

SAN FRANCISCO EMBARCADERO STREETSCAPE: A CONNECTION BETWEEN THE COMMUNITY, VISITORS & WATERFRONT



KAREN Y CHIN SPRING 2012
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SIGNATURES

San Francisco Embarcadero Streetscape
A Connection Between the Community, Visitors, and Waterfront

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ABSTRACT

The purpose of my senior project is to examine what makes a great street and apply my findings to The Embarcadero. A resident of San Jose, I visit San Francisco often and was surprised to see that The Embarcadero was not a very lively or interesting street to walk between Fisherman's Wharf and the Ferry Building. I wanted to research green open space, stormwater management, and walkability and utilize my research toward a redesign of The Embarcadero. The site is one of the main attractions of the San Francisco Bay and can be used as a conceptual plan for the San Francisco Planning's Better Streets project.

DEDICATIONS

My senior project is dedicated to my father, mother, and sister for supporting me through all my endeavors and always encouraging me to strive for the best.

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Thank you for your support, guidance, and assistance in making my senior project possible. I truly appreciate your time and knowledge in completing one of the most rewarding projects of my academic career. Thank you for your critique and words of wisdom that have helped shape my senior project.

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Special thanks to my calm before the storm:

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I. INTRODUCTION

The city of San Francisco is a metropolitan area that sits by the bay. Many of the streets, however, are not equally walkable or green. Many streets function to serve simply as a connection from one area to another, and therefore have become nothing more than bland and innocuous corridors of concrete surrounded by congestion and traffic. In particular, the Embarcadero in San Francisco serves its purpose of connecting vehicular and pedestrian traffic between several different tourist destinations but lacks elements that make the street memorable. Because of The Embarcadero's prominent location next to the Pacific Ocean and San Francisco Bay as well as the importance of its commercial and recreational life, the main street is a recognizable and historical landmark that has growth from previous urban design projects as well as room for innovative design. Though many pedestrians utilize the area as a tourist destination, the area has opportunity to promote increased walkability by designing a streetscape that breaks up the mass of concrete from the sidewalk and surrounding piers. Since the Embarcadero is a widely-visited street that serves both community members as well as visitors, the streetscape should be a design that not only serves its purposes for functionality but also

draws people back because of its memorable qualities and lasting impressions. The streetscape also must be able to serve a wide variety of people from bicyclists, people-watchers, pedestrians, tourists, and community members. The purpose of my senior project is to examine and research case studies of green walkable streets and apply the methods to a re-design a section of The Embarcadero between the famous tourist attractions of Pier 39 and the Ferry Building in San Francisco. My objectives include adding a green oasis of pocket parks to break up the mass concrete and add to a unique waterfront experience, managing storm water runoff on the pier, enhancing interactive pedestrian life for the community, and improving connections from the city, waterfront, and nearby tourist attractions.

The word "green" has become ever so popular in today's trending topics. Used to create a strong connection to the environmentalism that has evolved to become a prominent subject in today's society, "green" solutions are applied from landscapes to high-tech companies. A visual and functional element of an urban landscape, streetscapes offer a green aesthetic towards a sustainable future.

II. GOALS

The goal of my project is to use past case studies of green walkable streets and apply the methods to a design of a green oasis streetscape that defines a green livable urban environment. I want to show how the concept of a green oasis through the Embarcadero can:



Fig 2.1: Views of the Embarcadero waterfront

1. Enhance the existing green open space in the area as well as incorporate opening up the waterfront
2. Managing stormwater through a vibrant plant palette
3. Improve walkability and bicycle-usage.

III. DEFINING GREEN OASIS

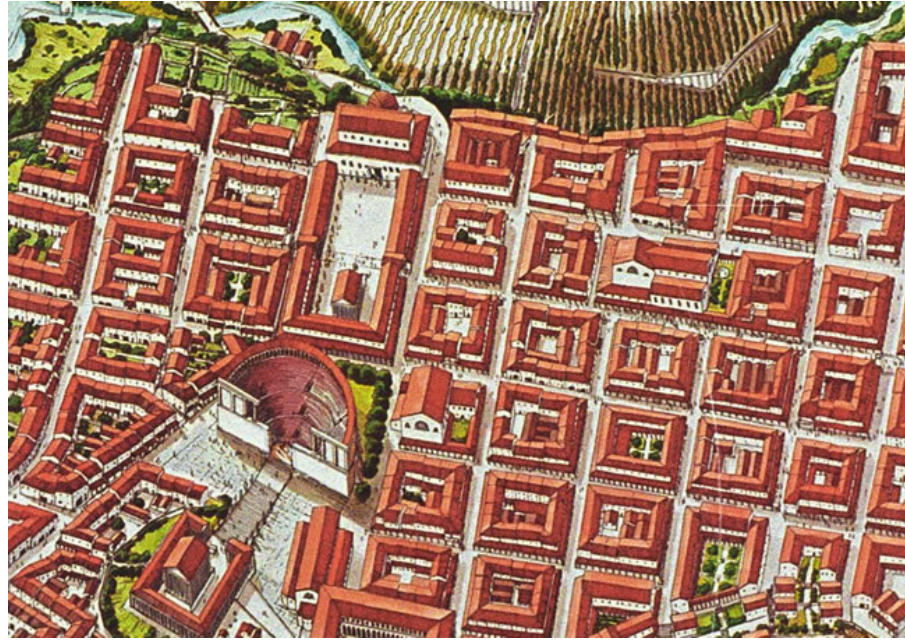


Fig 3.1: Roman street grid

Based on historical functionality, a street serves as a connection from one destination to another. Developed over time, the succession of civilization has contributed to the evolution of streets throughout time. Famous for their roads that constituted to the expansion of their empire, the Romans provided an influential example of the transformation of well-constructed roads that once served chariots and foot soldiers to streets that composed a comprehensive road network with a grid system. “To travel upon a Roman route system is an invigorating and fascinating experience; a constant and vivid reminder of the accuracy and efficiency of Roman

engineering, where no obstacle was insuperable” (Thompson, 1997). Providing a model for streets in the future, the Romans developed methods that influence future through networks of transportation that is more than simply a connection from one point to another. Modern streets today serve a social and economic purpose for both existing community members and new visitors. In addition, contemporary streets provide human, social, and commercial interaction. Greening of a street not only involves aesthetics, but also builds upon the Romans’ influence of creating an interesting street.

Concurrent with today's modern green consciousness and awareness, concrete streets like The Embarcadero can be livened up with a green oasis that includes ecologically and environmentally friendly features that break up the urban concrete surroundings of piers and public parking lots. The term green oasis can be applied to the process of greening The Embarcadero and providing interaction within the concrete jungle. Since The Embarcadero is composed of a long stretch of concrete that provides little visibility of the waterfront, my goal through the green oasis is to incorporate green pockets of open space that offer interaction and open up the view of the waterfront. In addition, the green pockets and streetscape can help stabilize and reduce climate change and support the green initiative with storm water management.



Fig 3.2: Concrete Piers of The Embarcadero



Fig 3.3: Pier 15

Features incorporated in the green oasis include the addition of green spaces to create a more interesting and aesthetically-appealing connection that incorporates prominent tourist destinations and historical aspects of The Embarcadero as well as the management of storm-water runoff from reaching the bay. “The great green spaces of the 19th century were parks, built as the lungs of industrial cities” (Gallacher, 2005). The addition of green space in The Embarcadero can add visual appeal to the site as a unique waterfront experience. While The Embarcadero includes many landmarks such as Pier 39 and the Ferry Building, portions of the northeastern waterfront are underutilized with vacant lots and dilapidated piers. A green urban oasis of gardens can be added to the area to provide low vegetation at intersections, pocket parks strategically placed to connect tourist attractions and promote walkability, as well as buffer zones with stormwater vegetation that allows for the trapping of runoff water from going into the bay.



Fig 3.4: Ferry Building



Fig 3.5: Fisherman's Wharf

A good streetscape should be able to provide a safe and protective environment for the benefit of the pedestrian through vegetation and planting. Elements of an urban streetscape include a landing strip that is used as a buffer from traffic, landscape planters, and characteristic amenities that complement the vegetation. Shade trees allow for stormwater management as well as reduction of the urban heat island effect. Urban heat island effect applies to heavily urbanized areas that remain significantly warmer than nearby areas because of the prevalence of heat-retaining materials like concrete and asphalt. Typically, urban heat islands are 5 to 8 degrees warmer than surrounding areas experiencing the same weather systems. (SPUR) Negative aspects of the urban heat island effect include high air conditioning costs, air pollution, and increased summer peak hours. Trees are a helpful mitigation strategy that can reduce summer temperatures and provide shade for pedestrians (EPA, 2012). "In San Francisco, from a 20th-century average of twelve days per year exceeding 81 degrees Fahrenheit, we could have 70 to 94 days exceeding this temperature by 2070 to 2099. The paradox of hot weather in milder climates, such as along the



Fig 3.6: 20th Avenue Streetscape in Kansas

California coast, is that people are much less prepared for and acclimatized to it (Tam, 2011). The issue can be solved with shaded areas, which can increase natural cooling that ground and roof surfaces need when plants and soil release water vapor into the air. Since climate change mitigation is much less expensive than adaptation programs, solutions that can be implemented today are beneficial toward the future. A buffer for traffic as well as solutions for landscape planters, shade trees will help The Embarcadero, currently lacking of vegetation, provide an aesthetically pleasing improvement as well as a practical limitation from nearby traffic.

IV. STORMWATER MANAGEMENT



Fig 4.1: View of The Embarcadero from the Pacific Ocean

Vegetation offers a connection between the built environment and the natural environment. Storm water management is a sustainable opportunity to capture runoff from roofs, parking lots, and streets to allow for reuse. Studies show that natural landscaping at a residential development can reduce annual storm water runoff volume by as much as 65%. The approach relies on vegetated natural systems to slow and filter the water (City of Portland). Water-loving vegetation can reduce runoff as well as filter the water for pollutants.

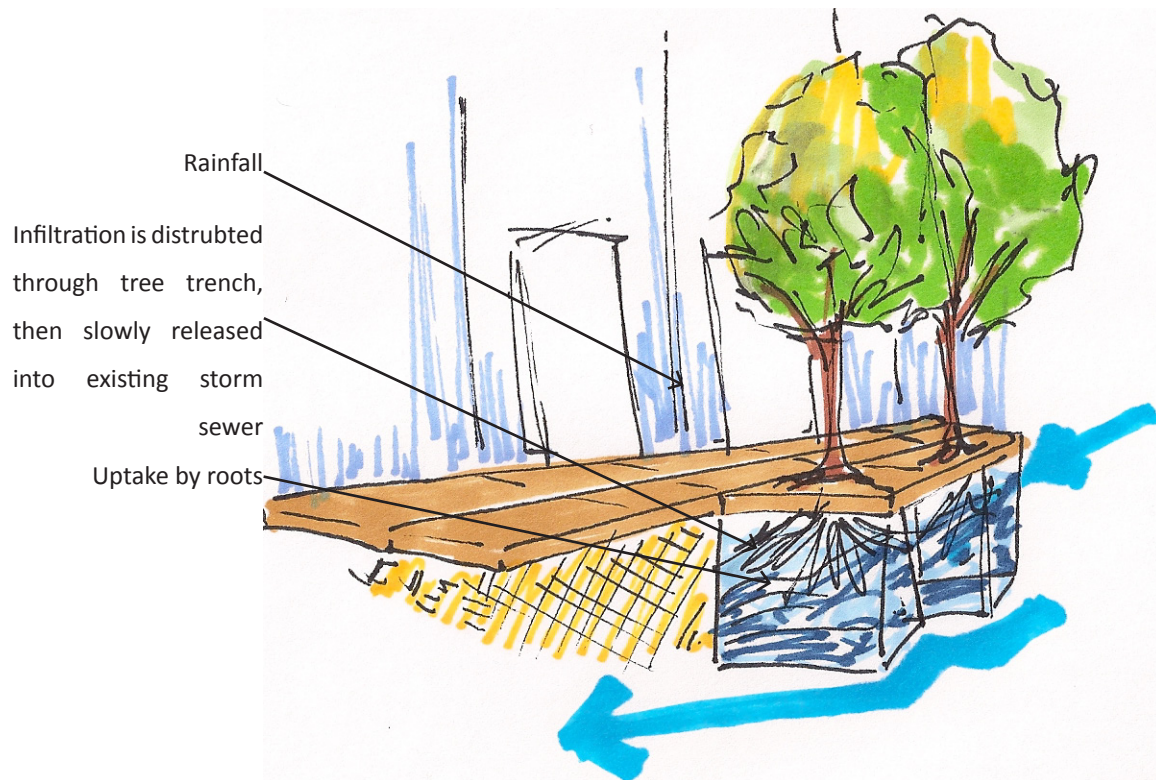


Fig 4.2: Stormwater Retention Planter

Elements of bio-retention and vegetative filter strips can be added along The Embarcadero to manage stormwater and runoff. Green space can be introduced to the area with the help of landscape buffer between the sidewalk and the bicycle and automobile road. The street stormwater planters are both aesthetically-pleasing and help manage nearly all the runoff from annual rainfall. The planters are bordered by curbs that prevent runoff from flowing into the bays, and additionally allows for re-use and redirection of surface runoff. “Stormwater in San Francisco is collected in the combined storm water and sewage system and conveyed to the City’s Southeast wastewater treatment facility in the Bayview-Hunters Point neighborhood” (Weiss Associates, 2012). Vegetation in the storm water management will help manage run off that can potentially harm and pollute the environment. The implementation of sustainable storm water management will benefit The Embarcadero, especially because of its proximity to the piers and Pacific Ocean.

Urban stormwater can not only be collected but also reduced through the usage of vegetated swales. “Vegetative swales are open, shallow channels with vegetation covering the side slopes and bottom that collect and slowly convey runoff flow to downstream discharging points (Weiss Associates, 2012). The swales are designed to treat runoff by filtering the water through the native vegetation and soil matrix. Trapping pollutants, the swales promote infiltration and reduce stormwater runoff.

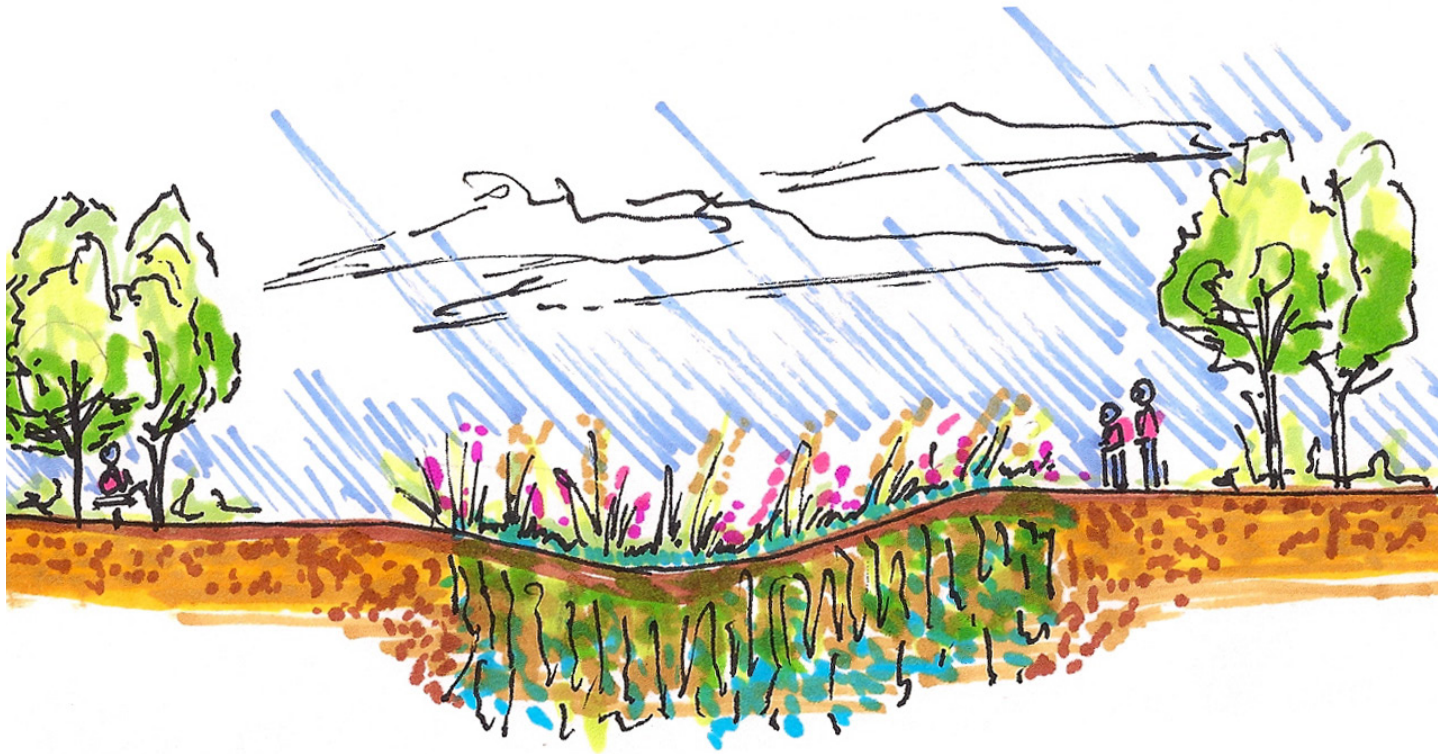


Fig 4.3: Vegetated Bioswale



Fig 4.4: Rain Garden

Rain gardens are another addition that can be used as a vegetative execution to prevent stormwater runoff. Native plants are an aesthetically-pleasing and beneficial tool that Vegetative gardens consume and filter rainfall that can be further collected and re-used to water additional gardens. The gardens can be placed in the green pocket parks along The Embarcadero to manage parking, surface, and rooftop runoff.

In addition to green spaces, porous pavers can be used on the sidewalks and street intersections to further allow for capturing of stormwater runoff. With the combination of reduced concrete paving as well as increased porous pavers, runoff can be managed for the benefit of the site. “Stormwater runoff carries sediment and toxins picked up from rooftops and parking lots that house substances such as oil from parked vehicles” (Gross, 2012). Eliminating runoff prevents substances from polluting the Pacific Bay.



Fig 4.5: Permeable Pavers

V. ENHANCING PEDESTRIAN LIFE & BICYCLE SAFETY

Along with vegetation that adds character to streets, the needs of the pedestrian and bicyclist are also important to what composes a great street. Circulation patterns define the spatial experience that pedestrians encounter when walking in a streetscape. The paths, bicycle lanes, and roads should be all connected to provide fluidity and promote connection. Benefits of streetscape in terms of pedestrian life include community character, accessibility, and public space. A strong streetscape includes connections to downtown and maximized public open space that is used as a welcoming for pedestrians and visitors.



Fig 5.1: Interactive pedestrian life on the Boulevard Saint-Michel



Fig 5.2: Vegetative buffer on Octavia Boulevard in San Francisco

A sense of personal safety and security in the defined pathways is also important in defining a pedestrian's view of streetscapes. In terms of safety, the length of the distance between clearly marked sidewalks and traffic along with the wideness of the sidewalk determines the safety of a streetscape, along with traffic calming techniques. Crime and road safety are issues that arise in terms of a pedestrian's overall sense of space in the site, but can be fixed with better design, lighting, and maintenance. Improved lighting has significant effects on reducing levels of fear and increasing pedestrian street use after dark and is the key variable with the potential to enhance the quality of the environment and thereby create a sense of social safety (Tolley 2003). A streetscape should be able to attract a visitor not only based on interesting views and amenities, but also because of the safe environment that the streetscape embodies.



Fig 5.3: Green bicycle lane in downtown Los Angeles

A good street focuses on safety as well as accessibility. “Besides being places one can walk to, great streets seem to be accessible by public transit, whether crossing them or along them or under them” (Jacobs, 1993). The streetscape is accessible to all modes of transportation, including pedestrians, bicyclists, train, bus, and automobiles. Vegetative buffers can be placed along the sidewalks and train stops to add a safety barrier from oncoming traffic. In addition, the five-foot wide bicycle lane and intersection crossings will be clearly marked with a distinct border to delineate between the road.

VI. CASE STUDIES



Fig 6.1: Boulevard Saint-Michel

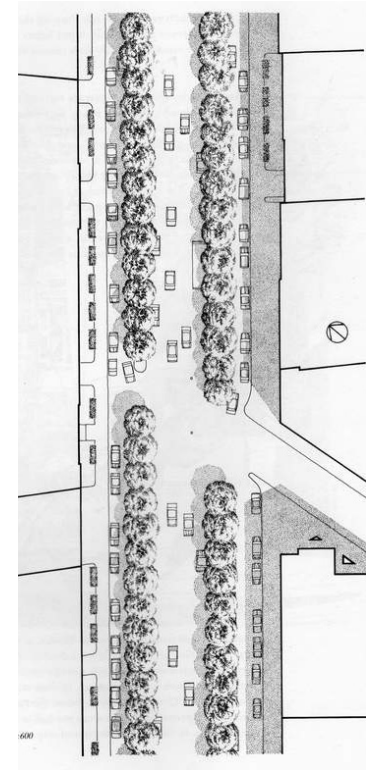


Fig 6.2: Boulevard Streetscape

“We all know a good street when we see one” (Jacobs, 1993). A street does not have to stop at being simply a connection from Point A to Point B. Streets are more than just public utilities-- a street needs interaction, vegetation, views, great architecture, and memorable details (Jacobs, 1993). A set of landmarks or intermediate destinations is in place, and development of views to them could incorporate them into pedestrian routes (Crankshaw 2009). The Boulevard Saint-Michel in Paris, France offers a London plane tree-lined boulevard that includes an inviting stretch of wide

sidewalks bordered by stores, cafes, and the Luxembourg Garden. Allan Jacobs, author of *Great Streets* comments on the Boulevard as an “attractive obstacle course”. An ideal model for streetscape, the Boulevard Saint-Michel serves as an inviting example of an interesting street. Streets with character influence a street’s identity, including distant views, views from a street into an urban space, or a landmark (Davis, 1997). The following case studies outline examples that will be utilized toward a streetscape on The Embarcadero.

Tom McCall Waterfront Park Portland, Oregon



Fig 6.3: Cherry Blossoms at Tom McCall



Fig 6.4: Seawall at Tom McCall

Governor Tom McCall Waterfront Park is located in downtown Portland in Oregon. Because of a seawall that was constructed to block the water from flooding, the people of Portland were also cut off from the views of the water. In 1978, the park was completed and named one of Portland's main attractions with beautiful views of the Willamette River. The park followed Frederick Law Olmstead Jr's request for the need for parks within the city, need for greenways along riverbanks, and need for preservation of river access for future generation. The park includes green spaces as well as a waterfront deck that allows visitors to reach the waterfront while being surrounded by cherry blossoms.

Tom McCall Waterfront Park follows the same ideals I would like to utilize in the streetscape design on The Embarcadero. Just like the seawall of the Tom McCall Park cut off the river from the people, the ports and concrete masses of The Embarcadero block most of the waterfront views from the community. The construction of the park opened up the waterfront to pedestrians and created an amenity to downtown, which attracts many visitors and community members every year. The waterfront park serves as a great case study for The Embarcadero.

Promenade Plantée

Paris, France

Located in Paris, France, the Promenade Plantée is an extensive green belt that was built on the right of way of the abandoned Vincennes railway line. Designed by landscape architects Jacques Vergel, the parkway was the first elevated park, which was succeeded by the High Line of New York. Stairs and elevators lead to the elevated raised route, which is composed of a promenade in a garden environment that provides excellent views of the city. The

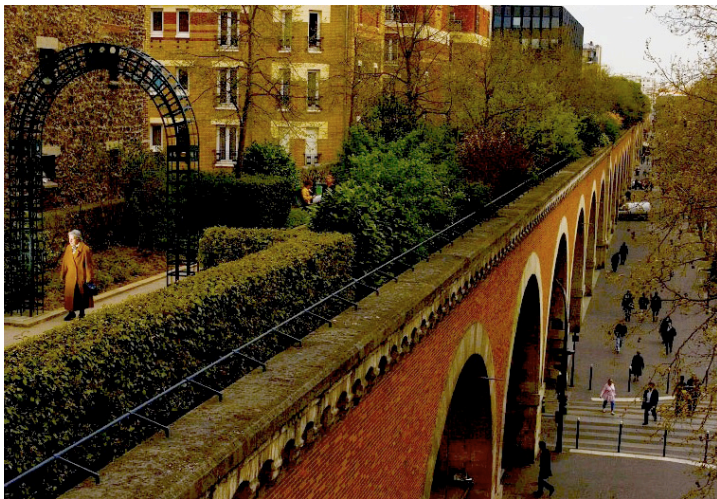


Fig 6.5: Promenade elevated viaduct



Fig 6.6: Promenade stairs and green wall

viaduct has also been renamed the Viaduc des Arts which includes exhibition spaces, cafes, and restaurants that add to the lush garden scene.

A prominent case study for The Embarcadero, Promenade Plantée offers a park environment in an elevated setting. Similar to The Embarcadero,

Southwest 12th and Montgomery Green Street Portland, Oregon



Fig 6.7: Stormwater Planter



Fig 6.8: Stormwater Planter Curb Detail

Located adjacent to Portland University, the Southwest 12th Avenue Green Street includes many methods that deem the street “green”. The streetscape successfully uses a series of infiltration planters that capture, collect, and filter stormwater runoff from the 12th Avenue. Water is collected in the stormwater planters until it reaches a depth of six inches. The water then percolates through the planter soil and infiltrates into the ground. 2006).



Fig 6.9: Stormwater drain



Fig 6.10: Green Streets Project educational sign

In addition to stormwater management, the streetscape maintains strong pedestrian circulation and on-street parking. “Built in summer 2005, the street retrofit project demonstrates how both new and existing streets in downtown can be designed to provide direct environmental benefits and be aesthetically integrated into the urban streetscape” (Sera Greenworks, 2006).

Newcomb Avenue San Francisco, California

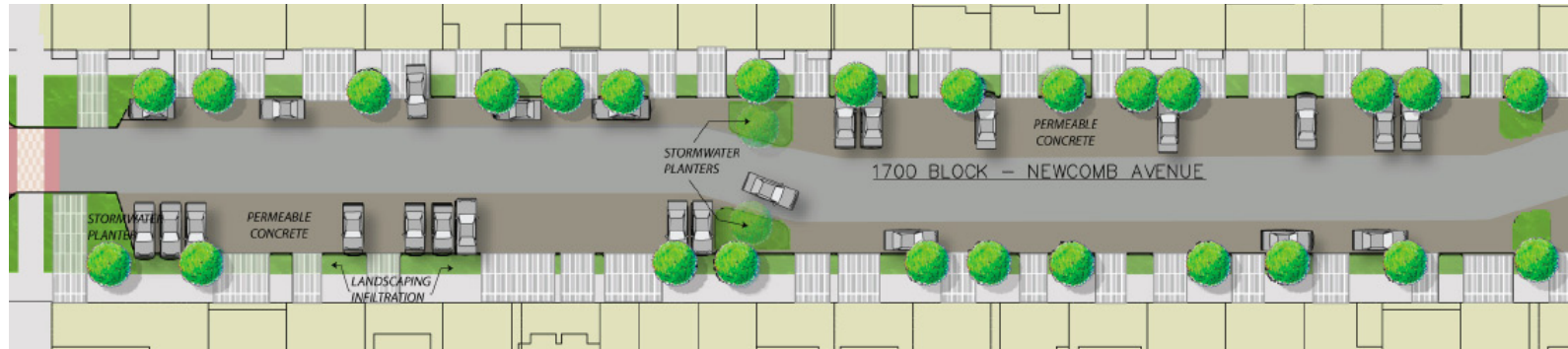


Fig 6.11: Newcomb Avenue Streetscape Plan

The San Francisco Planning Commission implemented a program called “Better Streets” to improve the streetscape and pedestrian environments of several streets in San Francisco. One of the streets is Newcomb Avenue, a street located in the Bayview District of San Francisco. The streetscape combines greenstreet treatments that have been commonly used in Portland, Oregon with permeable pavement on the street parking, greener sidewalks with more trees, and bulbouts to calm motor traffic. Through the project, the amount of stormwater runoff will be reduced by half. The benefits are also passed onto the community from the design, which brought together the community and reinforced activism and change.

The stormwater management systems can be implemented on The Embarcadero. Used as a tool to collect and filter water, the implementation system can also educate community members and visitors to the area. The streetscape stormwater management system can also be used as an example for future developments in San Francisco.



Fig 6.12: Newcomb Avenue Stormwater Planter

Avenue des Champs-Élysées Paris, France



Fig 6.13: Boulevard Streetscape

Arguably one of the best known streets in the world, the Champs-Élysées is a large 10-car wide street that is bordered by rows of greenery and frames the view of the Arc de Triomphe. The street provides a wonderful environment to stroll, sit, and take in the surrounding views of Paris. The natural surroundings of the rows of London plane and elm trees provide an offset to the distinct architecture that borders the street.

Though the street seems appealing, the Avenue de Champs-Élysées also includes factors that are unappealing and

unwalkable. The sidewalks are too wide at thirty-five feet, and the total of ten vehicular lanes makes the road seem more friendly to cars than pedestrians. The avenue is a great example of a visually-appealing street, but also increases the need to speed because of the many lanes. The sidewalk is too wide even to balance the traffic lanes, and “outdoor cafes and furniture take up about 16 feet of space and stick out like a sore thumb since they bulge out into the sidewalk, forcing pedestrians away from shops and into wide paved areas (Jacobs, 1993).



The Embarcadero is already a walkable street because of the close proximity to landmark destinations of Fisherman’s Wharf and The Ferry Building, but improvements on bringing the street to life can be made. The case studies represent examples of products of creative initiative that can be incorporated into a better street design for The Embarcadero.

VII. SITE ANALYSIS

Location



Fig 7.1: San Francisco Location

The site is located at the northeast corner of San Francisco in California. The specific portion I chose to redesign is located by Pier 15 and 17 in the middle of The Embarcadero, which is next to the new development of The Exploratorium. The design can be extended on the whole length of The Embarcadero.

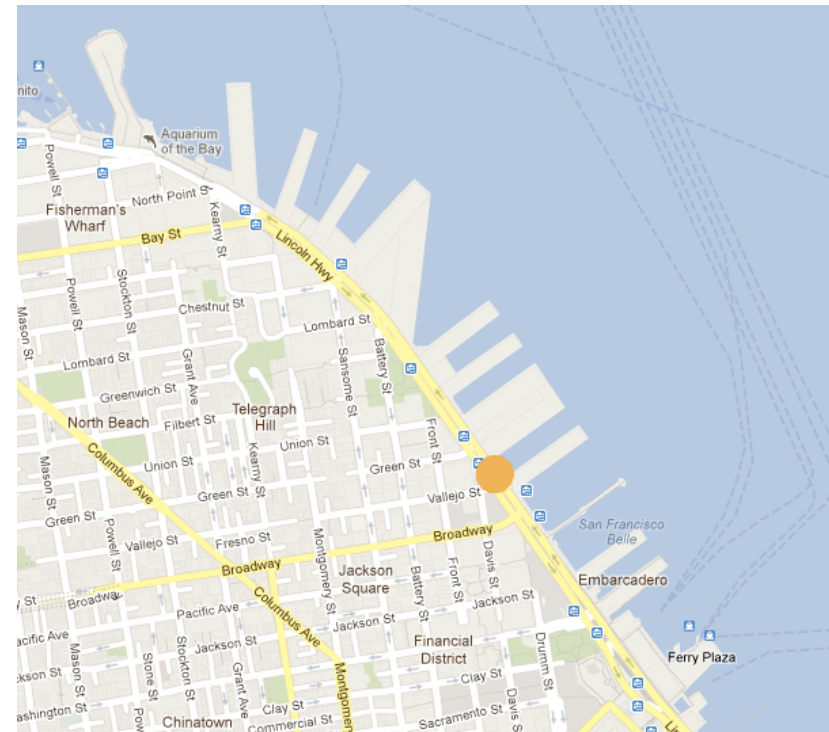


Fig 7.2: Embarcadero Location

History

The 1989 Loma Prieta Earthquake brought destruction yet also great change to The Embarcadero. The waterfront streetscape previously consisted of the Embarcadero Freeway. Constructed in 1958 despite the public's resistance, the freeway sought disapproval from residents as it brought in heavy traffic from the Bay Bridge. Debates began in 1986 to remove the Embarcadero Freeway, which were followed by the Loma Prieta earthquake in 1989. The earthquake severely damaged the freeway and consequently resulted in the removal of the Embarcadero Freeway in 1991. Opening up the area to new development, the Loma Prieta Earthquake allowed for the replacement of the freeway with a ground-level boulevard.



Fig 7.3: The Embarcadero in 1954



Fig 7.4: The waterfront view of The Exploratorium

To better benefit the city's tourists and residents, the San Francisco Planning Department has developed a wide variety of streetscape and re-use projects including a previous re-design of the Embarcadero Waterfront which began in 1998 (Karlinsky, 2010). While the Embarcadero has already been re-designed in 2002 from Fisherman's Wharf to the Ferry Building, the project is being completed in phases and still offers room for improvement and opportunity with the addition of another tourist landmark, the future Exploratorium that will replace Pier 15.

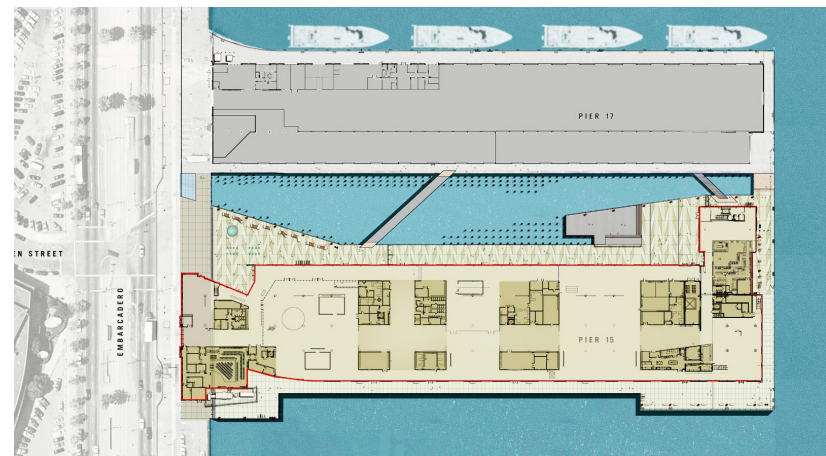


Fig 7.5: The Exploratorium site plan

A strongly pedestrian and public-transit oriented culture, San Francisco has opportunity for design in streetscape. Though the Embarcadero has been redesigned after the Loma Prieta Earthquake of 1989, the streetscape does not allow for strong pedestrian amenities or a captivating view of the natural landscape. Redesigning The Embarcadero with a focus on a series of urban pocket parks would not only bring in economic initiative for tourists and community members, but also enlighten residents of the benefits of greening the streetscape and sustainable living.



Fig 1: The glass ribbon that runs throughout The Embarcadero, designed in 1990

Problems and Existing Conditions

The Embarcadero includes two major tourist destinations connected by a twenty-five foot wide sidewalk. Bordered by the waterfront, The Embarcadero includes great views of the bay but many pedestrians do not utilize the spaces because the lots between the piers are used for parking and enclosed with high fences. In addition, the street is barren and includes minimal vegetation, leaving the site looking very stark. Because the street has a high volume of pedestrian usage especially visitors during the holiday and summer seasons, The Embarcadero can use a street design for revitalization.



Fig 7.7: Barren with little vegetation



Fig 7.8: Mass of concrete sidewalks and piers



Fig 7.9: Tall fences and parking lots block the waterfront



Fig 7.10: Piers are mostly used as lots for parking



Fig 7.11: Waterfront views of the bay which are mostly blocked by fences and ports



Fig 7.12: The new Exploratorium and the beautiful waterfront views expensive because of the vacant lots on The Embarcadero as well as parking at Fisherman's Wharf. The layout of The Embarcadero is consistent from North to South, with no street parking and wide sidewalks with little vegetation. In the future by 2013, the Exploratorium will move from The Palace of the Arts to Pier 15 and 17 in the middle between both tourist nodes. The area will bring in more tourists and economy, which is another reason for a need for a redesign to fit the needs of walkability for The Embarcadero.

Walking down The Embarcadero on a Saturday afternoon, I saw many people concentrated at both tourist destinations. Fisherman's Wharf always has a high focus of tourists while The Ferry Building had increased visitors with its Saturday Farmer's Market. Most pedestrians took advantage of the Muni public transportation and created a heavy flow of traffic from the south end of The Ferry Building to the north end with Fisherman's Wharf at Pier 39. Automobile traffic was constant but not congested, and parking was plentiful but

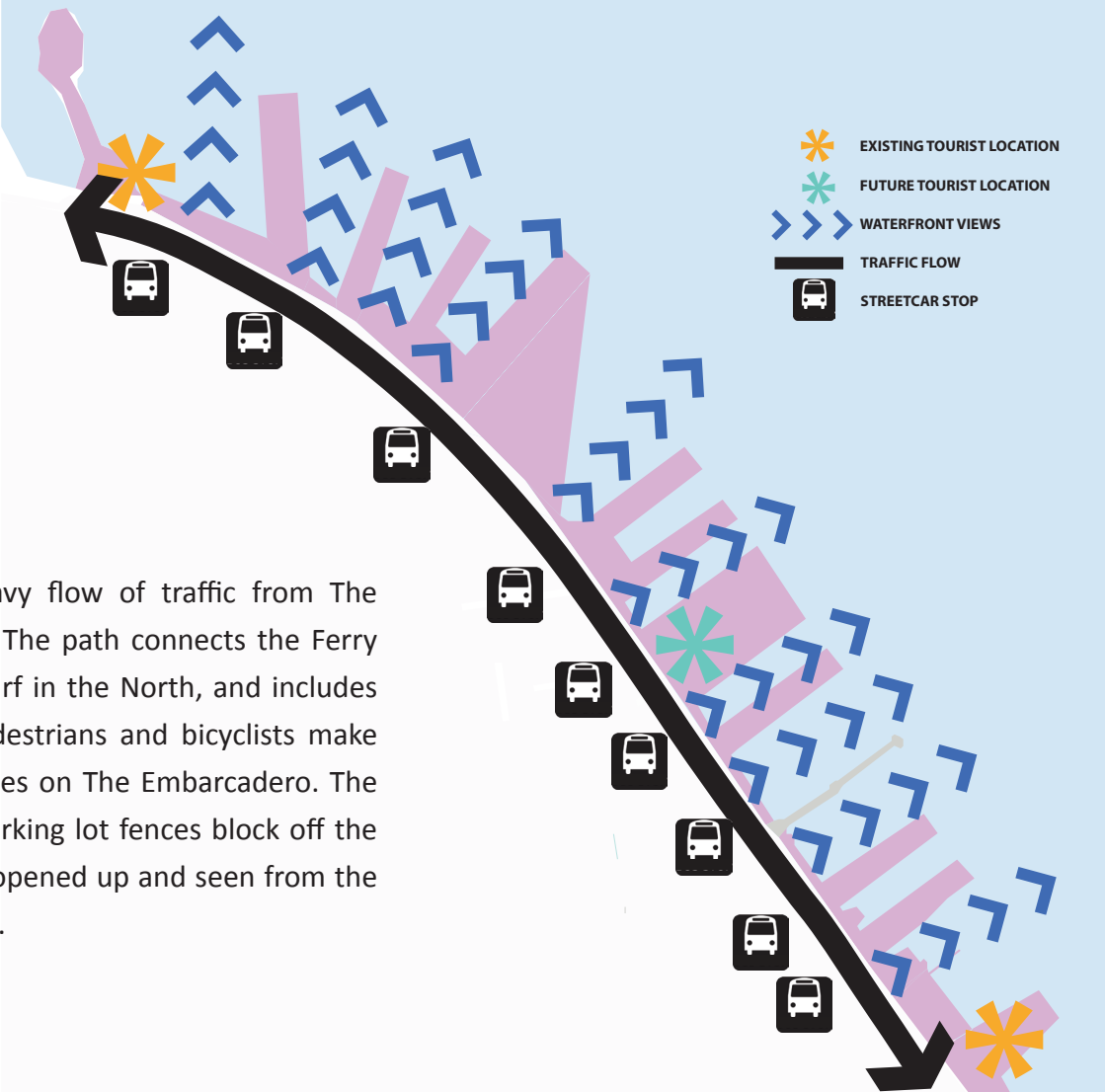
Land Use

The site is composed of many ports that are used for freight, storage, transportation, and office space. Vacant parking lots, office spaces, a restaurant, and the large concrete ports surround the specific site I chose. Most development on The Embarcadero is residential and office space, which is blocked off by large ports and vacant parking lots which disturb the serenity of the waterfront views.



Fig 7.13: Land Use of The Embarcadero and its surroundings

Context Map



The thick black line represents the heavy flow of traffic from The Embarcadero to Bay Street in the north. The path connects the Ferry Building in the south to Fisherman’s Wharf in the North, and includes many streetcar stops along the way. Pedestrians and bicyclists make up the majority of the transportation types on The Embarcadero. The existing large concrete piers as well as parking lot fences block off the gorgeous views of the bay, which can be opened up and seen from the street level with urban green pocket parks.

Fig 7.14: Overview of The Embarcadero

Opportunities & Constraints

The site includes two vacant areas used for parking between the ports, as well as two large public parking lots, which allow for opportunities for green pocket parks, which can be extended along The Embarcadero at other vacant lots. A dominating constraint is the large piers that block the views of the waterfront. Large fences as seen to the right and below on the map block the views of the pier. The open lots between the piers can be transformed into a green oasis that leads pedestrians into a pocket park that overlooks the vast waterfront.

The streetcar railroads are also another constraint, but would be impractical to redirect because of the high cost. Bordered by masses of concrete, the railroad tracks can be masked with a green border of vegetation that adds to



Fig 7.15: One of the many fences that surround the waterfront



Fig 7.16: Parking lots that block the waterfront

Circulation

The thick solid arrowed line represents the heaviest flow of pedestrian traffic on The Embarcadero. The dashed line on the opposite sidewalk shows a lighter flow of pedestrian traffic. The blue dashed line represents streetcar public transportation which many pedestrians use to reach the site. Pedestrian traffic from the streetcars is expected to increase with the new addition of The Exploratorium. Bicycles travel to the side of the sidewalk, next to a two-lane road for cars.

The proposed plan incorporates wide but not too large sidewalks with street elements such as green urban pocket parks, vendors, vegetation, and aesthetic details. The urban pocket parks are shown through the green spaces on the map. Wide clearly delineated pedestrian crosswalks occur often, which regulates the traffic pace. Vacant open lots can be transformed into usable green spaces that provide a connection for the community members to the rest of the green oasis on The Embarcadero.

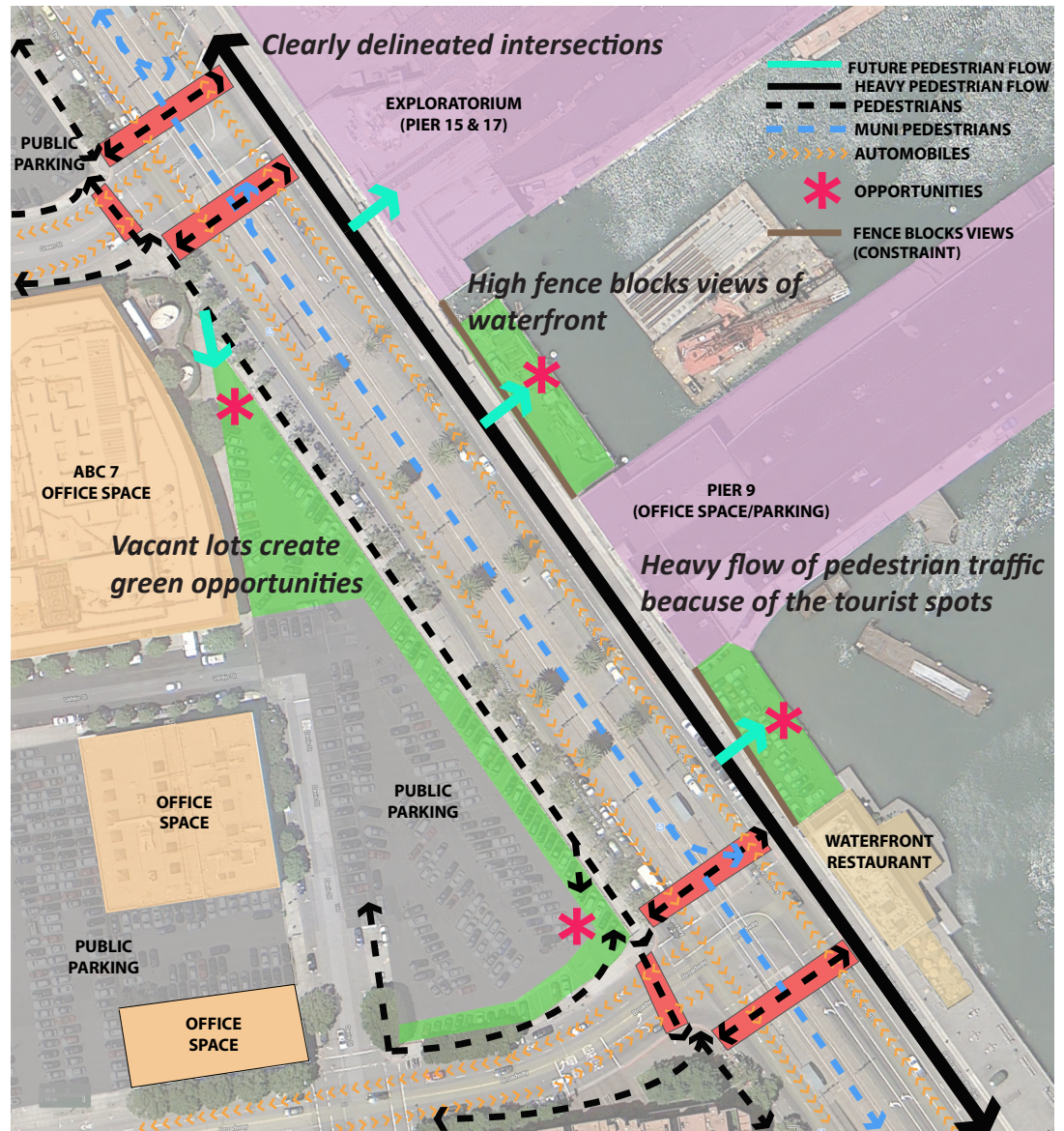


Fig 7.17: Opportunities & Constraints Map with Circulation

Layout of the Green Oasis

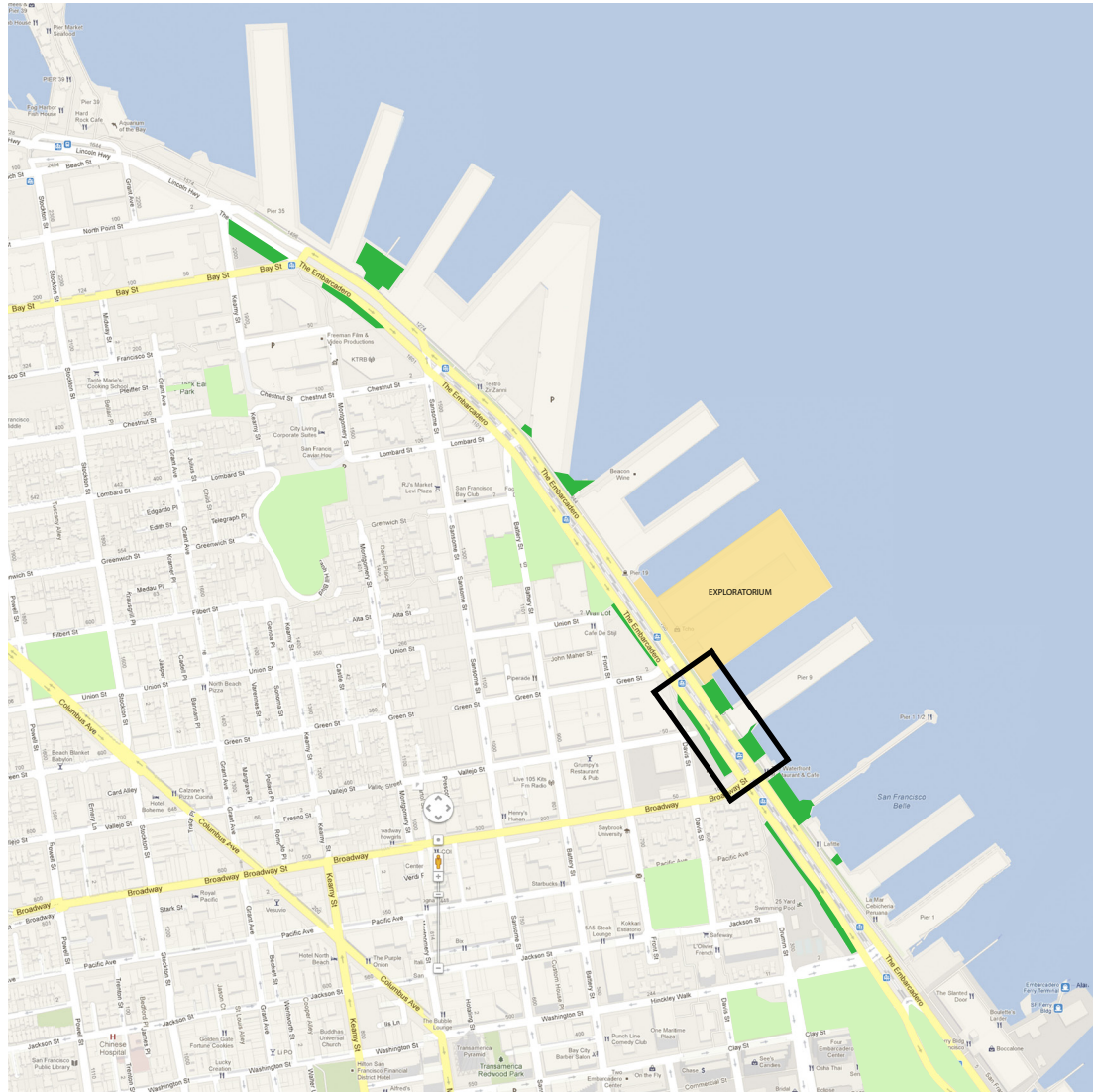


Fig 7.18: Specific Site Location

The streetscape of The Embarcadero will be redesigned from Fisherman’s Wharf to the Ferry Building. The dark green spaces highlight new additions to the green oasis, while the light green spaces highlight existing green spaces.

The black box shows the site I chose to redesign. The design of the urban pocket parks can be repeated along The Embarcadero.

The green pocket spaces complete the goals of enhancing waterfront views with open parks, managing stormwater re-use, and improving pedestrian and bicycle interaction and safety.

VIII. DESIGN SITE PLAN

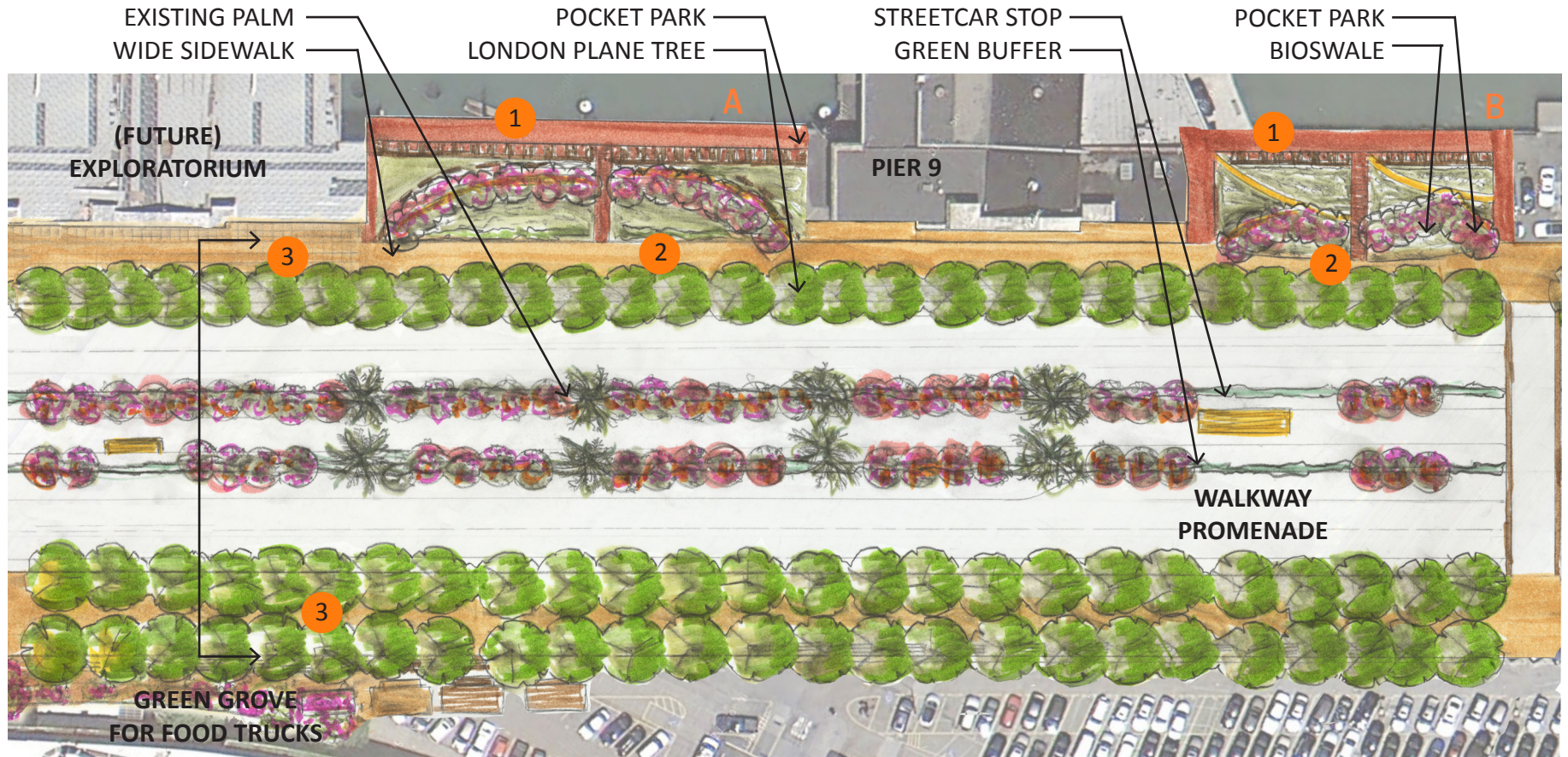


Fig 7.19: The Embarcadero Streetscape Site Plan

The proposed design benefits the community members as well as the environment through the utilization of past case studies of green walkable streets. Three goals are established in the final plan:

- 1 Vegetated pocket parks and open spaces through a green oasis running along The Embarcadero that opens up the waterfront
- 2 Managing stormwater through a vibrant plant palette
- 3 Improving walkability and bicycle-usage.

ENLARGED DETAIL A

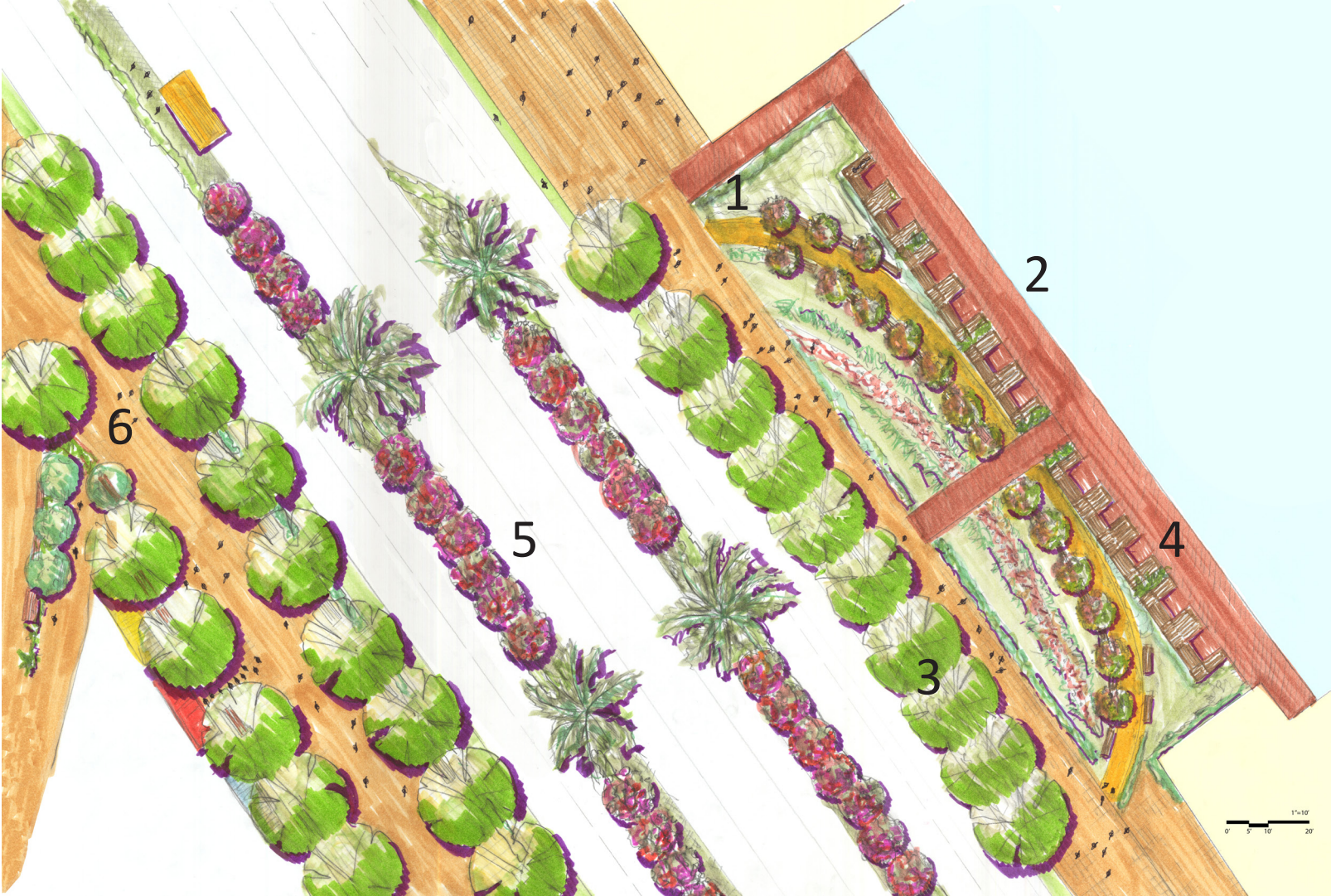


Fig 7.20: Detailed enlargement of the northern pocket park

- 1. BIOSWALE
- 2. WOOD BENCHES AND LOUNGE CHAIRS
- 3. STORMWATER PLANTERS
- 4. PIER OVERLOOKING WATERFRONT
- 5. STREETCAR BUFFER
- 6. GARDEN GROVE FOR FOOD TRUCKS

ENLARGED DETAIL B

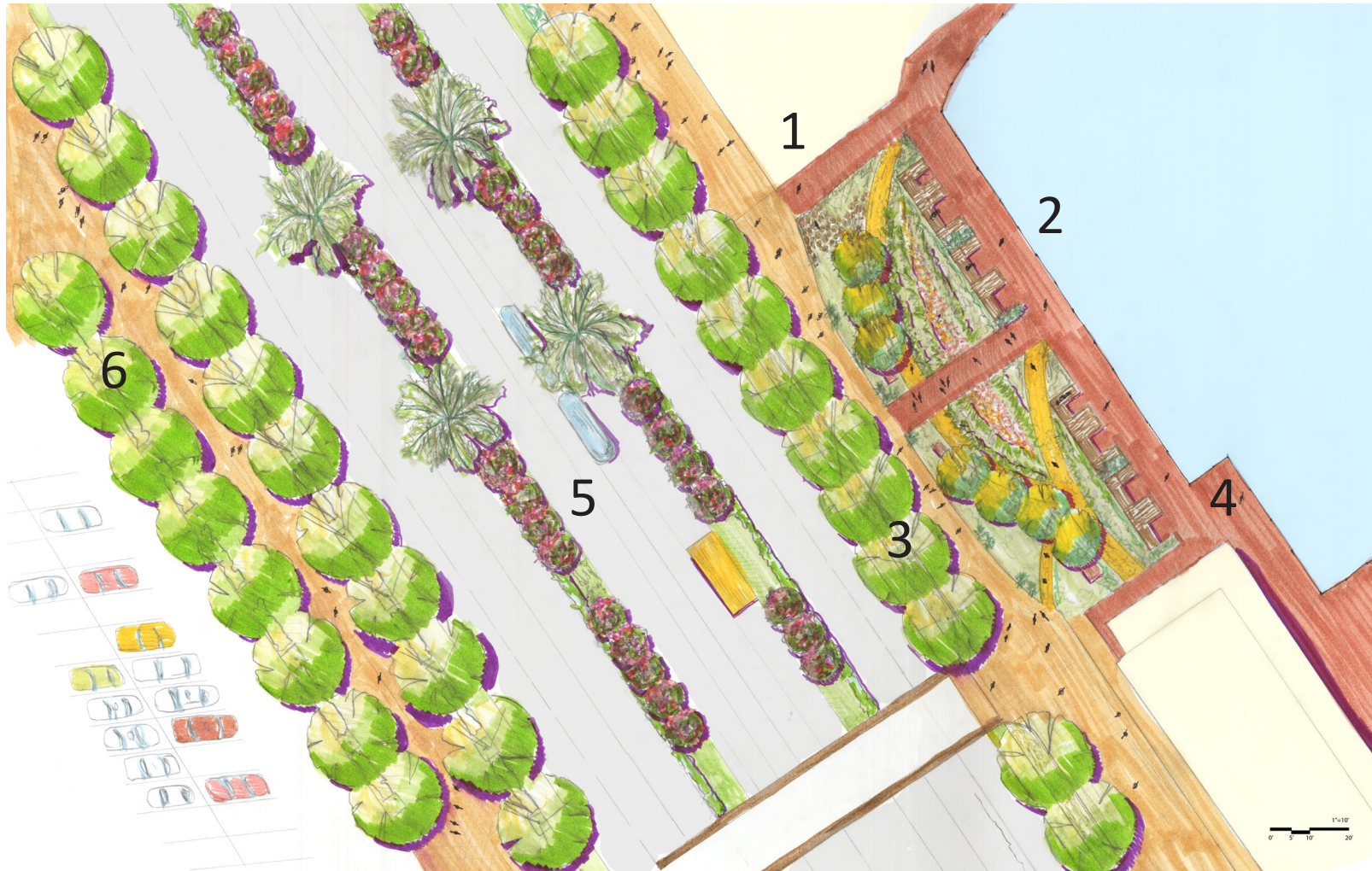


Fig 7.21: Detailed enlargement of the southern pocket park

- 1. BIOSWALE
- 2. WOOD BENCHES AND LOUNGE CHAIRS
- 3. STORMWATER PLANTERS
- 4. PIER OVERLOOKING WATERFRONT
- 5. STREETCAR BUFFER
- 6. SHADED PROMENADE

SECTION-ELEVATION

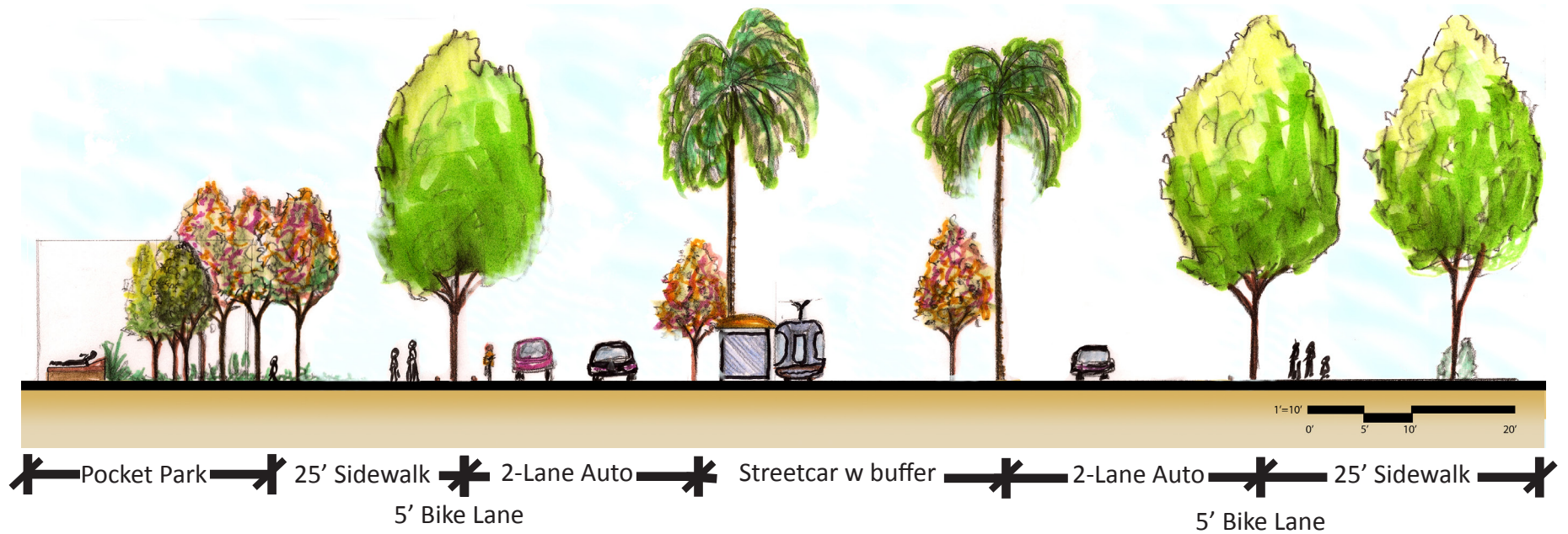


Fig 7.22: Section-elevation of the streetscape redesign

CREATING AN URBAN OASIS in a concrete jungle

The vegetated pocket parks allow for access to the waterfront as well as open space that offers comfort and leisure to pedestrians. The area welcomes visitors to the site and complements the existing Fisherman's Wharf and Ferry Building as well as the future Exploratorium. The open space also allows for the introduction of street vendors and food trucks that bring business and economy to the area. In addition, the green oasis of open space brings the waterfront closer to the sidewalk and utilizes the natural views that bring tourism to the area.

STORMWATER RETENTION PLANTERS infiltrate and re-use

Stormwater is a natural resource that can be captured and utilized for re-use. The capturing of storm water also allows for filtration, which screens the water for pollutants that could potentially harm the bay. Swales of natural vegetation offer a system to accumulate runoff. The addition of stormwater natural vegetation planters collects water in a natural way for re-use and also benefits the environment from pollution.

IMPROVING WALKABILITY for pedestrians and bicyclists

Safety of alternative transportation users is also a priority in the site. The design allows for places for people to walk with leisure and physical comfort. Bicyclists use a clearly delineated bike lane designated with a green colored concrete to reach one destination to another. A vegetation buffer protects the streetcar pedestrians walking along the median from the moving cars in the two-lane roads. Large trees border all sidewalks and provide a shaded promenade for walking from one tourist spot to another.

REGARD FOR THE FUTURE



Fig 7.23: Perspective of the urban parks and new Exploratorium

“Ask a pedestrian on a San Francisco street what physical, buildable characteristics are most important to achieving a great street and the answers are very likely to include words like cleanliness, smooth, and no potholes” (Jacobs, 1993). The street offers more than just a person’s expectations of what a street delineates. In addition to the design goals, the idea of interaction and maintenance is also important. The public site acts lively interaction with the scenery as well as a tool for education through the stormwater planters and green pocket spaces. The use of education also ties into maintenance for the future. The more people are educated about the importance of the design goals that prolong future goals and placing the environment first, the more likely future societies will have concern for the protection of their natural surroundings on The Embarcadero.

IX. CONCLUSION

“There is magic to great streets. We are attracted to the best of them not because we have to go there but because we want to be there. The best are as joyful as they are utilitarian. They are entertaining and they are open to all. They are symbols of a community and of its history; they represent a public memory.” Allan B. Jacobs



Fig 7.24: Span of The Embarcadero

The proposed redesign of The Embarcadero conceptually turns an idea into reality. In addition, the project promotes a growing awareness regarding the future of the environment that is descending upon us. A good streetscape should be able to provide a safe and protective environment for the benefit of the pedestrian through vegetation and planting. A perfect example that streets and roads are more than simply a connection point from A to B, the redesign proposal is an approach to a more people-friendly and ecologically sustainable environment. Urban streets capture and

liven the neighborhood and contribute to making the site a house-hold name as well as a destination that encourages public interaction from community members as well as tourists from around the world. Utilizing Portland, Oregon as a key example, the green street movement is able to spread south and further inform residents about the goals of improving urban green open spaces, stormwater management, and the positive interaction between various alternative modes of transportation within a site.

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