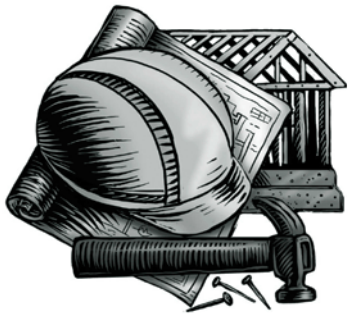
GREEN BUILDING RESIDENTIAL

casestudy



DAKOTA RIDGE VILLAGE TOWNHOUSE

SPECIFICS

- Dakota Ridge Village Townhouses
  611 Dakota Boulevard
  Boulder, CO
- Built: 2003
- Annual energy savings due to efficiency measures: $220
- Square Feet: 2,574

ARCHITECT/CONTRACTOR

- Markel Homes
  5723 Arapahoe Avenue
  Suite 2A
  Boulder, CO 80303
  303.449.8689
  www.markelhomes.com

FEATURES

- Xeriscape landscaping
- Low-E windows
- Insulation levels exceeding code
- 92% high-efficiency furnace
- E-Star rating of 86 points
- 62% of construction waste recycled
- Engineered lumber for floor and roof
- Hardiplank cement siding
- Choicedek 100% recycled maintenance-free decking
- Radon mitigation system
- Low VOC paint

Markel Homes is a local developer who has made Boulder their home for thirty years. With a deep appreciation of the unique opportunity to build something about which the community at large would be proud, Markel Homes is in the process of constructing Dakota Ridge Village. Dakota Ridge Village is located on 57 acres within the city of Boulder at the base of the Front Range of the Rocky Mountains. Condominiums, single-family homes, townhouses and commercial spaces are all included in this community vision. Natural features of the land and neighboring structures were taken into consideration in the design process. Energy efficiency and air quality are important features of each dwelling.

The estimated annual energy savings are calculated to be $220 per year per 2,574 sq. ft. foot townhouse. The calculation for this takes into account heating, cooling, hot water, lights, appliances and annual service fees. The estimated reduction in CO_2 emissions is estimated to be 2.9 tons.

SPECIFIC PRODUCTS AND DESIGN FEATURES

Sustainable Sites

Location Efficient Project – Located on the popular RTD-Skip bus route makes Dakota Ridge a location efficient project. All homeowners receive an Eco-Pass encouraging the use of public transportation.

Water Efficiency

Xeriscape Landscaping – *www.xeriscape.org*
Xeriscape landscaping is provided at each townhouse, with drip irrigation installed. Xeriscape landscaping reduces home water use dramatically.

Energy & Atmosphere

Windows & Patio Doors – Summit Windows • *www.summitwindows.com*
All windows are constructed with double-pane (two pieces of glass separated by an air space) Low-E glazing and vinyl frames. In the winter the high performance glass reflects energy back into the home. In the summer, it reflects energy away from the home. These windows were selected to create greater comfort and energy efficiency. The National Fenestration Rating Council (NFRC) certified U-factor for these windows=0.35. *www.nfrc.org*

DAKOTA RIDGE VILLAGE TOWNHOUSE

Energy & Atmosphere (continued)

Insulation – The townhouse was insulated with blown R-38 in attic spaces; R-38 unfaced batt insulation in vaulted and flat ceilings; R30 unfaced batt insulation in cantilevered floor; R30 batt insulation in floors over the garage; R-19 unfaced batt insulation in the exterior walls and R13 white vinyl faced blanket insulation on inside face of unfinished and finished basement wall. However, even with its excellent energy rating, Markel Homes has constructed subsequent townhouse buildings in the same project with wet-spray cellulose insulation in the walls and ceilings. Cellulose insulation is made from 80-90% recycled materials. It is blown into tight cavities, which increases the R-value. It is formaldehyde free, fire-resistant, reduces air leakage and contributes to a more comfortable and energy efficient home.

HVAC – A Janitrol 100,000 BTU, 92.6% AFUE efficient natural gas furnace with pilot-less electronic ignition was installed with a day/night setback thermostat. This is considered a high-efficiency unit. The thermostat is a Honeywell Standard Programmable model so that the homeowner may program the heating system to use resources when they are needed.

E-Star Rating – The Townhouse at 611 Dakota Ridge Blvd. received an E-Star rating of 86 points (out of 100).

Materials & Resources

Construction Waste Recycling – Waste-Not Recycling • *www.waste-not.com*
Markel Homes subcontracted with Waste-Not Recycling to recycle construction waste for the entire project. 62% of all construction waste has been diverted from the landfill.

Framing Materials – Markel Homes uses engineered lumber products in floor and roof construction. Floors were assembled with LPI32 "I" joists with Oriented Strand Board (OSB) sheathing. Roofs were assembled with locally engineered and manufactured trusses and sheathed with OSB. OSB is desirable because unlike other structural panels, OSB is made from smaller, faster-growing trees and is therefore easier and more readily available for harvesting. That means it's less expensive to produce and helps preserve old-growth forests. Using OSB, and engineered lumber result in stronger, more efficient structures that require less wood, hence less trees.

Siding Products – Hardiplank • *www.jameshardie.com*
Hardiplank was used for siding, manufactured by James Hardie Siding Products.
Hardiplank is composed of Portland cement, ground sand, cellulose fibers, selective additives and water. It does not contain asbestos, glass fibers or formaldehyde. It may be installed where non-combustible construction is required. Hardiplank needs to be replaced less frequently than other siding options which keeps waste out of the landfills. Also Hardiplank has been created with air quality in mind.

Decking – Choicedek • *www.choicedek.com*
Deck materials are made of low-density 100% post-consumer recycled polyethylene milk jugs and grocery bags mixed with 100% post-industrial Ash Juniper fibers, which are steam-treated, pre-cleaned and kiln dried. The dead trees are salvaged from a cedar oil fragrance manufacturer in Texas. No maintenance is required; it will not split, crack or rot, and it has a low skid surface—greater slip resistance than wood. Alternative decking materials are a wise choice because they require less natural resources in their inception, last longer, require no toxic maintenance, and unlike pressure treated wood contains no Chromated Copper Arsenate (CCA) a known carcinogen.

Indoor Air Quality

Radon Mitigation – 4" PVC pipe is installed under the slab of the townhouse unit with a pipe stubbed up for future exhaust of potential radon gas. This is a precaution in the event that radon gas is discovered within the unit in the future.

Interior Paint – Sherwin Williams • *www.sherwinwilliams.com*
Sherwin Williams low volatile organic compound (VOC) paint was used to reduce VOC emissions improving indoor air quality.

For More Information

Visit the city of Boulder's Planning & Development Services' web site at *www.ci.boulder.co.us/pwplan/index.htm*

For information on the city of Boulder's green building program, Green Points –
visit *www.ci.boulder.co.us/buildingservices/codes/energycode.htm*

Sponsored by the city of Boulder's Office of Environmental Affairs *www.environmentalaffairs.com*