

Making Viewscope

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fig. 2 : Massing of Program



AWARD OF
DISTINCTION IN
ANIMATION
Boathouse at
Montrose Harbor
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#15.

The Metal Construction Association of Chicago holds an annual call for student entries per a specified site and program focused on the use of metal in design. More particularly, metal is to be used innovatively to develop a building envelope as well as a supporting structural framework. This 2004 submission, entitled viewscope, represents a comprehensive investigation of the practical, conceptual, and aesthetic qualities of metal in the design of a multiuse community structure for a site adjacent to Montrose Harbor on the north side of Chicago. The program includes 12,300sf (1150m²) of conditioned space to be divided between a restaurant, beach house, and convenience store as well as an open-air theater and a viewing platform for the site.

Wind emerged as the unifying element of site forces that included a bird sanctuary, a harbor of predominantly sailing vessels, and the Chicago lakefront. The building form was

conceived as an expression of wind through a fluid series of ramps and ribbons, becoming a heart and beacon of site activity. The striking beauty of the man-made landscape encourages interaction between man and nature, staging scenes that are framed and realized through the vertical projection of the restaurant, ramps, and observation space. The building thus becomes a theater of nature, extending vision beyond the programmed stage and cultivating the dynamism of site activity as a panoramic performance.

Beginning with ideas of wind and sustainability the group hit the ground running. Early on we produced several models and performed a good deal of research regarding the application of wind power to the Chicago lakefront. After experiments with a large-scale model in the wind tunnel (fig. 1), we found that active wind power generation on the site would be counterproductive to our conceptual goals. Essentially, to create wind power on the site it would be necessary to implement full size wind turbines that would disrupt the landscape and disturb many of the site elements, including the bird sanctuary. This “blinding success”, as Mike put it, led to the reevaluation of our formal conception of the building.

The new idea was to create a building that was not conceived to capture wind, but rather be an expression of it. Through several group work sessions we soon came to a primitive version of our final design (fig. 2). Jon, Mike and I worked closely together, the product being what we believe to be a true synthesis of ideas. From here, we created another large-scale model from which we defined the essential form of the building (fig. 3). By establishing the form of our building early on through analog process, we were given the time to develop the project to completion in the digital realm and to work out the complexities of modeling organic form.



fig. 1 : First Sketch Model



fig. 3 : Completed Process Model

viewscape.

Considering what is a building element of site access, urban culture, + development the building was conceived in terms of an **expression of wind**, creating a breath or backdrop of site activity. The striking beauty of the landscape, particular water and vegetation, distance view + water, sloping terrain that are framed + revealed through the vertical projection of the restaurant, ramps, and observation space. The building then becomes a **breath of water**, creating views beyond the programmed stage and softening the distance of site activity as a geographic performance. Sited for elevated terrain, and elevated position, **water** creates a positive relationship with the landscape, providing **multiple layers of protection** while allowing for the enhanced experience of site.



viewscape.
concept plan
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site activity as performance.



N | beach

approach.

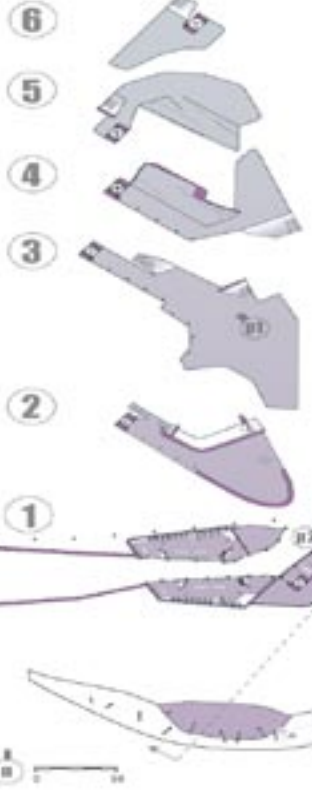


wind as form.



program / massing.

The building is composed volumetrically, creating a progressive series layered spaces that move upward, revealing the site.



circulation.



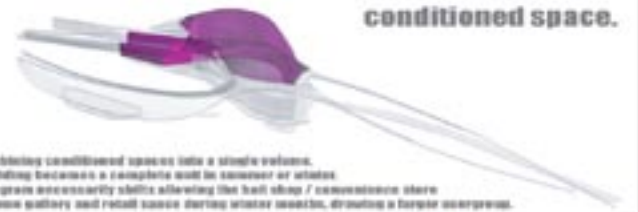
sun protection.

West, North, East, South, and Glass create a series of protective layers varying in transparency and mass, material in largely concentration on the south facade, regulating sun exposure while preserving views onto the site.



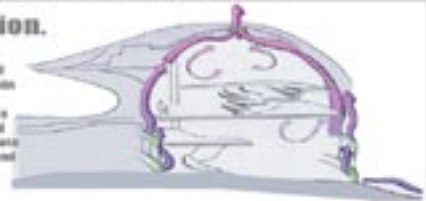
conditioned space.

By combining conditioned spaces into a single volume, the building becomes a complete unit in summer or winter, the program successfully shifts allowing the built space / concentration there to become utility and retail space during winter months, drawing a larger program.



skin respiration.

The placement of layered walls (green), allows the skin to breathe by creating a thermal chimney that uses the forces of rising air and wind to sustainably regulate temperature in summer and winter conditions.



Using a Microscribe probe digitizer, we digitized the model seen in figure 3, which we found to be surprisingly (and conveniently) to a nearly exact scale. Having only introductory experiences with NURBS based modeling; the team struggled with how it might be possible to construct this building. Several cups of coffee and 20 **form-Z** models later, we had a smooth skin. Derived from contours taken from the physical model, our new skin had been created, broken apart, and reassembled in an experiment none of us hope to repeat.

This exploration of NURBS and other forms of smooth modeling again presented themselves when we decided to rework the floor plates. To extend our concept of wind and fluid motion, and strengthen the design, we added in the sweeping motions along the interior circulation patterns (fig. 4). Also, we created a morphic ramp that created informal seating and dining spaces and allowed for the continuation of the “theater of nature” (fig. 5). This ramp, like the building skin, required a number of steps to resolve and proved to be incredibly frustrating. Once again, the results of the accomplished whole were a great addition to the design, and a good deal of learning in the areas of Boolean operations as well as T and Q-subz.



fig. 4 : Early Model of Interior

The innovative use of image and transparency mapping allowed us to establish the materiality of the building without the necessity of physically modeling certain complex components (such as the space frame seen in the interior perspectives). By utilizing constrained quadratic subdivisions and ruled surfaces, a developable geometry was generated, allowing for the design of a differentiated skin comprised of layers of glass, perforated metal, and light gauge sheet metal. By systematically defining panel locations in relationship to solar conditions on the site, a shading gradient was formulated utilizing these materials. This offered the opportunity to limit solar gain while generating a distinct aesthetic driven by environmental as well as programmatic requirements. For instance, the main generator of envelope opacity or transparency accommodates views out onto the site.

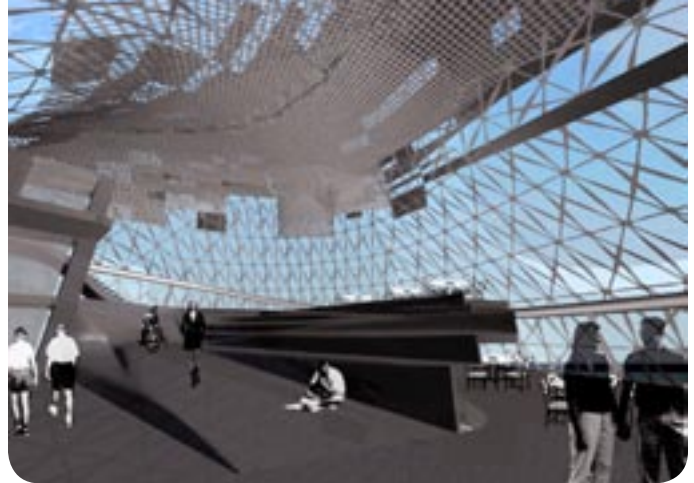
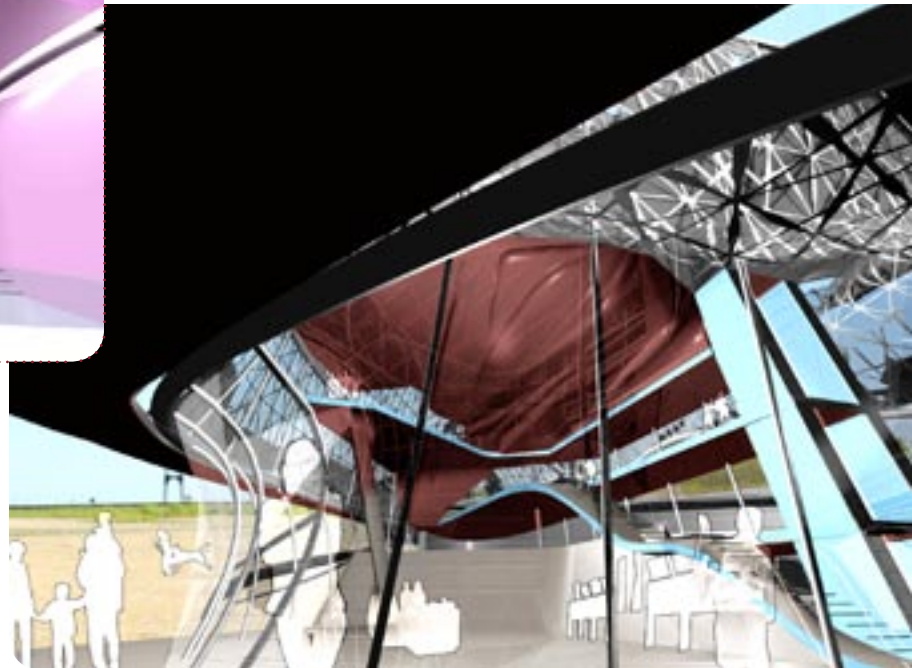


fig. 5 : Montage of Ramp Surface

Given all the pieces, we were confronted with the difficult task of legibly visualizing a building with such irregular geometry. While conventional plans and sections proved to be valuable supplements and were created for print, animation became critical in providing individuals a means of understanding the project. The use of still montage imagery negotiated by walkthrough clips became a framework that, when supplemented by program call-outs and a systematic, multi-scalar analysis of the supporting structure, told the story of viewscape. Wireframe, QuickDraw, and **RenderZone** animation clips also offered a unique way of depicting certain qualities of the design.



Perspective From the Beach House Looking East up to Restaurant

For us, the idea informed the use of a variety of tools and processes rather than the idea being a result of available tools. Put differently, viewscape was not a design created in response to the abilities and functions of **form-Z**, but rather an idea facilitated and developed through varied, and often improvised methods that exposed both strengths and weaknesses in the software.