

# **ALHEIM COMMONS – SUSTAINABLE DESIGN ELEMENTS**

## **Wells National Estuarine Research Reserve**

### **SUSTAINABILITY GOALS**

- To use resources efficiently
- To create a healthy environment
- To reduce waste
- To reduce fossil fuel consumption
- To recycle

### **DISMANTLING AND DEMOLITION**

- Contractor who specializes in disassembling old barns was hired to take apart an existing two-story 19<sup>th</sup>-century farmhouse with attached barn located on the site. Contractor dismantled and took from the site for resale to buyers all posts, beams, sills, plates, braces, purlins, wall and roof sheathings, old hardware, doors, windows, and other items of antique value.
- The wood, plaster, metal, glass, and other parts of the house deemed unusable by the contractor – the demolition debris – were taken off site and sent to a recycling center. Up to 65% to 70% of this demolition debris was recycled.
- Some furniture in the new building was made from the antique wood taken from the old house and barn, including kitchen table, coffee tables, desk, end tables, sections of other furnishings.

### **PLANNING AND SITE WORK**

- Alheim Commons is built on a previously developed site rather than on undisturbed land.
- The development footprint corresponds with the footprint of a former farmhouse and barn, minimizing site disturbance.
- Erosion control measures were in place during construction. The erosion control plan conformed to EPA standards (EPA-832-R-92-005).
- Post-construction storm water management was designed to work with the existing topography and follow the natural drainage patterns of the site; there is no net increase in the rate or quantity of storm water runoff.
- Native topsoil was stockpiled on site and reused. Trees were preserved with minimal thinning.
- All roadways, parking areas and walks are of permeable material.
- Reclamation of green space at front of building by removing roadside parking.

- ☑ The existing farmhouse and barn on the site was dismantled for reconstruction at another site. Debris not useful for the farmhouse reconstruction was to be recycled to the greatest extent possible.
- ☑ All new landscaping is done with native plant species.
- ☑ Use of salvaged granite was used to create new landscape features.
- ☑ There is no permanent landscape irrigation system installed.
- ☑ Bicycles and bicycle storage will be provided for Alheim Commons guests.
- ☑ The contractor created a waste management plan that was distributed to its employees and subcontractors.

## **ENERGY**

- ☑ Optimized building envelope and minimized air infiltration through the use of dense-pack cellulose insulation at exterior walls (creation of a “tight” building envelope).
- ☑ A vestibule/air lock has been provided at the primary entrance, helping to minimize heat loss (reducing heat loads).
- ☑ The hydronic (forced hot water) system has a 95% efficient (Energy Star rated) propane-fired, direct vent boiler and water heater (Trinity Ti by NTI). Each guest room has a zone valve with a wall mounted programmable thermostat controlling baseboard fin-tube radiators. Commons areas are heated with a hydronic radiant floor system. The heating system has been zoned to allow for maximum flexibility during partially occupied periods; the control system has been designed for ease of use, be energy efficient and durable, and easy to maintain.
- ☑ Windows are operable, allowing for natural ventilation when needed.
- ☑ Energy efficient compact fluorescent light fixtures; occupancy sensors in all bathrooms.
- ☑ The building uses natural cooling – there is no air conditioning system. Mechanical ventilation (with heat recovery) is provided to assure sufficient air changes and improve indoor air quality.
- ☑ “Low- E Maximizer Plus” argon gas filled insulated glass with low thermal conductive spacers, improving the energy efficiency of the glazing. (Eagle Talon double hung and awning windows with low maintenance aluminum clad exteriors).
- ☑ Energy Star kitchen and laundry room appliances (when available).
- ☑ “Solatube” tunnel skylights are use to provide daylighting to the west wing interior double loaded corridor, reducing the need for artificial lighting during daylight hours.
- ☑ Infrared switch sensor and time clock to manage exterior parking and path lighting.
- ☑ Green electricity for the building is purchased through Maine PowerOptions and consists of environmentally friendly hydropower and biomass power plants located in Maine.

- ☑ Blue Link Solar Panel (a photovoltaic system) located in back of the building connects to the grid in the mechanical room and supplements the electrical supply.

## MATERIALS

- ☑ 50% of the lumber used in construction came from Maine forests.
- ☑ Use of salvaged lumber to construct some of the interior furnishings, including dining room table, coffee tables, desk, end tables, night stands.
- ☑ The use of pre-engineered wood roof trusses, reducing on-site construction waste material.
- ☑ Spray in place cellulose insulation installed to a density of 3.5-lbs./cu. ft.
- ☑ 30 year warranted roof shingles.
- ☑ Non-toxic water-based and low VOC joint sealants.
- ☑ Acoustical ceiling tiles with 27%-43% (min.) recycled content (Armstrong Cortega).
- ☑ Minimal odor and zero VOC paint products (Pittsburgh Paints Pure performance Interior Latex – Green Seal Certified).
- ☑ Pre-finished bamboo tongue and groove flooring at Commons Room. Bamboo is a rapidly renewable resource and the adhesives used in the manufacturing process have virtually no formaldehyde.
- ☑ Linoleum flooring (Marmoleum by Forbo) at Guest Rooms and Kitchen.
- ☑ Hardiplank fiber cement exterior clapboard siding (installed as part of a rain screen exterior wall system that allows moisture to escape before damaging side wall materials).
- ☑ Regionally harvested weather resistant wood products (Eastern white cedar) used in place of pressure treated lumber products. Minimal use of pressure treated lumber

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