

# JUSTICE FOR THE ENVIRONMENT

NEW JUVENILE DETENTION AND COURT FACILITY HIGHLIGHTS GOVERNMENT LEADERSHIP

IN GREEN BUILDING; ALAMEDA COUNTY FACILITY OFFERS INTEGRATED SERVICES TO AT-RISK YOUTH.

BY CAROLYN BLOEDE

In the late 1990s, Alameda County, Calif., government leaders decided to consolidate youth services with the goal of providing an integrated therapeutic environment for the community's at-risk population. Replacing an aging, seismically deficient juvenile detention facility and consolidating countywide youth services into one location were top project goals. Creating a healthy space with daylight and fresh air for youth in a facility with heightened security requirements was the challenge placed upon the county's General Services Agency (GSA). Working collaboratively with Hensel Phelps Construction Co., Hellmuth, Obata + Kassabaum (HOK), Vanir Construction Management, and more than nine separate county agencies, GSA completed the new 379,000-square-foot, \$176-million Alameda County Juvenile Justice Center, designed and built to the LEED Gold standard, in Spring 2007.

## PROJECT REQUIREMENTS CHALLENGE DESIGNERS

Early on, the project challenged team members with significant design changes. While the design-build team was being selected, the project was downsized and relocated to a site with greater seismic sensitivity. The county also targeted greater participation by woman- and minority-owned businesses as well as design and waste diversion standards set by a new Green Building Ordinance (mandating LEED Silver). The new goals had

*Alameda County's Juvenile Justice Center features plenty of daylight and fresh air. Photo by Chi Fang.*





An 880-kilowatt rooftop solar system supplies 60 percent of the power needed to operate the Alameda County facility.

Photo by Chi Fang.

to be met without changing the budget or completion schedule in order to maintain state grant eligibility. Although some changes are inevitable during the long period of a public project, the project's performance-based requirements allowed for more flexibility than prescriptive requirements, according to Deputy GSA Director, James Kachik. "On this complex and innovative project, success could only have been achieved by using the design-build process," said Kachik.

With no additional funding, green features had to integrate into the overall design.

Requirements and regulations for detention and court facilities make many typical green features inappropriate. Security requirements, for example, limit choices for materials and continual building operation with technology-dependent features is energy intensive. According to former project manager, Ron Alameida, "the team used LEED as a tool, not a checklist, to deliver a facility that met the occupants' needs while addressing operations and maintenance from the design forward."

The Center was designed to provide a healthy indoor environment while also reducing global warming impacts and saving taxpayer dollars through conservation and waste reduction.

#### INDOOR ENVIRONMENTAL QUALITY

In residential juvenile detention areas, skylights and two levels of windows facing an outdoor courtyard provide natural light without compromising security. The design team integrated the external exercise area with the housing unit to take advantage of natural lighting. Finishes, carpet and furniture were selected to give off little or no volatile organic compounds to affect indoor air quality: A two-week building flush-out cleaned the air after construction. Ongoing cleaning with Green Seal-certified non-toxic chemicals also promotes indoor air quality. Carbon dioxide and temperature sensors, as well as lighting systems that adjust to occupancy and daylight, maintain a comfortable environment. The county is developing new occupant orientations, post-occupancy surveys, and cross-department Green Teams to keep operations green and comfortable.

#### CLIMATE PROTECTION

Recognizing that building construction and operations create more than 40 percent of world global warming emissions, the county focused on reducing energy use at the facility. Sixty percent of the power needed to operate the facility comes from an 880-kilowatt rooftop solar system.

"Designing buildings that are highly energy efficient and can provide some or all of their own power, coupled with purchasing renewable energy credits, are critical components to any public project," said Matt Muniz, Alameda County's energy manager. "These actions demonstrate to constituents that we're mindful of both natural and financial resources."

During construction itself, several innovations reduced greenhouse gas emissions. Site-grading equipment used biodiesel fuel, reducing carbon-dioxide emissions by 200 tons. Structural concrete units were prefabricated with fly ash, a by-product of coal combustion, which not only creates a stronger structure, but also saves energy and landfill space. Ninety-four percent of construction and demolition debris was reused rather than sent to a landfill in order to save the energy involved in extracting and manufacturing new materials.

On the project site, six acres of open space were preserved. Existing wetlands were restored in conjunction with the use of retention ponds and bioswales for natural stormwater filtration. The facility's location near rapid transit, preferential carpool parking, and bicycle storage and showers also encourages sustainable commuting.

#### HIGHLY-EFFICIENT DESIGN

The secure areas of justice facilities are not subject to the State of California's Title 24 energy code. However, through well-insulated roofing, walls and windows, as well as efficient lighting and ventilation and a central plant for heating and cooling, the facility was designed to outperform a code-compliant building by 46 percent.

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#### ALAMEDA COUNTY JUVENILE JUSTICE CENTER

FUNCTION: 360-BED JUVENILE DETENTION FACILITY

SIZE: 379,000 SQUARE FEET

LOCATION: SQUARE-FOOT FACILITY LOCATED IN SAN LEANDRO, CALIF.

COMPLETED: SPRING 2007

COST: \$176 MILLION

LEED: GOLD RATING ANTICIPATED

#### PROJECT TEAM

COUNTY OF ALAMEDA

HENSEL PHELPS CONSTRUCTION CO.,

HELLMUTH, OBATA + KASSABAUM (HOK)

VANIR CONSTRUCTION MANAGEMENT

BEVERLY PRIOR ARCHITECTS (ASSOCIATE ARCHITECT)

GERSON/OVERSTREET (CONSULTING ARCHITECT)

THE KPA GROUP (STRUCTURAL ENGINEER)

TELAMON ENGINEERING CONSULTANTS, INC. (CIVIL ENGINEER)

MCT ENGINEERS, INC. (MECHANICAL/ELECTRICAL ENGINEER)

BUFORD GOFF & ASSOCIATES, INC. (SECURITY ELECTRONICS CONSULTANT)

MARELICH MECHANICAL, INC. (DESIGN BUILD MECHANICAL CONTRACTOR)

ROSENDIN ELECTRIC, INC. (DESIGN BUILD ELECTRICAL CONTRACTOR)

GEOLABS, INC. (GEOTECHNICAL CONSULTANT)

THE MARSHALL ASSOCIATES, INC. (FOOD SERVICES AND LAUNDRY CONSULTANT)

KELLER MITCHELL & CO (LANDSCAPE CONTRACTOR)

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The 379,000-square-foot detention facility in California anticipates a LEED Gold rating.  
Photo by Chi Fang.

Low-flow fixtures will use 41 percent less water than federal code requires. Drought-resistant plants, drip irrigation, and lawn used only for a playing field use 52 percent less water than typical landscaping. To ensure the facility performs as designed, all systems were tested by

a third-party commissioning agent.

According to Karen Smith, Executive Director of StopWaste.org, the Juvenile Justice Center “showcases opportunities for waste reduction and green purchasing at all stages of a building’s life, from demolition to construction and maintenance.”

#### COMMUNITY OUTREACH

Public projects such as this one enable greater participation of small, local and emerging businesses by setting participation goals and bid preferences and providing training and bond assistance. To promote inclusion of smaller subcontractors on the project, the county and its design-build contractor organized bid packages better suited to the availability of smaller trade subcontractors. The county also created a \$500,000 bond assistance program, which provided administrative support and supplemental underwriting to help qualified and competitive subcontractors. The bond program enabled \$8.7 million of construction contracts to 12 small and local contractors. In total, the project enabled significant participation from local (\$85 million), small/emerging (\$27 million), minority-owned (\$21 million) and woman-owned (\$10 million) businesses.

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ALAMEDA COUNTY JUVENILE JUSTICE CENTER  
PRODUCT LIST

**CONSTRUCTION MATERIALS RECYCLED CONTENT**

CRUSHED AGGREGATE = 100 PERCENT POST-CONSUMER WASTE  
 ASPHALT = 15 PERCENT POST-CONSUMER WASTE  
 REBAR = 90 PERCENT POST-CONSUMER WASTE AND 10 PERCENT POST-INDUSTRIAL  
 STRUCTURAL PRECAST PANELS = 15 PERCENT POST-CONSUMER WASTE AND  
 14 PERCENT POST-INDUSTRIAL WASTE  
 CONCRETE MASONRY UNIT = 30 PERCENT POST-CONSUMER WASTE AND 20 PERCENT  
 POST-INDUSTRIAL WASTE  
 STRUCTURAL STEEL = 80 PERCENT POST-CONSUMER WASTE AND 20 PERCENT  
 POST-INDUSTRIAL WASTE  
 BUCKLING RESTRAINT BRACES = 80 PERCENT POST-CONSUMER WASTE AND 20  
 PERCENT POST-INDUSTRIAL WASTE  
 METAL DECKING = 25 PERCENT POST-CONSUMER WASTE AND 5 PERCENT  
 POST-INDUSTRIAL WASTE  
 BUILDING INSULATION = 9 PERCENT POST-CONSUMER WASTE AND 26 PERCENT  
 POST-INDUSTRIAL WASTE  
 STEEL DOORS AND FRAMES = 23 PERCENT POST-CONSUMER WASTE AND 8  
 PERCENT POST-INDUSTRIAL WASTE  
 CERAMIC TILE = 7 PERCENT POST-INDUSTRIAL WASTE  
 CARPET = 34 PERCENT POST-INDUSTRIAL WASTE  
 CARPET TILE = 38 PERCENT POST-CONSUMER WASTE AND 8 PERCENT POST-  
 INDUSTRIAL WASTE

**SOLAR PHOTOVOLTAIC SYSTEM**

POWERLIGHT CORPORATION POWERGUARD  
 XANTREX INVERTERS

**ADHESIVES AND SEALANTS**

SECURITY SEALANT: SIKADUR 31 AND SIKADUR INJECTION GEL  
 TILE CAULK: COLORCAST TILE AND GROUT CAULK  
 LINOLEUM FLOORING ADHESIVE: ARMSTRONG S-760  
 VCT ADHESIVE: ARMSTRONG S-515 AND S-202  
 RUBBER BASE ADHESIVE: ROPPE 205  
 CARPET ADHESIVE: COMMERCIALON PREMIUM CARPET ADHESIVE  
 SHEET VINYL ADHESIVE: ARMSTRONG S-599  
 CERAMIC TILE FAST SETTING MORTAR: MAPEI ULTRAFLEX RS  
 CONCRETE SEALER: PRO-SEAL DP-36  
 TILE SEALER: RUSTOLEUM 9700 SYSTEM ACRYLIC POLYESTER URETHAN

**PAINTS AND COATINGS**

INTERIOR PAINT: ICI LIFEMASTER 2000 INTERIOR EGGSHELL, MOORCRAFT SUPER SPEC  
 LATEX ENAMEL, HARMONY INTERIOR

**CARPET**

J&J ENCORE SD ULTIMA 100 PERCENT NYLONE, SHAW 100 PERCENT ANTRON  
 LEGACY NYLON, SHAW 90 PERCENT ECOSOLUTION Q NYLON, SHAW 90 PERCENT  
 ECOSOLUTION Q NYLON

**COMPOSITE WOODS**

MEDIUM DENSITY FIBERBOARD: SIERRA PINE MEDITE II  
 PARTICLE BOARD: ROSEBURG FOREST PRODUCTS SKYBLEND PARTICLEBOARD  
 FIRE TREATED MDF: PANEL SOURCE INTERNATIONAL PYROBLOCK MDF

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One of the most notable components of the project was a program designed to reach out to the youth of Alameda County with educational and career opportunities. Through a series of 12-week programs, students explored the professions of architecture, engineering and construction. Three graduates of the program were later selected to work full-time on the Juvenile Justice Center.

#### CONCLUSION

The new Juvenile Justice Center supports Alameda County youth by providing healthy environments and supportive rehabilitative programs in an integrated facility. The project is a national model for healthy and efficient government facilities and demonstrates to the country that green building is a realistic way to address climate change. ■

*Carolyn Bloede is Alameda County's Sustainability Program manager. She works with county agencies to address a broad range of sustainability areas such as climate change, green building, environmentally preferable purchasing, conservation, and recycling. Carolyn is also a certified lecturer for Al Gore's The Climate Project.*