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GREEN CLEANING PRODUCTS AND PROCESSES

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Los Angeles' High Tech High was designed to establish a connection between the school's high-tech aspect and sustainable design. Photo by Tom Bonner.

HIGH TECH, HIGH DESIGN, HIGH PERFORMANCE

HIGH TECH HIGH-LOS ANGELES INVOKES LOW-TECH STRATEGIES FOR SUSTAINABLE CAMPUS.

BY RICHARD BERLINER, AIA, LEED AP

Sporting bright colors, a glass-and-steel facade, and environmentally responsible features, High Tech High-Los Angeles (HTH-LA) debuted on the public high school scene in September 2004. More than a year after its grand opening, the 210-student school, with a capacity of 350 students, can boast of being high-performing on two levels: sustainability and academics.

HTH-LA is the brainchild of educational entrepreneur Roberta Weintraub, whose ideas established the first charter school within the Los Angeles Unified School District (LAUSD) that embraces the latest technology in preparing students for high-tech careers. Weintraub selected Berliner and Associates, Architecture—a Southern California firm experienced in designing educational facilities with environmental sensitivity—to design a campus that would reflect the school's project-based curriculum.

Even before formal design began, Berliner and Associates knew it

would champion sustainable attributes for the new campus, seeing a connection between the school's high-tech aspect and sustainable design. So began an effort to build High Tech High as a high-performance school, meeting standards set forth by the California Energy Commission and the Collaborative for High Performance Schools. The resulting program features low-tech, natural solutions, such as abundant daylighting and prominent landscaping, while tackling the client's needs.

Through brainstorming sessions with the school's teachers and administrators, the architect developed three principles that would define the building: connections with the adult world, transparency in the learning environment, and value of both beauty and function. Modeled after corporate research centers, the new campus holds eight classrooms (most with adjoining project rooms, separate spaces where students can work on small-group activities), a robotics lab,



multi-purpose "commons", great room, teachers' and administrators' offices, two conference rooms, and several outdoor learning and gathering spaces.

After a year of utilizing the new space, test scores revealed that High Tech High-Los Angeles is academically high-performing. It was the only LAUSD school to have all students pass the 2005 California High School Exit Exam, a two-part aptitude test and graduation requirement for high school students. Additionally, the school had the highest Academic Performance Index (API) score in its district.

But HTH-LA's impressive academics and new campus belie its modest beginning. The one-acre site was donated by LAUSD and sits on the existing campus of Birmingham High School. HTH-LA was a 27,000-square-foot adaptive reuse and new construction project. Two underused storage warehouses were gutted, completely renovated, and transformed into academic wings featuring cutting-edge technology. A newly constructed 9,000-square-foot commons building unites the two wings and is the heart of the school.

Designed with a strong daylighting program, the school takes full advantage of the site's natural north-facing orientation. With the exception of restroom facilities, virtually 100 percent of the building's interior receives natural light through windows, skylights, and roof monitors. Additionally, the use of high clerestories with light shelves, the high north-oriented side lighting of the commons, and the curving configuration of the roof bring natural light deep into the building. Automated louvers direct light throughout the day, minimizing glare.

The abundant use of glass further promotes the daylighting program while building a transparent environment where students, teachers, and administration are accessible to one another. Glass walls in classrooms face interior halls, and adminis-

HIGH TECH HIGH-LOS ANGELES

LOCATION: LOS ANGELES, CA
TOTAL FLOOR AREA: 27,000 SQUARE FEET
STUDENT CAPACITY: 350
COST PER SQUARE FOOT: APPROXIMATELY \$400/SQUARE FOOT

PROJECT TEAM

CLIENT: HIGH TECH HIGH-LA FOUNDATION, LOS ANGELES UNIFIED SCHOOL DISTRICT
ARCHITECT: BERLINER AND ASSOCIATES, ARCHITECTURE
INTERIOR DESIGNER: BERLINER AND ASSOCIATES, ARCHITECTURE
STRUCTURAL ENGINEER: BRANDOW & JOHNSTON ASSOCIATES
MECHANICAL ENGINEER: J & S CONSULTING
GENERAL CONTRACTOR: TASLIMI CONSTRUCTION
FURNITURE DEALER: PURCHASE PLANNERS GROUP
PHOTOGRAPHER: TOM BONNER
LANDSCAPER: GLEN DAKE LANDSCAPE ARCHITECT
CIVIL ENGINEER: P.A. ARCA ENGINEERING

PRINCIPAL INTERIOR CONSTRUCTION

MATERIALS

PAINT: FRAZEE
LAMINATE: NEVAMAR
DRY WALL: METAL STUDS—SSMA; GYPSUM BOARD—USG; JOINT COMPOUND—HAMILTON
MASONRY: STANDARD CONCRETE MASONRY UNITS FULLY GROUTED WITH STEEL REINFORCING
FLOORING: NORA RUBBER FLOORING
CARPET/CARPET TILE: INTERFACE
CARPET FIBER: SOLUTION DYED ANTRON LUMENA
CARPET BACKING: GLASBAC RE, +40 PERCENT RECYCLED CONTENT VINYL BACKING
CEILING: USG
LIGHTING: PRUDENTIAL
DOORS: STEEL DOORS AND HOLLOW METAL FRAMES—CECO; STOREFRONT DOORS—US ALUMINUM; GLAZED INTERIOR DOORS—WILSON PARTITION
DOOR HARDWARE: SCHLAGE, HAGER, LCN, TRIMCO, PEMKO

GLASS: VIRACON INSULATED GLASS
WINDOW FRAMES: US ALUMINUM STORE FRONT
WINDOW TREATMENTS: MECHOSHADE
RAILINGS: CUSTOM
TACK PANEL FABRIC: DESIGNTX, 100 PERCENT RECYCLED SOLUTION DYED POLYESTER
TILE: DAL-TILE

PRINCIPAL FURNISHINGS

STUDENTS' DESKS: VIRCO
STUDENTS' SEATING: KI (CUSTOM COLOR POLYPROPYLENE CHAIRS)
TEACHERS' DESKS: VIRCO
TEACHERS' SEATING: KI
ADMINISTRATIVE DESKS: VIRCO
ADMINISTRATIVE SEATING: UNITED CHAIR
LOUNGE SEATING: HAYWORTH
LOUNGE SEATING UPHOLSTERY: KNOLL
ADMINISTRATIVE CONFERENCE ROOM TABLE: DAVIS
OUTDOOR COURTYARD DINING, SEATING: WAUSAU SITE FURNISHINGS
CAFETERIA, DINING, TRAINING TABLES: KI
SEATING UPHOLSTERY: KNOLL
OTHER TABLES: KI
FILES: VIRCO
CABINETMAKING: TASLIMI CONSTRUCTION
PLANTERS, ACCESSORIES: WAUSAU SITE FURNISHINGS
SIGNAGE: CA SIGNS

BUILDING SYSTEMS

HVAC: CARRIER EQUIPMENT, ACCO DUCT WORK AND INSTALLATION
FIRE SAFETY: COSCO FIRE SPRINKLERS; FIRE ALARM — NOTIFIER WITH GENTEX DEVICES
UNDERFLOOR DUCT; WIREMOLD

LANDSCAPING

TREES: KOEREUTERIA, CHINESE FLAME TREE, SWEET GUM TREES, OLIVE TREE, CALIFORNIA SYCAMORE, DATE PALMS
SHRUBS: AGAVE, ALOE (SEVERAL KINDS), BULBINE, COTONEASTER, SAGO PALM, DASYLIRION, FORT-NIGHT LILLY, FLAX, PITTOSPORUM
VINES: RED TRUMPET VINE, CREEPING FIG



This 27,000-square-foot adaptive reuse and new construction project takes full advantage of natural light and high-performance design strategies.

Photo by Tom Bonner.



Through a very high-tech concept, this project features low-tech, natural solutions, such as abundant daylighting and prominent landscaping, while meeting standards set forth by the California Energy Commission and the Collaborative for High Performance Schools. Photos by Tom Bonner.

trative offices have interior windows. This transparency provides students with a sense of autonomy, while allowing teachers to monitor student activity. Ultimately, the use of glass integrates the natural lighting program with the school's emphasis on community.

Energy efficient design components also include high-performance glazing, which minimizes summer solar heat gain and minimizes winter heat loss. Cool roof materials and heat-reflective paint were specified for exterior wall surfaces. By reducing energy consumption, HTH-LA uses 10 percent less energy than California's Title 24 requires, exceeding one of the nation's most stringent energy codes.

To promote a healthy school environment, formaldehyde-free products were stipulated for all interior furnishings, casework, and materials, and low VOCs (volatile organic compounds) were achieved in the interior environment through the specification of durable and non-toxic paints and coatings. The interior flooring is rubber, which is easy and affordable to maintain, and provides acoustic protection from reverberating sounds. In a school where the computer-to-student ratio is better than one to

one, rubber's anti-static properties protect computers from damage by static electricity.

Working closely with landscape architect Glen Duke, the design team implemented a landscaping program that supports the school's curriculum and reduces resource consumption. "Gardens surround all four sides of the school, so there's a constant connection with nature," says school founder Weintraub. "This creates a stimulating, nurturing environment for students that's functional and aesthetically pleasing."

One such functional element is the use of deciduous trees. During the hot summer months they provide natural shade, reducing cooling costs. In the cooler winter months, the trees shed their leaves allowing sunlight to penetrate through the building to warm the school, reducing heating costs. Existing 50-year-old California sycamore trees were preserved and used for these purposes on the school's southern and eastern extremities.

Additional plants selected require little pruning, fertilizer, and water, reducing the environmental costs associated with disposing of clippings and chemically active fertilizers. Water is further conserved through a

customized irrigation system that efficiently waters plants according to their sun exposure and plant type. Instead of conventional lawns, the team used decomposed granite to minimize water use.

Although water use is limited, the potential for learning is not, as High Tech High-Los Angeles also offers education opportunities for community members. The school serves as a training ground for LAUSD teachers in incorporating technology in the classroom. On-line classes for non-LAUSD students are scheduled for the summer months, and evening computer classes for parents are also available at HTH-LA. +

Richard Berliner, AIA, is principal and founder of Berliner and Associates Architecture, a full-service Culver City, Calif.-based design firm with expertise in master planning, architecture, interior design, space planning and environmental graphics. Berliner is a LEED Certified Professional, as well as a member of the Urban Land Institute, California Coalition for Adequate School Housing, and the Society of College and University Planners.

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