

SITKA APARTMENTS

ENERGY AND RESOURCE EFFICIENCY MEASURES

OVERVIEW

The Sitka Apartments was designed, engineered, and constructed with careful attention to environmental features. And it will be maintained with the same awareness. The staff and contractors will use nontoxic cleaning products and methods.

The major focus of the environmental design was to reduce the use of energy and natural resources in the ongoing operation of the building. The apartments have high-efficiency appliances and the building has high-efficiency heating, cooling, and hot water heating equipment.

Most of all, we paid extraordinary attention to eliminating air infiltration and to providing healthy indoor air. By eliminating air infiltration, residents will have fewer drafts and will lose less of their heat through the walls, windows, and roof (the building's "envelope").

The tight "envelope" allows us to accurately balance the supply and exhaust air in the building. The hallways are supplied with 100% fresh outside air (no recycled return air) and that supplies the make-up air for the continuous exhaust fans in the apartments.

DETAILS

Here are some details of the eco-friendly features of the Sitka

Low-Energy Traction Elevators

- 50% reduction in electricity used by elevator by installing traction elevators in place of conventional hydraulic elevators
- Saves 2 air conditioning units that would be required for hydraulic elevator machine rooms
- (The elevators move faster too. Not an environmental feature, but nice for residents.)

Lighting

- Garage lighting uses less energy than recommended by code
- Hallway lighting – energy savings from 3 strategies
 - Use all compact fluorescent fixtures
 - Design placement of fixtures for even lighting levels so that minimum wattage is needed
 - Control operation of non-emergency fixtures with occupancy sensors. Light levels in hallways drop to lower levels when the halls are empty and come back to full lighting levels whenever someone is in the hall.
- Lighting in other common rooms (baths, laundry, trash, bikes rooms, storage, etc.) and leasing offices are controlled by occupancy sensors so that lights will be on only when room is in use
- Exterior fixtures are controlled by photocells (all lights come on with photocell) and timers (to turn off non-egress lighting after 11:00 p.m.)
- All apartment fixtures are supplied with compact fluorescent lamps (in a warm light color) to reduce tenants' electricity bills.

Appliances

- Common Laundry Rooms -
 - Front-load Energy Star washers in common laundry rooms
 - Gas dryers instead of electric in common laundry rooms
- Apartments
 - All refrigerators, dishwashers, and washing machines are Energy-Star rated (note only 1 and 2 bedroom apartments have dishwashers and only 12 ground floor apartments have washing machines).

Insulation

- R-21 batts in exterior walls (11% higher than code) for better apartment insulation
- “Advanced framing” techniques - including studs at 24” on center – increase the insulating value of the walls (and reduce the use of lumber)
- R-32 rigid insulation (5% higher than code) at roof is mounted on top of trusses to reduce heat loss through the framing and to reduce drafts caused by ventilated ceiling cavities.
- R-15 batt insulation in ceilings and interior walls reduces heat transfer to adjacent units

Air Tightness

- The Sitka uses an unusually draft-free construction system to ensure comfort, energy-efficiency, and indoor air quality
 - All joints and fasteners on exterior sheathing are caulked or covered in a self-adhesive membrane to prevent infiltration of air into the building and to minimize heat loss through the walls.
 - The exterior walls are wrapped in commercial Tyvek to add an additional layer of protection against air and moisture infiltration.
 - All door and window openings are double-caulked and wrapped with self-adhesive membrane.
 - Windows are commercially-rated for strength and have low infiltration ratings
 - As noted above, rigid insulation on top of roof framing (instead of ceiling batts) maintain air-tightness of building envelope and to reduce heat loss through light fixtures and other ceiling penetrations.
 - Shafts for heating and exhaust air are lined with sheet metal to reduce future air leakage. (This allows us to reduce the volume of hallway make-up air that needs to be heated or cooled by 20%.)

Hot Water System

- The Sitka uses central gas-fired hot water heaters rather than less expensive, but inefficient individual electric hot water heaters
- Hot water heaters are 98% efficient
- Energy Star dishwashers in apartments reduce hot water use
- Using high-quality low-flow showerheads (2.0 gpm) and aerators (1.5 gpm) reduces hot water use
- Apartments have submeters for hot and cold water. Tenants who use less water will get the financial benefits of their conservation.

Heating, Ventilation, and Air-conditioning (HVAC)

Building common areas

- High-efficiency heating and cooling equipment for common areas reduces energy use.
- Common-area HVAC equipment has economizers to switch to outside air for heating and cooling when temperatures permit doing so.
- Common-area HVAC has programmable thermostats with setbacks for off-peak periods.

- The laundry rooms have a separate make-up air unit and cooling unit (rather than being heated and cooled by the hallway system). The dryers have a circuit sensor system that tells the HVAC equipment that a dryer is running and causes it to increase amount of supply and exhaust air. This eliminates the need to exhaust large amounts of air when the dryers are not operating.
- The leasing office and other separate common spaces use heat pumps instead of conventional electric fan coil units for much greater energy-efficiency.
- The work done to make a tighter building envelope allows the HVAC engineers to design for less leakage and to reduce the amount of heating and cooling by approximately 10%.
- The building is designed to have a slight positive pressure (more air being mechanically supplied than is being mechanically exhausted) so that the apartment exhaust fans do not pull outside air in through windows, electrical outlets, and other penetrations.
- The parking garage uses natural ventilation as much as possible. This is supplemented by exhaust fans that are controlled by carbon monoxide sensors and operate only when needed – ensuring healthy air while conserving energy.

Apartments

- Apartments have zonal heating systems with separate electronic thermostats.
 - The zonal system allows tenants to turn off the heat in rooms that aren't being used.
 - The electronic thermostats increase the efficiency of the heating system.
- All bedrooms and living rooms have ceiling fans for cooling.
- Large windows open all the way to the ceiling to improve ventilation.
- Windows have high quality low-e coating to reduce summer heat gain and winter heat loss.
- Whenever possible, windows are oriented so that the operating section of the casement faces the prevailing summer breezes. This allows much greater natural ventilation in the apartments.

Air quality

- The apartments and common areas use low or zero-VOC paint, carpet, and sealants to reduce off-gassing.
- All apartments have a continuous ventilation fan that exhausts 33 CFM at all times. The make-up air for the exhaust fan is supplied by the hallway ventilation system. This provides heated or cooled air to the apartments so that the tenants do not have extra utility costs.
- The hallway air supply is made up of 100% filtered outside air. There is no return system on the hallway units so none of the air that is exhausted gets pumped back into the hall.

Water Use

- The use of submeters encourages conservation by residents and has resulted in 20-30% reduction in water use in other buildings.
- The apartments have water-conserving fixtures - 2.0 gpm showerheads, 1.5 gpm aerators on faucets, and 1.6 gpf toilets. We have researched and tested these to ensure that they also operate well.
- The courtyard landscaping uses only native plants and has an efficient irrigation system (drip systems, rain sensors) to reduce outdoor water use.

Materials

- Structural systems use manufactured wood beams when possible to conserve lumber. Studs are placed at 24" spacing when possible. Though this requires larger studs (e.g. 2x6 instead of 2x4), it results in less overall lumber use. We also use finishes such as MDF trim (a manufactured product) and wire shelving when possible to minimize lumber use.
- Building uses recycled content sheetrock and insulation
- Structural concrete uses maximum feasible fly ash content.