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Conceptual Design of Kewalo Basin and Kupu Hawai‘i’s Youth Facility

Kristoffer Jugueta

Architecture 341 (Intermediate Design Studio)
Mentor: Dr. Wendy Meguro

Situated along the coastline of the urban development of Kaka‘ako, Kewalo Basin is destined to become an attractive urban space for community interaction. While more housing is currently under development, the need for community and public space is needed. Operating the site is a nonprofit organization that gives opportunities to under-resourced youth, preparing them for the future.

In this final project, the student was challenged to design an urban landscape that faces the problems of climate change and future sea level rise. The design process involved site visits with clients and architects, conducting site analysis and extensive research. With the data collected, schematic phases of design were operated through a series of sketches and study models. Within a two-month timeline, the student was able to design an architectural vision with the assistance of local architect firms, Group 70 and PBR Hawai‘i.

The project resulted in an urban space fit for multi-generational uses where people can interact together. The site was strategically designed to take advantage of Hawai‘i’s natural resources while also emphasizing concepts shared from Hawaiian culture. A two-story facility was also designed to provide room for a variety of public spaces and private classrooms, giving Hawai‘i’s youth a future to live by.

Background Information

The Kupu Youth Facility was designed for semi-public and private use. The challenge was to create a structure that would be environmentally friendly by designing shading elements and creating spaces that would be naturally ventilated. A list of required programs that needed to be included in the building design are as followed:

<table>
<thead>
<tr>
<th>Function *</th>
<th>Area (square feet)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Great room (exhibition area)</td>
<td>1,500</td>
</tr>
<tr>
<td>Multipurpose space</td>
<td>1,500</td>
</tr>
<tr>
<td>Youth center</td>
<td>400</td>
</tr>
<tr>
<td>Meeting rooms 2 at 150 sf each</td>
<td></td>
</tr>
<tr>
<td>Commercial kitchen</td>
<td>300</td>
</tr>
<tr>
<td>Concession stand</td>
<td>300</td>
</tr>
<tr>
<td>Storage</td>
<td>1,000 spread throughout building</td>
</tr>
<tr>
<td>Restrooms and showers</td>
<td>600</td>
</tr>
<tr>
<td>Total Net Floor Area</td>
<td>6,000</td>
</tr>
</tbody>
</table>

*Site boundary and landscape functions to be proposed by students
Kewalo Basin
Kupu Hawai‘i

“To empower youth to serve their communities through character-building, service-learning, and environmental stewardship opportunities that encourage integrity (pono) with God (Ke Akua), self and others.”

SUSTAINABILITY

The vision of Kewalo Basin will become the heart that links the communities of Kaka‘ako and Ala Moana together. It will provide multi-generation uses that will create a place where users can LEARN together, SERVE one another, and RESTORE the vision of a healthy, sustainable future.
After meeting with clients and doing site visits, I included additional programs that I felt would benefit Kupu Hawai‘i. These additional programs are shown in Floor Plans.

The purpose of the building was to provide a space for Kupu’s youth. After doing site visits, I found that the general, everyday use of the current youth facility was as their main hang out spot. They use this space to learn wood crafting, hold community events, and teach various subjects in general classrooms. This will be their main headquarters as they grow and expand in the near future.

**Context Map**

This context map shows a portion of Kaka‘ako’s future development areas that are shaded. It shows the location of the project’s site in relation to the proximity of Kaka‘ako’s future development. The map also shows existing homeless shelters (stars) as well as existing bus stops (circles), future rail path and rail station (dashed lines), and public schools (darker circle) which surrounds the area. With all the new development, there is currently no plan for new education facilities, giving the Kupu Hawai‘i Youth Facility an opportunity to grow and nurture for the community.

**Design Statement**

Kupu Hawai‘i is a non-profit organization that empowers under-resourced youth to train and teach them valuable morals and technical skills that will prepare them in their career growth. Their motto reads: “To empower youth to serve their communities through character-building, service-learning, and environmental stewardship opportunities that encourage integrity (pono) with God (Ke Akua), self and others.”

**Vision Statement**

The vision of Kewalo Basin will become the heart that links the communities of Kaka‘ako and Ala Moana together. It will provide multi-generation uses that will create a place where users can **LEARN** together, **SERVE** one another, and **RESTORE** the vision of a healthy, sustainable future.

This project will later show what spaces were designed in both the landscape and building aspects using the words Learn, Serve and Restore as literal terms to create an environment representing the motto. Please see Site Plan and Building Floor Plans for further details.

**Part I (Big Idea)**

The word sustainability ties into the Hawaiian culture. More commonly known as “Mālama ‘Āina”, to care for the land. The word sust‘āinability is the concept that portrays and gives great meaning to take care of the land as a family. This relates back to Kupu’s motto, which envisions a striving future to **LEARN**, **SERVE**, and **RESTORE**.

**Site Plan**

Kewalo Basin is envisioned to bring a community together. The goal of the project was to create and environment where the public can enjoy the landscape, but also make sure that the Kupu Youth Facility was strategically placed for privacy and security reasons. Placing the Kupu Youth Facility along the north area of the site provided an opportunity to overlook the site as well as surrounding views. It also creates a separation between public and private spaces so that the community is not confused and finds themselves within the Kupu Facility territory. Another reason why the building was placed on the north was to take advantage of the projected sea level rise. After researching what areas would be submerged with water, the northern point had the lowest elevation height. This created an opportunity to excavate the land by cutting and filling soil for the Kupu Facility building foundation, elevating the site, and protecting it from the projected 6-feet sea level rise in 100 years.

The final site plan vision shows a more welcoming entrance than what exists today. Looking at the North East, where Kewalo Basin connects to Ala Moana Blvd, a tree canopy entrance is incorporated to create an inviting path for pedestrians as they approach the site. Walking further down, they are greeted by a flower garden to represent the concept of a Hawaiian tradition of being welcomed by a lei. The site is full of amenities that will serve the community and attract users to interact with each other. The main concept was to create multi-generational programs to fulfill a functional environment. These programs include an amphitheater for public use, general seating areas that are shaded, a playground for
kids to enjoy, solar-shaded seating with basketball courts for recreational use, sunset lawns with shaded lanais for traditional barbeques, and widened paths to make walkability and bikeability effective around the site.

To fit the concepts of LEARN, SERVE and RESTORE, programs were categorized and strategically placed for each function to work adjacently together. For example, incorporating Learn as a program within the site led to the decision to provide room for an amphitheater and a kalo garden. In Hawaiian culture, knowledge is always passed on to the next generation so that the traditions never die. Hula, a traditional, sacred Hawaiian dance is an example of knowledge passed on from generation to generation. Providing an amphitheater can give the site the potential to hold public hula classes where locals and tourists can learn the sacred hula dance. The kalo garden can also be used to teach Kupu’s youth and the public the importance of growing kalo in Hawaiian culture. The space is not limited to just planting kalo; this also has potential to become a community garden where the public can plant fruits and vegetables.

Representing the word Serve was a challenge itself. My goal was to make sure that the public is aware of Kupu Hawai‘i’s vision of teaching the youth to serve the community. Providing a space where the community can interact with the working youth will easily spread awareness and provide support for the nonprofit organization. Close to the youth facility, a shaded lanai is provided for seating areas, which is adjacent to the facility, holding a concession stand. The vision to see youth learning customer service by running the concession stand gives an opportunity to learn morals about serving the community.

Representing the word Restore was to provide ways that the site can practice sustainability. The site was designed so that storm water is directed for agricultural use. In the situation of a rainy day, water will flow from the site’s high points and will be directed to the kalo garden, making sure the site takes advantage of the natural resources. (See Environmental Systems Diagram)

**Site Sections**

The site section shows the variations in lifted elevation changes. In both sections, it represents the idea of cutting off land to create a salt water pool that fills the surrounding areas and creates an elevated site to design and preserve the land for future sea level rise. The elevated site also solves security issues to create an open vision where people are able to overlook the site, thereby decreasing the chances of violent activity.

**Site Perspectives**

The perspective view on the left is the flower garden entrance where plumerias are planted. The plumeria flower is one of the most commonly used flower for lei making. This view also shows how user-friendly the paths are for both pedestrian walkability and bikeability. The perspective views on the right are schematic sketches showing how functional the elevated sites would work to overlook the activities around the site. These views are taken on the main path of the site where there are open views to Diamond Head.

**Environmental Systems Diagram**

The site was designed to function as a sustainable environment where it creates a whole storm water catchment system. Sloping the land to low points will direct any water runoff to the site’s kalo garden, which is located on the north side of the site. The Kupu Facility will also collect storm water from its roof design where the water will flow to a sand filter, stored into an underground cistern, and later on pumped to any greywater fixtures that the building has.

**Kupu Perspective**

This view shows a rendering of the east façade of the proposed Kupu Facility.

**Concepts**

This concept diagram shows the design process that was performed to create the overall structure. It starts with a basic cube as a building mass, then develops as split masses to create a corridor division. Raising one cube and shortening the other will provide shading from the southern sun while taking advantage of the northern daylight. This will cut down on cooling costs and energy consumption as well as create comfortable spaces. Axis Corridors were then implemented to create a perpendic-
ular path to provide access to adjacent spaces. The roof was designed to create deep overhangs for shading as well as directed roof slopes to control the water runoff for storm water catching. The walls are then eliminated in the north to provide maximum daylighting and natural ventilation.

The concept was driven by a kalo plant. As a general rule of thumb when planting kalo, the stems are faced north-south to grow children. I took this concept and incorporated it into my structure design to symbolize the growth of children and youth that the building entails.

**Building Sections**

The building section shows how functional its interior spaces would be. The concept of an open floor plan creates social interaction for its users. It also shows the building’s elevation in relation to the water line to mitigate for sea level rise and prepare the structure from climate change.

**Floor Plans**

The floor plan on the left shows the first floor where it is programmed for all public spaces. It includes a youth-driven concession stand and kitchen, an office for the staff, a dining room, a gallery to showcase the youth’s projects, an outdoor gym and workshop, and an open-air, naturally ventilated great room and multi-purpose room.

The second floor is filled with private and semi-private spaces where the staff can hold meetings in the conference room as well as classrooms for the youth’s general learning. There are outside balconies to provide deep shading and quiet spaces where the youth can also enjoy the views around the site.

Kaka’ako lacks a community education center in this area. Providing these spaces will help the community grow as gives the people a place of learning and gathering.

**Environmental Systems Diagram**

The diagram on the left shows the calculated sun angles from the aggressive east sun angle. The idea was to provide functional shading systems to avoid any direct sunlight and create comfortable interior spaces. By designing for the annual lowest sun angle, the building is able to create shading through different seasons. The graphics on the right show the effectiveness of the shading system during summer solstice, fall and spring equinox, and winter solstice during different times of the day.