

Planning for Sea Level Rise: Redevelopment Concepts for San Francisco's Embarcadero

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In the Fall Quarter 2017, the third-year urban design studio run by the authors collaborated with San Francisco's Port Authority in developing ideas for how the city's Embarcadero waterfront could be redeveloped to its full potential, enhancing livability and preparing for sea-level rise. The thirty-two students, organized into six teams, developed plans and ideas for different sectors, as highlighted in these pages.

In Fall Quarter of 2017, the third year BSCRП students enrolled in CRP 341, the most advanced urban design studio in the undergraduate City and Regional Planning curriculum, were presented with a challenge: to develop a design strategy for one of the most iconic and famous waterfronts in the world – San Francisco's Embarcadero. Supervised by the authors of this article, their client was the Port Authority of San Francisco, a semi-independent entity that oversees the city's port facilities and real estate. With regulatory and economic jurisdiction of the land along the waterfront and the numerous piers and maritime structures that are connected to it and jut into San Francisco Bay, the Port Authority is financed by revenue from these waterfront lands and facilities. It, therefore, has a great interest in future developments in these properties and those around them, as well as in guiding these development to protect their assets.

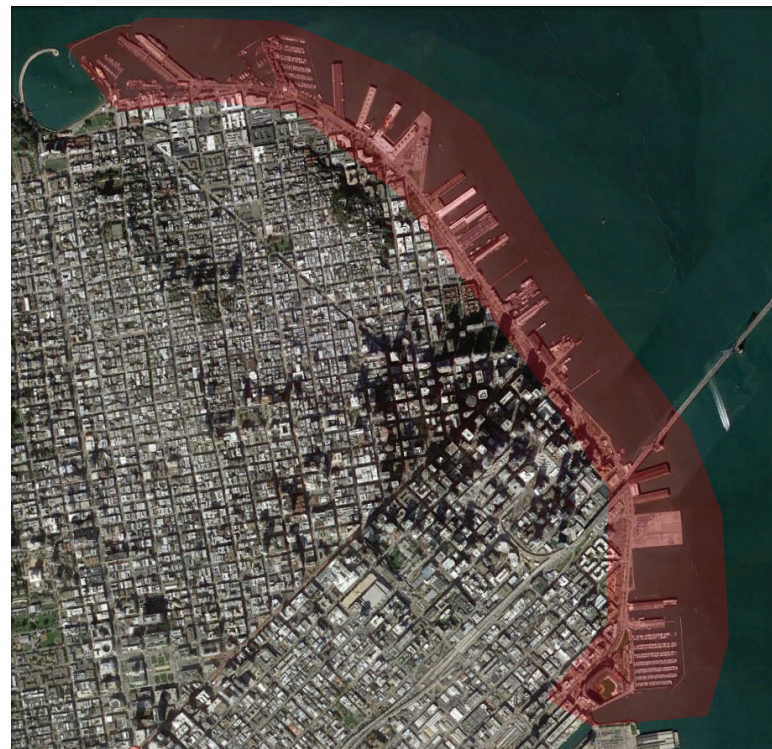
This was not a task for the faint of heart! The site included: as backdrop, the iconic skyline of the city, with its newly acquired "superstar" Salesforce Tower its glowing blue dome towering over the water at night; the iconic Ferry Building as one of the focal points of the waterfront, a hub for water connectivity to destinations around the bay; and, the destination Pier 39 with its stores, restaurants, trinket shops and sea lions and scenic views of Alcatraz and the Golden Gate Bridge (Figure 1). However, compounding the challenge was the client's mandate that the students were to address sea level rise impacts and design to mitigate and redevelop under these conditions. They were to concentrate in the area between the Maritime Park (North) and the ATT Park (South). These lands, under the Port of San Francisco's jurisdiction, required design proposals to include only those uses and activities with a maritime connection – as this was the Port Authority's prevue.

Not at all daunted by this task, the students formed six groups of five to six students and began to address different sections

of the site. A review of the literature and the standards provided by Port Authority engineers and planners helped establish the anticipated levels and timing of sea level rise, and literature searches and case studies revealed what other ports around the world are doing to address these issues proactively.

The group started their first-hand investigation of site with a field trip to the Port Authority offices on Pier 1, where presentations by Port Authority staff provided them with background history, overall intentions, and opportunities and challenges to address: to work at the scale of a preliminary concept specific plan and come up with design ideas that factored in the economic, cultural, political, environmental, social, regulatory forces that were explicit and implicit in the design to be addressed.

Figure 1: The initial study area along San Francisco's Embarcadero.



The groups had to work together to formulate how to connect the discrete nodes and districts along the Embarcadero, a strip of real estate rich in entertainment and activities, that make it one of the city's most significant tourist destination. Their proposals were to create an integrated and continuous promenade, featuring development that served to strengthen, and complement existing and very successful activities, and enrich it with the introduction of new attractions to broaden the "draw".

Students groups completed the field investigation of the whole study area and of their discrete sections along the Embarcadero. They surveyed the area, collected photographs, observed activity, and got a sense of place of their respective sites. The site across from the AT&T Park to the south was home to emerging high-rise residential towers. The Ferry Building with its food and gift stores, public plazas to front and back, the hustle and bustle of the ferries is a strong popular node. The Exploratorium on Pier 15 provided cues for complementary additions, and Pier 33, with the ferry to Alcatraz, was a highly energized and populated destination which deserved a careful redesign and better integration with its surroundings. Along the waterfront there were areas and entire piers dedicated to parking that could provide the community with a more livable and walkable waterfront, and the Port Authority and city with important revenue.

After a SWOT analysis of the study area and a specific assessment of the challenges and opportunities of their specific sections, the students went on to investigate case studies and start developing their visions and concepts. The seven group propos-

als featured numerous ideas within a redevelopment context resilient to sea-level rise. These ideas included: stronger linkages between both sides of the Embarcadero Boulevard; increased mixed-use, residential, retail, and entertainment uses along the waterfront; a sea-wall with berms and a raised walkway and pocket parks along the Embarcadero; an air gondola connecting the piers to the Coit Tower; an amusement pier and a Ferris wheel; a "boatel"; rooftop promenades; an expansion of the Exploratorium; a redesigned plaza and a floating stage behind the Terminal Building; restoration habitat piers; floating dendritic piers for community events and gardens; a sinuous boardwalk on top of a seawall creating a protective area for paddle boats; interactive parks and new beaches.

The student work culminated in a presentation to the client and other guests at Cal Poly, who were impressed by the students' range of creative and innovative designs. So much so that the Port Authority exhibited large format posters depicting all six proposals at their headquarter's public lobby in Pier for close to three months. It was a satisfying conclusion to a community-embedded project that promoted the understanding of the urban design process through real-life situation, and revealed to the students just how much impact their work could have on this beautiful and important site. And no doubt, for all involved, a visit to the Embarcadero will forever now be framed by the ideas and possibilities that were envisioned in these designs.



Figure 2: Example of a concept diagram for one of the sectors, by E. Huang, E. Gomes, E. Shimanuki, M. Spector & R. Browsers.

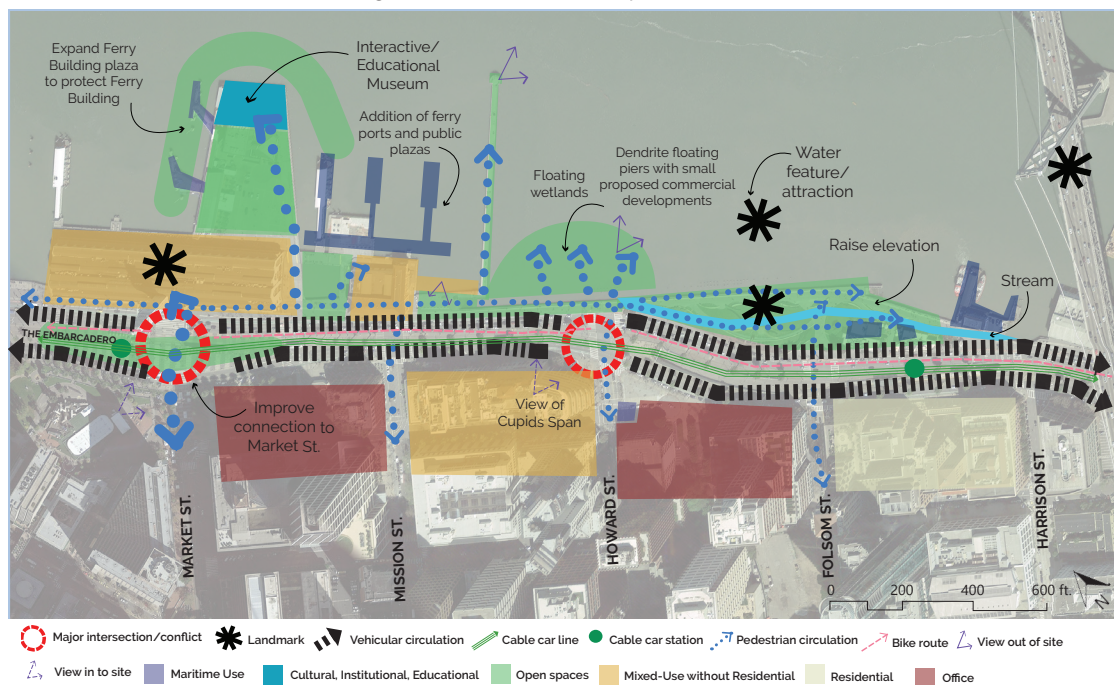


Figure 3: Sector proposal by E. Huang, E. Gomes, E. Shimanuki, M. Spector & R. Browers. Includes: public plazas, an amphitheatre, a floating stage and new piers behind the Terminal Building; floating dendritic piers; and a redesigned Rincon

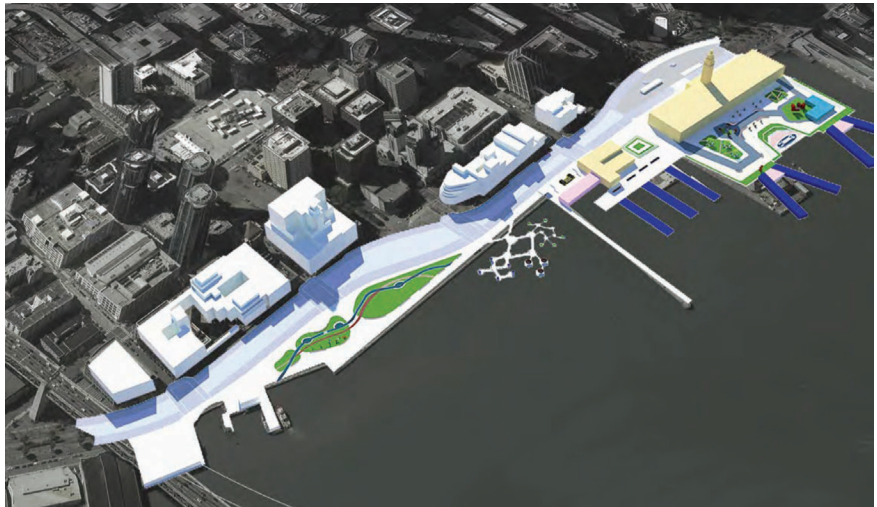


Figure 4: Sector proposal by K. Ferguson, E. Gatela, M. Gramajo, A. Herrington, I. McCarville & J. Setterlund. Includes: maritime museum, amphitheatre, incubators, leasable spaces, rooftop gardens, a tech campus, area for kayaking and floating barges, new mixed use buildings, and a Fire Department emergency pier.

Figure 5: Sector proposal by C. Bender, M. Hunstein, M. Rupard, E. Sugiyama & L. Traffenstedt. Includes a pier with a complex for the arts with an education center, a library, and a performance center, an observation tower and a beach park; piers with commercial development and rooftop gardens, and a seawall with a meandering boardwalk.

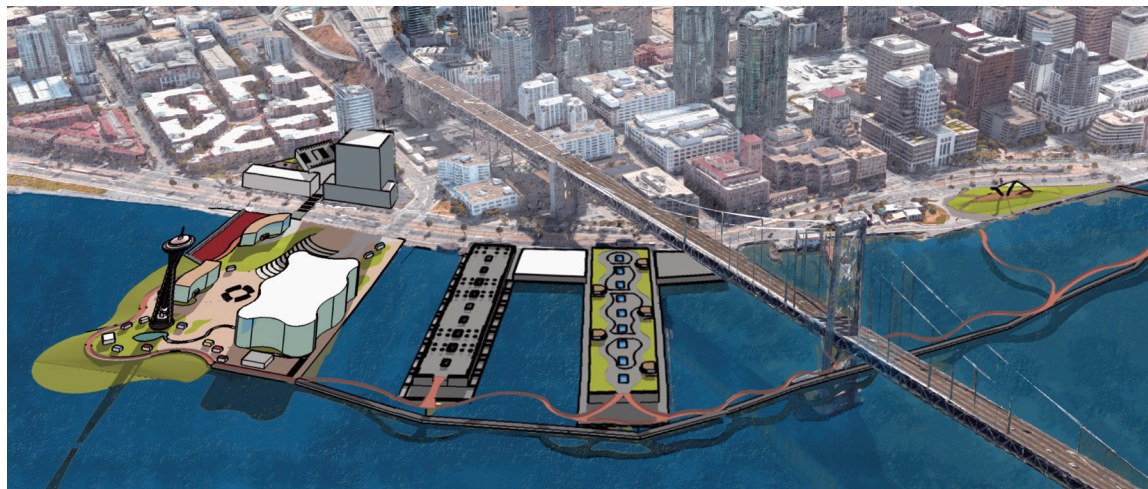


Figure 6: Sector proposal by C. Chen, A. Duran, E. Escher, A. Khaw & E. Rudger. Includes an area with oysters for bioremediation, a maritime education center, and an elevated walkway with parks over the Embarcadero Blvd.

