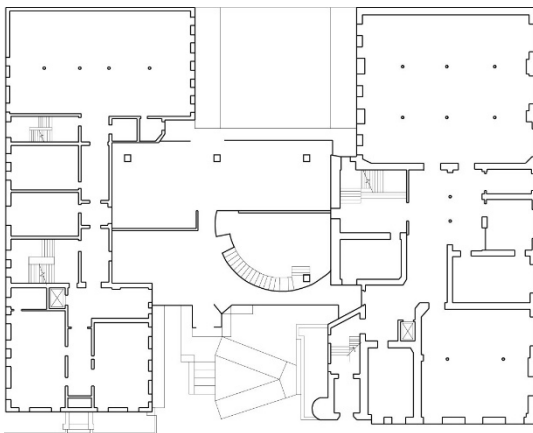


Figure 16: Higgins Hall Plan, source: Author

Transformation

In order to connect the two building, the intervention had to resolve the issue of the floor plates being at different heights. The southern building has taller floor-to-ceiling heights, creating a discrepancy when

the floor plates are extended into the void separating them. This was an amazing design opportunity, but Holl did not take full advantage of this opportunity. The

²² "Pratt Institute History," Pratt Institute, accessed November 5, 2015, <https://www.pratt.edu/the-institute/history/>.

moment when the plates come together is simply resolved by adding steps or a ramp. A railing is the only barrier between the two floor plates. The only interesting moment is when inhabitants can look through the floor plates above and below them to the upper and lower levels. As a design for a School of Architecture, this was missed opportunity.

Holl used channel glass on the façade of the building. In order to represent that architecture students never sleep, at night, the intervention lights up like a lantern.²³ The floor plate discrepancy is further played out in the design of the façade.

Analysis/Conclusion

By using the intervention as a hyphen, the sides of the wings being connected become part of the entry sequence space. The major element of this design is the contrast. The channel glass contrasted against the red brick brings attention to the intervention. The red brick comes into play on the façade in the form of the ribbons of red that signify where the floor plates are originating from.

Because this intervention acts as a connecting agent between two 19th century buildings, there is little interaction between new and old, in either plan or section. From the exterior, although the buildings all touch, they seem to be three separate entities; not the one entity they actually are. Even in section the interior spaces are separated by old and new. And within the intervention, when one would expect that

²³ “Pratt Institute Higgins Hall Insertion,” IIT College of Architecture, accessed November 5, 2015, <https://arch.iit.edu/prize/mchap/selected-works/project/pratt-institute-higgins-hall-insertion>.

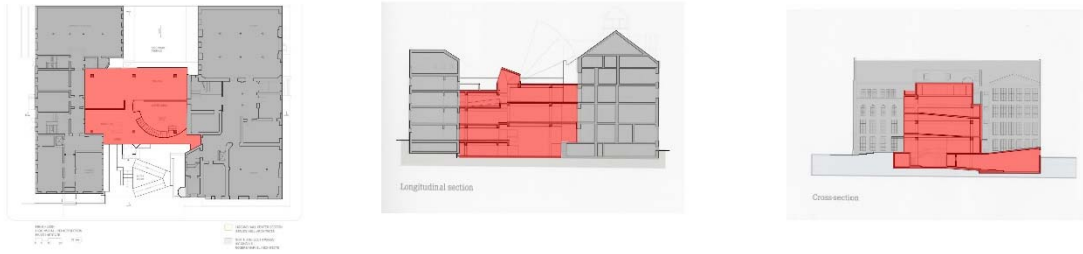


Figure 17: Higgins Hall old and new, source: Author

the spaces within would be more interactive than they are. The place where the floor plates meet and interact is the division between the studio spaces.

Although the intervention acts as a connecting agent, the spaces within could not be further divided. This makes it difficult in determining a typology. While it connects overall, it divides in the specifics. The only way to summarize all the contrasting elements in this project is to call it a contradiction typology. The contradiction typology would be useful for a designer when they want to bring attention to the new intervention and not the pre-existing structure.

Insert: Viaduc des Arts

History

The Viaduc des Arts is located in Paris, France. Construction of the Viaduct began in 1853 as part of a railway line that would carry a train from Strasbourg to Paris, terminated in the Place de la Bastille. Strasbourg is the capital of the Alsace-Champagne-Ardenne-Lorraine (ACAL) region of France. The ACAL is located on the periphery, and serves as part of France's border with Germany. In 1859, the line is inaugurated as the "Ligne de la Bastille." The viaduct was one and a half kilometers long and consisted of 67 vaults.²⁴ In 1969, the RER A was created. The

²⁴ Berger, Patrick. "Viaduc Des Arts, Paris, Patrick Berger Architecte." Viaduc Des Arts, Paris, Patrick Berger Architecte. N.p., n.d. Web. 18 May 2016.

RER A is a rapid transit train system. Because of this, part of the Ligne de la Bastille was incorporated into the infrastructure, but the part that ran from Paris to Vincennes (a suburb of France) was abandoned. In 1988, with help from architect Patrick Berger, early development work began on transforming the viaduct into a strip of art galleries. In 1994, the first vaults were inaugurated, and by 1997, they were all completed.²⁵

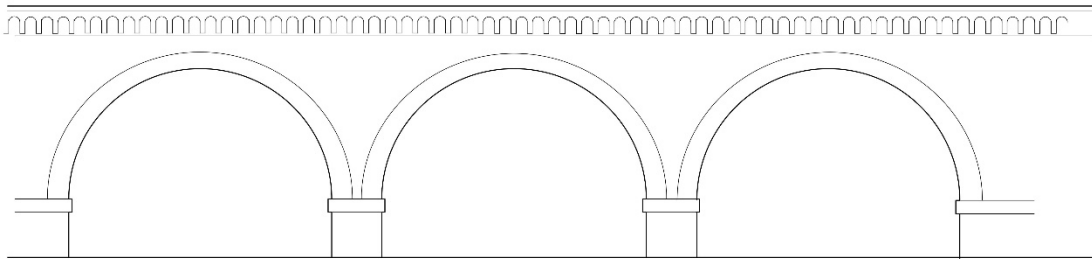


Figure 18: Viaduc des Arts elevation, source: Author

Transformation

The design of the viaduct was comprised of three major ideas: restoration of the viaduct, a planted promenade along the top, and shops or local craftsman exhibitions placed under the arches. Glass walls were inserted to close off either end of the arch, creating an interior space for the shops. Keeping the facades transparent is to allow visitors to perceive the thinness of the structure. In order to restore the viaducts, the central part of the masonry arches of limestone was cleared. This emphasized the curve of the arch in the shadow of the glazing compared to bare structure.

²⁵ "Historique." Le Viaduc Des Arts. Accessed May 18, 2016. <http://www.leviaducdesarts.com/fr/viaduc/>.

There are two lenses through which we read the façade. The first is through the concept of unity. The systematic and repeating presence of two elements, a flattened arch and a translucent detached curtain wall. The curtain wall is supported by a cable that runs along the top of the arch. This cable also provides support for the signs of each shop. The second lens is the free exposure of each activity. This is achieved through the fact that the walls are glass. Visitors can see directly what the local craftsmen are doing and selling.

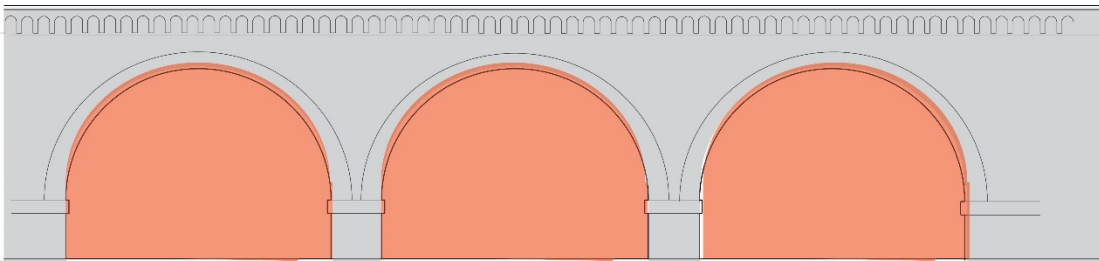


Figure 19: Viaduc des Arts, Old and New, source: Author

Analysis/Conclusion

Placing shops underneath these arches makes perfect sense. The space is already delineated with the structure itself. These shops can act as their own singular entity while still be part of a group. They have their individuality with the goods that they display and sell, but uniformity in the façade design.

There is, however, no wiggle room. If a shop wants to expand, it physically cannot. Due to the way arches function in the manner they carry loads, any type of penetration will compromise the integrity of the structure. If a shop wishes to expand, it needs to find another location. Over the past 20 years or so, the Viaduc des Arts has become a tourist attraction, and a venue for locals to come as well. What store owner would want to give up that kind of foot traffic?

The Viaduc des Arts falls into the insertion typology. This should come as no surprise due to the fact that the shops were literally inserted into the arches. This typology is useful for sites that have a repetitive, exposed, structural system like an arcade. The strength and weakness of this typology is the repetitive nature required of the structure. The strength comes in being able to create a modular unit that can be repeated. The weakness comes if the structure cannot allow for flexibility in the design.

Growth: High Line

History

The High Line is a one and a half mile long public Park in New York City. It rests on an elevated stretch of former freight rail lines. The line was first constructed in 1934, and was celebrated as one of the most important works of infrastructure in the history of Manhattan. The rail line was in service for almost 50 years; the last train ran in 1980. Left to nature's devices, the structure soon was overgrown and rusting away. In 1999, the Friends of the High Line activist group was formed to fight for the High Line's preservation. The group was successful and in 2003, a competition was launched to find designers that would help to transform the derelict High Line.

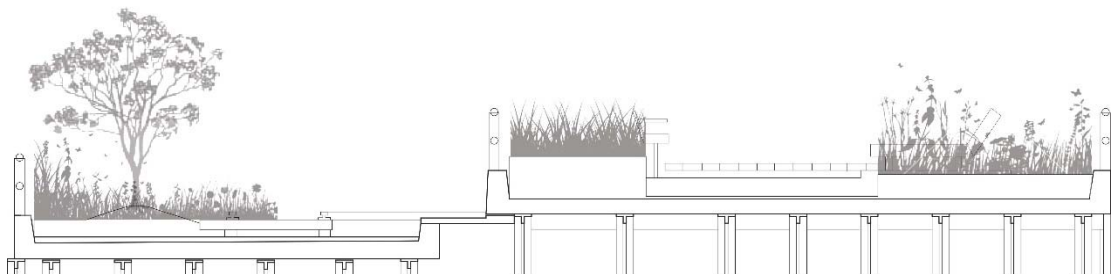


Figure 20: High Line section, source: Author

Transformation

Schematic design began in 2005 and construction began in 2006. The design team was a collaboration between James Corner Field Operations, Diller Scofidio + Renfro, and Piet Oudolf. Construction was executed in three zones.²⁶

The main idea behind the High Line was to keep it simple, wild, quiet, and slow. Construction began with the removal of all materials above the concrete deck, including soil, plantings, and rail ties. The railroad tracks that were removed were tagged so they could be placed back in the appropriate area and position. Areas were selectively chosen to be cut out for the implementation of stairs and special features. The planter beds that characterize the High Line were the last element to be installed. Tens of thousands of plants were distributed according to a detailed planting scheme.

There were six types of habitats created for the High Line: 1) mossland, 2) tall meadow, 3) wetland, 4) woodland thicket, 5) mixed perennial meadow, and 6) young woodland. The type of habitat dictated which plants grew where. Visitors would traverse through these various habitats as they walked the High Line.

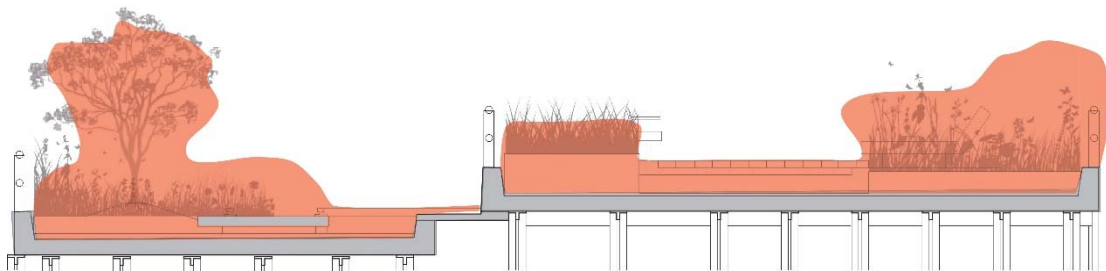


Figure 21: High Line, Old and New, source: Author

Analysis/Conclusion

²⁶ Terragni, Emilia, and Laura Loesch-Quintin, eds. *The High Line: Foreseen, Unforeseen*. New York: Phaidon Limited, 2015. Print. 9, 199, 279.

The High Line can be classified as a growth typology. The growth typology is so named for three reasons: 1) for the various habitats were created for the different sections of the High Line, 2) because the structure itself spreads into the city fabric of Manhattan, and 3) for the fact that the High Line was created to help this former industrial area to regrow into a trendy, new age place. This is a very specific typology, utilized for building parks, not buildings. Turning derelict sites into parks is the newest trend. They hark back to Renaissance gardens of Italy and England. It is a constructed wilderness, like an English garden, but has moments of history on display for all to see, like Italian gardens.

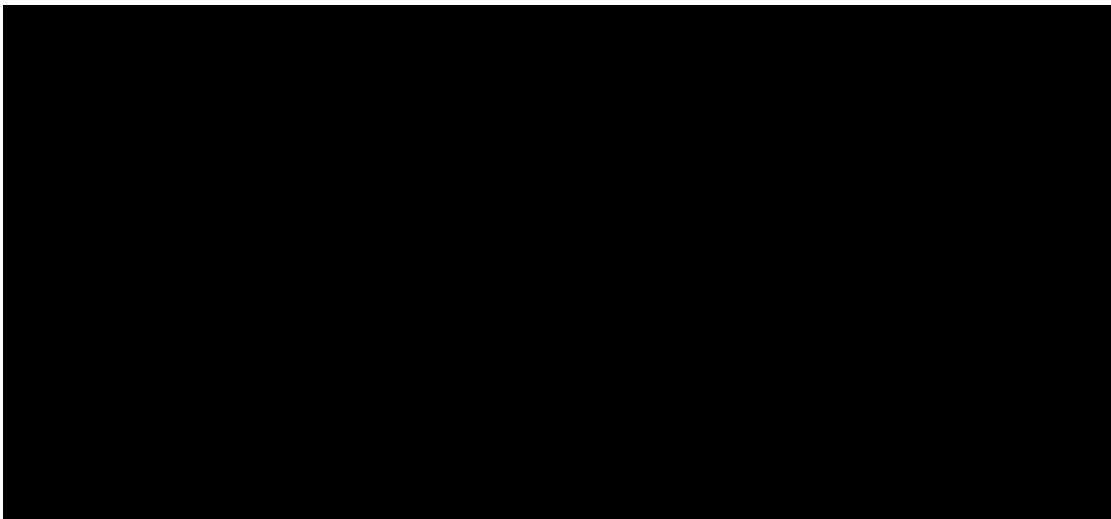


Figure 22: Habitats of the High Line, source: "The High Line. Foreseen, Unforeseen" pg 149

Conclusion

After analyzing each precedent, this thesis has discovered several different ways to create interaction between the pre-existing ruins and a new design fabric. Each strategy has its merits and its faults. The most successful solutions employ two or more strategies. The strategies that create the most juxtaposition between the old and the new also offer interesting design opportunities. To create a space where

visitors are surrounded by both the old ruins and the new intervention is a very powerful goal.

The strategies that were the most successful were the nesting strategy and the encompass strategy. These strategies allows the interventions to weave themselves into the fabric of the existing structures, yet take on a life of their own as they interacted together. In each of those two precedents, visitors are forced to travel through the old ruins in order to reach the new intervention.

These precedents all shared one specific quality: there is a distinct contrast between the old structure and the new intervention. This juxtaposition is due to the Guidelines for Rehabilitation put forth by the Secretary of the Interior. These guidelines will be further analyzed in a later chapter. The contrasting nature goes against the goals of this thesis. One of the goals of this thesis is to create a seamless interaction between the old and the new. How to resolve this disconnect between what is recommended, and under some circumstances required, for historic sites and the goal is something that will need to be explored thoroughly.

Chapter 3: Process of Decay

Introduction

Decay affects all buildings, both old and new. Being able to identify the presence of decay, and recognize the causes of decay and failure in building

structures and materials is the essential first step in any conservation project.²⁷

Materials decay as part of the weathering process and materials can only last so long before they need to be repaired or replaced. The rate of decay is linked to the quality of the material, original workmanship, quality of design and detailing, level of maintenance, and how the building is being used.²⁸ There are four major causes of decay that this thesis will analyze and discuss: climactic causes, biological and botanical causes, natural disasters, and humans.

Climactic

There are three major elements of climate which cause the most damage to a building: sun, water, and temperature. Sunlight not only causes materials to fade, but solar radiation causes the breakdown of protective coatings like varnish and painted. Water in any form can cause damage. Because water expands and contracts depending on its state, frost damage is a major concern in cold and wet places. Damp places are also perfect breeding grounds for insects and fungi. Rain also can leave streak marks over time. The area most vulnerable to water damage is at joints where two materials meet. The protective coating or mortar protecting the connection decays away and the structure (structure that was not created to deal with weathering condition) beneath is left exposed to the elements. Thermal changes cause materials to expand and contract over time. Usually, this movement is calculated into the

²⁷ Orbasli, *Architectural Conservation*, 112

²⁸ Orbasli, *Architectural Conservation*, 113

structure, but in cases where temperatures between day and night, and the seasons, is dramatic enough, thermal movement can become an issue.²⁹

In regards to the two proposed sites for this thesis, water damage seems to be the most likely candidate for climactic causes of decay. Both the Eastern Building and Pier 124 have exposed wooden elements, and wood is the material most susceptible to water damage. Pier 124 is also along the waterfront; and therefore, the chances of water damage increase significantly.

Biological and Botanical

Biological and botanical causes include insects, animals, fungi, and plants. Birds, animals, and vermin can cause damage to structures by dislocating materials or actively chewing through them. They also burrow into crevices and cavities of the structure and aggravate the condition of the materials. Insects mainly attack timber. Plants, especially trees, can cause foundational issues. Tree roots are very powerful and can break through masonry walls. Trees in close proximity to the site also create a safety concern for the structure because, during heavy storms, their branches can break off and damage the building. Seeds that get carried by the wind can take root in cracks in the roof and walls of the building, causing plant and moth growth in those cracked areas. Fungus can occur in wet or dry climates, however, it is more likely to see them in wet climates. Unless the dampness can be eradicated from the area and better ventilation can be provided, it is impossible to stop a fungal attack³⁰. And even

²⁹ Orbasli, *Architectural Conservation*, 114

³⁰ Orbasli, *Architectural Conservation*, 115

if the fungus is eradicated, there may be lasting damage to the structure that can weaken it.

Because Pier 124 is located on the water, it increases the chance of fungus growing, but the chance is later decreased due to the fact that the breeze that comes in off the water provides excellent ventilation for the site. Also, because the site is completely open to the elements, there is no place for air to remain stagnant. Pier 124 is also in danger of damage caused by trees and plants. In fact, there is already plant damage on the site. Plants have reclaimed the top of the structure and are starting to reclaim the bottom as well as evidenced by the tree roots that have slithered their way in between the piers.

The Eastern Building's surrounding site is hardscape, but neglect has allowed vegetation to spring forth from the cement and grow on the site. So far, vegetation has not grown enough to cause any structural or foundational concerns, but left unchecked, the plants can become a problem. Plants are not gone until you get the root. The longer plants remain, the more difficult it is to remove that root. Also, due to the exposed wood structure on the uppermost level, the beams and columns are at risk of fungal attacks due to their exposure to moisture and air.

Natural Disasters

The two natural disasters that are of concern to the proposed sites are flood and fire. The obvious damage that flooding causes is water damage. But flood can also cause structures to fail because of the pressure created when flood water becomes trapped. When flood water becomes trapped somewhere, and the water outside drains away, the differential pressure causes the trapped water to burst forth in

order to re-establish equilibrium. That moment when the water bursts free can cause extreme damage to structure because often, the water needs to break through something. Because Pier 124 is on the waterfront, it will be the first to flood and the bottoms of the piers and arcades can accrue water damage. The Eastern Building is in proximity to the Schuylkill River, and depending on how severe the flooding is, the Eastern Building may accrue some water damage as well.

Fires probably cause the most damage to buildings. Not only does the fire itself burn and char elements of the building, the smoke damage can affect the structure, and the large quantities of water coupled with the immense water pressure of the hoses can cause severe damage to buildings. Following a fire, structures need to be reassessed to make sure their structure are still fit to carry the loads, or if repair is necessary.³¹ Both Pier 124 and the Eastern Building have suffered fire damage. It would be prudent of designers to incorporate more intense fireproofing to these structures in any design interventions. Other than the wood elements of each site, the other materials found are much better equipped to handle the intense heat of fires. Concrete and brick have a higher tolerance for fire than wood does.

Humans

Most human-caused damage comes from the day-to-day wear and tear, coupled with a lack of maintenance and poor building management. Humans also cause damage by conducting inappropriate repairs and poorly considered alterations that cause serious and irreversible damage.³² Negligence in building systems can lead

³¹ Orbasli, *Architectural Conservation*, 117

³² Orbasli, *Architectural Conservation*, 118

to leaks and the use of inappropriate cleaning practices which cause permanent damage. Other human causes of decay are pollution, vibration, and intentional damage to properties through acts of vandalism, war, and terrorism.

Atmospheric pollution has contributed to deterioration of buildings since the industrial age. Pollution and acid rain negatively react with the surface of materials, causing them to decay. The increase in urbanization has caused a massive increase in traffic. Traffic causes pollution via vehicular exhaust, and also causes vibrations. Vibrations can destabilize foundations and cause differential settling to occur.

Acts of vandalism are very popular with buildings of historical, cultural, or religious significance. The urge to leave one's mark on history is too great to ignore. There is also the wow-factor of placing a tag or piece of art where it is not supposed to be. But the fact of the matter is that spray paint can cause serious damage to material surfaces.³³ The constant, heavy, cleaning required to remove graffiti can damage the surface of the material.

The graffiti is a major factor of the aesthetic of Pier 124. The spray paint is only damaging if it is constantly being removed. If the design solution factors in graffiti artists, the damage will be far less severe. Vibrations and pollution from traffic are harmful to both of the proposed sites. Pier 124 sits directly adjacent to a major highway infrastructure and in close proximity to a rail line. The Eastern Building is embedded within the urban fabric of Philadelphia and immediately adjacent to a rail line. Vibration damage is definitely a factor that needs to be taken into account with the Eastern Building.

³³ Orbasli, *Architectural Conservation*, 119

Conclusions

By knowing the most likely candidates that cause decay on each site, appropriate design solutions that combat these candidate can be employed. By knowing that combatting water damage at Pier 124 is crucial to the success of a design intervention is something very important to know at the onset of the design process. The major force of decay at the Eastern Building will be pollution and vibration from the railroad.

One of the goals of this thesis is to have visitors be able to interact with the ruins. But because humans can cause so much damage to older structures causes a concern. Even the oils on our skin and the chemicals in our breath can negatively affect material surfaces. Whether or not visitors will be able to physically interact with the ruinous structures is an issue that will need to be resolved.

Chapter 4: Preliminary Site Analysis

Introduction and Criteria

Site Selection

In finding and determining potential sites to analyze, there were three criteria needed in order for a site to qualify. First, the pre-existing structure on the site should not be a complete structure. Second, the site should be part of a community. And third, the site should be more urban than rural. The rationale behind these criterions will be explained in the subsequent subsections.

The process used to locate these potential sites began with determining which cities to explore. Due to proximity, Washington D.C. and Baltimore, MD were the obvious first choices. Philadelphia, PA was also chosen due to the familiarity with the area. It was soon determined that locating derelict structures within these cities was going to be far more difficult than originally anticipated. Because these structures are seen as an eye-sore, or because they attract crime, municipalities are quick to tear down the rest of the structure. This thesis needed to find a structure that had been damaged, abandoned, etc., but had not been slated for demolition or already destroyed.

The search began by Googling for ruinous and abandoned structures within the selected cities. Many of the results turned up buildings that either did not fit the criteria or had already been demolished. Washington D.C. and Baltimore fell out of the running for different reasons. Almost all of the potential sites located in

Washington D.C. had either already been torn down, or were far enough in the process of a rehabilitation project, that the original structure was lost. While Baltimore is not lacking in abandoned buildings, a lot of the buildings were rows of townhouses or sections of neighborhoods that had fallen out of use. These structures were, more or less, still complete. To take on these sites would be more along the lines of set design, and that is not what this thesis is about.

Philadelphia proved to be more fruitful in the results. As a city with a long history, finding potential sites proved to be slightly easier. A lot of the potential sites were located in the suburbs of Philadelphia, and while it was not a completely urban site, they were still logged as back up sites. Eventually, two sites presented themselves as meeting all the criteria: Pier 124 on the waterfront of the Delaware River in the Port Richmond neighborhood, and the Eastern Building in the Brewerytown neighborhood.

Criteria 1: Incomplete Building

The first criterion that this thesis uses in selecting a site is that the structure should not be a complete building. Completed buildings skew perception of the structure. And perception is essential to this thesis. Part of the beauty of ruins is their incompleteness. Seeing the destruction inflicted upon buildings evokes a truly visceral understanding of the passage of time. Ruins imply finality, beauty, majesty, glorious memory, tragedy, loss, and historical import.³⁴ It is that emotion that drives this criterion. When buildings and structures are complete, the image is already

³⁴ Mah, *Industrial Ruination*, 9

complete; the perception is already skewed. By having an incomplete structure, the slate is more or less blank. The structure will help to frame the final image, but the final image will be of the author's own creation.

Criteria 2: Community

The second criterion is that the site must be part of a community. Being part of a community gives a sense of purpose and belonging. The site becomes part of the collective memory of the community. Collective memory is the memory of a person, place, or event, created and built upon by a group of people, as opposed to a single individual. This can create tensions between true memory and historical memory.³⁵ Collective memories contain people's livelihood, their stories. They are all folded into an idea that the site embodies. Tapping into these stories offers an unlimited amount of avenues to take a design solution down. Endless stories means endless inspiration.

The community can inspire the design and in turn, the design can inspire the community. By placing the design within a disenfranchised community, the design can help to revitalize said community. A design so compelling can bring interest to area, people come to see the building, and help to bring the community back to life.

Criteria 3: Urban

Being within an urban setting gives the site more context to enhance and build upon. The urban setting, much like a community, gives the site nodes to build off of. A city is like a puzzle; when trying to force the pieces together, the picture does not

³⁵ Mah, *Industrial Ruination*, 14

look correct, but when the pieces all fit together properly, a beautiful picture is created. An urban context has a shorter memory than other sites. There are people who live nearby that can remember the grandeur of how the site was originally, and there are people who do not remember, but can see what it could be.

Pier 124, Port Richmond, Philadelphia, PA

Location

Pier 124 is located along the Delaware River waterfront in the northeastern area of Philadelphia. Access to the site is limited to Beach St. Pier 124 is an old wharf structure that has been reclaimed by nature. The pier is disconnected from the city because of the highway infrastructure that separates it. It is located about two miles



Figure 23: Pier 124 Source: Google Maps

away from Old City, the most historic area of Philadelphia, and about three miles from Center City. These distances, however, are in a straight line and do not follow roads. Following I-95, the site is about two and a half miles from Olde City closer to three and a half miles to Center City.

Temporal/History

Known by many names and also called Philadelphia's worst-kept secret, Pier 124 has been part of Philadelphia's waterfront since the 1800s. Pier 124 is also known as the Graffiti Pier, Pier 18, the Abandoned Pier, Port Richmond Yards, the Coal Pier, just to name a few. For this thesis, the site will be referred to as Pier 124. Originally owned by the Reading Railroad Company, the pier supported two train

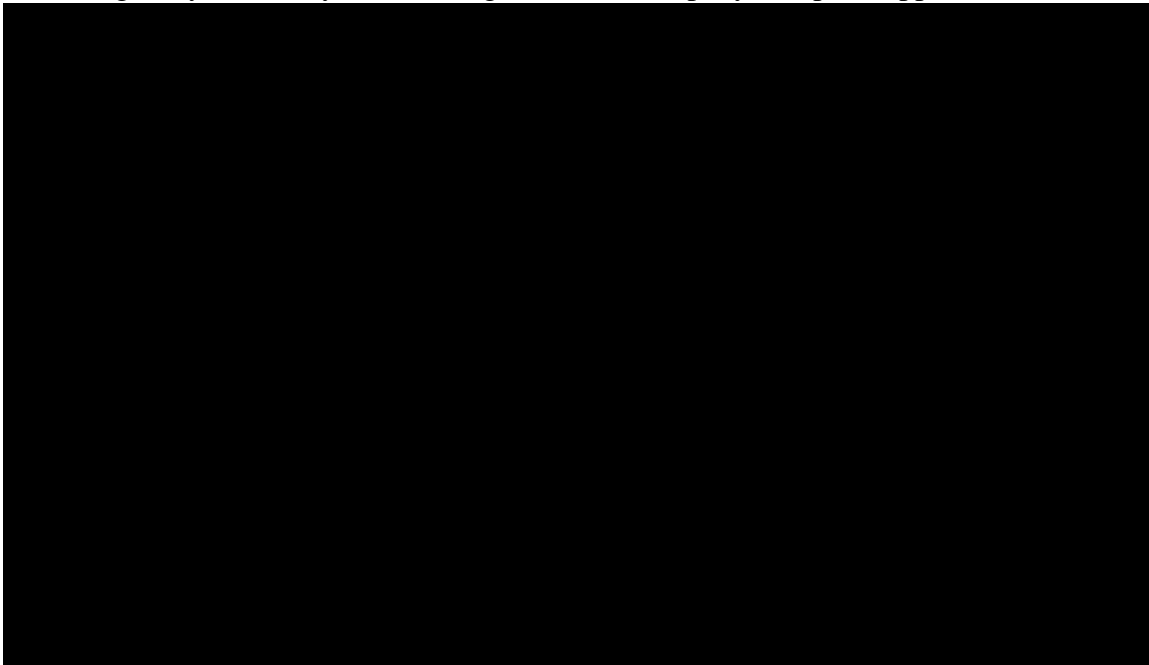


Figure 24: Reading Railroad Map, source: Reading Company Technical and Historical Society tracks, upon which freight trains transported coal from the mining towns of eastern and central Pennsylvania to the Delaware River to be shipped all along the Mid-Atlantic region (Figure 22). In the 1970s, the pier and tracks were sold to a company called Conrail, who modernized the pier.

Conrail began its operations in April of 1976. The railways that Conrail controlled were built as early as 1826 and over the next century and a half, the hundreds of miles of railway consolidated into six lines: Central Railroad of New Jersey, Erie Lackawanna, Lehigh & Hudson River, Lehigh Valley, Penn Central and Reading. The Reading line would be the tracks that brought coal to Pier 124. In the 1970s, one of the six railroad lines entered bankruptcy. Competition from trucks, the completion of the Interstate Highway System, and a system of economic regulation which prevented railroads from responding to the needs of the market, caused a decline in using trains for transportation. Conrail was a federally created company to help revitalize the railway industry. Part of Conrail's first accomplishments was to fix up the dilapidated railway structures. Pier 124 was part of this modernization

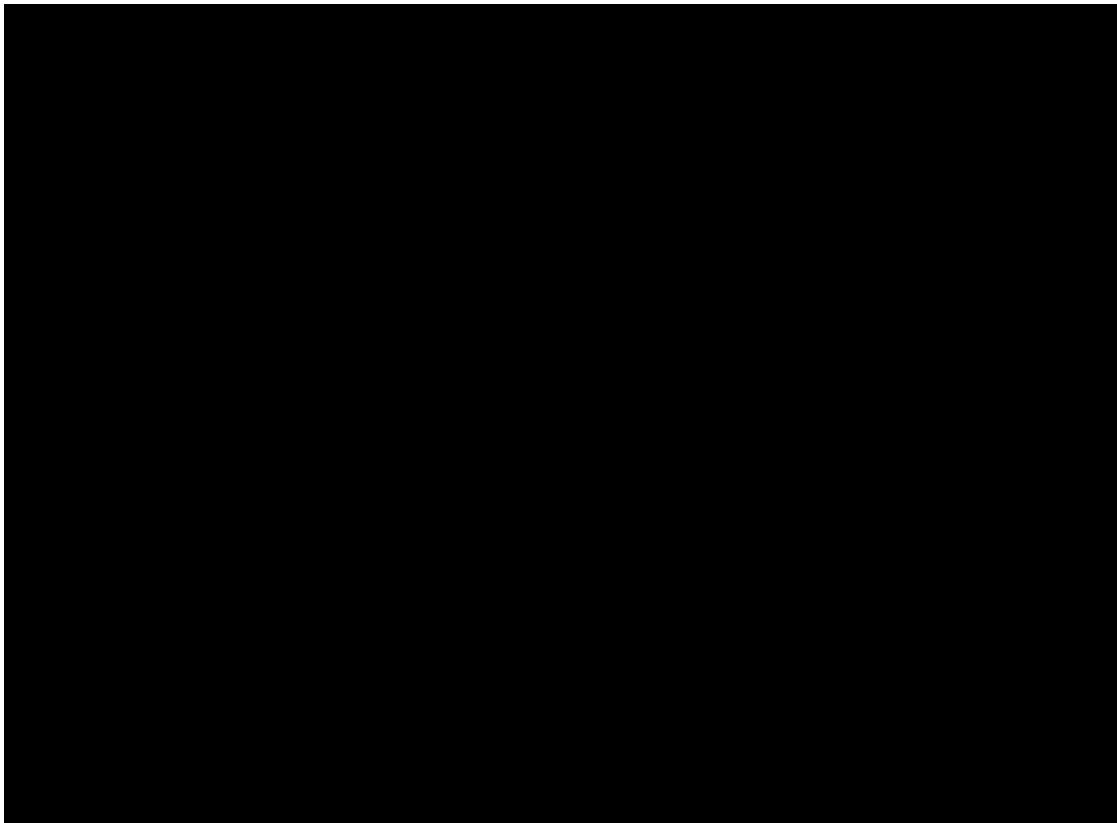


Figure 25: Pier 124 historic photo, source: The Philadelphia Evening Post's Facebook page

project.³⁶ In 1999, Conrail was turned over to two private investors: CSX Transportation (CSX) and Norfolk Southern Railway (NS). CSX is the company that currently owns the property of Pier 124 and the surrounding areas.

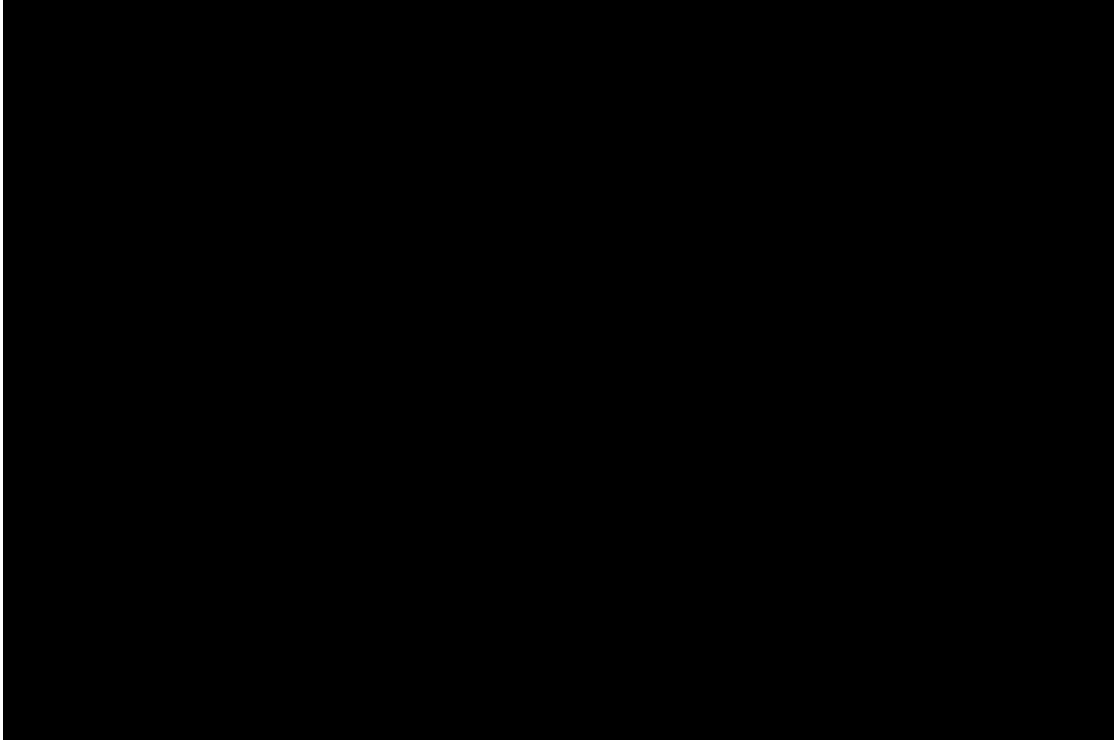


Figure 26: Pier 124 c. 1984, source: Dick Bregler, Conrail Photo Archives

Pier 124 had two parallel, rotary car-dumpers that could handle 77 and 100 ton railroad cars and dump coal onto a conveyor belt that loaded the coal onto the ships. The ships would dock on either side of the pier in order to receive their shipments. The pier was able to handle 2,500 tons of coal per hour. It included a thawing shed and was capable of mixing coal grades during the loading of vessels.³⁷

However, when coal use started to dwindle in favor of other energy fuel sources, Conrail decided to move their production down to Baltimore, MD in order to

³⁶ “Conrail Company History,” Conrail Historical Society, accessed December 1, 2015, <http://thecrhs.org/CompanyHistory>.

³⁷ John Mayer, “Piers,” Workshops of the World - Philadelphia, accessed November 22, 2015, http://www.workshopoftheworld.com/south_phila/piers.html.

save money. In 1991, the pier ultimately closed down. In 2009, the steel crane that was an essential piece of machine for the pier was torn down. Since its abandonment, nature has reclaimed the pier and it has become a popular place for graffiti artists. It is not uncommon, during the summer, to see people fishing off the pier, swimming in the way, or having picnic. Despite CSX retaining ownership of Pier 124, it has gained fame as an informal park. Part of the reason people keep returning, despite the fact that they are technically trespassing, is that the pier is always changing. As a free-for-all art installation for graffiti artists, there is always something new to see when you return; new artwork, expansion of artwork, etc.



Figure 27: Pier 124 exposed rebar, source: Author

Aesthetics

The obvious aesthetic of Pier 124 is the graffiti art that decorates the structure. It brings color and life to an otherwise utilitarian aesthetic. The concrete brings a very hard and practical aesthetic to the site. The fact that parts of the concrete have chipped and decayed away, exposing the rebar beneath, adds to the utilitarian aesthetic of the structure (Figure 26). The concrete creates a blank canvas for the

graffiti. Without the graffiti, the site would not be nearly as special and unique as it is. All of the colors of the graffiti bring life to the site. There is not one accessible spot

that is not covered in somebody's artwork. It is a living, changing, exterior wall paper for the site.

There are some remaining wooden beams sprinkled around the site. It brings a different type of aesthetic to the site. It brings an aesthetic of destruction. The wood is burnt from a previous fire and falling apart. The beams that remain hoisted above everyone's heads are broken, jagged, and uneven (Figure 29). The pieces that have fallen to the floor allow visitors to get a close up of the destruction that time can bring. It also brings a softer, more organic aesthetic. An aesthetic which is further emphasized by the nature that has reclaimed the site. Small trees and shrubbery line the edges of the pier. Some plants have penetrated the column grid (Figure 28). On the top of the structure, grass has overtaken what was once an industrial railroad line. Nature reclaiming a site is not a common occurrence in an urban ruins. It brings an ethereal and timeless quality to the site, a quality normally found in rural ruins. The vegetation that has reclaimed the site will be further discuss in the Movement section.



Figure 28: Top of Pier 124, author: Diane Bickel



Figure 29: Pier 124 vegetation penetrating structural grid, source: Author

Typological

Pier 124, due to the railroad that ran along the pier, would be considered an industrial site. Industrial sites have a character unique to their typology.

Industrial sites echo the magnificence that captivates people about past civilizations, yet industrialization happened in a much quicker timeframe. Industrial sites are always in a constant state of change.³⁸ The

sites are constantly being abandoned,

reused, regenerated, sold, and in the worst cases, demolished. It is a process, not a state of being. The very definition of “decay” implies a passage of time. This aspect of change is further emphasized by the ever-changing graffiti art. 4152

³⁸ Mah, *Industrial Ruination*, 3

Socio-Political

Pier 124 is located within the neighborhood of Port Richmond and immediately adjacent to Fishtown. It is also located near the more well-known neighborhood of Kensington. Most immediately adjacent to Port Richmond. Port Richmond, also known as Olde Richmond, is one of the original neighborhoods associated with Philadelphia. It was an outlying village detached from the built-up urban area around what is now called Center City. In 1854, Olde Richmond, along with Philadelphia and its surrounding townships were consolidated under one municipal government. It has occupied, historically and in present day, the Delaware River waterfront. It was the Reading Railroad Company, bringing coal to the Delaware River to ship out all over the east coast that brought Port Richmond into



Figure 30: Pier 124 wood beam remains,
source: Author

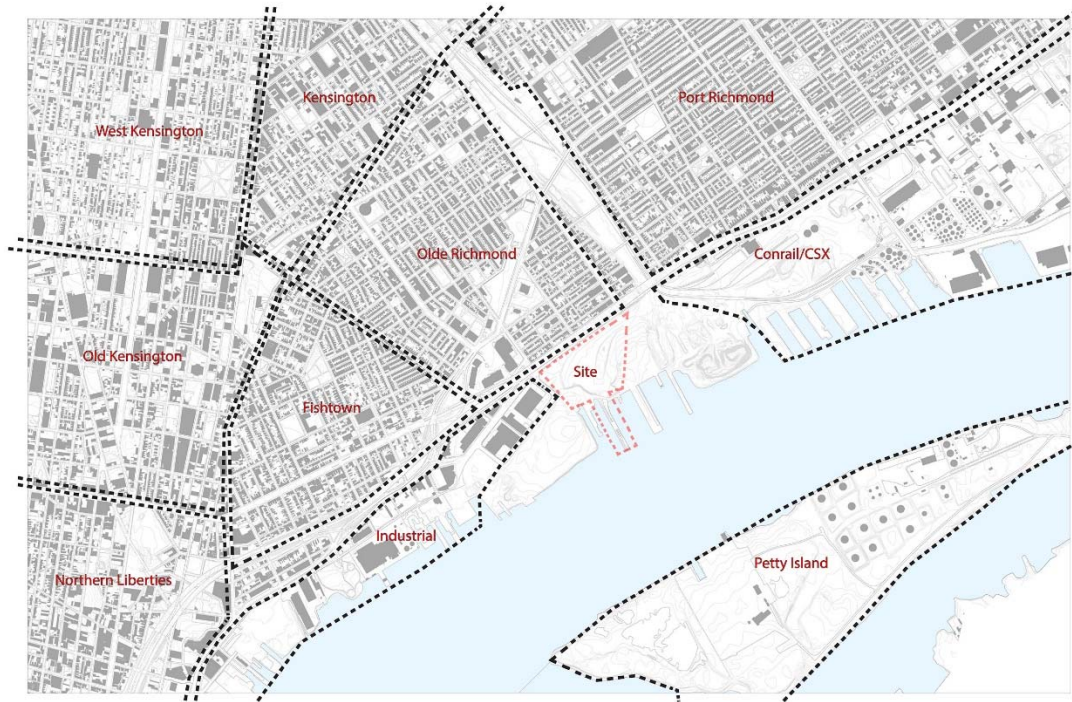


Figure 31: Neighborhoods near Pier 124, source: Author
prominence. Because of the strong coal economy, Port Richmond historically had a large population. Presently, Port Richmond is a manufacturing center.³⁹

Because Port Richmond is located along the waterfront and the main program being manufacturing, the neighborhood only has a population of a couple hundred people, who squeeze in along the outskirts of the neighborhood. Of these people, the median age is 39 years old, the median household income is \$49,000 a year and the demographics are pretty evenly distributed between single, married, single parents, and married with kids. The population is mostly white, of Polish decent, and 47% of residents 18 years and old have a high school diploma.⁴⁰

³⁹ “A Brief History of Philadelphia,” US History, accessed December 10, 2015, <http://www.ushistory.org/philadelphia/philadelphia.html>.

⁴⁰ “Port Richmond, Philadelphia, Pa,” Realtor.com, accessed December 10, 2015, http://www.realtor.com/local/Port-Richmond_Philadelphia_PA/home-prices.

Fishtown is also immediately adjacent to the site. Fishtown is historically known as the site where William Penn and the Lenape Indians signed the Treaty of Love in 1682. The neighborhood occupies, both historically and in present times, the stretch of waterfront next to Port Richmond. While Polish immigrants settled Port Richmond, German immigrants settled Fishtown. Fishtown received its name because these Germans were generally fisherman.⁴¹

Today, about 16,000 people live in Fishtown. The median age is 33 years old and the median household income is \$45,000 a year. The percentages of single, married, married with kids, and single parents is very evenly split, with married without kids inching into the majority with 34%. Of the 16,000 people who live in Fishtown, about 37% of them have a bachelor's degree or higher.⁴²

The closest well-known neighborhood near Pier 124 is Kensington. Kensington was historically a ship- and boat-building district, as well as having a fair amount of fishing merchants engaged in supplying markets in Philadelphia. During the Industrial Revolution, Kensington moved away from the water industry and into iron and steel manufacturing, as well as the building of machines powered by steam.⁴³

Today, Kensington has a population of about 89,000 people. The neighborhood is very dense; 23,000 people per square mile. Philadelphia, overall, has a density of about 11,500 people per square mile; therefore, Kensington is over twice

⁴¹ "Where It All Began," Philadelphia Neighborhood - Fishtown, accessed December 10, 2015, <http://www.fishtownonline.com/>.

⁴² "Fishtown, Philadelphia, Pa," Realtor.com, accessed December 10, 2015, http://www.realtor.com/local/Fishtown_Philadelphia_PA/home-prices.

⁴³ "A Brief History of Philadelphia," US History, accessed December 10, 2015, <http://www.ushistory.org/philadelphia/philadelphia.html>.

as dense as Philadelphia as a whole. The median age is 30 years old and the median household income is \$29,000 a year. 46% of the population are single parents.

Unfortunately, Kensington is locally known for the amount of crime that occurs in the neighborhood. If the national average rate of crime is based at 100, the average crime rate in Kensington is 50% above that. However, in regards to personal crime (crimes committed against an individual, like assault, kidnapping, and homicide), Kensington is 207% above the national average.⁴⁴

Knowing this information about the surrounding neighborhoods will help to better design the site. Knowing the median age allows for a more age-appropriate program and design. For example, a playground in the midst of a neighborhood with people who are mostly older than 20 would not be a smart design decision. Knowing the median household income can also affect design decisions because designers can estimate how much free time the residents have to visit the site.

Legal and Regulatory

Pier 124 is currently zoned as a medium industrial district, notated from here as I-2. This zone is intended to accommodate low-impact employment-generating land uses, like light industrial, assembly, fabrication, offices, research and development, small-scale wholesaling, local distribution, and similar activities that generate few adverse operational impacts⁴⁵. I-2 is a broad zoning and due to this, the site may not need to be re-zoned if it becomes more formalized.

⁴⁴ “Kensington, Philadelphia, Pa,” Realtor.com, accessed December 10, 2015, http://www.realtor.com/local/Kensington_Philadelphia_PA/lifestyle.

⁴⁵ “14-403 Industrial and Industrial Mixed-Use Districts. 142amended, Bill No. 120774-a (Approved January 14, 2013).142,” Philadelphia Decoded, accessed December 11, 2015, <http://phillycode.org/14-403/>.



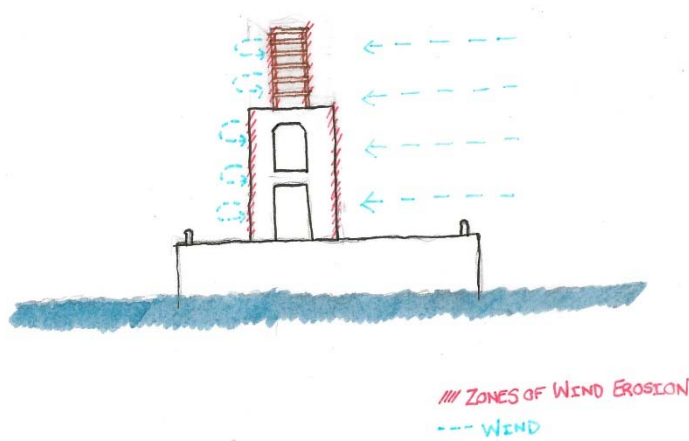
Figure 32: Pier 124 Approach from Beach St., source: Author

Hydrology

Pier 124 is located along the Delaware River waterfront. Because of this, the winds that blow off of the water have a chance to cause wind erosion on the structure towards the end of the pier (Figure 32). The division between the states of Pennsylvania and New Jersey occurs in the middle of the Delaware River. This is useful because any design solutions can take advantage of being along

with riverfront without getting into property battles between different states.

Although the Delaware River does eventually connect to the Atlantic Ocean, Pier 124 is far enough upstream that the salt levels are nowhere near what they need to be in



order to cause salt corrosion.⁴⁶

Figure 33: Potential wind erosion, source: Author

⁴⁶ "The Salt Line: What Is It and Where Is It?," Delaware River Basin Commission, accessed December 12, 2015, <http://www.state.nj.us/drbc/hydrological/river/salt/>.

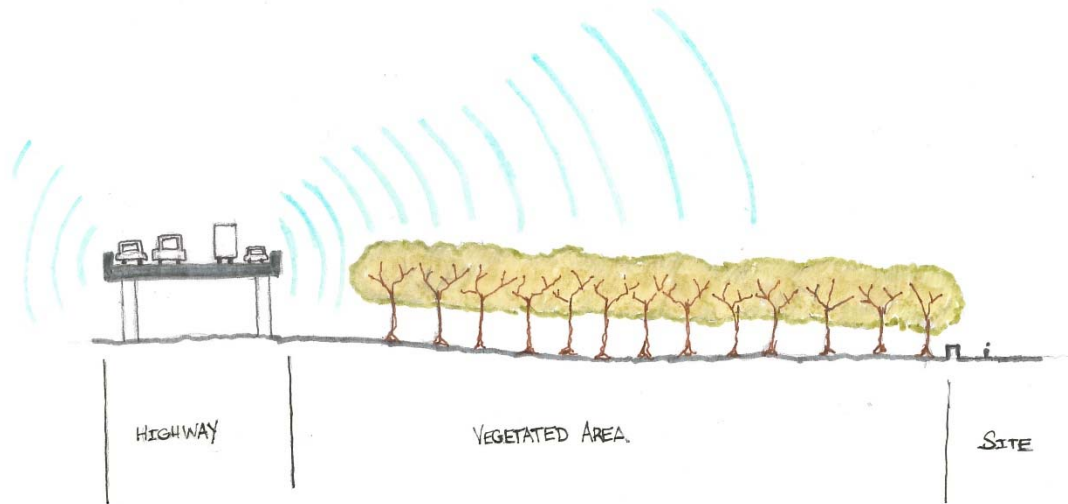


Figure 34: Vegetation buffer, source: Author

Species and Habitats

The vegetation shapes visitors' perception of the site. The path that visitors must walk down in order to reach Pier 124 is lined on both sides by overgrown vegetation. In places, vegetation has broken through the retaining walls along the path. Because of the overgrowth, the site is completely hidden from view until visitors are right next to it. This hidden quality of the site is something that may want to be preserved, depending on how the site is ultimately going to be used. The vegetation also prevents visitors from ever fully seeing the pier. The length of the pier, and the spaces it holds, come as a surprise for first-time visitors.

One of the positive aspects of the overgrown vegetation is the privacy the site achieves. The site is extremely close to a major highway, only about 300 yards, and yet, the vegetation blocks almost all of the sounds radiating from it. It created a very intimate setting on the site. When visitors reach the end of the site, it is akin to



Figure 35: View of Philadelphia skyline from Pier 124, source: Author
standing on the edge of a cliff. They are completely surrounded by water and can see far up and down the river. In the distance, the Philadelphia skyline is visible, as well



Figure 36: Pier 124 vehicular access, source: Author

as some of the famous bridges in Philadelphia, like the Betsy Ross Bridge and the Benjamin Franklin Bridge. Visitors are alone with only the sounds of the river.



Figure 37: Pier 124 pedestrian access, source: Author

The Pier itself is over 700 feet in length. Any soft sounds the trees did not drown out at the beginning of the pier are now long gone.

Movement

In order to access

the site, visitors must either drive to a back road, or walk to one of the entrance points in a network of paths. The site is separated from the city fabric by the highway infrastructure, I-95. There are a few underpasses that allow cars to travel underneath I-95 in order to reach the site. Visitors who are coming from the highway can get off at Allegheny Ave. and take Richmond St. to the backroad, Beach St. Local residents use Beach St. to race cars and bikes. At some point, someone formalized the pathway system that leads to Pier 124. Someone laid gravel down. Whether CSX or the city did it is unknown. This could be an effort to stop erosion of the topography. It could also be that at some point, the path was used as a back road for CSX and gravel was laid to provide traction for vehicles.

Eastern Building, Brewerytown, Philadelphia, PA

Location

The Eastern Building is located in the northwestern area of Philadelphia. To the north, the site is bound by Cecil B Moore Ave. To the east, the site is bound by W Glenwood Ave. To the west of the site, SEPTA rail line runs north-south. This rail line takes riders from 30th St Station, the main transportation hub of Philadelphia (the Union Station of Philadelphia) to the northern suburbs and even into Trenton, New Jersey. Across Cecil B Moore Ave to the north is the Jehovah's Witness East



Figure 38: Eastern Building site, source: Google Maps

Part. And about 1,500 feet to the west is Fairmount Park. Fairmount Park runs for about four miles along the Schuylkill River.

Temporal/History

The Eastern Building was originally constructed in 1922 by Robert E. Lamb Company and designed by Harris & Richards, and Philadelphia architecture firm, run

by John McArthur Harris and Howard S. Richards, which operated from 1910 to 1935. It was originally constructed for the American Railway Express Company (AREC) and used as a parking garage for heavy trucks. AREC was formed in 1918 and provided express rail service of packages and local delivery of goods via trucks to its patrons. AREC was formed as a result of the United States' involvement in World War I. The United States Railway Administration took over all of the railroads and consolidated them into one company, the AREC. Since the entire rail systems were under the control of one federal company, the delivery of war material and freight could be much more easily contracted.

The building was only used as a garage for until 1931 before it was sold. In 1929, the AREC was reformed as the Railway Express Company and used the garage until it was sold in 1931. By 1940, the building became known as the Sylvania Garage. From the mid -1940 to the 1950, the building was owned by Esso Standard Oil who used the building as a warehouse. Eventually, the building came under the ownership of the Eastern Electrical Company, who used it as a factory. Most of their large metal-framed aluminum sign is still is attached to the building, and it is from this sign the common name "Eastern Building" originated (the sign still having "EAST N"). Due to "Eastern Building" being the name that most people know the building by today that is the name this thesis will used to refer it the property. In 2004, about 80% of the roof structure was removed due to safety reasons. In 2006, the building was listed on the National Register of Historic Places. It was slated for redevelopment in 2005, but ground was not broken on the project until the end of 2014.

Socio-Political

The Eastern Building is located in the Brewerytown neighborhood and is adjacent to the Strawberry Mansion neighborhood. Brewerytown received its name due to the multitude of breweries that were located along the Schuylkill River in the 19th and 20th centuries. The earliest mention of Brewerytown was during the 1860s. At its peak, about 700 breweries were located in the ten-block area that makes up Brewerytown. However, starting with Prohibition and having beer production move to the Midwest, the breweries in Brewerytown shut down and sent the neighborhood on a downward spiral. After suffering immensely from the economic depression in the late 20th century, Brewerytown has been considered a blight of the city.⁴⁷

Today, Brewerytown has a population of about 8,500 people, predominately African American. Brewerytown is not as dense as some of the other Philadelphian neighborhood; its density being only about 10,000 people per square mile. The median age is 34 years old and the median household income is about only \$26,000 a year. 44% of the population are single parents and only 34% of residents 18 years and older have a high school diploma.⁴⁸

Surrounding the Brewerytown neighborhood is the Strawberry Mansion neighborhood. Originally known as Summerville, Strawberry Mansion draws its name from the historic house located in the neighborhood. In the 19th century, Strawberry Mansion was home to some of the wealthiest families in Philadelphia. The area was popular due to its proximity to the Woodside Amusement Park, the

⁴⁷ "History of Brewerytown," Greater Brewerytown, accessed December 10, 2015, <http://greaterbrewerytowncdc.org/history-of-brewerytown/>.

⁴⁸ "Brewerytown, Philadelphia, Pa," Realtor.com, accessed December 10, 2015, http://www.realtor.com/local/Brewerytown_Philadelphia_PA/lifestyle.

Philadelphia Zoo, the Smith Playground and Shibe Park. Residents had access to these amenities via trolley lines. Since the middle of the 20th century, the neighborhood has also suffered similarly to Brewerytown. The area has declined majorly in the past few decades.⁴⁹

Currently, Strawberry Mansion has about 22,500 people living there. Like Brewerytown, the density is only 10,000 people per square mile. The neighborhood is mostly an African American community. The median age is 35 years old, and the median household income is about \$24,500 a year. Of the residents in the Strawberry Mansion neighborhood, 50% of them do not have a high school diploma, and 45% of them are single parents.

Knowing these demographics about the neighborhoods surrounding the Eastern Building helps to better design for the people who will be utilizing this building the most. Knowing that the majority of the users will be African American helps because the design should react to their culture.

Legal and Regulatory

The Eastern Building is currently zoned as Industrial Residential Mixed Use, notated from here on as IRMX. This zone typology is intended to accommodate a mix of very low-impact industrial use, including artists and artisan industrial, and residential and neighborhood-oriented commercial uses.⁵⁰ This zoning should not need to change with a new design. The mixed use nature of the zoning type allows for

⁴⁹ “The History of Strawberry Mansion,” Strawberry Mansion Community Development Corporation, accessed December 10, 2015, <http://www.strawberrymansioncdc.org/history/>.

⁵⁰ “14-403 Industrial and Industrial Mixed-Use Districts. 142amended, Bill No. 120774-a (Approved January 14, 2013).142,” Philadelphia Decoded, accessed December 11, 2015, <http://phillycode.org/14-403/>.

more freedom to design to the neighborhood's needs and desires. And the industrial aspect of the zoning allows the design to react to its proximity to the railroad directly adjacent to the site.

Hazardous Materials

There is a hazardous quality to this site. Unlike Pier 124, which is mostly stable and intact, the Eastern Building is falling apart. The most notable concern is the roof structure. Some years ago, a fire burned down about 80% of the wooden roof structure. Only the bare bones of the roof, the columns, beams, and some joists remain today. Because fires are not predictable, the remains of the roof do not have a pattern to them, which makes for interesting design opportunities. In order to utilize the roof structure in any kind of design, the remaining wooden elements will need to be properly preserved and stabilized before any new intervention and design work can occur.

Due to the site being boarded up and surrounded by a fence, the interior of the building is a large mystery. The building has been both a truck garage and a factory. There could be dangerous leftovers from the previous programs that are more dangerous than they may seem.

Movement

Because Brewerytown, and the Eastern Building, is part of a regularized grid, access to the site is very direct. The site can be accessed from two main and important streets of Philadelphia: Broad St, which runs from north to south, and Girard St, which runs east to west. Girard Ave connects the two separate sides of Philadelphia that straddle the Schuylkill River. The site is bound by Cecil B Moore Ave and

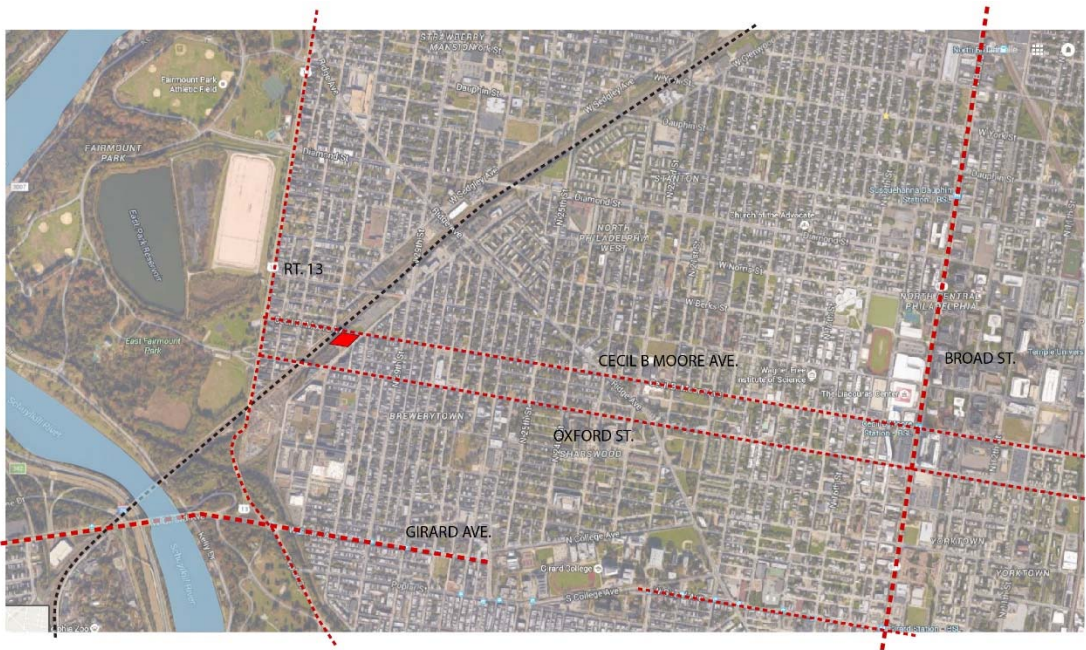


Figure 39: Eastern Building access diagram, source: Author
Glenwood Ave. Cecil B Moore Ave runs east to west, like Girard Ave, and connects right to Broad St. As people drive west down Cecil B Moore from Broad St, the aesthetic of the space dramatically changes. Cecil B Moore and Broad intersect at Temple University. In just over a mile distance, the aesthetic travels from an urban college center to a dilapidated neighborhood on a downward spiral.

The other major movement on the site belongs to the railroad that is immediately adjacent to the site. The railroad is an active railroad and SEPTA (Southeast Pennsylvania Transportation Authority) trains. The railroad connects to

30th Street Station and goes to the northern suburbs of Philadelphia. The SEPTA train will cause consistent intervals of sound to run immediately next to the site.

Aesthetics

The aesthetic of the building gives the appearance of historic Philadelphia. The weathered brick gives an aged look to the building. Although it is not part of the original Philadelphia proper, it has the aesthetic of a building out of the 1700s, even though the building was built in the early 1900s.

The wood on the roof gives the building a destruction aesthetic, as it did with Pier 124. Because a fire destroyed the roof structure, the passage of time and the destruction of nature is very evident. It creates an interesting juxtaposition between the power of nature and the urban nature of the site.

Comparisons and Conclusions

After conducting an analysis of each site, Pier 124 appears to have more opportunities for design. This decision was made based on the conditions surrounding each site and what each site has to offer. Although the Eastern Building has more direct access from central parts of Philadelphia, the access to the site cannot be shaped to fit the needs of the eventual design. Pier 124 is disconnected from the rest of the city fabric, yet the pedestrian approach can be shaped, the vegetation along the paths can be designed.

The Eastern Building offers a truly historic appearance and feeling based on the materiality of the building. But, Pier 124 embodies the idea of ruins more strongly than the Eastern Building. The Eastern Building appears to be a historic building is

disrepair, where Pier 124 has a timeless quality due to the simplicity of the structure and materiality. The Eastern Building lacks that timeless, ethereal quality of a ruin because its intended time period can be guessed. The brick fits perfectly into the vernacular of Philadelphia, both historically and in more recent histories. While the concrete and rebar can help to approximately date Pier 124, there is more of a mystery to solve. Pier 124 also offers an interesting juxtaposition between the timeless nature of a ruin and the ever-changing nature of the graffiti art that decorated the structure.

Each site is located close to a rail line. The Eastern Building's direct proximity to the SEPTA line is more of a hindrance than an opportunity. There is little buffer between the site and the sound, smells, and other discharge from the trains that travel the tracks. There is distance (almost 2,000 feet) between Pier 124 and the rail line that runs to the manufacturing plant slightly up the waterfront. Pier 124 also has a buffer in the form of trees that protect it from the sounds and such of the trains, as well as the highway it is also adjacent to. Pier 124 also offers the opportunities associated with the waterfront.

It is for these reasons, the ability to shape the surrounding area, the juxtaposition of ruins and graffiti, the buffer zone around the pier, and the added bonus of the waterfront, that this thesis will utilize Pier 124 as the site to design for.

Chapter 5: Stabilization of Structure

Introduction

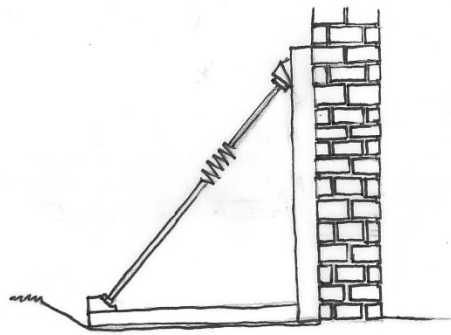
When designing with pre-existing structures, inevitably, there will be some structural issues to contend with. These structures have faced neglect, abandonment, and subsequent weathering on a structure that is not consistently maintained. If designers want to include ruinous structures into new designers, failing structures are a major concern because of safety issues. Preservationists always have a structural survey of the building completed before working on preservation or new design work. Because safety is such a major concern, and rightly so, stabilization of structure should be a first concern and an unyielding element. There should not be any give and take on the stabilization.

There are two common ways to deal with stabilizing structure: bracing and tie rods. Bracing helps to support walls from toppling over. Tie rods help to combat walls that are bowing.

Bracing

Bracing is one of the most common methods preservationists use to support walls that are in danger of failing or toppling. There are a few different ways to brace a wall. The two methods this thesis will analyze are lateral/perpendicular bracing and scaffolding bracing.

Lateral Bracing



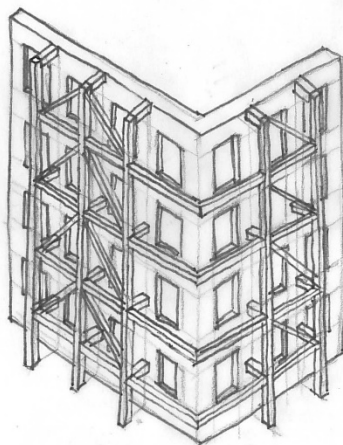
LATERAL BRACING

Figure 40: Lateral bracing, source: Author

material itself to fall apart. For example, when the mortar between stones in a masonry wall disintegrates, the stones can fall to either one side or another because there is no longer anything holding them upright and together.

Lateral bracing is placed on the side which the wall is in danger of falling. It provides support for the wall to lean against. In the case where lateral bracing is needed, there are often foundation issues which cause the wall to lean, or connection issues, which cause the

Scaffold Bracing



SCAFFOLD BRACING

Figure 41: Scaffold bracing, source: Author

At the onset of a structural survey, the project manager must explain the future intent

What this thesis is calling scaffolding bracing is generally used on taller walls, where more than a few bracing implements are needed. Scaffolding bracing has multiple points of contact along the wall. Therefore, the weight of the taller wall is evenly distributed along several points.

Comparisons

Bracing can be temporary or permanent.

of the property. More permanent bracing can create irreversible situations in whatever is being braced. Because of the infrastructure and technique required for permanent bracing, there are instances where holes need to be cut into existing walls, destroying part of the integrity of the structure. Temporary bracing is less invasive. One of the key aspects of historic preservation is reversibility. Reversibility is when interventions can be undone without leaving a lasting impression on the property. The idea is to be able to remove the intervention in so many years and it is like the intervention was never there, a reversal in time.

For properties that are being preserved as is, permanent bracing is typically the preferred method. With permanent bracing, a steel gauge is the general material. Steel will weather better than other materials will. In project that will require change to the property, like restoration or rehabilitation, temporary bracing is more appropriate. More likely than not, the new additions to the project will help to stabilize the existing structure, and a more extensive support system is not necessary. For temporary bracing, depending on the material of the property, wood bracing is the generic material.

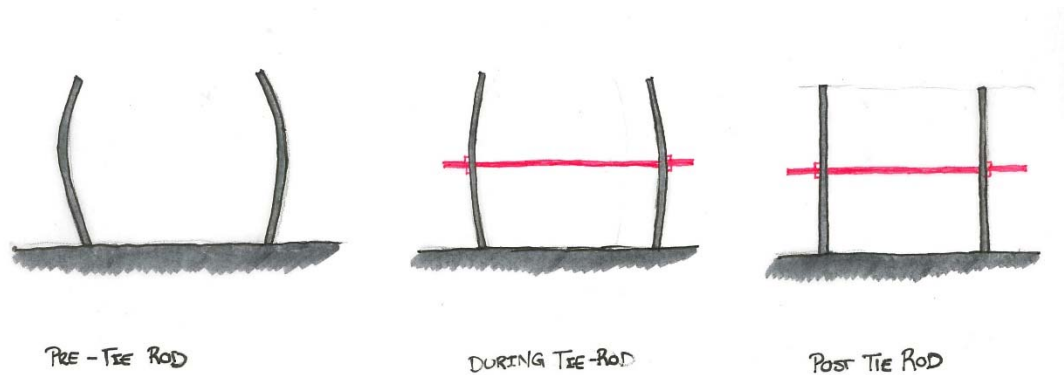


Figure 42: Tie rod process diagram, source: Author

Tie Rods

Tie rods are utilized when walls are bowing out. The tie rods run from one wall to the wall opposite it. Similar to dental braces, tie rods have adjustable screws that get tightening, slowing straightening the wall. Depending on the severity of the bowing in the wall, other measures will need to be implemented to fix the cracking that occurred from the bowing.

Conclusions and Implications

Bracing and tie rods work fundamentally different. Bracing works in compression, the wall pushing against the bracing to stay erected. Tie rods work in tension, the opposite walls pulling against each other, keeping each other upright. Tie rods are more intrusive than bracing structures. Tie rods require penetrating the wall in order to install the hardware. Bracing is less disturbing when connecting to the existing structure. Tie rods also can be less visual than bracing. They can run along the length underneath a floor or above a ceiling, hidden from view. Bracing is a much more visual infrastructure.

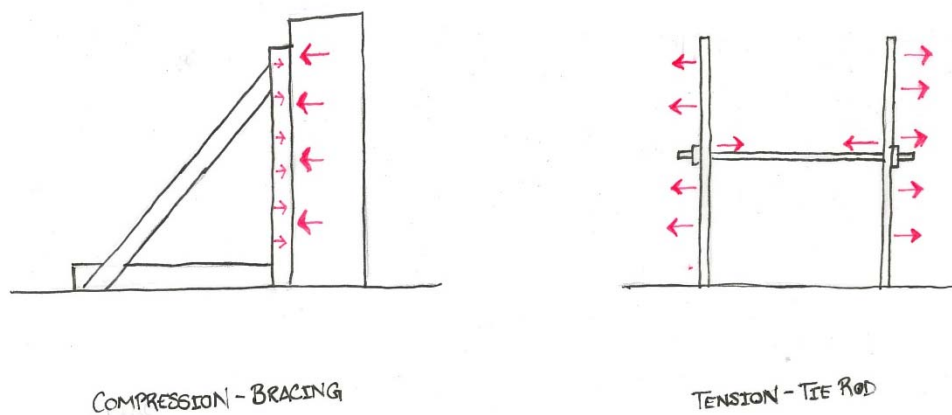


Figure 43: Force acting upon supports, source: Author

Pier 124 does not appear to need any stabilization. The concrete piers are stable and in no danger of failing. The wooden elements may need some kind of stabilization in order to remain as part of the existing structure.

The Eastern Building is possibly more in need of stabilization. The brick exterior walls seem to be only standing upright on their own volition. There seems to be only one wall that runs east to west for lateral support. Depending on whether or not the design intent allows for visualization of the stabilization system, either bracing or tie rods can be used. A structural survey would exposed which side of the wall the bracing would need to be placed on.

Chapter 6: Secretary of the Interior's Standards for Rehabilitation

Introduction

When dealing with older and historic buildings, there are certain guidelines to follow. Depending on the type of work that is desired, the project will fall into one of four categories: preservation, restoration, reconstruction, and rehabilitation.

Preservation is when measures are taken to maintain a historic structure as is, to preserve it for future posterity. Measures are taken to protect and stabilize the structure, as well as ongoing maintenance and repair of character-defining features.

Restoration is when the building is brought back to its original aesthetic.

Professionals are able to accomplish this by researching historic, pictorial, and literary evidence about the building, the style it was originally designed in, the time period it was originally constructed in, and the architect who designed it.

Reconstruction occurs when a new building is constructed and designed to look like a building that has not survived the passage of time. The purpose of reconstruction is to replicate the appearance of a specific period of time and historic location. This thesis will focus on rehabilitation. Rehabilitation is “the act or process of making possible a compatible use for a property through repair, alterations, and additions while preserving those portions or features which convey its historical, cultural, or architectural values.”⁵¹

⁵¹ “The Secretary of the Interior’s Standards,” National Park Service U.S. Department of the Interior, accessed October 30, 2015, <http://www.nps.gov/tps/standards.htm>.

Guidelines for Rehabilitation

There are ten guidelines to follow when working with historic buildings. While these guidelines are not law or code, it is highly recommended that they are followed. These guidelines were developed by professionals in 1977 in order to determine the most effectively and respectful way to work with historic buildings. Federal agencies, as well as state and local governments, use these guidelines when carrying out historic preservation responsibilities. The standards and guidelines apply to historic properties of all types, materials, construction techniques, sizes, and use. The only standards that are codified are the Standards for Rehabilitation, and this is only in the case of the Historic Preservation Tax Incentives.⁵² The Standards for Rehabilitation are as follows:

1. A property will be used as it was historically or given a new use that requires minimal change to its distinctive materials, features, spaces, and spatial relationships.
2. The historic character of a property will be retained and preserved. The removal of distinctive materials or alteration of features, spaces, and spatial relationships that characterize a property will be avoided.
3. Each property will be recognized as a physical record of its time, place, and use. Changes that create a false sense of historical development, such as adding conjectural features or elements from other historic properties, will not be undertaken.
4. Changes to a property that have acquired historic significance in their own right will be retained and preserved.

⁵² "Rehabilitation Standards and Guidelines," National Park Service U.S. Department of the Interior, accessed October 30, 2015, <http://www.nps.gov/tps/standards/rehabilitation.htm>.

5. Distinctive materials, features, finishes, and construction techniques or examples of craftsmanship that characterize a property will be preserved.
6. Deteriorated historic features will be repaired rather than replaced. Where the severity of deterioration requires replacement of a distinctive feature, the new feature will match the old in design, color, texture, and, where possible, materials. Replacement of missing features will be substantiated by documentary and physical evidence.
7. Chemical or physical treatments, if appropriate, will be undertaken using the gentlest means possible. Treatments that cause damage to historic materials will not be used.
8. Archeological resources will be protected and preserved in place. If such resources must be disturbed, mitigation measures will be undertaken.
9. New additions, exterior alterations, or related new construction will not destroy historic materials, features, and spatial relationships that characterize the property. The new work will be differentiated from the old and will be compatible with the historic materials, features, size, scale, and proportion, and massing to protect the integrity of the property and its environment.
10. New additions and adjacent or related construction will be undertaken in such a manner that, if removed in the future, the essential form and integrity of the historic property and its environment would be unimpaired.

With the two proposed sites analyzed in Chapter 3, these guidelines legally apply to one of them; the Eastern Building. The Eastern Building has been on the National Register of Historic Places, notated from here on out as NRHP, since 2006.

In order to be accepted into the NRHP, the property must meet one of four criteria. The property must either be A) associated with events that have made a significant contribution to the broad patterns of our history, B) associated with the lives of significant persons in our past, C) embodies the distinctive characteristics of a type, period, or method of construction, or represents the work of a master, or possesses high artistic values, or represents a significant and distinguishable entity whose components may lack individual distinction; or D) yielded or may be likely to yield, information important in history or prehistory. As well as matching one of the four criteria, the property must also have integrity. Integrity is defined as the ability of a property to convey its significance.⁵³ There are seven aspects to integrity: location, design, setting, materials, workmanship, feeling, and association. Historic integrity will always possess several, if not most, of these aspects. As well as historic integrity, the property must also have structural integrity, meaning it must be substantially complete.

In the following sections, this thesis will examine why the Eastern Building is on the register, why Pier 124 could be on the register, and what the implications of being on the register do to how each site is approached when thinking about an addition for rehabilitation.

⁵³ “Section II: How to Apply the National Register Criteria for Evaluation,” National Park Service U.S. Department of the Interior, accessed November 30, 2015, http://www.nps.gov/nr/publications/bulletins/nrb15/nrb15_2.htm.

Eastern Building

According to the National Register of Historic Places registration form for the Eastern Building, the property is “significant in architecture as an early example of the commercial parking garage and as an outstanding example of the Commercial style by Harris & Richards.⁵⁴” When the automobile became a part of daily living, Philadelphia had an abundance of stable that were converted into garages for automobiles. In 1914, just eight years before the Eastern Building was constructed, New York State created fire codes specifically for parking garages. The structures needed to be built according to fireproof regulations and include materials like metal lath and concrete, windows were a necessity so the exhaust from the cars could vent, and interior pillars of concrete here absolutely necessary in order to carry the weight of the cars on the floors above. Parking garages, unlike today, did not follow a pattern, and differed based on customers’ needs. In the early 1910s, use of the car and truck quickly replaced using a horse and wagon. The AREC owned 44 electric trucks in 1918, just four years before the construction of the Eastern Building. Large scale garages for electric powered trucks, like the Eastern Building, were rare. The AREC was the only railway express company that could afford to have a garage for 200 electric powered trucks. Other garages in Philadelphia had amenities that the Eastern Building did not: car washes, lounges for chauffeurs, repair facilities, and retail shopping along the ground floor. The Eastern Building is lacking in these amenities because the building was a privately owned facility, and the AREC had no need for

⁵⁴ American Railway Express Company Garage NRHP registration form

these amenities. The Eastern Building was built specifically to house the trucks owned by the AREC.

Harris & Richards designed the Eastern Building in the Commercial style. Both Harris and Richards attended the University of Pennsylvania, where they received their degrees in architecture (Richards also received a degree in engineering as well). According to J. Presper Eckert Jr., the first owner of the Eastern Building and Richard's nephew, Richards pioneered the use of pre-stressed concrete in place of steel and designed his garages' roofs with wooden roof supports thick enough to rival steel in withstanding fires. His rationale was that steel buckled when exposed to intense heat, wood that was thick and robust enough did not. What is remaining of the roof of the Eastern Building is an example of Richards' work.

The Commercial Style prevailed in the early 20th century because business sought designs that were economical and fireproof. Translation: business moguls wanted architecture that was quick, cheap, and safe. The Commercial Style, with the use of reinforced concrete, flourished because it was functional and safe. Buildings designed in the Commercial Style tended to have several common characteristics: large banks of windows on every elevation, large open interiors with widely-spaced columns and minimal ornamentation. The Eastern Building has all of these characteristics. The only ornamentation is pilasters and cornices that just barely project from the face of the elevation. The Eastern Building shares many physical characteristics on the interior with other early parking garages: specifically its concrete construction.

The Eastern Building embodies the Commercial Style's forward thinking and functional approach to fire-proofing and load bearing construction. The AREC remains a unique example of a private parking garage designed for a large amount of electric power trucks.⁵⁵

Pier 124

In order for a property to qualify for the NRHP, the property must be at least 50 years old. However, exceptions to that rule can be made if the property meets one of the following requirements: A) a religious property deriving primary significance from architectural or artistic distinction or historical important, B) a building or structure removed from its original location but which is primarily significant for architectural value, or which is the surviving structure most importantly associated with a historic person or event, C) a birthplace or grave of a historical figure of outstanding importance if there is no appropriate site or building associated with his or her productive life, D) a cemetery that derives its primary importance from graves of persons of transcendent importance, from age, from distinctive design features, or from association with historic events, E) a reconstructed building when accurately executed in a suitable environment and presented in a dignified manner as part of a restoration master plan, and when no other building or structure with the same associated as survived, F) a property primarily commemorative in intent if design, age, tradition, or symbolic value has invested it with its own exceptional significance,

⁵⁵ National Register of Historic Places registration form for the Eastern Building. This analysis is a summary of the extensive historical, architectural, structural, and typological analysis completed for the registration form filled out in order for the Eastern Building to become listed on the NRHP.

or G) a property achieving significance within the past 50 years if it is of exceptional important.

Pier 124 has been in use since the 1800s, but the structure on the pier is trickier to date. Conrail modernized the pier in the 1970s, but the details of that modernization were not explained. The structure is 90% reinforced concrete, either iron or steel, it is difficult to determine. There are also concrete masonry units (CMUs), bricks and wood. If Conrail were to apply for Pier 124 to be on the NRHP,



Figure 44: Pier 124 graffiti art, source: Author

the site is old enough to qualify and falls under the category of a property associated with events that have made a significant contribution to the broad patterns of our history. The property also has integrity in its structure and its history. Although a major piece of machinery was removed from the middle of the site, the structure of the railroad platforms is still mostly intact.

If the structure itself is under 50 years old, an argument can be made for an exception to the rule under the reason that it is a property primarily commemorative in intent if design, age, tradition, or symbolic value has invested it with its own exceptional significance. The structure is a fine representation of the railroad culture that shaped our country in the 19th and 20th



Figure 45: Pier 124 graffiti art, source: Nicole Gattone

century. Since the property's closure and abandonment in the 1990s, the structure has become a haven for graffiti artists. Every type of graffiti can be found on the columns and walls of Pier 124, from true works of art to teenagers who like to draw phallic symbols over other pieces of work. Also found on site are those who paint bubble letters, cartoonists, and people who just come to spray their names. It is not just graffiti artists who make this site a nexus of graffiti culture, it is the multitude of people who

flock to the site to see and take pictures of

the art. On Instagram, there are over 3,000 pictures that were taken at Pier 124.⁵⁶

Guideline four of the Standards for Rehabilitation state that changes to a property that have acquired historic significance in their own right will be retained and preserved.

This thesis submits that the graffiti has gained enough historic significance since the site was abandoned and should be preserved with the property. Part of the reason why people are so compelled by the graffiti is actually opposite to why people are so compelled by ruins. Ruins are lauded for their timeless nature; that in 100 years, they will still be essentially the same. Graffiti art is exactly the opposite. Graffiti sites are

⁵⁶ When conducting a search on Instagram, over 3,500 posts were found with the hashtag "graffitipier," and 13 more with the hashtag "graffitipierphilly." Knowing that not everyone uses hashtags, and given the likelihood that users used other hashtags in their posts, there are mostly likely even more posts about Pier 124 that were not accounted for.



Figure 46: Pier 124 graffiti art, source: Nicole Gattone

Figure 47: Pier 124 graffiti art, source: Nicole Gattone

captivating because they are constantly changing. Artists build upon other work and transform it into something new.

Implications

The rule of thumb in these guidelines is identify, retain, preserve, protect, maintain. Identify the character-defining elements of the property, the elements that help to distinguish the property has an exemplary example of a particular style, historic time period, architect’s work, etc. Retain these character-defining elements. Preserve them, protect them, and set up a cyclical maintenance system so the elements remain in the same condition. When preserving and protecting, it is

always best to work with a lighter hand, work with techniques that cause the least amount of damage to the existing condition. For example, sand blasting, while excellent at removing surface contaminants, is detrimental to abrasive surfaces, like masonry, and should not be considered when dealing with masonry elements. When dealing with the various architectural materials, proper cleaning and preservation methods should be followed (and the methods vary depending on the material). Of these cleaning methods, the gentlest methods should be considered first.

One of the most important intentions of the guidelines is to be compatible but differentiate. Any new work should be compatible to the historic building in massing,



Figure 48: Pier 124 graffiti art, source: Nicole Gattone

124, the graffiti has accrued its own historical import, and should not be covered up or cleaned off.

Missing Elements

When dealing with missing elements, recovery of the original is always the first option. If the element can be repaired, then it should be repaired. Only if the element is missing and cannot be salvaged and repaired, should replacement be an option. Both the Eastern Building and Pier 124 have suffered fire damage and have lost wood elements to those fires. If these wooden element are determined to be character-defining features, these elements can be reconstructed based on historic, pictorial, and physical documentation. If replacement is inevitable, the replacement should convey the same visual appearance of the original. If these elements are not

size, scale, proportion, etc., but differentiate itself in style as to not create a false historic appearance. Any new additions to the property should only be considered if it is determined that the needs cannot be met by altering secondary, non-character-defining interior spaces. Anything that is done to the property should not radically change, obscure, or destroy character-defining spaces, materials, features, or finishes. Any surface that is painted should remain painted and any surface that is devoid of paint should remain

so. As explained in the section regarding Pier

character-defining features, then they fall under the differentiate-but-be-compatible rule. They should not be designed in such a way that created a false historic appearance.

Roofs

When dealing with roof structures, the shape of the original roof should be maintained. This does not apply to Pier 124, which does not have a roof, but it does apply to the Eastern Building, and causes an issue. There is only a small percentage of the roof structure remaining, not enough to determine the shape of the roof. There are also no historic photographs or account of what this building originally looked like. Professional can guess, but without hard evidence, to try and recreate the roof would be against the guidelines. In this case, a new roof should differentiate itself from the rest of the historical structure.

Structural Systems

The Eastern Building used a column and beam system along a regular structural grid comprised of both concrete and wood members. Pier 124 uses a set of two arcades with lateral support that intersect and combine comprised of reinforced concrete. The secondary structure is a wooden beam and joist system to create upper level floors. Structural systems which are important in defining the overall historic character of the building should not be covered. This is more important in Pier 124, whose various spaces are made entirely from the structure. Hiding the arcades and piers behind a new wall would hide the historic quality of the property. Floor and ceiling structure cannot be hidden above a dropped ceiling either.

In the Eastern Building, it is less important. While the grid system is a key element in the parking garage style, this thesis believes that the exterior aesthetic is more important to the overall historic appearance than the columns and beams. Even though the structure is completely exposed on the uppermost floor, it does not contribute to the historic appearance because that is not how the uppermost floor originally looked. In both sites' structural systems, designers should minimize cutouts and holes in structural members when adding new mechanical or electrical systems.

Spaces

Care should be taken to retain the essential proportions of primary interior spaces. This is not a concern at Pier 124, as all of the spaces are exterior. There might be one or two spaces that were originally interior, but because there is no hard evidence to support it, it cannot be designed to create a false historic appearance. The exact opposite is true at the Eastern Building, where all the spaces are interior. The guidelines also state that the floor plan should not radically change. Without a historic floor plan, it is difficult to determine where walls used to be. However, because the original program, a parking garage, is known, it is safe to assume (from a designer's perspective) that there were few interior walls. However, new walls cannot be added and made to appear as if they were originally there. If designers are anticipating heavy pedestrian traffic that could potentially damage historic features, protective coverings should be put into place.

Guidelines vs. Codes

The guidelines generally support interventions that are needed to bring buildings up to code. When discussing interior spaces, the guidelines say to enclose interior stairs when required by code, and to add stairs and elevator when required by code. However, they do say to put the new vertical circulation elements in the secondary spaces. Within the Americans with Disabilities Act, there are some codes that specifically address the issue of historic structures. However, most historic structures were not designed with wheelchair bound inhabitants in mind, so designers need to make the most of what they have. The goal when it comes to accessibility is to create the highest level of access with the lowest level of impact. The guidelines are very clear when they say to not alter or damage character-defining features when creating access. Sometimes, it means that ADA codes are left unmet.

There are a few circumstances when building codes and guidelines clash and disagree with each other. In those circumstances, follow what the building codes say. Although it can depend on the context and proposed new use of the space, it is better to default to the building codes. It will be a balancing act to adhere to both building codes and guidelines. In some cases, it is necessary to collaborate with a code specialist and a preservationist. And part of the design opportunity is to negotiate a way where they are both satisfied

Conclusions

The guidelines offer a different perspective when looking at historic structures. One of the main goals of this thesis is to seamlessly integrate new design fabrics into pre-existing structures. That goal goes against the main idea of the guidelines: to differentiate but to be compatible. While that goal is not changing,

there are ways of working with the other guidelines. New design fabrics can differentiate themselves through their form, not necessarily their style. It would not be creating a false historic appearance, because the intervention would be identifiable as a contemporary addition, even though it may look historic in aesthetic. Following the guidelines on how to preserve the structures is an excellent first step into the design process. Knowing what these properties need to retain their historical appearances, in regards to infrastructure, is important and necessary to know at the onset of the design process.

Chapter 7: Program Analysis

Goals

The goal of the program is to create a destination site. In providing a destination, the goal is to help to revitalize the adjacent communities. To accomplish this, the amenities must be useful to both the community and visitors from other parts of the city. Having amenities for the community to use will help to bring the people together and give identity to the residents. Having amenities for visitors will help to generate interest and income for the community and in turn, bring new interest to it.

In-Depth Site Analysis

After deciding upon Pier 124 as the site, a more in-depth site analysis was conducted. The adjacent communities: Kensington, Port Richmond, and Fishtown are lacking in recreational programmatic areas. There are a handful of open green spaces, but they are few and far between. Most of them are simply open, green, square spaces, a few have a baseball or softball field. Along with recreational areas, places to eat and locations of schools were also analyzed. Most of the eateries in the area are small mom-and-pop shops, with a couple are large chains as well (Applebee's, Dunkin Donuts, etc.). What was surprising was the amount of schools located within a two or three mile radius of the site. There are 15 schools, both public and private within a two mile radius from the site. This means that, even if there aren't as many children in the adjacent neighborhood, there will still be a significant amount that come to these schools. Programs geared towards children are not out of the question.

The amount of mom-and-pop shops indicate that those types of shops are successful in this area. Smaller retail spaces like these might be something to consider for the pier.

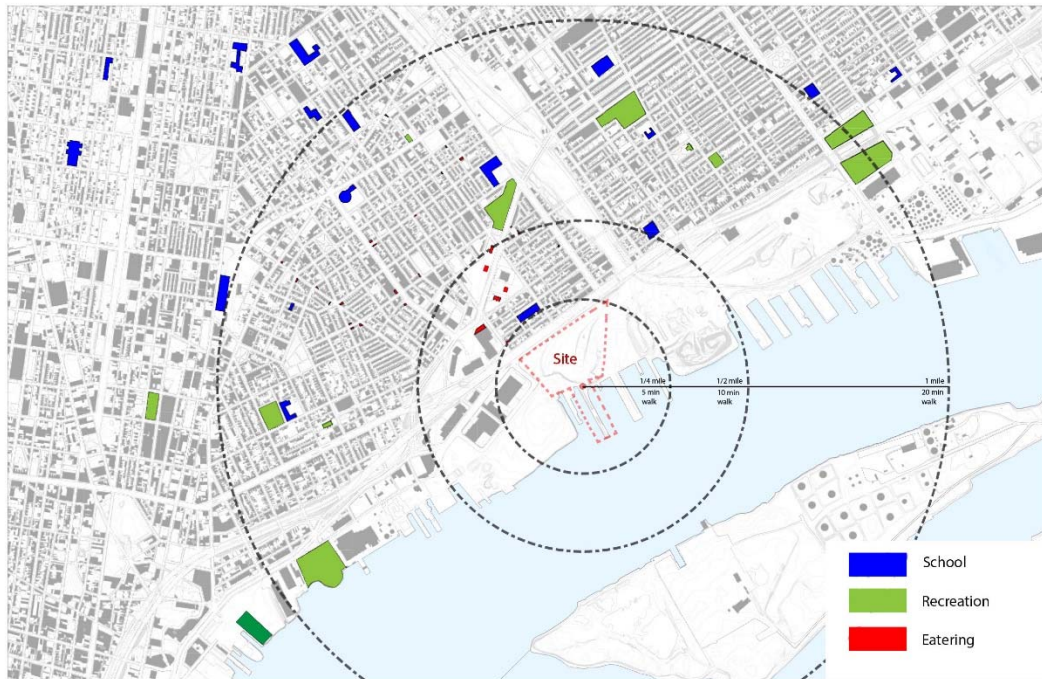


Figure 49: Programs surrounding Pier 124, source: Author

The problems and opportunities of the site were also examined during this analysis. Two of the major problems of this site were already discussed; the disconnection from the city and the unsafe area. Moving in at a larger scale, the site itself has poor drainage and only one entrance/exit currently. This adds to the danger of the site. The opportunities of the site come in three categories: access, views, and the fact that it's a waterfront property. The site can be access via some of the major arterial streets of Philadelphia: I-95, Aramingo Avenue, Girard Avenue, and E. Lehigh St. From the site, visitors get an amazing view of the Philadelphia skyline as well as views to the Benjamin Franklin and Betsy Ross Bridges. Waterfront properties are trending nowadays; they are hot property. Combining these three

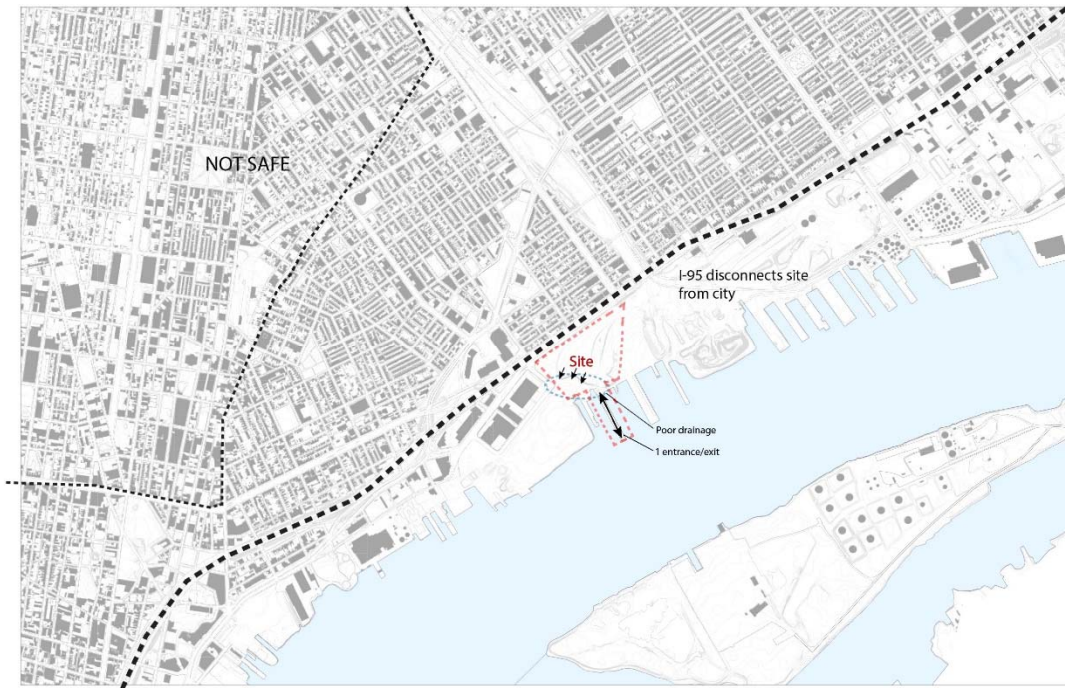


Figure 50: Pier 124 problems, source: Author

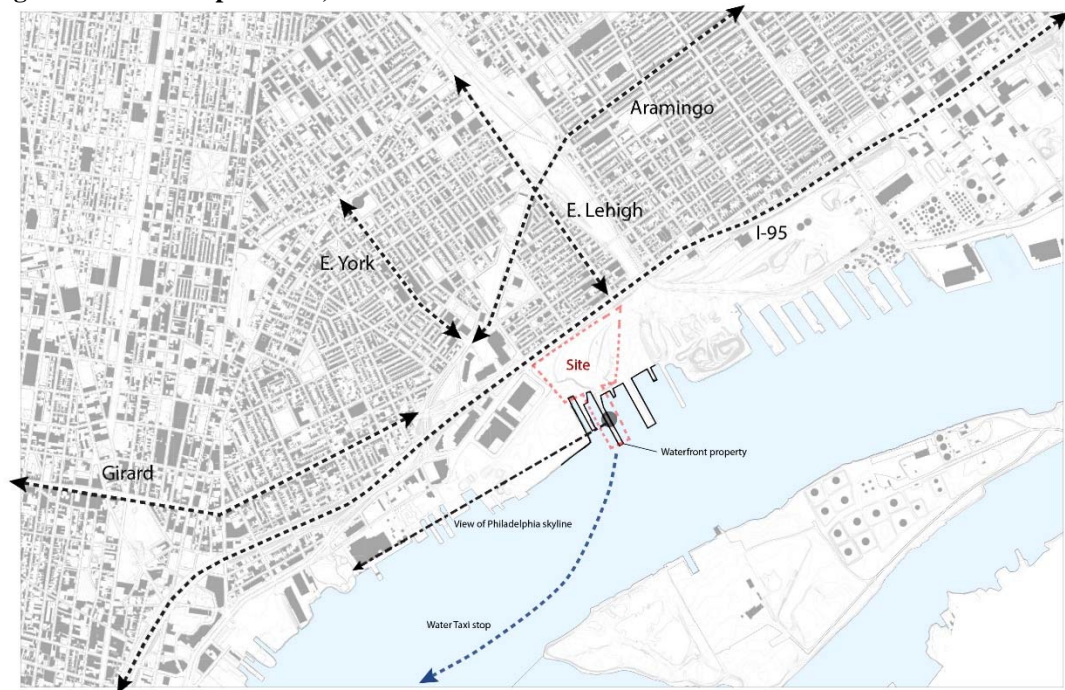


Figure 51: Pier 124 opportunities, source: Author

opportunities together, they outweigh the problems of the site, some of which can be fixed through the proper designing of the site and the surrounding areas.

Formal Retail

The first thing that comes to mind when trying to bring people to the site is retail space. There are two types of retail that will help to populate the site: formal and informal retail. Informal retail will be discussed in the following section. Formal retail, in this thesis, is classified as space a storeowner can buy or lease in order to set up shop. During their ownership period, they may decorate in the interior however they wish. To make a comparison, in Disney World, the shops along Main Street would be formalized retail space. The T-shirt and souvenir stands scattered throughout the park would be the informal retail. In the context of this thesis, the formal retail space can manifest itself as a coffee shop or a bookstore.

Informal Retail

Informal retail, in this thesis, is classified as space to be rented out on a much shorter timeframe than the formalized retail space. Informal retail space is to be rented out on a day-to-day basis. In a similar manner as a flea market or farmers' market, local vendors can rent a space, set up stalls, and sell their goods. The informal retail space is more of an amenity for the community and not for the visitors the other programmatic elements will bring.

Park

As stated before, Pier 124 is severely disconnected from the actual city itself. This is a problem with a lot of historic waterfronts. Urban design and planning trends of the 1800s and 1900s have placed industrial programs along the waterfront, where

the products of the industry could be quickly shipped out. This effectively cut the communities off from the water. In a bid to separate the dirty industry from the cleaner residential and commercial programs, highways were erected as a barrier between them. Philadelphia has fallen to this same problem. Connecting back to the waterfront is a goal that cities are putting into their redevelopment plans and projects. This thesis seeks to connect the pier back to the community by utilizing a park. The unused area to the north will contain a more elaborate park system, concluding in a linear park that will run the length of the site. The park will house programmatic elements that both the adjacent communities and visitors will be able to utilize.

Residential

One of the goals of the revitalization is to entice people to live in the area. The other program elements seek to bring people to the site; the residential component will keep them here. With growing interest in the area (provided by the other program components) people will want to live near the action. More people caring about the wellbeing of the community will help to reshape the area and create a new era.

Civic

One of the main criteria of the design, and the earliest, is to respect the history of the site. The most obvious and natural choice is to create a museum or civic center that will do just that. This site has a rich history; it is linked to the history of Philadelphia's industry, to the history of the Reading Railroad, and the history of railroad America. To ignore these three histories would do a great disservice and injustice to the site.

The decision to create a museum for the site was a long and conflicting battle. To create a museum on a historic site is a commonly used cliché. However, what better way to blatantly display history? Deciding on whether or not there was a better way to showcase the site's history was one of the longer decisions of this thesis. Without a museum, the structure of the site would be seen as just an old structure with something new and shiny attached to it; a pig with makeup, if you will. By glorifying the structure with a museum, its significance is brought to the forefront.

Chapter 8: Major Ideas

Preserve, Utilize, Interact

As stated previously, the goal of this thesis is to examine different methods of incorporating old structures into new designs. This thesis has chosen three different methods of doing so. The first is to protect the structure as is and prevent further damage; to preserve. The second is to treat the existing structure as a foundation for new development, in the same manner a structural grid provides support for a new building; to utilize. The third is to take the spaces that are left behind from the old structure and reimagine what they could be; to complete the image; to interact. Each of the three major program elements: retail, civic, and residential, are a manifestation of one of these methods. The retail embodies the interact method; the civic, the preserve; and the residential, the utilize. These three methods were chosen because they represent a spectrum of intervention. To preserve is the least invasive method because it seeks to protect. To utilize is a neutral method because it does not add or subtract anything; the structure does not get a new purpose or have its purpose

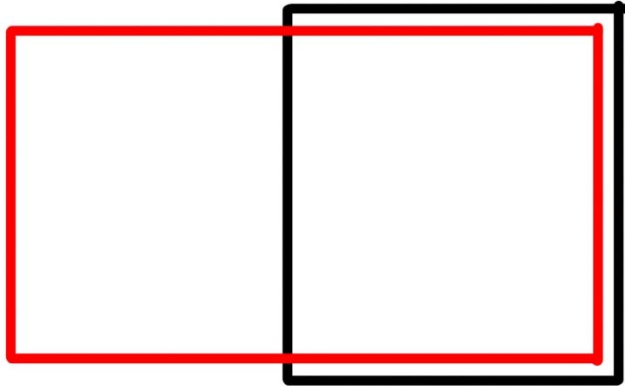
removed; it remains structure. And to interact is the most invasive method of the three. In order to reimagine spaces, to complete the image, new things must be added and old things taken away.

Design Criteria

The first design criterion that was established is to respect the history of the site. The rationale behind this criterion was explained in the *Civic* section of Chapter 7: Program Analysis. The second criterion is to connect the site back to the community. This rationale was explained in the *Park* section. The third criterion is to not hide the graffiti, but rather showcase it. The graffiti is as much a part of the history of the site as the railroad. The graffiti helped to reinvent the site as an informal gathering space. Just googling “graffiti pier Philadelphia,” one can see all types of activities that take place here: proposal pictures, paintball wars, music performances, exercise, photoshoots, and much more. Without the graffiti, this site wouldn’t be nearly as interesting. The final criterion has to do with a historic preservationist’s view on old structures and new designs. As stated in Chapter 6: Secretary of the Interior’s Standards for Rehabilitation, new designs must differentiate themselves in style as not to create a false historic appearance, yet any additions must be similar in scale, massing, and proportion. Springing from this requirement for historic sites (which Pier 124 is not), the fourth criterion is to take the forms and materials from the existing structure to help inspire the design.

Insertion – Formal Retail

The main idea behind the formal retail is an idea of insertion. This idea takes precedent from the Viaduc des Arts in Paris, France (for more information about the



Viaduc des Arts, see the *Insert: Viaduc des Arts* section of Chapter 2: Typological Precedents). The old structure provides the foundation and the retail intervention is inserted into the space left

Figure 52: Formal retail idea - insertion, source: Author behind. The intervention then claims exterior space beyond as part of it.

Wrapping – Informal Retail

The idea that influenced the informal retail component is the idea of wrapping. At first blush, this idea may seem similar to the Gemini Residences

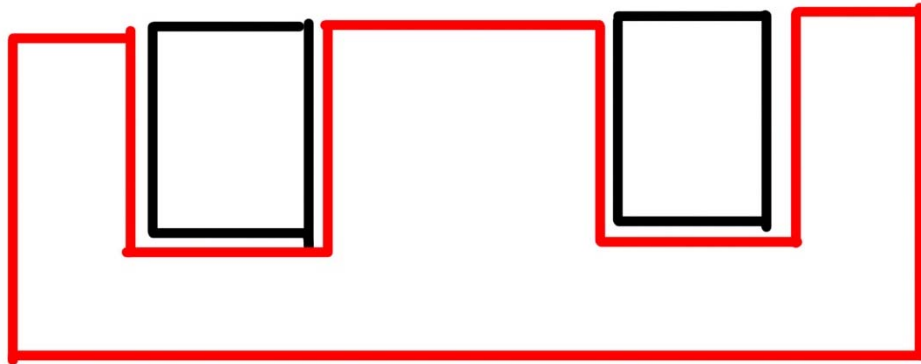
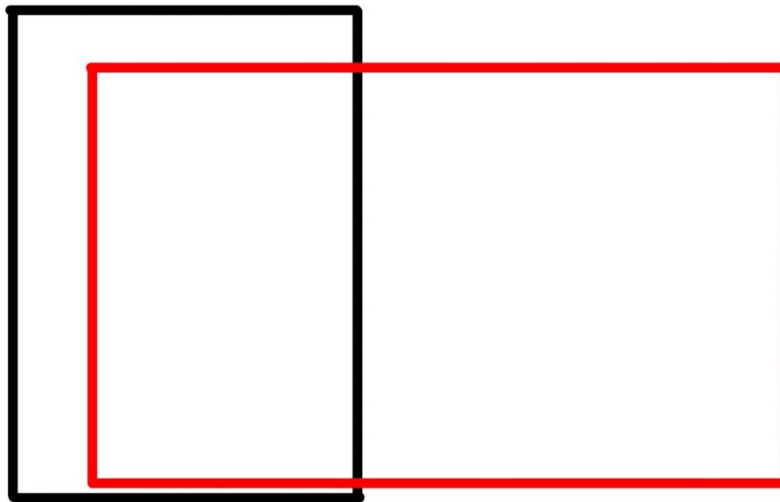


Figure 53: Informal retail idea - wrapping, source: Author

discussed in the *Encompass: Gemini Residences* section of Chapter 2: Typological Precedents. They do share some similarities, but do not have the same typology. They both use new construction to wrap an existing structure, but the existing structure functions different in each. In the Gemini Residences, the existing structure serves both as an organizing principle and as structure for the new intervention. The informal retail of Pier 124 does not utilize the existing structure as structure. The existing structure serves to delineate the space. As part of the third design criterion, to showcase the graffiti of the site, the informal retail wraps around these piers in an effort to preserve and showcase the graffiti. By wrapping the structure in the informal retail, visitors have the chance to view the structure from all angles and really take in the beauty of it.

Separate and Engulf – Civic

The main idea influencing the civic center is to separate and engulf. The separation aspect of this idea can find its roots in the DoMa Gallery (for more



information, see the *Nesting: DoMa Gallery* section of Chapter 2: Typological Precedents). The engulf

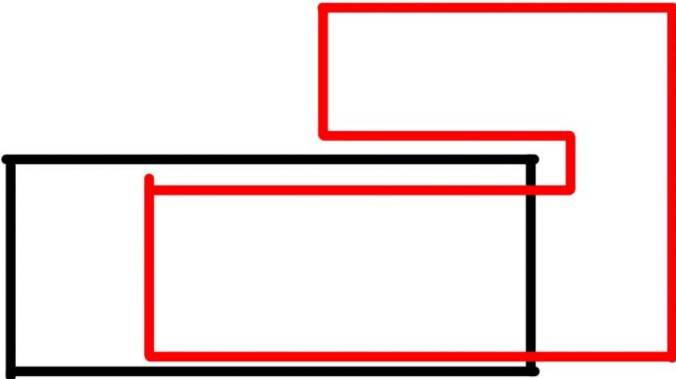
Figure 54: Civic idea - separate and engulf, source: Author

portion lends itself to stand in juxtaposition to the separate portion. In the civic center, history is celebrated. In order to protect the structure from further damage, one thing to do is to separate it from humans. As discussed in Chapter 3: Process of Decay, human interaction is one of the leading causes of decay in a structure. The everyday wear-and-tear of humans treading on a decaying structure will cause extra damage over time. By separating the human and the structure, by putting it behind glass, the structure is held as something sacred. Similar to how artifacts in a museum are kept behind glass, the existing structure is set behind glass to keep it protected.

In stark contrast to separation, other end of this idea is to engulf. This takes a very different approach to preserving the structure. It takes the attention away from the structure and puts it on the intervention. The structure does not completely fall into the background, though. In keeping with the criterion of showcasing the graffiti, the structure is left visible, but it becomes part of the exhibit. In an ordinary museum, paintings are mounted on the walls and sculpture stands free, or shelves are nailed to the wall in order to show artifacts. On Pier 124, the existing structure is in part an exhibition piece, and part the wall upon which other pieces are mounted.

Wrapping – Residential

The idea behind the residential component is also wrapping, but a different



type of wrapping than the one employed in the informal retail space. They work fundamentally the same, but the informal retail wraps in plan while the

Figure 56: Residential idea - wrapping, source: Author residential wraps in section. The idea behind wrapping the residential is two-fold: 1) to bring more light into the interior spaces, and 2) to engage the top of the roof structure. Currently, the only way to access the top of the structure is by climbing a



tree that someone drove several metal stakes into. It is dangerous (especially when the stakes are wet) and impractical. Providing the residential units with roof top access is one way to bridge the ground and roof levels of the design.

Figure 55: Tree with stakes, source: Author

Chapter 9: Design Proposal

Master Plan

The main idea behind the master plan is to provide amenities for the community to use. The idea for a park came from the lack of any recreation space or facility in the area. There are a few green squares or baseball fields within a mile radius of the site, but the park in this thesis's master plan is more formalized and on a much larger scale, allowing it to service more people.



Figure 57: Master plan, source: Author



Figure 58: Master plan program, source: Author

In deciding on which programs to place within the site, the ones that already happen, or draw the most people are the ones that were utilized. The programs are a playground, a performance space, sport fields, a garden, and a “beach.” These



Figure 59: Master Plan circulation, source: Author

programs are interconnected by a pathway system that connect back to the entire waterfront as a whole. The playground is located the closest to the neighborhoods as so the children who use it don't have to go as far away from their houses. The sports fields serve the same purpose. They are located closest to Richmond Street. At the moment, this can be a dangerous venture. Vehicles fly by because, save for a few traffic lights, there is nothing in the area that will cause vehicles to want to slow down. The streetscape will have to change in order to get vehicles to slow down as they pass the park. The sports field is placed according to logistical reasons. They were placed in the areas with the most flat land.

The idea behind the performance space is simply moving an activity that already took place on the pier into a more appropriate and usable location. Music performances were held in the open area between the two ends of the structure on the

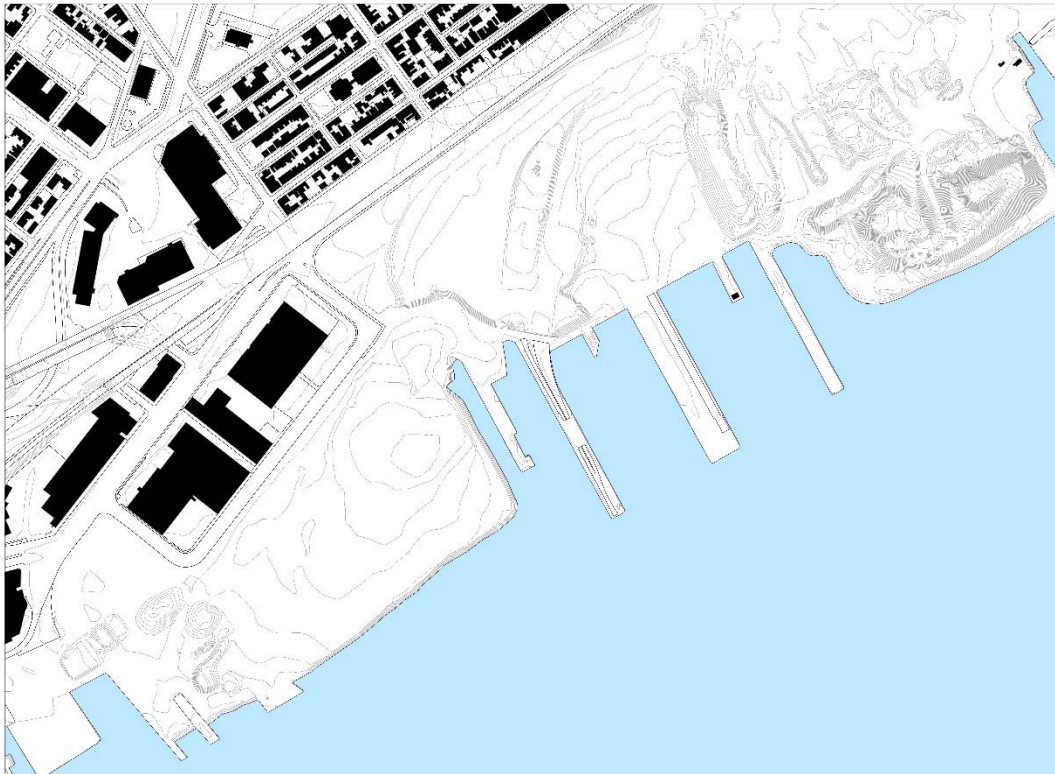


Figure 60 Pier 124 topography, 2ft intervals, source: Author

pier. The performance space was placed based on the topography of the site. Using the topography of the site, the performance space is created with the incline of the site. Because the site used to be house freight trains, parts of the site had to be built up with more earth in order to hold the weight. Because of this, there is an incline to part of the site that would be perfect for a natural theater. Similar to the Delft Library in the Netherlands by Mecanoo Architecten, the hill is a place for people to rest, relax, and enjoy a performance if one is scheduled.

The garden and the beach areas are where the more stereotypical park

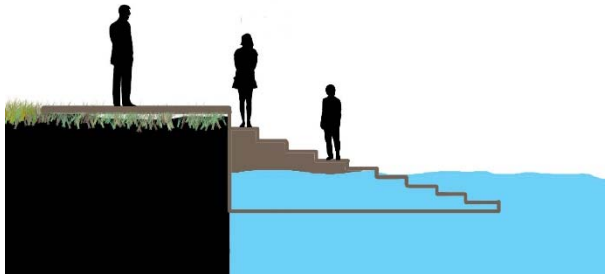


Figure 61: "Beach" conceptual diagram, source: Author

activities occur. The garden is a series of paths that wind through the area. Within this area, a botanical or sculptural exhibit could be displayed. The garden is meant to be a manifestation of the English

garden ideal: constructed wilderness, constructed through winding paths and purposefully placed plants. The beach is a newer trend. The boardwalk that runs along the edge of the piers is stepped to provide access to the water. The beach extends into the water a certain distance; therefore, as the tide rises and ebbs, less and more of the boardwalk is hidden or revealed.

Water Taxi and Boardwalk

The city of Philadelphia already has a master plan for the Delaware River waterfront. Completed in 2006-2007, the Civic Vision for the Central Delaware and

the Action Plan for the Central Delaware was designed to “provide a framework of land use, open space, economic, transportation, and development recommendations for the Central Delaware waterfront.⁵⁷” The Central Delaware is the waterfront area between Oregon and Allegheny Avenues. The master plan was released to the general public in 2011, and in 2012, it was adopted by the Philadelphia City Planning Commission. Once implemented in the physical world, this master plan needs 25

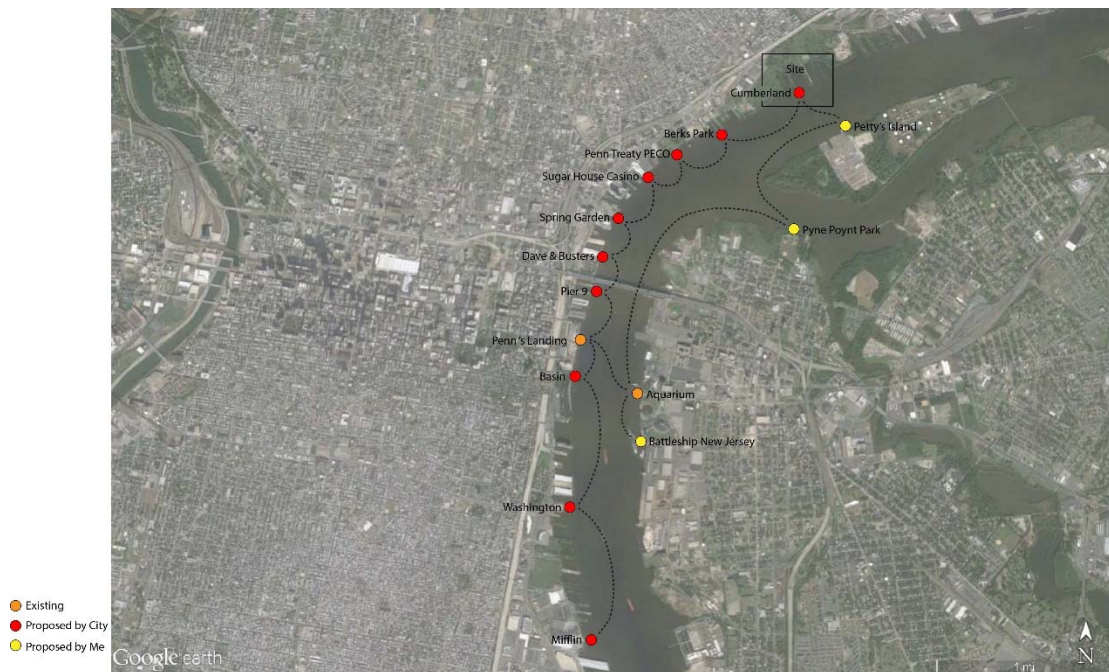


Figure 62: Water taxi route, source: Author

years until it is finished. The plan is broken into zones along the river, which an order in which they are to be constructed.

Within this master plan, a water taxi route and a river walk were designed.

The water taxi was designed to stop that choice locations along the master plan.⁵⁸

⁵⁷ "Delaware River WATERFRONT." DRWC. Accessed May 18, 2016.

<http://www.delawareriverwaterfront.com/planning/masterplan-for-the-central-delaware>.

⁵⁸ The exact locations of these stops are pointed out on page 177 of the master plan document which can be found at <http://www.delawareriverwaterfront.com/planning/masterplan-for-the-central-delaware/full-plan>

These locations all have either a park or a major recreation facility on site. There is only one of these stops that existed prior to the master plan: the ferry that travels between Penn's Landing and the Aquarium in Camden, New Jersey. This thesis has proposed three more sites along the New Jersey side: one at Petty's Island, one at Pyne Poynt Park, and one at the Battleship New Jersey. The route the city designed functions as a linear sequence. Adding these three stops creates a loop instead of a line, a more functional design. The city's master plan has already designated the area near Pier 124 as a stop along the route. This stop has been incorporated into the design of the pier.

Along with a water taxi route, the master plan also includes a river walk. One of the main ideas behind the master plan is to have a park every half mile along the waterfront. The river walk serves to connect these parks together and to provide entry



Figure 63: Riverwalk, source: Author and exit points for the interstitial space between the parks.⁵⁹ The river walk is a multi-

⁵⁹ More information on the river walk can be found starting on page 45 of the master plan document.

use trail system. The pathways that were created for the master plan of this thesis connect to this river walk, effectively connecting the site to the entire waterfront, one of the design criterion set forth in the beginning of this project.

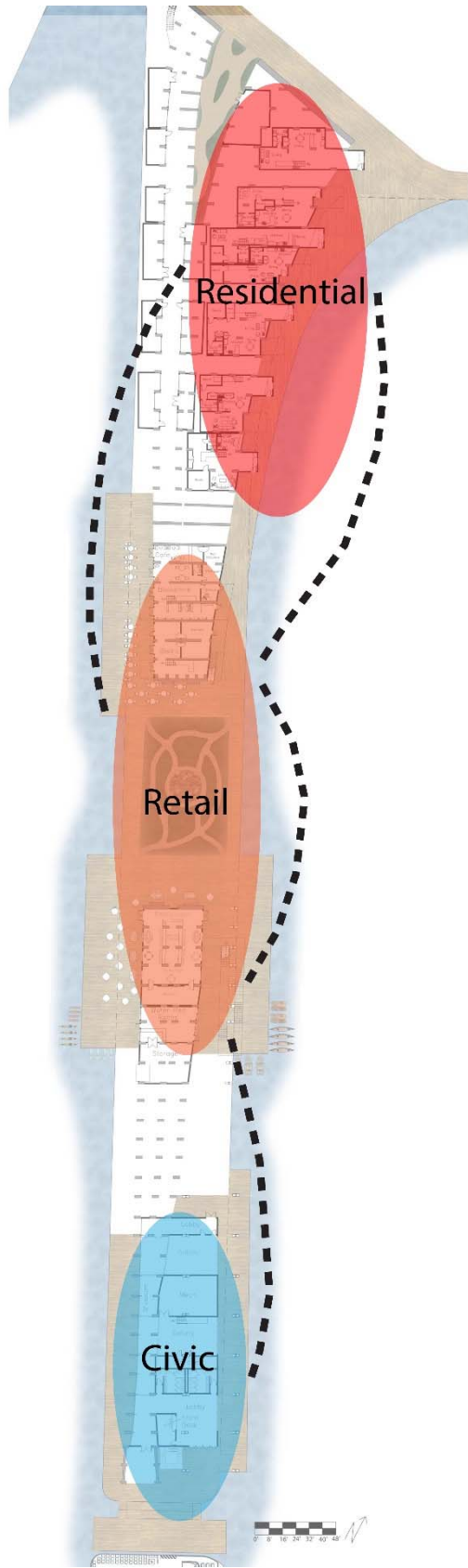


Figure 65: Sequence of Events, source: Author

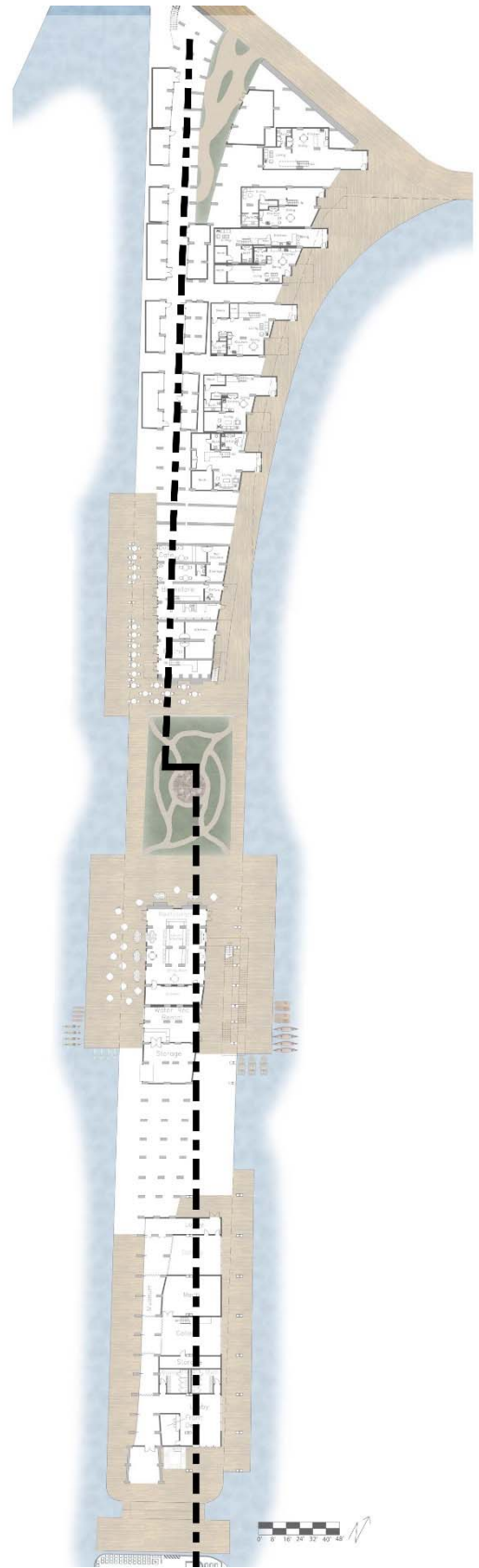


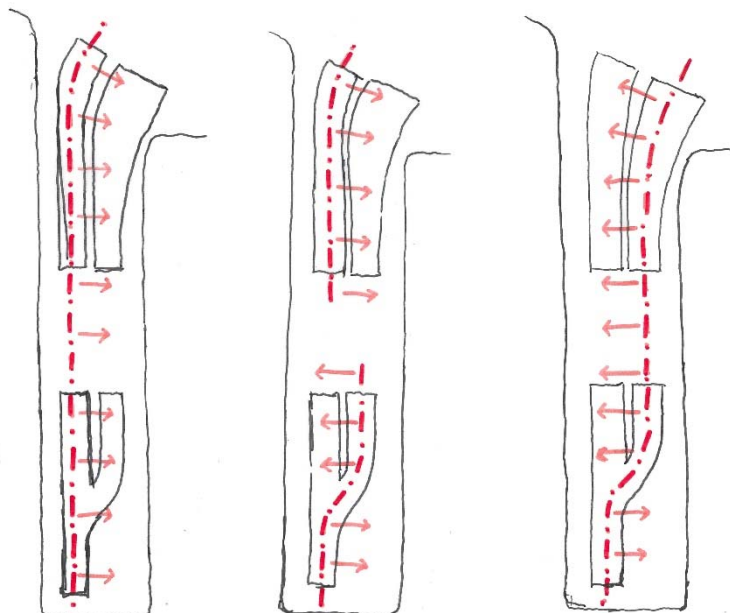
Figure 64: Design Parti, source: Author

Driving Idea: Sequence of Events

The main driving idea behind the design of the actual pier is to set up the various program elements into a sequence of events. Each of the three program elements, retail, residential, and civic, sit in their own area of the structure, separate from each other by unaltered areas. They are connected together through an extension of the boardwalk that runs the entire waterfront. This sequence can be experienced north to south or south to north. The program element that will bring the most people is located in the middle of the pier, bookending the open space in the middle. This is the element that drives people through the site. The water taxi stop is located at the very end of the pier. People can enter the pier at this end via water taxi, or at the opposite end of the pier via foot or bike. Because of the entry points at either end, the sequence can be experienced from either end.

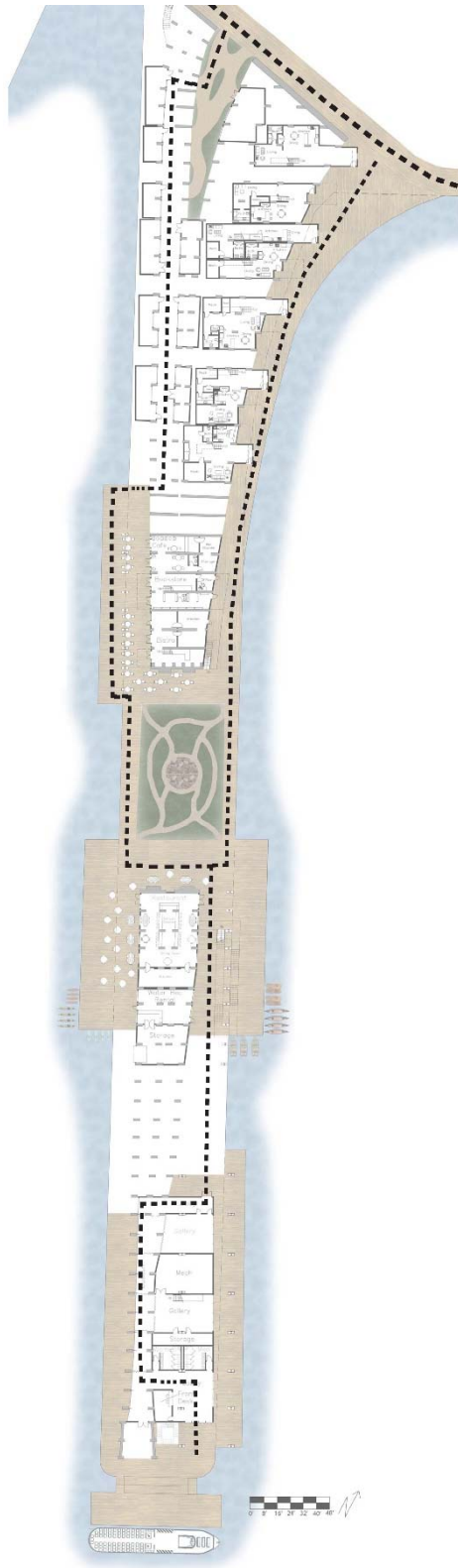
Parti

Due to the linear nature of the site, a spine parti was the most obvious and



natural choice for a parti. There were three types of spines that were explored in the early design phases: a straight parti, a jogged parti, and a right parti. The straight parti follows

Figure 66: Straight, jogged, and right partis, source: Author



a direct line along the left/west side of the structure. The jogged parti begins on the left side and cuts across to the right side. This jog occurs in the open space in the middle of the pier. The right parti follows a line down the left/east side of the structure. Because the lower half of the structure merges into one line of piers, the jogged and right partis eventually end up back on the left/west side of the pier. Eventually, the design ended up having a jogged parti. This allowed visitors to best experience all public parts of the program elements. The circulation of the pier follows the same path as the parti of the design. This circulation pattern is denoted with the use of the boardwalk; which, in places, penetrates into the structure.

Program

Figure 67: Design circulation, source: Author

When entering the site from the northern end, the first thing that visitors



encounter is the entry courtyard. The entry courtyard only services the informal retail spaces, the vendors' stalls. The courtyard pathways are composed of a light beige gravel path. Upon entering the courtyard, the space to the left is the welcome center, a stall that gives information about the

Figure 69: Entry courtyard, source: Author

vendors present that day, where vendors can sign up, or sign in for stalls, etc. To the right there are several entrances to the Infinity Hall. The Infinity Hall is the name given to the linear sequence in which the vendors occupy. Due to the repetitive nature of the structure, there is an illusion similar to when you look between two mirrors, the



Figure 68: Cross Section through Lofts and Vendors, source: Nathan Rennich



Figure 71: Vendors "Infinity Hall," source: Author

image keeps bouncing back and forth, giving the impression that the space continues forever. The goal was to exude an air similar to Union Station in Washington D.C. or Charlestown Market in Charlestown, South Carolina. The linear sequence is lined on either side by goods to see and buy. The side of the stalls that face the hall are glass walls, so visitors can see right into the spaces and see what's for sale. There are nine stalls in total. From the

visitors' perspective, the stalls appear to

punch into the landscape, when in fact, the stalls sit in the landscape and penetrate in



Figure 70: Approach towards Lofts, source: Author

between the structure. With the layout of the individual stalls, there was experimentation of how to wrap the piers and which spaces to include or exclude.



Figure 72: Plan of Vendors and Lofts, source: Author

Also at the north end are the artist lofts. These lofts are entered along the right/east side of the pier, giving an air of privacy to their entrances. Because the lofts wrap the roof structure, they can be entered on the ground floor, or on the roof. The ground floor is for more public aspects of a home's program: the kitchen, the living room, the dining area, etc. On the second floor is where the bedroom and studio space is located. The roof level serves as both a light well and a gallery/conservatory space. There are seven lofts in total. Due to the fluctuation of the existing structure, each loft had to be individually designed. A singular module cannot be implemented here because the space in which the lofts were located gradually shrunk, depth-wise.

On the opposite end of the pier is the museum. The museum is dominated by the linear gallery that runs through the structure on this portion of the site. Because the structure is only present on the left/west side of the structure, the other half can be used for new construction. There are two larger galleries that finger off of the linear gallery. These are to be utilized for larger exhibitions that need more space than a linear gallery can provide. The spaces in between these galleries are the service spaces needed for the building to function. The upper floor of the museum is where

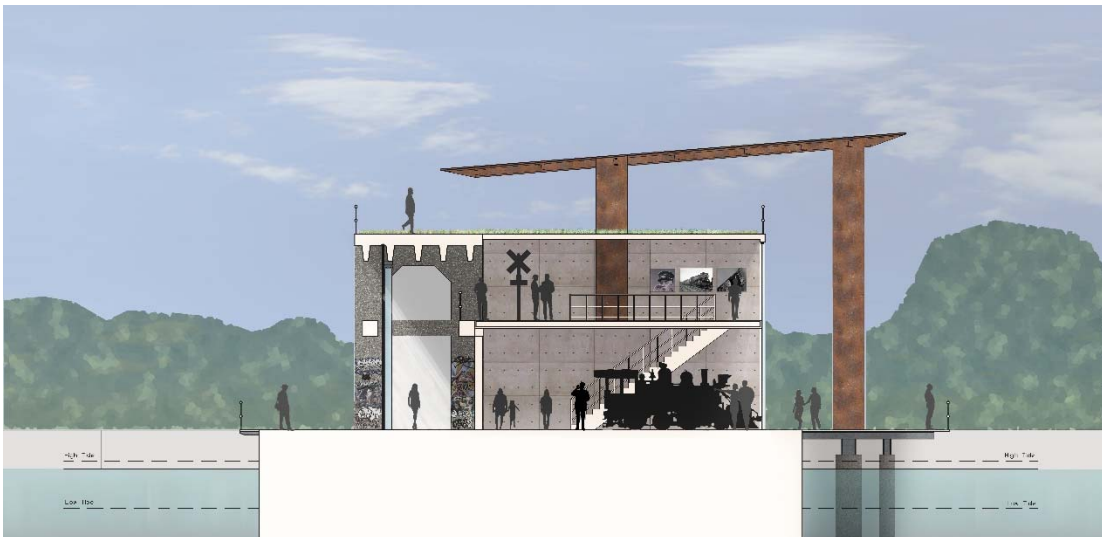


Figure 73: Cross section through museum, source: Nathan Rennich

the offices are located. There is also a balcony to the upper floor where employees can overlook into the linear gallery.



Figure 74: Plan of Museum, source: Author

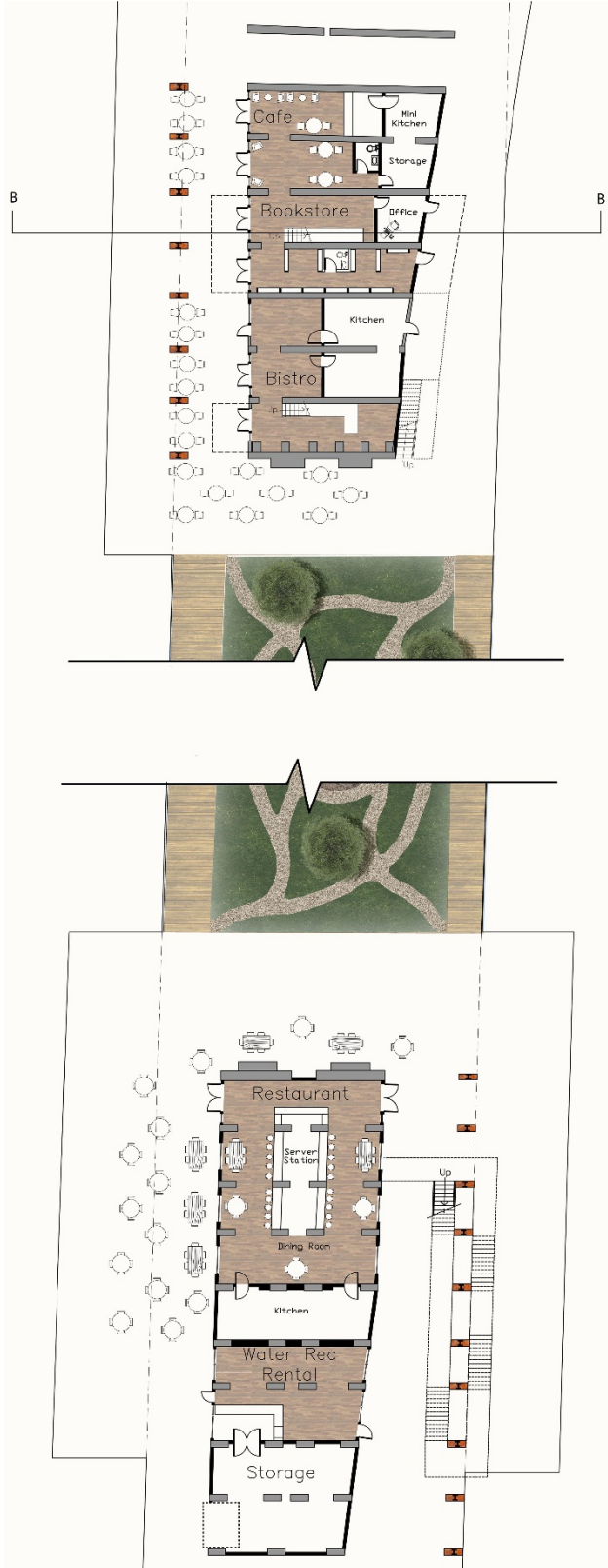


Figure 75: Plan of formal retail, source: Author

The formalized retail space is located in the middle of the site and bookends the open space in the middle. On the northern half, the structure was delineated into spaces that ran perpendicular to the pier but walls. These walls replaced the repetitive piers that dominate the rest of the site. There are 10 of these bays in total, and seven of them are used for retail space. By cutting into these walls and creating openings, multiple bays were able to be combined into one program. There are two programs that have been named on this upper half: a café/bookstore, and a bistro. The difference between a café and a bistro is that the bistro has a kitchen and can make more complex food than a café which is limited to what can be displayed and preserved in a display case. Originally the bookstore was its

own entity but upon reflection, it was decided that the bookstore should be included in the café. Bookstores, like newspapers, are a dying breed. By including it into the café, it helps to keep people at the café. This is not dissimilar to a bookstore in an airport. While waiting for the plane, passengers take a seat at the bookstore and start to read a book. When it's time to board, the book gets put back or bought for the plane ride. The same concept applies here. It's the reverse of when Barnes & Nobles put Starbucks in their stores. These two stores are catered more towards the locals.



Figure 76: Cross Section through formal Retail, source: Author

On the opposite side of the open space, there are two more stores. These stores are more catered towards visitors from other parts of the city. There is a restaurant and a water recreation rental shop. The restaurant is a major element that will help to bring people to the site. There is a choice between indoor and outdoor seating, however there is far more outdoor seating available. The rental shop is to help formalize an activity that already takes place; swimming in the Delaware River. People already want to enjoy the water in the summer. The rental shop gives them

more options. From this shops, visitors can rent row boats, peddle boats, paddle boards, inner tubes, wave runners, canoes, etc.

Extra Structure and Materiality

Because of the condition of the existing structure, little to no additional load bearing support is needed. The walls of the interventions simply have to hold their own weight. There is one instance where extra structure is required: the museum. Because it extends past the structure, additional columns are needed to support the intervention. These new columns mimic the dimensions of the existing concrete piers, but because they are steel, only occur half as often. The piers associated with the museum also support a large roof structure that covers the entire museum. This roof serves as a marker or beacon along the waterfront. Due to the dimensions and materiality (which will be discussed shortly), the roof sticks out like a sore thumb both from the river and from the highway.



Figure 77: Overall perspective, source: Author

There are also instances along the retail component that appear to have additional structure. While they are designed to mimic the museum's new piers, they are completely aesthetic. They are actually smaller I-Beams with a skin to have the same aesthetic. These piers serve an entirely different purpose. There is not enough room within the structure to accommodate the activities that occur with these retail spaces, so the piers help to capture exterior spaces as well.

One of the design criterion is to take inspiration from the existing structure. This occurs, in one aspect, in the extra structure. Another aspect is in the materiality of the interventions. Because time has exposed the raw insides of the concrete piers, the design harkens to this with the materials chosen. The main materials all help to



Figure 78: Northern retail, source: Author

Figure 79: Koshino House by Tadao Ando, source: archdaily.com
 Figure 80: Northern retail, source: Author

give an aged look to the structure without compromising the integrity of the material. The three major materials are varying and colors of concrete, Corten steel, and wood. The wood mainly manifests itself in the boardwalk and flooring materials. By utilizing the same wood on both interior and exterior spaces, it helps to unify them. Because the structure is already concrete, using other forms of concrete seemed the natural choice.

However, it is not the same type of

concrete. The concrete used in the interventions is a much sleeker, newer looking concrete. The newer looking concrete helps to follow the Guidelines for Rehabilitation: not creating a false historic appearance.

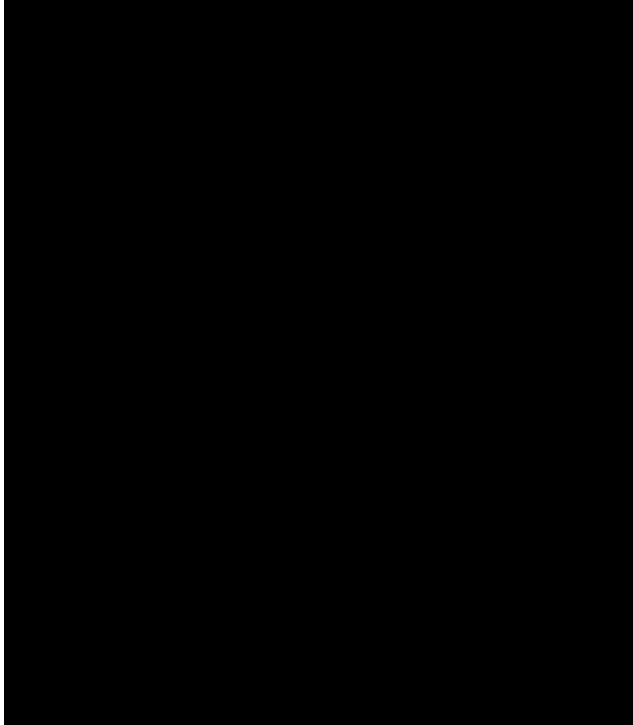


Figure 81: Koshino House by Tadao Ando, source: archdaily.com

Figure 82: Elevation of Retail, source: Author
Figure 83: Koshino House by Tadao Ando, source: archdaily.com

The most noteworthy type of concrete being applied is a modular unit that takes precedent from Tadao Ando's Koshino House. The Corten steel is possibly the most interesting of the three. Corten steel is another phrase to describe weathering steel. This steel looks normal when first erected, but after a few years the steel takes on a rusted appearance. The rust forms a protective layer around the steel,

providing protection from atmospheric corrosion. The Corten steel is employed in several areas along the pier. The most notable use is of the extra structure and the roof that extends over the museum. The lofts also have a Corten screen on their facades. Having these three materials dominate the design helps to unify the facades together into one cohesive façade.



Figure 87: Elevation of Lofts, source: Author

Figure 88: Elevation of Museum, source: Author Figure 89: Elevation of Lofts, source: Author



Figure 84: Elevation of Retail, source: Author

Figure 85: Elevation of Lofts, source: Author Figure 86: Elevation of Retail, source: Author



Figure 90: Elevation of Museum, source: Author

Figure 91: Main Level Floor Plan, source: Author Figure 92: Elevation of Museum, source: Author

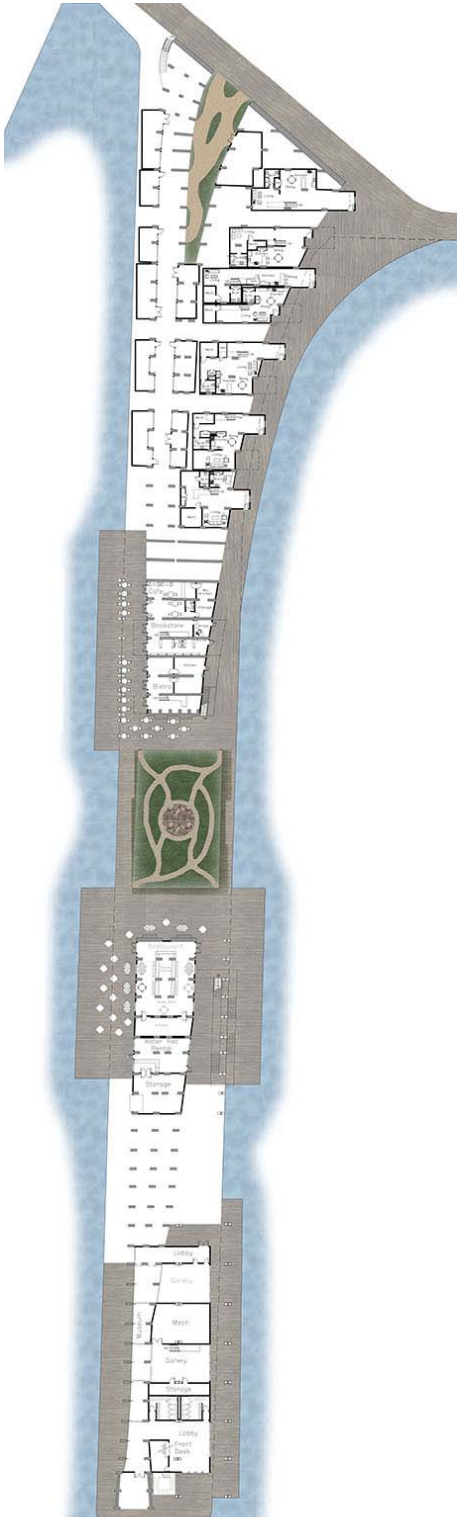


Figure 93: Main Level Floor Plan, source: Author

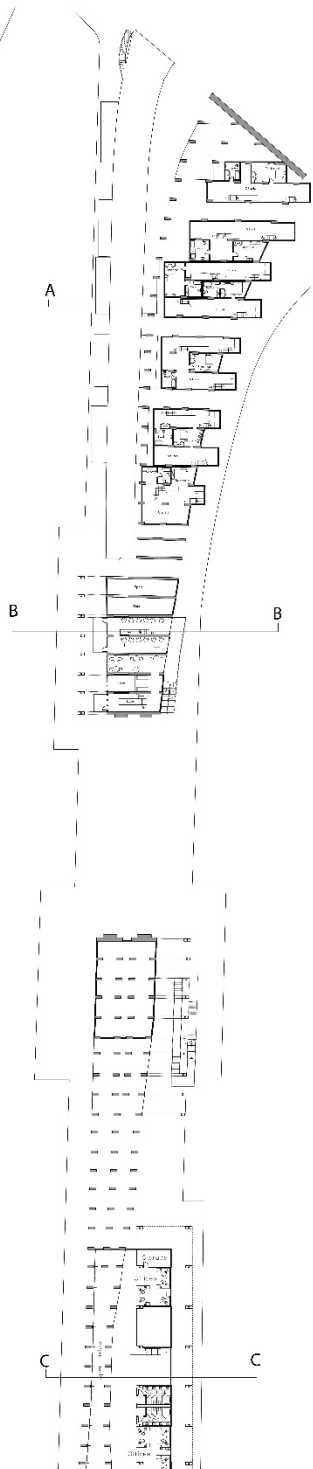


Figure 96: Second Level Floor Plan, source: Author

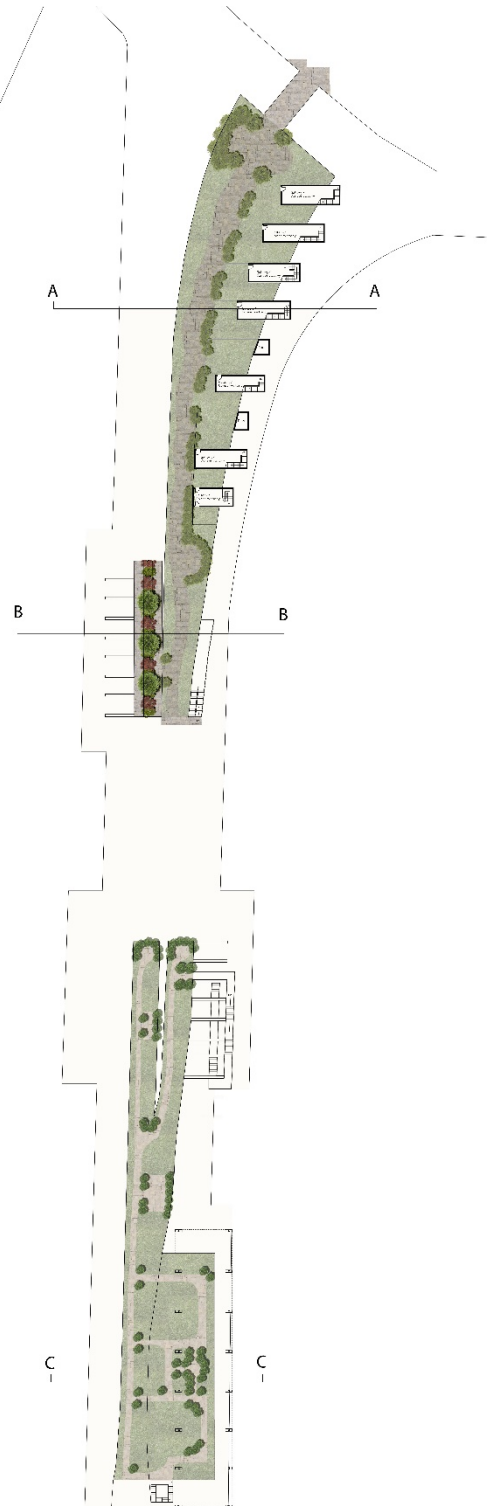


Figure 99: Park Level Floor Plan, source: Author

Figure 94: Second Level Floor Plan, source: Author

Figure 97: Park Level Floor Plan, source: Author

Figure 95: Main Level Floor Plan, source: Author

Figure 98: Second Level Floor Plan, source: Author

Figure 100: Park Level Floor Plan, source: Author

Chapter 10: Conclusions

In the beginning of this thesis, the goal was to create a design that respected the history of the site, connected it back to the city, to showcase the existing structure, and to bring inspiration from the materials and forms of the existing structure into the new design. In order for the site to be viable, it had to be an incomplete structure, it had to be within a community, and it had to have an urban context. Pier 124 was able to fulfill all of those criteria.

Looking back upon the work that was completed, there is definitely room for improvement. The program elements are very disconnected from each other, each occupying their own space of the structure. There could have been more interaction between them. The original idea was to separate them so they could be seen as separate entities, but perhaps they shouldn't be separate. Perhaps there should be more than just the boardwalk connecting them together.

Within the program itself, there is definitely improvement that could have been made, given more time. The lofts are too large to be considered "lofts." There is much more room than is needed. There probably could have been twice as many, had the units been appropriately sized. These over-sized units were an oversight between conceptual design and schematic design. There is also some critique to the formalized retail spaces. The programs chosen could have been more thought through. Were these particular programs the best choices to make in this particular instance? Is it more important to service those coming to the site or those living on or close to the site? These questions could have been answered. At the crux of this thesis is the interaction between new and old. It wasn't until the end of the process that connection

details were delved in. This should have been addressed much sooner. The connection details sit at the core of this thesis; they should have been much higher on the priority list when designing. Unfortunately, the teaching methods of various design schools lead students to not think about these details until the end, and usually as an afterthought.

As a learning experience, this thesis was incredibly helpful. It was eye opening into the design process and the timeline of a project from research, to conception, to completion. This thesis began as a theory-based thesis. It ended as a combination of theory and site; the site was incredibly influential in the design. In fact, it was a design stipulation to draw inspiration from the site. It was also eye-opening into what a project needs in order to be sold to clients; which types of drawings will best help to represent and convey the design concept. These topics were a goal of earlier studios, but it has never been so blatantly obvious until this thesis.

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