Holcim Awards 2005

Encouragement

Beacon River Pool, New York, USA

Comment of the Holcim Awards 2005 jury for North America

The research is innovative in proposing an intelligent reuse of natural water for a socially salutary and attractive objective. The strategy is to create an appealing contribution to the environment, but also admirably could encourage social equity by bringing diverse groups of people together. Another notable ambition is to combine natural systems - sun, river water, trees, etc. - with technical infrastructure to produce a cross between landscape and building. While further studies need to be made of the economic feasibility and capacity of the filtration device, the high quality of the architectural and structural elements are commendable, especially considering the young age of the author. The project is clearly sensitive to the intense patterns of chemical contamination in everyday life, proposing an approach that is taken to capitalize on the specific qualities and features of the site. Equally sensitive is the concern for minimal environmental impact of the intervention, demonstrating that less design can deliver superior results with high aesthetic resonance.

Project description by author

The proposed location for the project is on a man-made landscape currently used as a boat dock in Beacon, New York. The site offers great views of Hudson River to the north, west, and south. Not too far away from the Manhattan, the city of Beacon offers a quick getaway from the metropolis. In order to add to the appeal of the city, I am proposing a water attraction that would enable visitors to embrace and experience the Hudson River as closely as possible with safety and protection.

In recent years, there has been increased anxiety concerning the health effects of chlorinated water, which causes skin rashes and irritation to swimmers. In fact, studies have shown that chemical contamination from chlorinated water increases the chances of developing various kinds of cancer. Rethinking conventional ways of maintaining a swimming pool, in which the water is supplied with liquid chlorine to keep the water for a period of time, I am proposing a pool that functions as a filtration device which collects non-chlorinated river water into the interior of the building for free.

The inspiration underlying the project comes from a close analysis of local environmental factors which are expressed in figure 83. First, the water level of the river changes by about 3.5 feet every day due to the tides. Second, throughout the year, the average water temperature of the Hudson River is warmer than the average temperature of the surrounding air. Therefore, these two pieces of information came together to conceptualize a swimming pool that takes in river water through a filtration device by tidal force and storing it until the next high tide. Collecting the warm river water, it saves energy to heat up the water and the cost of filtering the pools.

The architecture which shelters the river water utilizes solar energy and wind flows to control the temperature of the water and the interior space for the comfort of visitors. All of the programmatic elements are placed within a concrete construction on the eastern side of the building. This side of the building functions as thermal mass and absorbs the solar energy for heating. Also, the fusing-like formulation of the building section is determined by considering the wind pattern of the site. It is designed to allow in as much of the southern wind during the summer time and to deflect the cold northern wind during the winter time. By actively engaging the natural elements of the site as building components, the architecture becomes a hybrid of both natural and artificial.

Relevance to target issues (by author)

Quantum change and transferability

The project aims to hybridize what are natural and artificial into a single construction by integrating its surrounding environment as active ingredients of the building components. In this case, the Hudson River is literally brought into the interior of the building to be experienced by the visitors. By carefully placing the building in relation to the water level, it became possible to harness the tidal force present in the river. In the details, the water level is used to control temperature and humidity. As shown in the image 7.8.9, the panel windows on the eastern side do not touch the ground completely. Thus, high water level encloses the space completely, and low water level generates ventilation. As a result, the experience of the pool becomes cyclical through seasonal changes.

Ethical standards and social equity

A swimming pool is for everyone! In recent years, there is increased social awareness of chemical contamination in our daily life, through food, water, air and the materials we come in contact with. Responding to such anxiety, the pool offers non-chlorinated water which comes directly from the Hudson River. The water levels with both biological and mechanical filtration mechanisms.

Ecological quality and energy conservation

If one of the goals in sustainable design is to minimize the negative impact on the environment by using low-energy or recycled materials, I believe this project does the opposite, by benefiting the environment through its operation. There are two components to the filtration mechanism of the pool. One consists of pebble and rocks for physical filtration of unwanted objects. Another one is biological and grows around the mouth of the pool where water flows. The biological filter is a field of local river plants, and they purify and enrich the water with oxygen. Over time, the pool benefits the river through its purification process and as a result, establishes a symbiotic relationship with nature through its operation.

Economic performance and compatibility

Theoretically, the pool does not cost a penny to operate. The pool water is free coming from the river. Also, it does not require chlorine, because fresh and filtered water flows in every other day. Minimal cleaning required for there are no chemicals to build up. Heating and cooling could be controlled and adjusted by all natural means. However, winter months may require electrical heating.

Contextual response and aesthetic impact

The building aims to have minimal impact on the landscape. It is designed on a shallow hill as a continuation of the promenade leading up to the turf roof terrace. Being half sunk into the ground, the building splits the ground into two surfaces providing green on the top, and the water underneath. The pool water levels with the Hudson River and offers a great view out into the river.