

Architectura Laticis

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Thesis submitted to the faculty of the Virginia Polytechnic Institute and State University in
partial fulfillment of the requirement for the degree of

Masters of Architecture
in
Architecture

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June 28, 2011
Blacksburg, Virginia

Key Words: Fluid, Movement, Rythm, Transition

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Abstract

Public spaces can have the Architecture that supports the movement of people, a rhythmic movement from one space to another. This thesis is an exploration on how Architecture can transition in a natural, fluid way. It questions how one moves through space without well-defined boundaries that differentiate one space from another. It challenges how Architecture can move one lithely through space by the ambiguity of borders in between spaces.

Previous designers have engaged ideas of movement, rhythm, and transition. Le Corbusier established the idea that Architecture is a successive phenomenon without necessarily having a genesis in which one can experience the whole Architecture without a designated starting point. Bernard Tschumi's set of follies at *Parc de la Villette* in Paris follow a set of syntactic rules with an infinite combination to reference the transition between one folly to another. Sergei M. Eisenstein describes Architecture as a montage in which a sequential rhythm is established by the placement of buildings. Likewise this thesis is a contribution to that discourse in the blending of edges between spaces. It is an exploration of a fluid ambiguity of boundaries, which support the rhythm of stride as one moves from one space to another.

For Hilary, Bill and Kay for all your guidance and efforts which I'll take with me for a lifetime of Architecture.

For Chris, for always believing in me.

Bhavneet, for accepting me into your family, here and across the pond.

Julie for your companion and support through all those long nights in studio.

Ben, I can always count on you.

Dooba, for being my best friend since day one.

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Diachronic Lines



Several 20th century designers have questioned how man moves through space. Architecture is after all for the habitation and benefit of man and complements the movement of daily life. As a visitor experiences Architecture moving from one space to another, Le Corbusier, a Swiss born French architect, famous for being one of the pioneers of Modern Architecture, describes the experience in which,

“Architecture is judged by eyes that see, by the head that turns, and the legs that walk. Architecture is not a synchronic phenomenon but a successive one, made up of pictures adding themselves one to the other, following each other in time and space, like music.” (Le Corbusier 73)

“Synchronic phenomenon” needs a history, a starting point, in order for it to be understood, however, Architecture can be a diachronic process where it cuts through time and one can experience it at any point without necessarily needing a genesis to understand the space. Corbusier implies that it is through the action of walking through a space and sensing it with our eyes that the ambiguity between spaces can be understood as diachronically an experience throughout any point of the Architecture. As one moves from one space to another, that experience adds to the senses from all parts of the Architecture without giving significance from where one starts.

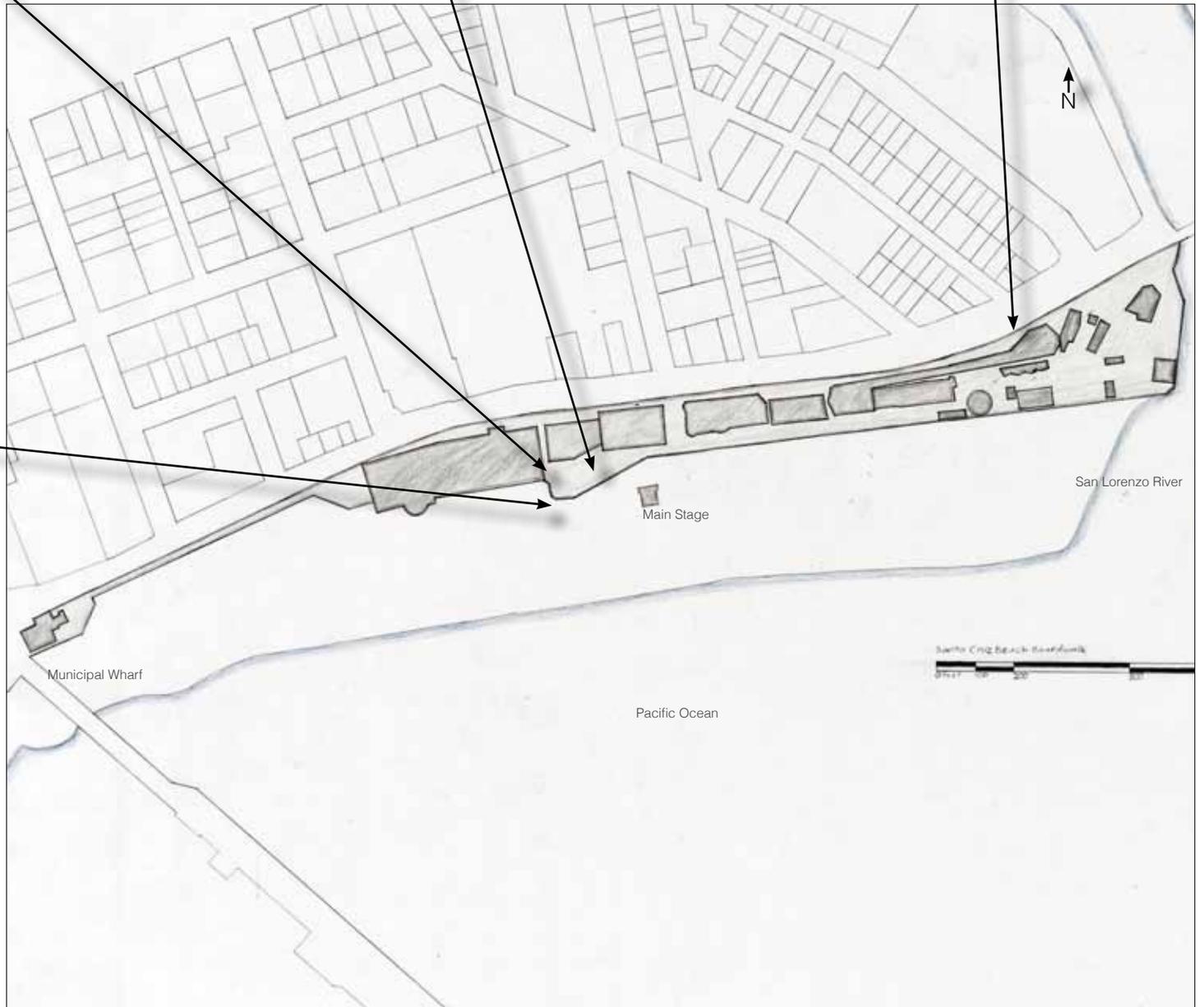
Bernard Tschumi is a contemporary Swiss born architect and commonly known for deconstructivism; his *Parc de la Villette* in Paris is a series of follies arranged in a grid pattern where the visitor walks from one folly to another. The relation between follies is done by the formal language of one folly referring to the other by a process of: “superimposition, permutation and substitution in a grid matrix in an endless combination of the above, and each combination can be distorted fragmented or repeated.” (Tschumi 3) Tschumi establishes a set of finite rules that are used in each folly in an infinite combination in reference from one space to another to give the visitor a recognizable relation across great distance. Each building is distinctly different but connect to one another with these sets of rules to maintain a cohesive Architecture across the landscape.

Furthermore, the regulation of space can give a rhythm to the Architecture. One can experience Architecture as a sequence of spatial events, whether physically or visually perceived. Russian filmmaker Sergei M. Eisenstein, known for cinematic montage, describes the Acropolis as, “sequences...entirely in step with the rhythm of the building itself: the distance from point to point is long, and the time taken to move from one to the other is of a length in keeping with solemnity.” (Bois 121) He argues that the rhythm in action can trigger a sentiment; it can physically and expressively move a person. Eisenstein also describes a Catholic church on a steep hill in Mexico at the center of Amecameca. He explains how the twelve Stations of the Cross that are set outside on the path up to the church sets a rhythm for the pilgrims, “climbing that distance is particularly impressive because it is the custom to go from ‘station’ to ‘station’ and on up to the very top - on one’s knees.” (Bois 121) It is the faith, exhaustion, and the anticipation of reaching the top

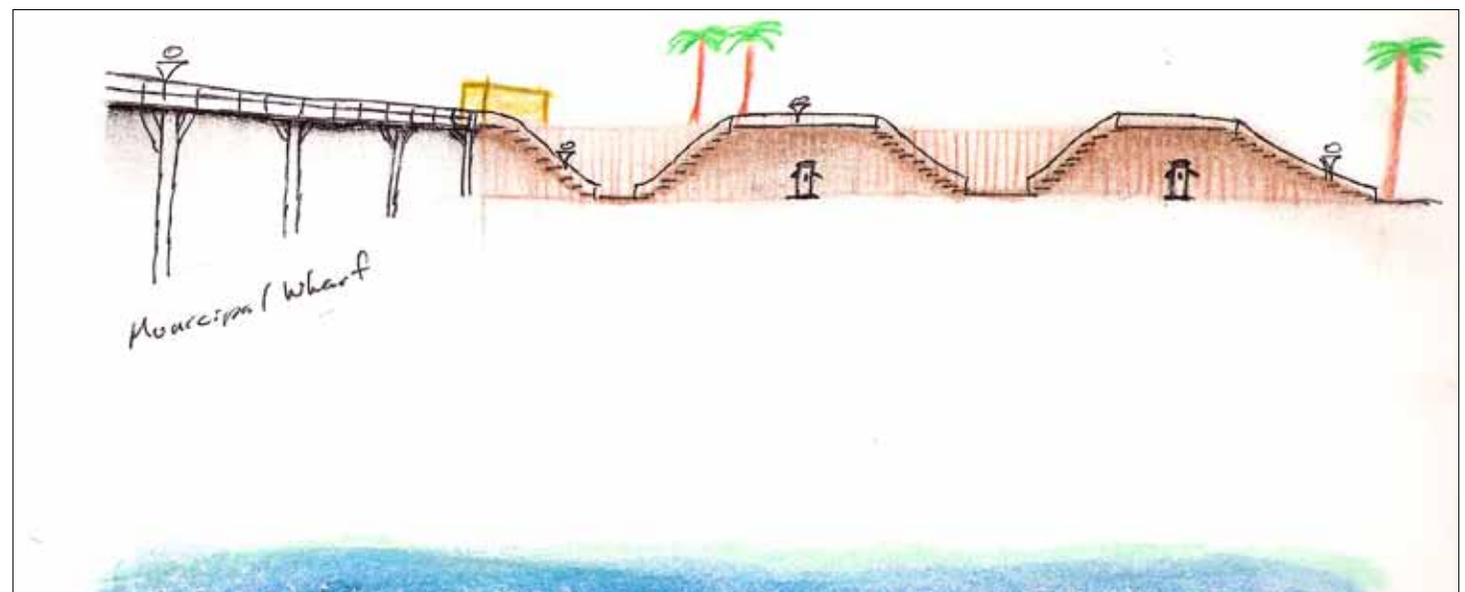
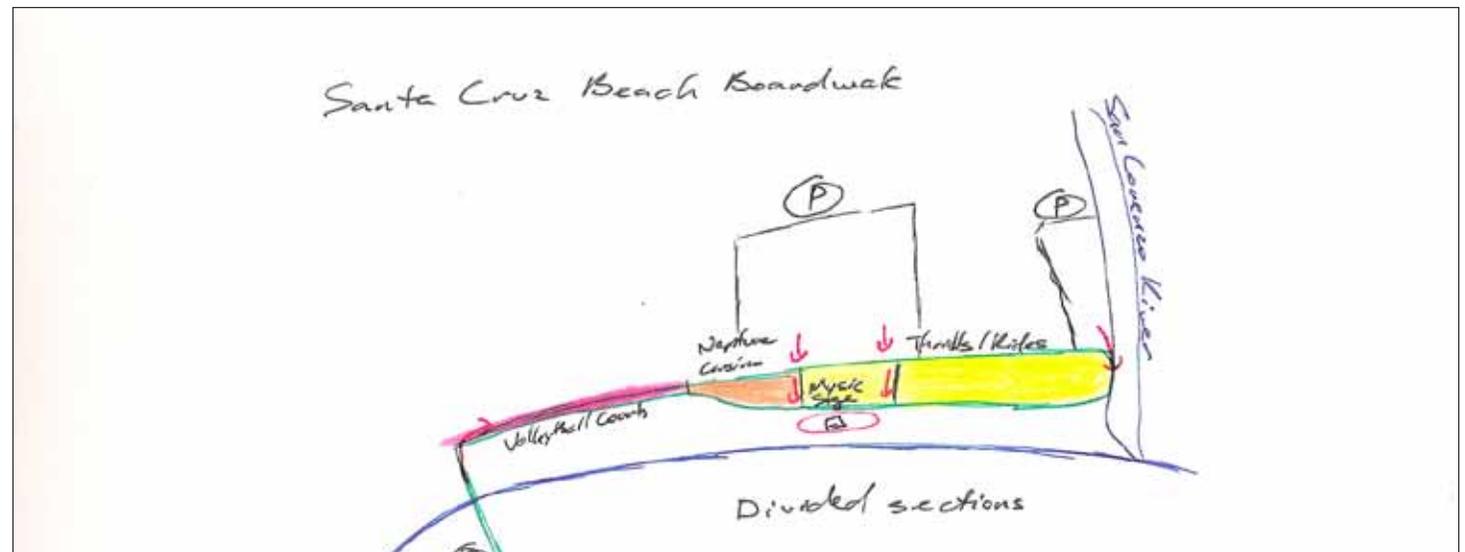
set forth by the rhythm of the Stations of the Cross that moves people in this pilgrimage. One sees that Architecture has the ability to emotionally move people through movement. Composition delineates the transitional space between events to set the rhythm, pace, or quality of one’s movement.

Taking into account these principals, Le Corbusier’s transition between spaces in a non-synchronic process, Tschumi’s finite set of rules to an infinite combination for an Architectural cohesiveness, and Eisenstein’s cinematic montage of rhythmic placement as precedence, I am contributing to the conversation with this thesis to challenge static transition in the blending and delineation between spaces. The project tests a fluid ambiguity of edges to maintain the rhythm in the transition between spaces across Santa Cruz Beach Boardwalk by overlapping functions between spaces. By removing hard boundaries in between spaces, the Architecture hopes to create a relation to the fluid movement of people from space to space in an uninterrupted, yet cadenced rhythm. With this intended ambiguity between edges, one’s eyes follow an undulating field that challenges which space belongs to what. Does floor belong to wall or floor belong to sitting or floor belong to barrier?

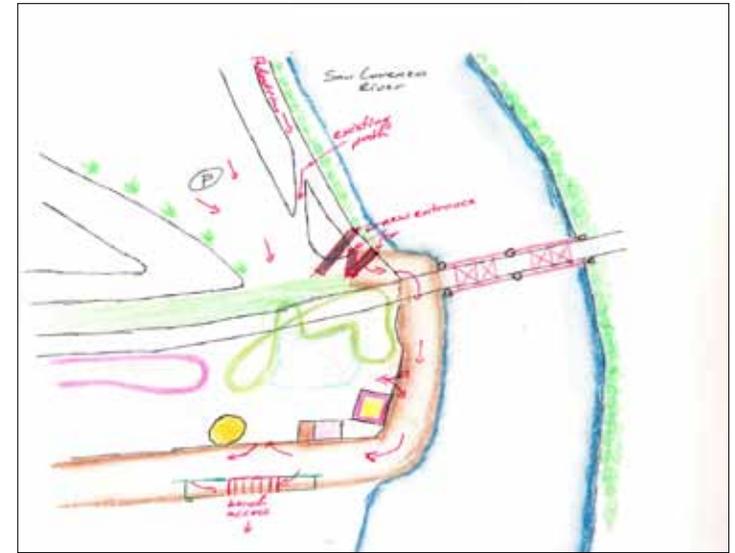
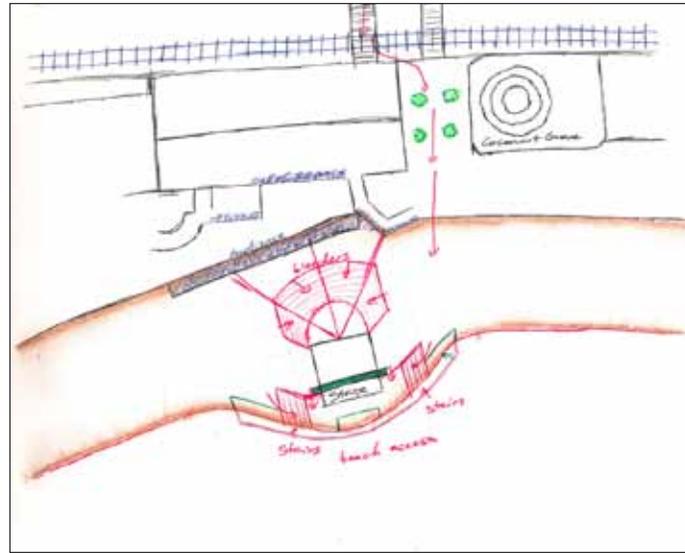
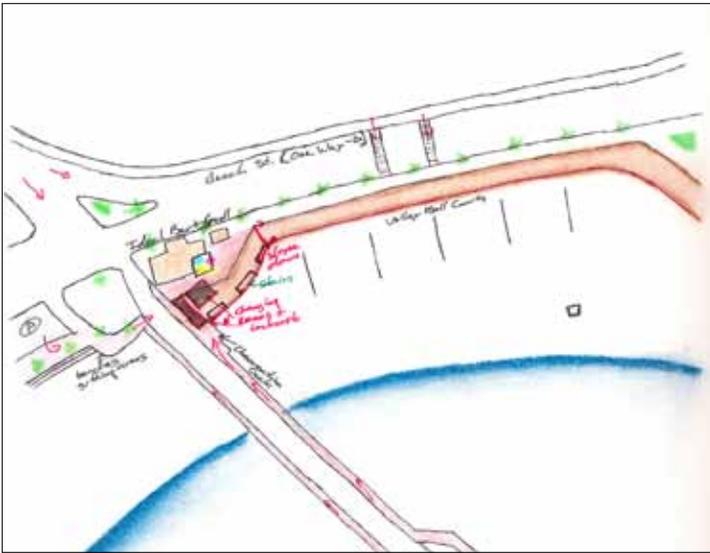




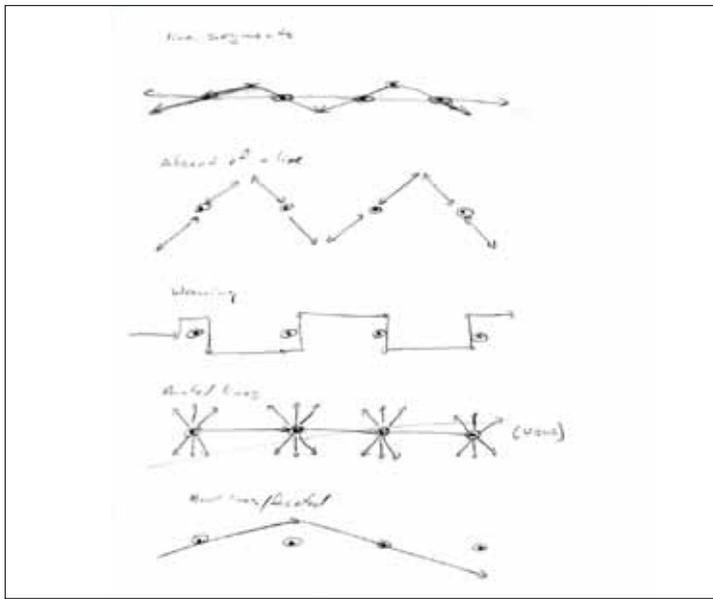
Santa Cruz Beach Boardwalk is located on Monterey Bay on the Pacific. It is the home to thousands of students from University of California, Santa Cruz, well known in the surfing world and visited by thousands of people every year. It is the Coney Island of the West, equally defined by the carnival sounds of games, rides, restaurants and shows, however there is no wooden boardwalk. Santa Cruz has a concrete pad over the sand, which serves as a foundation for everything on the boardwalk; pedestrian access to the beach is simply accommodated by stairs up to 8 feet high. The thesis blends the tradition of the boardwalk and pushes the standard of the boardwalk design to an aesthetic and functional pedestrian path.



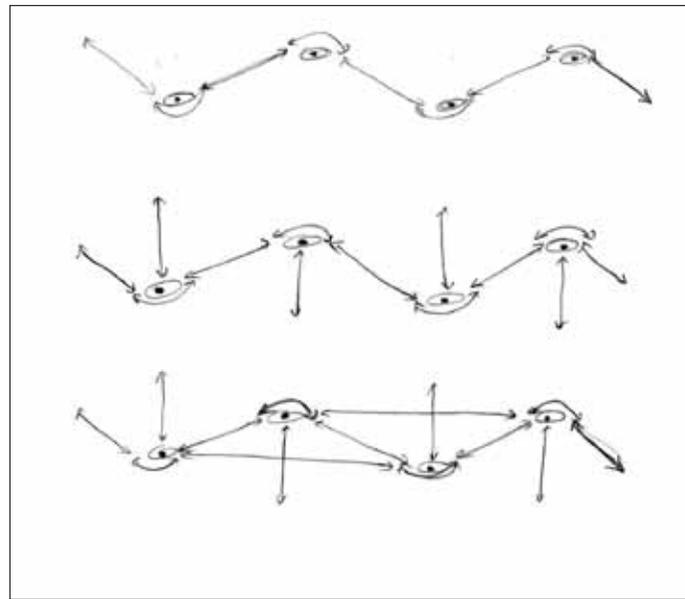
Starting from the West on the Municipal Wharf to the East towards the San Lorenzo River, existing pedestrian paths help determine where different spaces will be located. The functional requirements guide the design of spaces needed for sitting, lounging, and gathering for transition from one space to another. The site analysis sketches on the opposite page outline existing pedestrian movement.



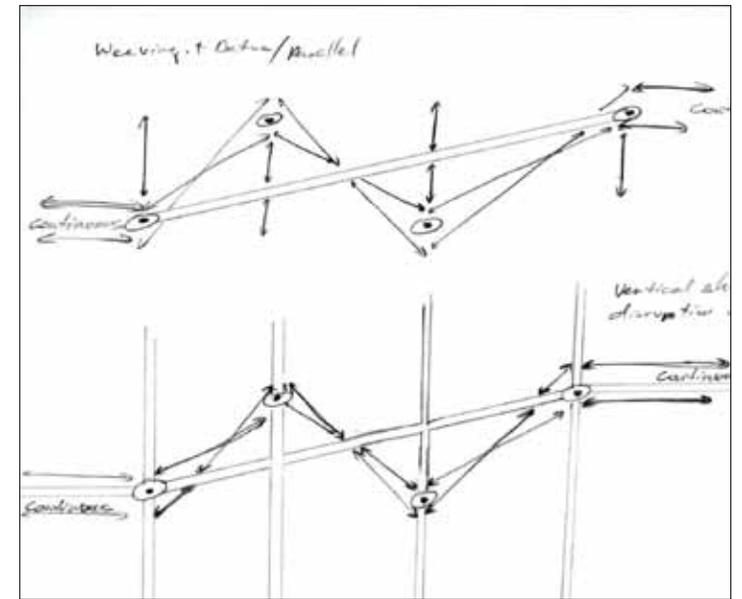
Throughout the three miles of boardwalk there are five nodes, or natural gathering places, which delineate a datum for the non-synchronic lines that define the boardwalk. The study on the opposite page shows diachronic line studies to ascertain what which best fits the design for the boardwalk. Each exploration has a different type of a diachronic line such that one can start from any point of the boardwalk and experience the Architecture as a whole without needing a particular starting point. Having a diachronic nature of the boardwalk one can move through the boardwalk in part or in its entirety. The explorations of different types of diachronic lines define and reveal different potential experiences.



Schematic line types

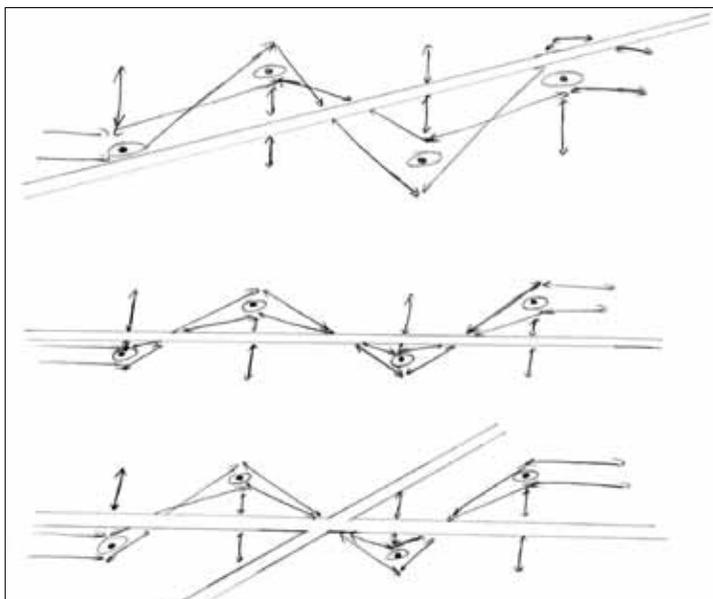


Segmented

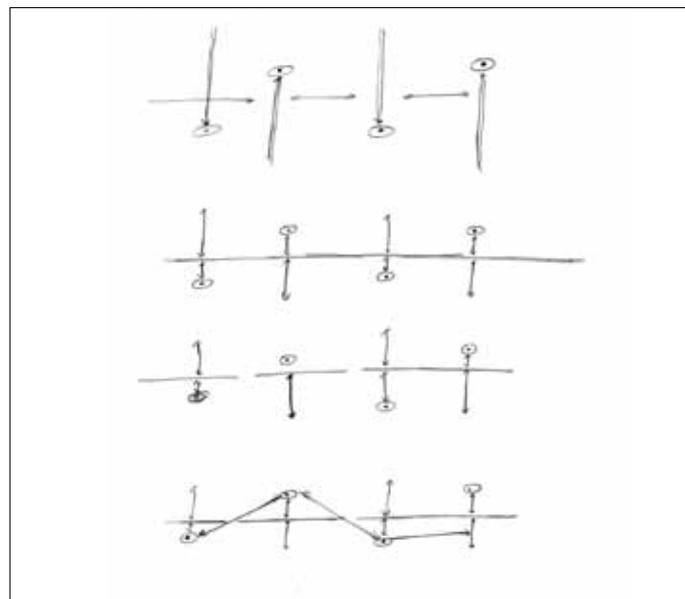


Weaving + Datum with Parallel lines

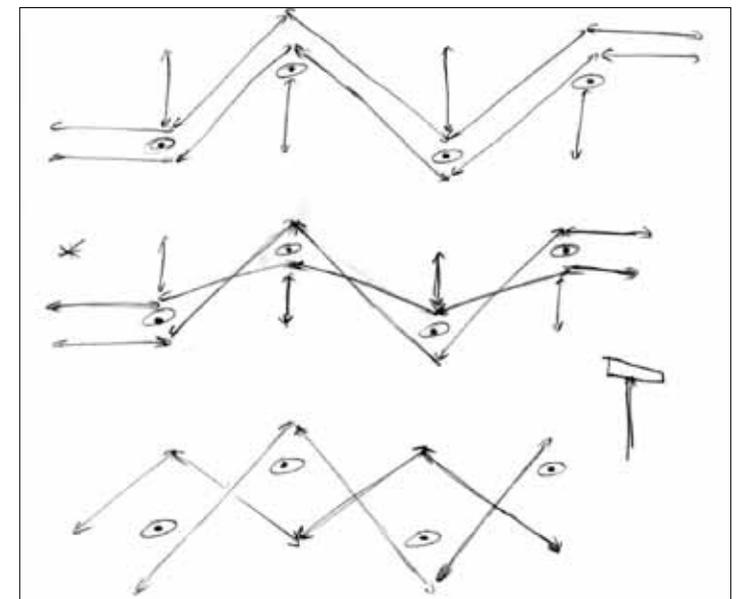
Broken + Weaving lines



Broken lines



Weaving

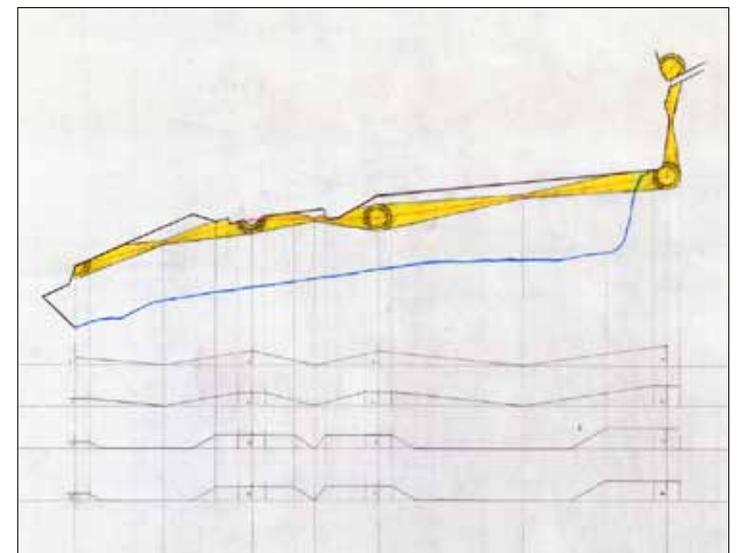
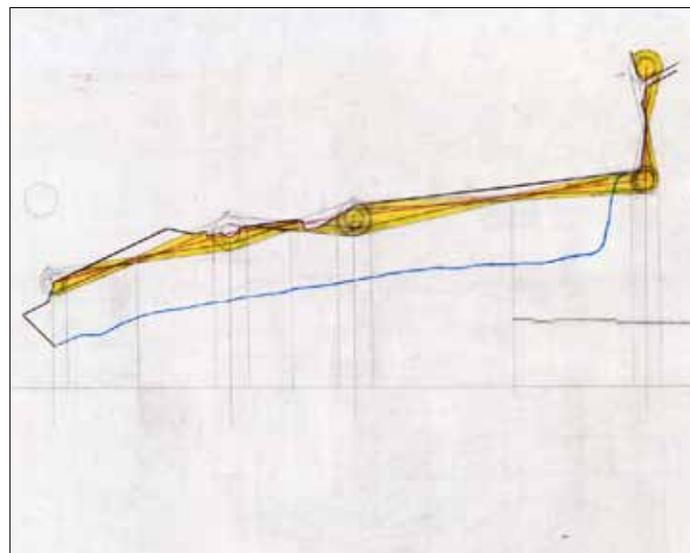
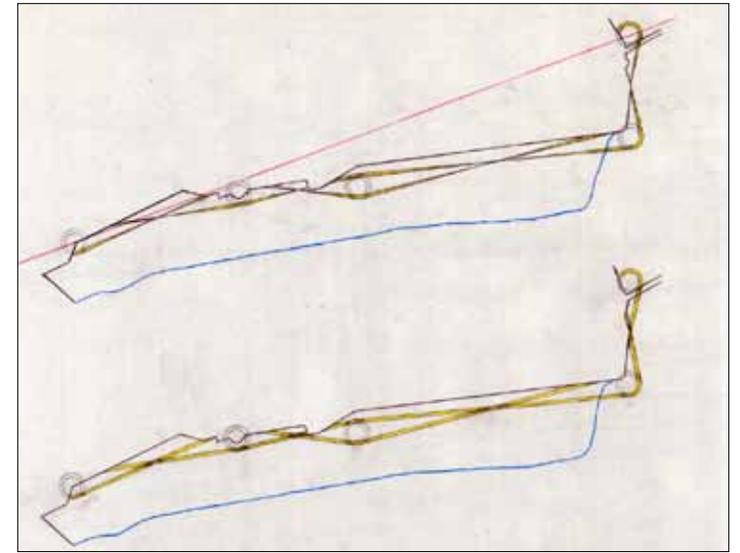
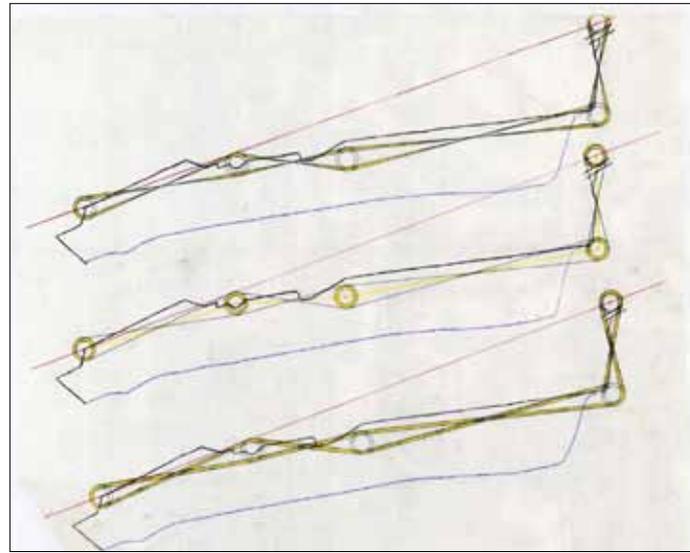
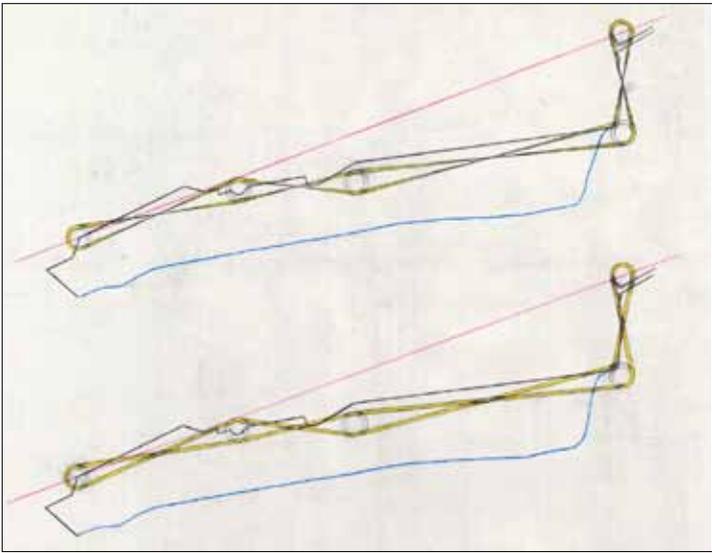


Schematic Weaving map

Schematic Weaving with Elevation map

The nature of the diachronic line took on different characteristics when engaged in: line segments, absence of a line, weaving lines, pointed lines, arched lines, and bent and faceted lines. In the end a weaving line that intersects tangentially from one node to the next was chosen. The tangential lines weaving between each datum gives one a perspectival skewed edge as the lines intercept each other from one node to the next. Keeping in mind that there are two lines to be designed, one on the beach and the other meeting the existing concrete.

Once the site and the nature of the line were considered, the mapping of the boardwalk focuses more on the design. What tectonic structures create the best spaces for place and what would be the best spaces for transitions?



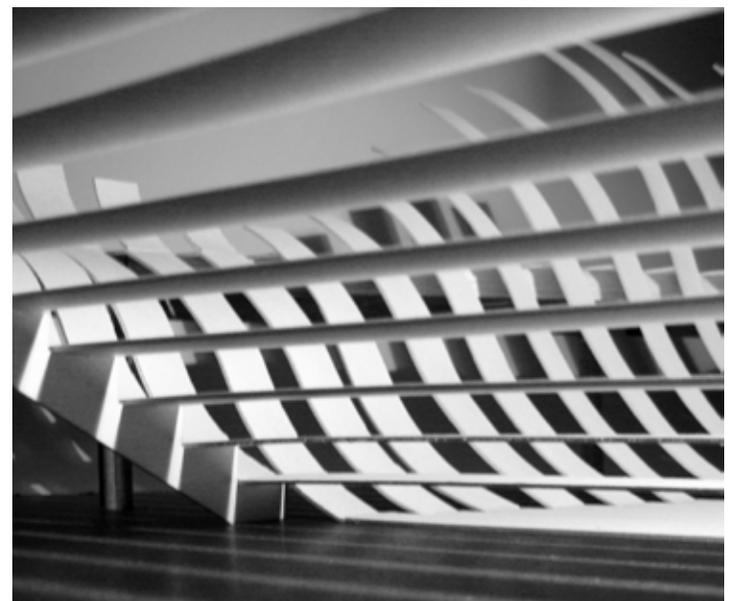
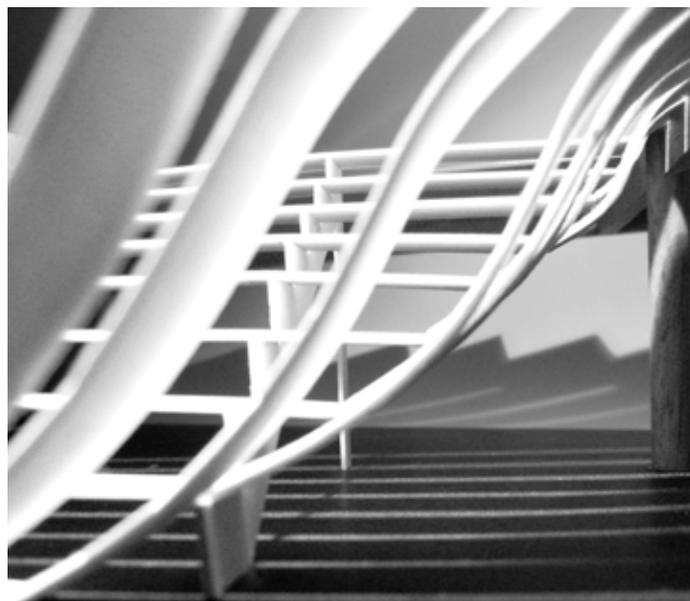
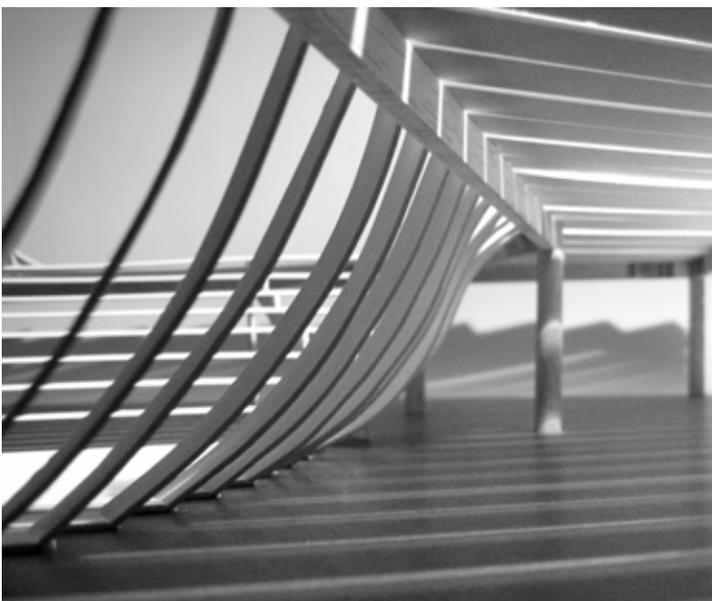
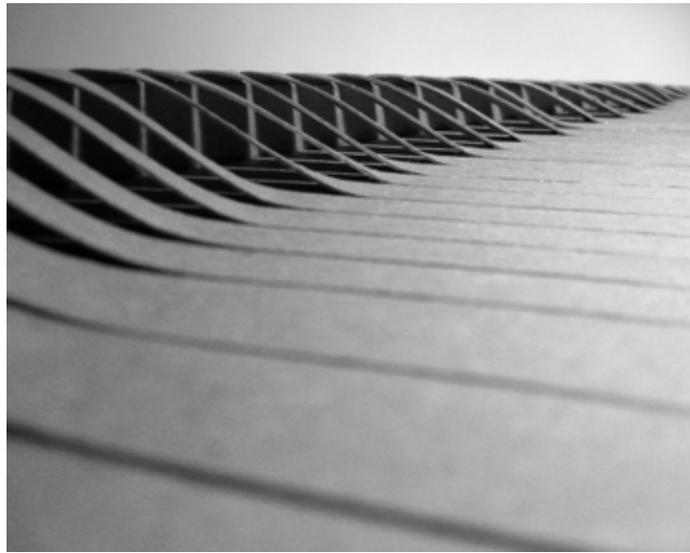
The spaces for places occur at each of the five nodes throughout the boardwalk. These are natural gathering places already, plus a new space on the mouth of the San Lorenzo River. In between these nodes are transitional spaces where pedestrians traverse the boardwalk. On the opposite page, when mapping the diachronic lines of the boardwalk, the durability and longevity of the existing concrete is an established structure in which the boardwalk is designed with its permanency intact. The concrete line takes precedence over the new wooden boardwalk. The diagram shows weaving diachronic lines where the edges of the boardwalk are defined in which tectonic structures can now be implemented in the design.



Kit of Parts

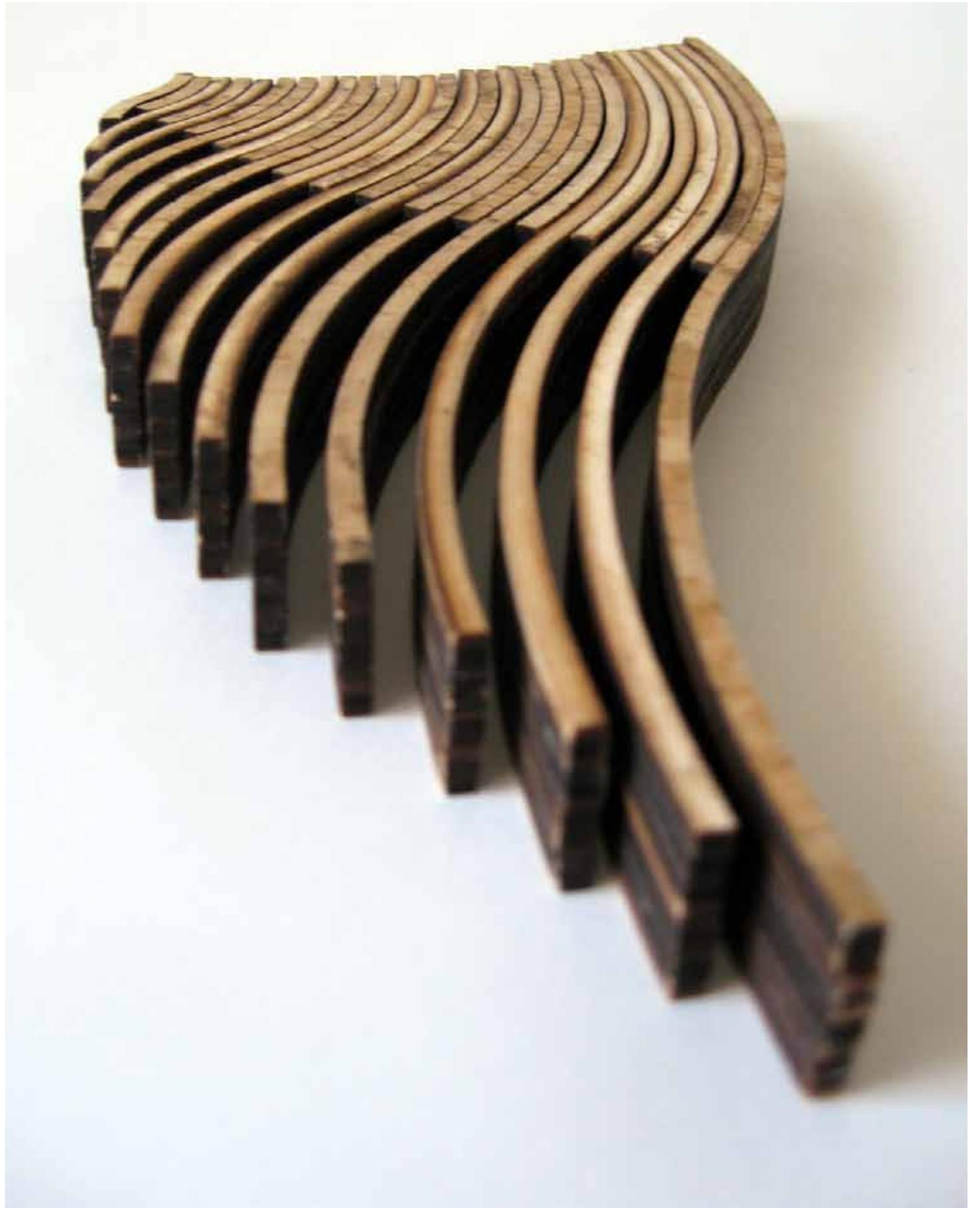


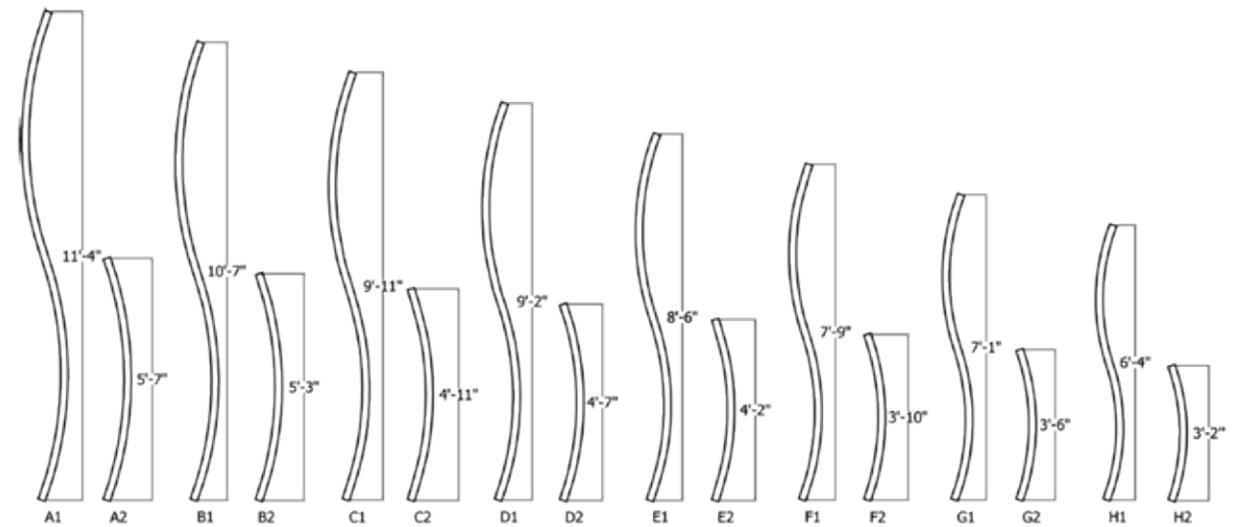
On the opposite page, preliminary models made out of chipboard, laminated wood, and task board help to physically understand which material might best engage the idea of the fluidity of the boardwalk while considering the limitations of the material. Photography in different light conditions reveals potentials in the light and shadow as part of the design. With the idea of a fluid Architecture to delineate between spaces, the study models demonstrate fluidity to be developed as later elements. These elements will ultimately be translated into a standardized kit of parts.



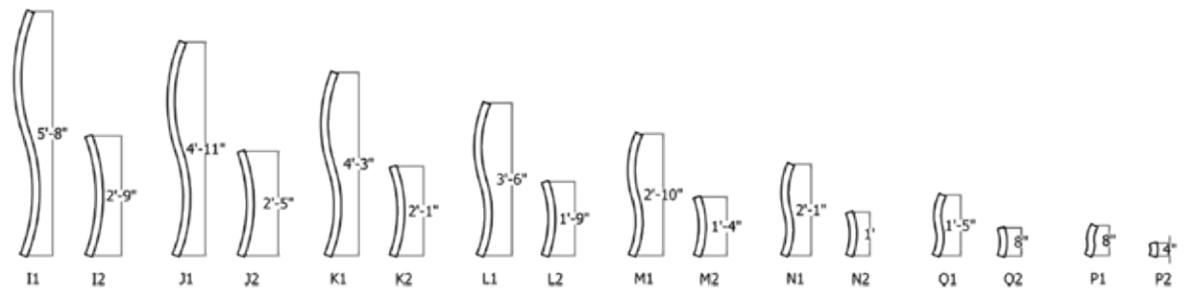
Regulated S curves were developed as a kit of parts. These curves are variously combined and assembled to construct the spaces between floor, wall, barrier, and seating. The curves are the transitional forms that move one from one space to another. A smooth form where your eye follows from floor to wall, to seating, to column, and back to floor again.

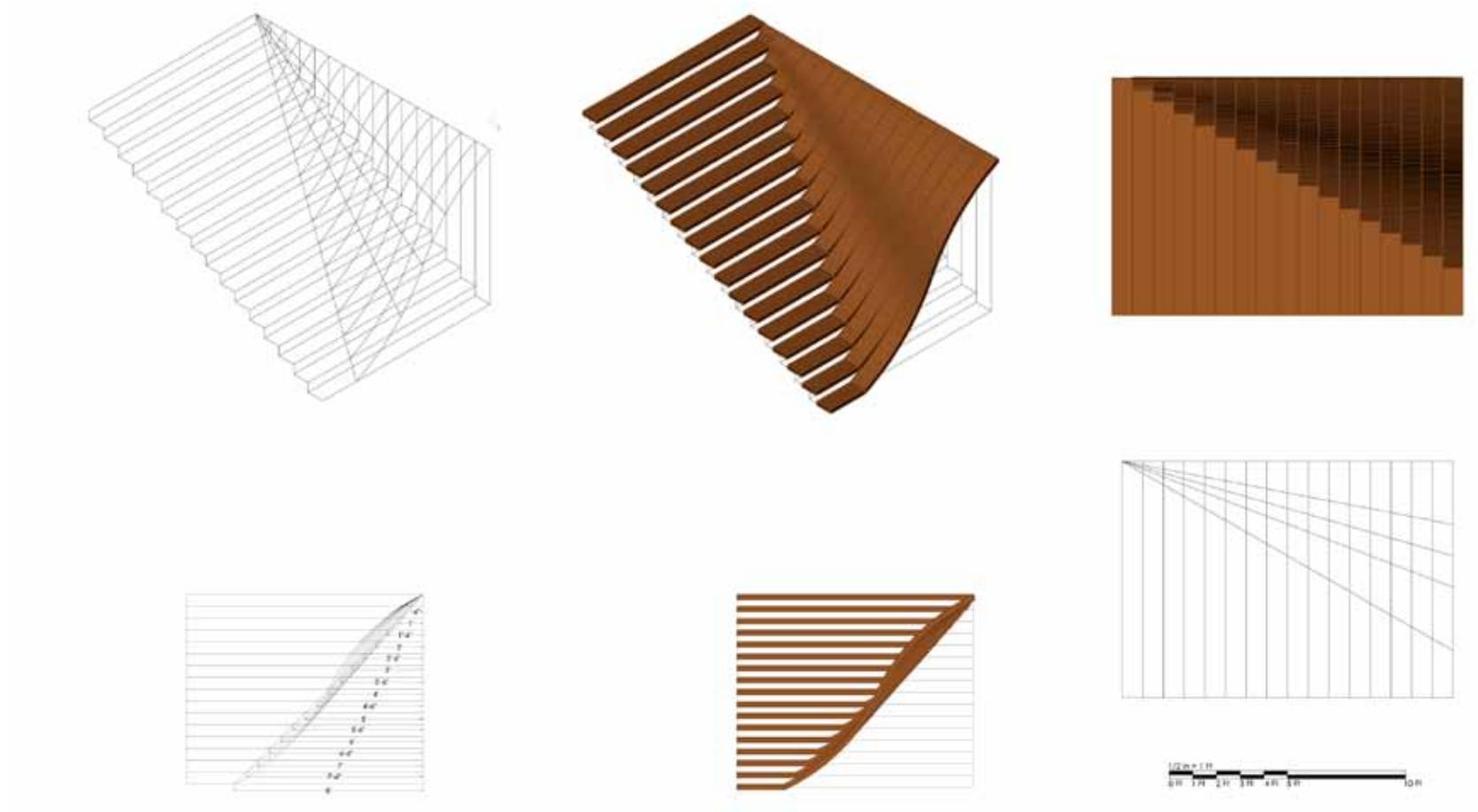
Glue wood lamination or Glulam is not only practical to maintain a wooden boardwalk, but is exceptional to achieve those specific dimensioned curves. The Modulus of Rupture of an average $\frac{3}{4}$ inch thick hardwood of seven feet determined the radius of the curves. (Quin 28)



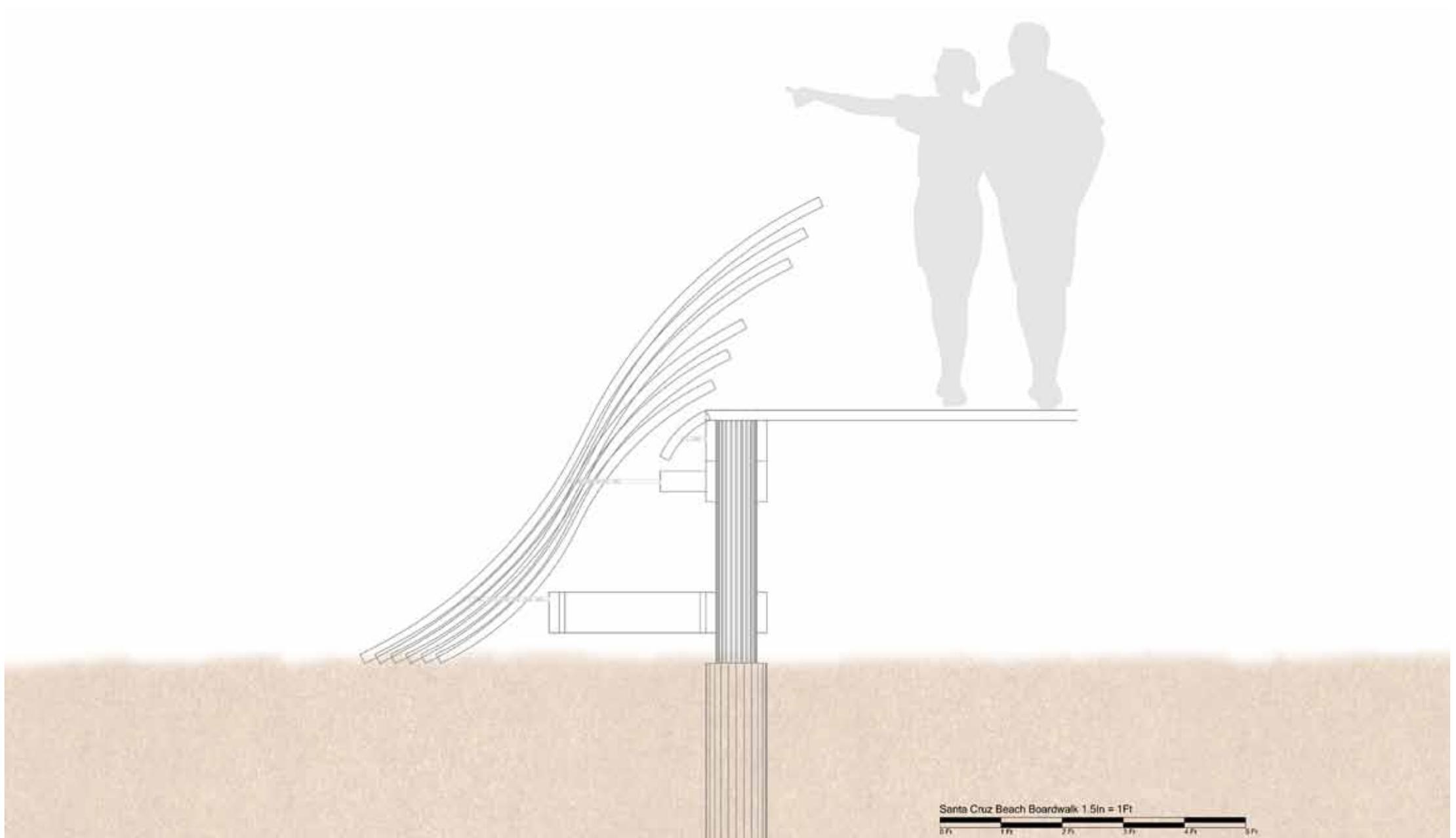


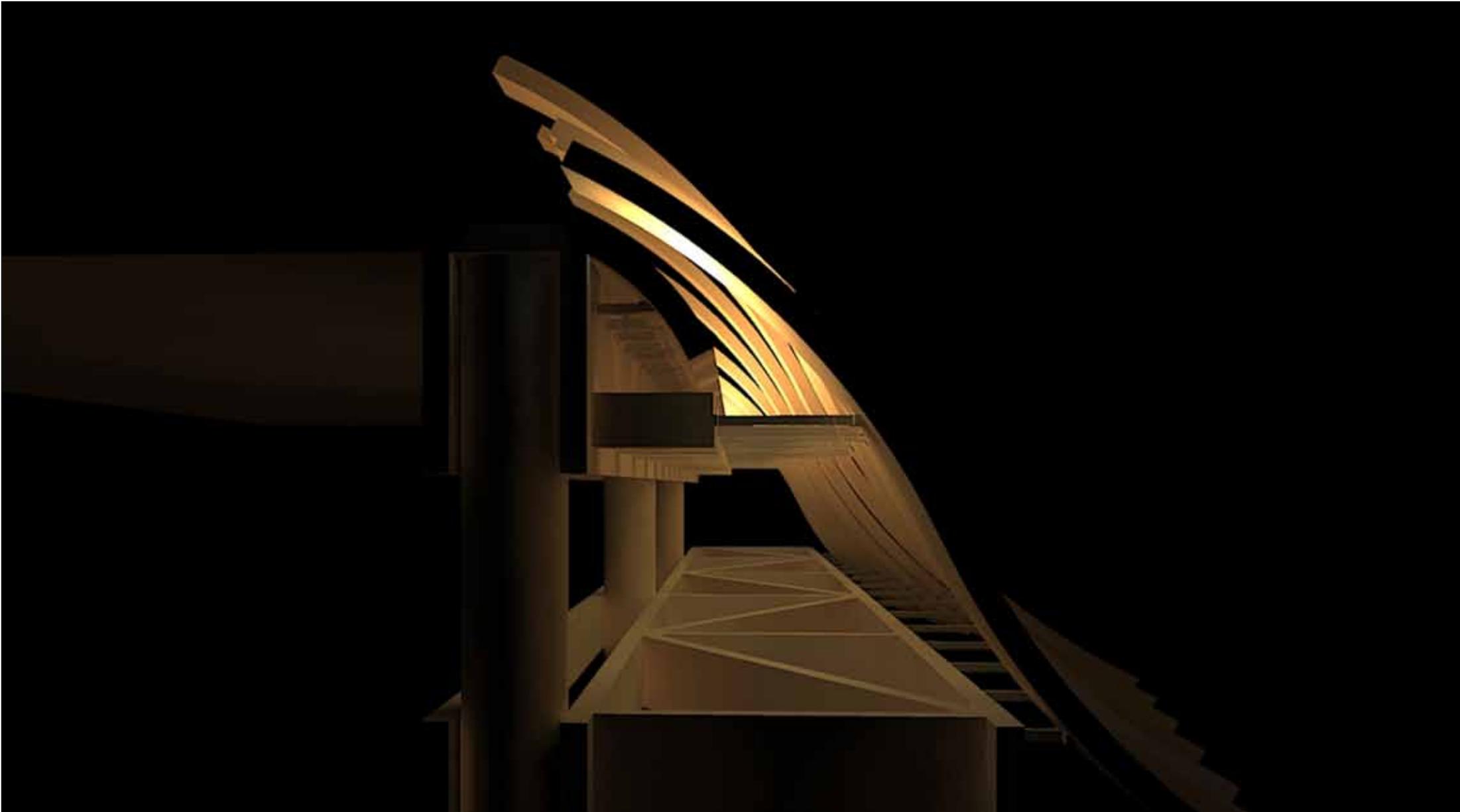
After determining that the thickness can get thinner and the number of laminates can increase to get a tighter curve on the smaller pieces, the seven feet radius was only a starting point. Eventually the curves range from a 4 inch radius to 8 feet 4 inch radius on sixteen standardized curves with 2 inch thickness and 10 inch width of a standard size of decking for the boardwalk. With a dimensioned and a standardized kit of parts the conceptual idea of a fluid Architecture is more tangible such that it can now be built with a set of drawings.



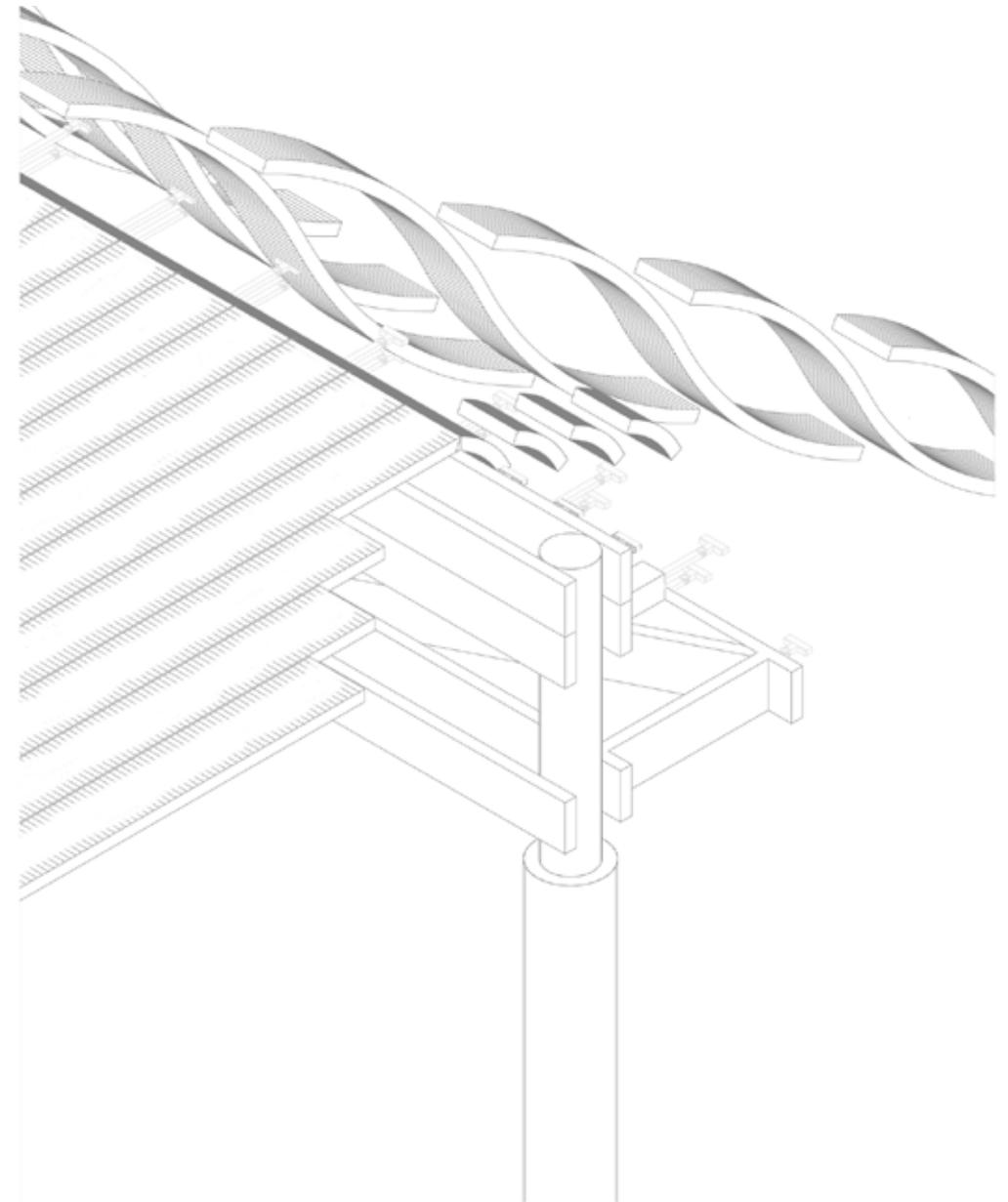
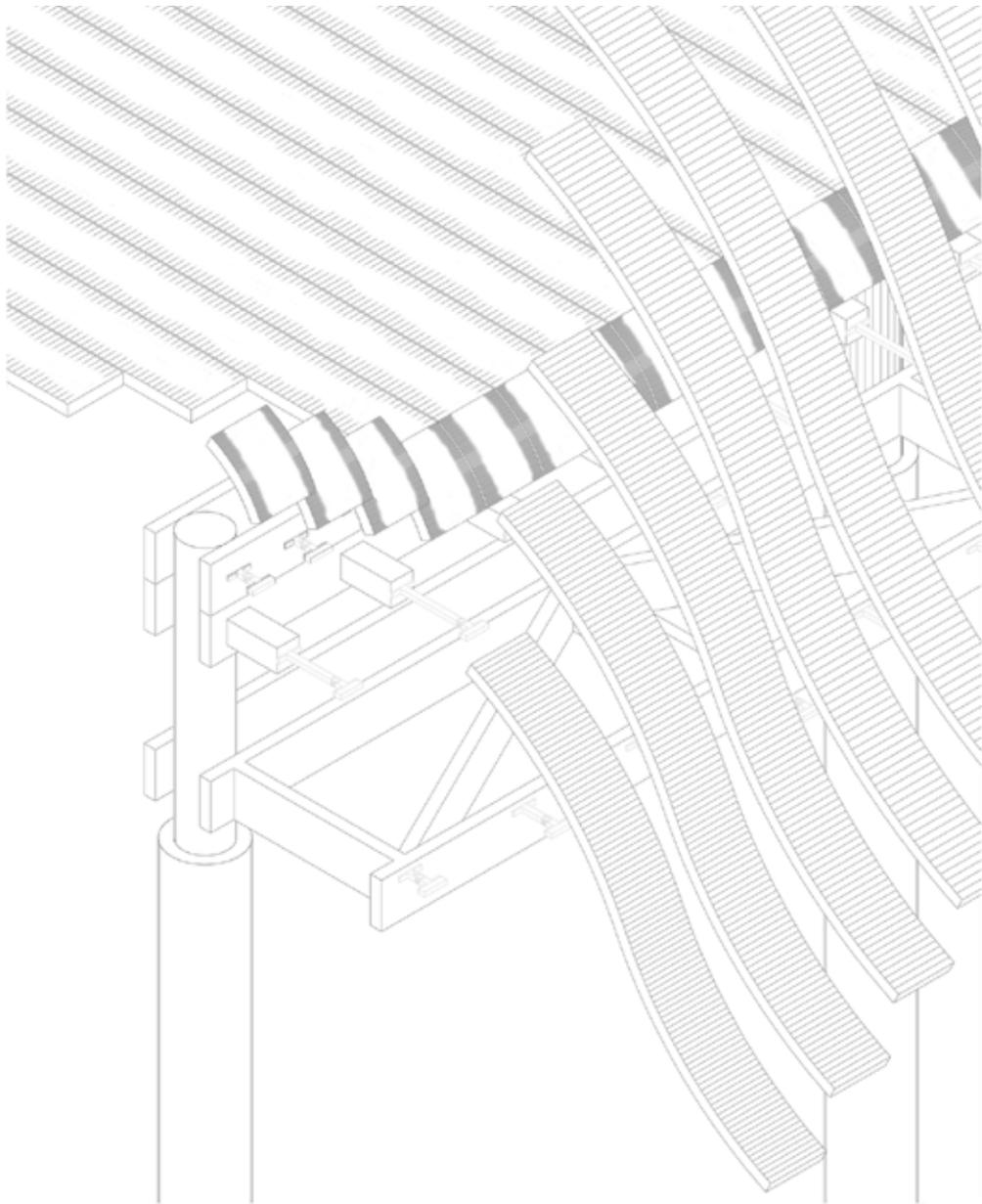


The new boardwalk will use similar standard structure of boardwalk design as used in Coney Island since 1898 where most of the structure still stable today; (Quin 28) it will start with precast and pre-stressed concrete piles measuring from 10 feet to 15 feet with a diameter of 12 inches for the sandy soil. On top of that are wooden posts measuring 8 inches in diameter and as high as 8 feet.

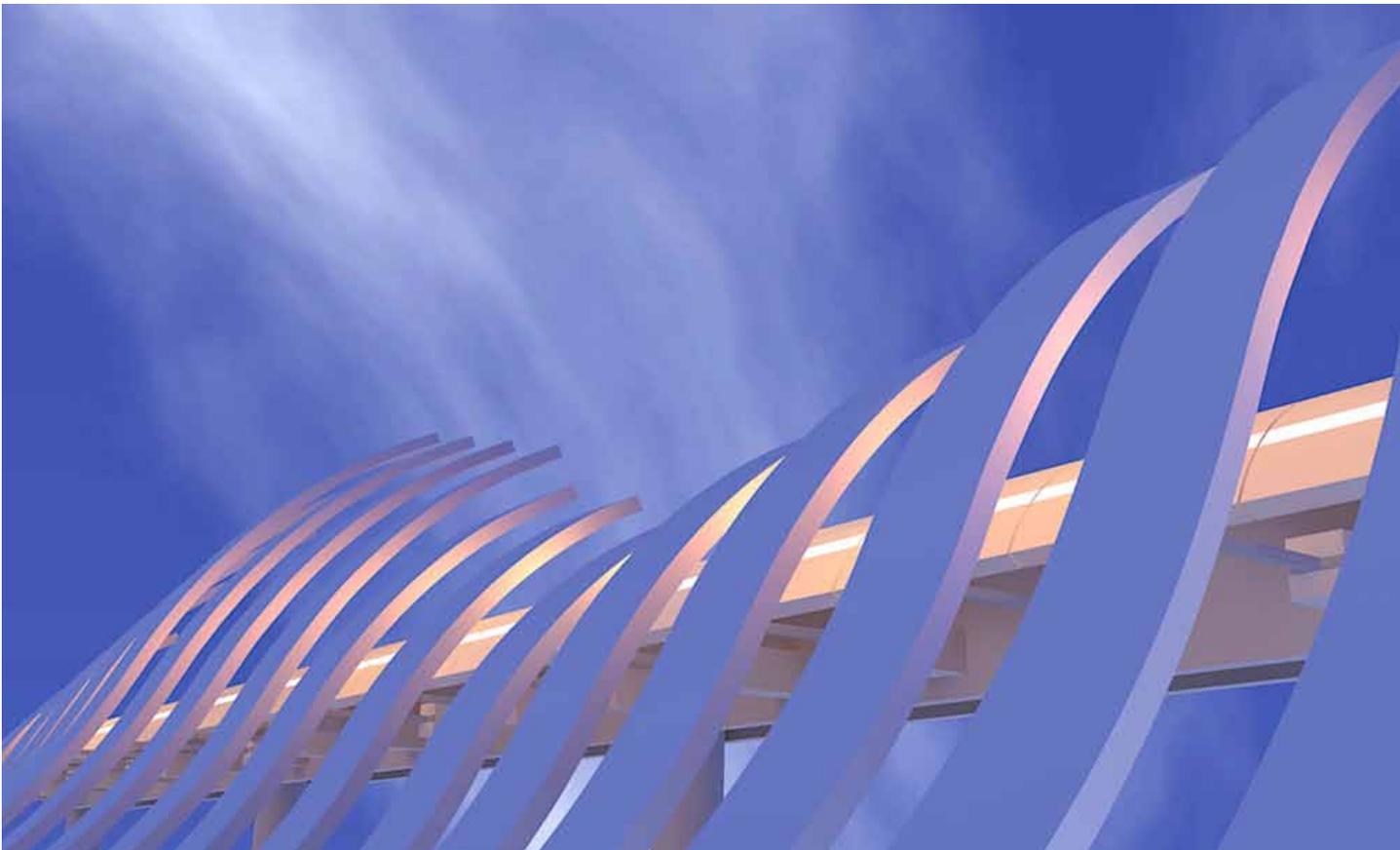
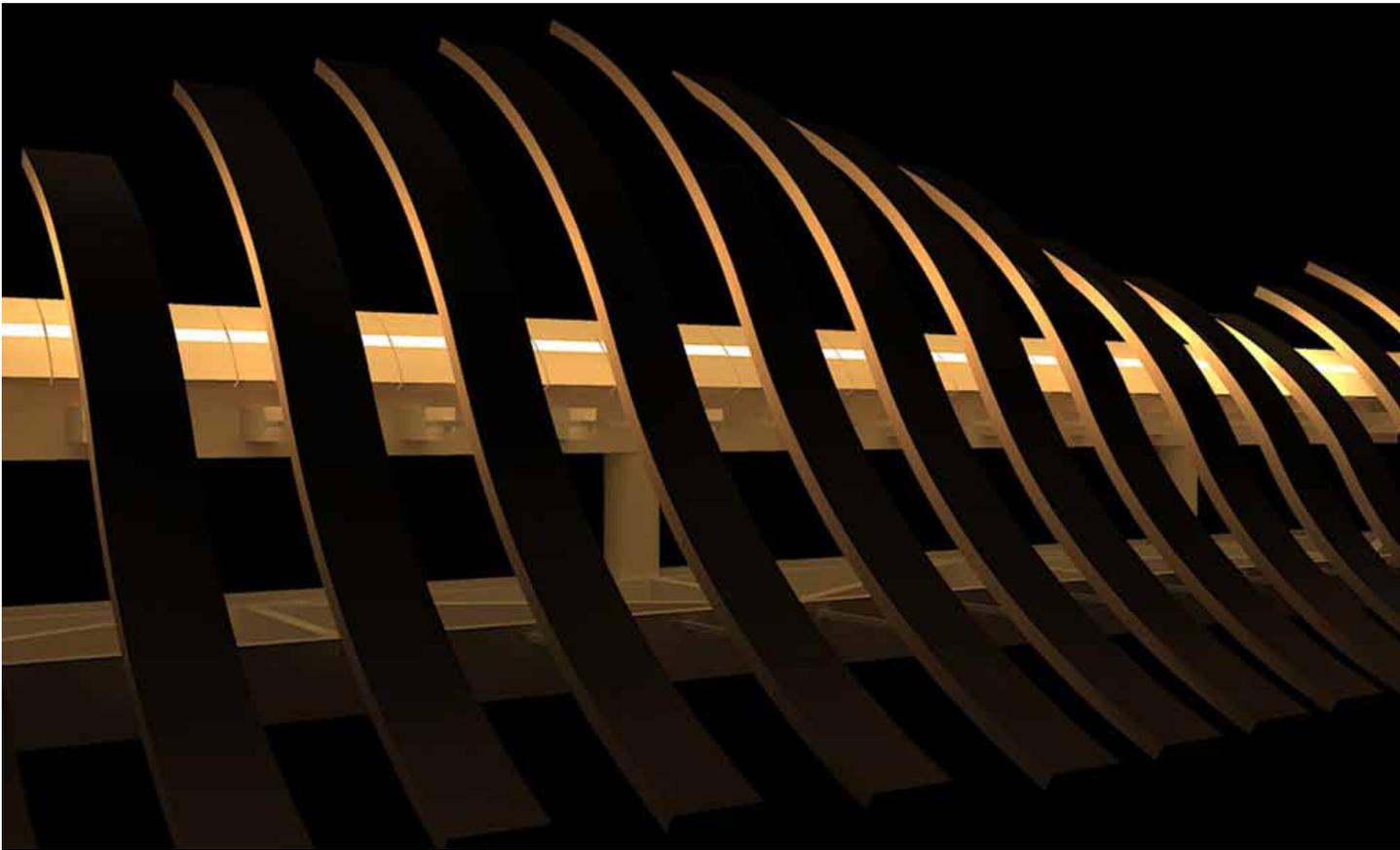




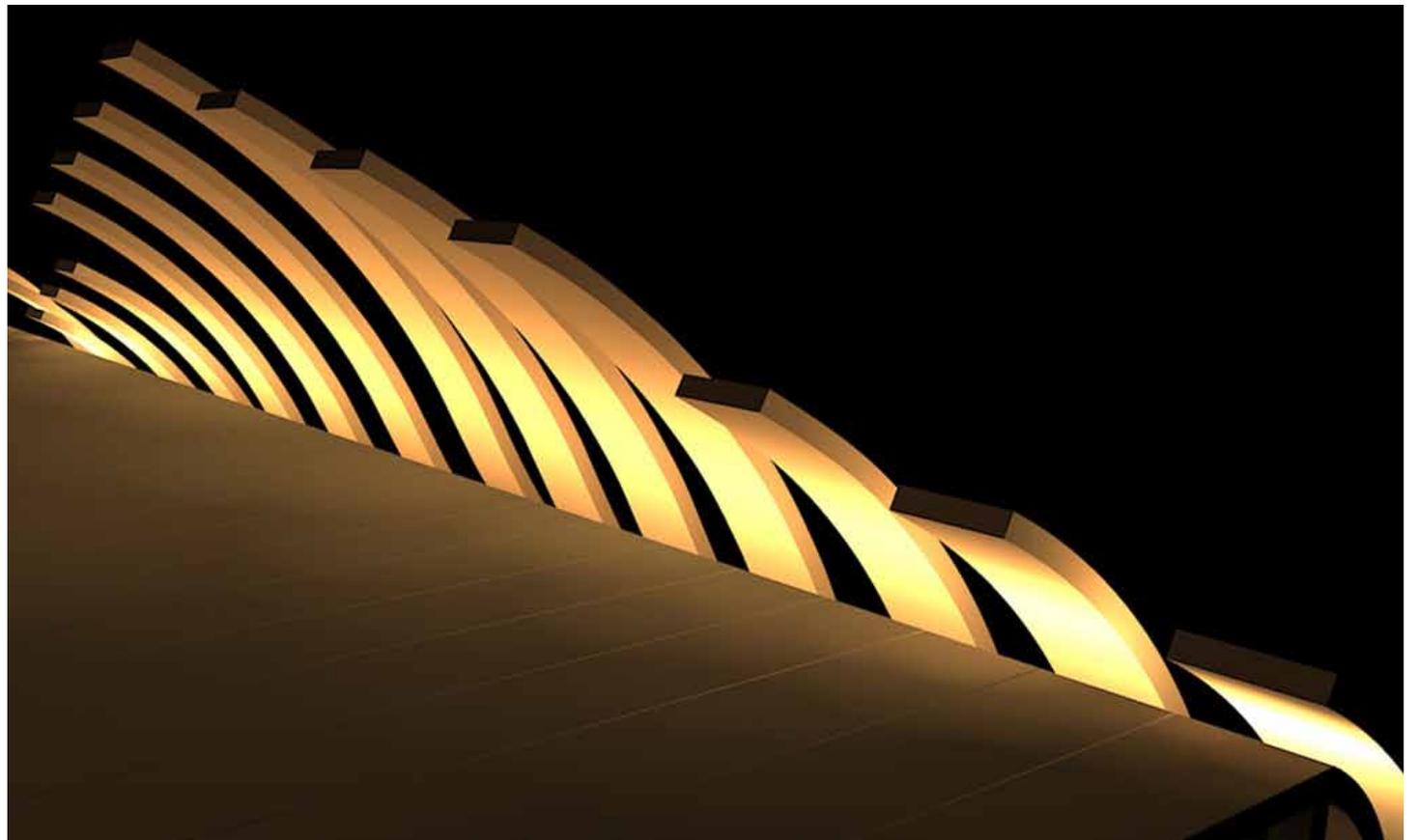
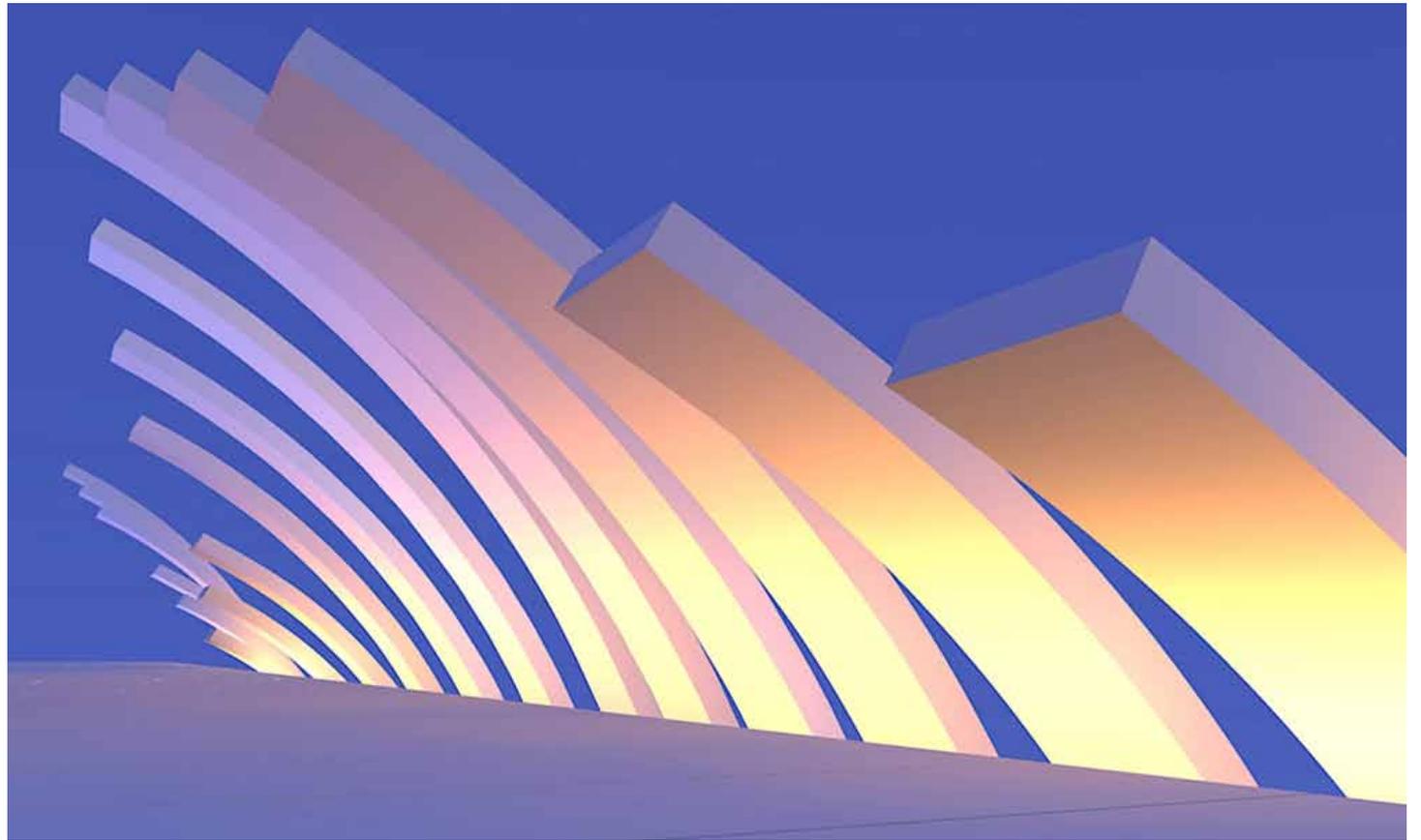
To accommodate the curvilinear glulam boards, another frame is needed to attach to the post on two points of the S curved boards to transfer the forces down to the ground. The joint is a steel pin-hinged joint to accommodate for alignment tolerance while on site. This type of framing structure will be used throughout the whole boardwalk.





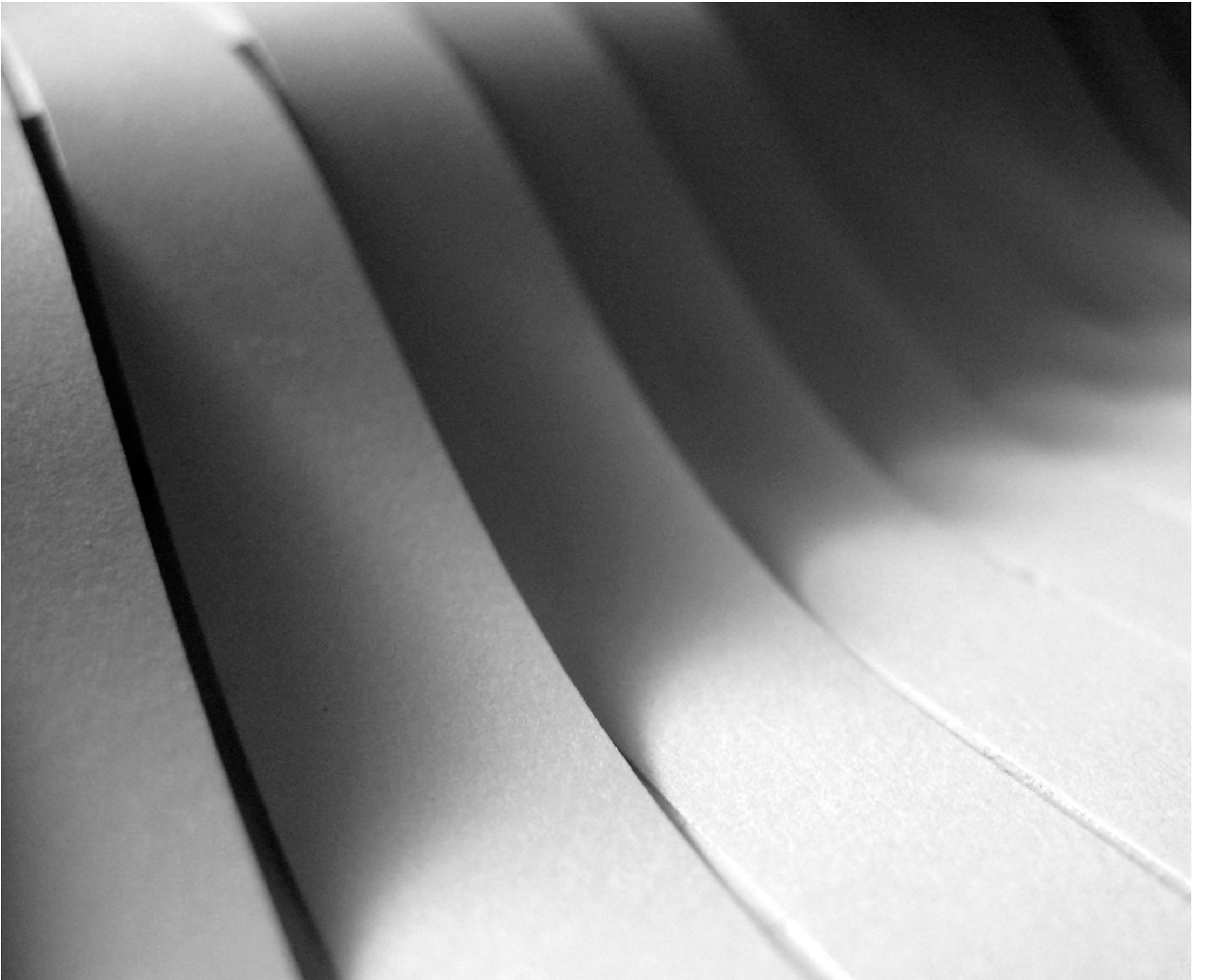


Light conditions effect how these curves look at different times of day. The shadows cast during the day and the glowing illumination of internal LED light fixtures at night, critically alter ones perception of the design.

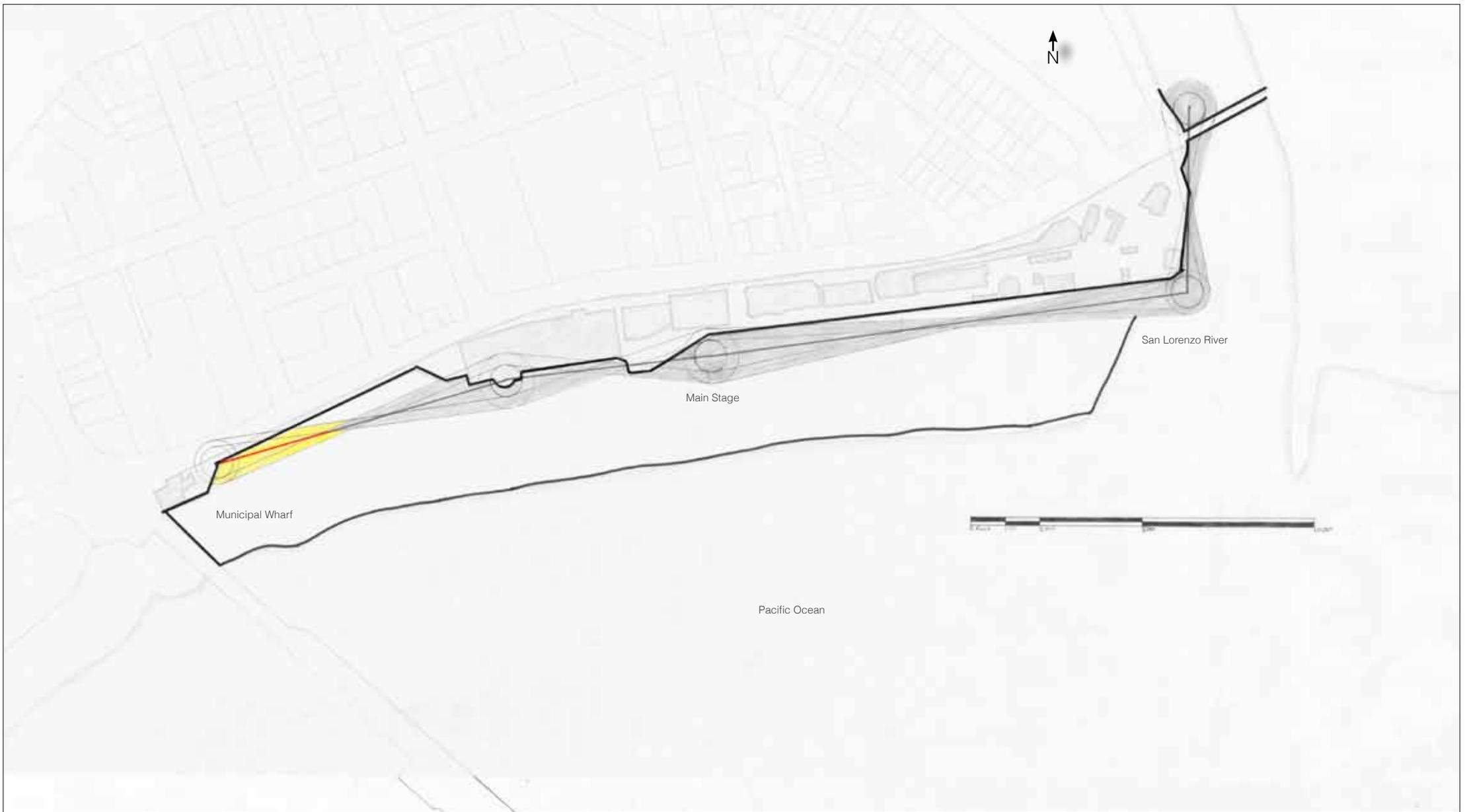


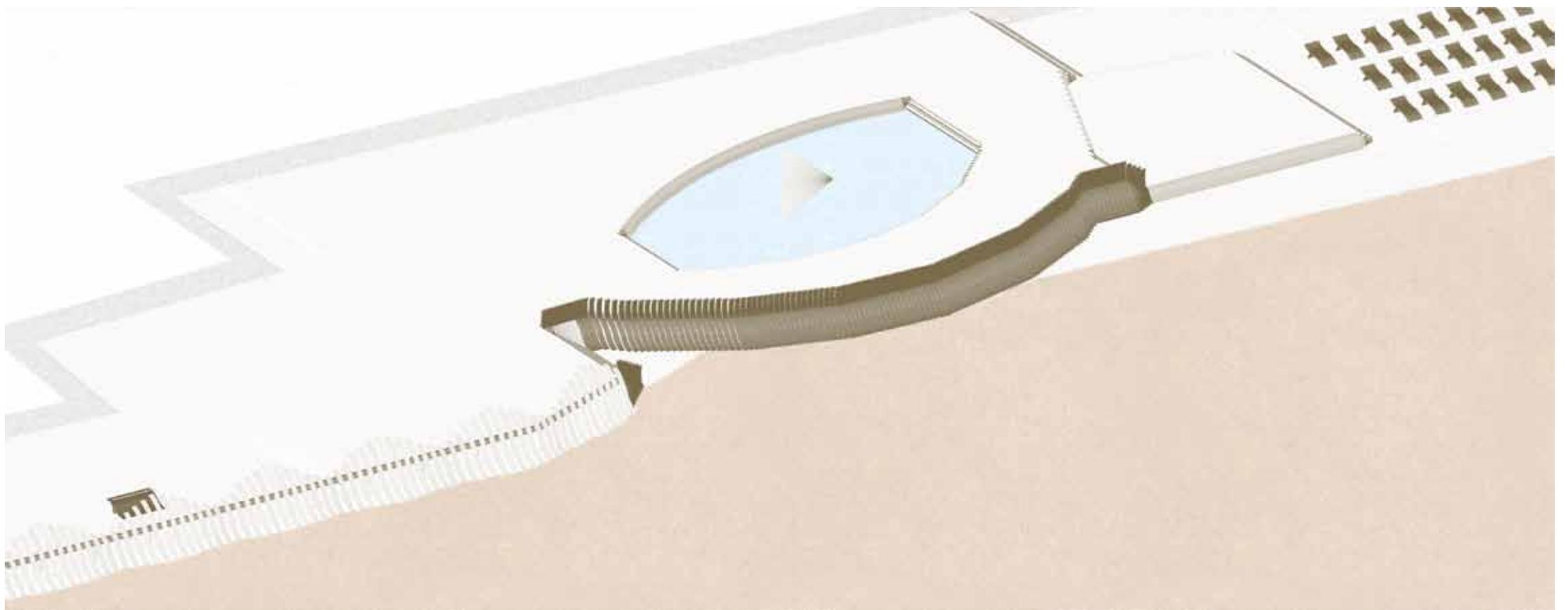
Light plays a significant role on the perceived fluidity and blending of the edges to maintain that ambiguity between spaces. Does floor belong to walls or walls belong to the sky during the day and decking at night?

Compositional Movement

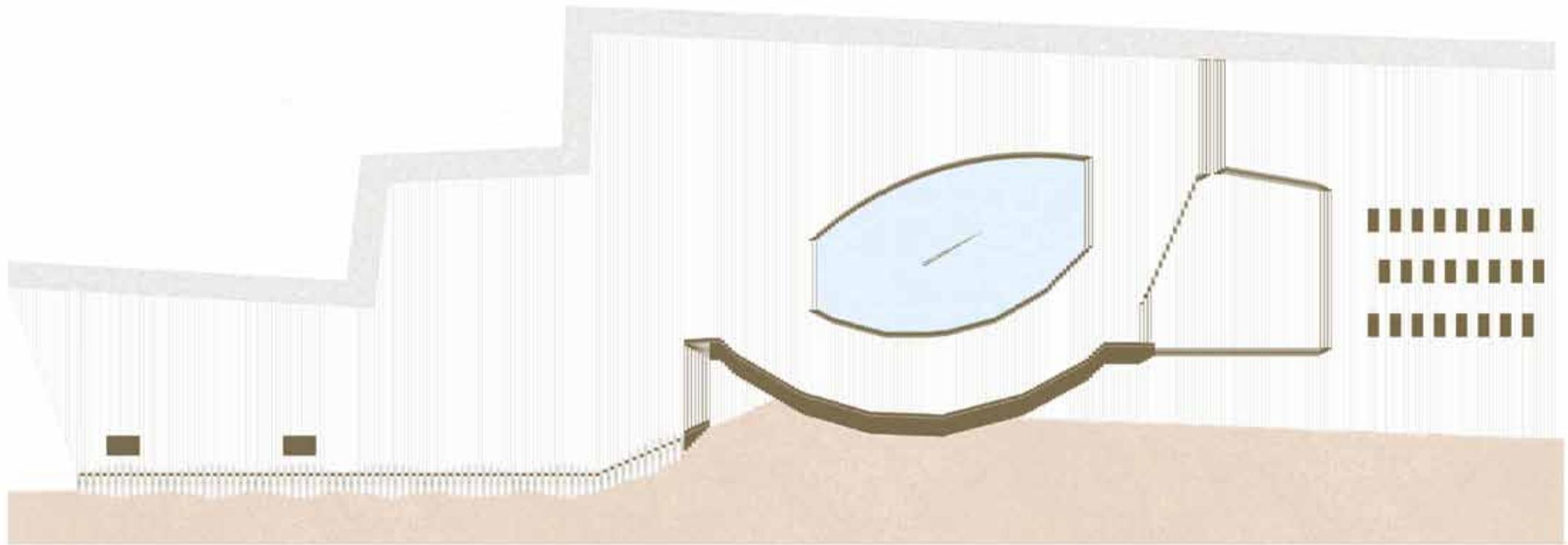


The Municipal Wharf is at the western most part of the boardwalk. It has a dense traffic of pedestrians from ships docking at the wharf, shoppers, beach goers and restaurant patrons who go eat at the end of the wharf. The flow of traffic and pedestrian movement is constant through out the day. The boardwalk accommodates the diverse range of people that move through this node. Surfers, sailors, beach goers, and patrons all have a different purpose on their walk, but they all have to traverse through this node. This node is naturally a central entrance for access to the beach, restaurant, wharf and shops that channels people coming from all directions.





South West Isometric

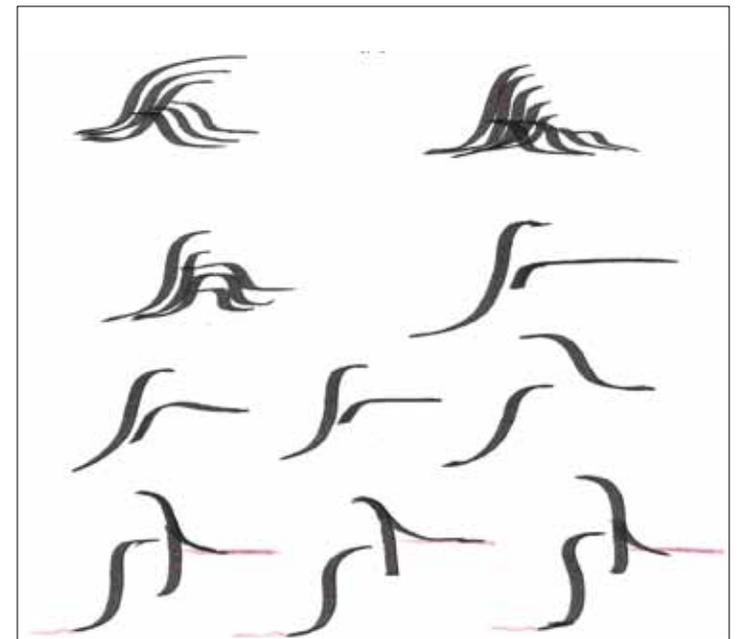
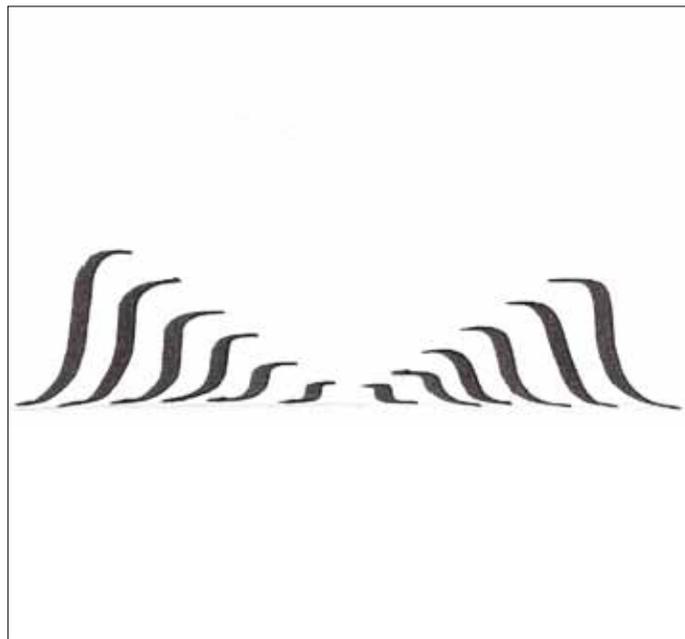


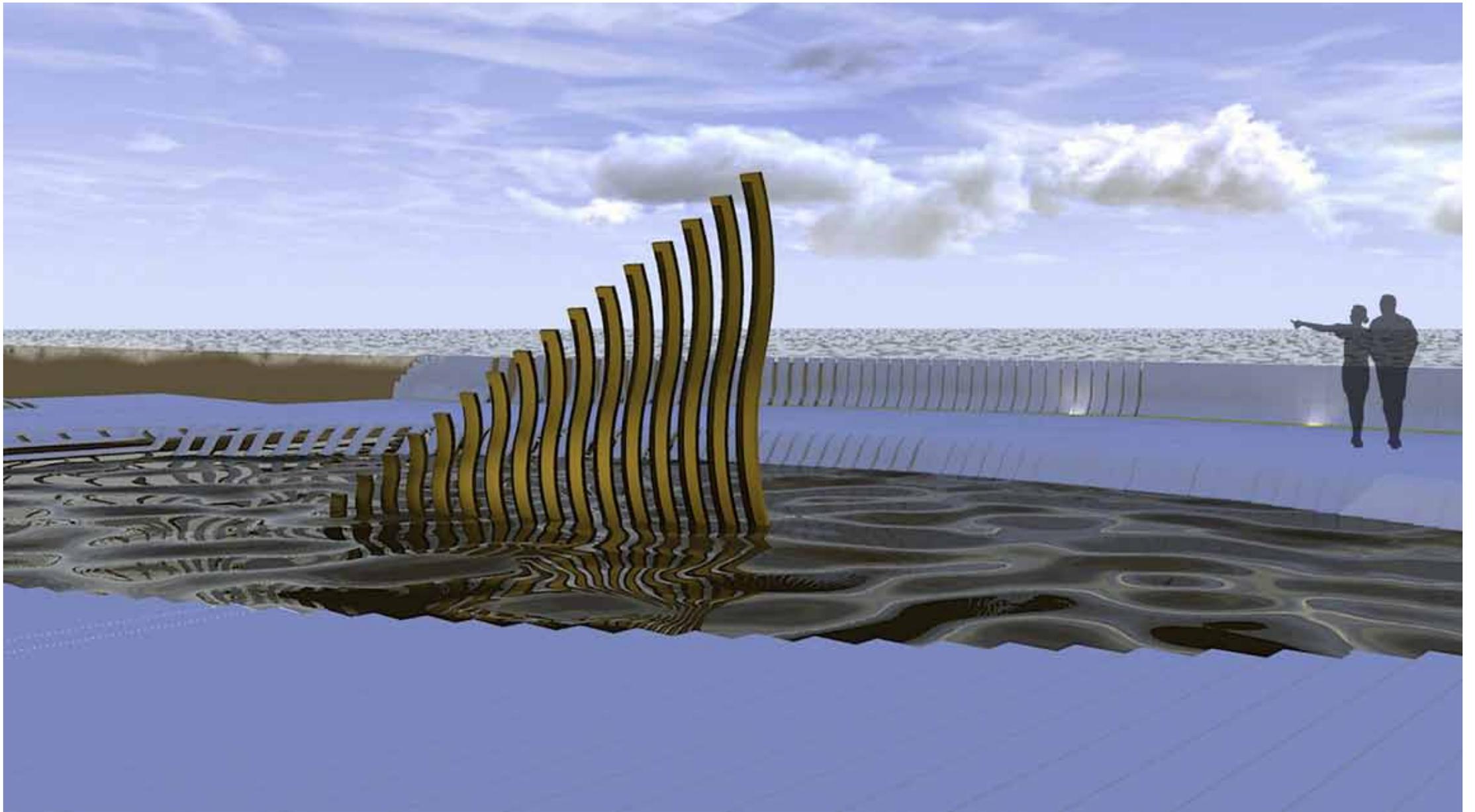
Plan



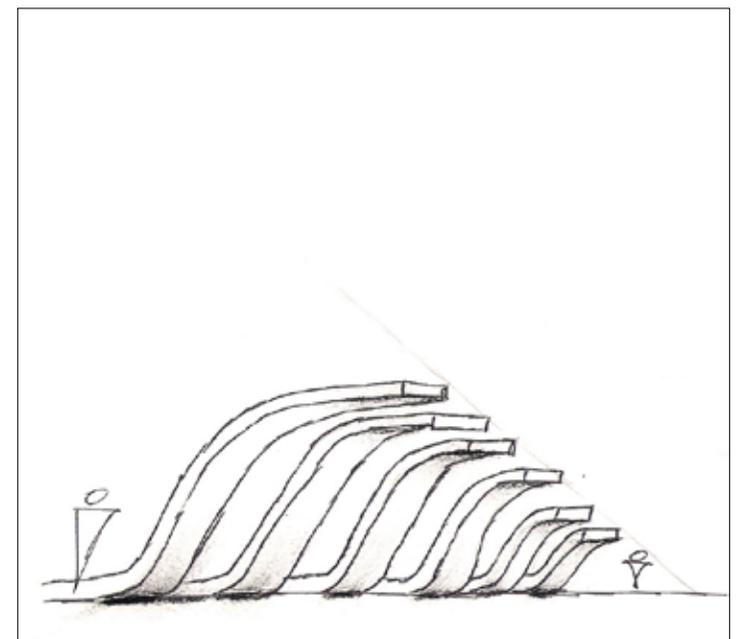
South Elevation

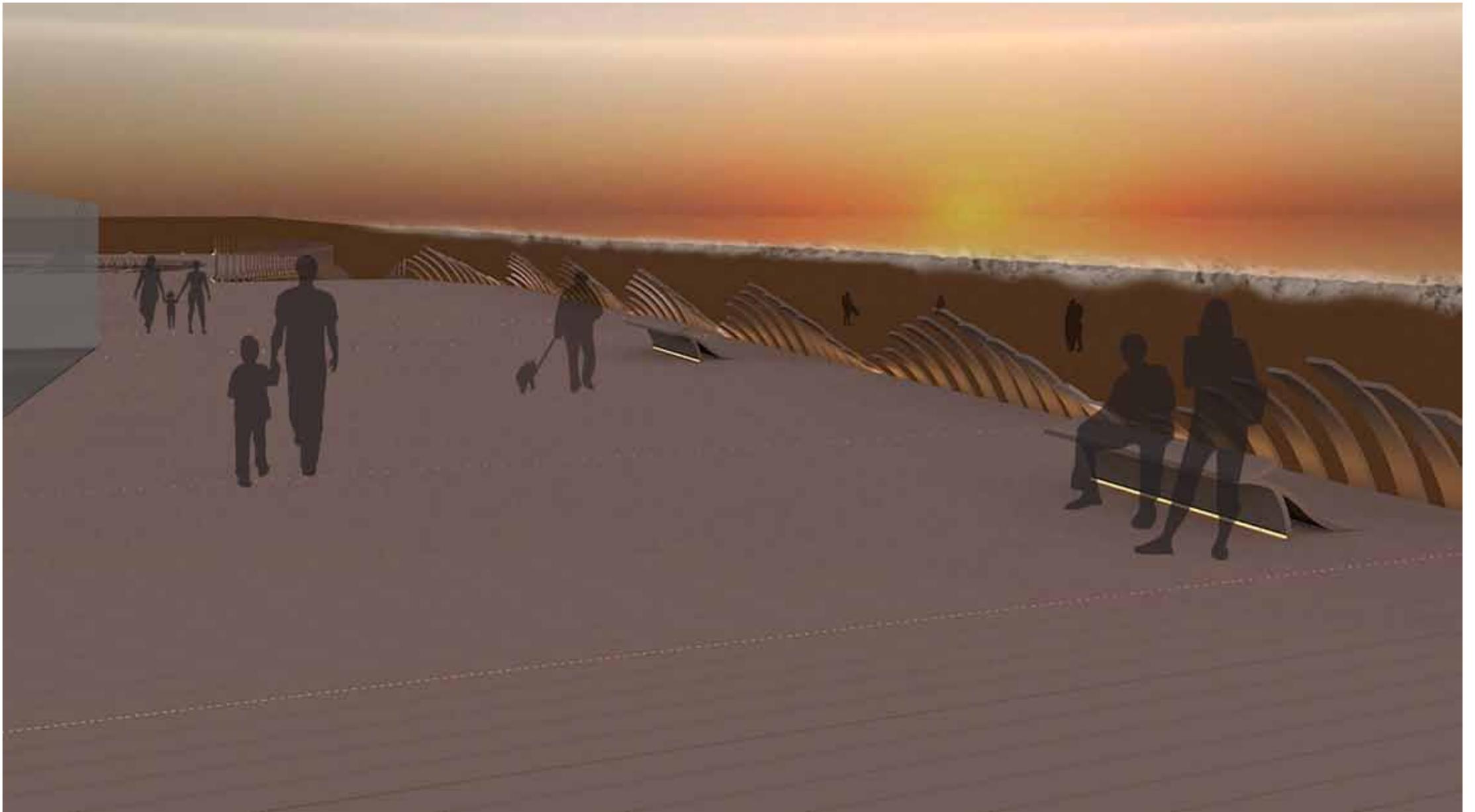
On this page the preliminary sketches of curves serves as a study of what happens when one curve meets another. How might the line continue as a transition from one space to another as each curve is a synecdoche of the Pacific that is always in motion. On the opposite page is a rendering of the center of the Municipal Wharf node. This node holds an autodidactic composition. The fountain has a bronze sculpture made up of every curve that the boardwalk is assembled from.



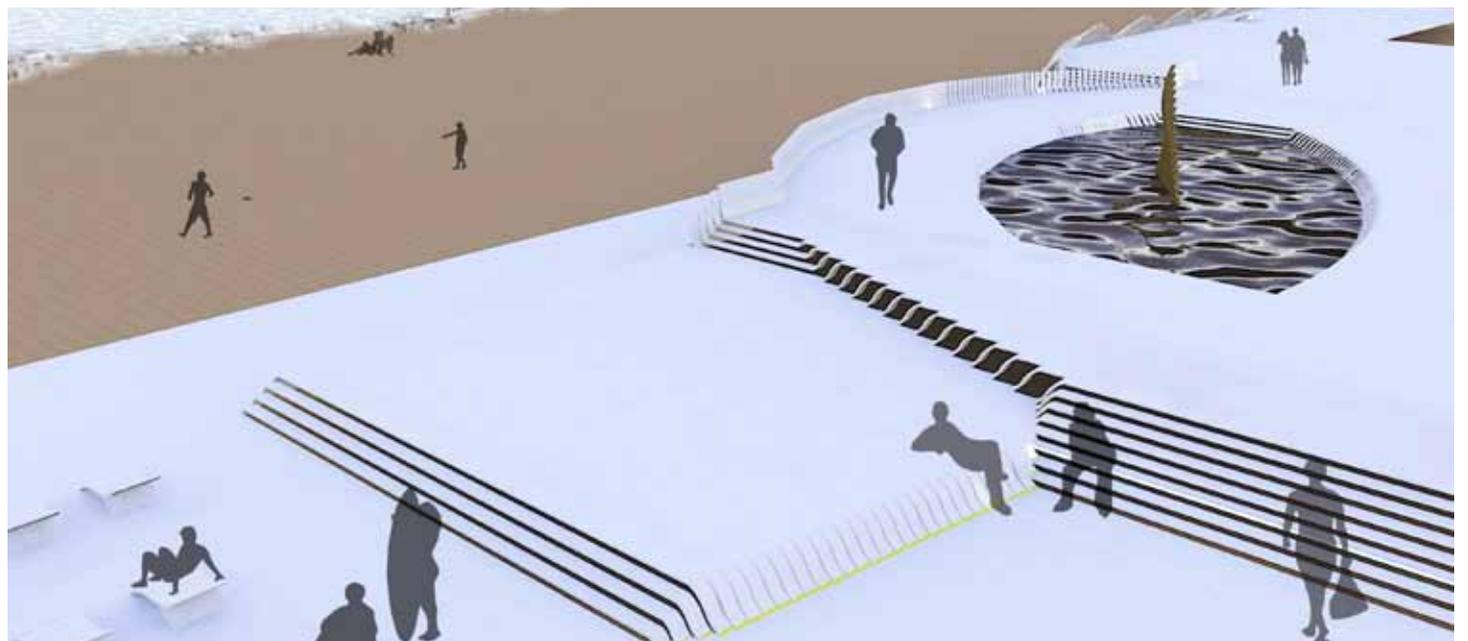


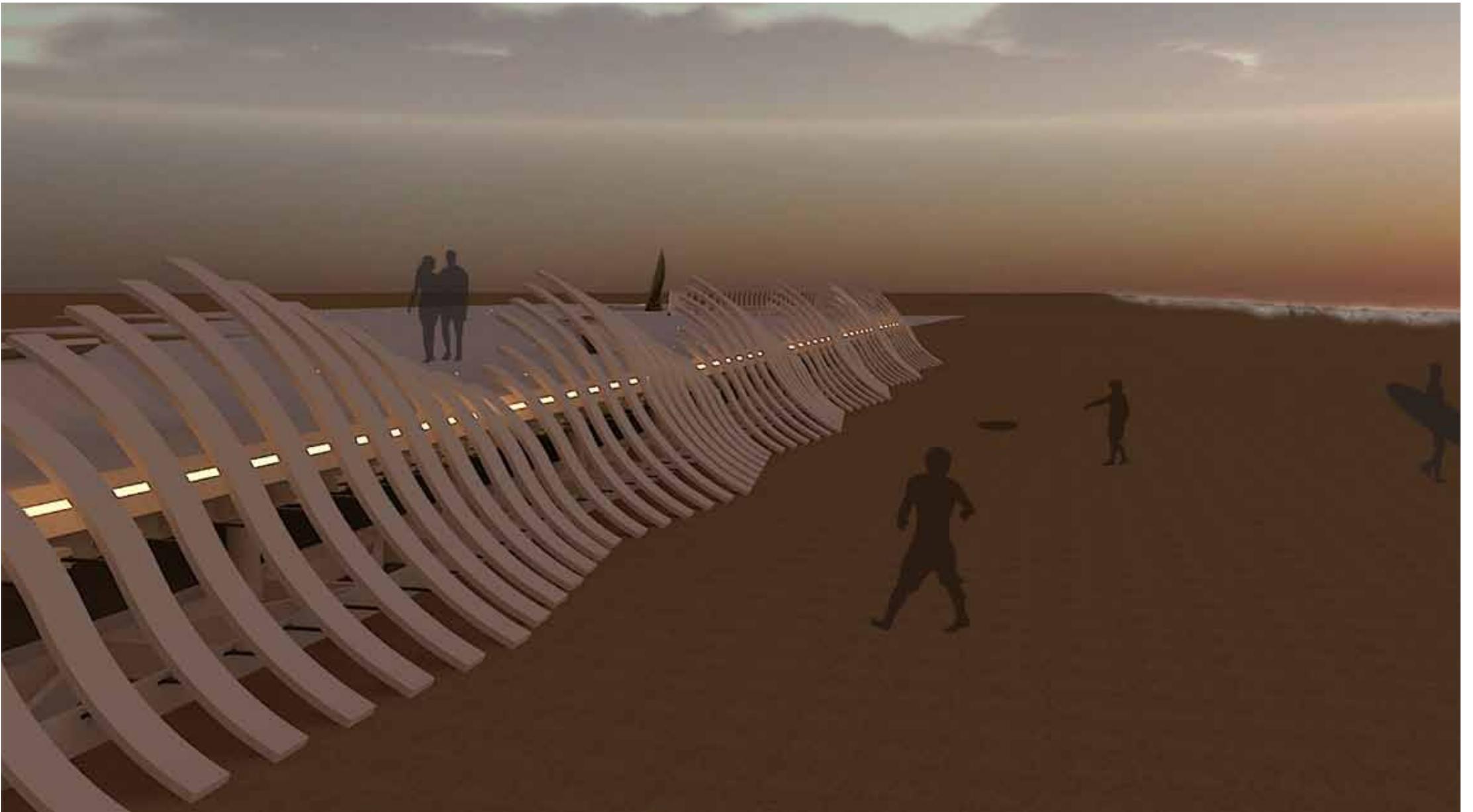
On the Municipal Wharf looking towards the East shows the relationship between the waves and the boardwalk. The ambiguity of barrier is a synecdoche of the Pacific to continue the rhythm along with the pace of the pedestrians. Each grouping of a set of S curves sets forth a rhythm as one walks towards the East.





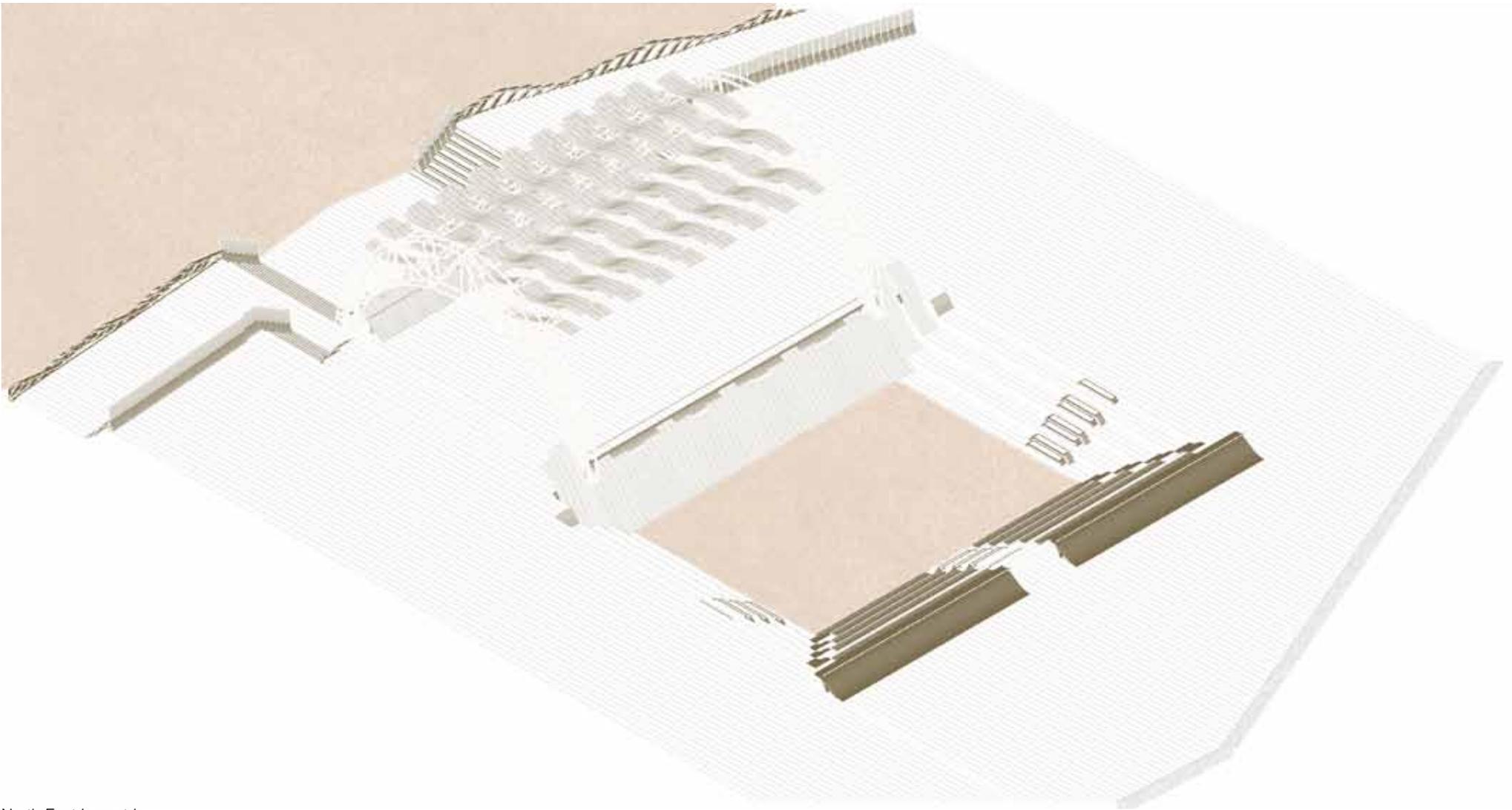
In the late afternoon the lights are turned on as the sun sets. The lights highlight the borders of the boardwalk at night while the boardwalk ribbons through between levels to make spaces for stairs, barriers, and sitting. The opposite page shows the transition from day to night, which highlights where the barrier expands from. During the day it belongs to sky; during the night it belongs to earth.



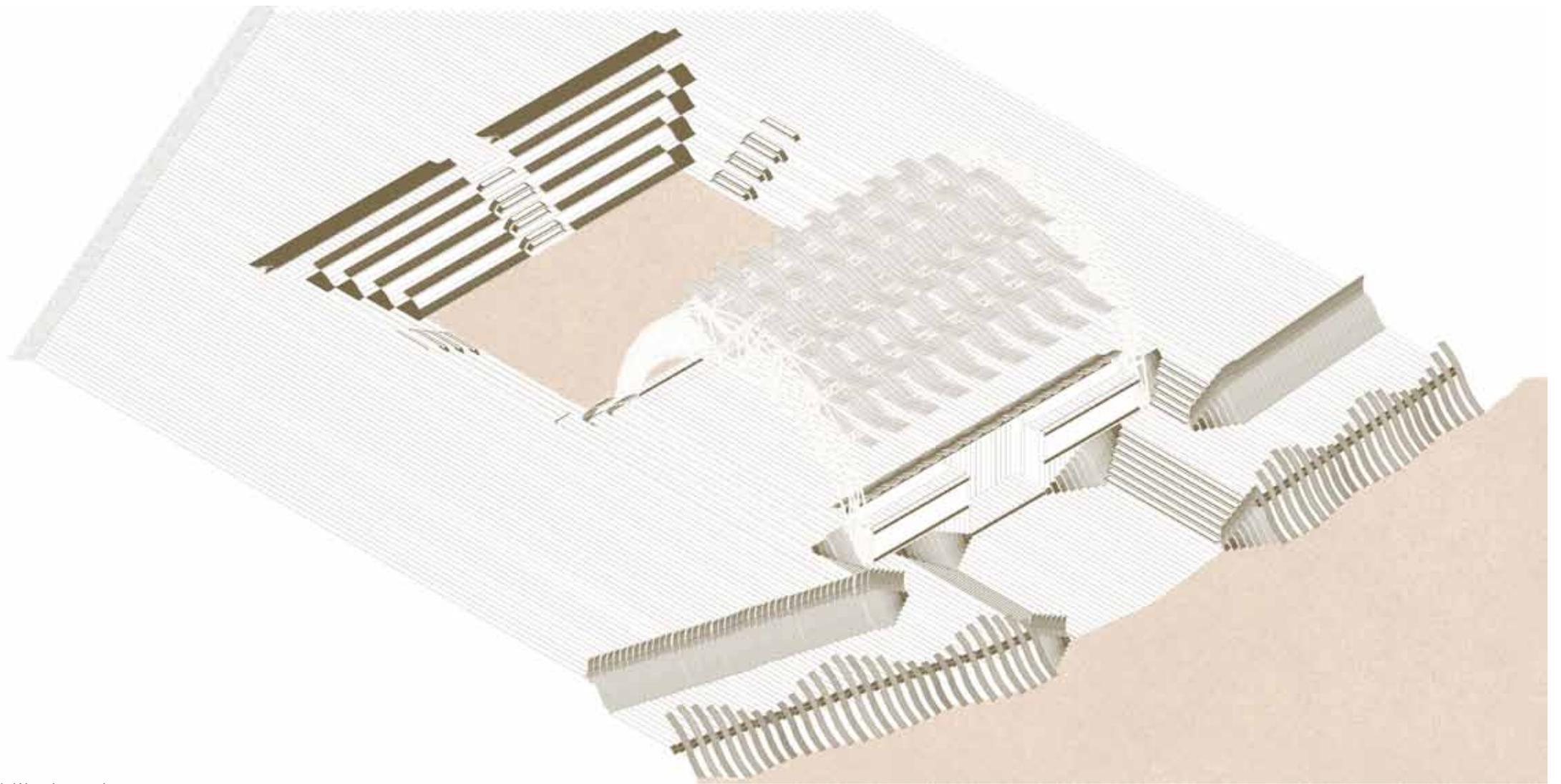


The Main Stage node is at the center of the three miles of boardwalk and is the densest area for pedestrian traffic. If there is going to be any loud concerts and shows, it is going to be here. It is a transitional central point of people coming from all directions. This node is naturally the hub of the boardwalk. Because of the central location, people come in just North from the city directly towards the beach. Beach goers, shoppers, and surfers traverse the boardwalk from East to West and in the evening, as the tide ebbs, people heading back North towards their cars and home. The Main Stage also serves as a meeting place and a landmark that can be seen from all parts of the boardwalk.



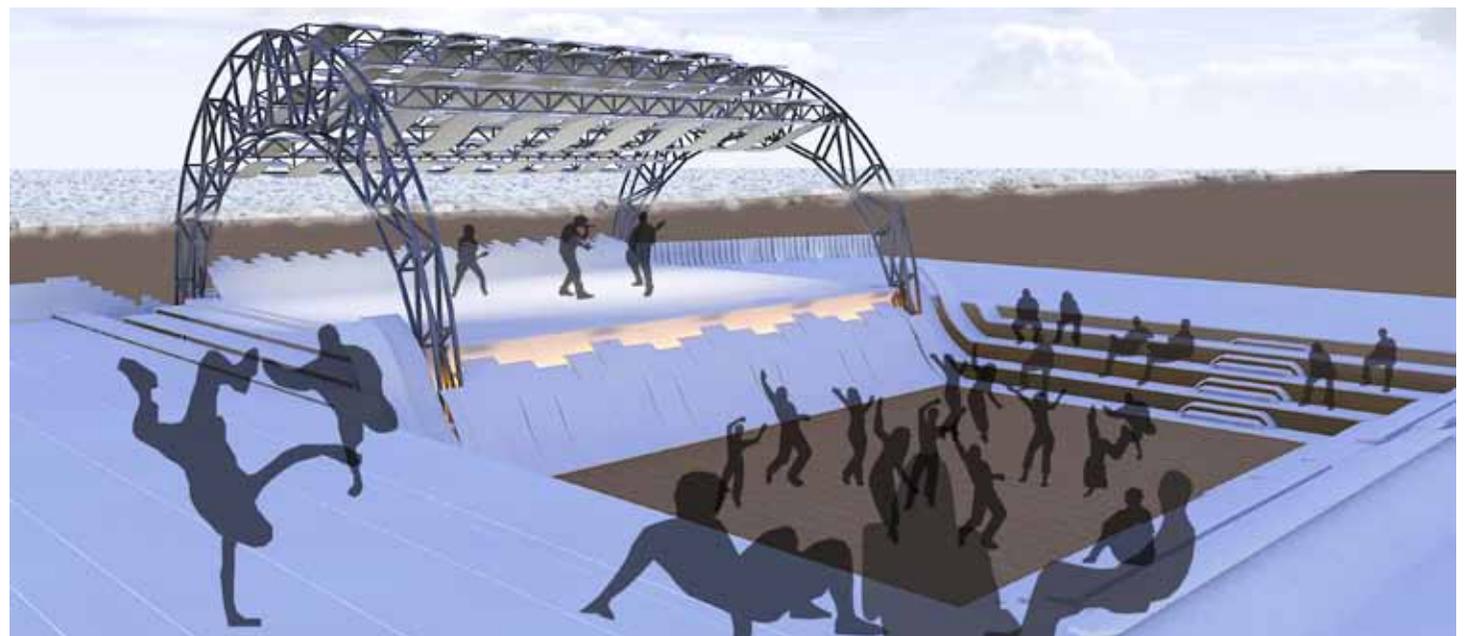
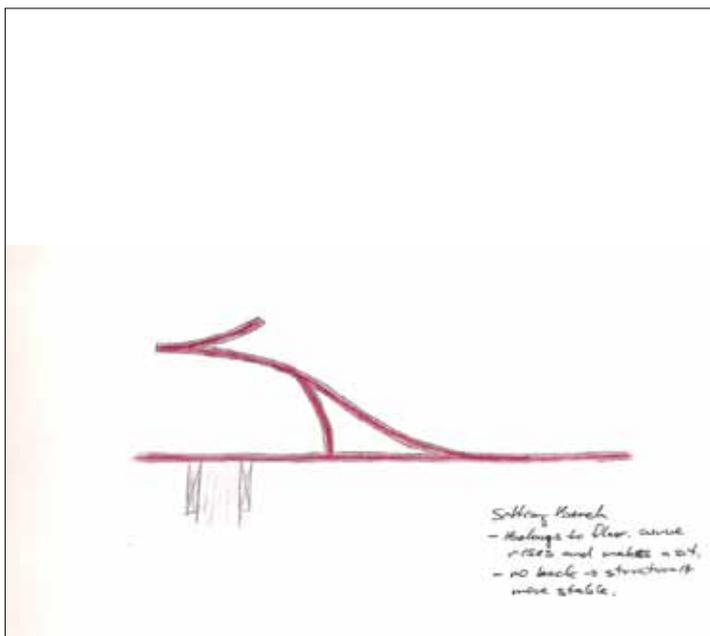


North-East Isometric



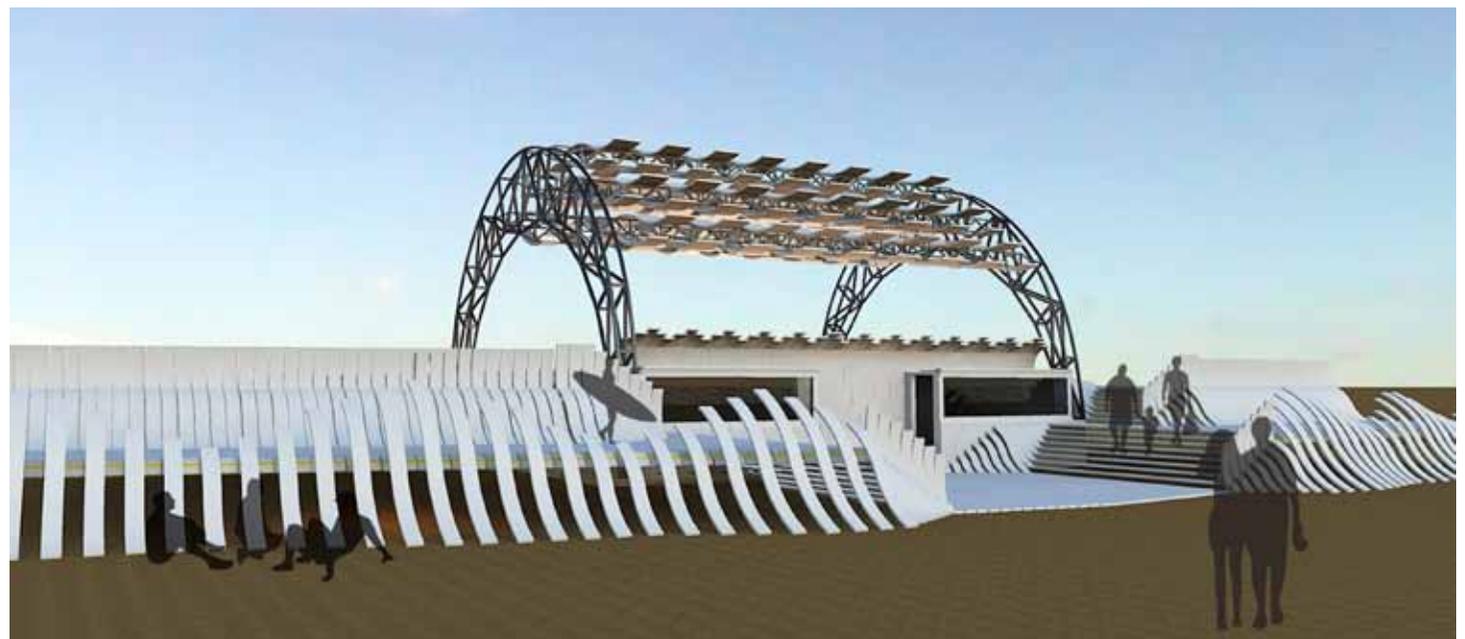
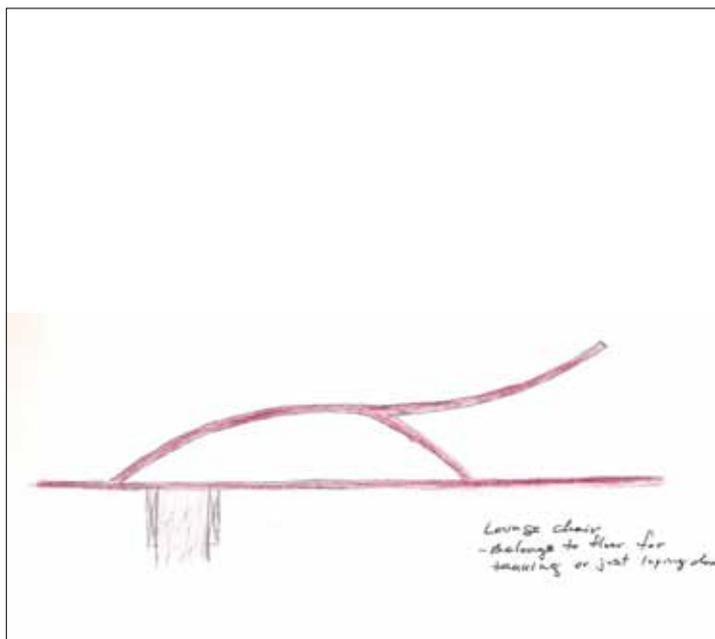
South-West Isometric

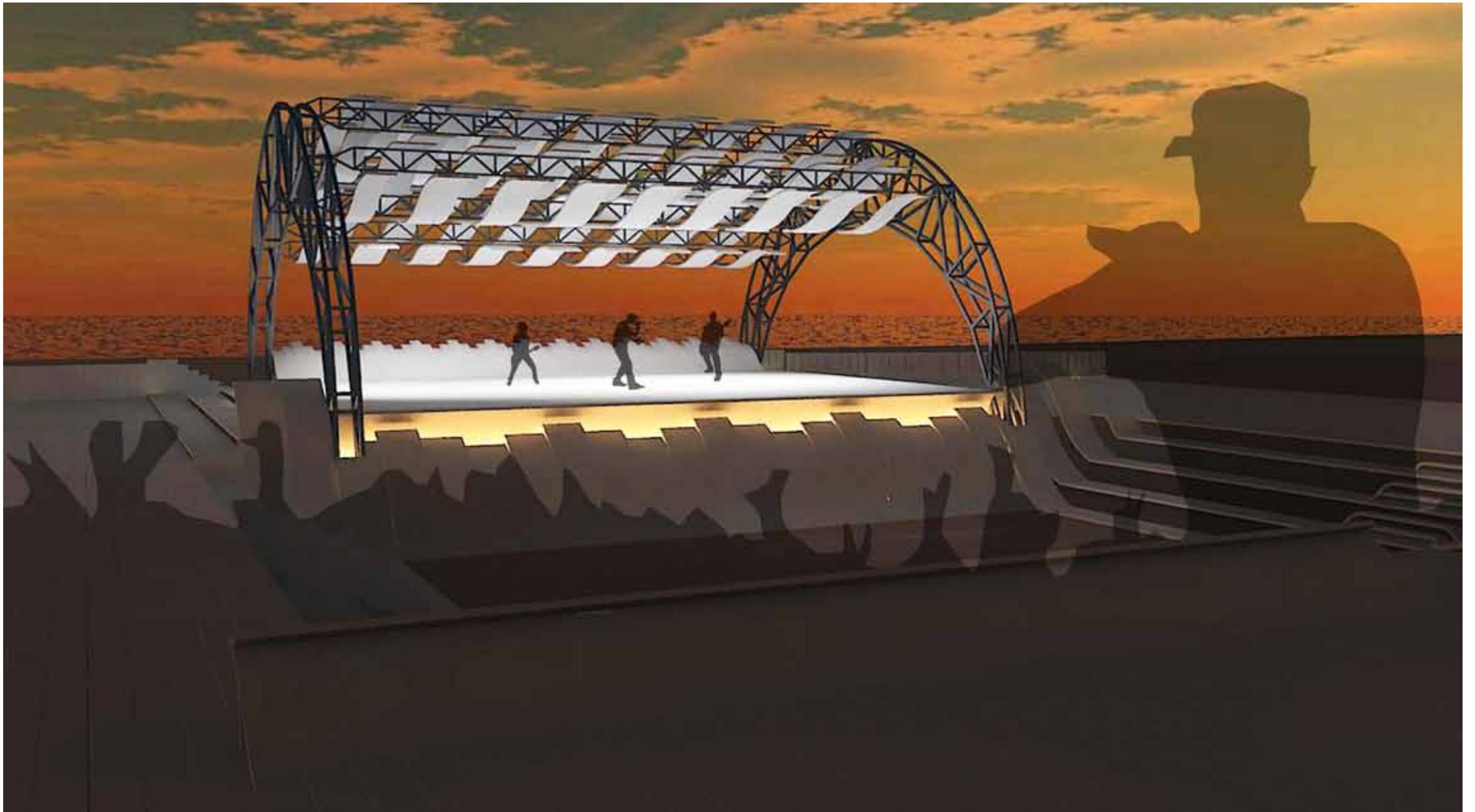
As people gather for an afternoon concert, the Main Stage is where there is the most human interaction with the Architecture. It is here where the boards ribbon across the boardwalk to create the Main Stage Architecture and where floor becomes seating, seating descends down to mosh pit and ascends back to wall, wall becomes stage and stage becomes railing to later create stair treads and finally a barrier that makes contact back to the sand. These curves soften the hard edges to create a multi-functional border between spaces where people can seat, lean, stand, and dance on all these different spaces.



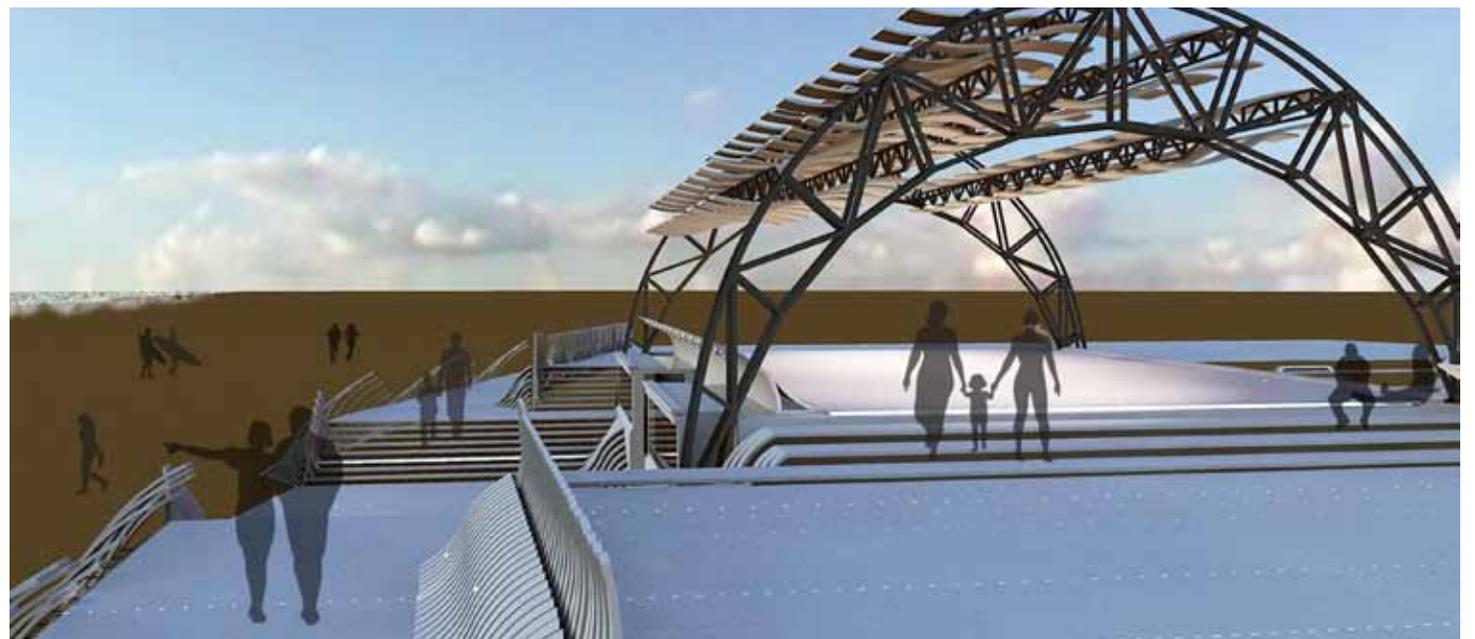


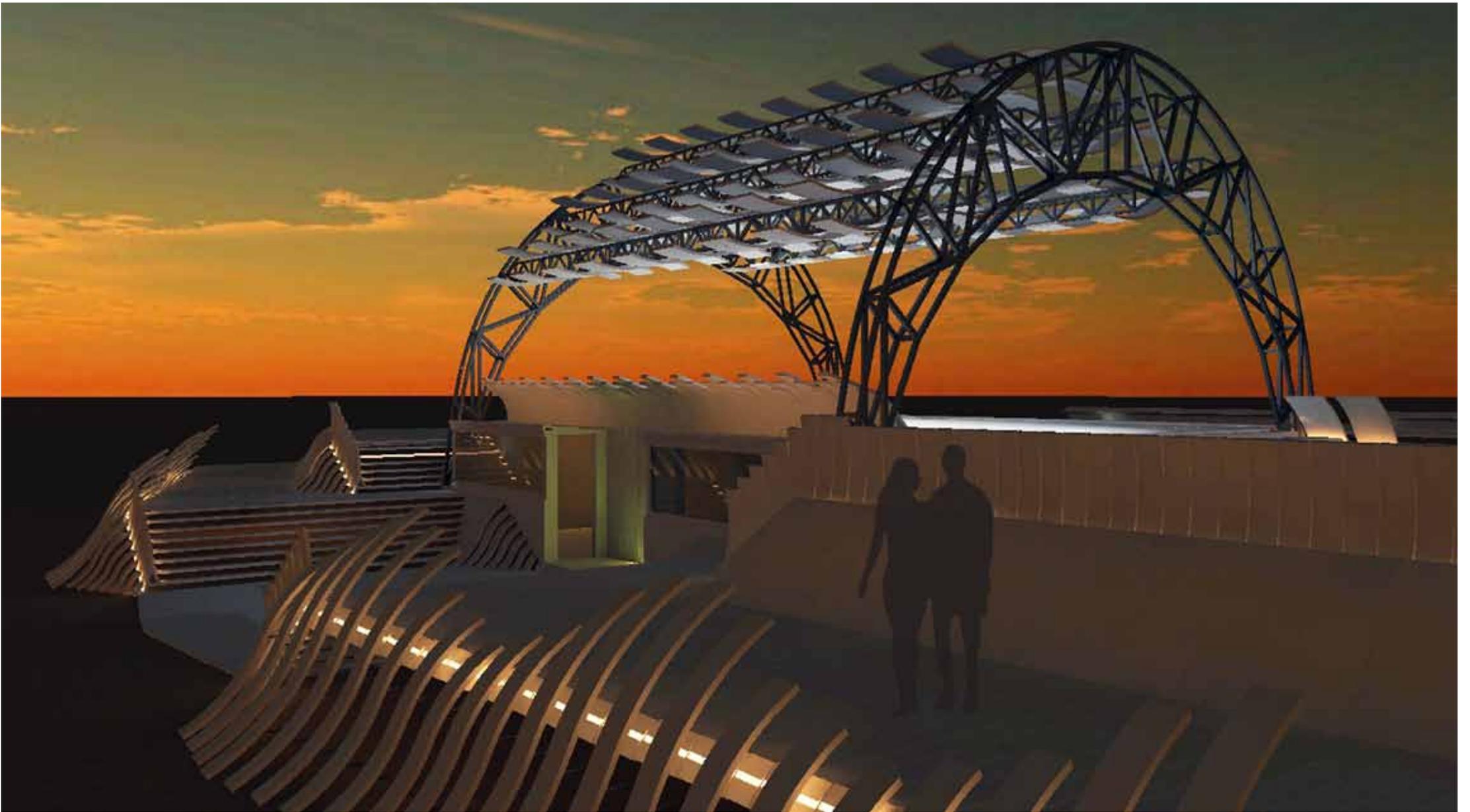
The roof is an extension of the boards that ribbon across the stage. It is an aesthetically functional roof, not only provide shading and acoustic and lighting support for performances, but it is also a synecdoche of the Pacific.





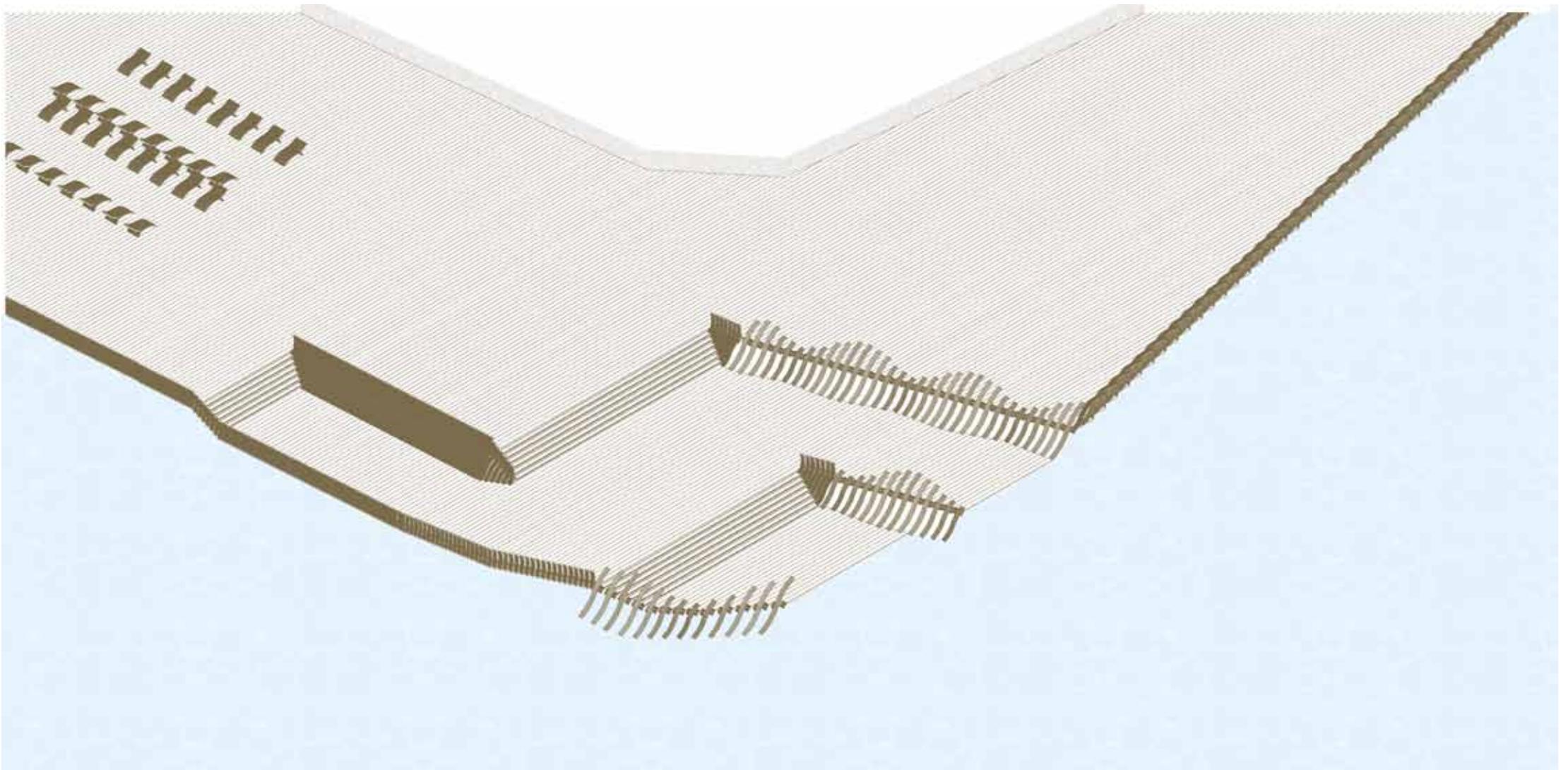
In both renderings the edges in between spaces blend ambiguously. Tread might belong to barrier or might barrier belong to floor or to the beach itself. It is the blending of these edges between spaces where movement and rhythm are set throughout the whole boardwalk. As one walks from one space to another the rhythm is kept by the removal of hard edges as one descends to the different levels of the boardwalk.





The San Lorenzo River is where rhythm is literally demonstrated in the interaction with nature with the flooding of the tides. At this node there was a great opportunity to really express rhythm and movement on a daily basis with the interaction of the river with the boardwalk. Currently the river runs down to the Pacific and the edge of the river is right up against the concrete pad. This node will extend into the river to create an access point to the beach for the residents along the West bank of the river where there was no access before.





South-East Isometric

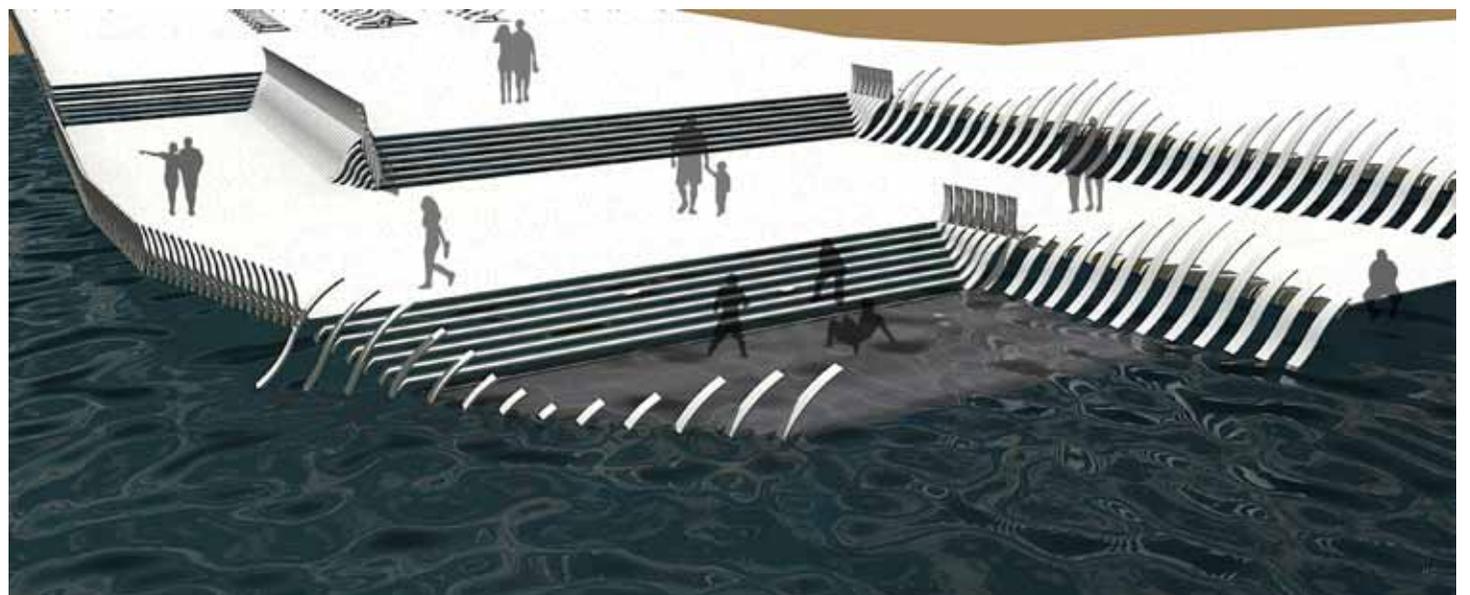
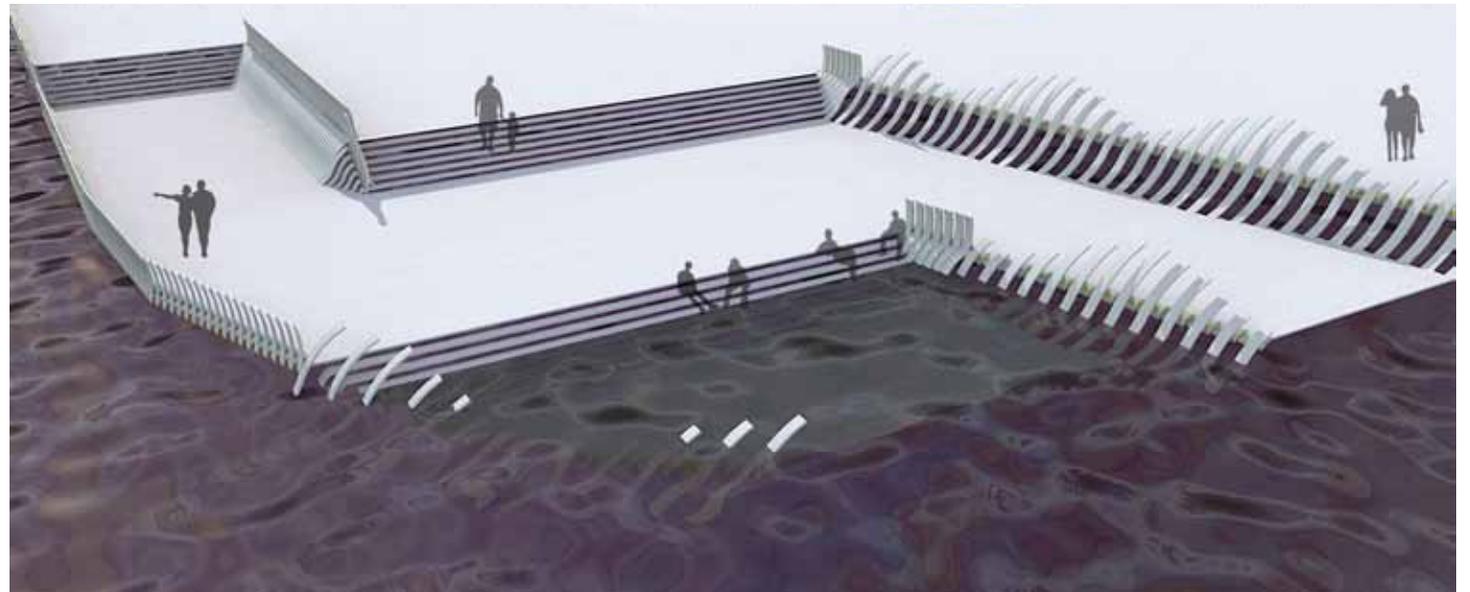
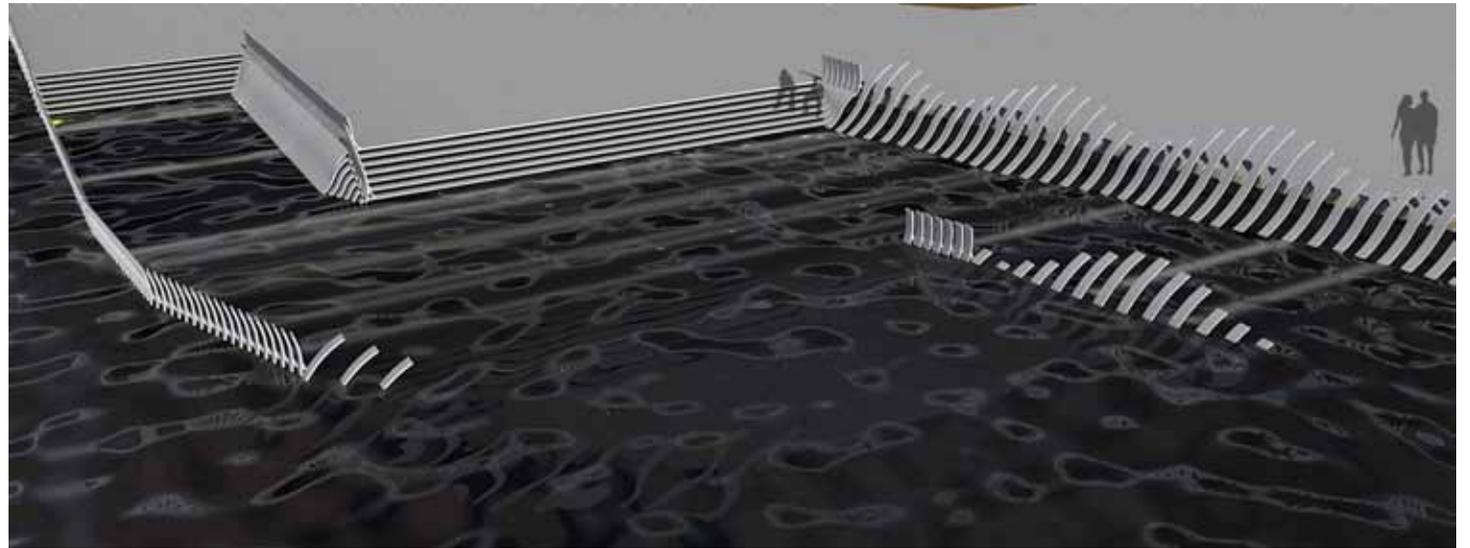


South Elevation 3/16" = 1' H

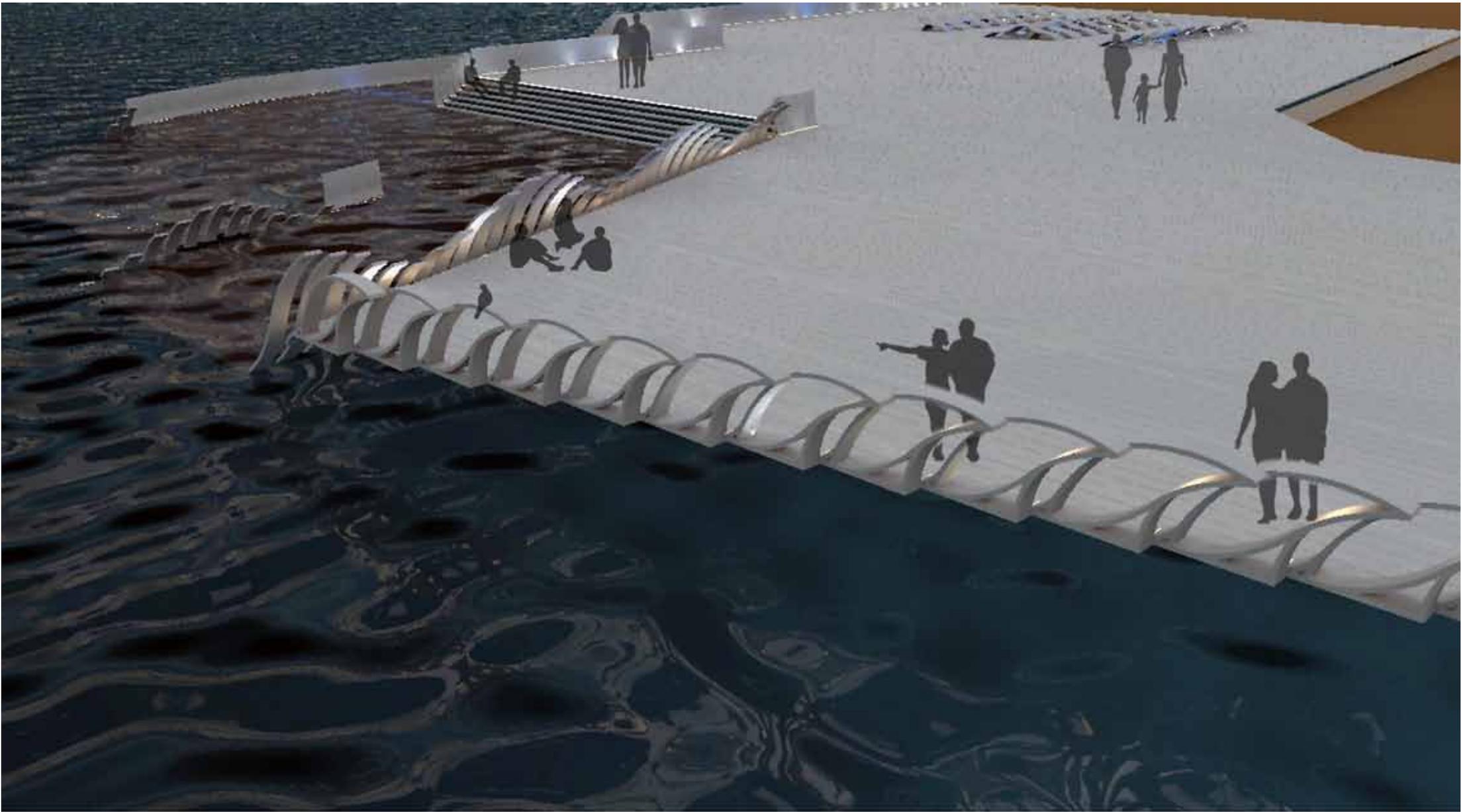


East Elevation 3/16" = 1' H

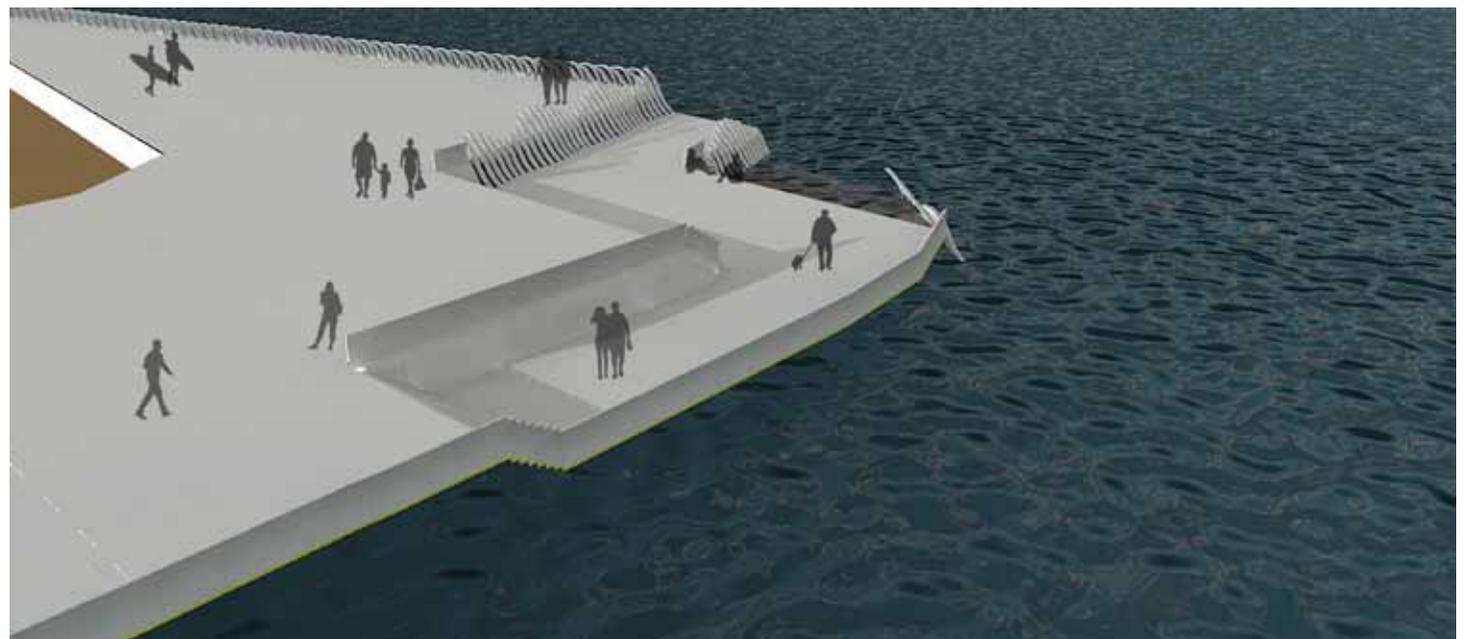
The daily rhythm of the tides is engaged in the San Lorenzo River node. From early morning when the moon is still out to late afternoon, the different levels of the boardwalk allow river access to pedestrians. When the tide is high the barriers of the boardwalk seem sculptural as they emerge from the flooded parts of the boardwalk.



As the river tide ebbs in the afternoon the pedestrian density increases; as the river tide flows in the early mornings and late evenings there are less people enjoying the boardwalk. It is a daily routine where nature is allowed to directly make a way into the Architecture and its people.



Late in the afternoon, people are able to actually wade and swim in the river and climb and sit on the boardwalk throughout the day. This natural rhythm of interaction between people and nature is set directly by the boardwalk as a means to facilitate the contact between the two. The boardwalk sets the tone, rhythm and pace of the movement of people while nature's rhythm, which is constant and unchanging, is brought into the Architecture.





In taking up the established principals of Le Corbusier's experience of Architecture in a non-synchronic process, Tschumi's finite set of rules to an infinite combination for an Architectural cohesiveness, and Eisenstein's cinematic montage of rhythmic placement as precedence, I challenged static transition in the blending and delineation between spaces. I tested a fluid ambiguity of edges to maintain the rhythm in the transition between spaces across Santa Cruz Beach Boardwalk. By overlapping the functions between spaces, which removes hard boundaries in between spaces, the Architecture creates an undulating field in relation to the fluid movement of people from space to space in an uninterrupted rhythm. With this intended ambiguity between edges, the boardwalk sets the rhythm of the movement of people in relation to the site.

The addition of this boardwalk would enhance the rhythm of transition from one node to the other. The rhythm is established throughout the whole boardwalk in the weaving nature of edges from one node to node. The intercepting edges in between the nodes gives one a perspective edge that follows a rhythmic undulating field in which one can experience the Architecture in a diachronic process entering from any point of the boardwalk.

Using standardized S curves as a kit of parts, which is a set finite rules for an infinite combination of parts, the blending of edges are tectonically possible and less conceptual. The standardized curves materialize the ambiguity of floors, barriers, seating and edges.

The placement of spaces establishes the rhythm of the transition between the spaces; each staircase, seating, lounging area, and barrier blend into one another within the edges and functions in between spaces. They set the quality for the transition from the Municipal Wharf, Main Stage, and the San Lorenzo River. The Architecture sets forth an established rhythm of the movement of people. The boardwalk serves as a fluid Architecture that delineates the edges of spaces for a smooth transition from one space to another.



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