

WEST HAWAII EXPLORATIONS ACADEMY

"No Child Left Indoors!"

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Key Information

Architects: Ferraro Choi And Associates Ltd.
 Location: Kailua-Kona, HI 96740
 Cost: \$6.5 M
 Size: 12,000 GSF

Site Size: 4.8 Acres

Grades: 6-12
 Completion Date: August 2014
 Sustainability: LEED Platinum Equivalent



Background:

Founded in 1984, West Hawaii Explorations Academy is the first start-up charter high school (August, 1984) and first start-up to officially open (August, 2000).

WHEA is a nationally recognized laboratory school serving as a "magnet" for science-focused, outdoor, hands-on education. It features large-scale, long-term, projects that meet or exceed performance demands of traditional "standards based" education. The program works best for students seeking to challenge themselves in a self-directed, science-focused learning environment. The curriculum is writing intensive and college preparatory, but "Can-Do" attitude almost always outshines innate ability. While WHEA's pedagogy has been developed in the context of STEM (science, technology, engineering and mathematics) education, it is actually designed to be transferable to nearly all academic subjects.

The Project:

The project is the 12,000 SF first phase of an ultimate 20,000 SF development that relocates the high and middle school campus for WHEA. The project's master plan accounts for a future student enrollment of 300. Phase 1 enrollment is 190. Inadequate facilities and increasing noise concerns with the existing school's proximity to the Kona International Airport flight path were the prime triggers for relocating the school to a new site.

The highly sustainable, 21st Century Learning campus is designed to be LEED 2009 For Schools Platinum equivalent, and a net-zero energy facility. The project uses cold deep seawater distributed by the Natural Energy Laboratory of Hawaii Authority (NELHA) as a source of chilling for cold-earth agriculture projects.

Phase 1 development includes administration, classrooms, computer labs, STEM/maintenance and conference/multi-purpose buildings, amphitheatre for 300, shark/reef/touch pool, site utilities

and services distribution (power, water, deep seawater, surface seawater), parking lot, site lighting, student project services spine, walkways and roadways, septic system with leach field, and landscaping.

Future phases will include a food service/kitchen building and additional classrooms.

Ahupua'a as an Organizing Element:

The concept of ahupua'a as an organizing philosophy has been applied both in the context of the site itself and in the context of the established Kalaoa Ahupua'a that the campus resides in. The Kalaoa Ahupua'a begins in the O'oma forest reserve and extends to the coastline at Keahole. Typically, the mauka portion of an ahupua'a is characterized by forests and cold streams.

As the streams work their way to the coastal areas of the ahupua'a the water is put to a number of domestic, agricultural and

aquaculture uses before it reaches the sea. The revised WHEA campus exhibits these relationships in its layout. Receiving cold deep sea water at its mauka boundary, domestic, agricultural and aquaculture uses are organized according to their need for cold, cool or ambient water temperature. As a result, domestic uses are in the mauka area of the campus, agriculture uses are in the center, and aquaculture uses are generally in the makai portion of the site.

Campus Components:

The net-zero campus is designed as three distinct "villages" organized around landscaped courtyards and/or activity zones: public village, high school village and middle school village. All buildings are simple, flexible, cost effective repetitive structures that prioritize functionality and sustainability. High priority is given to orientation for daylighting, shading and renewable energy systems (photovoltaic (PV) arrays and solar water heating panels).

Image Captions

- 1. Casual Gathering in the Amphitheater
- 2. WHEA New Campus
- 3. Covered Outdoor Learning Area

- 4. Site Plan - Phase 1
- 5. Site Plan - Phase 2
- 6. Site Plan - Distinct Villages



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Construction Materials and Finishes

Construction materials and finishes have been selected for durability, low-maintenance, cost effectiveness and conformance with sustainable building requirements (recycled content, low VOC, certified wood, regional materials, etc).

Public Village

The Phase 1 public village includes the main entry, administration, conference/multi-purpose, STEM/maintenance, covered amphitheatre, shark/reef/touch tank, activity tents and restroom buildings.

■ Administration Building

The administration building is air-conditioned and provides offices for the co-directors and counselors, administrative support space and work areas, reception, waiting and restroom.

■ Conference/Multi-Purpose Building

The conference/multi-purpose building is naturally ventilated and provides flexible, dividable space suitable for conferences, meetings and teaching.

■ STEM/Maintenance Building

The STEM/maintenance building is naturally ventilated and provides flexible project space for science, technology, engineering and math, air-conditioned office space for maintenance personnel, storage, main electrical room and shower/restroom facilities

■ Covered Amphitheatre

The covered amphitheatre accommodates gatherings of the entire school or the public and provides flexible space for orientation, teaching and performance uses. The amphitheatre is covered with a tensioned fabric structure.

■ Shark/Reef/Touch Tank

The shark/reef/touch tank provides habitat for sharks, reef fish and other marine animals. It is professionally designed and constructed with a flow-through aquatic life support system utilizing surface seawater and deep seawater provided by NELHA.

■ Public Aquaria

Student aquaria and marine animal tanks are covered and situated to suit public tour routes and have access to SSW and DSW supply and return.

■ Agriculture Pads


Student agriculture pads (lo'i) are situated to suit public tour routes. The pads are provided with soil, amendments and access to potable water and DSW supply and return.

High School and Middle School Villages

The Phase 1 high and middle school villages each consist of one classroom building with computer laboratory and covered outdoor learning space.

■ Classroom Buildings

The classroom is naturally ventilated and provides open, flexible, dividable space suitable for teaching in multiple configurations. The design emphasizes simplicity and durability of finishes, appropriate levels of controlled daylighting and stack/cross ventilation. Two teacher stations are provided in each building. The computer lab is air-conditioned and accommodates 28 computer stations in a perimeter configuration. The lab also features a drop down projector screen and centralized worktables. A teacher station is provided in the lab.

Designed to be a fun and interactive learning environment, West Hawaii Explorations Academy successfully unites the history of Hawaii with 21st century learning to transcend the traditional image of the conventional school. 

Content provided by: Erin Takahashi, FERRARO CHOI

Image Captions

7 Morning Orientation in the Amphitheater

8 Campus at Sunset

9 Student Study Group

10 21st Century Student-Centric Classroom

11 Shark Pool and Touch Tank (Foreground)