

Project Description

Location:

- Pinedale, WY

Project Type:

- Earth Sheltered Residential Home with Green Roof

Size:

- 4160 sqft

Products Used:

- Quad-Lock R-32 Wall System using both 6" and 8" wall widths
- Quad-Deck 9", 10" and 11" thick panels depending upon span
- Colphene LM300 Damp-proofing applied to walls and top of concrete roof
- Burke Hypalon Roofing
- Solatube light units
- Specialized concrete form system for light, venting and fireplace exhaust units
- ICFVL Ledger Insert Plates (for mounting cabinets, shelves, flat screen TVs and other wall items)

Project Partners:

- Advantage Exteriors - Gold Certified Quad-Lock Installers (ICF Contractor)
- Energywise Sustainable Products (Quad-Lock Dealer)
- King Engineering, Cheyenne WY (Engineering & Layout)
- Top Line Installers (Burke Hypalon Roofing)

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Wyoming Earth Sheltered Home

Challenge:

The initial challenge was the timeline. The first inquiry from the homeowner came via the internet in the early part of 2008. The preliminary project concept and design was started in June, 2008 with a goal of having the home's shell weather-tight by October 1st. Details and layout were completed in 25 days and construction started just before July 1st, 2008. The 4-man crew traveled 8 hours one-way to work on the project, working shifts of 8 10-hour days then taking 6 days off.

Additional challenges were the homeowner's desire for an earth-sheltered design, along with a rather remote, rural building site. All construction materials, except for concrete, were shipped in.



Building Efficiencies:

- The Advantage Exteriors crew installed Quad-Lock R-22 components below grade and R-30 components on the exposed wall surfaces.
- The owners selected dual pane windows and an in-floor radiant heat system. These choices, together with the extensive solar gain from the sun hall design, should allow the structure to operate at a 70% savings over a comparable structure in Pinedale, WY. (*At publication, the home has not yet been completed so energy performance data is not available.*)
- Final exterior and interior wall finishes as well as window installation methods will affect the overall energy efficiency of the structure.



Solution:

In order to meet the short construction timeline it was imperative that all aspects of the project come together expediently and efficiently leaving little time for second guessing or costly errors. With previous experience in building an earth-sheltered home, Energywise Sustainable Products was eager to lend expertise to the homeowners in assembling a team that understood the design concept and was willing to put forth the extra effort it would take to meet the tight time schedule. Choosing high quality, energy efficient products like Quad-Lock and hiring quality installers committed to working together got the project off to a solid, fast start.



Summary:

The structural shell of the 4160 sqft earth sheltered home was completed in 64 labor days by a crew of four. The visible portions of the exterior design features reflect a southwestern Santa Fe style home and incorporate as many energy saving products as possible. Approximately 250 yards of concrete went into the 550 linear feet of footers and walls and 4100 sqft of roof. The design includes a retaining wall on either end of the home constructed in a 35-foot radius, allowing more southern exposure and an additional window into the master bedroom. Rapid weather changes and countless mosquitoes were the largest environmental factors to overcome.