

## STANFORD'S 'Y2E2'

The Jerry Yang and  
Akiko Yamazaki  
Environment and  
Energy Building



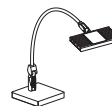
Y2E2 is the greenest building on the Stanford campus and one that is making a dramatic statement in sustainable building and lighting.

Designed by Boora Architects and funded by a 75 million dollar grant from Yahoo co-founder Jerry Yang and his wife Akiko Yamazaki, it's the first of four buildings completed for the new Science and Engineering Quad.

Stanford University created the project with the intent to teach and inspire new 'best practices' in green building and energy efficiency. The building is projected to use 56 percent less electrical energy than a traditional building of the same size and incorporates several different strategies featuring LED task lighting, low ambient fluorescent lighting and effective use of daylighting.

According to Architect and Design Principal, Isaac Cambell, "Palo Alto has a near-ideal climate for daylighting, with ample sunlight most of the year. When Stanford commissioned BOORA to design a new Science and Engineering quadrangle, it was a natural fit, given our firm's long history of sustainable design advocacy and innovation, with a particular focus on natural daylighting. The extensive daylighting within the building allows us to substantially downscale electrical lighting systems and reduce lighting power densities."

### PROJECT SNAPSHOT



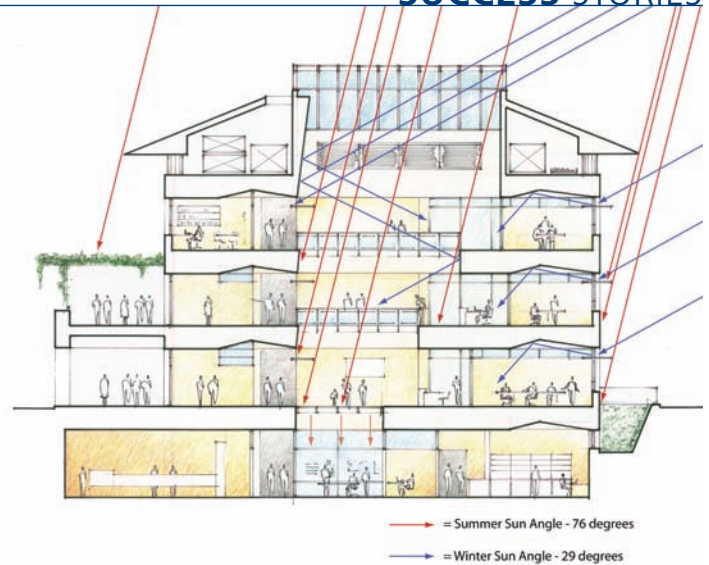
6-watt  
PLS Desk Lamp



Series 12ID,  
3 lamp T8

**Effective Lighting Power  
Density: 0.50 w/ft<sup>2</sup>**

# Finelite's Personal Lighting System illuminates each office using only 6 watts.



The design team successfully incorporated daylighting into the space by balancing the varying levels of outdoor lighting with the need for adequate light levels in the offices, conference rooms, and research labs in the space at all times of the day and night.

Finelite's state-of-the-art LED task lamp and Personal Lighting System (PLS) was used in the offices, illuminating each office space using only 6 watts. The overhead ambient light functions as fill lighting allowing lighting power densities to operate at surprisingly low levels.

By combining high-efficiency indirect/direct luminaires and daylight controls with an LED system for task lighting, the system is reported to demonstrate lighting power densities at 0.5 watts per square foot. The approach is a departure from traditional lighting design because it integrates the task lighting and controls as part of the overall lighting system.

The 6 watt LED undercabinet light was used to light many of the spaces, delivering beautifully rendered light and complementing the daylight at 3500K. Some of the users mentioned that they were so pleased with the quantity, color and balance of the LED task lighting, it was the only light that they turned on.

During the day several strategies were used to make the most effective use of natural light. One of the strategies was to bring natural light into the building via the four contemporary geometric 'atria' that extend from the roof to the ground floor. Each 'atria' is topped by a raised triangular skylight that concentrates and redirects the light throughout the building.


Light shelves are also used to harvest light, redirecting sunlight into the building while shading the windows from direct sun. Light shelves and window shades are elaborately

positioned throughout the building and designed to accommodate every season, time of day, and angle of light. The light shelves and window shades block some light and also redirect light deep into the interior, providing light but not heating up the building.

In the evening, the integrated controls automatically adjust the indirect fluorescent luminaires. Series 12 luminaires provide just the right amount of up and downlight and the integrated dimming and occupancy sensors ensure that the lights power down or shut off when not needed.

Y2E2 proves that it's possible to build an energy efficient building without having to sacrifice comfort and design. Y2E2 is beautifully illuminated and very comfortable using less electricity and incorporating the very latest in LED-Task/Low Ambient lighting best practices.

Sources: BOORA Architects  
Interview "How Y2E2 slashes energy and water consumption" by Michael Pena, The Stanford Report, March 3, 2008.



PROJECT DETAILS

**Location:**  
Stanford University  
Palo Alto, CA

**Architect:**  
BOORA Architects  
Isaac Cambell,  
Design Principal

**Electrical Engineer:**  
ARUP  
Jason Edling,  
Senior Consultant

**Electrical Contractor:**  
Cupertino Electric  
Jeremy Camper,  
Program Manager

**Interior Design:**  
RMA Design Studios  
Claire Anspach, IIDA  
CID, Principal