2021

# **PUNAHOU SCHOOL**

SIDNEY AND MINNIE KOSASA COMMUNITY FOR GRADES 2 – 5

> **ASSOCIATION FOR LEARNING ENVIRONMENTS** PROJECT OF DISTINCTION SUBMISSION

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### **EXECUTIVE SUMMARY**

The Punahou School Sidney and Minnie Kosasa Community for Grades 2-5 project, completed in August 2019 represents the school's Educational goals in its form, embodies the school's academic mission, vision and provides a visual representation of Punahou's commitment to sustainability, the Hawaiian concept of Ahupua'a, and the surrounding community.

The project supports the school's mission to provide an environment where students can develop intellectual, academic and physical potential to the fullest degree, preparing them for college and for challenges facing them now and in the future, develop and enhance creativity and appreciation of the arts and appreciate cultural diversity and develop social awareness. It was the main focus for the school design to support creating a community of design thinkers actively engaged in the pursuit of knowledge, skills and experiences necessary to empower all children to meet the challenges of the 21st-century learner through the engagement of students in a vigorous, integrated approach to culture and technology.

The project was designed to encourage and inspire sustainable decisions and awareness, educating students within a sustainable future. The facility is used as a teaching tool for analyzing energy use, understanding sustainable systems, use of recycled material and support teaching sustainability as part of the curriculum. The was designed to achieve Leadership in Energy and Environmental Design (LEED); Platinum and Hawaii – Collaborative of High Performance Schools (HI-CHPS); CHPS Verified.







### **SCOPE OF WORK & BUDGET**

#### SCOPE OF WORK:

Programming/Pre-Design Schematic Design Design Development Construction Documents Construction Administration

#### **PROJECT OVERVIEW:**

The project provides two new educational neighborhoods in the broader Grades 2–5 Community on the existing K-12 campus. The new Grades 2–5 Community is a new 95,000 SF facility which includes 28 Studio Classrooms, Art and Music Building, a K-8 Learning Center Commons consisting of creative Learning Centers, Administrative Offices and Multi-Purpose/Central Commons. The K – 8 Learning Commons that will serve as the administrative and creative hub of the entire Junior School including a variety of design, media, technology and maker-spaces, as well as state-of-the-art music and art facilities. The design strives to honor Punahou School's architectural legacy. The budget of the project is withheld per School request.

Project Type: Educatior

Completion: 2019

HONOLULU OAHU, HAWAII 95,085

Square Feet

5.98 ac.

Lot Size

### SCHOOL AND COMMUNITY RESEARCH AND ENGAGEMENT

The design supports a 21st-century Educational environment that is designed to provide a learning community where each student actively participates in sustainable activities every day. The overall site plan is complementary of the Campus Master Plan, fulfilling the vision of the plan by completing the hierarchy of the neighborhood spaces relating to the Central Commons.

The overall design concept was to keep the spirit of the old Winne Units that were once there. The new buildings were designed to be modern and express new educational pedagogy as well as incorporate features of Punahou's overall campus and Hawaiian history. In honoring the memory of Ossipoff's design, the new Grade 2-5 project will capture the essence and character of Winne through re-use of materials, blending of indoors and outdoors, creating space through use of existing grades and opportunity for a range of gathering spaces throughout the neighborhood. The aesthetics will reflect Punahou's value for living sustainability.

#### **KEY DESIGN ELEMENTS WHICH SUPPORT THIS INCLUDE:**

- Open Studio Plan with movable furniture, white boards and partitions to support interactive learning which encourages interaction. The movable furniture and partitions may be arranged to support interaction of groups of various sizes and activities for inquiry based learning.
- Studios provided with large, roll-up and double doors to provide direct access to exterior learning spaces.
- Shading systems to control natural light penetration. Lighting levels based on learning activity requirements.
- Green wall, rainwater catchment cisterns, digital display boards, energy efficient lighting systems are building features that promote a sustainable learning environment.
- Outdoor Learning Area includes compost bin, chicken coop, and vegetable garden as part of the interactive and sustainable learning environment.









The design process started with a series of four Charrettes over the course of two months. The collaboration was an organized and structured on-site decision making process where the stakeholders reached consensus on a common goal. The stakeholders were cross-disciplinary and multi-departmental and main discussion topics included defining Project Goals & Principles, Education Design, Sustainability, Project Program, and Site Design and Building Layout. During the Charrette, the stakeholders defined the project goal with the following:

"Design a school community that is a physical of Punahou's educational representation philosophy for the 21st-century based on personalization and flexibility, while establishing a new standard for green building design in education."











#### **PROGRAM SPACES**

K-B LEARNING CENTER ING LEARNING CENTER
ADMINISTRATION SUITE
CONFERENCE ROOM
MULTIMEDIA
GRADE 2-5 FACULTY COMMONS
GRADE 2-5 TEAM SPACE CLC/EPIC CENTER
EPIC CENTER ATRIUM
FOOD SERVICE AREA
K-H DRAMA
CONSIGUIDATED ART CLASSROOM
CONSCILINATED MUSIC CLASSIFORM
OUTDOOR EDUCATION

#### =>> LEARNING in ACTION

- -Build, Move, Stretch - evaluate - personalize fown - Curiosity - express
- Spontaneous
- -experiment
- create
- act
- risk
- challenge
- self-direct ( independence invent
- imagine (wonder
- -discover
- Observe
- invent / design
- -Sweat - mash-up

- construct deconstruct

- initiate / inquire

- communicate

- laugh fenjoy

- synthesize

- feel

- -failf thy-again
- -hangout

10















MAIN COMMONS PAVED OUTDOOR SPACE DIRECT CONNECTION VISUAL CONNECTION CIRCULATION PATH

SHARING BOT 10 SEA



















## EDUCATIONAL ENVIRONMENT DESIGN

The goal of the Grade 2-5 Neighborhood is to meet learning objectives to include innovation in education, curriculum delivery, use of technology, development of design thinkers, interconnectedness at a variety of scales with the entire campus, and respect Punahou history and Hawaiian context of the campus. Punahou School requires the design of the future to be flexible and adaptable, allowing adjustment to new and innovative ways as part of the learning experience that meets the needs of all students. The new Grade 2-5 Neighborhood was designed to offer a high standard physical environment through careful and innovative design to promote an enjoyable learning experience for both students and teachers.

Punahou School Sidney and Minnie Kosasa Community for Grades 2-5 project represents the school's sustainability goals in its form, supports the school's mission, vision and provides a visual representation of Punahou's commitment to sustainability, the Hawaiian concept of Ahupua'a, and the surrounding Manoa community. The project integrates sustainable strategies into the design to minimize the energy consumption, conserve resources, minimize adverse effects to the environment, improve occupant productivity, health, and comfort, to reduce the total cost of ownership using a whole building life-cycle approach. The facility is used as a teaching tool in support of inquiry-based learning. Applying the latest research about the neuroscience of learning, Punahou School provided guiding principles for the design team: the new facilities support progressive education pedagogy that focuses on personalized and interactive learning.









LEVEL 2



- Drop Off Canopy 1.
- 2. Breezeway
- 3. Entry
- 4. Learning Commons
- 4A. Small Group
- 4B. Process / Workroom
- 4C. Exploration Tube
- 5. Admin Reception
- 5A. Health Room
- 5B. Admin Office

- 6. Art Classroom
- 6A. Kiln
- 6B. Art Storage
- 6C. Art Office
- 6D. Art Lanai
- 7. Exterior Walkway
- 8. Outdoor Seating Area
- 8A. Stage
- 8B. Garden

9. Demonstration Kitchen

- 10. Student Teacher Learning Hub 10A. Flex / Publication 10B. Black Box Theater 10C. Staff Lounge 11. Media Equip / Storage 11A. Recording Room 12. Display Hall 12A. Makery 12B. Makery Lanai
- 13. Music Classroom

13A. Music Office

- 13B. Practice Room
- 13C. Hula Room
- 14. Outdoor Learning Center
- M. Meeting Room
- R. Restroom
- S. Storage
- U. Utility Room































### PHYSICAL ENVIRONMENT DESIGN

The project provides an educational realm that extends the classroom into the landscape around the buildings. Inspired by the sustainable practices of Hawaiian land stewardship, the project integrates Hawaiian cultural education into outdoor space typologies to nurture the students' physical, social, cognitive, and emotional development.

Dubbed a "Wonderland of Learning," the project supports the school's educational philosophy backed by neuroscience research: learning occurs everywhere and outdoor learning environments are equally as critical as indoor classrooms. Through thoughtful design that transformed the campus grounds into dynamic play areas and outdoor learning environments, the project connects students to nature and exemplifies how the environment enables a sense of wonder and discovery that enriches childhood development.













The Hawaiian climate allows students to enjoy the outdoor spaces around the building throughout the year. The design considered spaces for emotional, physical, cognitive, and social development, designated active, gathering, individual, experimental, and ecological spaces. There are a diversity of spaces with multi-purpose elements, a community presence, and allowance for seasonal variation throughout the school year. Biophilic design has helped give life and meaning to the indoor and outdoor spaces of the project by integrating natural shapes and forms, natural patterns and processes, and place-based relationships.











### RESULTS OF THE PROCESS & PROJECT

The design was developed in conjunction with Punahou School through a series of Design Charrettes. Series of options for a variety of design decisions were presented to analyze the implications and trade-offs of various scenarios.

The site layout has two studio neighborhoods with the connecting K-8 Learning Commons in the middle. The studio buildings are angled to maximize daylight in the classrooms and support natural ventilation. The siting of the studio buildings respond to the existing site grading and create the boundaries of the Neighborhood Commons (open green space). The neighborhoods have been positioned to support phasing of construction and allow for modifications in the future. The Visual & Performing Arts building responds to the 12-foot elevation change between Piper's Pali and the Grades 2-3 Neighborhood and located to create synergy with the inspiration, innovation and collaboration that occurs in the K-8 Learning Commons. The layout minimizes intersecting pedestrian and vehicular/service circulation as a safety precaution.

The main focus of the site plan is to strategically plan the spaces so that the program accommodates for space adjacencies and create an intimate learning environment as a sub-set to a larger school campus while maximizing open green space as a component of the Punahou School Master Plan/Junior School Redevelopment.

Overall the result is that the facility now supports creating a community of design thinkers actively engaged in the pursuit of knowledge, skills and experiences necessary to empower all children to meet the challenges of the 21st-century learner through the engagement of students in a vigorous, integrated approach to culture and technology which was the original goal of the stakeholders.



### SUSTAINABILITY AND WELLNESS

The Hawaii climate also affords opportunities to significantly reduce energy use and operational costs enabling the design to reduce energy costs by at least 30%. Energy efficient design reduces building energy loads through planning, proper building orientation, and "right sizing" the rooms and mechanical systems. Additional energy savings were achieved by selecting efficient lighting and mechanical systems, utilizing passive design strategies, providing smart building controls, and incorporating heat recovery systems.

All energy strategies were evaluated in a full building energy model and cost analysis in order to ensure that the energy measures are also cost effective. HVAC and lighting systems were specified with energy efficient equipment and controls to minimize loads and reduce annual energy consumption. Photovoltaic systems were designed and maximized such that a surplus of power generation resulted in net export of energy for utilization at other facilities on the campus and contributes to offsetting the overall campus energy usage. To meet the goal of Net-Zero Energy certification, the project was designed to provide enough renewable energy on-site to offset the annual electricity use of the neighborhood. In addition, to achieve the Net-Zero Energy certification through the International Living Future Institute, no combustion (e.g. natural gas boilers, ovens, stoves) was used.







Studies show that daylight in classrooms can increase student retention while reducing absenteeism. Effective daylighting allows the lights to be turned off during the day to save energy. Daylight dimming reduces internal heat gains during the summer and reduce the demand for air conditioning, thus saving energy. The Grades 2-5 Neighborhood was designed to achieve daylighting 90% of the classroom studios and 75% of the K-8 Learning Commons floor areas for 80% of the annual occupied hours. Glazing on 3 sides of each studio, clerestory glazing in the second floor classrooms, and exterior shading contribute to the balance of daylight levels across each classroom. Because the project is pursuing LEED Platinum certification, it will be important to achieve the daylight credit (EQc8.1) that requires the classrooms are effectively daylit at 9am and 3pm on the equinox.

Studies show that students are more alert in classrooms with good ventilation and fresh air. Classrooms with effective natural ventilation and high ceilings are passively cooled and ventilated for 50–85% of the occupied hours, allowing building operators to turn off HVAC system to save energy. The studios and common areas in the K-8 Learning Commons were designed for this and ceiling fans allow the facility to adapt to climate change and support resilient recovery from disasters. When the outside temperatures are too hot, ceiling fans can be used to increase comfort by effectively moving and mixing the air in the room.

Water is a precious resource in Hawaii, thus the design employed best practices for saving water in and around the building. Water efficient plumbing fixtures are the primary means for reducing water usage. Native and adaptive planting along with water efficient irrigation systems help ensure that water savings are also achieved outside the building. Additionally, rainwater collection for exterior irrigation uses will help exceed water use savings of 40% and achieve netzero water. The open space that connects the buildings serves open functional spaces for gathering, active play and fitness, and also serves to retain storm water for low impact development. The constructed wetland with native sedges filters water and lets students see the relationship between rainwater management, bio-filtration, and water quality.

















