

# Case in Point...

## A GREEN AFFORDABLE HOUSING COALITION Case Study

MF-005



### Acalanes Court

Acalanes Court, a 17-unit affordable housing development for families, is located on a small parcel of surplus land remaining from the construction of the I-680 freeway through Walnut Creek. Along with its small size, the site's awkward shape and steep slope led to many design challenges and higher construction costs. Despite the budgetary challenges, Acalanes Court successfully incorporated many green building features to enhance its livability.



*The future lobby of Acalanes Court*

#### Project Summary

- **Location:** 1988 Trinity Avenue, Walnut Creek, CA
- **Target Completion Date:** June 2006
- **Owner/developer:** Trinity Avenue Apartments, Limited Partnership/Satellite Housing, Inc.(a 501(c)3 corporation)
- **Architect:** Mikiten Architecture, Inc.
- **General contractor:** J.H. Fitzmaurice, Inc.
- **Other:** Landscaping by Swanson & Swanson Landscape Architects; Structural by Simmons Structural Engineering, Inc.; MEP by Belden Consulting Engineers; Acoustical Consultation by Charles Salter, Inc.

#### Project Description

Acalanes Court broke ground in March 2005 on a site adjacent to the Interstate 680 off-ramp to Ygnacio Valley Road. The half-acre site at the corner of Trinity Avenue and Oakland Boulevard in Walnut Creek was large enough to accommodate 17 affordable units, including one studio, three one-bedroom units, six two-bedroom units, and seven three-bedroom units. The site is within a half mile of bus lines and a Bay Area Rapid Transit (BART) station, and is within walking distance of schools, medical facilities, shopping, two city parks, and the downtown area of Walnut Creek.

<b>By the Numbers...</b>	
<b>Parcel size:</b>	0.47 acres
<b>Floor area:</b>	20,548 ft <sup>2</sup>
<b>Footprint:</b>	9,600 ft <sup>2</sup> excluding patios
<b>Number units:</b>	17
<b>Site acquisition costs:</b>	\$409,580
<b>Development costs:</b>	\$7,066,144
<b>Funding sources:</b>	
California Community Reinvestment Corporation	\$676,000
City of Walnut Creek	\$1,262,080
Contra Costa County HOME	\$1,064,000
Tax Credit Allocation Committee	\$3,612,500
General Partner Equity	\$328,328
Deferred Developer Fee	\$123,206
<b>Ave. cost / sq. ft.</b>	<b>\$271.77</b>
<b>Ave. cost / unit</b>	<b>\$415,655.53</b>
<b>Affordability targets:</b>	<b>Number of Units:</b>
30% median income	2
40% median income	3
50% median income	8
60% median income	4

The building’s California Mission-inspired architecture is in character with the design of the surrounding neighborhood. The 17 units wrap around three sides of a protected courtyard, landscaped to promote residential interaction and community building. Green features include durable siding, efficient mechanical systems, and solar panels to offset the utility costs for the common areas.

The residents of Acalanes Court will be low-income individuals and families at or below 60 percent of the area median income. In the interest of accommodating resident needs, Satellite housing provides a Service Coordinator for every development it builds. The Service Coordinator assists the residents in accessing essential services such as child care, financial empowerment assistance, and job training via a network of community organizations.

### Planning, Design, and Development Process

Changes in the regulatory environment and increasingly stringent building and energy codes are requiring designers and builders to create higher performing buildings. A major funding

source for affordable housing developments is the Low Income Housing Tax Credit program, which is administered in California by the California Tax Credit Allocation Committee (TCAC). TCAC allocates competitive tax credits to affordable housing developments through a point-based competitive process that both requires and offers incentives for the incorporation of various sustainable building practices. For example, at the time of Acalanes Court’s award, extra points were awarded to applications that agreed to exceed Title 24 energy efficiency standards by at least 15 percent. Furthermore, developers must incorporate three additional sustainable building methods such as using no-VOC paint and low VOC carpeting and adhesives, energy-efficient appliances with the ENERGY STAR rating, and water conserving technologies.

Recognizing the potential long term operational benefits of green building principles, Acalanes Court prioritized the incorporation of other green building practices. In addition to the long-term financial benefits of greener construction, the development team also appreciated the lower environmental impacts. As a firm committed to green housing, Mikiten Architecture advocates and promotes sustainability through energy-efficient design and the use of durable, green building materials. Moreover, Acalanes Court’s general contractor, J.H. Fitzmaurice, Inc., an Oakland-based firm, brought considerable experience in affordable housing construction and the implementation of green design.

## Sustainability Goals

- **Energy and Atmosphere:** Design the project to be 20 percent more efficient than Title 24 requires. Incorporate renewable energy in the form of solar panels.
- **Materials and Resources:** Select materials for durability, low-maintenance needs, and recycled content.
- **Water:** Reduce water consumption by installing low flow faucets.
- **Health and Safety:** Promote healthier indoor air quality through the use of no-VOC paints, low/no-VOC adhesives, and no added-formaldehyde in interior finishes.
- **Site and Community:** Connect residents with surrounding community by virtue of location and ease of access to BART, bus routes, and a variety of amenities. Take advantage of pre-existing services and resources while preventing further sprawl and dependence on automobiles.

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*An exterior wall built with 2x8s to buffer the sounds of I-680 and BART*



### Green Building Features at a Glance

Green Building Feature	Base Case	Benefits
<b>Site</b>		
<ul style="list-style-type: none"> <li>In-fill project</li> <li>Preserved existing redwoods</li> <li>Native/drought resistant landscaping</li> <li>Secure bike storage for 15 bikes</li> <li>Adaptable building/Universal design</li> <li>Brownfield site</li> <li>Construction IAQ management</li> </ul>	<ul style="list-style-type: none"> <li>Outward development</li> <li>Clear trees during development</li> <li>Lawns, non-native plants</li> <li>No bike storage</li> <li>No grab bar blocking in walls</li> <li>Greenfield development</li> <li>No consideration given to maintaining clean ducts and HVAC or dry building materials. No building flush-out prior to occupancy</li> </ul>	<ul style="list-style-type: none"> <li>Infill sites take advantage of existing utilities and deter sprawl</li> <li>Provide natural beauty and maintains ecosystem</li> <li>Native and drought resistant plants are more appropriate for the climate and require less water</li> <li>Bike storage encourages alternate means of transportation, as well as healthy choices for the residents</li> <li>Designing for accessibility will minimize waste and costs associated with renovation to accommodate new occupants, and can increase a building's longevity</li> <li>Brownfield projects restore polluted sites and avoid greenfield development</li> <li>Proper attention to IAQ issues during construction protects occupant health over the long-term. By limiting exposure to moisture and associated mold growth, it also contributes to project durability.</li> </ul>
<b>Structural Frame</b>		
<ul style="list-style-type: none"> <li>Parallel strand lumber (PSLs) over long spans</li> <li>Pre-manufactured roof trusses</li> </ul>	<ul style="list-style-type: none"> <li>Solid wood beams</li> <li>Stick framed trusses</li> </ul>	<ul style="list-style-type: none"> <li>Engineered lumber reduces the demand on old growth trees and is stronger than solid wood of comparable size</li> <li>Pre-manufactured trusses reduce cut waste on site</li> </ul>
<b>Exterior finish</b>		
<ul style="list-style-type: none"> <li>Stucco siding</li> </ul>	<ul style="list-style-type: none"> <li>Vinyl siding</li> </ul>	<ul style="list-style-type: none"> <li>Durable siding materials offer better protection for the building than conventional materials and require minimal maintenance</li> </ul>
<b>Plumbing</b>		
<ul style="list-style-type: none"> <li>2 A.O. Smith Cyclone BTH-300 combustion boilers with 300,000 BTU inputs</li> <li>Low-flow faucets</li> </ul>	<ul style="list-style-type: none"> <li>Conventional domestic hot water heater</li> <li>Conventional faucets</li> </ul>	<ul style="list-style-type: none"> <li>With 99% thermal efficiency, Cyclone boilers deliver more hot water with lower operating costs than comparably sized water heaters with lower thermal efficiencies.</li> <li>Low-flow fixtures can significantly reduce water bills as well as energy bills, as they reduce the amount of hot water used</li> </ul>

Green Building Feature	Base Case	Benefits
<b>Electrical</b>		
<ul style="list-style-type: none"> <li>Fluorescent lights throughout</li> </ul>	<ul style="list-style-type: none"> <li>Fluorescent lights in kitchen and bath only, incandescent in other rooms</li> </ul>	<ul style="list-style-type: none"> <li>Fluorescent lights require 2/3 less energy than standard lighting, which translates to money saved on energy bills, generate 70% less heat, and last up to 10 times longer</li> </ul>
<b>Appliances</b>		
<ul style="list-style-type: none"> <li>Gas powered clothes dryers</li> </ul>	<ul style="list-style-type: none"> <li>Electric clothes dryer</li> </ul>	<ul style="list-style-type: none"> <li>Gas powered models save money and time by drying clothes more quickly and working more efficiently</li> </ul>
<b>Roofing</b>		
<ul style="list-style-type: none"> <li>Concrete tile roofing</li> </ul>	<ul style="list-style-type: none"> <li>Asphalt shingles</li> </ul>	<ul style="list-style-type: none"> <li>Concrete tiles are fire resistant and more durable than conventional roofing materials</li> </ul>
<b>Insulation</b>		
<ul style="list-style-type: none"> <li>Formaldehyde-free fiberglass insulation</li> </ul>	<ul style="list-style-type: none"> <li>Fiberglass batt insulation with a formaldehyde binder</li> </ul>	<ul style="list-style-type: none"> <li>Insulation contributes to better indoor air quality by avoiding formaldehyde</li> </ul>
<b>Windows</b>		
<ul style="list-style-type: none"> <li>Energy efficient windows with low-E insulated glass and mid to high STC ratings</li> </ul>	<ul style="list-style-type: none"> <li>Single-paned windows with STC ratings of 18-26</li> </ul>	<ul style="list-style-type: none"> <li>Energy efficient windows can reduce unwanted heat gain or loss and reduce the energy costs of the homeowner. STC ratings of 27 to 44 (depending on location) minimize the transmission of highway and street traffic noise</li> </ul>
<b>HVAC</b>		
<ul style="list-style-type: none"> <li>Kitchen range hoods vent to outside</li> </ul>	<ul style="list-style-type: none"> <li>Range hoods circulate air back into kitchen</li> </ul>	<ul style="list-style-type: none"> <li>A range hood that vents to the exterior promotes a healthier indoor air quality in the kitchen, and prevents moisture buildup</li> </ul>
<b>Renewable energy</b>		
<ul style="list-style-type: none"> <li>Solar panels for common areas</li> </ul>	<ul style="list-style-type: none"> <li>Full reliance on electricity from the grid</li> </ul>	<ul style="list-style-type: none"> <li>The electricity generated onsite will supply up to 50% of the energy needs of the common spaces and reduce the development's demand on the power grid.</li> </ul>
<b>Interior finish</b>		
<ul style="list-style-type: none"> <li>No-VOC paints</li> <li>Low/no-VOC adhesives</li> <li>No-added formaldehyde</li> <li>Finger-jointed trim</li> </ul>	<ul style="list-style-type: none"> <li>Oil-based paints</li> <li>Adhesives with high-VOCs</li> <li>Finishes and sealants that contain formaldehyde</li> <li>Long lengths of oak/pine trim</li> </ul>	<ul style="list-style-type: none"> <li>Indoor air quality is improved with the reduction of Volatile Organic Compounds (VOCs) in paints and adhesives and through the absence of formaldehyde</li> <li>Finger jointed trim consists of short high-grade lengths of wood from otherwise low-grade lumber glued together to form long lengths</li> </ul>

Green Building Feature	Base Case	Benefits
<b>Flooring</b>		
<ul style="list-style-type: none"> <li>• Lonseal LonEco recycled content vinyl flooring</li> <li>• Shaw PETO II 100% Eco Solution Q premium brand rolled carpet</li> </ul>	<ul style="list-style-type: none"> <li>• Vinyl with no recycled content</li> <li>• Conventional carpet</li> </ul>	<ul style="list-style-type: none"> <li>• LonEco vinyl contains up to fifty percent recycled vinyl and wood powder, reducing the pressure on resources</li> <li>• Eco Solution Q contains at least 25% reclaimed fiber from post-industrial and post-consumer waste and is as durable as virgin fibers</li> </ul>

## Lessons Learned

Designing and building an infill project can be challenging when it comes to accommodating the existing environment. In this case, two major site challenges to the success and livability of Acalanes Court were the steep slope of the site and the noise from the adjacent freeway and BART tracks. The 24 foot slope made it impossible to connect with the city's sanitary sewer and storm drain systems at the front of the lot, so hundreds of linear feet of line were necessary to connect to a more distant line downslope. Similarly, Acalanes Court incorporated higher-cost windows and building features to address the site's high noise levels. The team's acoustical consultant analyzed the site noise and proposed building design and specified the needed STC-rating of the windows to meet code requirements. In addition, the four living units with the most exposure to the freeway were given double exterior walls to further buffer the sounds and meet building requirements. Since funding for affordable housing projects is usually based on a per-unit amount, Acalanes Court was forced to incorporate major site and offsite improvements in a budget limited by its small development size.

The primary lesson learned from the development of Acalanes Court is that while green building is an ideal goal in affordable housing, the development team should carefully examine and research each principle to ensure that it makes sense economically for the development and will truly benefit future residents. While many green features are more and more accessible, they are still not widely used and it is important to make sure that the costs of incorporating them are realistically captured and that the subcontractor and/or supplier are familiar with the material and/or technology. For example, the development team installed a photovoltaic (PV) system at Acalanes Court via a local design-build firm. During the construction period, the solar company saw a 25 percent increase in materials and consequently, proposed an increased contract price or a smaller system. As Acalanes Court had committed to install a PV system and depended on a set amount of utility expenses during operation, the incorporation of the PV system was critical to the development's success. While solar systems are more popular, there are only a handful of contractors that provide systems for multifamily developments. Unable to find an alternative proposal, Acalanes Court absorbed the unexpected cost overruns of the system, forcing value-engineering in other areas of the building. In addition, the incorporation of green features into a small development was especially challenging. With fewer units to spread the costs of non-standard green materials and features, the cost differential between the green materials and standard components was much more significant than it would have been with a larger development.

Despite the challenges, Acalanes Court's development as a green, multi-family affordable housing community is a successful example of green building. Acalanes Court exceeds Title 24 standards by 20 percent, incorporated a multitude of sustainable building methods, and features a photovoltaic

*Adaptable building: Blocking in a bathroom wall for grab bars*



system that will return Satellite's investment within 8 years. Ultimately, Acalanes Court is an affordable home to seventeen working families in Walnut Creek and a great accomplishment by the City of Walnut Creek, County of Contra Costa Community Development Department, funding agencies, and the development team.

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### About the Green Affordable Housing Coalition

We are a coalition of San Francisco Bay Area public-sector and private-sector professionals committed to incorporating green building practices into the construction, operation, and maintenance of affordable housing. Through education and outreach, we promote the use of construction materials and practices that conserve energy and water; minimize construction waste; use resource-efficient materials; promote good health for both the construction workers and the occupants; are durable and easily maintained; are integrated to the site and region; and enhance housing affordability. Success in this endeavor will produce economic and quality-of-life benefits for tenants, improve the financial bottom line for property owners, and generate economic and environmental benefits for the local, regional, and world community.

For more information about the Coalition, visit our website at [www.greenaffordablehousing.org](http://www.greenaffordablehousing.org) or call Bruce Mast at 510-845-0472.

### Disclaimer

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