WORKING AT THE WATER'S EDGE:

Reconnecting the people of Charleston with the Water

A Thesis Presented for the
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ABSTRACT

Water is a chemical compound fundamental to life. When many people first think of water, it is the water used for everyday activities and drinking that may come to mind. What is frequently overlooked is the fact that 71% of the Earth's surface is covered with water and 96.5% of Earth's water is found in oceans and seas (U.S. Geological Survey). What may not be as clear is the importance of these bodies of water to the surrounding towns and cities.

Since it's founding in 1670, Charleston, South Carolina has always had a strong relationship with the water. One could call Charleston an aquatic project. The city is located in southeastern South Carolina, on a peninsula between the Cooper River and the Ashley River. You cannot find yourself getting far in or around Charleston without crossing over a body of water. Although the proximity of water has not always been a pleasant situation for Charleston with the Civil War, hurricanes, and ever changing water levels, it has helped shape the city to what it is today. This project is focused on bringing back Charleston's connection with the water. With modern technology and innovations, locals and tourists have seemed to lose touch with the water on an everyday basis.

The design of a multi-use ferryboat terminal and maritime center located at the end of one of the most popular streets in the downtown area is going to reconnect both the locals and tourists of Charleston back with the water both visually and spatially. The city has acknowledged the problems with the end of Market Street and is looking to Cooper, Robinson & Partners to work with the South Carolina State Ports Authority to redevelop this area. The major aspect of Cooper, Robinson & Partners proposal is the newly designed cruise ship terminal and it's new location. I have chosen to take some aspects of this proposal into consideration and to take advantage of the newly created view corridor down Market Street. With details such as "eco-parks", restoration of the natural shoreline, interactive pedestrian bridges, viewing towers, and ferry boat routes, my design will bring back the industrial, historic character of Union Pier Terminal while creating opportunities for locals and visitors to experience something not yet found in Charleston, South Carolina.

“Take thought, when you are speaking of water, that you first recount your experiences, and only afterwards your reflections.”

– Leonardo da Vinci
(Dreiseitl 9)

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PART 1_ **framing**

1_*Significance of a City's Connection to its Surrounding Water*

No matter how water is used as a landscape element, this element tends to bring both immediate and constant life to the site (Woodward, 10). The use of water features or retention ponds may be incorporated into a design or some sites may just have the privilege of being located near a body of water. Looking more at the United States, seventy-five of the largest cities are located by a significant body of water (Breen and Rigby 11). Water has helped to shape the hard landscapes it surrounds through erosion, and in some cases, softens it with vegetation (Woodward, 10). Some of these landscapes are still changing today. Charleston, South Carolina is a good example of this type of landscape formed by the surrounding body of water. The Charleston Peninsula has changed through the years, and continues to change, with the rough waters and the ever-changing tides.

No matter the size of the city or town, the "urban waterfront" can be defined as the water's edge where land and water meet (Breen and Rigby, 10). We are seeing an interest more often in the reestablishing and/or preserving of the traditional downtowns during the redeveloping of these cities. The preserving of a city or town does not stop with the just the buildings. Such fundamentals that can also be taken into consideration include those in the categories of social, cultural, and environmental, all of which fall into the category of "urban values" (Breen and Rigby, 5).

The growing appreciation for "urban values" forces us to pinpoint the unique characteristics that define the term in order to successfully incorporate into the design. The physical qualities of this phrase include a concentrated development, combination of a range of activities and land uses, a diverse population, a mix of old and new architecture, walkability, incorporation and use of public transportation, and a strong sense of place (Breen and Rigby, 5). Most, if not all, of these qualities reflect the human instinct to socialize (Breen and Rigby, 5). Socializing is what leads to the sense of community that defines a city.

Figure 01a_Jacopo de' Barbari. Engraving of aerial view of Venice, 1500.
Source: Savoy, p.21

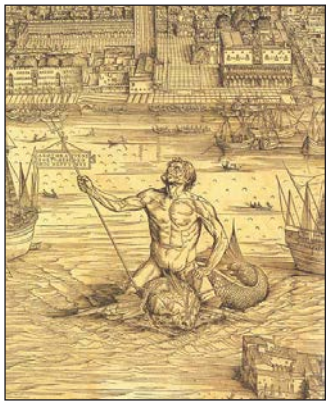


Figure 01b_Detail of Neptune. Jacopo De Barbari. Engraving of aerial view of Venice, 1500.
Source: < http://www.settemuse.it/arte_bio_D/de_barbari_jacopo.htm>

In today's society, we see more of an anti-social population. People tend to keep to themselves on their technological devices, in their cubicles at work, and even in their travels from point a to point b. Something that still remains the same over the years is the sense of welcoming you get from a functioning city waterfront. Waterfronts can function as a community-gathering place and typically portray a feeling of a neutral territory (Breen and Rigby, 6); therefore, the revitalization of a city or town's waterfront, if it has one, could be considered a crucial step in the preservation of the traditional downtown (Breen and Rigby, 5). The waterfront has the potential to bring back the socialization that is lacking in today's cities.

Figure 02_Max Ernst. Collage from *Une Semaine de Bonte.* Second book: Mardi, Element: Water.
Source: Ernst, p.41

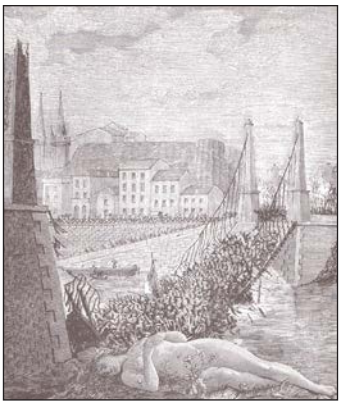


Figure 03_Max Ernst. Collage from *Une Semaine de Bonte.* Second book: Mardi, Element: Water.
Source: Ernst, p.42

1_*Experiencing Water*

Both a theoretical and practical understanding of water is essential for successful use as an architectural medium. The incorporation of this medium into a design presents the opportunity to create diverse atmospheres and moods one may leave the site feeling. The integration of water into a design can come in the form of a simple water feature, a conservational aspect, or a much larger body. Water is an element that has universal qualities and the ability to bring life to any landscape.

Water can be described with an infinite variety of words. This is due to the fact that the character of water can change depending on its surrounding environment; although, it is these distinguished characters that the visitor leaves never forgetting. They begin to affiliate that place with those feelings because such an experience may be not easily duplicated. Factors, such as setting, containment, movement, lighting, wind, sound, color, and depth, all have an impact on the atmospheric qualities of water (Woodward, 10-11).

The setting of water can impact its ambiance and this is clear when comparing the same body of water in two very different locations. Experiences a body of water in a location where it is not expected can leave a lasting impression on an individual. Containment refers to the constraints put on the water. Looking out at an endless horizon on a beach is quite different than looking at water confined to a fountain or surrounded by pavement. When referring to movement, water can be experienced as a smooth feature or a rapid one, both of which give off a difference mood. The movement of water can also help gauge it's depth and make the water more visible with the white bubbles created from waves or splashes (Woodward, 10). Lighting around water, or lack thereof, is definitely something to take into consideration. The lack of lighting causes an individual to experience the water with the use of their other senses, such of hearing and smell. You cannot see the water but you still leave having felt its presence. Natural lighting, such as the moon or the sun, also has an uncontrolled effect on the water and the way it is seen. Seeing the water at night with the help of moonlight,

Figure 04_Max Ernst. Collage from *Une Semaine de Bonte.* Second book: Mardi, Element: Water. Source: Ernst, p.44

Figure 05_Max Ernst. Collage from *Une Semaine de Bonte.* Second book: Mardi, Element: Water. Source: Ernst, p.48

versus artificial light, can be quite a different experience. Robert Woodward explains in New Waterscapes: Planning, Building, and Designing with Water, reflection and refraction produced by lighting is used to bring out the visual qualities of water (Woodward, 11). The meticulous use of light, whether artificial or natural, can ultimately bring color to this naturally defined “colourless liquid” (Woodward, 11).

The understanding of water’s diverse characteristics is critical when design with this medium is being considered. Wolfram Schwenk sums up this thought by explaining, “Water is by nature formless and passive, and only shows its particular qualities when interacting with its surroundings. These qualities constitute its significance in the context of nature and teach us to handle water correctly” (Schwenk, 112). If the designer is not considerate of how the elements can affect one another, the visitor could leave the site with an unintentional and misrepresented experience.

Figure 06_Charleston, South Carolina waterfront showing Castle Pinckney, the Arthur Ravenel Jr. Bridge, and a cargo ship coming in.
Source: Photo taken by Author

1_*Impact of Development Over Time – balancing old & new*

The attraction to water is not only powerful, but also universal, bringing about another aspect of powerful altogether (Breen and Rigby, 10). Looking into historical documents and reading through the decades, you begin to notice the many changes the urban waterfronts have endured over time. Personal docks have become industrial ports. Industrial ports have become shipping ports. Shipping ports have become terminals for public transportation. Ultimately, these terminals have become locations for more public events.

As Breen and Rigby describe, “at once calm and dynamic, profoundly symbolic in religion and literature, water evokes primeval emotions in all of us” (Breen and Rigby, 10). Some of the reasons for building on water today tend to differ from reasons the building on water took place years ago. Some of the primary reasons for building on water in the past were having to do with defenses, economics, and religion (Fletcher, 10). The architectural structures of defenses consisted of naval bases, fortresses, and/or prisons, and the structures representing economics were the ports and dockyards. Both of these architectural structures can still be seen on the coasts of many cities, Charleston being one of them. Not only are they still located on the bodies of water but they are also functioning that very purpose. Some have needed to expand and grow up the waterfronts to satisfy the increase in demand in today’s society.

Ports are very symbolic to cities and their past. In Port Architecture, Peter Quartermaine explains, “the stark monumentality of ports – the simultaneous difficulties and opportunities of their site – speaks as no other architecture of the movement, suffering and achievement of peoples” (Quartermaine, 102). With such a powerful symbol of the city, the ports would need to be greatly considered during the revitalization of a waterfront if one is present. With religion also being a primary reason for building on water, there were many temples and shrines blocking the waterfronts.

Figure 07_Frank Lloyd Wright's Fallingwater showing the connection to the mountain.
Source: <www.fallingwater.org/>

As previously stated, most of the great cities were built near a body of water and many of which were on islands (Fletcher, 10). The city's proximity to water tended to helped trade and communication, along with irrigation and drainage for the city (Fletcher, 10). The water also served as a defensive mechanism for the fortresses, prisons, and naval bases. The surrounding water prevented invaders from digging tunnels and being able to easily bring weapons close to the fortress walls (Fletcher, 10). The reasons for building on water have taken a shift on some accounts.

Rather than building on water for defensive, economic, or religious reasons, we now see water as a design device. Water can be incorporated into design as a symbolic, linking, or isolation device (Fletcher, 10). This design strategy could be a way to link a building to its environment. An example of this strategy being used is Frank Lloyd Wright's Fallingwater (Fletcher, 10). Built in 1935 in southwestern, Pennsylvania, the building sits above a waterfall. The stone and concrete materials not only compliment the stone on the side of the mountain but they also form cantilevers that dramatize the flowing of the water down the mountain (Fletcher, 10). The idea of using water as an isolation device does not vary far from the historical use of water as a defensive device. Rather than using water to keep others from getting to that area, it is used as a way to make that structure stand out from the crowd (Fletcher, 10). In order to successfully revitalize an urban waterfront, it takes research and an understanding of what that waterfront has meant to the city in the past. In a case such as Charleston, the idea of getting rid or hiding the port would not be an option due to the historical significance it holds to the city. Connecting and educating the people of Charleston with the port would be an important consideration to have when it comes to preserving the historic character of the city. What would be interesting to explore is how modern technology, such as cruise ships, have impacted the urban waterfronts.

The waterfront has evolved over the years starting from one of the first stages being the ancient times to the mid-nineteenth century. At this time, the waterfront, or "primitive cityport"

functioned as the center of power having to do with the city's physical, social, or economic aspects (Brown, 14). In the second half of the nineteenth century and the first half of the twentieth century, the city port operations began to expand up and down the urban waterfronts. More land was taken over and used for port operations in order to accommodate the growing trade that took place at this time. The locations of the expansions were effected by the technological advances in travel and communication at that time (Brown, 14). In the mid-twentieth century, we continued to see the ship sizes increase, along with specialized industrial growth. The larger operations taking place forced the ports to need an expansion in site size and deeper waters. Moving downstream was one of the only options at this time to accommodate the changes that were happening. During this time period, container technology was also developing and requiring larger sites. Concern for environmental issues was increasing at this time throughout society. The public sensitivity brought about questioning whether the urban waterfront was the best location for industry (Brown, 15). All these factors resulted in a shift of the port from the urban waterfront. In 1970, a redevelopment in the urban waterfront began with the relocation of the manufacturing and industrial operations. The waterfront became large sites that attracted developers as locations for proposed housing, offices, parks, and marinas (Brown,15). Due to the increased concern of pollution controls, problems came about in the cleaning up of these industrial sites for the newly proposed uses. Challenges for the port authorities were rising with these changes that were occurring on the waterfront properties (Brown, 15). With urban waterfront redevelopment today, one of the biggest challenges is the balancing of old uses and new uses. The new has to do with residential, commercial, tourism, and recreational usage (Brown, 17).

Instead of the thought of ports and waterways being exclusively functional places, we see people in today's society looking to the water as destinations for living and traveling. This brings upon the desire to look at these urban waterfronts as an experiential setting, providing the opportunity for humans to connect with the water.

Figure 08_Aerial view of Pittsburgh, Pennsylvania.
Source: Photo taken by Matt Robinson in 2011 < http://pittsburghskyline.com/>

Figure 09_Aerial view of Cooper River Bridges in Charleston, South Carolina.
Source: Photo taken by C. Frank Starmer on July 17, 2005 < http://oldcooperriverbridge.org/blog/>

1_*Transportation*

In Port Architecture, Peter Quartermaine quotes Christine M. Boyer with help to explain what modern technology, such as the car, has done to society:

> "In the postindustrialized world of the present, an intimate link with nature has been severed, giving rise to a set of nostalgic desires to re-experience the time when man confronted nature directly, mastering the perils at sea and the dangers on land. Any seaport symbolizes the world of mercantile exploration that launched a thousand ships around the world" (Quartermaine, 93).

The addition of infrastructure, such as bridges, has provided means of bypassing the connection one must have with the water to get from one place to another. As previously discussed, this modern technology has also impacted society and how people interact with one another. Anti-urban tendencies have risen and a preference of isolation is more popular. This is in part due to the individualized means of living and travel (Breen and Rigby, 5). People in today's society have neglected the human desire to congregate (Breen and Rigby, 5).

The addition of a ferryboat system in the revitalization of the urban waterfront would not only reconnect the people back with the water, but it would also revive the human desire to socialize. The method of travel by boat has a historical significance of its own. Water was the first link we had to islands, and even more important, countries. This was earlier discussed when explaining the importance of trade and economics to our port cities. These urban waterfronts were not only economic centers of trade; they also served as a type of immigrant gateway into the United States of America (Quartermaine, 95). These immigrants made a "unique contribution to the city, and beyond that to the larger nation" (Quartermaine, 94).

Figure 10_Bird's Eye View of New York City, 1865.
Source: Drawn by J. Bachman <http://www.old-maps.com/NY/NY-BirdsEyeViews_NYC_More.htm>

Figure 11_Aerial Overview of Manhattan Island, New York City, 2013.
Source: Herb Lingl <aerialarchives.com>

A cities connection with the water has the potential to become an image of that city. New York is a city made up physically of islands. These islands include Manhattan, Long Island, Staten Island, Coney Island, Liberty Island, and Ellis Island. It is the complexity of bridges, ferries, tugboats, and grand ships that make the city work and leave a lasting impression on the tourist (Quartermaine, 93). In cities similar to New York, an addition of a ferryboat system would give both the residents and the tourists an opportunity to connect with the water on an everyday basis, ultimately creating a lasting image of the relationship the city has to its boundary of water.

PART 2_ **positioning**

Figure 12_1950 Figure Ground Diagram of Venice, Italy.
Source: Graves, p.310

Figure 13_Reflections on a canal.
Source: Savoy, p.13

Figure 14_Reflections on a canal after a storm.
Source: Savoy, p.13

2_*Venice, Italy*

Contemporary urban waterfront redevelopment is being taken on in many cities, no matter size or location. Revitalization of the urban waterfront is not only a big city concern. This is a concern in small towns, as well as international locations (Breen and Rigby, 11). This is because the significance our cities share with their surrounding bodies of water is similar to those in other cities, such as Venice, Italy. A city, like Venice, also shows that the restoration of an urban waterfront does not necessarily have to take place from land. The restoration could extend out to the water with the use of infill or floating docks. From the 13th century to the 17th century, Venice was a great seafaring power (Fletcher, 10). Named the “City of Water”, Venice is located in the Venetian Lagoon, off of the Adriatic Sea (Fletcher, 10). The city was formed on this marshland by building and expanding islands. Foundations were built by driving wooden pilings close to one another (Fletcher, 10). The waterways were turned into canals, which still serve today as a popular means of transportation.

Venice was constructed in relation to the water. Traveling by canal, compared to the land, leaves you with spatial and experiential qualities affiliated with the transportation networks and the historical architecture oriented towards the water (Savoy, 8). The visual environment one experiences when traveling the canals of Venice differs greatly from others. The canals connect an area of approximately 550 square kilometers (5,920,150,729.35 square feet), providing an open view towards the horizon no matter the direction (Savoy, 9). With the openness of the canals and the proximity to the Adriatic Sea, Venice tends to experience unpredictable weather conditions. The weather has a large impact on the aura of the city. The lack of visibility that an overcast day brings can leave you feeling lost and alone.

Experiencing the city on the Venetian waterway, versus by foot, allows the visitor to enjoy their surroundings without peripheral distractions (Savoy, 12). Traveling through the canals in the seated position allow views to be uninterrupted. Speaking about a similar experience, Daniel Savoy references Vittore Carpaccio’s painting of The Miracle of the True Cross: The

Figure 15_View & reflections of the Grand Canal.
Source: *left* Savoy, p.11 & *right* Savoy, p.13

Figure 16_Andrea Palladio, Il Redentore, 1576.
Source: Savoy, p.28

Figure 17_Vittore Carpaccio's painting of The Miracle of the True Cross: The Healing of the Possessed Boy, 1494.
Source: Savoy, p.7

Healing of the Possessed Boy from 1494, seen in Figure 18 (Savoy, 14). He explains how passengers of the gondolas were able to enjoy views both near and far due their perspective in the seated position (Savoy, 7).

How does the water influence the visitor's interpretation of Venice and how could this be incorporated in other cities?

As the visitors traveled through Venice, "the space, atmosphere, reflective surface, movement, and conceptual richness of the canals, as well as their own somatic sense of fluid motion and visual attention, fundamentally shaped their perception of the city" (Savoy, 14). The traveler leaves Venice with an everlasting image and personal experience of the city's aquatic setting. By connecting people more with the water in our cities and having them experience the city from the eyes of the original visitors by boat, this can result in a powerful experience.

Figure 18_1662 Figure Ground Diagram of Philadelphia, Pennsylvania.
Source: Graves, information on p.358, image on digital copy

Figure 19_1794 Figure Ground Diagram of Philadelphia, Pennsylvania.
Source: Graves, information on p.358, image on digital copy

Figure 20_1802 Figure Ground Diagram of Philadelphia, Pennsylvania.
Source: Graves, information on p.358, image on digital copy

Figure 21_1840 Figure Ground Diagram of Philadelphia, Pennsylvania.
Source: Graves, information on p.358, image on digital copy

2_*Philadelphia, Pennsylvania*

Philadelphia, Pennsylvania location on the Delaware River greatly impacts the city's historic character. The relationship Philadelphia has with its surrounding body of water and how infrastructure has affected this relationship is a notable situation. In 1911, the Delaware River Port Authority was created for the purpose of building one bridge. Over the years, the Delaware River Port Authority responsibilities expanded and were operating four toll bridges, a commuter rail service, intermodal cargo facilities, and a cruise terminal by the early 1990s (Brown, 1). At this time, Philadelphia was undergoing urban revitalization projects that were focused on transforming the urban waterfront. This was affecting the port due to the desire to convert this urban waterfront to a regional center for tourism (Brown, 2).

Since the early twentieth century, public authorities in the United States have been increasingly involved in the public infrastructure. These units of local government have been engaged in the shaping of the urban environment in some of the most influential ways (Brown, 2). In the second half of the twentieth century, operations that took place at the port of Philadelphia and Camden began to shift to more modern ports such as New York and Baltimore. This was due to the struggle between public and private port operations that took place in Philadelphia and Camden. The movement of operations also had to do with the lack of funding by both cities and states during the post-World War II era (Brown, 79). This movement left abandoned industrial property on the Delaware River coast.

Philadelphia underwent almost a complete separation with the water in 1979 with the completion of the north-south interstate highway, I-95. This 1960 proposal was proposed to run along the water's edge only one block from the waterfront (Brown, 79). This planned interstate would ultimately block the waterfront view of those who resided in one of the most successful urban renewal projects in the country, Society Hill (Brown, 79). The planner's solution was to depress the interstate along this stretch of waterfront property to preserve the views of the residents. Even though the I-95 was successfully depressed and no longer

Figure 22_Photograph showing the path cleared through Philadelphia for I-95.
Source: < http://philadelphianeighborhoods.com/2011/06/16/port-richmond-residents-hopeful-but-wary-over-plans-to-improve-the-riverfront/>

Figure 23_View of I-95 and Christopher Columbus Boulevard running parallel to the Philadelphia waterfront.
Source: Plan Philly Website <http://planphilly.com/eyesonthestreet/2012/02/22/re-imagining-urban-highways-1>

Figure 24_Plan view of Philadelphia showing I-95 destroying the connection the city has to it's waterfront.
Source: The Architect's Newspaper < http://archpaper.com/news/articles.asp?id=4155>

created a visual boundary, it still created a physical boundary. This interstate, with the help of the Christopher Columbus Boulevard, ultimately created a barrier between Philadelphia and the water's edge (Brown, 79). These two streets connected to the fourteen lanes of traffic at Penn's Landing (Brown, 79).

Between 1995 and 2005, the Delaware River Port Authority invested approximately a half a billion dollars into more than forty major development projects (Brown, 2). The majority of these projects were built on or near the Philadelphia-Camden waterfront. Philadelphia tended to experience more challenges in development, compared to Camden, due to the isolation of the waterfront from the Center City. I-95 and Christopher Columbus Boulevard contributed in these challenges. These challenges are still impacting development along the Philadelphia waterfront today.

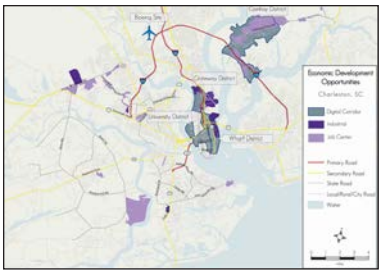


Figure 25_Diagram showing economic development opportunities in the entire Charleston Tri-County Area: Charleston County, Berkeley County, and Dorchester County.
Source: City of Charleston's *Century V Plan Update*, p.34

Figure 26_Diagram showing considered accommodation zones for economic development opportunities focusing more on Charleston County and the peninsula.
Source: City of Charleston's *Century V Plan Update*, p.75

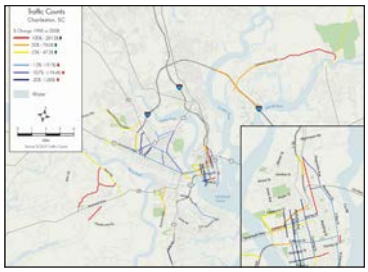


Figure 27_Diagram showing percent change of traffic counts throughout Charleston from 1998 to 2008.
Source: City of Charleston's *Century V Plan Update*, p.94

2_*City of Charleston Century V Plan*

In 2000, the City Council adopted The Century V City Plan from the City of Charleston. This working document was created for the Charleston citizens, conveying the goals for the city (City of Charleston, 3). Decisions are associated with Charleston's natural and cultural resources, economic development, public safety and services, land use and preservation, transportation options, and planning coordination (City of Charleston, 3).

There are six goals stated for The Century V City Plan best summarizes the intentions of the plan for Charleston. The first goal pertains to the rural areas of the City and the preservation of the way of life in these locations. The second goal pertains to the urban and suburban areas of the City and the protection of the natural resources in these locations (City of Charleston, 4). The third goal concentrates on guaranteeing a high quality of life throughout the entire City. In order to fulfill this goal, the City of Charleston mentions the maintaining of quality neighborhoods, supporting infill, and offering new public gathering spaces throughout the City (City of Charleston, 4). The fourth goal of the Century V City Plan is to increase the public transportation options for the people of the community. The fifth goal relates to the economic growth expansion opportunities throughout the City (City of Charleston, 4). The City of Charleston wants the City to be able to continue accommodating a wide range of businesses. The Century V City Plan's sixth goal focuses on the civic growth in urban and suburban areas. The City of Charleston wants to ensure public services and facilities of the highest quality to the residents throughout the City (City of Charleston, 4).

The City of Charleston includes five distinct land masses. These five land masses include the Peninsula, West Ashley, James Island, Johns Island, and the Cainhoy Peninsula. Out of these five land masses, the Peninsula will be the focus throughout this thesis. The Charleston Peninsula is approximately eight square miles and known to be the historic core of Charleston (City of Charleston, 55). Within these eight square miles, 20% is categorized

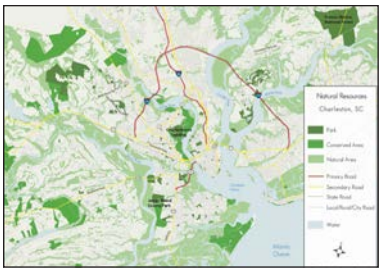


Figure 28_Diagram showing natural resources in the Charleston Tri-County Area. Source: City of Charleston's *Century V Plan Update*, p.49

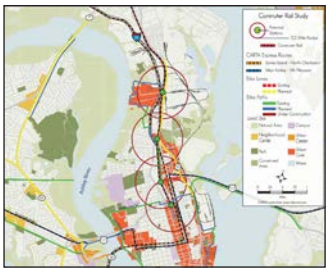


Figure 29_Diagram showing the existing and potential paths of transportation focusing more on Charleston County and the peninsula.
Source: City of Charleston's *Century V Plan Update*, p.88

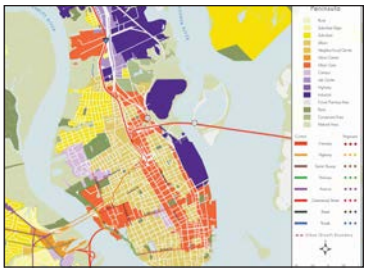


Figure 30_Diagram showing the current land use for the Charleston peninsula. Source: City of Charleston's *Century V Plan Update*, p.68

as commercial use, where 30% is zoned for heavy industrial. This industrial zone symbolized the Peninsulas industrial history (City of Charleston, 56).
Zooming in on the Wharf District of Charleston, which is the proposed study area for this thesis, the City of Charleston agrees that this area is an economic development opportunity area. Figure 22 indicates the Wharf District as part of the Digital Corridor. The Charleston Digital Corridor is the second economic driver of the City, behind the Medical University of South Carolina. The Digital Corridor is the "knowledge-based business sector" (City of Charleston, 29). Charleston's tourism and hospitality remains to be the thriving industries in this business sector. Annual tourism revenues rose 61% to $3.5 million from 2000 to 2008. During this time, annual lodging revenue increased 50% to over $213 million (City of Charleston, 31). The City of Charleston estimates the incoming cruise ships, which currently dock at the Wharf District, aiding in the continuation of this sector growth (City of Charleston, 31).

Carnival Cruise Lines began sailing one of their ships out of the Charleston Harbor in 2010. The Carnival Fantasy brings visitors to downtown Charleston by shipping out every five to seven days, which signifies more than sixty annual port calls (City of Charleston, 31). The South Carolina State Ports Authority is currently proposing a redevelopment of the cruise ship terminal and surrounding property located at Union Pier. There intentions are to make the terminal operations much more efficient, while also reducing the local impact of these cruise ships. The South Carolina State Ports Authority plan for Union Pier also opens up thirty-five acres to non-maritime redevelopment (City of Charleston, 31).

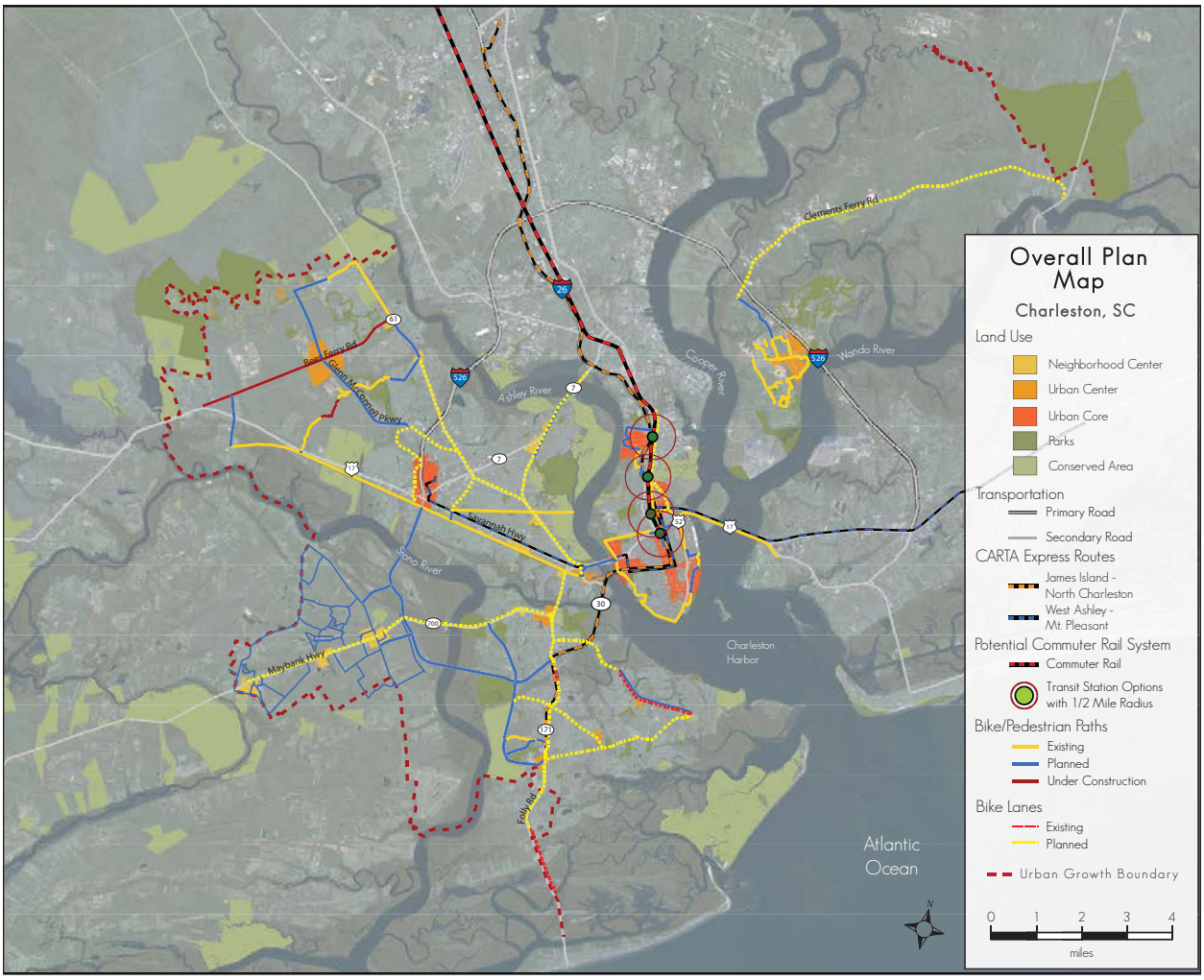


Figure 31_Diagram showing the overall Century V Master Plan for the Charleston Tri-County Area.
Source: City of Charleston's *Century V Plan Update*, p.123

Figure 32_Aerial image of the Charleston peninsula diagramming out the "urban fabric boundary".
Source: Cooper, Robertson & Partners, p.II.3

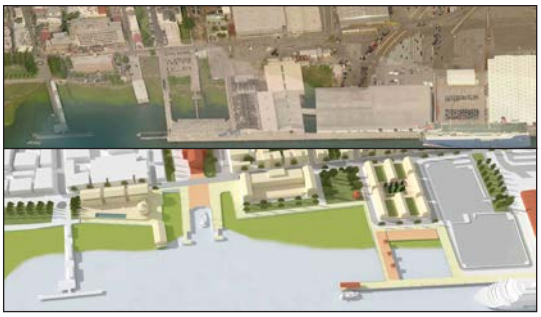


Figure 33_Photograph of Union Pier Terminal's waterfront today versus Cooper, Robertson & Partners concept plan of Union Pier Terminal's waterfront redesign.
Source: Cooper, Robertson & Partners, p.I.4

Figure 34_Plan view of the Union Pier Terminal's waterfront concept plan.
Source: Cooper, Robertson & Partners, p.IV.1

2_*Union Pier Terminal Proposal*

In September 2010, the South Carolina State Ports Authority appointed Cooper, Robertson & Partners to design a concept plan for the Union Pier waterfront. This concept plan aims to provide a new cruise terminal location and layout, to respond to today's increased cruise requirements for security, to alleviate traffic on the surrounding streets and infrastructure, to enhance the civic and economic value of Union Pier, and to increase access to the Charleston waterfront for the general public (Cooper, Robertson & Partners, I.1).

Throughout the plan, the needs and interest of the Port and the City have been considered, along with the individual citizens (Cooper, Robertson & Partners, I.1). The relocating and designing of a new cruise terminal, that keeps with the character of historic Charleston, has been one of the major concentrations in the Union Pier concept plan. The cruise ship terminal is currently located at the southern end of Union Pier, in front of the United States Custom House. It is recommended that the new terminal be located at the northern end of Union Pier where the Market Street waterfront view will not be obstructed when a cruise ship is docked.

With this new location, long-term parking could be accommodated at grade without blocking the flow of local traffic. The current paves areas in the northern end of Union Pier provide passenger vehicular parking in close proximity to the ship. The Ground Transportation Area and service areas can also be located in these already paved, adjacent areas of the terminal. With this area already being paved, it saves on the cost of development (Cooper, Robertson & Partners, I.3). Having the area to separate passenger drop-off and pick-up zones from other forms of traffic can minimize the traffic congestion. This traffic falls into the category of local and cruise related traffic (Cooper, Robertson & Partners, I.3). The ease of operations for the cruise ship passengers was taken into consideration on the inside of the building, as well as on the outside. The new proposal had to work with today's improved cruise security requirements.

Figure 35_Diagram showing new cruise ship terminal location in comparison to existing location and rendering of new cruise ship terminal.
Source: Union Pier Cruise Terminal Website <http://www.scspa.com/UnionPierPlan/gallery.html>

Figure 36_Transportation analysis of regional and local access to Union Pier Terminal.
Source: Cooper, Robertson & Partners, p.III.18

Figure 37_ Daily traffic volumes around Union Pier Terminal.
Source: Cooper, Robertson & Partners, p.II.15

Figure 39 shows the typical routes the cruise ship passengers would take to get to Union Pier. The Market Study, done in 2007, indicates that 5% of passengers come in by US 17 South, 5% come in by US 17 North and 90% come in by I-26. History shows that 15% of the cruise ship passengers stay on the Peninsula overnight (Cooper, Robertson & Partners, III.17). Zooming more into the regional and local streets, Figure 40 shows the daily traffic volumes of streets that serve Union Pier. East Bay is a vital north-south link on the east side of the Peninsula, serving approximately 21,000 vehicles a day (Cooper, Robertson & Partners, II.15). This four-lane roadway connects to I-26 on the northern end of the Peninsula, but not before becoming Morrison Drive, then Mount Pleasant Street (Cooper, Robertson & Partners, II.15). Washington Street is located in the northern of the site and serves approximately 6,200 cars a day. This is a two-lane roadway consists of a series of sharp turns prior to becoming Concord Street (Cooper, Robertson & Partners, II.15). Revised access and transportation systems are designed with intentions of major intersections being evaluated and Concord Street being added back to the Charleston city grid. Concord Street currently runs parallel to East Bay Street and is adjacent to Union Pier. An increase in wayfinding signs will be used to direct traffic to use Concord to access the cruise terminal (Cooper, Robertson & Partners, III.17). Washington Street, as well as Chapel Street, is recommended to improve to help with more frequent use.

Calhoun Street and Market Street are the major east-west streets connected to Union Pier. Calhoun Street is a four-lane roadway providing direct access to US 17. Market Street connects King Street and Concord Street and is made up North Market Street running west along the Market Street sheds and South Market Street running east. You will find pedestrian traffic at a high percentage along Market Street with the Market Street sheds and adjacent shops known as major tourist attractions.

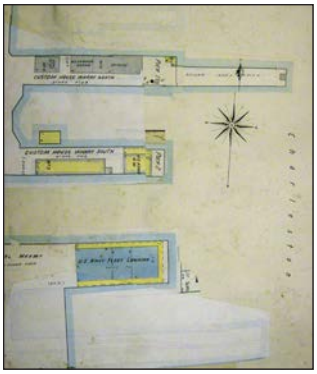


Figure 38_1902 Sanborn map with updates through 1952 of Custom House Wharf.
Source: Cooper, Robertson & Partners, p.IV.39

Figure 39_Current and proposed conditions of historic public plaza and access to Custom House Wharf.
Source: Cooper, Robertson & Partners, p.IV.40

Figure 40_Early 20th century photograph of public landing.
Source: Cooper, Robertson & Partners, p.II.9

The restoration of the historic landing at the east end of Market Street is a key component for the Union Pier Concept Plan. By relocated the cruise ship terminal to the northern end of Union Pier, this allows for the creation of a historic landing in front of the United States Custom House. The design is proposed with intentions of revealing the original granite slips of the Custom House Wharf located on Pier 1 and Pier 2 (Cooper, Robertson & Partners, IV.39). This historic wharf can be seen in the 1902 Charleston Sanborn map shown in Figure 41 as well as the early 20th century photograph in Figure 44. The Custom House, as well as the Public Landing, marks the waterfront "terminus" of Market Street (Cooper, Robertson & Partners, IV.39). There is also a public plaza proposed for this public landing that will be located at the foot of the Custom House. The intention of this plaza is to provide a public gathering place where you can enjoy a view of the Cooper River. The public landing will provide access to small boats, for those that wish to access Market Street with ease (Cooper, Robertson & Partners, IV.39). With the restoration of this historic landing, it will give the individual the opportunity to experience an appropriate entrance into Charleston. Cooper, Robertson & Partners explains, "Seen from the steps of the Custom House or from the water, a restored public landing with a vibrant marsh will provide the postcard view of the city once more" (Cooper, Robertson & Partners, IV.39).

The portion of the Union Pier Terminal, currently used for the cruise terminal, should be made available for development once the terminal is relocated. This area should be made available for private development, as well as public infrastructure (Cooper, Robertson & Partners, I.3). Other important aspects of the Union Pier design proposal include the redevelopment of the South Carolina State Ports Authority existing buildings and decks. A recommendation is made to use this waterfront property and create an exciting, mixed-use neighborhood. The historic neighborhoods are also considered with the proposal to extend existing city streets

Figure 41_1884 Sanborn detail of Bennett Rice Mill.
Source: Cooper, Robertson & Partners, p.IV.47

Figure 42_ Present day photograph of the Rice Mill Facade.
Source: Cooper, Robertson & Partners, p.IV.47

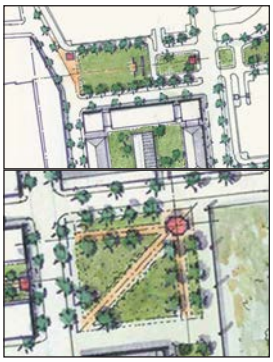


Figure 43_Detail of proposed Rice Mill Park and proposed Union Pier Park. Plan view of the Union Pier Terminal's waterfront concept plan.
Source: Cooper, Robertson & Partners, p.IV.47

to the water's edge. This extension will allow views and connections from the neighborhoods to the waterfront (Cooper, Robertson & Partners, I.3).
The Union Pier Concept Plan will also coordinate with some of the bigger City plans already in motion. One example is the coordination with the Market Street Drainage Project. Steps are being taken to improve the drainage on Market Street due to the frequent flooding after rains and/or high tides. There are also improvements along Washington and East Bay Street that are being considered. The South Carolina State Ports Authority also has intentions of reestablishing Charleston's natural waterfront in this area (Cooper, Robertson & Partners, I.3). This reestablishment process should be phased to coordinate with the other construction on the site.

There are four special areas within the Concept Plan. These four areas are tied to the "past, present, and the future of the working waterfront and therefore inextricably linked to industry and the residents of Charleston" (Cooper, Robertson & Partners, IV.35). Two concepts that have been discussed prior in this chapter include the restoration of the historic landing and the restoration of the natural shoreline. The two additional special initiatives include the creation of Rice Mill Park and Union Pier Park. Rice Mill Park will focus on the restoration and importance of Bennett's Rice Mill and the last standing symbolic structure, the façade. The Union Pier Park will consist of a pavilion for the history of the waterfront. With all the design proposals taken into consideration, the Union Pier Concept Plan wants to ultimately "honor the history of Charleston's waterfront" (Cooper, Robertson & Partners, I.3).

Figure 44_Proposed parking conditions and service routes.
Source: Cooper, Robertson & Partners, p.IV.24

Figure 45_Pedestrian network diagram showing esplanades and sidewalks.
Source: Cooper, Robertson & Partners, p.IV.27

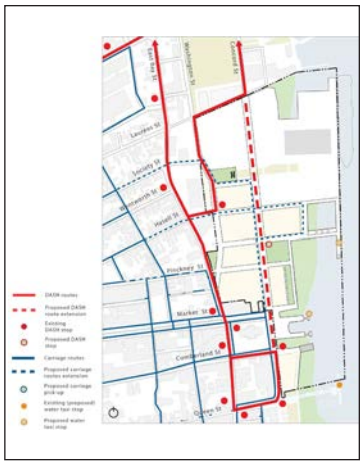


Figure 46_Proposed and existing transit routes.
Source: Cooper, Robertson & Partners, p.IV.25

Figure 47_Primary and secondary streets.
Source: Cooper, Robertson & Partners, p.IV.20

Figure 48_View corridors.
Source: Cooper, Robertson & Partners, p.IV.8

Figure 49_Zones for potential bonus height diagrammed in blue.
Source: Cooper, Robertson & Partners, p.IV.30

Figure 50_Conceptual illustration. Axon and Elevation of the Union Pier Concept Plan.
Source: Cooper, Robertson & Partners, p.IV.3 & IV.2

PART 3_ **referencing**

Figure 51_Potential three ferry terminal site.
Source: Ove Arup & Partners California Ltd, p.15

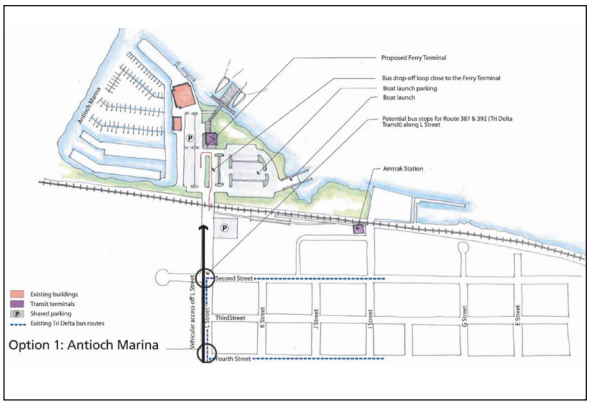


Figure 52_Option 1: Antioch Marine terminal site.
Source: Ove Arup & Partners California Ltd, p.17

3_*Water Transit Authority – Antioch Ferry Terminal*

Ove Arup & Partners California Ltd presented a proposal for the Antioch Ferry Terminal's alternative locations. This presented case study is a ferry terminal project on a larger scale. Rather than zooming in on the architectural details of the terminal, this referenced document has to do with the beginning stages of the project and deciding the most beneficial terminal location on the Antioch coast. The presentation consists of three alternatives and explains the strengths and weaknesses with each one on a larger scale of the city.

The California Legislature created the San Francisco Bay Area Water Transit Authority (WTA) in 1999. The WTA's focus was to relieve the traffic congestion in the Bay Area. This was to be accomplished by developing a plan of a ferry transit system that would enhance the region's transportation system (Ove Arup & Partners California Ltd, 1). The system would be cost effective, convenient, and environmentally responsive (Ove Arup & Partners California Ltd, 1). The water transit route is being proposed for the connection of the City of Antioch and San Francisco to one another. This connection will either be a direct route between Antioch and San Francisco or a combined route from Antioch to San Francisco with a stop in Martinez (Ove Arup & Partners California Ltd, 3). The three main purposes for this new transportation route is to offer a transit link in an area of Antioch that is targets for redevelopment, develop a new mode of transportation for both commuters and casual users to cut down on vehicular congestion on the streets, and to help strengthen the position of downtown within the city of Antioch (Ove Arup & Partners California Ltd, 1).

The three potential terminal locations consist of the Antioch Marina, Downtown, and the Fulton Shipyard. The Antioch Marina is located at the end of L Street and currently includes a place to house boats, a waterfront restaurant, a public fishing pier, several office/retail storefronts, and a park. The Marina serves both recreational boats and sailboats (Ove Arup & Partners California Ltd, 15). Space would be available for a small ferry terminal building on this site. After sharing the parking lot with the Marina, approximately 150 parking spaces

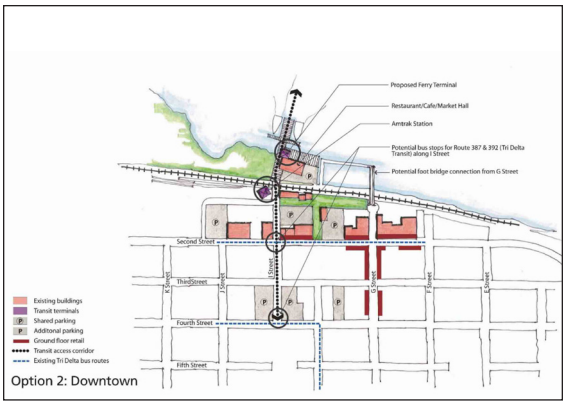


Figure 53_Option 2: Downtown terminal site.
Source: Ove Arup & Partners California Ltd, p.19

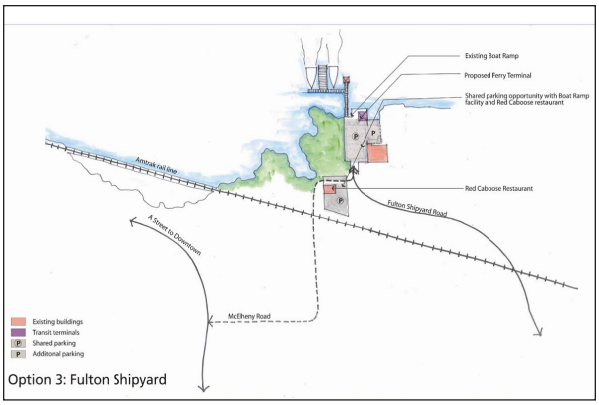


Figure 54_Option 3: Fulton Shipyard terminal site.
Source: Ove Arup & Partners California Ltd, p.21

would be available for ferryboat passengers. The strengths with this site location include the close proximity to a large amount of parking, the constant service by buses, convenience to State Route 4, and fewer construction impacts. This site has the potential for great pedestrian connections with Amtrak (Ove Arup & Partners California Ltd, 24). The disadvantages of this location include the distance from downtown, poor links to downtown for pedestrians and bicycle users, lack of integration with downtown land uses, existence of at-grade rail crossings, location on the outskirts of downtown, could require the park to accommodate parking (Ove Arup & Partners California Ltd, 24).

Another location option includes Downtown, which is located at the end of I Street. The existing pier near the Amtrak location would be used as the ferryboat landing, resulting in a direct connection to Amtrak and local buses. This location would also have a connection to Downtown favorable to pedestrians and cyclists. The parking for the ferryboat users could be shared with existing City parking lots in the Downtown area. This location, similar to the Marina, has good access from State Route 4 by A Street (Ove Arup & Partners California Ltd, 25). This site adds opportunity to provide a public green space for the Downtown and ultimately aids in the revitalization efforts of Downtown altogether. Although the ferryboat users could share parking with the existing Downtown parking lots, additional parking would have to be provided (Ove Arup & Partners California Ltd, 25). Another constraint of this location is the impact construction will have on the streets of Downtown. Similar to the Marina location, pedestrians would be forced to cross over the railroad tracks to get to the pier, which would be dangerous. With that taken into consideration, another constraint is the limited of accessibility of emergency and service vehicles that site proposes (Ove Arup & Partners California Ltd, 25).

The last option, Fulton Shipyard, is located on the east edge of downtown. The strengths of this site include the adequate space for parking and minor construction impacts on neighborhoods (Ove Arup & Partners California Ltd, 26). Unlike the previous two options, this site has grade-separated rail crossing. This site is also accessible from State Route 4 via A Street. This site has many disadvantages that include the distance from Downtown, difficulty of bus service and connections with the Amtrak, and poor pedestrian and bicycle connection to downtown. This location is not incorporated with downtown land uses (Ove Arup & Partners California Ltd, 26).

After all the strengths and constraints were considered for each location, along with existing conditions in Antioch, the decision was made to locate the ferryboat terminal at the Downtown site (Ove Arup & Partners California Ltd, 28). This is a great precedent to study when it comes to deciding the location of a site. This Antioch Ferry Terminal report displays a thorough and well thought out process to consider.

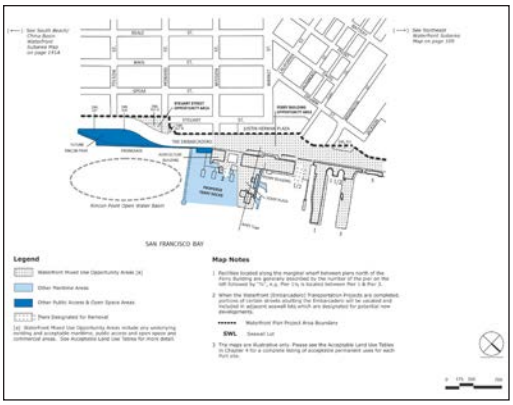


Figure 55_Plan diagram of the Ferry Building waterfront revitalization.
Source: San Francisco Port Department, p.127

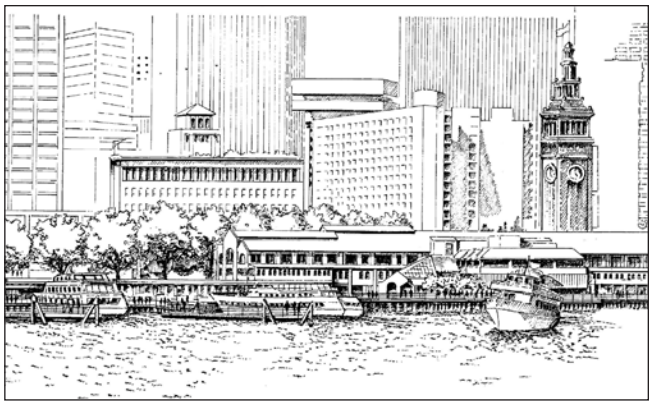


Figure 56_Drawing of the plans for the expansion of ferry operations at the Ferry Building.
Source: San Francisco Port Department, p.123

3_*The Ferry Building Waterfront – San Francisco*

This precedent addresses the revitalization of the San Francisco waterfront located in front the Ferry Building. The Ferry Building is a landmark in the city of San Francisco and is also listed on the National Register of Historic Places. This building was originally named the Union Depot and Ferry House when it was opened in 1898. It serves as a historical symbol of entry and departure site into the City (San Francisco Port Department, 119). Over the years, additions to the city, such as the Embarcadero Freeway, have masked the importance of this city beacon and kept the public from interacting with the building. The objective of this proposal is to restore the Ferry Building to its historic role as a transportation hub and icon on the waterfront (San Francisco Port Department, 118).

Even though the Ferry Building is still a key orientation point for the downtown, it is currently lacking “the sense of place and purpose that should be accorded a building of such historic importance” (San Francisco Port Department, 119). With the demolishing of the Embarcadero Freeway in 1992, it turned the community attention back to the Ferry Building as being a symbol of the primary gateway into San Francisco (San Francisco Port Department, 120). This report proposes a plan to not only return the functions to this area, but also introduce new activities and connections to the water.

The solution to revitalizing this urban waterfront is to provide a mix of uses the “emphasize the civic importance of the area, generates waterfront activity and serves San Franciscans and visitors alike” (San Francisco Port Department, 120). A range of uses, such as maritime, commercial, civic, open space, recreation, and other waterfront activities are being considered for the site. This design of the waterfront will be taking both the locals and the tourists into consideration, resulting in a place in which everybody can could use and feel welcomed. A boardwalk feature will be incorporated to allow for waterfront pedestrian access (San Francisco Port Department, 122). Waterfront parking is something that San Francisco will be attempted to do away with so it can be replaced with proposed activities in that area. Another

Figure 57_Drawing of the potential activities that could take place along the Ferry Building waterfront.
Source: San Francisco Port Department, p.121

Figure 58_Photograph of the public enjoying the Embarcadero Promenade and the want for this design to enhance this quality.
Source: San Francisco Port Department, p.122

Nationally Registered building, known as the U.S. Agriculture Building, stands just to the south of the Ferry Building (San Francisco Port Department, 119). Both the Ferry Building and the U.S. Agriculture Building serve as office space, which lessens their historic character. The U.S. Agriculture Building will be taken into consideration during the revitalization process of the San Francisco waterfront. The historic significance of both the Ferry Building and the U.S. Agriculture Building will be reestablished. A mix of public and private uses will be needed to design a successful multi-use waterfront.

Figure 59_Whitehall Ferry Terminal 1992 scheme. View from across the harbor.
Source: Von Moos, p.181

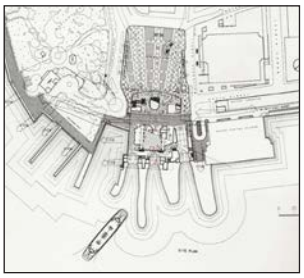


Figure 60_Whitehall Ferry Terminal 1992 scheme. Site Plan.
Source: Von Moos, p.182

Figure 61_Whitehall Ferry Terminal 1992 scheme. Interior rendering of the main hall.
Source: Von Moos, p.183

3_*Whitehall Ferry Terminal*

The Whitehall Ferry Terminal was a project located on New York City's waterfront. Robert Venturi and Denise Scott Brown won this design competition sponsored by the Economic Development Corporation of New York City in 1992 (Von Moos, 180). This project is a great precedent because it shows a ferryboat terminal's potential to be a beacon from the water's perspective.

An important element of Venturi and Scott Brown's 1992 scheme of the Whitehall Ferry Terminal was the design of the electronic clock facing the water. This clock was made up of LED pixels and depicted the "hands" moving around the face of the clock. The clock was symbolic to the historical significance of a clock to the railroad terminal. These clocks were both decorative and functional, due to the fact that many train passengers did not own watches (Von Moos, 180). When it comes to civic presence, Venturi and Scott Brown explain "In an era when civic place has been supplanted by shopping centers, the new Whitehall Ferry Terminal is an unparalleled opportunity to create a civic setting that celebrate New York City and enhances the daily routine of 70,000 commuters" (Brownlee, 145). The terminal was made up of a barrel vault shape that seemed to float behind the clock. This design addressed the standpoint from Manhattan, as well as that of Staten Island (Von Moos, 180). After disapproval of this design from both the public and the president of the borough of Staten Island, Guy Molinari, a second scheme had to be designed (Brownlee, 145).

This disapproval, as well as a budget cut, brought about a new design in September 1994 (Brownlee, 145). By June 1995, drawings were revealed of the new Whitehall Ferry Terminal design with an elimination of the clock and barrel vault. This new design contained a more complex program to accommodate the existing underground and aboveground circulation. The new program also required a car-on-ferry system (Von Moos, 180). The LED clock was replaced with an electronic LED signboard. The wavy curves of this signboard distinguished itself from the rectangular shapes of the buildings behind the terminal that formed the New

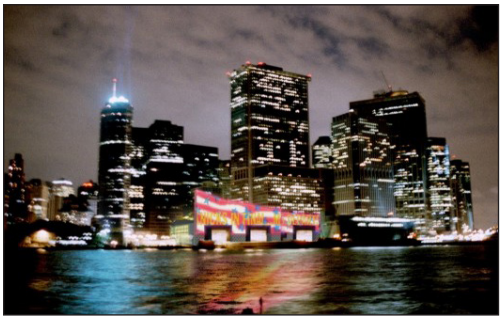


Figure 62_Whitehall Ferry Terminal 1995 scheme. View of LED signboard from across the harbor at night.
Source: Von Moos, p.187

Figure 63_Whitehall Ferry Terminal 1995 scheme. View of LED signboard from across the harbor in the day.
Source: Von Moos, p.187

Figure 64_Venturi, Scott Brown and Associates 1989 competition entry for the 1992 Seville Expo.
Source: Brownlee, p.145

York City skyline. The LED signboard would change according to the schedules of the ferries (Von Moos, 180). When the ferries were at a greater distance, the signboard would portray more bold, symbolic images. An example of this type of image is the waving American flag that symbolizes Venturi, Scott Brown and Associates 1989 competition entry for the 1992 Seville Expo shown in Figure 71 (Brownlee, 145). As the ferries approach the terminal, smaller-scale images begin to project from the signboard. These images are also informational to the time and place of arrival (Von Moos, 180).

This 1995 design of the Whitehall Ferry Terminal received the same disapproval as the 1992 design. The constant disapproval resulted in the project never being built, ultimately loosing an opportunity to build not only a symbolic structure, but a civic structure for New York City.

Figure 65a_View 1 and 2 of the Stanley Saitowitz viewing tower for Mill Race Park in Columbus, Indiana.
Source: Greyscle Website by Carbone

Figure 65b_Aerial view of Mill Race Park showing its location to Downtown Columbus, Indiana.
Source: Grounds for Change Website < www.gfcactivatingland.org>

3_*Additional Case Studies*

Just because a city's waterfront has a ferryboat terminal, this does not necessarily qualify as a successful connection with the water. In addition to the ferryboat terminal, other factors can be considered, such as a restaurant, commercial space, residential space, maritime center component, viewing tower, and public entertainment component. Any direct interaction an individual can safely have with the water can be one of the strongest additional factors.

A viewing tower, or rooftop terrace can be a strong addition to a waterfront. This allows you to have a 360-degree perspective of the city and the water. Lining this structure up with a strong axis to the city could also have its advantages. Stanley Saitowitz's design of the Mill Race Park observation tower gives us an example of the success of such a structure. This tower was designed, along with the other Mill Race Park structures, in Columbus, Indiana between 1990 and 1992 (Lin). Michael Van Valkenburgh designed this 86-acre downtown riverfront park, while Stanley Saitowitz designed the structures (Carbone). Figure 73 and Figure 74 show the unique qualities the observation tower has on each side. These unique sides of the tower make the journey up to the top an experience. The aerial view of the park shows how this observation tower is on axis with one of the main streets of Downtown Columbus, making the destination to the top even more inviting.

When suggesting a direct interaction with the water, the redevelopment of the Chattanooga, Tennessee waterfront is a wonderful precedent to think about during the design stages. In 2005, the River City Company managed the 21st Century Waterfront project that took place on the Chattanooga waterfront. The project totaled at 129 acres of waterfront property on the north and south side of the Tennessee River. Hargreaves Associates developed the master plan, with the help of Schwartz Silver Architects (Hargreaves Associates). These firms took the history of Chattanooga into consideration and incorporated these unique qualities into distinct characters of the design. The location of this project is where the original founding of Chattanooga took place (Hargreaves Associates). The goal of the design was to also

Figure 66_Photograph showing how Chattanooga's waterfront reconnects the people with the water.
Source: Hargreaves Associates Website < http://www.hargreaves.com/projects/Waterfronts/Chattanooga/>

Figure 67_Chattanooga, Tennessee 21st Century Waterfront Park at night.
Source: Hargreaves Associates Website < http://www.hargreaves.com/projects/Waterfronts/Chattanooga/>

Figure 68_Chattanooga, Tennessee 21st Century Waterfront Park at night.
Source: <http://www.sitephocus.com/blog/?p=194>

connect the city to its waterfront. The connection was accomplished with open space and infrastructure taking up 83 acres out of the 129 of the total project. The remaining 46 acres were used for mixed-use development (Hargreaves Associates). Figure 77 and Figure 79 show aspects of this design the specifically concentrate on the physical connection of the visitor with the water. Figure 78 also shows the use of artificial light to attract people to that Chattanooga waterfront at night. Hargreaves Associates explains how this design makes "the city's goal of 'living, working, playing and learning at the river' a reality" (Hargreaves Associates).

The incorporation of these additional features could be crucial for a successful waterfront revival project. The locals, as well as the visitors, could be driven to the waterfront thriving for that connection with the water, the social interaction, the night life, or a simple view you cannot get anywhere else in the city.

Figure 69_Aerial view of Chattanooga 21st Century Waterfront Park.
Source: Hargreaves Associates Website < http://www.hargreaves.com/projects/Waterfronts/Chattanooga/>

PART 4_ **locating**

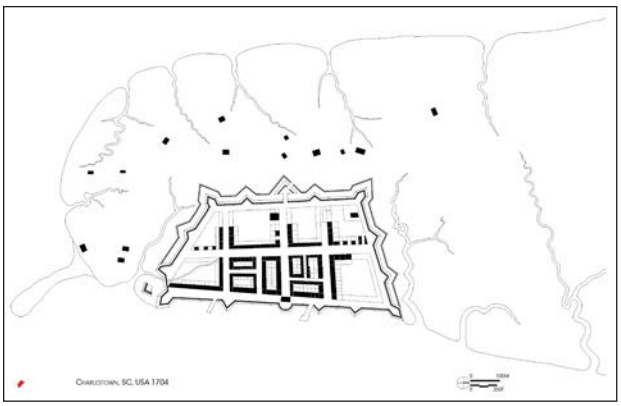


Figure 70_Figure Ground Diagram of Charleston, South Carolina in 1704.
Source: Graves, p.106

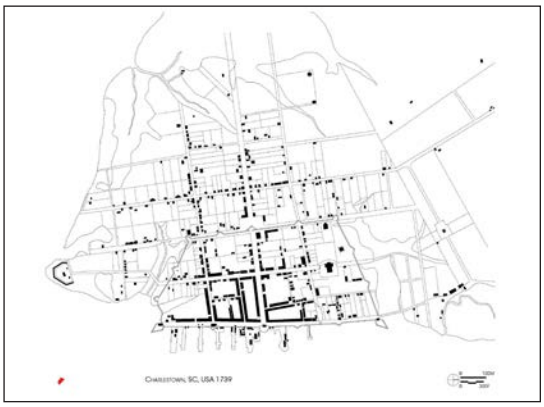


Figure 71_Figure Ground Diagram of Charleston, South Carolina in 1739.
Source: Graves, p.107

4_*Charleston's Development Over Time*

Thinking about a location of study that is full of history, has a strong relationship with the water, and attempting to adapt to this contemporary time period, Charleston, South Carolina comes to mind. In 1663, King Charles II of England granted the Carolana territory to the eight Lords Proprietors (Poston, 16). This territory was later named Carolina. Charleston was named after King Charles II himself. In 1670, English settlement occurred at Albemarle Point. This was the first English settlement south of Virginia and it took place several miles inland of the current location of the city of Charleston (Poston, 16). It was not until ten years later, Charles Town officially moved to its new and current location, on the peninsula between the Ashley and Cooper Rivers. It did not take but another ten years before there were more than a hundred houses built in the city, along with a developing large brick wall surrounding the city completely (Poston, 24). The wall represented the earliest architecture development of the urban core. The wall included corner fortresses and a drawbridge where Broad Street intersects Meeting Street today (Poston, 24). Referencing historic maps, such as Figure 80 and Figure 81, you can begin to see the baroque city grid that formed inside the city walls, along with a central square. The wall was completed in 1704 to ward off Spanish attacks by sea, and remained standing until 1719 (Poston, 17).

Charleston, South Carolina is one of the largest historic districts in the United States. This city has experienced a lot of hardship through the years with wars, fires, hurricanes, and much more. Some of the most noteworthy natural disasters that Charleston experienced include the fire in April of 1838, destroying 150 acres and the earthquake on August 31, 1886, measuring 7.3 on the Richter scale and doing $6 million in damage. Then the night of September 21, 1989, Hurricane Hugo ripped through the coast doing $2.8 billion in damage (Poston, 20-22). Charleston also experiences constant flooding due to heavy rain and/or the rising tides.

Figure 72_Map of Charleston, South Carolina from 1711 showing the city walls.
Source: Cooper, Robertson & Partners, p.II.3

Figure 73_Map of Charleston, South Carolina from 1780.
Source: Cooper, Robertson & Partners, p.II.4

Figure 74_Map of Charleston, South Carolina from 1885.
Source: Cooper, Robertson & Partners, p.II.4

Even with all the natural and manmade disasters Charleston has endured, the city still manages to proudly represent its historic character through architecture. It is not only the architecture, but also the strong cultural heritage and intimacy with the water that keeps people wanting to come see such a place. For the third consecutive year, Charleston ranked the #1 top city in the United States and Canada in the *Travel + Leisure* 2013 World's Best Awards survey (City of Charleston). With Charleston also ranking the #7 top city in the world in the *Travel + Leisure* 2013 World's Best Awards readers' survey, Charleston continues to uphold its reputation as a travel destination (City of Charleston). As Breen and Rigby explain, "Charleston, South Carolina is an example of a city that is popular due to revolving the cultural tourism around the celebration of the community's heritage" (Breen and Rigby, 7). This is evident with tourism being Charleston's leading source of revenue with the Charleston Port taking a close second.

The following page shows the development of the Charleston Peninsula in seven stages, starting as early as 1690. Each color on the key symbolizes the era in which that building as built. These eras include the Colonial Era from 1690 to 1782, the Federal Era from 1783 to 1820, the Antebellum Era from 1821 to 1865, the Post-Bellum Era from 1866 to 1886, the Victorian Era from 1887 to 1900, the Renaissance Era from 1901 to 1945, and the Modern Era from 1946 and on. With the original high water and the Charleston Peninsula color coded in every diagram, you can see how the development moved from the inside of the Peninsula to the water's edge over the years. Even with the movement of development towards the water's edge, the city feels an even more disconnect from the water today than it ever has.

Charleston, SC Peninsula Historic Development Over the Years

Source: Historic Charleston Foundation

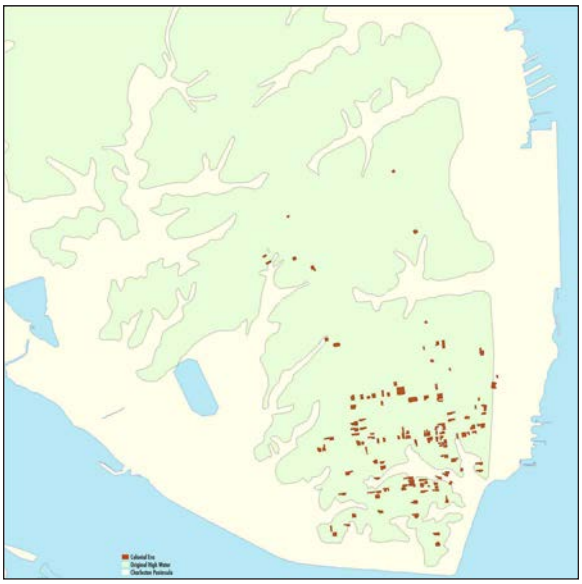


Figure 75a_1690-1782

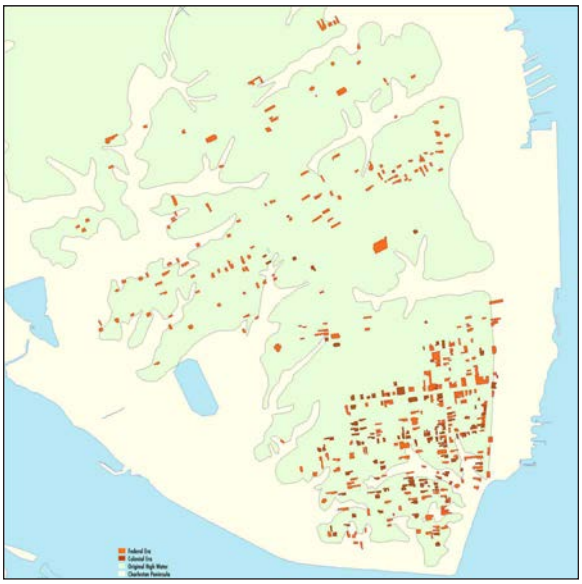


Figure 75b_1783-1820

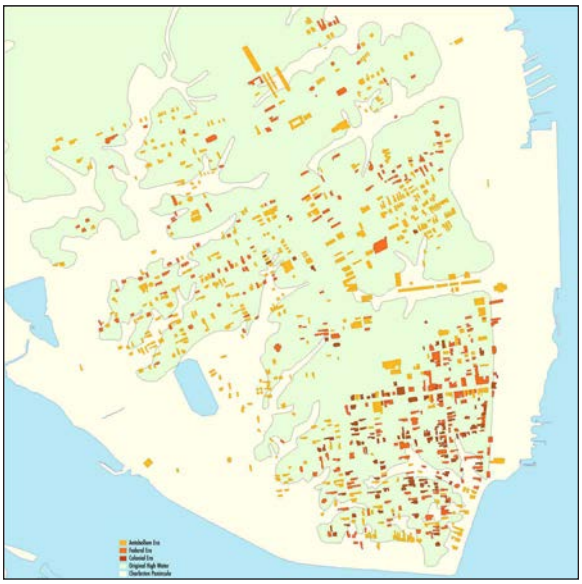


Figure 75c_1821-1865

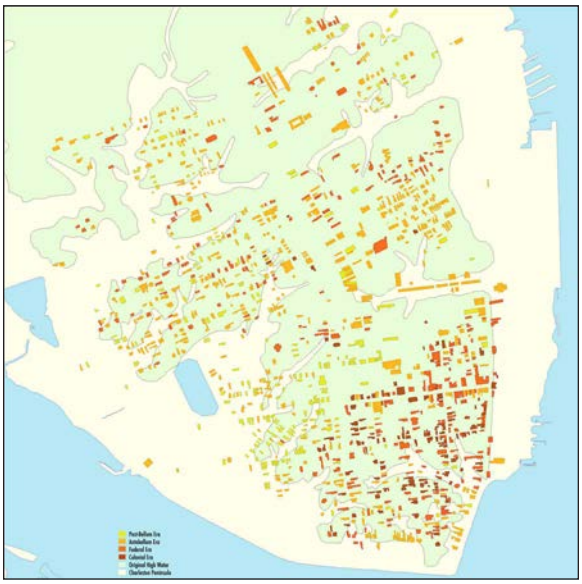


Figure 75d_1866-1886

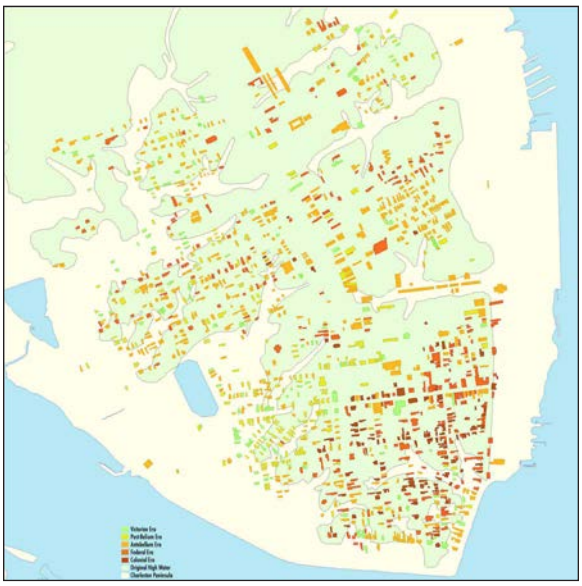


Figure 75e_1887-1900

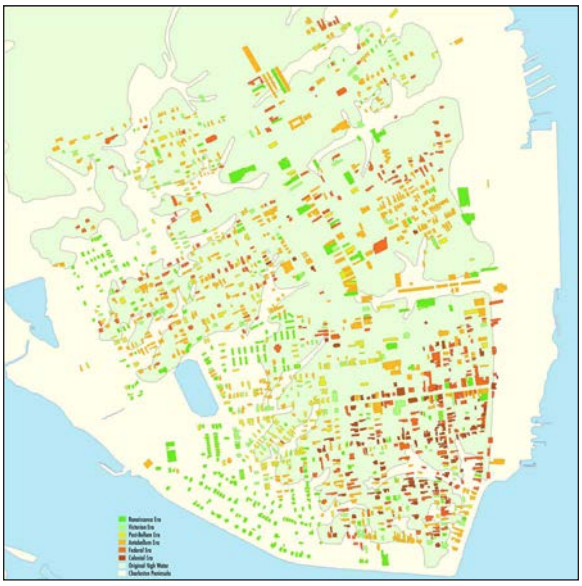


Figure 75f_1901-1945

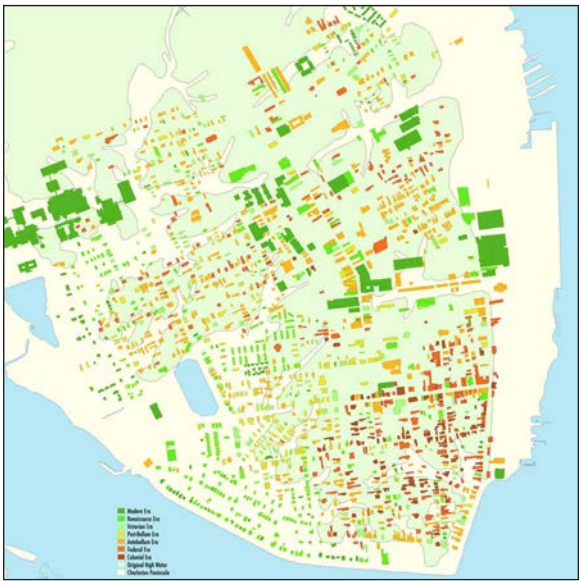


Figure 75g_+1946

Figure 76_Topographic map of Charleston, SC.
Source: <http://www.ces.clemson.edu/scmaps/Pages/9/Charles.htm>

Figure 77_Map locating of the 5 current port terminals and the location of the proposed additional terminal.
Source: < www.maritimesc.org>

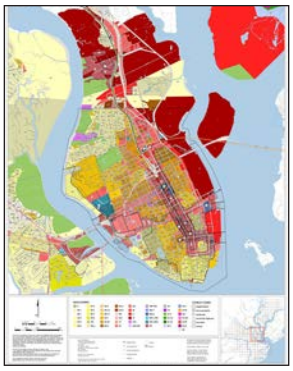


Figure 78_Zoning map and key of Charleston peninsula.
Source:<gis.charleston-sc.gov/library/webmaps/ZoningPen.pdf>

4_*The Charleston Peninsula and Harbor*

As discussed in the City of Charleston Century V Plan subchapter in Chapter 2, the proposed study area for this thesis is located on the Charleston Peninsula. The Charleston Peninsula has always had a strong connection with the water since settlement in the late 1600's. It only took 2 years after the 1670 settlement to decide to move the town site to Oyster Point. Oyster Point is located in the lower part of the peninsula between the Ashley River and Cooper River. In 1672, the decision was made to survey this area and the move was made in 1679 (Poston, 16-17). In 1680, Charles Town was officially moved to the new location on the lower part of the peninsula (Poston, 17). This move was made primarily due to the defensive capabilities and the port potential the peninsula held in comparison to Albemarle Point (Poston, 16).

Those individuals responsible for the move of the Charles Town site location were proven to be correct with their predictions. Charleston is known for some of its fortresses that are still standing today and symbolic to the historical character of the city. On April 12, 1861, the Federal forces at Fort Sumter fired the first shots of the Civil War. This shot initiated the War Between the States (Poston, 21). People from all over come to see Fort Moultrie, the water-surrounded Fort Sumter, and the smaller fortresses like Castle Pinckney. Charleston is proof that Mark Fletcher is accurate in his book, Islands: Contemporary Architecture on Water, when is explains the advantage of a water-surrounded fortresses. Fletcher explains that surrounding water can prevent invaders from digging tunnels and being able to easily bring weapons close to the fortress walls (Fletcher, 10). Due to Charleston's water-surrounded fortresses, cannons were used to fire shots from one island to another across the waterway. The southern most tip of the Peninsula is were the majority of the cannons were shot in the direction of Fort Sumter, across the water. Today, this area of the Peninsula is called the Battery, where cannons can still found symbolizing that important era in Charleston's history.

Figure 79_Edge conditions diagram of the Charleston peninsula. Source: Cooper, Robertson & Partners, p.II.6

Figure 80_Charleston Peninsula natural edge, mostly made up of marshland. Source: Cooper, Robertson & Partners, p.II.5

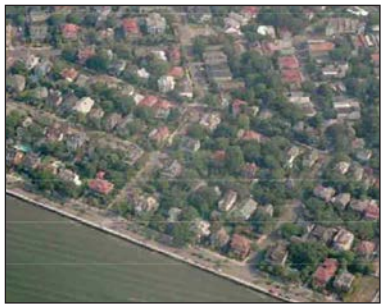


Figure 81_Charleston Peninsula urban edge, located along the Battery. Source: Cooper, Robertson & Partners, p.II.5

The settlers were also proven to correct on their expectation of Charleston as a port. Charleston proximity to water proved to be very beneficial with the trading industry. Since the founding in 1680, Charleston has always held a reputation for being a center of trade. With the location of the peninsula being on the Ashley River and having a strong connection with the natural harbor, Charles Town was declared the colonies port of entry. It ranked the fourth largest port in the colonies behind Boston, New York, and Philadelphia (Cooper, Robertson & Partners, II.1).

Operating from out of five terminals today, the Charleston Port is at a close second to tourism for being the leading source of revenue in the city (Cooper, Robertson & Partners, II.1). These five terminals, located in Figure 86, include North Charleston Terminal, Veterans Terminal, Wando Welch Terminal, Columbus Street Terminal, and Union Pier Terminal. All five of these terminals are within two hours of sailing time from the open ocean (South Carolina State Ports Authority Website).

Charleston has the deepest water in the Southeast with 47 feet of depth at the entrance of the channel and 45 feet at the harbor channel and dockside at mean low tide. There are several hours during the day that this depth can increase five to six feet due to the tidal lift (South Carolina State Ports Authority Website). The channel has a minimum width of 500 feet and a maximum or 1,000 feet, with an additional feature of no air draft restrictions. The air draft refers to the distance from the surface of the water to the highest point of the vessel. Two bridges that must be considered when delivering to three out of the five terminals include the Arthur Ravenel Jr. Bridge and the Don Holt Bridge. The Arthur Ravenel was completed in July 2005 and is one of the third longest cable-stayed bridges in the Western Hemisphere. This bridge provides a clearance of 186 at mean high tide where the Don Holt Bridge provides a clearance of 155 feet (South Carolina State Ports Authority Website). The

Figure 82_Charleston Peninsula urban edge, located along Waterfront Park. Source: Cooper, Robertson & Partners, p.II.5

Figure 83_Charleston Peninsula industrial edge, located along Union Pier. Source: Cooper, Robertson & Partners, p.II.5

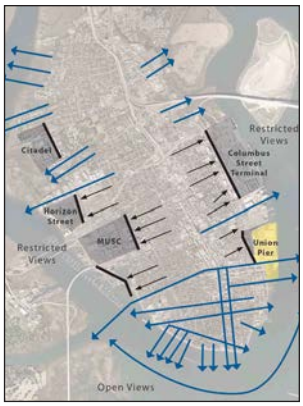


Figure 84_Water views from areas on the Peninsula in correlation with the edge conditions. Source: Cooper, Robertson & Partners, p.II.6

above aspects all factor into the success and importance the Port of Charleston has to the city as a whole.

The previous chapter maps out the development that has occurred on the peninsula over the years. The time has gone by, the development has drifted in the direction of the city's edge, or would it be the water's edge? This continuous development has begin to shape the edge of the Charleston Peninsula. Moving from one side of the peninsula to the other, you can notice three different edge conditions that are categorized in part by the buildings and/or activities taking place in that specific area. These three categories include the natural edge, industrial edge, and urban edge (Cooper, Robertson & Partners, II.6). Looking at Figure 88, you can notice the more natural marsh edges are located north of US 17. The urban edges tend to run along the Battery, which is the southern most part of the peninsula, as well as the newer waterfront developments. The industrial edges are located in areas most likely controlled by the Port of Charleston. These two areas on Figure 88 include the Union Pier Terminal and the Columbus Street Terminal (Cooper, Robertson & Partners, II.5).

These edge conditions have an impact on the waterfront views. Most of the waterfront views are available by street corridors or open spaces, such the open space located along the Battery (Cooper, Robertson & Partners, II.5). Waterfront views can also be found north of the historic district, along the natural edges. The downfall of these waterfront views, provided by the natural edges, is that they property may be restricted by larger users (Cooper, Robertson & Partners, II.5). The redesign of an area along the peninsula, such as the Union Pier Terminal, can provide an opportunity to transform a restricted-view edge to one that reveals the waterfront and celebrates its historic significance to the City of Charleston.

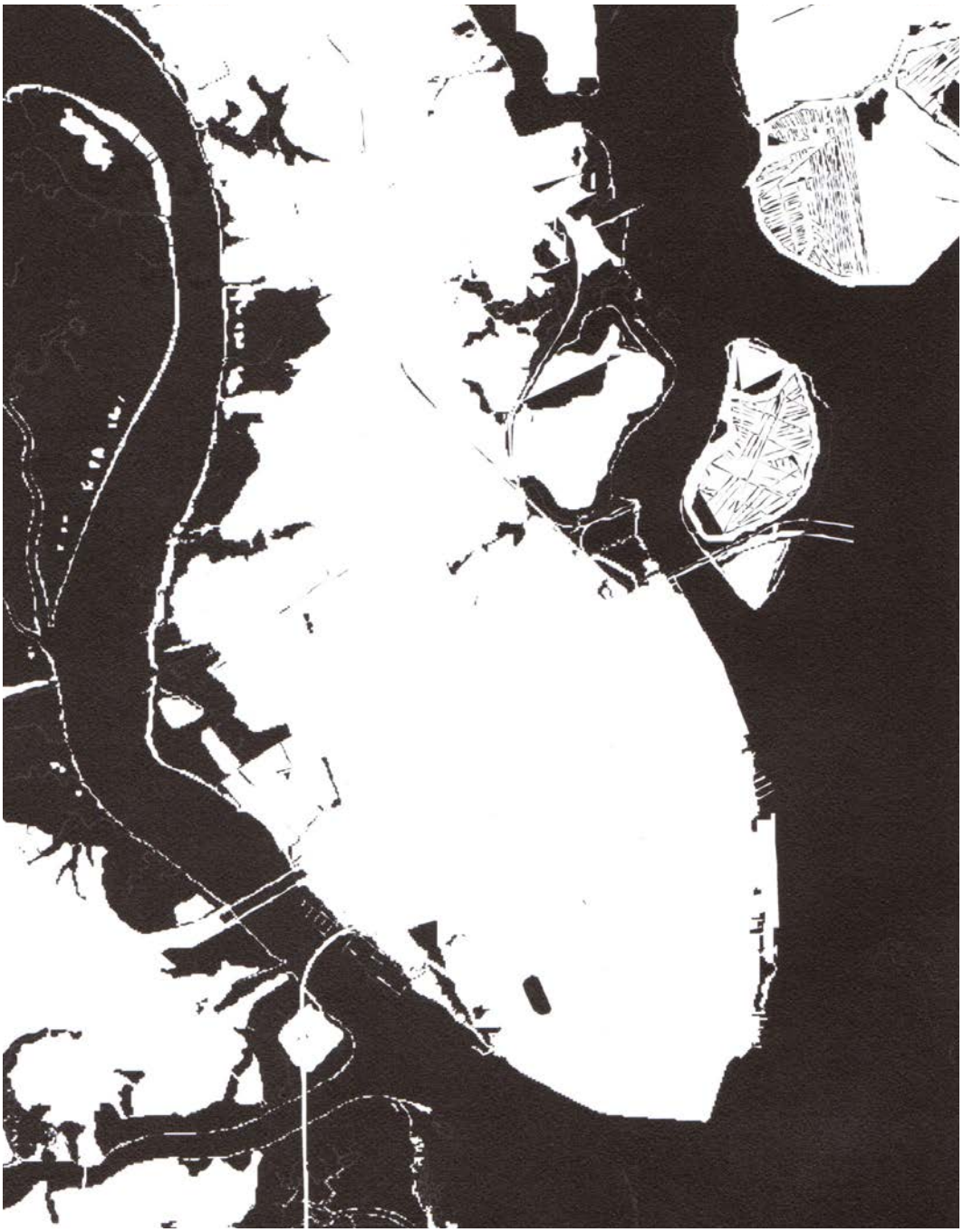


Figure 85_Water/Ground Diagram showing Charleston's intimacy with the water.
Source: Thesis Document of David James Baker *Tragedy, loss, and Memory: the use of rhetoric in making and marking a site*

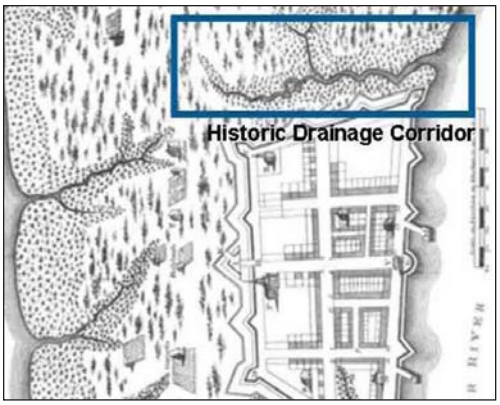


Figure 86_Historic Drainage Corridor on Market Street.
Source: Cooper, Robertson & Partners, p.II.10

Figure 87_Photo of the inside of Market Street sheds after it rains.
Source: Photo taken by Charles Merry from the Charleston City Paper

Figure 88_Existing storm water drainage.
Source: Cooper, Robertson & Partners, p.IV.32

4_*Market Street and Union Pier Terminal*

Market Street is one of the most popular sites for today's visitors to Charleston. The City Market is what attracts people to this part of Downtown. Long ago, you could buy beef, poultry, fish, fruit and vegetables at this market. Today, the City Market is the number one place visitors go to in order to purchase souvenirs or local and/or handmade crafts. You will also find Market Street lined with restaurants and other shops on either side. The open-air pavilions, which make up the City Market, are capped by the historical Market Hall built in 1841. Market Hall sits at the head of the market at the intersection of Market Street and Meeting Street and currently houses the Confederate Museum (Phelps, 83). In this museum, you will find memorabilia of the Charleston soldiers (Phelps, 83). You can still see the cattle and rams' heads displayed in the stucco frieze of the Market Hall building. This represents that fact that this was never the location of the slave market in Charleston (Phelphs, 83).

The Market Street sheds stretch from Meeting Street to East Bay Street, covering almost a third of a mile. The sheds once stretched down to the Cooper River, connecting Market Street with the water. The block of sheds, located between East Bay Street and Concord Street, were destroyed in 1930 by two tornadoes in one day (Phelps, 83). The connection Market Street now has with the Cooper River is not easily noticeable.

Market Street currently sits on a former tidal creek bed. This waterway is known as Daniel Creek (Phelps, 83). This creek as filled in by property owner, Charles Cotesworth Pinckney, and the City Market was built over it (Phelps, 83). Figure 95 shows how Daniel Creek use to serve as a drainage corridor. The effects of this infill are evident today when you experience a heavy rain. The historic brick arch drains have served as the main drainage feature on Market Street for about 200 years. These brick arch drains are about 2-1/2 feet wide by 2-1/2 feet high. They run underground from Market Street to just beyond Concord Street (City of Charleston Website). This was not a problem 200 years ago because sea level was about two feet lower than it is today. Flooding was not a frequent occurrence in the area

Figure 89_View of the Charleston Custom House from the late 1800's/early 1900's.
Source: Historic Charleston Foundation Website <http://lcdl.library.cofc.edu/contributing-institution/historic-charleston-foundation>

Figure 90_Photograph showing where the cruise ships currently sit when they are in port in relation to Market Street and the Custom House.
Source: National Trust for Historic Preservation Website <http://savingplaces.org/treasures/charleston>

(City of Charleston Website). This 200-year-old system is currently not working to its fullest capability due to the build up of sediment. As a result, any storm water that falls does not get removed in a timely matter along Market Street. This causes the area to flood quite quickly and vastly. Rain can easily flood Market Street to the point where canoes can be taken from shed to shed. The City of Charleston is currently taking on a project to improve the drainage system along Market Street.

Today, you can usually find a Carnival Cruise ship docked perpendicular to Market Street, ultimately obstructing the waterfront view from this historic City Market. For over the past 40 years, the Port of Charleston has welcomed cruise lines and tourists into our city. It was not until May 2010 that Charleston became the home port for the Carnival Fantasy cruise line. The current terminal is located at the Port of Charleston's Union Pier Terminal. The ship docks closer to the end of Market Street, right in front of the Charleston's Custom House. When the ship is docked in town, not only does the Carnival fin tower over our historic structures, the cruise liner blocks the view of one of the most popular streets in Charleston.

You will also find another important Charleston landmark located at the end of Market Street, between East Bay Street and Concord Street. The United States Custom House symbolizes the original doorsteps to the city. Congress set aside money to fund the construction of this custom house in 1848 (Phelps, 41). Construction on the project soon began after property was purchased. During the excavating for the foundation, remains of Craven's Bastion were discovered (Phelps, 41). Craven's Bastion was an ancient city buttress. A competition took place for the designing of the Custom House. Edward Brickell White, from Charleston, won the design competition, along with $300.00 (Phelps, 41). Production on the Custom House continued even with dilemmas, such as a lack of workers with men going off to war. The United States Custom House for the Port of Charleston was officially opened for business in 1879 (Phelps, 41).

Figure 91_View from the steps of the Custom House from the early 20th century versus today.
Source: Cooper, Robertson & Partners, p.IV.40

Figure 92_View of Custom House from cruise ship deck docked at Union Pier Terminal.
Source: <http://boards.cruisecritic.com/showthread php?t=1219556>

Observing historic photographs, you can easily notice the Custom House Wharf's adjacency to the Custom House and the water's edge in close proximity. This wharf was connected to what is today's Union Pier. The atmosphere you see in these historic photographs is different to what you may see today between the waterfront and the Custom House steps.

Due to infill, the proximity to water is not as close as it once was. Not only was the area filled in, but it is now used as a parking lot for the workers of the South Carolina State Ports Authority. This was briefly explained in Chapter 2 under the Union Pier Terminal Proposal. The United States Custom House may still looks today as it did when if was finished in 1879 but its connection with the water has changed. An attempt to revitalize this atmosphere is evident when you witness the steps along the Cooper River side of the Customs House during certain festivals. These steps serve as a grandstand for Spoleto or musical events during the African American Moja Arts festival (Phelps, 41). The continuation of this tradition, along with a larger architectural gesture, could be the key elements needed in the revitalization of this waterfront.

Figure 93a_Historic photograph Market Hall.
Source: Historic Charleston: City Market Website <http://www.thecharlestoncitymarket.com/history.cfm>

Figure 93b_Present day view of Market Hall.
Source: photo taken by Author

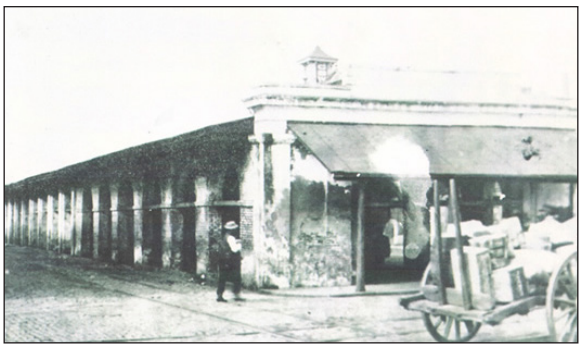


Figure 94a_Historical photograph of the Market Street sheds from the corner of Market Street and East Bay Street.
Source: Historic Charleston: City Market Website <http://www.thecharlestoncitymarket.com/history.cfm>

Figure 94b_Present day view at the corner of Market Street and East Bay Street.
Source: <myfantasticlife.wordpress.com>

Figure 95a_Historic photograph of Market Street with sheds to the left.
Source: Historic Charleston: City Market Website <http://www.thecharlestoncitymarket.com/history.cfm>

Figure 95b_Present day view of Market Street.
Source: <blog.preservationleadershipforum.org>

Figure 96a_Historic photograph of the vegetable and fruit vendors at Market Street sheds.
Source: Historic Charleston: City Market Website <http://www.thecharlestoncitymarket.com/history.cfm>

Figure 96b_Photograph of the today's vendors at the Market Street sheds.
Source: <www.weddingmapper.com>

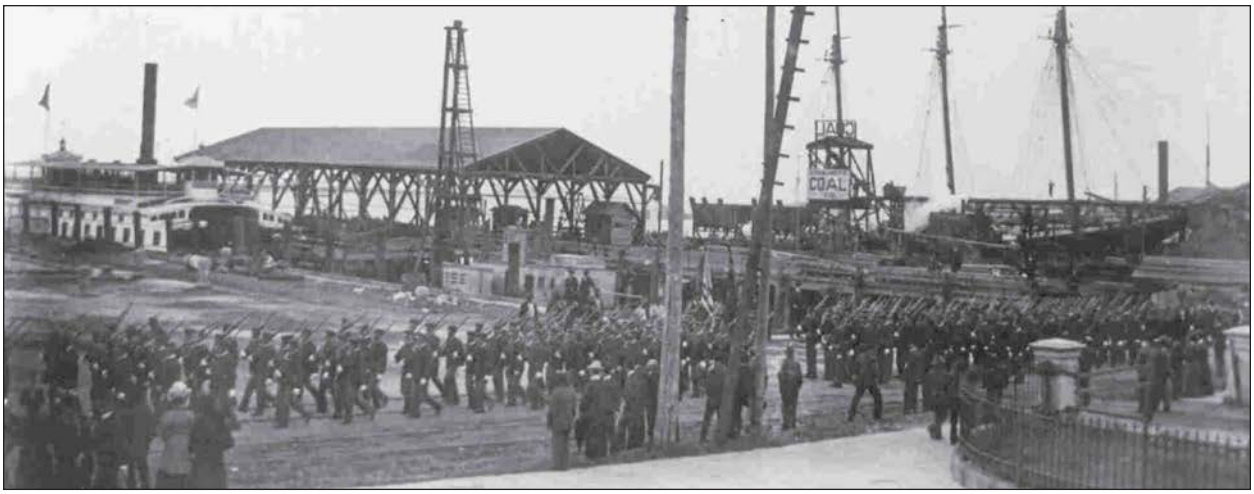


Figure 97_1898 photograph of South Carolina Volunteer Artillery preparing for Spanish-American War.
Source: Cooper, Robertson & Partners, p.IV.38

Figure 98_Custom House and Public Landing view from the water at the turn of the century.
Source: Cooper, Robertson & Partners, p.II.10

Figure 99_Early 20th century photograph of Pier 2 at the Custom House Wharf.
Source: Cooper, Robertson & Partners, p.IV.38

Figure 100_Photograph and close-up of the remaining artifacts of the Pier 1 Wharf.
Source: Cooper, Robertson & Partners, p.IV.38

PART 5_ **forming**

Figure 101_View of the Custom House from the water in the late 1800's/early 1900's versus today.
Source: *top* Cooper, Robertson & Partners, p.IV.37 & *bottom* Fox News Website < http://www.foxnews.com/travel/2011/11/01/cruise-ships-charleston/>

Figure 102_View of Vendue Range looking east from the corner of East Bay Street in 1865 versus today.
Source: *left* Shorpy Archive Website, <http://www.junipergallery.com/taxonomy/term/122> & *right* Photo taken by Author

5_*Bringing the Water into the City*

Throughout this document, historic maps have shown the development of the Charleston Peninsula and its relation to the water. Over the years, development of Charleston has shifted from the inside of the Peninsula to the water's edge. In relation to this development, the water's edge has also shifted. The constant infill started with the coming down of the city walls of the original walled city in the mid 1700's. The above figures are just some photographs showing the original Charleston shoreline in comparison to the current shoreline.

The constant infill has destroyed the Charleston's natural edge and marsh vegetation. This infill has also continuously separated the City and the water more and more over time. There are areas on the Peninsula that have increased more than two blocks into the water. Historic Charleston buildings, such as the United States Custom House and the Old Exchange Building are significant due to their relation to the water and their purpose. With the infill that has occurred over the years, these connections have been lost.

The Charleston development towards the water has also disconnected the people physically from the waterfront. The Union Pier Concept Plan, presented by Cooper, Robertson and Partners, proposes a reconnection of the United States Custom House to the water. The incorporation of this design proposal is crucial in the revitalization of the waterfront, especially at Union Pier Terminal. Taking the historic structures, as well as the people of the community, into consideration during the redevelopment of Charleston's waterfront would have to be equally as important. It is both the history and the people that help to define a city.

Before continuing this chapter on the program for this thesis project, take thought of a quote by Peter Quartermaine. In his 1999 book *Port Architecture: Constructing the Littoral*, Quartermaine states:

Figure 103_Old Exchange Building view from East Bay Street in 1865.
Source: Phelps, 36

Figure 104_1739 view of the Old Exchange Building from the water.
Source: Rediscovering Charleston's Colonial Fortifications Website < http://walledcitytaskforce.org/2013/01/14/half-moon-battery-program/>

Figure 105_Present day view of the Old Exchange Building from the water. Current building shown with the red circle.
Source: Google Maps

> "A port and its structures retain this drama of site: doorstep to the city, a metropolitan quayside is lapped by that watery element to which all explorers, politicians and travellers must submit. The sea always threaten, sometimes overwhelms, those constructed limits of 'culture' of which the quayside itself is the precise and literal edge. It is only with construction, however minimal, that a site acquires that determined cultural reference signified by 'port'. For 'a site that cannot be altered by force preserves no trace of human history', and it is precisely in the maintenance of port structures against the elemental odds that 'shore' becomes part of urban culture as 'port': 'sand and water erase any sign, just as they frustrate any design'. With the exception of ports and dikes, which were themselves often precarious, and the vision of moving sails, the seaside offered no image that could demonstrate mankind's mastery of nature" (Quartermaine 103).

This quote portrays the strength of water in comparison to that of a human. Water is vital element we cannot live without, yet has the strength to take a life. Water is strong and versatile enough to take a life in the mass form of a tsunami or a minute form of a frozen puddle on the road. The strength and quality of this element must not be underestimated in the stages of an architectural design.

Figure 106_Aerial view of site marking Union Pier Terminal. Source: Cooper, Robertson & Partners, p.II.12

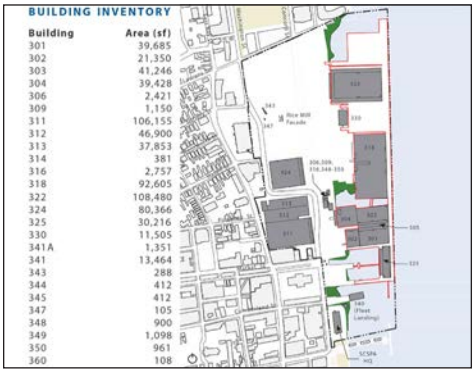


Figure 107_Diagram of existing deck structures shown in gray and each structure's square footage. Source: Cooper, Robertson & Partners, p.II.11

Figure 108_Diagram with blue hatching showing existing deck. Source: Cooper, Robertson & Partners, p.II.12

5_*Spatially and Visually tying the Market to the Water*

Breen and Rigby explain, "A waterfront project does not necessarily have to be directly on the water. It can be tied to the water visually, historically, or a part of a larger whole" (Breen and Rigby 10).

Market Streets runs perpendicular to the waterfront, hitting the waterfront at Union Pier Terminal. The City Market ends at the corner of Market Street and East Bay. There is a block between the end of the City Market and the water that runs perpendicular to the Charleston Customs House. The block currently serves as a street, with parking as its primary use. This is an evident break in Market Street when it comes between the end of the City Market and the waterfront. Up until 1930, the Market Street sheds stretched all the way to the Cooper River. After the block of the City Market between East Bay Street and Concord Street got destroyed by the tornadoes, no effort has been made to reestablish this connection. This lack of connection is definitely impacting Market Streets connection with the water.

With the Cooper, Robertson and Partners proposal to move the cruise ship terminal closer to the northern end of Union Pier, this will open up the waterfront property and provide the opportunity to connect Market Street back with the water. This connection can happen visually and/or physically. The moving of the cruise ship will help this connection visually and a proposal of an extension of the City Market environment can aid in the physical connection. This proposal could even consist of the changing of the block between East Bay and the water to be strictly pedestrian. The continuation of the pedestrian environment, that is currently taking place in the City Market pavilions, would enhance the character of this block.

To successfully tie the Market to the water, the United States Custom House will also have to be taken into consideration. Historic pictures of the Custom House will show the relationship the building once had with the water that it no longer experiences. The Union Pier Concept Plan, presented by Cooper, Robertson and Partners, proposes a plan to restore the historic

Figure 109_ Explanation of street character for surrounding streets of site.
Source: Cooper, Robertson & Partners, p.II.8

Figure 110_Diagram of existing roads and their direction of travel.
Source: Cooper, Robertson & Partners, p.II.14

Figure 111_View down Market Street looking towards water.
Source: National Trust for Historic Preservation, Preservation Leadership Forum Website. Article: "Preservation Victory Over Charleston Cruise Ship Terminal" < http://blog.preservationleadershipforum.org/2013/09/26/charleston-cruise-ship-terminal/#.U2sKp8f5blt>

public landing. This proposal includes the revealing of the original granite slips and reconnecting the Custom House with this public landing. Due to the historic significance of the Custom House Wharf, it would be important to take this aspect of the Union Pier Concept Plan into consideration.

The restoration of this public landing is also historically significant to Market Street. Private boats were able to dock at this landing in order to buy and/or sell goods at the City Market. Other than the small dock located at Waterfront Park, the main public landing currently located on the Charleston Peninsula is the City Marina. The City Marina is on the other side of the Peninsula between James Island and Downtown. The restoration of this public landing will not only be historically significant to Downtown Charleston, it will continue to promote walkability throughout the city and cut down on vehicular traffic on the roads.

Referring back to Chapter 4, in the section on the Charleston Peninsula and Harbor, the figures show the restricted view of the waterfront from Market Street due to the industrial edge of Union Pier Terminal. Figure 123 above gives you an idea of this blocked view from Market Street when a cruise ship is docked. The redesign of this area along the peninsula can provide an opportunity to transform this restricted-view edge to one that reveals the waterfront and celebrates its historic significance to the City of Charleston. The rethinking of the Charleston waterfront at the end of Market Street could not only reconnect the people with the water but it could reconnect the water with the city.

5_*Multiuse Ferry Boat Terminal & Maritime Center*

Charleston has the potential to leave a similar lasting impression on the tourists of the town, similar to that of New York and Venice, Italy. Charleston is made of up the Peninsula/ Downtown, West Ashley, Johns Island, James Island, Daniel Island, and the Cainhoy Peninsula. Smaller barrier islands also surround these islands. In order to get from one island to another, you must cross a bridge. Being a Charleston resident, crossing a bridge is so frequent that you consider it just another road. You usually do not have direct interaction with the water, unless you are enjoying a summer day on the boat, at the beach, or on a public boat tour. Unless your job requires you to work on the water or the docks of the port, an everyday interaction with the water is rare.

A proposal for a ferryboat system would give the residents and tourists an opportunity to connect with the water on an everyday basis and cut down on the congestion of the Charleston streets and bridges. The cut down of traffic could potentially allow the visitors and people to enjoy the city without the interrupted view of the moving vehicles down the historical streets. There would be designated routes for the ferry boats. One set of routes would cater more the visitors by hitting main attraction sites on and around the peninsula. Another set of routes would accommodate the locals by concentrating more on the route from point a to point b and hitting some of the main transportation hubs around the peninsula and the surrounding islands. You can compare the City of Charleston's Water Taxi proposal in Figure 123 to Figure 171 (found on the following pages), which maps out a re-proposal for these ferry routes and stops.

Taking the new cruise ship location into consideration, a multi-use ferry terminal will be proposed at the end of Market Street. This multi-use ferry terminal will be an attraction for both the locals and the visitors of Charleston. The qualitative program for the proposal includes, waiting and ticketing area for the ferry system, a restaurant, retail shops, a maritime museum component, a staging component for public entertainment, an observation tower,

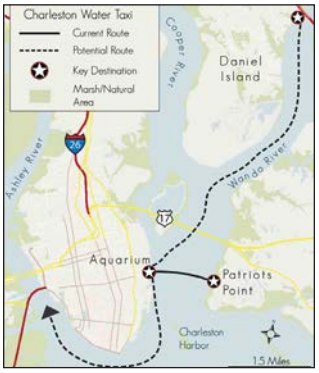


Figure 112_City of Charleston's Century V Plan Update. Diagram comparing the current Charleston Water Taxi Route and the proposed routes with destination points. Source: City of Charleston's *Century V Plan Update*, p.89

Figure 113_Re-proposal of Union Pier Concept Plan for zones of potential bonus height with red dots symbolizing the two structures to be re-proposed hotel/multi-use. Source: Cooper, Robertson & Partners, p.IV.30

a residential component, and a feature connecting the people directly with the water. There will also be an incorporation of Charleston's architectural history, such as the piazzas used for natural ventilation. The docking system will be expanded to accommodate multiple ferry boat systems, harbor tour boats, and private boats.

The ferry system will be a park and ride system. Current surrounding parking garages would accommodate the parking for the riders. Majority of residents in the Charleston area live outside the city but work in the city. This would decrease the number of cars in the downtown area and increase public transportation and pedestrian travel. With this in mind, the Union Pier Terminal Proposal, discussed in Chapter two, diagrams out proposed and existing public transportation routes that would correlate with the intentions of the ferry system.

Chapter two includes a diagram by Cooper, Robertson and Partners proposing potential bonus height in redeveloped structures that come out of the Union Pier Concept Plan. The buildings they are to be zones for potential bonus height are all proposed residential buildings. If bonus height is going to be proposed in such a primetime waterfront area, these buildings need to be more public versus private to allow everyone to enjoy the views of the city and water. Figure 124 proposes making the two buildings, located on either side of the historic public landing hotel, rather than private residential. With hotel on the upper stories and public amenities on the lower levels, this will activate the waterfront at all hours of the day and night.

With the site location being Union Pier Terminal, it allows the opportunity to work with the City of Charleston Century V Plan and the South Carolina State Ports Authority Union Pier Concept Plan. Incorporating the strengths of these plans, with a redesigning of the weaknesses, could result in a solid and corroborative plan that will salvage Charleston's aquatic relationship.

PART 6_ **concluding**

Figure 114_Charleston, SC location on a map of the world.
Source: Diagram by Author

Figure 115_Charleston, SC location on a map of the United States of America.
Source: Diagram by Author

6_*Project*

Since its founding in 1670, Charleston has always has a strong relationship with the water. Researching the history of the city, specifically the peninsula, you can begin to see a loss of day to day interaction with the water that once was the main entrance and transportation for the city. This thesis project is focused on bringing back Charleston, South Carolina's connection with the water. The design of a mutli-use ferry boat terminal and maritime center is going to reconnect both the locals and tourists back with the water both spatially and visually. After zooming out and viewing the Charleston Peninsula as a whole, it did not take long to realize an existing problematic area. This site is known historically as the Custom House Wharf but known today as Union Pier Terminal, home of the Carnival cruise ship, the Fantasy.

The City has acknowledged the problems with the end of Market Street and are looking to Cooper, Robertson and Partners to work with the South Carolina State Ports Authority to redevelop this 74 acre site. The major aspect of Cooper, Robertson and Partners proposal is the newly designed cruise ship terminal and relocation. This thesis project's research and design continued with taking some aspects of Cooper, Robertson and Partners proposal into consideration, but mostly taking advantage of the newly created view corridor down Market Street with the cruise terminal relocation.

Research began with a past, present and future analysis of the site looking at the peninsula as a whole. The historic development from figures 85a to 85g was considered in relation to the site. In order to study the changing seawall and edge condition, historic figure ground maps, as well as Sanborn maps were gathered. Figures 131a-131h range in date from 1804 to 1955 and show the changing seawall location in relation to Union Pier Terminal, which is marked out in blue. These diagrams show Union Pier Terminal, and even Market Street, under water. Looking at future conditions shown in figures 132a-132h, predictions show this site mostly back underwater in one hundred year. After this past, present analysis, as well as research on the City of Charleston Century V Master Plan, the peninsula started to become more of a concentration and specifically Union Pier Terminal.

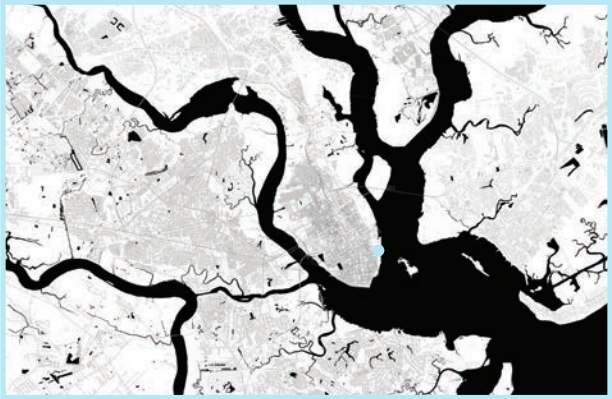


Figure 116_Site location on a map of Charleston County.
Source: Diagram by Author

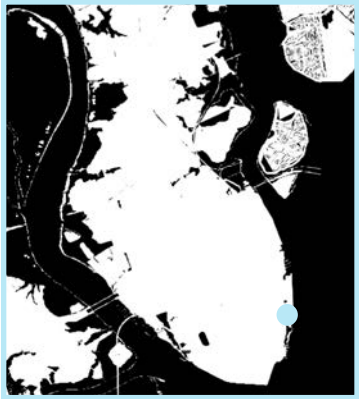


Figure 117_Site location on a map of Charleston Peninsula.
Source: Diagram by Author

Figure 118_Montage of Max Ernst engraving and photograph of the Old Exchange Building today symbolizing the historic location of the original seawall.
Source: Image by Author

Charleston, SC Peninsula Sea Wall Location in Relation to Site

Source: *The Genealogy of Cities,* <http://sanborn.umi.com/>, and Author

Figure 119a_Figure Ground 1704

Figure 119b_Figure Ground 1739

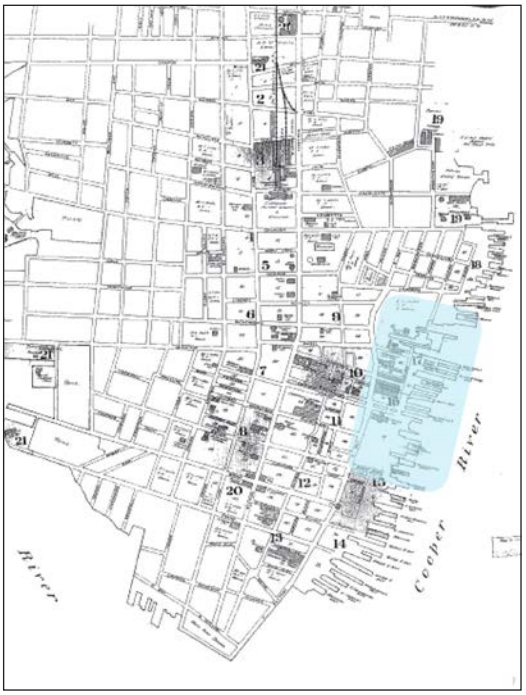


Figure 119c_Sanborn Map 1884

Figure 119d_Sanborn Map 1888

Figure 119e_Sanborn Map 1902

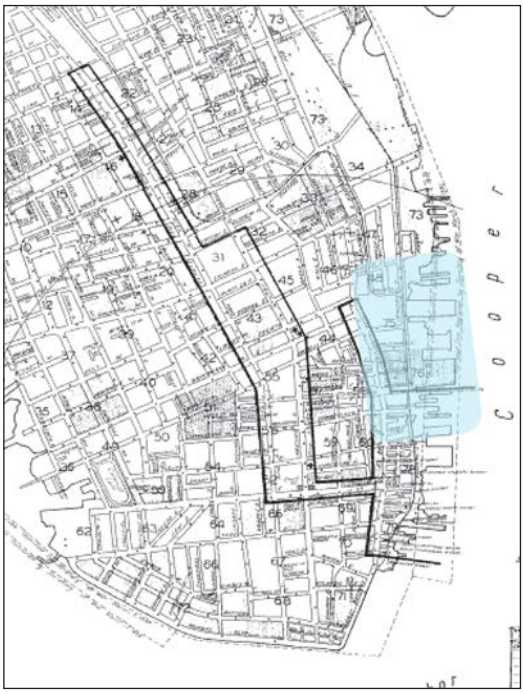


Figure 119f_Sanborn Map 1944

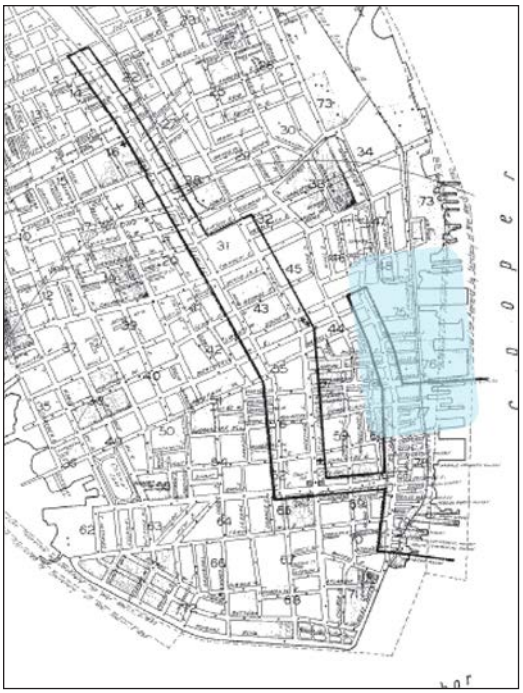


Figure 119g_Sanborn Map 1951

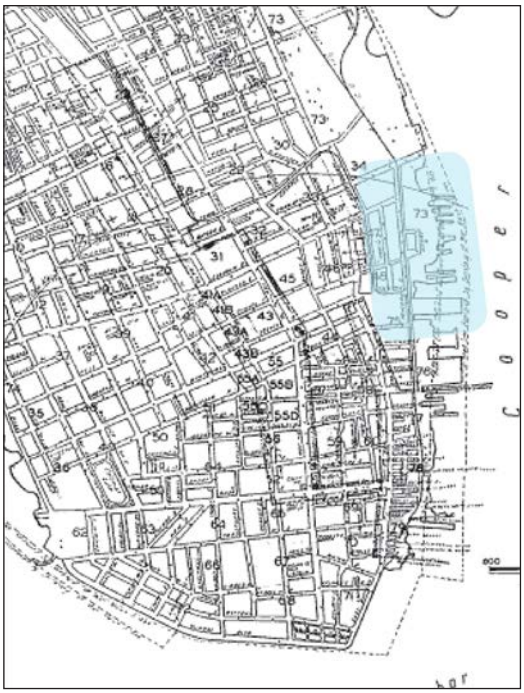


Figure 119h_Sanborn Map 1955

Sea Level Predictions

Source: Sea level rise analysis by Climate Central (http://sealevel.climatecentral.org/surgingseas/gauge/)

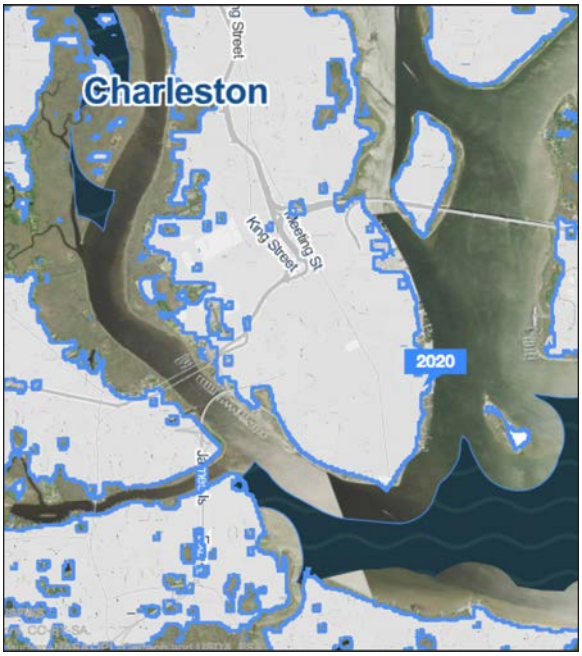


Figure 120a_Flooding Diagram 2020 (sea level rise = 1ft)

Figure 120b_Flooding Diagram 2020 (sea level rise = 3ft)

Figure 120c_Flooding Diagram 2030 (sea level rise = 5ft)

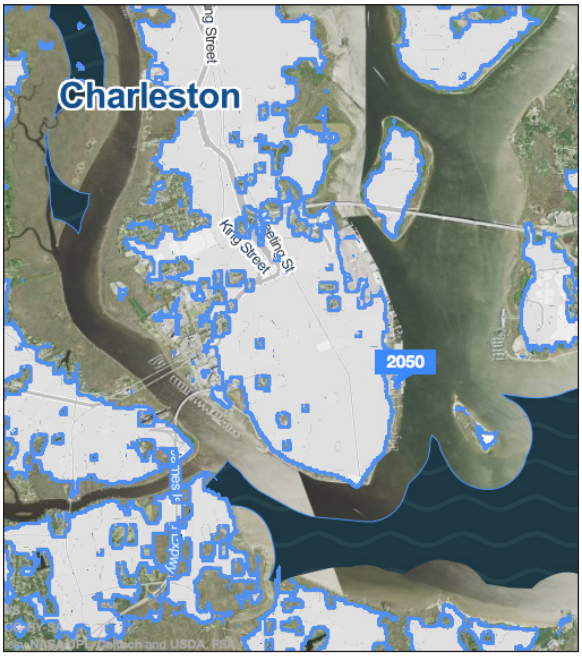


Figure 120d_Flooding Diagram 2050 (sea level rise = 6ft)

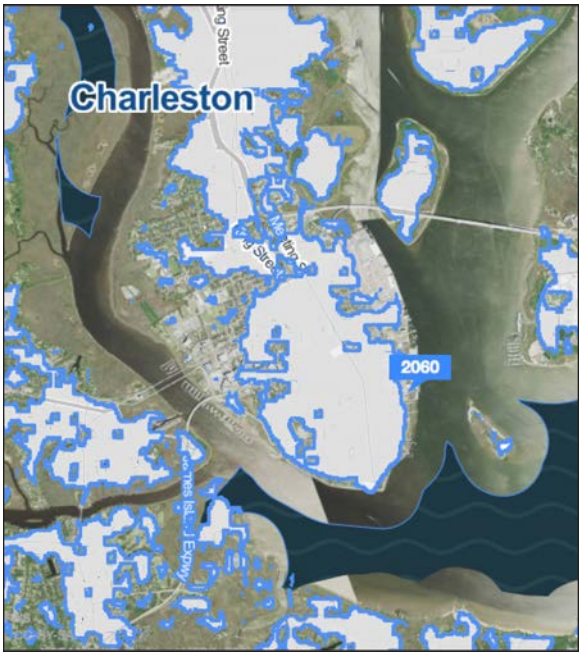


Figure 120e_Flooding Diagram 2060 (sea level rise = 7ft)

Figure 120f_Flooding Diagram 2080 (sea level rise = 8ft)

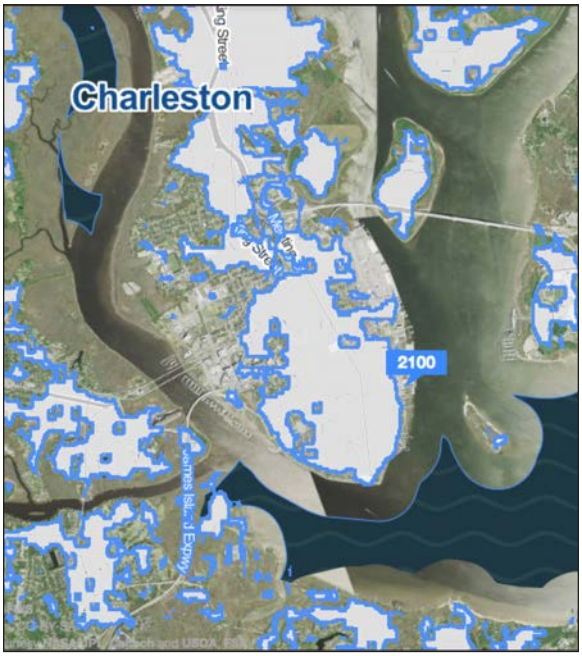


Figure 120g_Flooding Diagram 2100 (sea level rise = 9ft)

Figure 120h_Flooding Diagram >2100 (sea level rise = 10ft)

Continuing with the past, present, & future research, a site analysis was completed on the study area. The study area includes everything between the water, Calhoun Street, Meeting Street, and Broad Street. This study area of strategically chosen due to Broad Street being the heart of the original walled city from 1704, as well as Calhoun Street and Meeting Street being two of the busiest roads in today's society. A typology analysis was completed, as well as a past/present photograph analysis. Figure 133 on the following page shows these two components combined into one diagram with a conclusion that some areas have not changed much over the past one hundred years, while others show drastic differences. With arrows representing view points, this diagram gives you a good perception of what it is like to be in Charleston, SC and around this site even if you have never been there. Being able to know the current conditions and what they once were is very important to know when trying to understand some of the design decisions that were made throughout this project.

While Figure 133 shows the past and present images separately with the historic image always being black and white, Figure 134-141 shows these images montaged into one cohesive image. The montaging of some of these images really gives you a perspective of the changes that have occurred over the years and the impact it has made on Charleston. Some of the most compelling images are those which include the Carnival cruise ship. The montaging of these images that include the Fantasy cruise ship gives you an idea of the scale of these ships in comparison to other aspects of the city. With the Fantasy's size, it covers up one of the most historically significant buildings in Charleston from water's view. Due to regulations, you cannot even access the portion of the water where the Custom House is visible when a cruise ship docked. Figure 134 and 135 show the Fantasy ship in comparison to the size of the U.S. Custom House portico. The Carnival Fantasy ship is 855ft long, with a beam height of 103ft, and a draft of 25ft 7in. With this size, the ship weighs 70,367 tons and carries an onboard crew of 920 and a passenger capacity of 2056 ("Carnival Fantasy"). Figure 134 shows approximately 13 U.S. Custom House porticoes reaching from the bow to the stern while Figure 135 shows the height comparison.

Past and Present Analysis of Study Area

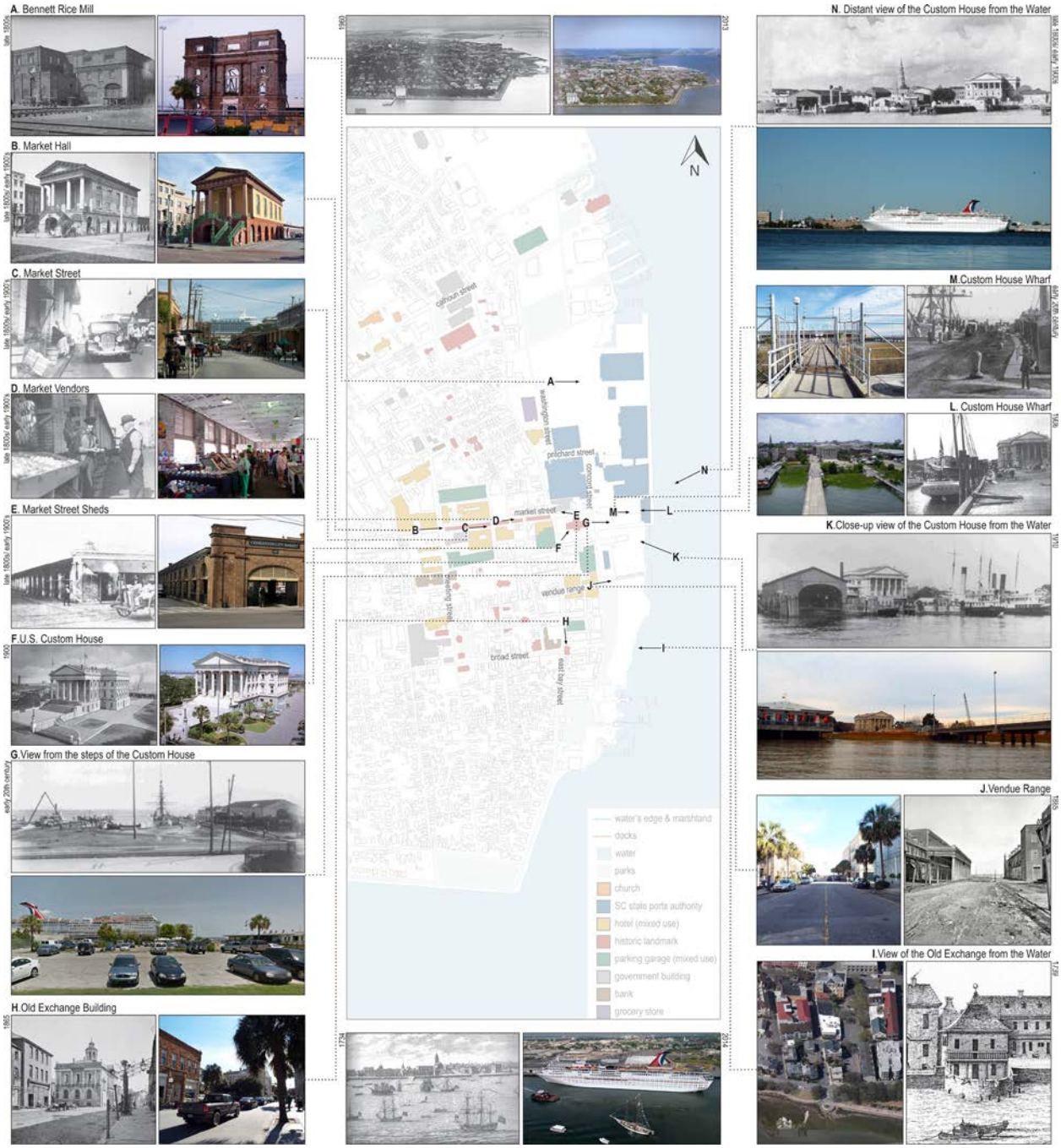


Figure 121_Past and Present Analysis of Study Area
Source: Diagram by Author

The U.S. Custom House & The Carnival Fantasy Cruise Ship

length comparison:
it takes 13 U.S. Custom House porticoes to span the length of the 855ft Carnival Fantasy

Figure 122_The U.S. Custom House and the Carnival Fantasy Cruise Ship length comparison.
Source: Image by Author

height comparison:
It takes 2.5 U.S. Custom House porticoes to span from the water's edge to the highest point of the ship (approximately 190 ft).

Figure 123_The U.S. Custom House and the Carnival Fantasy Cruise Ship height comparison.
Source: Image by Author

Past Edge Condition with Today's Cruise Ship:
1872 with Carnival Fantasy Cruise Ship

Figure 124_Montage of past edge condition with today's cruise ship.
Source: Image by Author

View from the Custom House Steps Through Columns:
Early 20th Century & Dec. 2013

Figure 125_Montage showing the past and present view from the Custom House steps.
Source: Image by Author

View of the Custom House from the Water:
1910 & Dec. 2013

Figure 126_Montage of past and present views of the Custom House from the water.
Source: Image by Author

View from the back Custom House steps:
Early 20th Century & Dec. 2013

Figure 127_Montage of past and present views from the back Custom House steps.
Source: Image by Author

View of the Custom House from the Water:
1910 & Dec. 2013

Figure 128_Montage of past and present views of the Custom House from the water close-up.
Source: Image by Author

View of the Custom House from the Water:
late 1800's/early 1900's & Dec. 2013

Figure 129_Montage of past and present views of the Custom House from the water from a distance.
Source: Image by Author

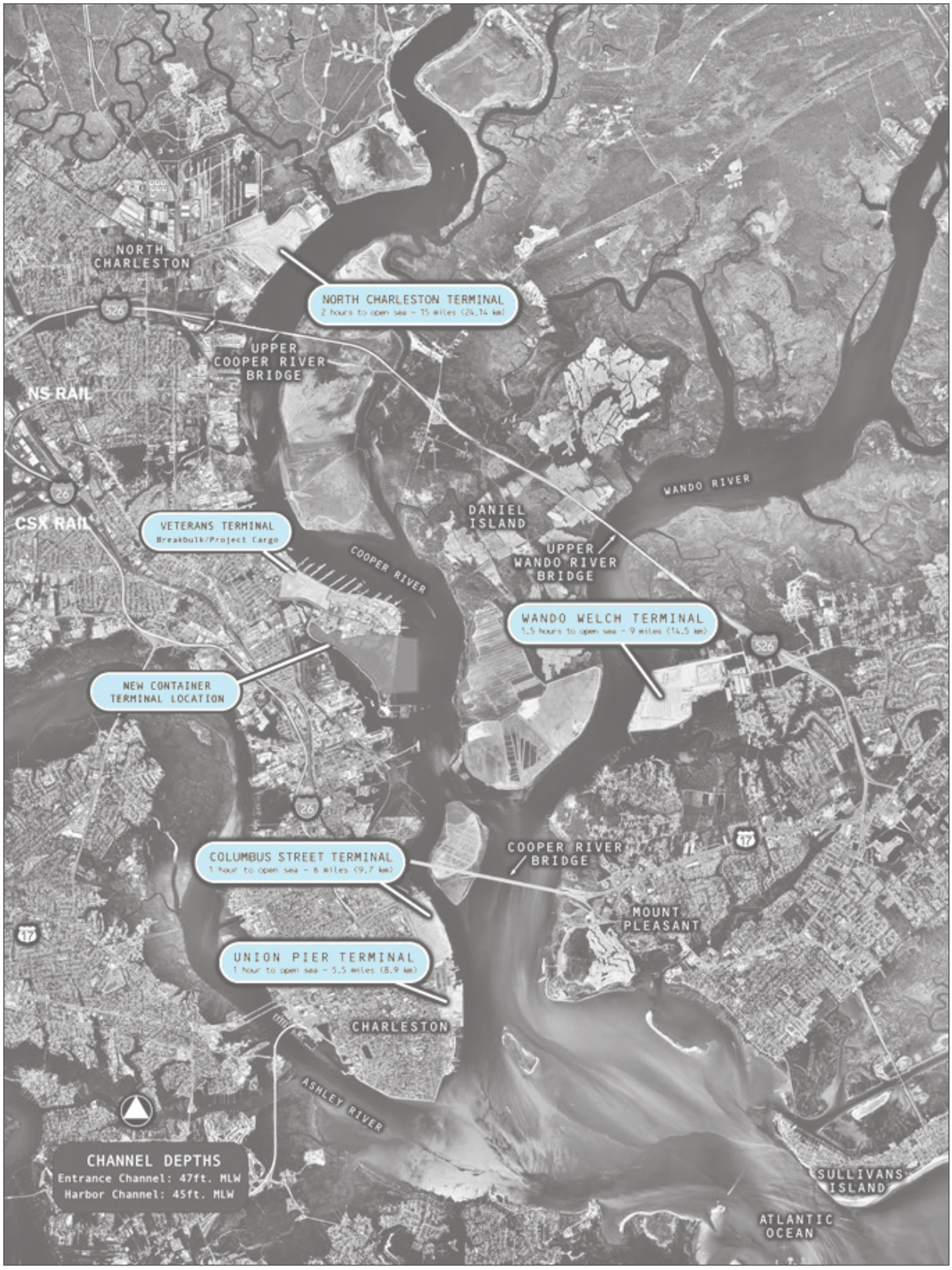


Figure 130_ Map locating of the 5 current port terminals and the location of the proposed additional terminal.
Source: Port of Charleston Maritime Association of South Carolina < www.maritimesc.org> and image manipulated by Author

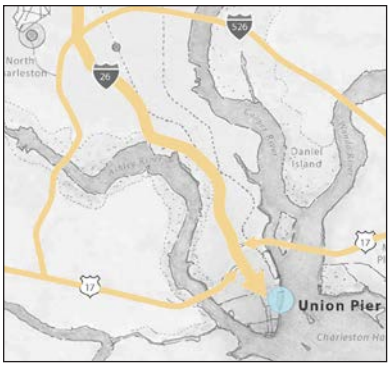


Figure 131_Transportation analysis of regional and local access to Union Pier Terminal.
Source: Cooper, Robertson & Partners, p.III.18

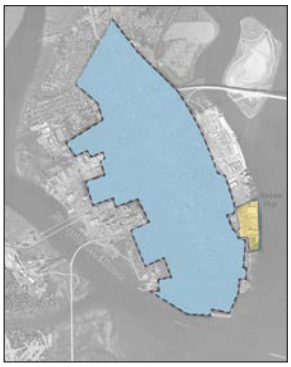


Figure 132_Aerial image of the Charleston peninsula diagramming out the "urban fabric boundary" and the Union Pier Terminal location.
Source: Cooper, Robertson & Partners, p.II.3

Figure 133_Water views from areas on the Peninsula in correlation with the edge conditions.
Source: Cooper, Robertson & Partners, p.II.6

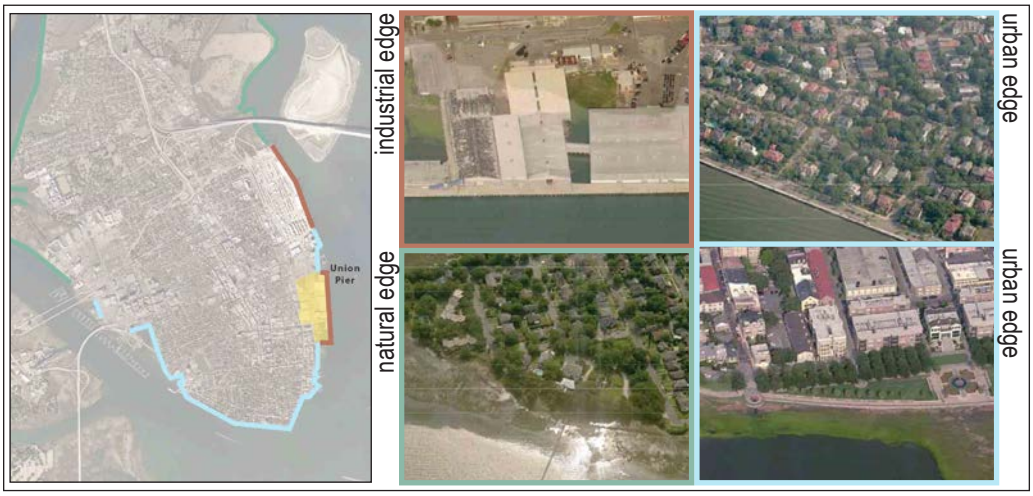


Figure 134_Edge conditions diagram of the Charleston peninsula with color-coded examples.
Source: Cooper, Robertson & Partners, p.II.5 & 6

Figure 135_Aerial view of site marking Union Pier Terminal.
Source: Cooper, Robertson & Partners, p.II.12

Figure 136_Diagram with blue line showing site area currently used for Cruise Facilities.
Source: Cooper, Robertson & Partners, p.I.2

Figure 137_Diagram of existing deck area shown with blue hatching and existing deck structures shown in gray.
Source: Cooper, Robertson & Partners, p.II.1

Figure 142-149 recalls images and diagrams shown previously in this document while researching existing conditions. Figure 142 -149 were some of the most important diagrams taken into consideration when researching existing conditions of Union Pier Terminal for design purposes. With Figure 150, you can begin to see the impact the Cooper, Robertson and Partners proposal will have on the 74 acre site. Currently, 43 acres of that 74 are land, 20 acres is constructed deck, and the remaining 11 acres is part of the Cooper River that is located in a tax lot (Cooper, Robertson & Partners, II.11). Union Pier Terminal runs approximately 3,000 feet in the north-south direction and approximately 1,300 feet in the east-west direction at the widest points (Cooper, Robertson & Partners, II.11).

This figure includes a conceptual illustration with surrounding conditions, as well as a zoomed in image of Union Pier Terminal with Cooper, Robertson and Partners conceptual illustration montaged onto the existing site conditions. It is important to note the existing cruise ship terminal in relation to the proposed relocation. Currently, the cruise ship terminal is located at the end of Market Street, which blocks an important view to the city from the water and to the water from the city while a cruise ship is in port. Cooper, Robertson and Partners is proposing a move of the terminal to the northern end of Union Pier Terminal. Not only would this relocation open up a historic view corridor, the relocation would allow for easier access from the interstate, more parking for passengers, as well as a longer dock area (Cooper, Robertson & Partners, III.1).

Figure 151 is a compilation of multiple rendered views of the proposed cruise ship terminal. One of the major considerations during the design process of this terminal was the pedestrian circulation within the building during the embark and disembark times of travel. Rendered images of the proposed cruise ship terminal are important to include to put emphasis on the support felt concerning both the design and location that will both be incorporated in the final project.

Existing Conditions and Cooper, Robertson, & Partners Proposal

Figure 138_Montages of existing conditions and Cooper, Robertson, & Partners proposal.
Source: Diagrams by Author

Figure 139_Renderings of proposed cruise ship terminal.
Source: Union Pier Cruise Terminal Website <http://www.scspa.com/UnionPierPlan/gallery.html>

Existing Conditions of Union Pier Terminal

Figure 140_Aerial view of existing conditions of Union Pier Terminal.
Source: Photo taken by Leroy Burnell <postandcourier.com>

Figure 141_Aerial view of the existing Union Pier Waterfront.
Source: Cooper, Robertson & Partners, p.I.4

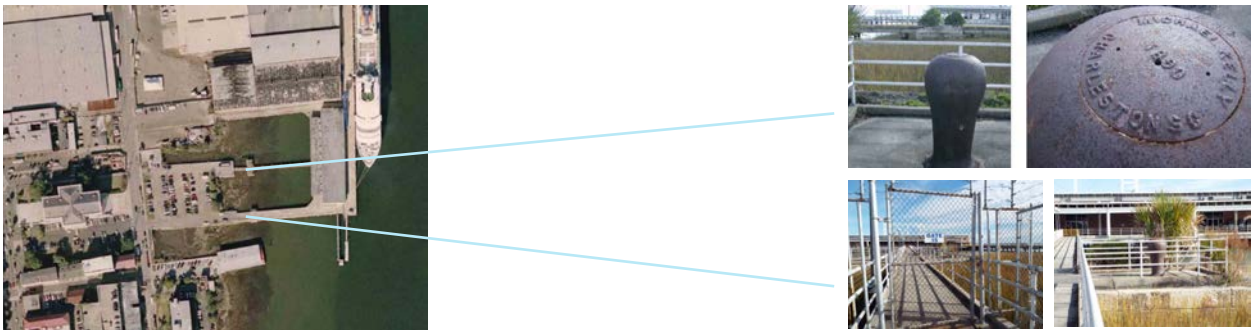


Figure 142_Photograph showing existing SPA parking lot located at the historic public landing and only remaining artifact of the Custom House Wharf, Pier 1. Photographs also show today's public restricted access.
Source: Cooper, Robertson & Partners, p.IV.40, IV.38, & photos taken by Author

Cooper, Robertson & Partners Proposal for Union Pier Terminal

Figure 143_Conceptual illustration. Axon view of the Union Pier Concept Plan.
Source: Cooper, Robertson & Partners, p.IV.2

Figure 144_Conceptual illustration. Aerial view of the Union Pier Waterfront.
Source: Cooper, Robertson & Partners, p.I.4

Figure 145_Conceptual drawing showing proposed public plaza and access at water access at the historic Custom House Wharf.
Source: Cooper, Robertson & Partners, p.IV.40

Figure 146_Conceptual drawing of visitors interacting with proposed eco-park.
Source: Cooper, Robertson & Partners, p.IV.46

Figures 152-161 is an overall diagram showing the existing conditions in comparison to the Cooper, Robertson and Partners proposed conditions. Shown in detail with figures 154-156 and figures 159-161, one will notice the emphasis on the restoration of the historic public landing located in front of the U.S. Custom House. There is a proposal for a public plaza, along with intentions of exposing the original granite slips of the Custom House Wharf. Today, this granite is partially covered up by the South Carolina State Ports Authority parking lot that is located directly in front of the U.S. Custom House (Cooper, Robertson & Partners, IV.37). There are also intentions of providing public access to the only remaining artifact of the historic wharf. Figures 55 and 56 show a close up of this bulkhead, while figures 59 and 60 show today's restricted public access to this artifact. You will see these design intentions taken into consideration during the redesign of Union Pier Terminal and the ferry boat terminal and maritime center.

With wanting to re-establish certain ecological, historical, and typological conditions of this site, Cooper, Robertson and Partners proposal for an "eco-park" was greatly incorporated in the redesign to connect the people with the water. The removal of many existing in-water structures could allow for the reclaiming of natural shoreline habitats. Restoration of the natural shoreline not only has an ecological and historic significance but provides the opportunity for the people to learn first hand about water's edge. Cooper, Robertson & Partners explains the ecological components to be incorporated include, "restoration of a variety of viable habitats and connections to other open space, policy of self-sustainability of ecosystems, no further net loss of aquatic or wetland habitat as a result of new development without compensation through mitigation, public access to the restoration habitats, educational opportunities at the restoration sites, and incorporation of local environmental organizations in the planning and design of these areas" (Cooper, Robertson & Partners, IV.46). This special initiative not only connects the people with the water and aquatic habitats, but it also brings the water to the people with the movement of the shoreline into the city.

Figure 147_Existing Shoreline Conditions.
Source: Cooper, Robertson & Partners, p.IV.43

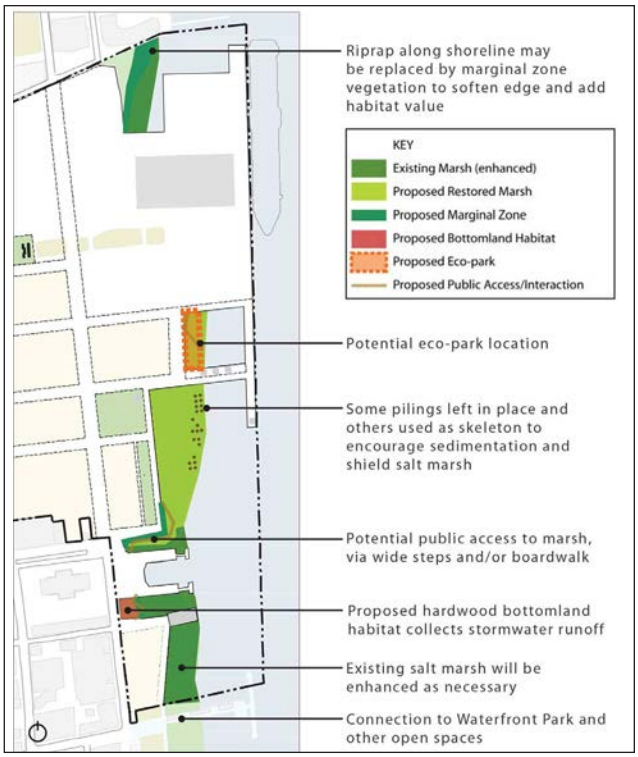


Figure 148_Ecological Restoration Plan.
Source: Cooper, Robertson & Partners, p.IV.44

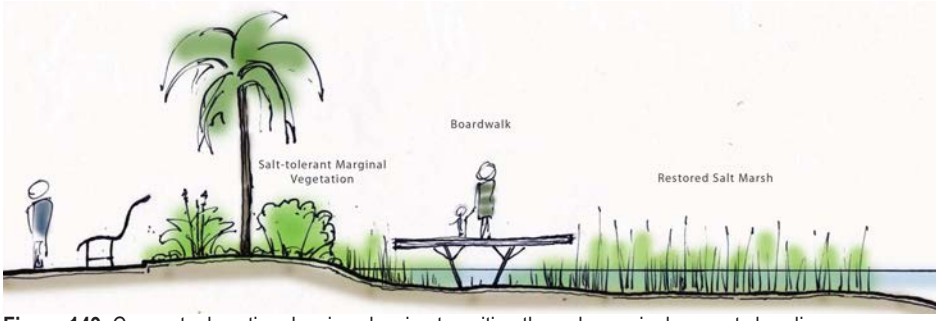


Figure 149_Conceptual section drawing showing transition through marginal zone at shoreline.
Source: Cooper, Robertson & Partners, p.IV.45

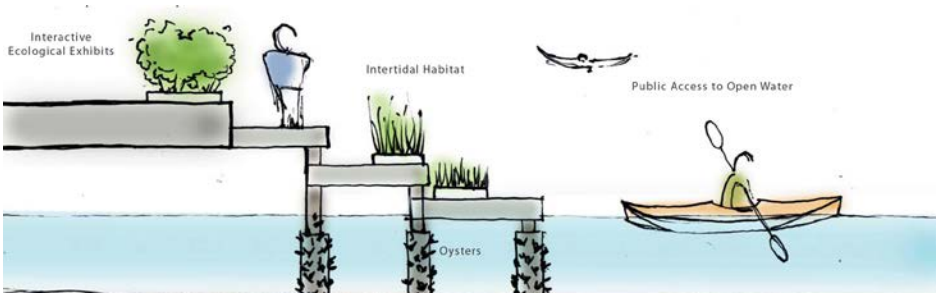


Figure 150_Conceptual section drawing of eco-park at the pier's edge.
Source: Cooper, Robertson & Partners, p.IV.46

Analysis of Cooper, Robertson & Partners Proposal_PROS

Figure 151_PROS Analysis of Cooper, Robertson & Partners Proposal.
Source: Diagram by Author

Analysis of Cooper, Robertson & Partners Proposal_CONS

Figure 152_CONS Analysis of Cooper, Robertson & Partners Proposal.
Source: Diagram by Author

6_*Reconnecting the People of Charleston with the Water*

After a detailed analysis of the pros and cons of Cooper, Robertson and Partners Union Pier Proposal, design began with the proposal of the ferry boat routes. As mentioned in Chapter 5, there will be two dedicated routes. One route will cater more to the visitors by having stops that are tourist destinations. The other route will cater more the locals by having stops that are island hubs, helping with the quick commute to work and/or everyday activities.

Figure 169 is part of the City of Charleston Century V Master Plan, showing intentions of increasing the current water taxi stops. The additional routes with connect Daniel Island and the other side of the Charleston Peninsula with the current routes, shown in Figure 170. Figure 171 is the proposal for a much larger operation, catering to locals and tourists of Charleston. This will provide the everyday connection with the water that has seemed to fade away through the years. Providing public boat transportation also brings back the historic significance of entering Charleston by boat. Historically, the boat was the number one form of transportation to Charleston, giving a perspective that is much different than what you experience today entering the city of vehicle. This proposal provides us with the opportunity to bring back that perspective, experience, and everlasting memory.

Figure 172 and 173 diagram out the design intentions of this re-proposal. The red buildings, which include the Market Street sheds, the U.S. Custom House, and the Bennett's Rice Mill Facade, are historic landmarks that had to be considered during the design phases. The black buildings are existing structures while the yellow are proposed. Depending on their location on the site, the range from being a hotel, residential building, restaurant, or parking garage. Incorporating some of the proposed residential from Cooper, Robertson and Partners proposal allowed for the neighborhoods to flow into the site. The incorporation of these residential buildings will also insure life on the site all hours of the day and night. They were strategically placed and designed with views of the water taken into consideration. This design resulted in pulling the grid of the city into the water and the water into the city.

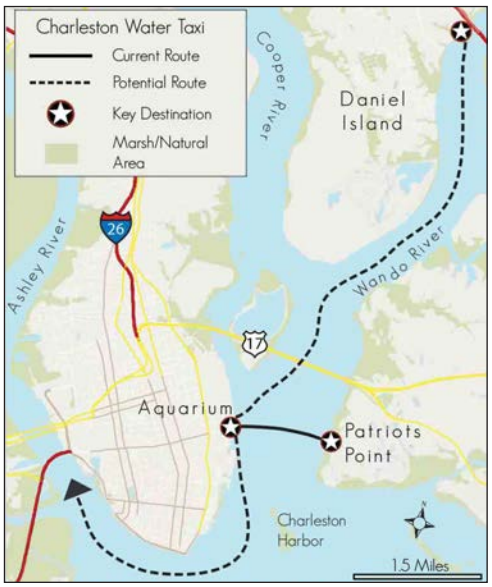


Figure 153_City of Charleston's Century V Plan Update. Diagram comparing the current Charleston Water Taxi Route and the proposed routes with destination points. Source: City of Charleston's *Century V Plan Update*, p.89

Figure 154_Existing Charleston Water Taxi Route. Source: Charleston Water Taxi Website <http://www.charlestonwatertaxi.com/)

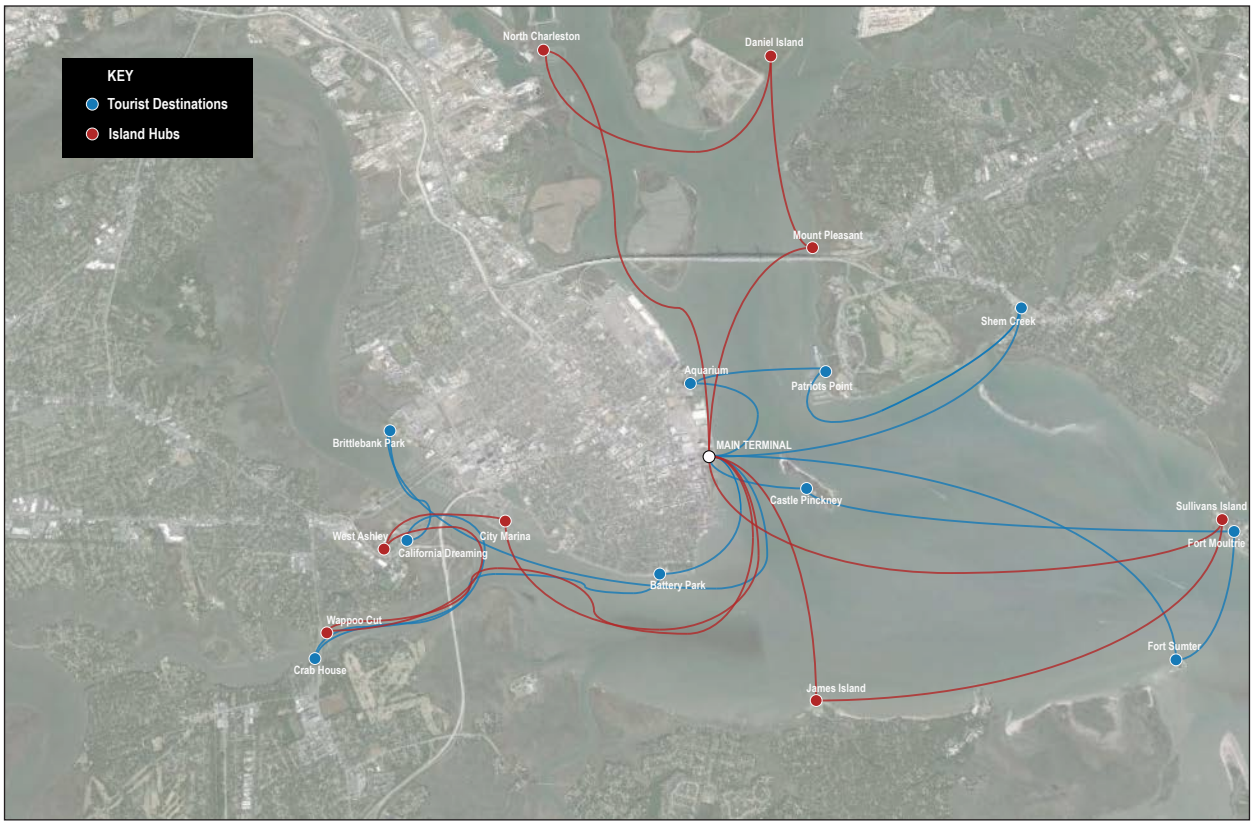


Figure 155_Proposed ferry boat routes with two dedicated lines. Source: Diagram by Author

Three major components are incorporated into the design proposal. These three include the ferry boat terminal and maritime center, the pedestrian bridges, and the public dock. The floor plans shown in Figures 176-178, explain the detail that was put into the designing of each component.

The incorporation of the public dock was important due to the historic character of that area being a public wharf. Currently, the east side of the peninsula is limited to public docking. With this component, it will being back the public access to and from the water that once made this site a lively one.

The ferry boat terminal and the pedestrian bridges were both designed to be experiential viewing mechanisms. This viewing device catered to views of the city and the water, something that is currently lacking in Charleston. The pedestrian bridges consist of towers that allow for 360 degree views of the city and open water. Between each one of the towers are pedestrian bridges that go up and down with the coming and going of the ferry boats. To see the moving of these bridges are not only symbolic of the time of day or schedule of the boats but it is an experience in itself. Draw bridges use to be more common but today you will find higher bridges to help save time during transit. These bridges are built high enough where boats can clear without the ritual of them opening. This component of the site brings back that docile event that has almost disappeared.

Inside the ferry boat terminal and maritime center, you will find similar unique experiences. With ramps, bridges, and patios on all floor facing all directions, the building serves as a viewing mechanism as well. These views can be found looking towards the city, as well as to the water. The ferry boat terminal and maritime center also provides a unique view down into the water. With durable glass material used in some places of the floor, it allows for you to see down into the water or marshland, depending on the time of day and tides.

Figure 156_Newly proposed Union Pier Terminal and impact on Charleston Peninsula edge condition.
Source: Diagram by Author

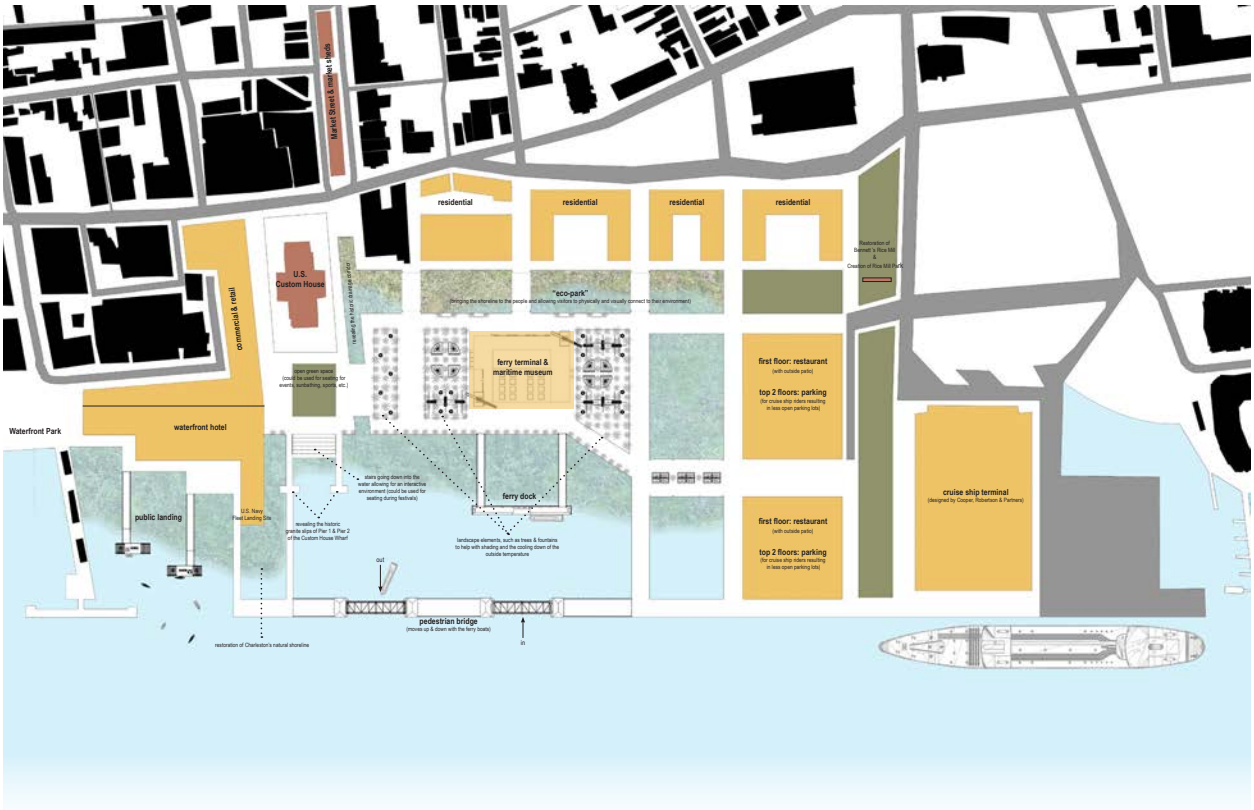


Figure 157_Plan diagram showing newly proposed of Union Pier Terminal.
Source: Diagram by Author

Figure 158_Montage of newly proposed Union Pier Terminal and existing conditions.
Source: Image by Author

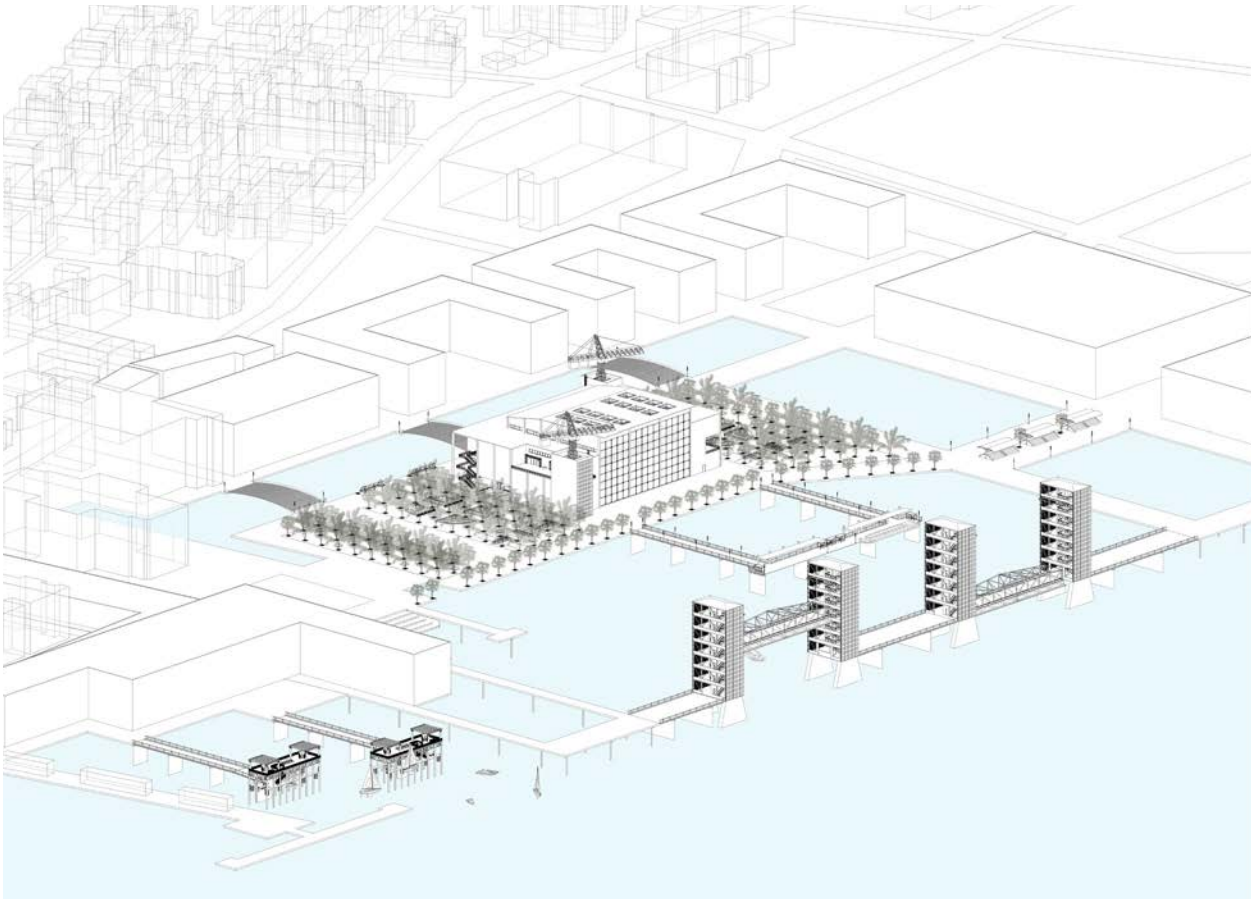


Figure 159_Axon of newly proposed Union Pier Terminal and three major aspects of design.
Source: Drawings by Author

Ferry Boat Terminal and Maritime Center

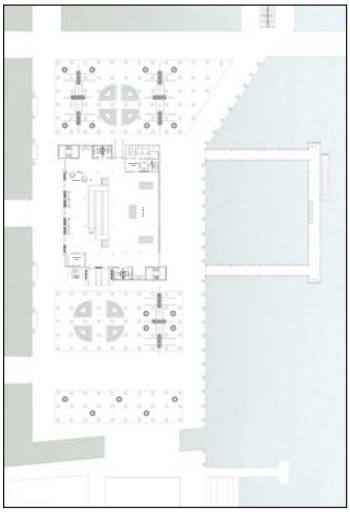


Figure 160a_Ferry Boat Terminal & Maritime Center_floor 1

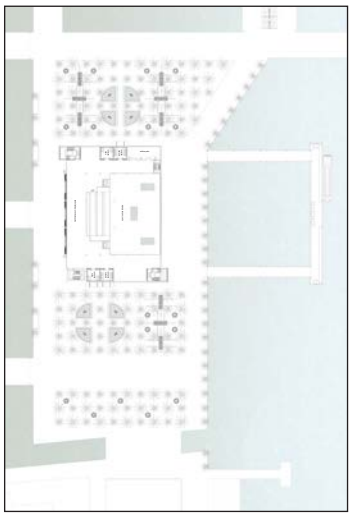


Figure 160b_Ferry Boat Terminal & Maritime Center_floor 2

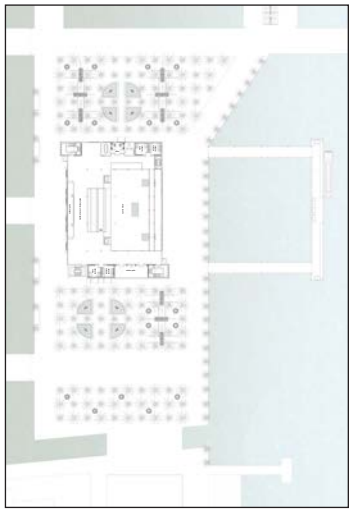


Figure 160c_Ferry Boat Terminal & Maritime Center_floor 3

Pedestrian Bridge

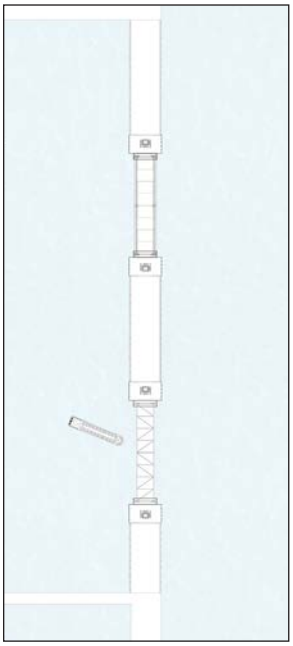


Figure 161a_Pedestrian Bridge_floor 1

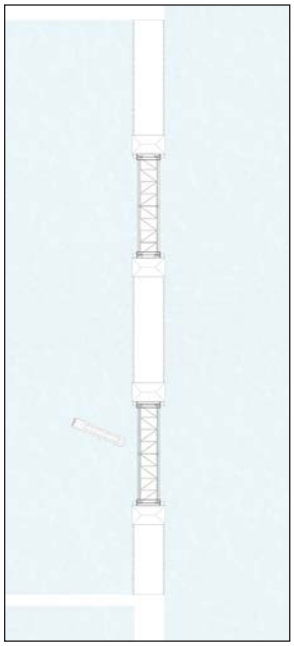


Figure 161b_Pedestrian Bridge_floor 2

Public Dock

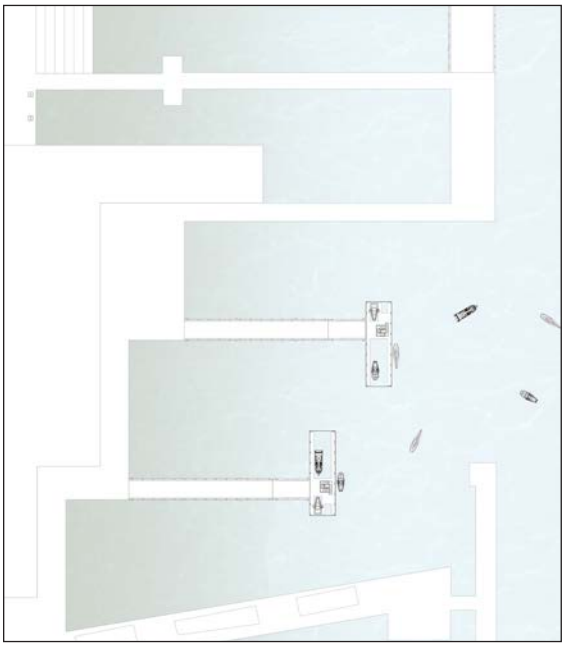


Figure 162a_Public Dock_floor 1

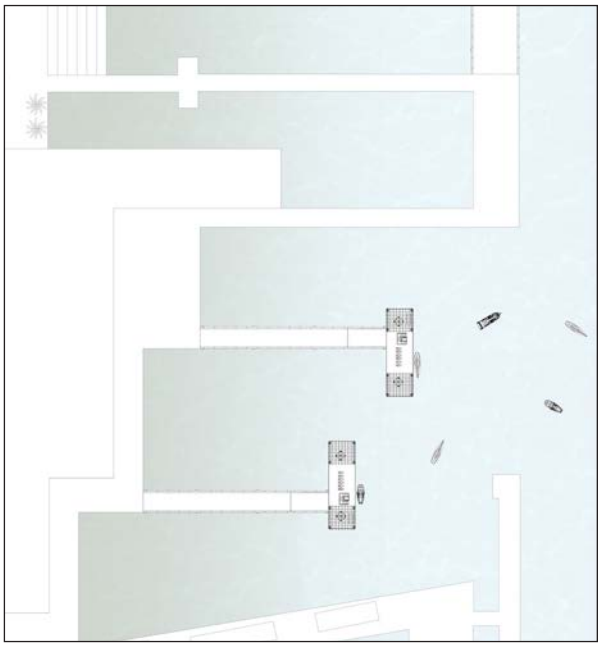


Figure 162b_Public Dock_floor 2

The following renderings give you an idea of the experience one has while visiting this redesigned Union Pier Terminal. With a ferry boat system, along with the strategically designed public dock, pedestrian bridge, and ferry boat terminal and maritime center, this site allows the people of Charleston to reconnect back with the water. The provided physical and visual connections can educate both the locals and visitors of the importance the water's edge once was to the city of Charleston. Incorporating historic symbols such as the original seawall location and industrial building materials, will also help enhance the importance of the site.

This will be a place locals will want to take their visitors. This will be a place that when you leave and think back on your visit, you will "first recount your experiences, and only afterwards your reflections" (Leonardo da Vinci from Dreisetl 9).

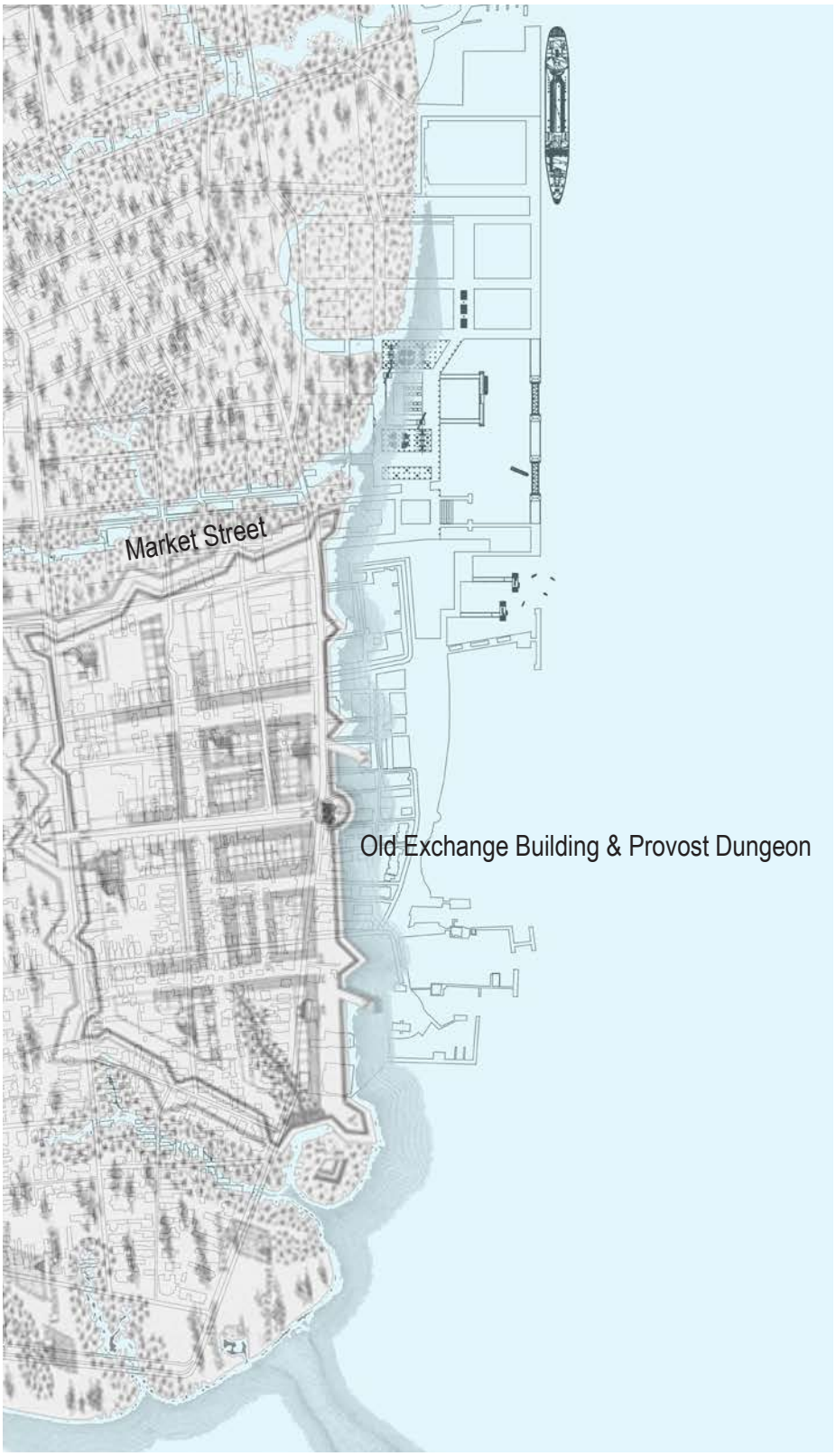


Figure 163_Montage showing movement of water's edge & location of original seawall from 1704.
Source: Diagram by Author

Figure 164_View of the pedestrian bridges and public dock from Waterfront Park.
Source: Rendering by Author

Figure 165_View of the ferry terminal and maritime center from the pedestrian bridge.
Source: Rendering by Author

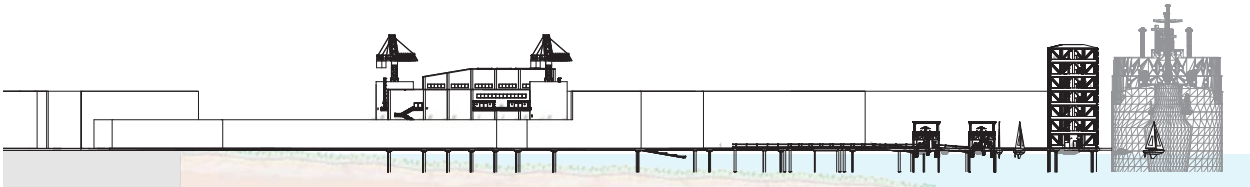


Figure 166_South elevation.
Source: Drawing by Author

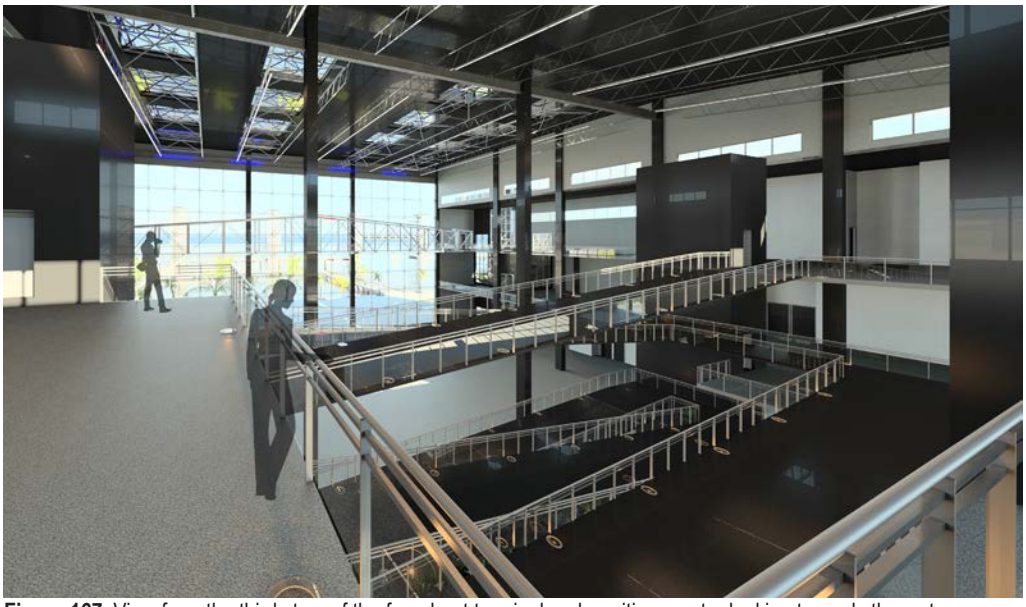


Figure 167_View from the third story of the ferry boat terminal and maritime center looking towards the water.
Source: Rendering by Author

Figure 168_View from the third story of the ferry boat terminal and maritime center looking towards the city.
Source: Rendering by Author

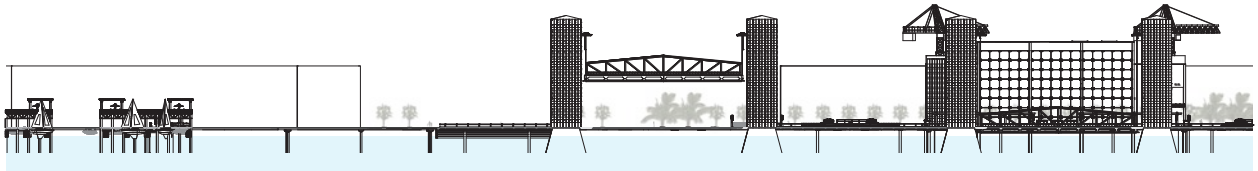


Figure 169_East elevation.
Source: Drawing by author

Figure 170_View of the water down Market Street.
Source: Rendering by Author

Figure 171_Perspective from boardwalk.
Source: Rendering by Author

Figure 172_Perspective from plaza.
Source: Rendering by Author

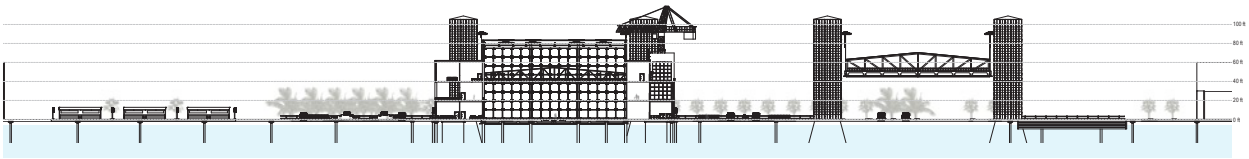


Figure 173_North/South section.
Source: Drawing by Author

Figure 174_View of the city from the sixth level of one of the viewing towers (pedestrian bridges).
Source: Rendering by Author

Figure 175_View walking towards the water over “eco-park” bridges.
Source: Rendering by Author

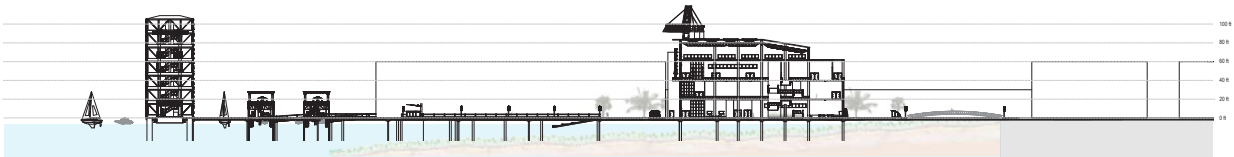
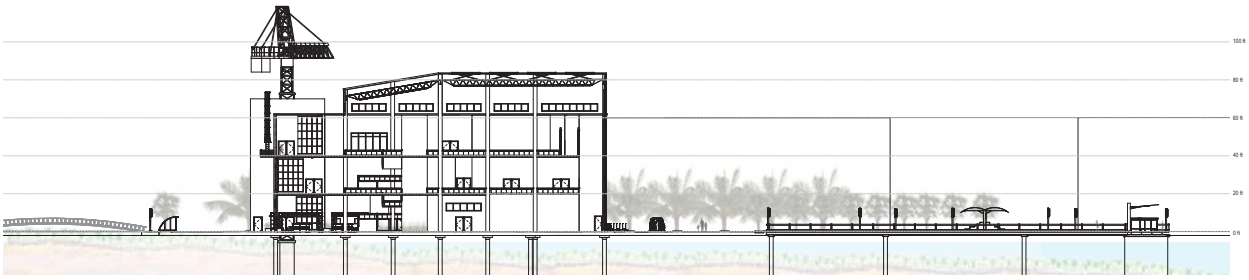


Figure 176_East/West section.
Source: Drawing by Author

Figure 177_First story perspective of the ferry boat terminal and maritime center.
Source: Rendering by Author



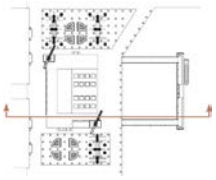
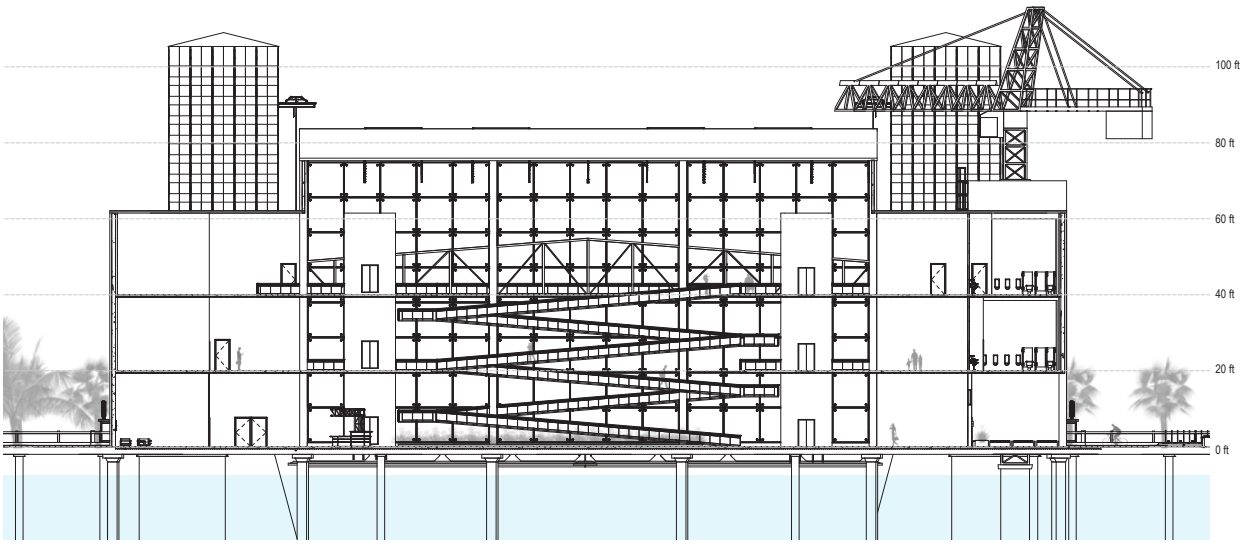


Figure 178_West/East section.
Source: Drawing by Author

Figure 179_Night perspective of pedestrian bridges from ferry terminal balcony.
Source: Rendering by Author



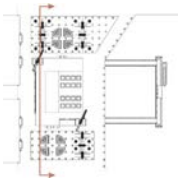


Figure 180_North/South section.
Source: Drawing by Author

Physical Connections

Figure 181_Diagram of physical connections.
Source: Diagram by Author

Visual Connections

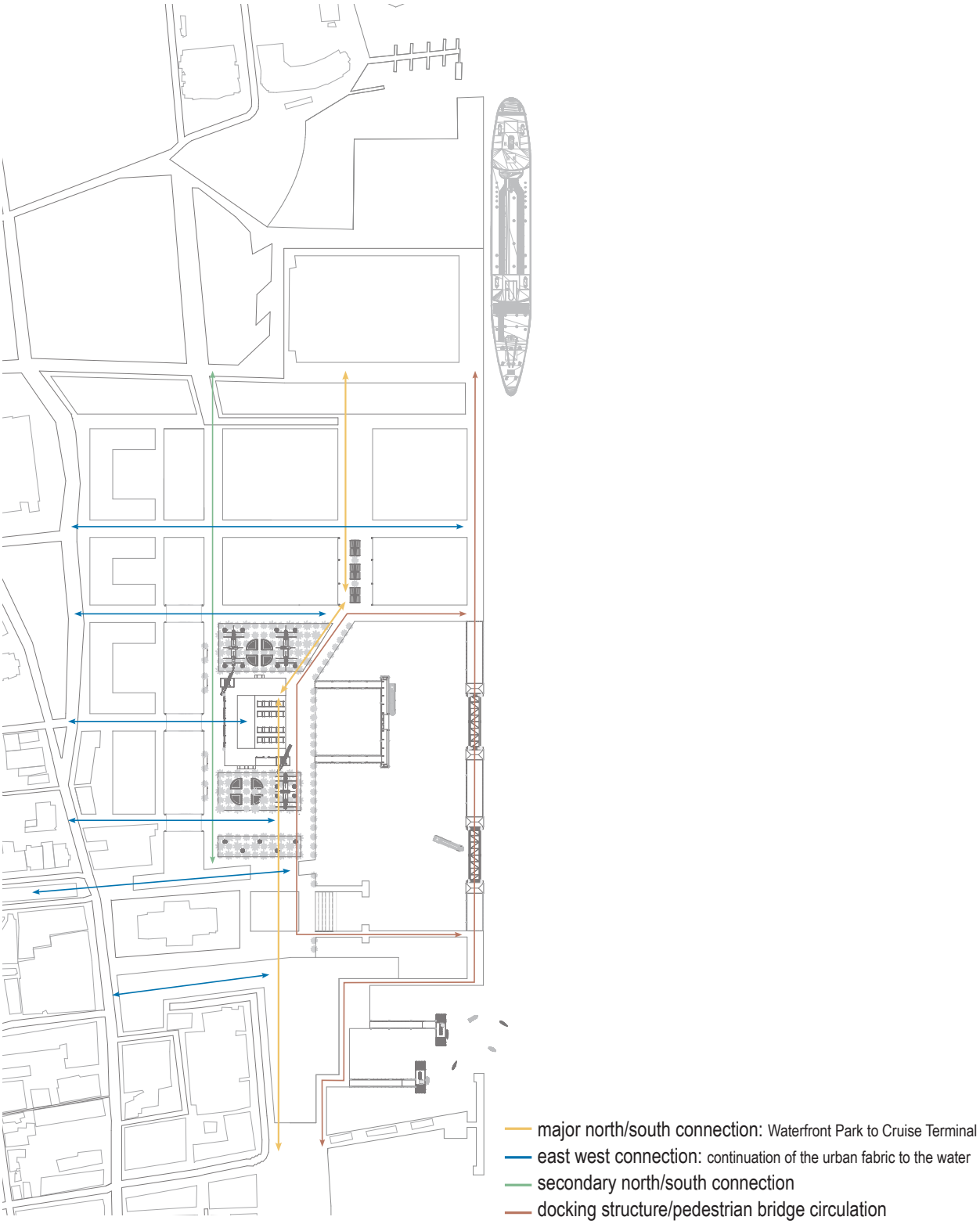


Figure 182_Diagram of visual connections.
Source: Diagram of Author

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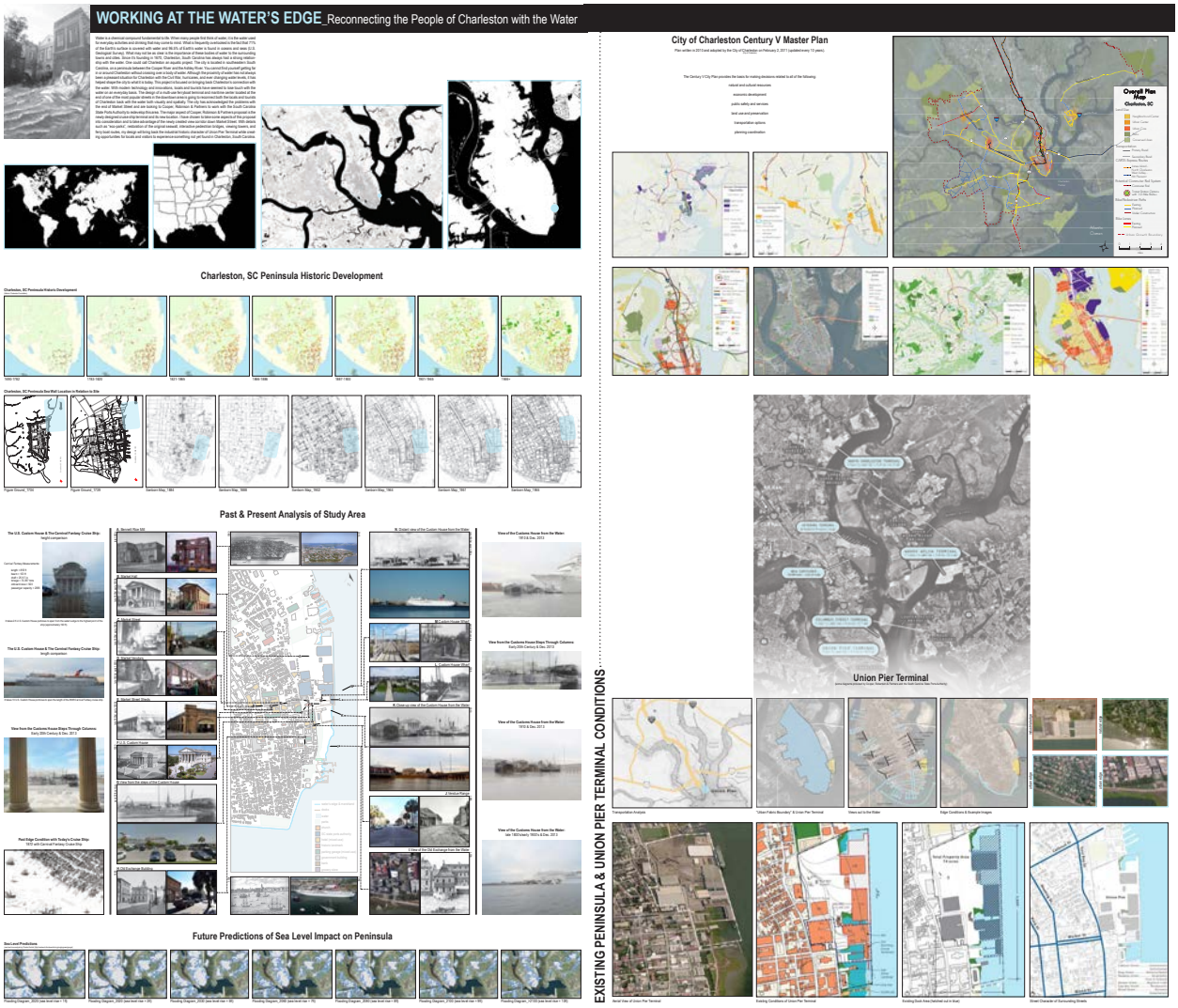
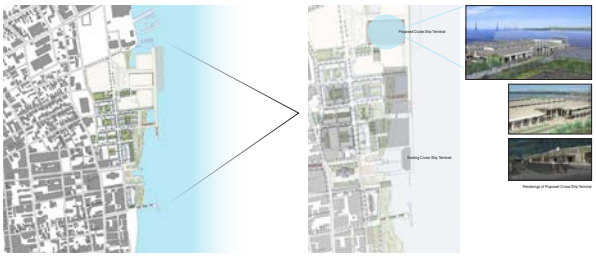
APPENDIX

Final Presentation Board (totaling 28ft long & 6ft tall)



COOPER, ROBERTSON & PARTNERS UNION PIER TERMINAL CONCEPT

Existing Conditions & Cooper, Robertson & Partners Proposal



Renderings of Proposed Cruise Ship Terminal

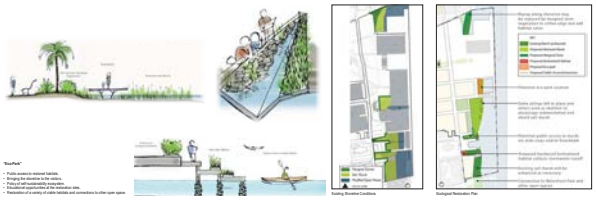
Concept Plan | Zones for Potential Bonus Height (in blue) | Transit Routes | Street Type Diagram | Pedestrian Network | Bike Network

Existing Conditions

Cooper, Robertson & Partners Proposed Conditions

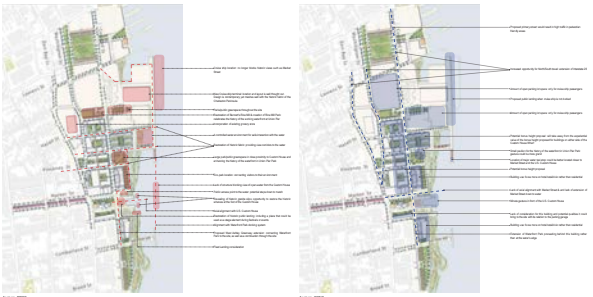
Rendering artifacts from Google Street View. Can't zoom any in, sorry.

Shoreline Restoration



FERRY BOAT TERMINAL AND MARITIME CENTER

Analysis of Cooper, Robertson & Partners Proposal



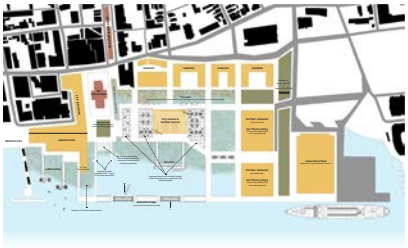
Analysis_PROS | Analysis_CONS

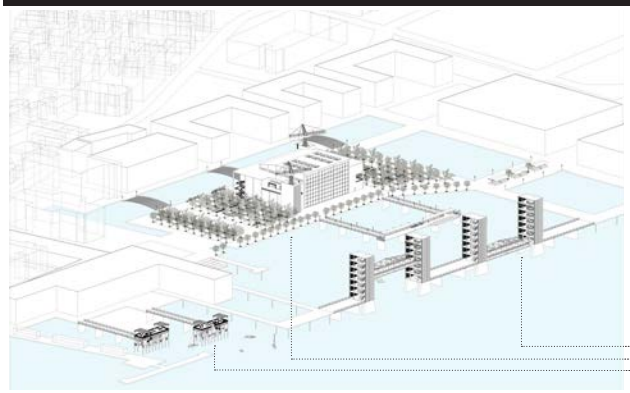
Water Taxi vs. Ferry Boat Routes

Existing Charleston Water Taxi Route (http://www.charlestonwatertaxi.com) | City of Charleston Master Plan | My Proposed Ferry Boat Routes

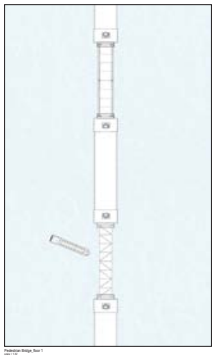
Nearby Proposed Union Pier Terminal area - map

Visually and Physically Connecting the People with the Water

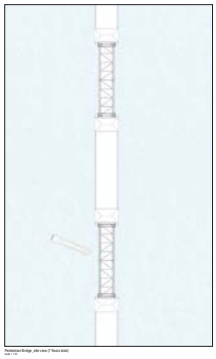




Pedestrian Bridge



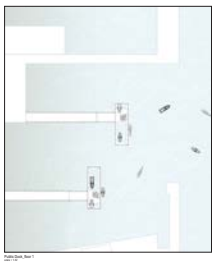
Pedestrian Bridge, floor 1
scale: 1:50



Pedestrian Bridge, side view (7 floors total)
scale: 1:50

Ferry Boat Terminal and Maritime Center

Public Dock



Public Dock, floor 1
scale: 1:50

Public Dock, floor 2
scale: 1:50

Design Analysis

Movement of Peter's Edge &Location of Original Seawall from 1756

Physical Connections

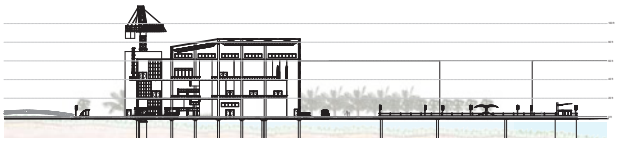
Visual Connections

view of the ferry boat terminal and maritime center from the pedestrian bridge

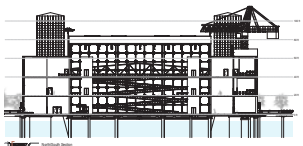
view of the pedestrian bridges and public dock from Waterfront Park

South Elevation
scale: 1:100

North Elevation
scale: 1:100

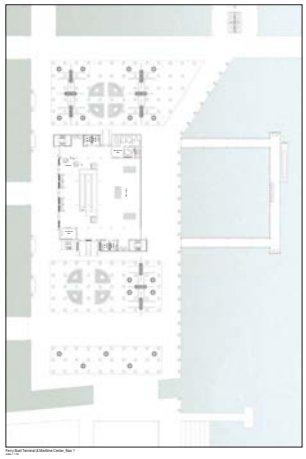


East/West Section
scale 1:128

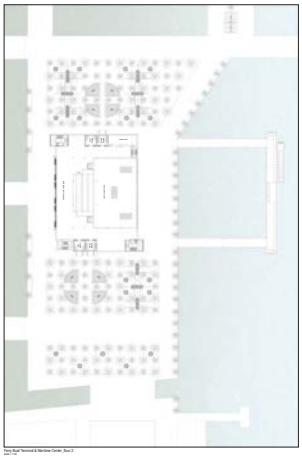


North/South Section
scale 1:128

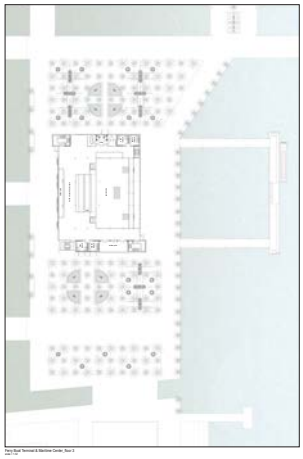
night perspective of pedestrian bridges from ferry terminal balcony



Ferry Boat Terminal & Maritime Center, floor 1
scale 1:128



Ferry Boat Terminal & Maritime Center, floor 2
scale 1:128



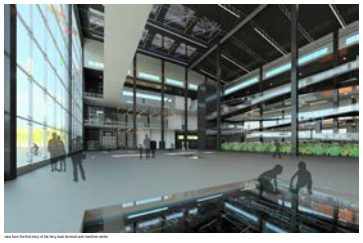
Ferry Boat Terminal & Maritime Center, floor 3
scale 1:128

boardwalk

perspective two: plaza

view of the water down Market Street

view walking towards the water over "sun pool" bridges



view from the first story of the ferry boat terminal and maritime center

view from the first story of the ferry boat terminal and maritime center looking towards the water

view from the third story of the ferry boat terminal and maritime center looking towards the city

view of the city from the sixth level of one of the viewing towers (pedestrian bridges)

North/South Section
scale 1:128

East/West Section
scale 1:128

VITA

Maria Fox was born in St. Mary's, Pennsylvania. When she was two years old, her family moved to Charleston, South Carolina, where she was raised and ultimately impacted what she wanted to be when she grew up. Having an appreciation of her hometown, as well as enjoying opportunities to portray her personality and creativity, she knew she wanted to be an architect since the seventh grade.

In May of 2009, she not only accomplished the title of being the first member of her family to go to college, she graduated with a Bachelor of Arts degree in Architecture and a minor in Business Administration from Clemson University. Through her four years studying architecture, her love and respect for the profession grew even larger.

Determined to be a licensed architect one day, she began the next chapter of her life at The University of Tennessee, Knoxville. In 2014, she graduated with a Masters in Architecture with a concentration in Urban Design and Conservation and Stewardship.

She plans to start her architectural career in Atlanta, Georgia, bringing her one step closer to achieving her goal she has had since the age of twelve.