The Architecture of Sustainability

AIA/COTE 2009 Top Ten Green Projects Awards
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
<table>
<thead>
<tr>
<th>COTE Top Ten Measures - <strong>USGBC LEED™ Rating System</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Sustainable Design Intent &amp; Innovation</strong></td>
</tr>
<tr>
<td><strong>Innovation &amp; Design Process</strong></td>
</tr>
<tr>
<td><strong>Long Life, Loose Fit</strong></td>
</tr>
<tr>
<td><strong>Lessons Learned &amp; Feedback Loops</strong></td>
</tr>
<tr>
<td><strong>Regional/Community Design &amp; Connectivity</strong></td>
</tr>
<tr>
<td><strong>Land Use &amp; Site Ecology</strong></td>
</tr>
<tr>
<td><strong>Sustainable Sites</strong></td>
</tr>
<tr>
<td><strong>Bioclimatic Design</strong></td>
</tr>
<tr>
<td><strong>Energy Flows &amp; Energy Future</strong></td>
</tr>
<tr>
<td><strong>Energy &amp; Atmosphere</strong></td>
</tr>
<tr>
<td><strong>Light &amp; Air</strong></td>
</tr>
<tr>
<td><strong>Indoor Environmental Quality</strong></td>
</tr>
<tr>
<td><strong>Water Cycle</strong></td>
</tr>
<tr>
<td><strong>Water Efficiency</strong></td>
</tr>
<tr>
<td><strong>Materials &amp; Construction</strong></td>
</tr>
<tr>
<td><strong>Materials &amp; Resources</strong></td>
</tr>
</tbody>
</table>
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?
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
This project learned the lessons and practices of its place.

– Kim Shinn
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
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. BR/Studio
7. Two Bedroom Suite
8. Three Bedroom Suite
9. Meeting Room
10. Courtyard
11. Play Area
12. Exterior Terrace
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 respond 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.
This 250-acre site in the heart of urbanized Orange, Texas, exhibits the prime ecological zones which once dominated the landscape. The facilities at Shangri La seek to provide research, education, functions in balance with the site’s natural systems.
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
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

U.S. DEPARTMENT OF ENERGY
SOLAR DECATHLON
2009
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 • Yarmouthport, MA
DesignLAB Architects
World Headquarters for the IFAW • Yarmouthport, MA
DesignLAB Architects
World Headquarters for the IFAW • Yarmouthport, MA
DesignLAB Architects

Buildings gathered around a south-facing courtyard; the team found a way to maximize program and minimize space. — Kim Shinn
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
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
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
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.
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
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: _____
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
Part of the message to the community is "you can do this and in a high performance way." That has real value. -- Kim Shinn
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
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
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
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.
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
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
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?
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
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