“EDUCATION AND RESEARCH CREATES NEW SPACE MANAGEMENT TOOL FOR THE CAMPUS”

and

“INTEGRATING CAMPUS PLANNING FOR SUSTAINABILITY”

Presenters:
Kevin Griffin, UHM Campus Planner
Ajala Kenyatta, ERDL’s Project Manager and BIM Manager
Sanphawat Jatupatwarangkul, ERDL’s Assistant Project Manager
The mission of the Environmental Research and Design Lab (ERDL) at the University of Hawai‘i Mānoa is to enhance an interdisciplinary curriculum and expand students’ educational experience through environmental design and collaborative outreach.

The lab provides applied research experience and diverse technical skills on the built environment, sustainable practices, and physical planning. Undergraduate, graduate, and doctorate students work as a team with community and campus partners on projects that afford them a deeper understanding of professional practice and also inform their academic studies.

Stephen Meder
Ajala Kenyatta
Daniel Simonich
Dayna Vierra
John Paolo Soriano
Ren Shiroma
“Somers” George Reid
Filipe Palma
Jordan D. Cayanan
Joseph Furutani
Ria Lyn Mitchell
Lindsay Wong
Lori Walker
Carlos Lopez
Micah Thrasher
Carlos Lopez
Chris Strahle
Eric Dela Cruz
John Manuia

Dayton Wong
Samia Silvera
Deirdre Zoder
Troy Okimoto
George Raco
Reid K Okaneku
Faaseila Fruean
Yihan Fu
Eric Siwy
Jonathan Scarpelli
Junghwa Suh
Tuan Tran
Jason Mandaloniz
Andy Tran
Chuen Shek
Justin Szajnecki
Chris Strahle
Sanphawat “David”
Jatupatwarangkul

@bout us

ERDL’s Director
Associate Professor
Stephen Meder, D.Arch.
ERDL Wins the 2012 Student Employee of the Year Team Award

The Environmental Research and Design Lab (ERDL) team was nominated for the 2012 Student Employee of the Year (SEOTY) team award. These students were recognized for their individual and collective diligence, creativity, commitment, and overall excellence as student employees and members of the campus community.
+ More

Research, Publications, Articles
Students have conducted energy audits on military housing to determine how energy is being used and to look for energy saving strategies. Forest City manages over 6,700 military houses in 37 neighborhoods on O‘ahu and Kaua‘i, so like the large campus at University of Hawaii Manoa, energy saving measures adopted promise to add up to significant reduction in power consumption and energy costs.
The University of Hawaii has set goals of a 50% energy reduction by 2015, and to be energy self-sufficient by 2050.

The renovation of Kuykendall Hall at the University of Hawaii at Mānoa is part of the Department of Energy’s (DOE) Commercial Building Partnerships program. This program is part of DOE’s larger Net-Zero Energy Commercial Building Initiative.

This is a pilot project for the university to adopt energy efficient strategies to apply to the rest of its facilities. The design for the renovation which includes reduced HVAC, natural ventilation, efficient lighting, and daylight dimming is expected to reduce the energy demand of the building by about 50%. It is a project goal to supply the building with all it’s power through photovoltaics.
RESEARCH ON NATURAL VENTILATION USING ADVANCED CFD (CD adapco, Star CCM+)
by Manfred Zapka, PhD, PE
Sanphawat Jatupatwarangkul, Arch.D

External Wind pressure study on Classroom Building ILIMA International School EWA Beach, OAHU, Hawaii

Porosity at 0.1
Porosity at 0.5
Porosity at 1.0

K-epsilon
K-omega
PRESSURE
K-epsilon
K-omega
VELOCITY

Research Fall 2012

University of Hawai‘i at Mānoa | School of Architecture | 2410 Campus Road Room 101C Honolulu, Hawai‘i 96822 | Tel: 808.956.0487 Email: archenv@hawaii.edu
Mānoa BIM Project
2009 - present

Project History

Phase I – Henke Hall
Proof of Concept
2009-2010

Phase II
Space Survey & Integrated Planning (ORS)
2010-2011

Phase III
BIM Integration (On-going)
2011-Present

BIM Status

- Completed 2012
- Completed Spring 2013
- Target Completion 2013
- Next Target Completion 2013-14
- Pending

(51 bldgs 3.5 million GSF)
Building Documentation: Verify and Update

Original Documentation

Field Verification

Computer Modeling

Mānoa BIM Project 2009 - present
Mānoa BIM Project 2009 - present
Mānoa BIM Project (GIS) 2009 – present
BIM Project | Advanced Modeling - Preliminary Environmental information

Mānoa BIM Project 2009 - present
Accessible Space Information: Website

Beta webpage
- Continue to add content
- Work with users, establish privileges, respond to specific needs
- Link to existing applications, serve as central hub for campus building information

Prototype GIS web access for campus GIS
Budget and Policy

Space budget with forecasts, approvals, reports and audits

Policies, guidelines, and relationships to better support the mission
Conservation of Space

Accurate space information to examine efficiency and appropriate usage

Centralized planning efforts support the holistic approach to campus challenges
Reduce: Increased efficiency reduces demand for new construction

Reuse: Repurposing of existing space is an immediate benefit
Reduce, Reuse, Recycle, Rethink

Recycle: Renovate our largest physical assets with new strategies

Rethink: Move toward shared, flexible space mitigates potential underutilization
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