Case in Point…

A GREEN AFFORDABLE HOUSING COALITION Case Study

MF-006

Valley Oaks Villas

Many middle income families in the Bay Area earn too much to qualify for affordable housing, but without some kind of assistance, the cost of a home is often prohibitive. MCM Design Build Group recognized this need for workforce housing and developed Valley Oaks Villas to provide homeownership opportunities to first time homebuyers. MCM's building practices and material selections are driven by a commitment to the environment, but above all else MCM is committed to building homes that are both healthy and affordable for the occupants.

Neil Kelley formaldehyde-free cabinets with no-VOC finishes grace the kitchens of Valley Oaks Villas Homes

Project Summary

- **Location:** 100-232 Valley Oaks Drive
- **Completion date:** Summer 2006
- **Owner/developer:** Kilburn Investments Inc.
- **Architect:** MCM Design Build Group
- **General contractor:** MCM Healthy Buildings
- **Other:** Landscape Architecture by Gretchen Stranzl McCann; Civil Engineering by Reichers & Spence; Surveying & Construction Staking by Triad Holmes Assoc.

Project Description

Valley Oak Villas is a two-phase development of fifty-six craftsman-style town homes located off of Kilburn Avenue, just west of Route 29 in Napa. The units are grouped together with alternating corridors of exclusive use common areas and front entrances. Each cluster has its own designated picnic area to enhance the neighborhood feel. The development also includes a common area with a grill and benches, and a children's play area.

Published January, 2006

By the Numbers…	
Parcel size:	3.63 acres
Total sq. ft.:	92,000 ft^2
Number units:	56
Site acquisition costs:	$3,000,000
Development costs:	$1,000,000
Funding sources:	75% lender 25% investor equity
Ave. cost / square foot	$195 (hard costs)
Affordability targets:	80%-120% of median income

MCM's goal was to create compact, highly efficient housing with an emphasis on quality of space, not quantity. All homes in Valley Oaks Villas are either two bedroom or three bedroom townhomes, and average less than 1,150 square feet per unit. Twenty-nine homes include an auxiliary or "granny" unit. These additional spaces help make this development affordable for first time homebuyers, as money they receive from renters can help offset a portion of their monthly mortgage payments.

Planning, Design, and Development Process

Stick framing is the standard in residential construction, but steel framing is central to MCM's building philosophy. As a design/build organization, MCM has a hand in all aspects of the project, from planning and design to the actual construction. This approach both lowers cost and allows a high measure of quality control. The architects and engineers on staff work exclusively with steel framing, and as general contractor MCM handpicks the subcontractors. This gives MCM the opportunity to educate and train the workers who are new to steel framing. Steel was chosen for two reasons: for its environmental impact and for its role in promoting a healthy building. Steel is both made from recycled materials and is 100% recyclable itself, and its use reduces the demand for lumber. Unlike wood, steel is inorganic and will never grow mold, a significant contributor to poor indoor air quality. Further, steel framed buildings have lower insurance costs due to this resistance to water damage.

In addition to steel, many of the other construction and finish materials for Valley Oaks Villas were chosen for their healthy effect on indoor air quality. In lieu of carpeting, the ground floor of all units feature stained concrete, and for the upper levels the homeowners can select cork, bamboo or wood laminate flooring. All bathrooms have stained concrete floors and tub surrounds. The adhesives and paints used throughout are no-VOC, and the cabinets and vanities are formaldehyde-free with no-VOC finishes. MCM opted for aluminum windows with a

Stained concrete creates a beautiful bathroom floor and tub surround.

factory applied finish instead of vinyl windows that off-gas.

Sustainability Goals

- **Energy and Atmosphere:** Lower energy consumption with a well-insulated building envelope and the inclusion of Energy Star appliances.
- **Materials and Resources:** Reduce deforestation by substituting steel for wood in structural and non-structural applications. Use material with recycled content to ease pressure on resources.
- **Water:** Reduce the amount of water used by including low-flow fixtures and efficient appliances.
- **Health and Safety:** Create the healthiest indoor air quality and home possible by using methods that deter mold growth and by incorporating interior finishes with no-VOCs.
- **Site and Community:** Provide outdoor areas to encourage resident interaction as well as a safe place for children to play.
- **Land Use:** Build medium density, two and three story attached housing to minimize the impact on land resources

Rinnai tankless systems provide the homeowners with hot water on-demand.

Green Building Features at a Glance

Green Building Feature	Base Case	Benefits
Site and Community		
• Community area with BBQ	• No community area	• Outdoor common areas promote residential interaction and community building
• TotTurf safety mat with recycled rubber	• Mulch around play equipment	• TotTurf provides a safe surface for the children's play area while incorporating post-consumer recycled rubber tires
Foundation		
• High volume flyash in concrete (30%)	• 100% Portland cement (+ sand and aggregate)	• Flyash is waste from coal-burning plants, and its use reduces the pressure on resources and produces a stronger concrete
Structural frame		
• 35-40% recycled content steel members	• Wood studs	• Steel is 100% recyclable, has the highest strength to weight ratio of any building material and is not vulnerable to termites or mold
• Studs at 24" on center	• Studs at 16" on center	• 24" o.c. framing means less material used, less waste generated, and better insulated walls
• Engineered lumber or steel beams	• Solid hewn joists and beams	• The use of engineered lumber or steel beams reduces the demand for old growth trees
Exterior finish		
• Fiber cement board siding and trim	• Wood siding and trim	• Fiber cement siding is durable, fire and pest resistant, and reduces the demand for redwood and cedar shingles
Plumbing		
• AquaPEX plumbing	• PVC pipes	• PEX is free of toxins and heavy metals, uses no off-gassing glues, and is resistant to scaling and deposit buildup
• Sterling dual flush toilets 1.6/.8 gallons per flush	• Standard single flush toilets	• Uses an average 20% less water than 1.6 gallons per flush Ultra Low Flush Toilets
• Rinnai Tankless hot water heater	• Traditional hot water tank	• Heats water on demand, saving water and energy
Appliances		
• Energy star refrigerators and clothes washers with upgrade option of horizontal load axis	• Conventional refrigerators and clothes washers	• Energy Star appliances are more energy efficient than their conventional counterparts, and can save on water and utility bills. The horizontal access saves water by reducing the volume.

Green Building Feature	Base Case	Benefits
Insulation		
• Demilec Sealection500 spray foam insulation	• Fiberglass insulation with formaldehyde binder	• Makes homes more energy efficient, comfortable, quiet and less dusty
Windows		
• Western Window Systems: dual-glazed aluminum windows • Solatubes in four phase I homes and all phase II homes	• Single-paned vinyl windows • No skylights	• The aluminum frames with a thermal break are durable and require little maintenance, and the dual glazing improves the window's energy efficiency • Solatubes increase the amount of daylight inside and reduce the need for artificial light
HVAC		
• Puron refrigerant charge for air conditioners • Blower door test	• Freon for the air conditioners • No blower door test	• Puron does not contain chlorofluorocarbons (CFCs) and is classified as a non-ozone-depleting refrigerant • Blower door tests can help identify air leaks as well as sources of indoor air quality problems, such as carbon monoxide.
Interior finish		
• Sherwin Williams Harmony no-VOC paint • No-VOC adhesives and finishes • Neil Kelly cabinets • Concrete countertops	• Oil-based paints • Adhesives and finishes with VOCs • Cabinets with MDF boxes containing urea-formaldehyde • Plastic laminate countertops	• Paint is durable, low-odor, anti-microbial, formulated without silica, and will promote good indoor air quality • No-VOC adhesives and sealants do not off-gas so they contribute to healthier air quality • Formaldehyde-free cabinets with low/no-VOC finishes • Concrete countertops are durable and do not have an MDF or particle-board substrate that would off-gas formaldehyde
Flooring		
• Cork, bamboo, • Wood laminate, stained concrete	• Hardwood flooring • Carpet	• Rapidly renewable materials such as cork and bamboo reduce the demand on non-sustainable hardwoods • The absence of carpet contributes to better indoor air quality

Lessons Learned

As MCM's first venture into green and healthy multi-family housing, Valley Oaks Villas has been a learning experience. MCM will take the knowledge gained from the first phase of building and apply it to Phase II and future multi-family workforce projects, several of which are already in MCM Healthy Building's pipeline.

The project brought with it challenges associated with steel framing on a large scale. The panelized walls from Mexico reduced cost and onsite waste, but required the subcontractors to be trained to work with the steel.

The steel framing of a Phase II unit

One of the challenges has been balancing the need to keep the project affordable for the homeowners with the need to keep it profitable for MCM. All but four of the Phase I homes were pre-sold, which locked MCM into purchase prices that no longer reflected market conditions at the time of completion. Also, the various upgrade options in conjunction with the presale had the unintended effect of turning the units into semi-custom homes. MCM would like to keep Valley Oaks Villas an owner-occupied, local workforce community in perpetuity. As it is now, however, residents can sell their homes at market rate after only one year of occupancy. For the second phase of the project and for upcoming affordable projects, MCM may consider deed or resale restrictions.

MCM saw Valley Oaks Villas as an opportunity to push green and healthy building technology to a higher level and apply it to multi-family housing. Both the internal and external support helped make the development a success. The in-house team has proven adept at overcoming the day to day challenges, the lender and major investor have been especially supportive, and so far the project has been very well received by the homebuyers. Valley Oaks Villas has also generated a lot of interest from other builders and created positive publicity for green and healthy construction.

MCM chose resource-friendly engineered lumber over dimensional lumber for the joists and beams.

For more information

Kirsty Shelton
Planning & Project Development Manager
707.265.0265 Phone
707.265.0285 Fax
Kirsty@mcmdbg.com

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 or call Bruce Mast at 510-845-0472.

Disclaimer