U.S. DEPARTMENT OF ENERGY

SOLAR DECATHLON 2009

The Architecture of Sustainability

AIA/COTE 2009 Top Ten Green Projects Awards

U.S. DEPARTMENT OF ENERGY

NREL National Renewable Energy Laboratory

APPLIED MATERIALS

bp

pepco Your life. Plugged in.™

Schneider Electric

AIA Committee on the Environment

Mission

"…promote the role of the architect as a leader in preserving and protecting the planet and its living systems."

Definitions

Sustainability envisions the enduring prosperity of all living things.

Sustainable design seeks to create communities, buildings, and products that contribute to this vision.

AIA Committee on the Environment

- **9,000+ members**

- **64 local chapters**

- **Advisory Group**

  Ken A. Scalf, AIA, Co-Chair
  Dennis Andrejko, FAIA, Co-Chair
  Henry Siegel, FAIA, Past Chair
  David Miller, FAIA
  Alexis Karolides, AIA
  Filo Castore, AIA
  Vernon Woodworth, FAIA
  Greg Mella, AIA
  Whitney Okun, AIA
  Hofu Wu, FAIA

- **Adjunct Advisory Group**

  Kira Gould
  Tom Fisher, FAIA
  Lance Davis, AIA
  Angela Heinze, AIA

The COTE Measures of Sustainability

1. Sustainable design intent & innovation
2. Regional community design/connectivity
3. Land use & site ecology
4. Bioclimatic design
5. Light & air
6. Water cycle
7. Energy flows & energy future
8. Materials & construction
9. Long life & loose fit
10. Collective wisdom & feedback loops

COTE Top Ten Measures - USGBC LEED™ Rating System

Sustainable Design Intent & Innovation	Innovation & Design Process
Long Life, Loose Fit	
Lessons Learned & Feedback Loops	
Regional/Community Design & Connectivity	
Land Use & Site Ecology	Sustainable Sites
Bioclimatic Design	
Energy Flows & Energy Future	Energy & Atmosphere
Light & Air	Indoor Environmental Quality
Water Cycle	Water Efficiency
Materials & Construction	Materials & Resources

2009 COTE Top Ten Projects Jury

James Timberlake, FAIA,
Kieran Timberlake Architects

Brandy Brooks, Assoc. AIA,
The Community Resource Design Center of Boston

Michelle Addington
Yale School of Architecture

Kim Shinn, LEED AP
TLC Engineering for Architecture

Bill Leddy, FAIA,
Leddy Maytum Stacy Architects

Nadav Malin
BuildingGreen, LLC

Good design is green design: it's one thing, not two things. The most successful projects found a really beautiful marriage of design and performance.

–Bill Leddy

We were looking for integrated projects: no bling. It is difficult to reach the level of integration we wanted.

–James Timberlake

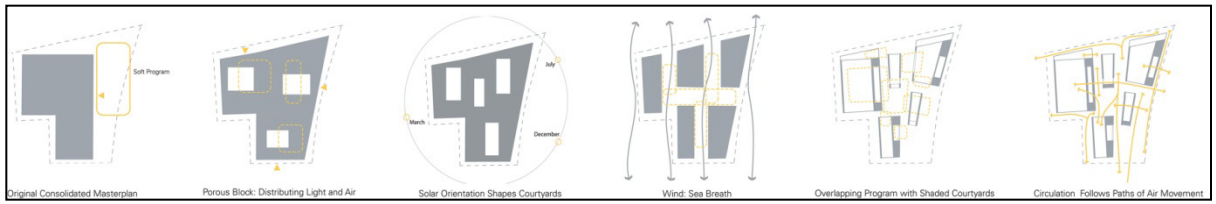
Top Ten Measure 1: Sustainable Design Intent

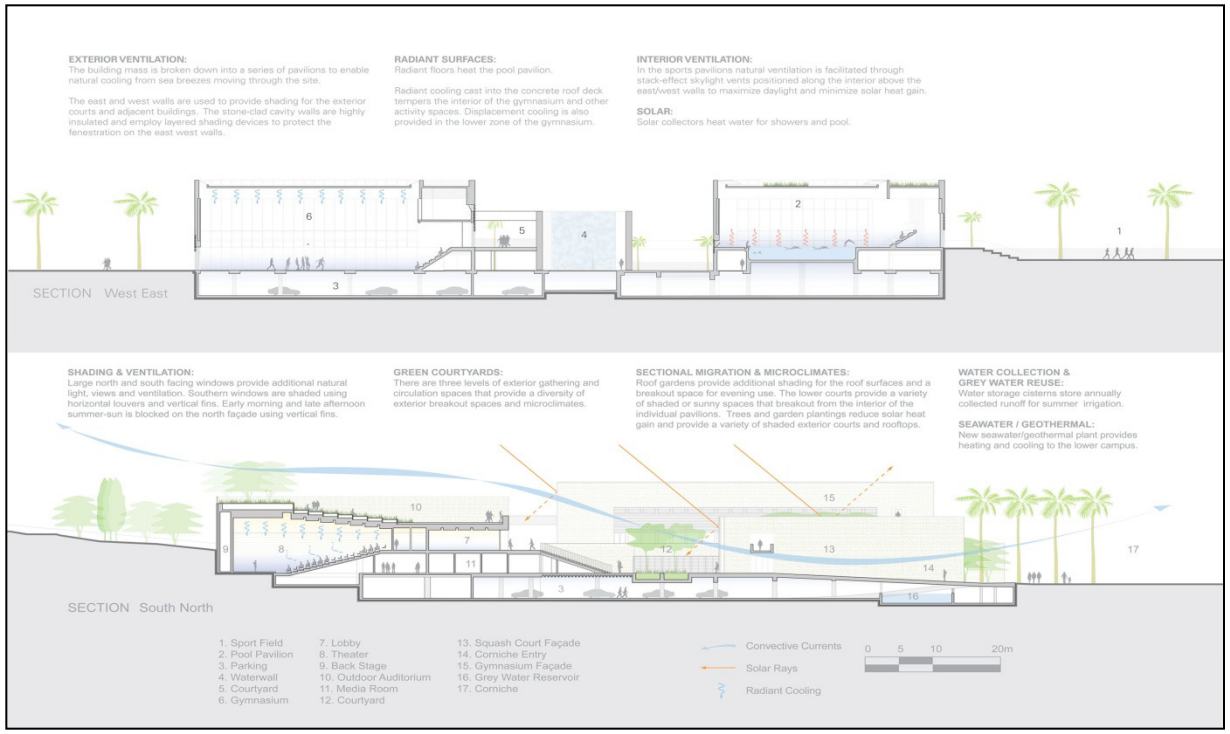
- How did ecological, social, and economic circumstances drive the project's design?
- How were they expressed?
- How does the architectural expression demonstrate the sustainable design intent?
- How did the sustainable design effort lead to a better overall project design?

Charles Hostler Student Center • Beirut, Lebanon
VJAA

There is an understanding here about the movement of air and people, as well as a powerful reminder of the enormous potential of thinking of buildings as connecting people to their culture, history, climate, function and space. – Bill Leddy

Charles Hostler Student Center • Beirut, Lebanon
VJAA





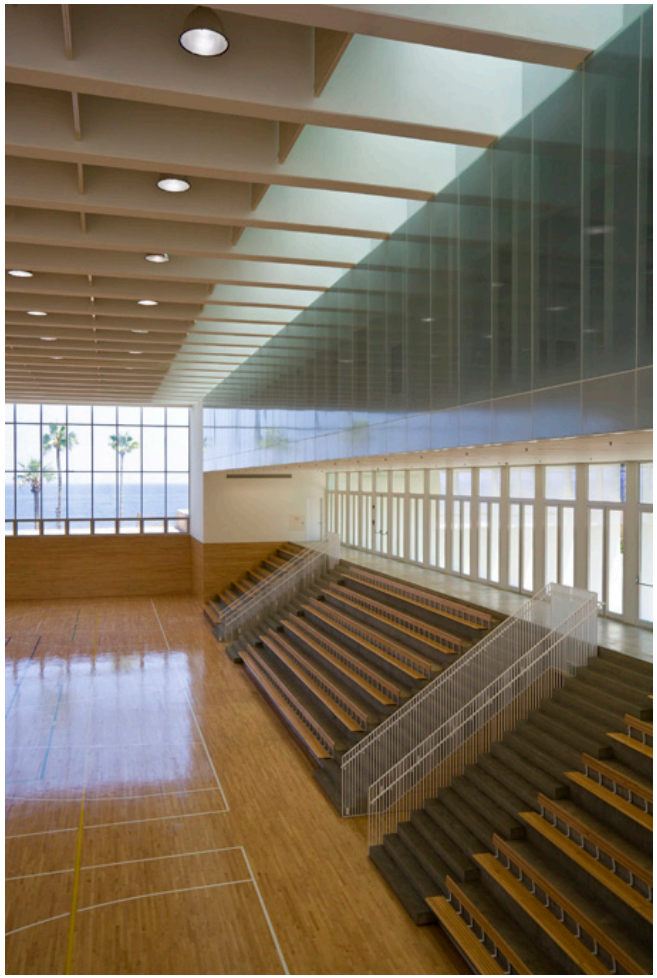
This project learned the lessons and practices of its place.
– Kim Shinn

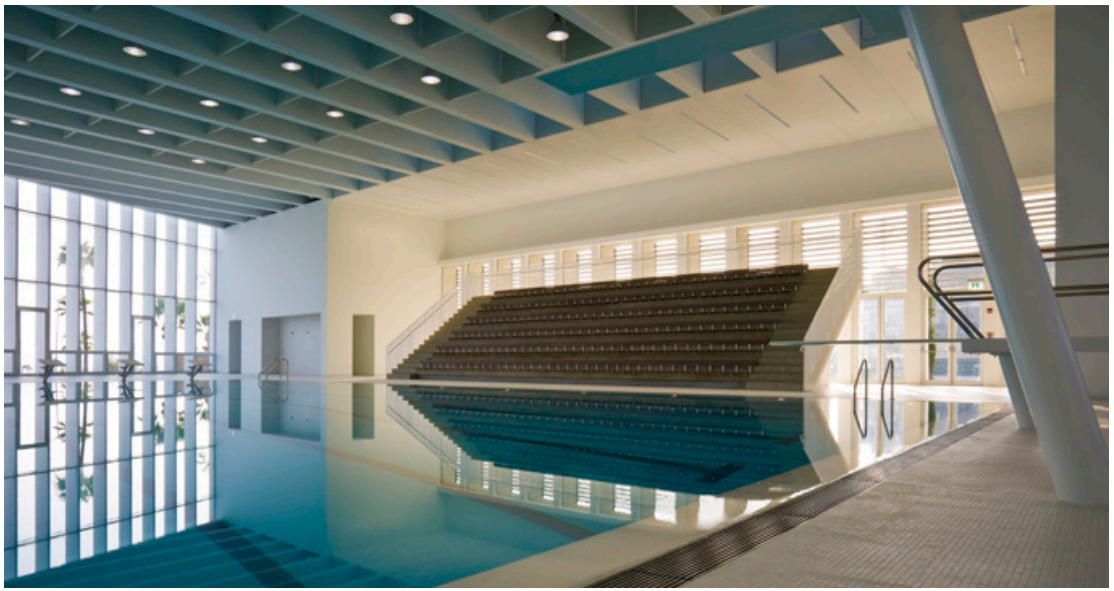
AIA

Charles Hostler Student Center • Beirut, Lebanon

VJAA

Charles Hostler Student Center • Beirut, Lebanon
VJAA





I really appreciate that the definition of the space wasn't about the envelope, but the interaction between the interior and exterior spaces. This team was rethinking the facility as a collection of buildings that interact. This stood out as a project with a well-defined concept.
– Michelle Addington

Integrated Design Team Members

American University of Beirut, Owner
VJAA, Architect

Transsolar, Environmental Building Consultant (Climate Engineer)

Samir Khairallah & Partners, Structural Engineer & Associate Architect

Hargreaves Associates, Landscape Architect

Barbanel Liban S.A.L., Mechanical & Electrical Engineer

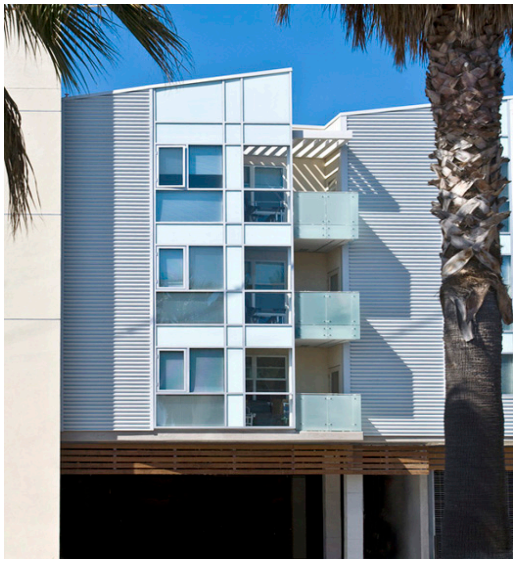
Wael Kayyaali, Civil Engineer

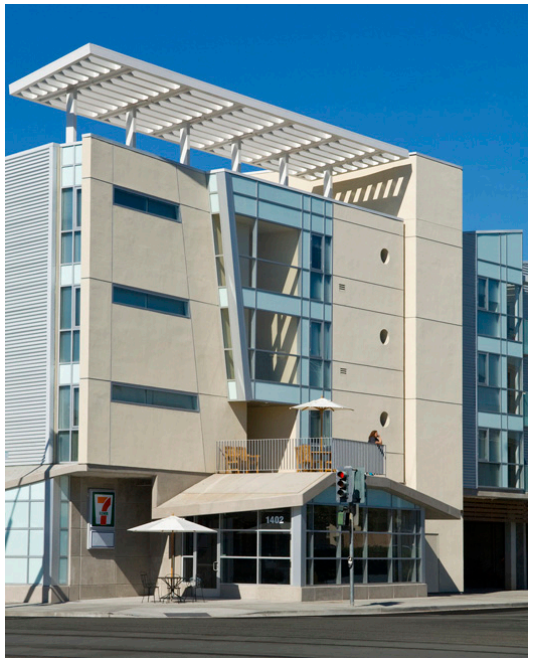
Karagulla Engineering and Contracting Contractor

Top Ten Measure 2: Regional/Community Design & Connectivity

- How does the design promote regional and community identity and an appropriate sense of place?
- How does the project contribute to public space and community interaction.
- How does the project's location reduce automobile travel?
- Does the project make use of any alternative local or regional transportation strategies?

Gish Apartments • San Jose, CA
The Office of Jerome King Architects

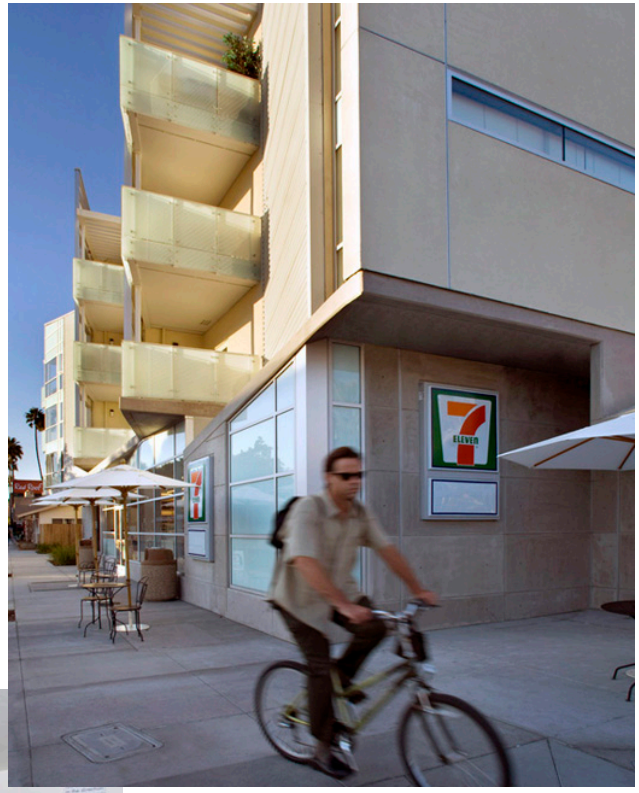




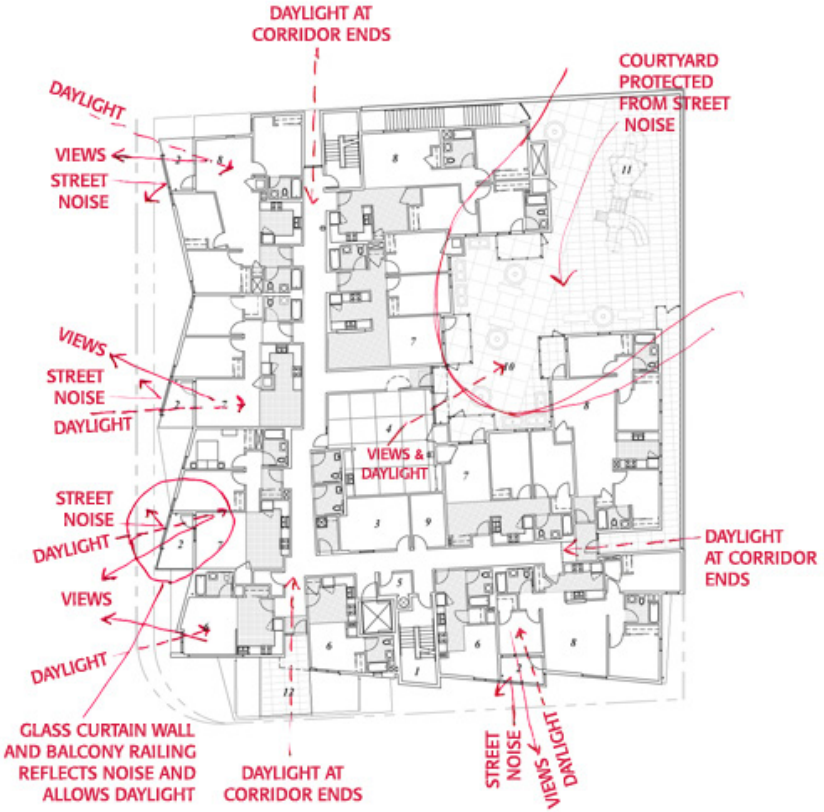
The project responded to street noise as quality of life, and addressed parking effectively. In many ways, this project really hit holistically.
– Brandi Brooks

AIA

Gish Apartments • San Jose, CA
The Office of Jerome King Architects



Gish Apartments • San Jose, CA
The Office of Jerome King Architects



Second Floor Plan

1. Main Stair
2. Suite Balconies
3. Office
4. Community Room
5. Trash Room
6. SRO/Studio
7. Two Bedroom Suite
8. Three Bedroom Suite
9. Meeting Room
10. Courtyard
11. Play Area
12. Exterior Terrace

AIA

Gish Apartments • San Jose, CA
The Office of Jerome King Architects

It's not always easy to embrace the expression, but in terms of money, site, climate, the street, and people within it, this package at this budget delivers very high value.
– James Timberlake

Integrated Design Team Members

Jeff Oberdorfer, FAIA, First Community Housing, Owner/Developer

The Office of Jerome King Architects, Architect

Branagh Construction, Inc., Contractor

Vertech Engineering, Structural Engineer

Cottong & Taniguchi Landscape Architects, Landscape Architect

Charles W. Davidson Company, Civil Engineer

Energy Compliance Systems, Energy Consultant

Integrated Design Associates, Inc., Lighting Designer

Engineered by Murphy, Mechanical Engineer

W.L. Hickey Sons, Inc., Plumbing Engineer

H.A. Bowen Electric, Inc., Electrical Engineer

Simon & Associates, Inc., Environmental Building Consultant (LEED)

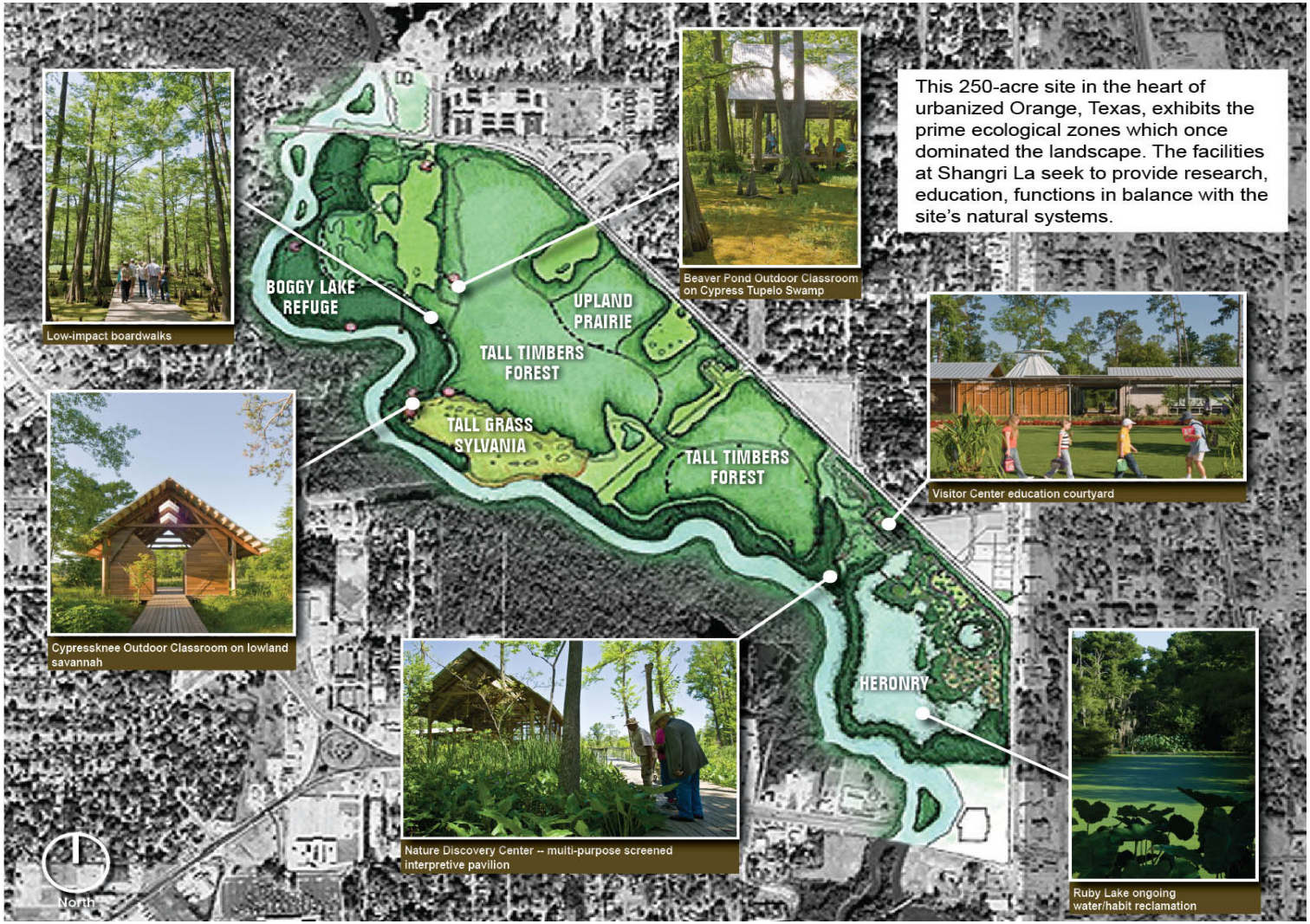
Guttmann & Blaevoet, Commissioning Agent

Top Ten Measure 3: Land Use & Site Ecology

- How does the development of the project's site responds to its ecological context?
- How does the site selection and design relate to ecosystems at different scales, from local to regional?
- Describe the landscape design and the creation, recreation or preservation of open space, on-site ecosystems and habitat.

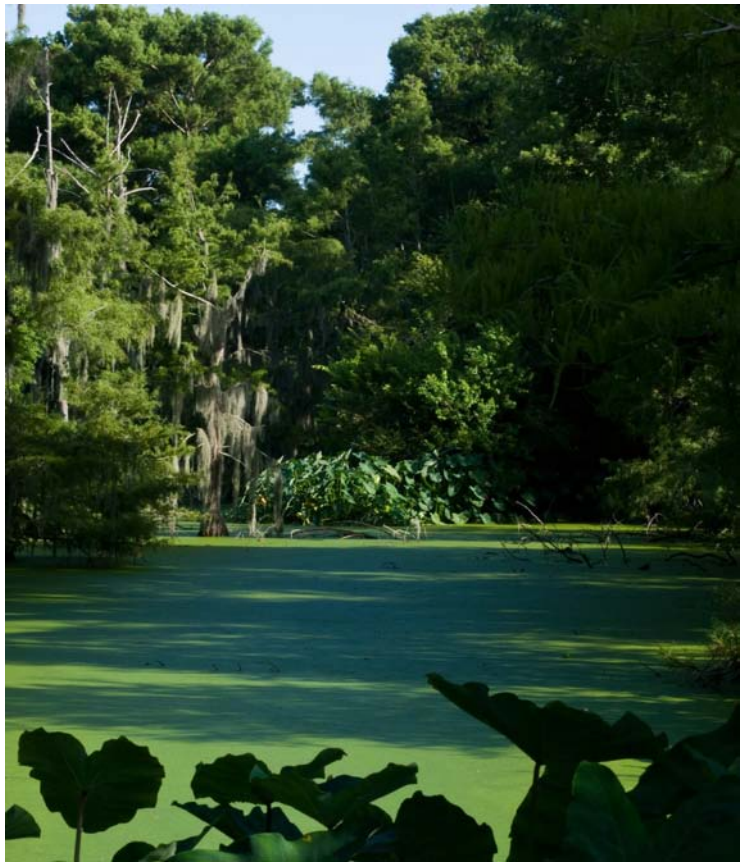
Shangri La Botanical Gardens & Nature • Orange, TX

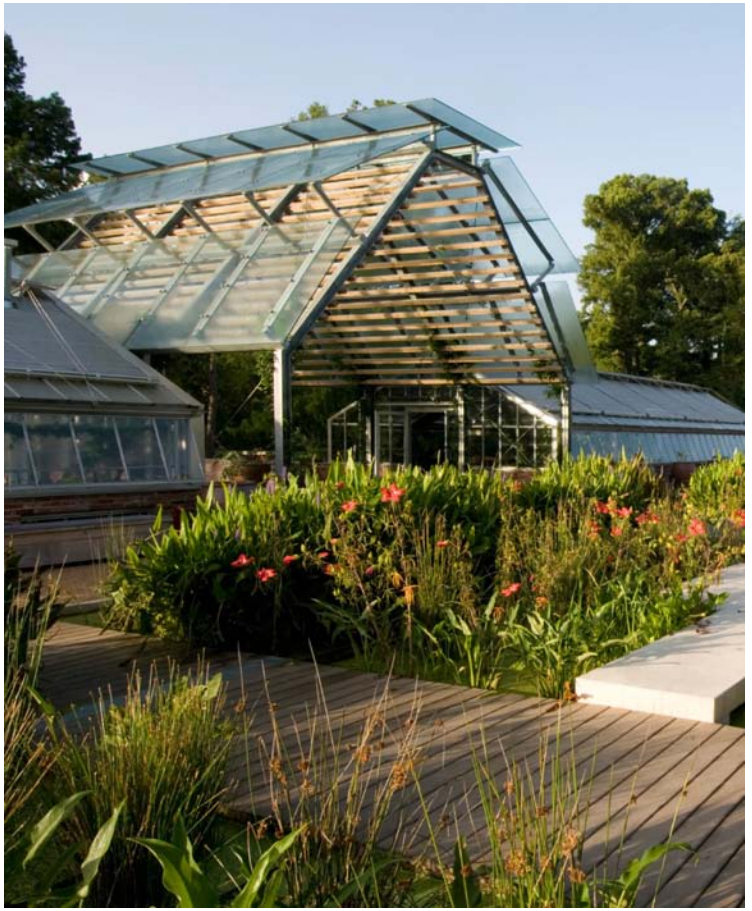
Lake|Flato Architects



AIA

Shangri La Botanical Gardens & Nature • Orange, TX
Lake|Flato Architects



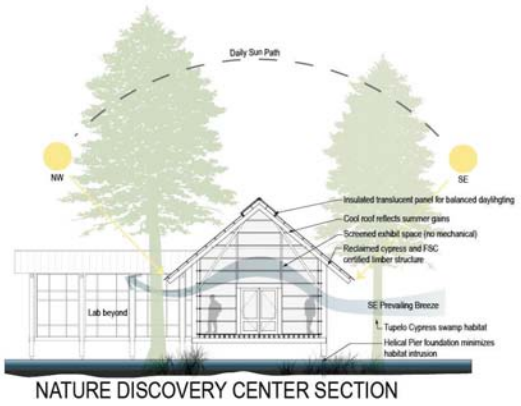


There is something extraordinarily simple and seductive about how these structures engage the landscape. They are in rather than on the landscape.
-- James Timberlake

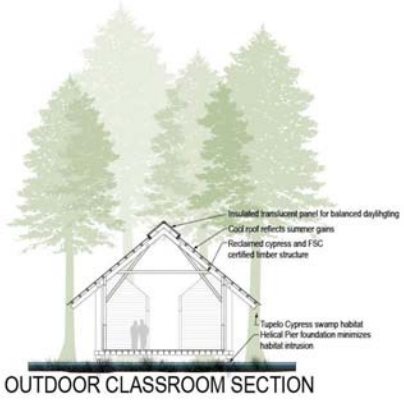
Shangri La Botanical Gardens & Nature • Orange, TX
Lake|Flato Architects

Shangri La Botanical Gardens & Nature • Orange, TX

Lake|Flato Architects



NATURE DISCOVERY CENTER SECTION



OUTDOOR CLASSROOM SECTION

This project limited the use of mechanical cooling. Other nature centers were heavily conditioned and this one was in the worst climate. This demonstrates a true willingness to challenge temperature setpoints.

-- Michelle Addington

Integrated Design Team Members

The Nelda C. & H.J. Lutcher Stark Foundation, Owner

Lake|Flato Architects, Architect

Jeffrey Carbo Landscape Architects, Landscape Architect

MESA Design Group, Landscape Architect

Archillume Lighting Design, Lighting Designer

Beck Group, Contractor

Brandon J. Monceaux Consulting Engineers, Civil Engineer

Earthly Ideas LLC, Energy (LEED) Consultant

Henderson Engineers, Inc., Mechanical, Plumbing & Electrical Engineer

R.L. Goodson, Structural Engineer

Boyken International, Project Management

Supersymmetry USA, Commissioning

Meridian Energy Systems, Solar Energy

Rolf Jensen & Associates, Life Safety Consultant

Top Ten Measure 4:Bioclimatic Design

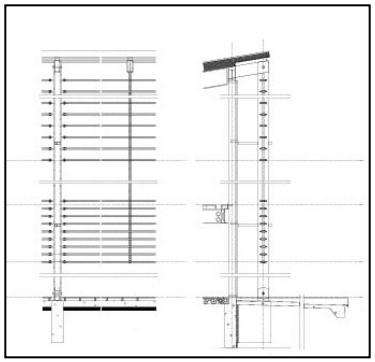
- Describe how the building responds to the site, climate and bio-climatic region through passive design strategies.
- What are the most important issues to address for your climate and building type?

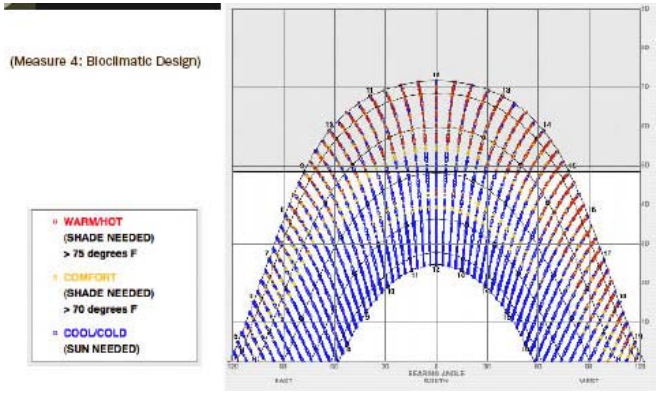
World Headquarters for the IFAW • Yartmouthport, MA
DesignLAB Architects

Boardwalk over swale at IFAW HQ.

Boardwalk at Yarmouthport coastal marsh.

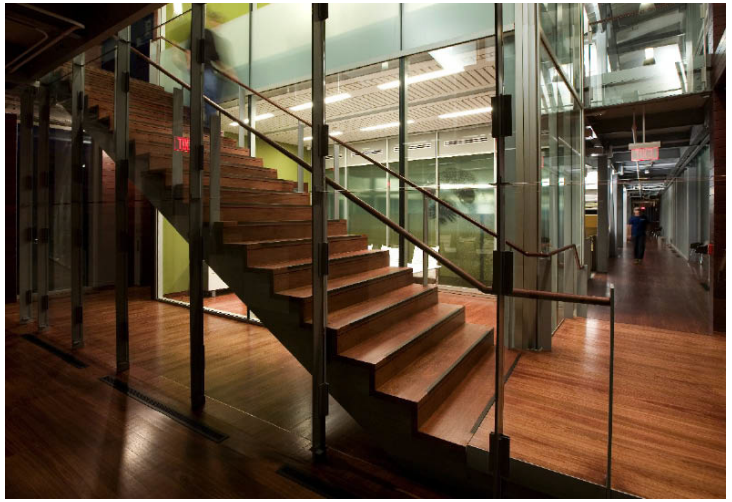
World Headquarters for the IFAW • Yartmouthport, MA
DesignLAB Architects

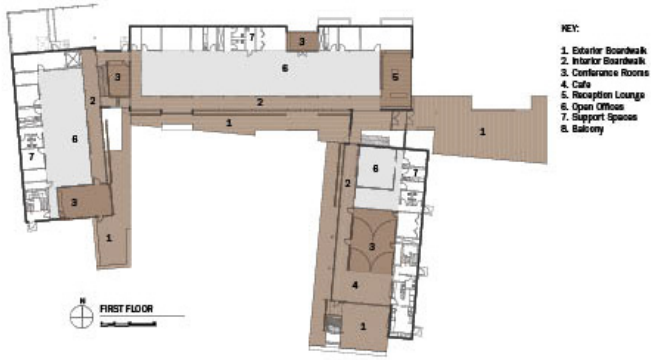




AIA

World Headquarters for the IFAW • Yartmouthport, MA
DesignLAB Architects





Buildings gathered around a south-facing courtyard; the team found a way to maximize program and minimize space. -- Kim Shinn

World Headquarters for the IFAW • Yartmouthport, MA
DesignLAB Architects

Site Plan

Overview Plan >

Context Plan >

Aerial View Of Site Before Cleanup. >

They swapped their site (a virgin habitat) to rehabilitate a brownfield. Very simple, mono-pitched roofs, but the detailing is controlled and elegant. Seemed like wonderful spaces to engage and work in -- you can imagine being in this building and feeling quite comfortable. -- James Timberlake

AIA

Integrated Design Team Members

International Fund for Animal Welfare, Owner

designLAB architects, Architect

KV Associates, Owner's Representative

JK Scanlan Company, Contractor

Stephen Stimson Associates, Landscape Architects

TMP Consulting Engineers, Inc., Mechanical engineer

Down Cape Engineering, Civil engineer

Odeh Engineers, Structural engineer

Leslie Saul Associates, Furnishings Consultant

Norfolk Ram, Geotechnical Engineer

Sladen Feinstein Integrated Lighting, Lighting designer

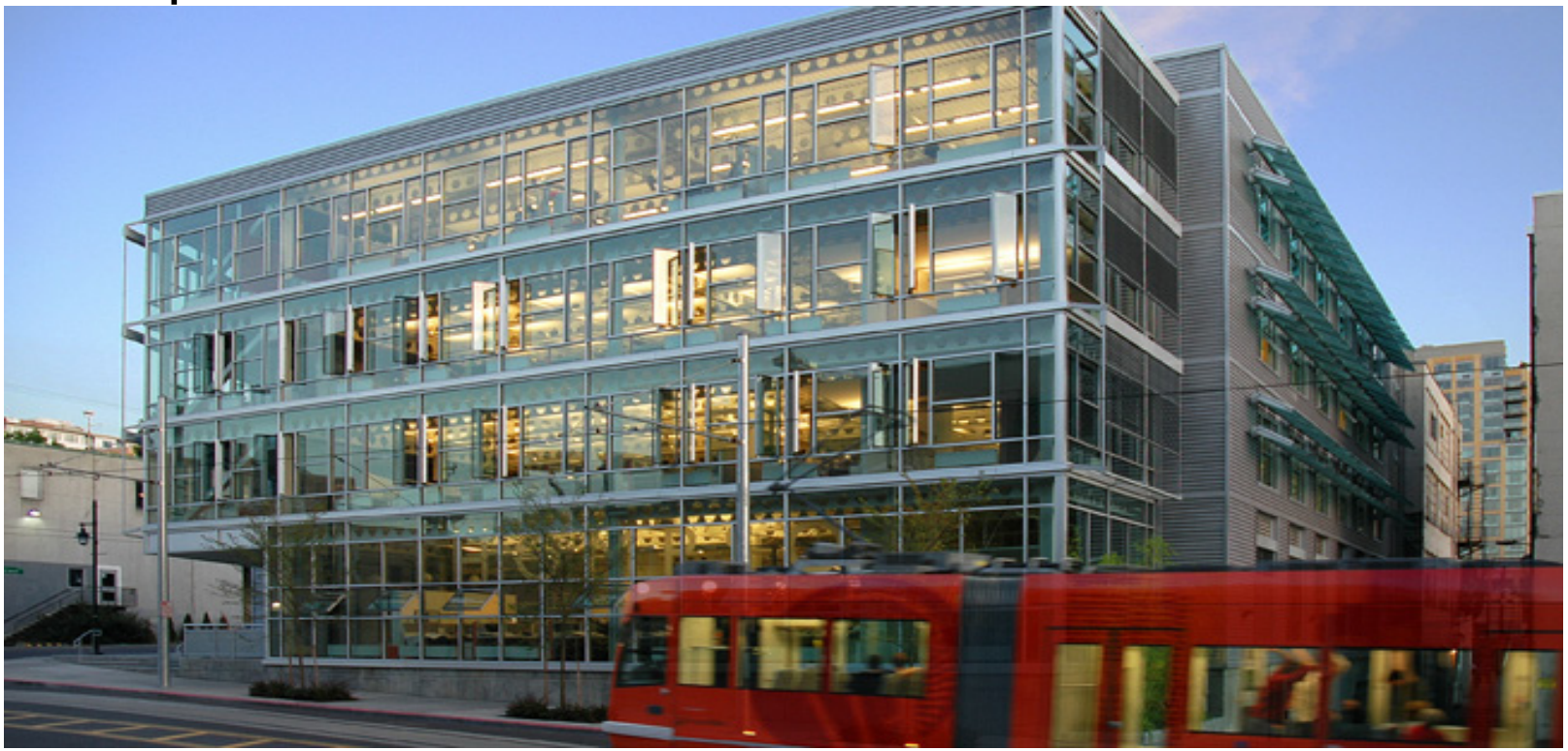
Peter Vanderwarker Photography, Photographer

Top Ten Measure 5: Light and Air

- How does the design create a comfortable interior environment while providing abundant daylight and fresh air.
- Outline design strategies for daylighting, lighting design, ventilation, indoor air quality, view corridors, and personal control systems.
- Describe how the project's design enhances connections between indoors and outdoors.

The Terry Thomas • Seattle, WA

Weber Thompson

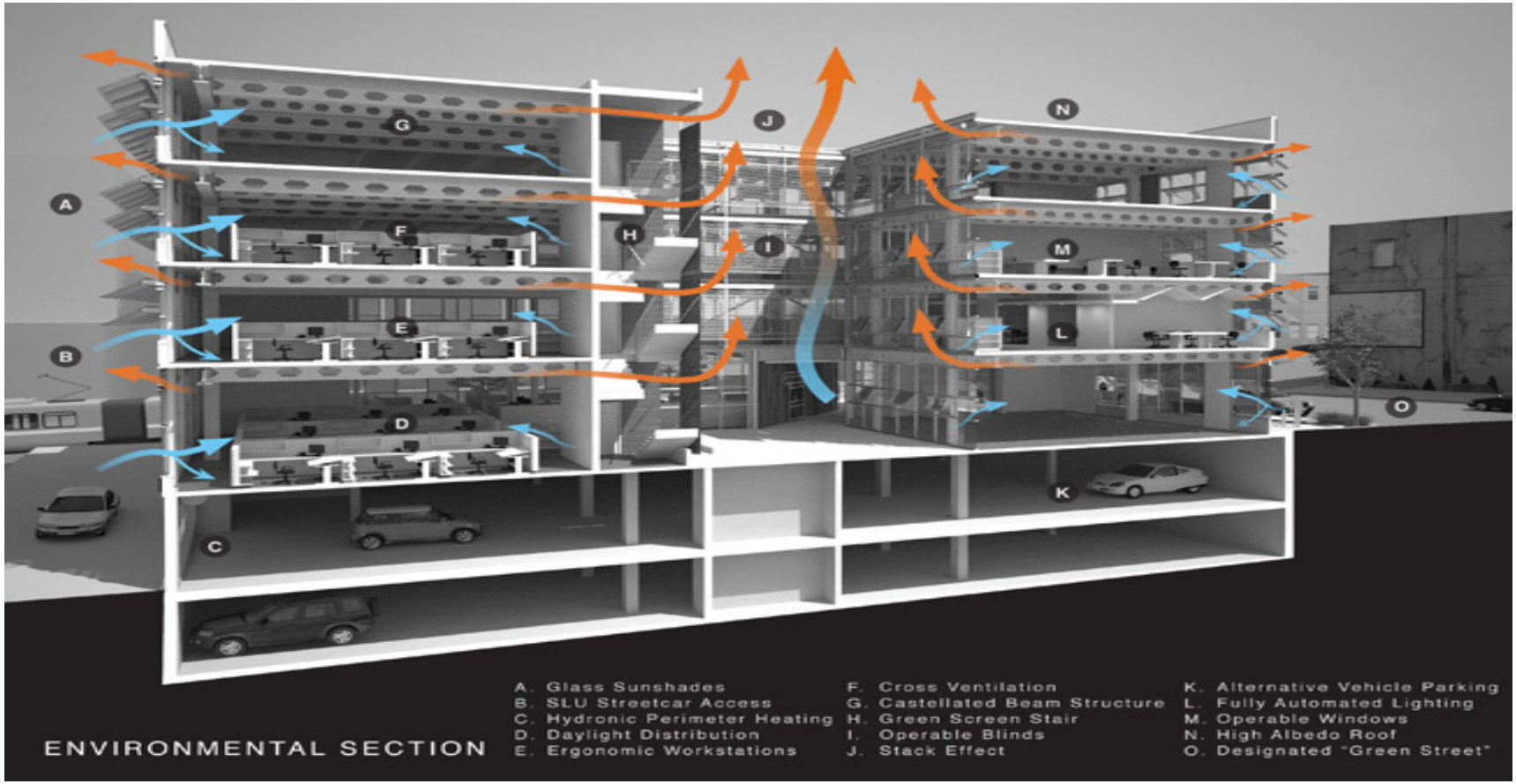


AIA

The Terry Thomas • Seattle, WA
Weber Thompson

The Terry Thomas • Seattle, WA

Weber Thompson

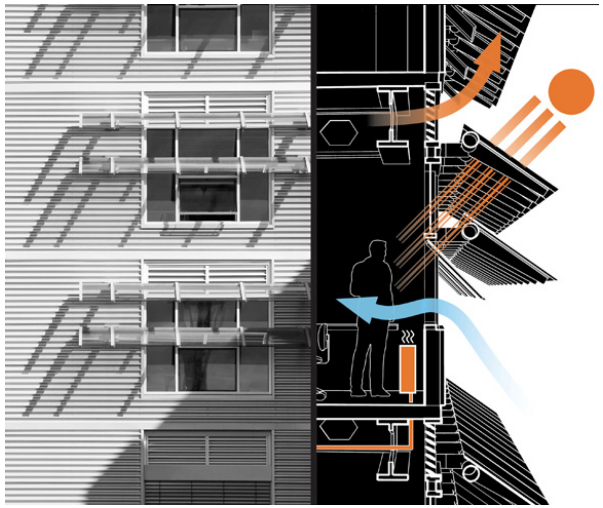


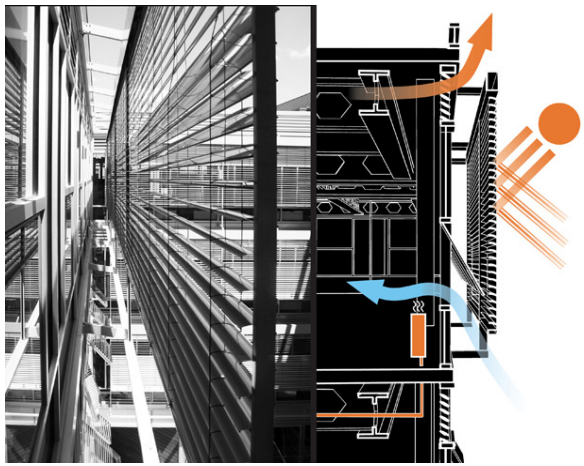
Another example of how Seattle does things the right way. Simple strategies. Abundant daylight. No bling. -- James Timberlake

AIA

The Terry Thomas • Seattle, WA

Weber Thompson





There is still a prevailing belief that green design costs money and this project turns that around. To achieve at such a low capital cost sends a great message. -- Michelle Addington

Integrated Design Team Members

Thomas & Terry LLC, Owner/Developer

Weber Thompson, Architect

Rafn Company, Contractor

DCI Engineers, Structural & Civil Engineer

Stantec, Inc., Mechanical & Plumbing Engineer & Energy Consultant

Keithly Barber Associates, Commissioning Agent

Weber Thompson, Interior Designer

Stephen C. Grey & Associates, Property Management

Top Ten Measure 6: Water Cycle

- Describe how building and site design strategies conserve water, manage site water and drainage, and capitalize on renewable sources.
- Outline water-conserving landscape and building design strategies, as well as any water-conserving fixtures, appliances, and HVAC equipment.
- List water reuse strategies for rainwater, graywater, and/or wastewater.

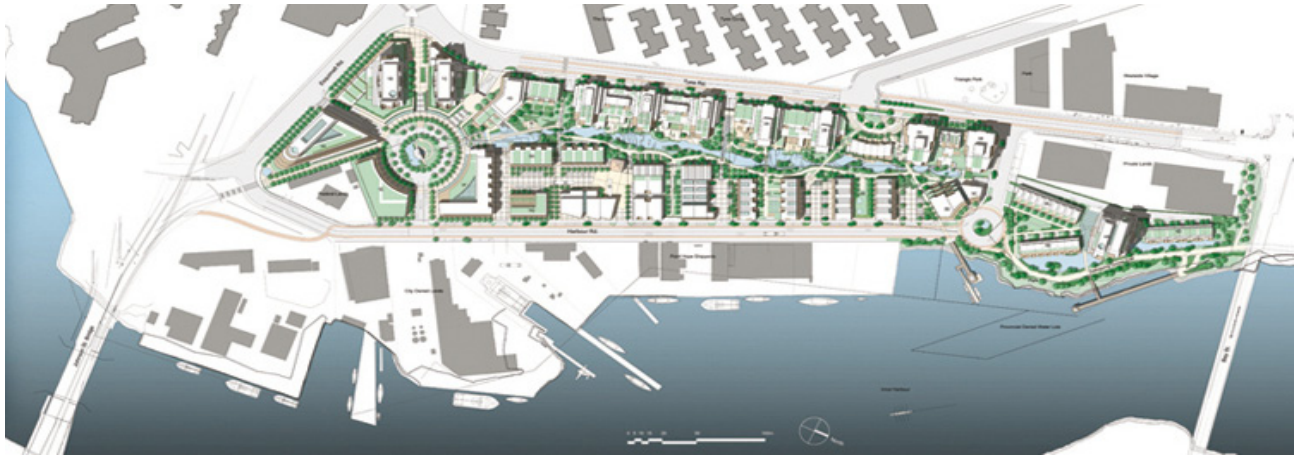
Synergy at Dockside Green • Victoria, BC

Busby Perkins + Will Architects

Most compelling here -- the holistic view of how it engages with the community, like the usable residence gardens on the roof and district heating with biomass. Ecologically and socially, this meets the bar. -- Nadav Malin

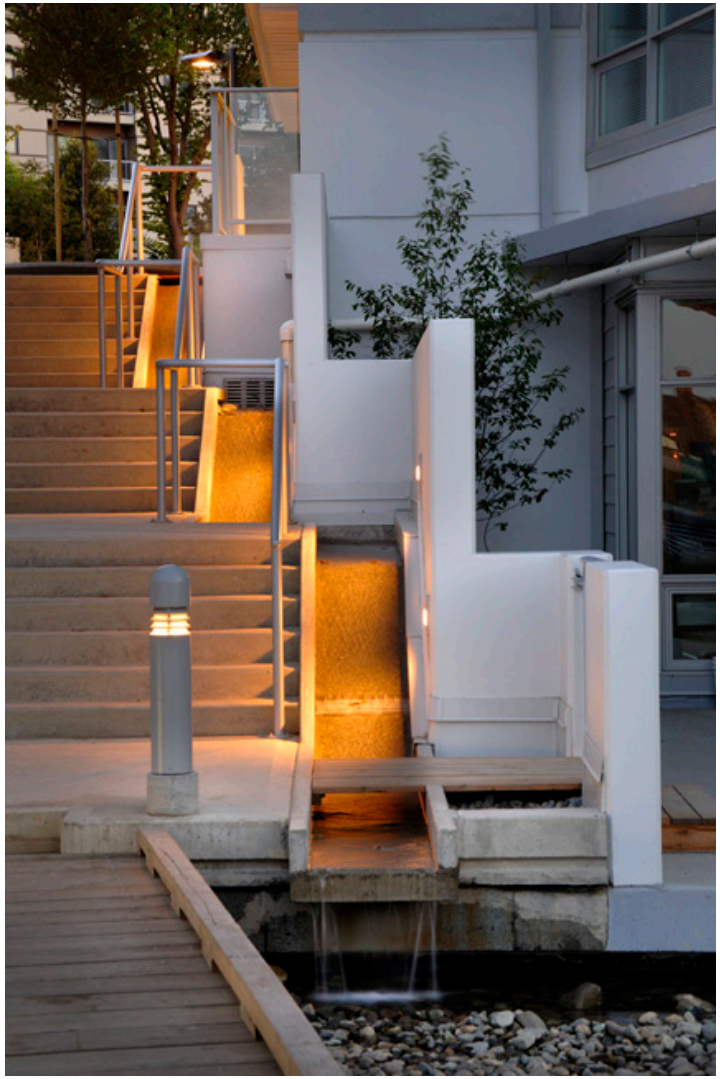
Synergy at Dockside Green • Victoria, BC

Busby Perkins + Will Architects



Synergy at Dockside Green • Victoria, BC

Busby Perkins + Will Architects



Synergy at Dockside Green • Victoria, BC

Busby Perkins + Will Architects

This campus is served by a biomass fuel steam plan, so there is a high percentage of renewable energy. Net zero carbon because of biomass, but not net zero energy. -- Kim Shinn

Integrated Design Team Members

Windmill Development Group, Owner/developer

Busby Perkins + Will, Architect Environmental Building Consultant

False Creek Design Group, Ltd., Interior Designer

Farmer Construction, Contractor

Healthy Green Building Consultants, Ltd., Commissioning Agent

Keen Engineering Co., Ltd. (now Stantec, Inc.), Energy Consultant

PWL Partnership Landscape Architects, Landscape Architect

Read Jones Christoffersen, Ltd., Structural Engineer

Stantec, Inc., Electrical Engineer & Mechanical Engineer

Worsley Parsons Komex, Civil Engineer

Top Ten Measure 7: Energy Flows & Energy Future

- Describe how the design of building systems contributes to energy conservation, reduces pollution, and improves performance and comfort.
- Describe how your project responds to the on-going reduction and possible loss of fossil fuels.
- Does the project employ or encourage alternative energy sources?
- EPA Performance Rating: ____

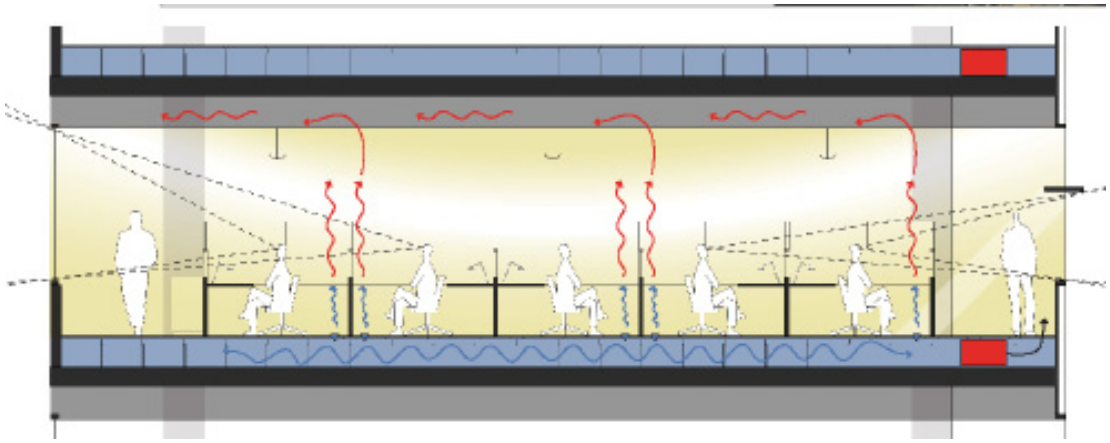
Great River Energy Headquarters • Maple Grove, MN

Perkins + Will Architects

Performing this well in a northern climate was impressive. Also, this team wisely looked at worker efficiencies as to shrink the building size intelligently.
-- Brandi Brooks

Great River Energy Headquarters • Maple Grove, MN

Perkins + Will Architects

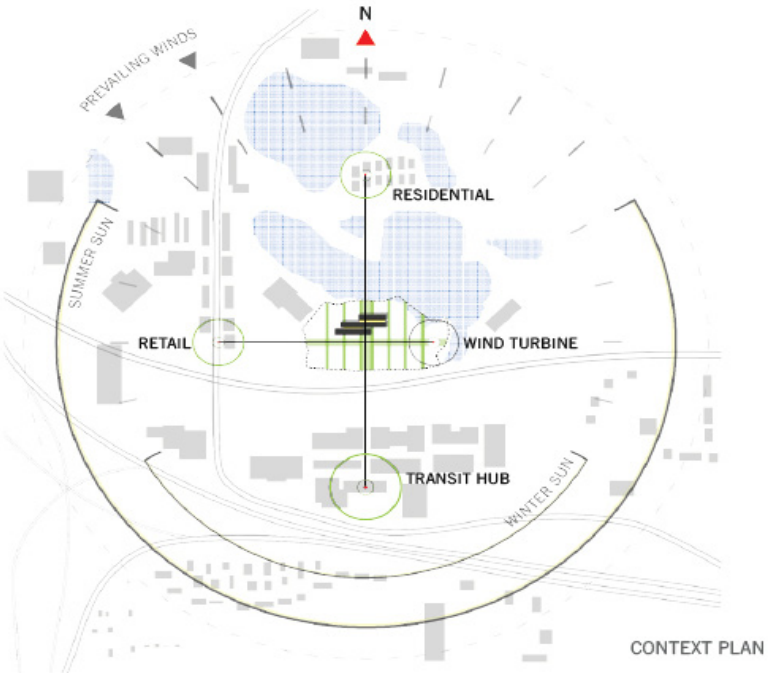


Great River Energy Headquarters • Maple Grove, MN

Perkins + Will Architects

Great River Energy Headquarters • Maple Grove, MN

Perkins + Will Architects



CONTEXT PLAN

Part of the message to the community is "you can do this and in a high performance way." That has real value. -- Kim Shinn

AIA

Integrated Design Team Members

Great River Energy, Owner/developer

Perkins + Will, Architect

McGough, Contractor

RLK Kuusisto Ltd, Civil Engineer

Close Landscape Architecture, Landscape Consultant

BKBM Engineers, Structural Engineer

Dunham Associates, MEP FP Engineer

The Weidt Group, Energy Modeling

Robert Rippe & Associates, Food Services Consultant

Lerch Bates & Associates, Elevator Consultant

Quast Consulting & Testing, Exterior Consultant

N'compass, Audio/Visual/Security Consultant

Karges-Faulconbridge, Inc., Commissioning

Top Ten Measure 8: Materials & Construction

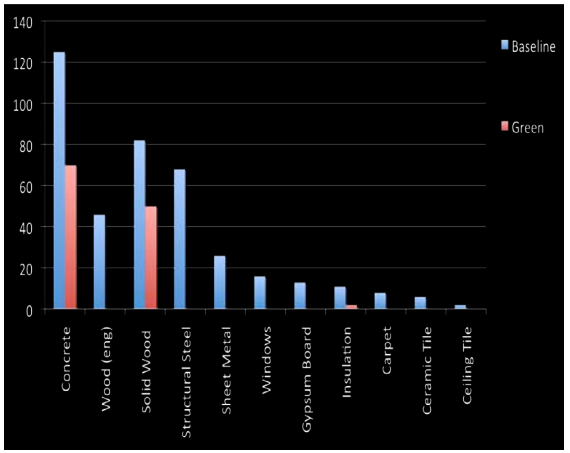
- How does material selection conserve resources, reduce impacts of harvesting, production, and transportation.
- How do materials improve building performance, and enhance occupant health and comfort.
- Describe the most important selection criteria, considerations, and constraints for materials or building assemblies for your project?

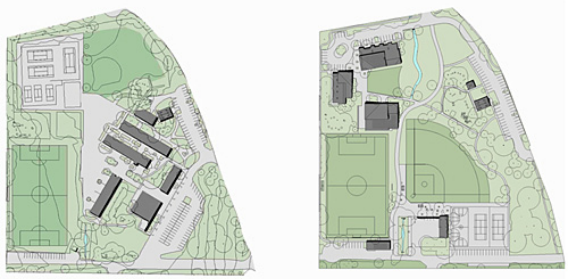
Portola Valley Town Center • Portola Valley, CA

Siegel & Strain Architects; Goring & Straja Architects

Portola Valley Town Center • Portola Valley, CA

Siegel & Strain Architects; Goring & Straja Architects





This set of buildings that functioned as a town center; because it was on the San Andreas fault, they had to tear it down, and they used the opportunity to shrink the program, rather than expand. -- Michelle Addington

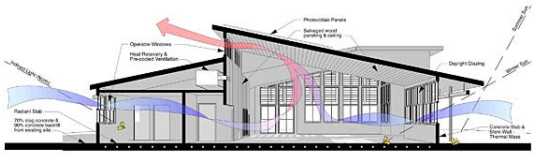
Portola Valley Town Center • Portola Valley, CA

Siegel & Strain Architects; Goring & Straja Architects

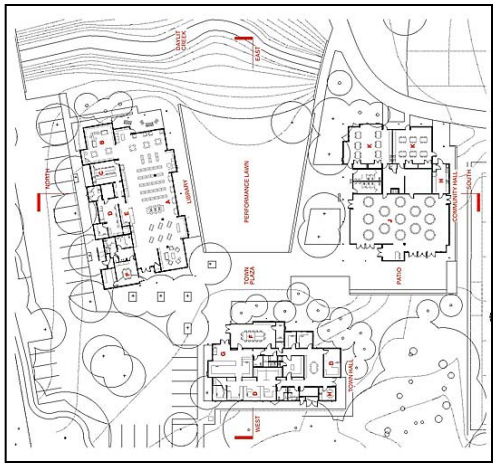
This beautifully detailed project is an example of an engaged and enlightened client.
--- James Timberlake

Portola Valley Town Center • Portola Valley, CA

Siegel & Strain Architects; Goring & Straja Architects



Section Through Library



AIA

Integrated Design Team Members

Town of Portola Valley, Owner

Siegel & Strain Architects and Goring & Straja Architects, Architects

TBI Construction Management, Construction Manager/Contractor

Rumsey Engineers, Inc., Mechanical & Plumbing Engineers

High Sun Engineering, Energy Consultant

Integrated Design Associates, Inc., Electrical Engineer

David Nelson & Associates LLC, Lighting Designer

Staprans Design, Interior Designer

Pivot Interiors, Interior Designer

Lutsko Associates, Landscape Architect

Carducci & Associates, Landscape Architect

BKF Engineers, Civil Engineer

Forell/Elsesser Engineers, Structural Engineer

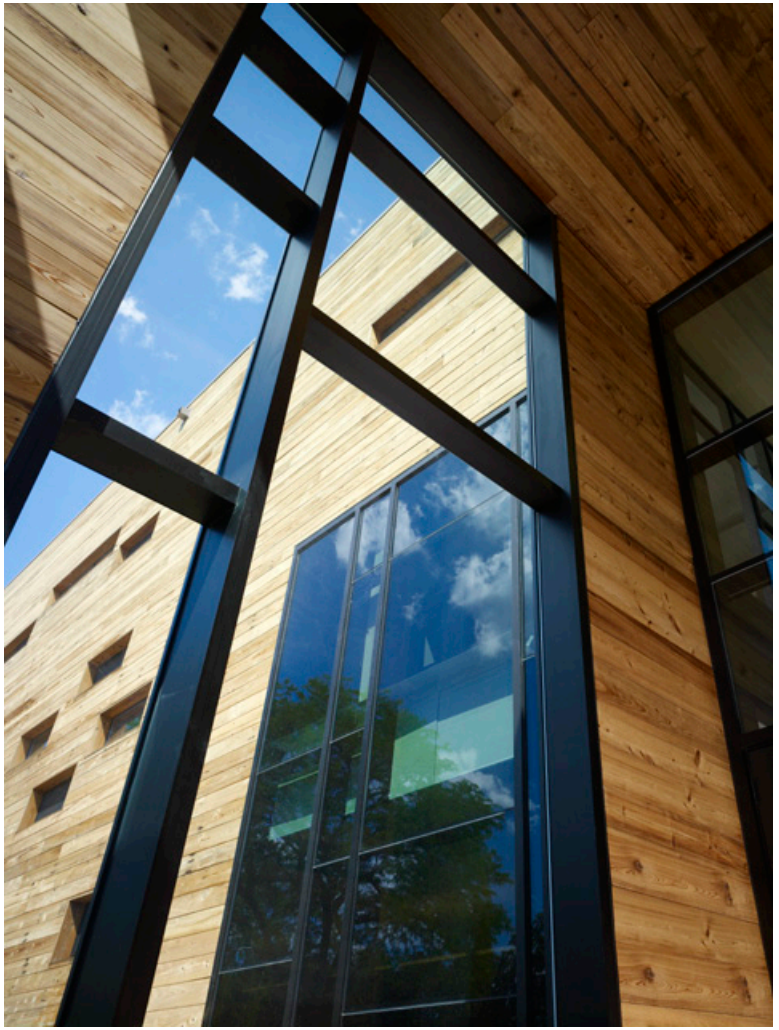
Ewart Wetherill, Acoustics

Top Ten Measure 9: Long Life, Loose Fit

- Describe how the project's design creates enduring value through long-term flexibility and adaptability.
- Describe any components designed for disassembly.
- Describe design solutions developed to enhance versatility, durability, and adaptive reuse potential.
- Describe efforts to "right size" the project.

Jewish Reconstructionist Congregation • Evanston, IL

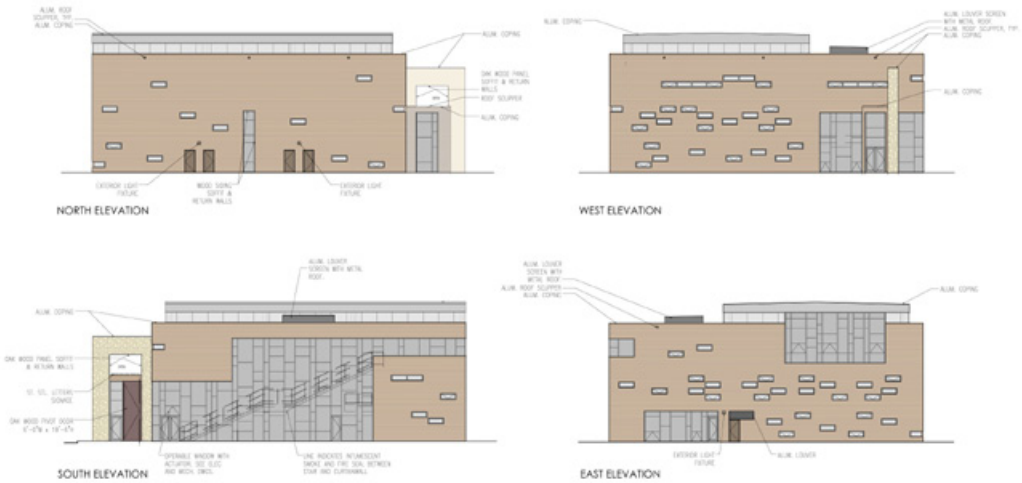
Ross Barney Architects



This is a great example of making the most with the least: there is a beautiful, simple elegant, link between religious values and sustainable values. -- Bill Leddy

Jewish Reconstructionist Congregation • Evanston, IL

Ross Barney Architects



I liked how they mapped space use hour by hour, day by day for a week to really get a sense of what the program of the building was. -- Michelle Addington

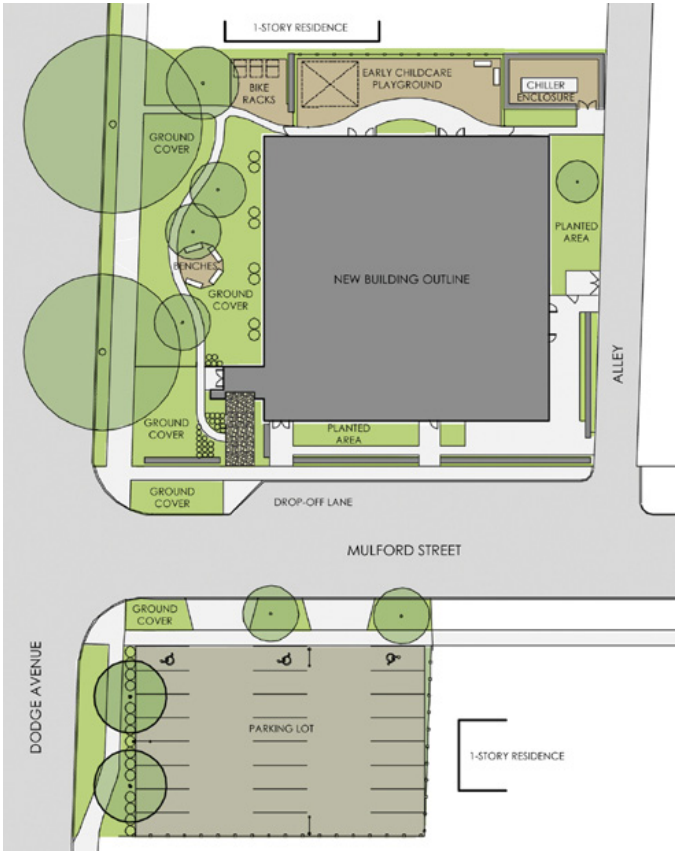
Jewish Reconstructionist Congregation • Evanston, IL

Ross Barney Architects

AIA

Jewish Reconstructionist Congregation • Evanston, IL

Ross Barney Architects



Integrated Design Team Members

Jewish Reconstructionist Congregation, Owner

Ross Barney Architects, Architect

HJKessler Associates, Environmental Building Consultant

EYP Mission Critical Facilities, Electrical & Mechanical Engineer

C. E. Anderson & Associates, Structural Engineer

Infrastructure Engineering, Civil Engineer

Oslund & Associates, Landscape Architect

Talaske, Acoustic Consultant

Bulley & Andrews, Contractor

Cotter Consulting, Inc., Project Manager & Commissioning Agent

Top Ten Measure 10: Collective Wisdom & Feedback

- Describe how your design process enhanced the ultimate performance and success of the building.
- How did collaborative efforts between the design team, consultants, client, and community contribute to success?
- What lessons were learned during the design, construction, and occupation of the building?
- If starting over today, how would your approach or emphasis change?
- Describe how commissioning and monitoring will contribute to better building performance, occupant satisfaction, or design of future projects?

Chartwell School • Seaside, CA

EHDD Architecture

This was ambitious, with very low energy numbers, and had a well integrated storm water system that became an educational opportunity – the buildings become teachers.

-- Bill Leddy

Chartwell School • Seaside, CA

EHDD Architecture

Chartwell School • Seaside, CA

EHDD Architecture

AIA

Chartwell School • Seaside, CA

EHDD Architecture

This is a building with a strong design for disassembly element and where the staff and visitors feel positive about being here. The user feedback is strong.
-- Brandi Brooks

Integrated Design Team Members

Chartwell School, Owner

EHDD Architecture

Gary Strang, Landscape Architect

Ausonio, Inc., Contractor

Sherwood Engineering, Civil Engineer

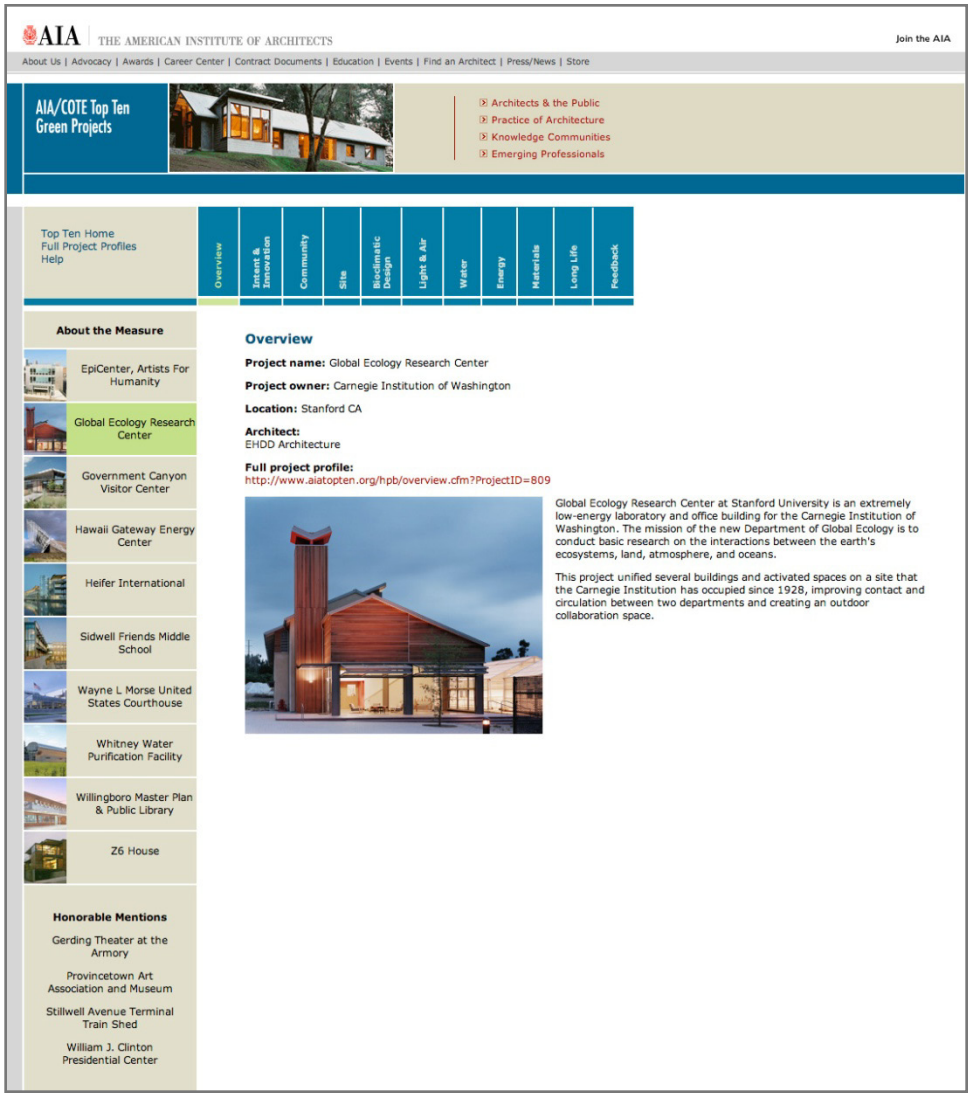
Taylor Engineering, LLC, Mechanical Engineer & Commissioning Agent

Tipping Mar + associates, Structural Engineer

Links for Additional Information

www.aiatopten.org

www.aia.org/cote



AIA