

# Colonnades Residential Building

The Colonnades Residence Halls C, D and E, now known as Kivette Hall, William W. Staley Hall and Colonnades E respectively, were designed and constructed to be high performance buildings with a lighter impact on human and environmental health compared to a typical building. The buildings received LEED Gold certification. LEED stands for Leadership in Energy and Environmental Design. It is an internationally recognized benchmark for the design, construction and operation of high performance green buildings. LEED was created by the U.S. Green Building Council (USGBC) a non-profit organization committed to expanding sustainable building practices.



The new Colonnades residence halls complete the Colonnades Neighborhood, a residential community of 5 buildings, located behind the Koury Business Center. Each of the new residence halls is about 33,500 square feet and consists of student residential rooms and common or lounge space, as well as laundry and kitchen space. Kivette Hall is also the location of the Colonnades Neighborhood office. Construction began in the summer of 2010 and completed in August 2011.

## Sustainable Sites



The new Colonnades residence halls are located within walking distance of many commonly used buildings on campus, such as Colonnades Dining Hall, Belk Library and Moseley Center. Students can also access the Biobus system within a short walk. The project site was designed to provide green space and pedestrian walkways to encourage the use of outdoor space. There are many bike racks for residents to store their bikes. The parking lot has spaces designated for low-



emitting fuel-efficient vehicles. LEVs include non-hybrid and hybrid models that have been classified as Zero Emission Vehicles (ZEVs) by the California Air Resources Board or have achieved a minimum green score of 40 on the American Council for an Energy Efficient Economy (ACEEE) annual vehicle rating guide. To learn more about LEVs and to find out if you drive one visit [www.greencars.org](http://www.greencars.org). A LEV permit is required to park in these spaces and can be obtained from the Traffic Office.

A stormwater management plan has been implemented to protect nearby streams from excessive erosion through stream channel protection and quantity control strategies. Best management practices have been utilized to remove solid materials from stormwater.

## Water Efficiency

All of the plumbing fixtures in these buildings are low-flow. The faucets use 1.0 gallons of water per minute. The toilets have green, dual-flush handles. An upward flush uses 1.1 gallons of water and a downward flush uses 1.6 gallons. There are also low-flow shower heads. These fixtures are expected to reduce the building's potable water usage by 44%. The landscaping around the building is designed to minimize the need for irrigation. In addition, the automatic irrigation system is supplied with reclaimed stormwater collected in the ponds located on campus.



# Energy Efficiency

Energy efficient systems were integral in the design and construction of the new Colonnades residence halls. The buildings are 34 to 44% more energy efficient than a building that meets the standard building energy code. A contributor to this energy efficiency is the geothermal system, which assists with heating and cooling needs in the buildings. The system consists of heat pumps that utilize the Earth's nearly constant temperature (between 50° and 60°F) to heat and cool the residence halls. They transfer heat from the ground into the buildings in the winter and reverse the process in the summer. This system reduces the need for fossil fuel based energy.

The windows and layers of building insulation help keep the buildings cooler in the summer and warmer in the winter. The buildings have occupancy sensors for lighting in multi-occupant and frequently used common spaces. In general, efficient lighting systems are used throughout the buildings. Energy Star appliances are also used. There is metering for water, natural gas and electricity, which allows for improved monitoring and tracking of consumption. Electricity usage will be available through the [Building Dashboard](#). One will be able to view and compare total use vs. lighting use, plug use and HVAC use.



# Materials and Resources



During construction, about 90% of the waste was recycled or reused, which kept it out of the landfill. In addition, building materials with recycled content (pre and post consumer) were used, 20% based on cost. Using recycled content reduces the need for virgin materials. Specific examples include the steel which contains 97% post-consumer recycled content and the drywall, which is 95% pre-consumer recycled content and 5% post-consumer recycled content.

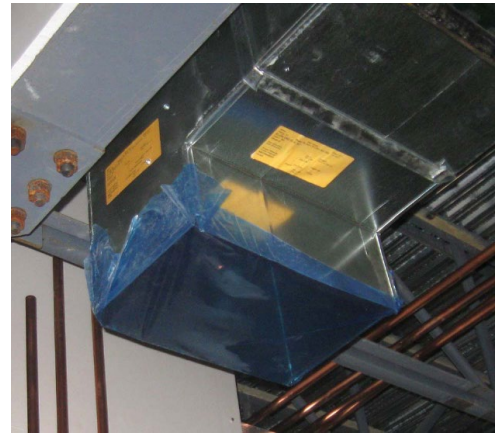
To support the regional economy and reduce the impact of transportation, regional materials were used as much as possible. In the LEED system, regional materials are those that are extracted, harvested, recovered and manufactured within 500 miles of the project site. Based on cost, about 30% of the building materials are regional. Specific examples include the concrete, steel, carpet and drywall.

Recycling bins are located in the lobby of the buildings, and there is also a designated recycling/trash room on the first floor of each building for resident recycling and trash. Elon's recycling program accepts all kinds of paper, cardboard, plastic, glass and metals (aluminum beverage cans, steel food cans). Other items are recycled in designated areas on campus such as batteries, printer cartridges and small electronic items.



# Indoor Environmental Quality

Providing excellent indoor environmental quality was another essential component in the design and construction of these buildings as it contributes to the health and productivity of building occupants. Great care was taken during construction to ensure the building and its systems were kept clean and free of contaminants benefiting the construction workers and the eventual building occupants and users. During construction, duct work was kept covered to prevent debris from accumulating, and a special sweeping compound was used to minimize dust.



The adhesives, sealants, paints and carpets used in the buildings contain low amounts of volatile organic compounds (VOCs). Low VOC products allow for better air quality during and after construction. The entry way mats also help provide good indoor air quality by preventing dust and other contaminants on shoes from entering the building.

Some of the furniture pieces in the lounge areas of the Colonnades buildings are GREENGUARD certified, which means they have been tested by a third party and verified to contain low amounts of chemicals and particle emissions and have met acceptable indoor air quality guidelines and standards. GREENGUARD certification is a voluntary program used primarily by commercial/institutional furniture manufacturers.

For thermal comfort, thermostats are provided in resident rooms to allow students to adjust the temperature to suit their personal thermal comfort within a pre-defined range (to avoid excessive heating and/or cooling).



A comprehensive green cleaning program is being used benefitting the building occupants and maintenance personnel. Green cleaning improves air quality, occupant health and well-being and is better for the environment. The program includes (but is not limited to) the use of Green Seal certified or equivalent cleaning products that have low chemical content, bulk dispensing systems to reduce packaging waste, microfiber cloths to reduce use of disposables and vacuum cleaners with high-filtration systems to contain particulate matter.

# Innovation and Design

Residents of these buildings are provided with a Sustainable Living Guide with tips to reduce one's environmental impact in terms of power and water consumption, waste management, transportation and purchasing. It also includes information about LEED and the sustainable features of the buildings. This Guide is available online from the [Sustainability web site](#) and the [Residence Life web site](#). Limited hard copies of the Guide were produced.

These new residential buildings will be added to the online real-time electricity monitoring system ([Building Dashboard](#)). The following items will be monitored and displayed: electricity (total consumption and broken down by HVAC, lighting and plug loads), water and natural gas. The geothermal system that provides the primary source of heating and cooling for these buildings will also be monitored and displayed on the system. This system will allow occupants as well as anyone else to view and track the utility consumption in the buildings. If you would like a tour focusing on the sustainable features of these buildings, please [contact us](#).