Our Washington Quad Renovation

To be completed June 2008

This $3.03 million initiative could not have been completed without the commitment, energy and contributions of dozens of people from on and off-campus.

Off-Campus Partners

Capstone Development – Developer
Design Collective – Architect
Whiting-Turner – Construction contractor
A. Morton Thomas – Civil engineer
Mahan Rykiel – Landscape architect
BKM – Electrical engineer
ESSI – Traffic control engineer
Hope Furrer – Structural engineer

University Partners

Residential Facilities – Project manager
Resident Life
Environmental Safety
Public Safety
Network & Telecommunications Services
Transportation Services
Operations & Maintenance Piped Services
Operations & Maintenance Electrical Services

We also recognize the residents who lived around the Quad and who endured the inconvenience and interruptions from the construction activities outside their windows and front doors during the 2007-2008 school year.

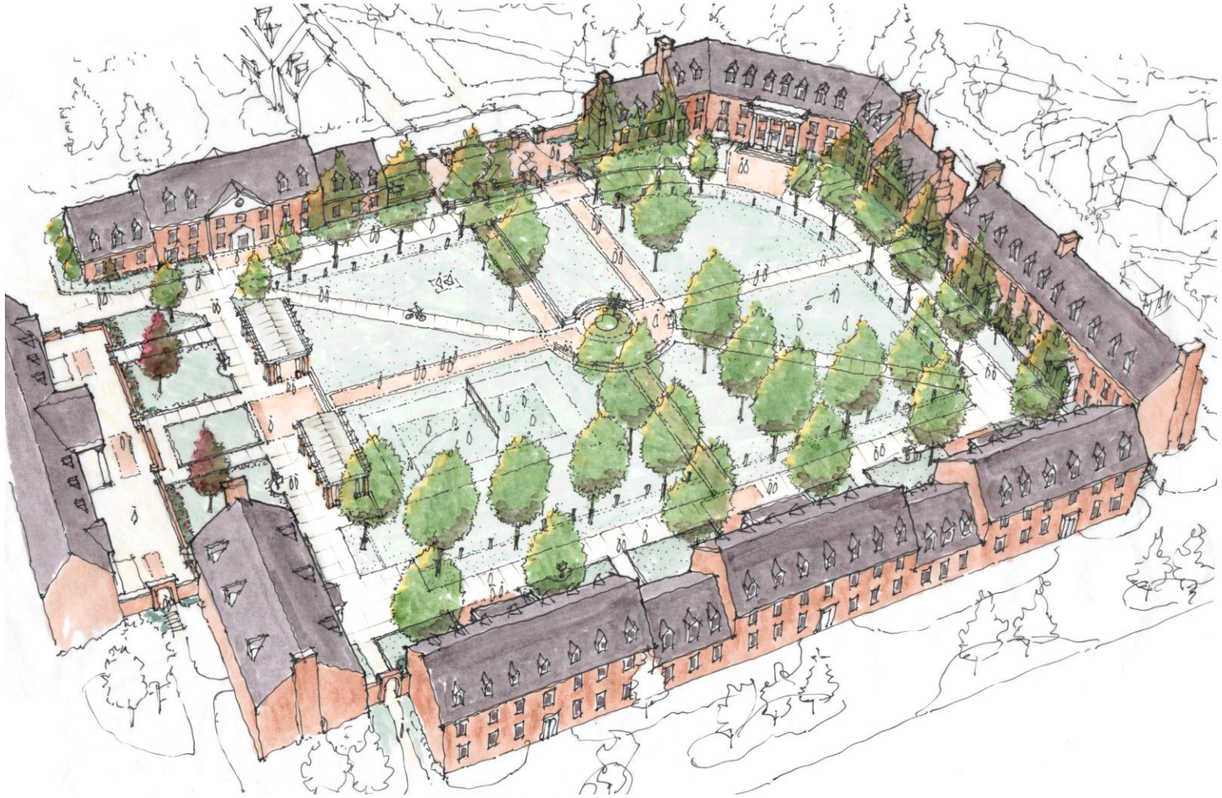
An American Success Story – The Valley Forge American Elm

As the primary tree in the Washington Quad site design, 32 Valley Forge American elms line the perimeter sidewalk system, providing shade to pedestrians while reducing the heat absorbed by the pavement.

The destructive fungus *Ophiostoma ulmi was f*irst recognized in the 1920s by Dutch researchers in the Netherlands, hence, how it received its name Dutch elm disease (or, DED). DED has been estimated to have killed between 70-80 million elm trees, roughly 95% of all American elms in the United States. DED is widely believed to have been accidentally introduced to North America in 1931 in shipments of logs from either France or the Netherlands destined for use as veneer in the furniture industry of Cleveland and Columbus, Ohio. By the 1970s, the American elm had largely vanished from forests nationwide. Infection occurred when an elm bark beetle brought the fungus from an infected tree and then burrowed into the living tissue of a healthy tree. Once a tree became infected with this disease, other nearby American elm trees died quickly when the fungus spread across tree roots underground.

After 20 years of research and selective breeding, researchers in the 1990s at the Department of Agriculture's National Arboretum research station in Beltsville, Maryland identified several types of elm trees that were genetically resistant to Dutch elm disease. Eight new "cultivars" (or, cultivated varieties) became available in the United States in 1995 when the Valley Forge and Harmony cultivars were released. To many researchers, the Valley Forge seems to be the newest American elm most resistant to the dreaded Dutch elm disease.

Ecosystems flourish that have a wide diversity of plant and animal species. We are pleased to reintroduce the American elm back onto campus, restoring these elms where they once thrived widely through-out this region of the country.



What's in our Environmental Design

The design requirements for the restoration of the Washington Quad involved:

- **3,100 tons** of concrete, asphalt, brick, and various tree and plant materials removed during demolition were diverted to reprocessing centers to become crushed stone, mulch, and other valuable supplies for use in other construction projects.
- The new site design removed over 30% of the former concrete and asphalt surfaces, increasing green space in the Quad and further reducing storm water run-off.
- A 10,000 gallon storm water collection cistern captures rain water from nearby residence hall roofs for re-use in an irrigation system in the planting beds.
- Many of the trees and shrubs selected are native or adaptive to the local climate and therefore require less fertilization and additional watering to thrive.
- Much of the original brick sidewalk in front of Washington Hall was salvaged and reused in the new brick plazas at each of Washington's three main entrances.
- Ninety-six new trees are to be planted on this site, almost three times more than when the project started. The majority of these trees shade pedestrian walkways and in time reduce the amount of heat absorbed and then emitted by concrete and brick surfaces throughout the quad – otherwise known as *reducing the heat island effect*.
- Fifty-two bike rack U-tubes are installed near building entrances to support increasing student bicycle use across campus.
- Both trellis structures included non-wood composite columns instead of wood.

Our Storm Water Irrigation System

The system captures rainwater and snow melt from the roofs of the surrounding residence halls, carrying it through the building downspouts and underground piping to a storage tank or cistern buried near the center of the Washington Quad. The cistern stores up to 10,000 gallons of water for use irrigating planting beds throughout the Washington Quad. Rain water run off from the sidewalks and grassy areas is not captured due to the presence of leaves, grass clippings and fertilizer that would contaminate the water being held underground until its use for irrigation.

The capture and recycling of storm water reduces water use by eliminating the need for either hand watering or standard irrigation systems that use domestic water to help sustain landscape plantings. Harvested water also reduces the amount of storm water run-off entering, stressing, and potentially polluting nearby streams.

Our high efficiency drip irrigation system will maximize the use of harvested rain water as soil moisture sensors send irrigation water only as needed to each of four different "micro-climates" found in the quad. For example, planting beds with a southern exposure require more watering than other planting areas and would be watered more frequently or for longer durations, as determined by the sensors and the microprocessor controlled pumping system.

How It Works

1 - Rain water collected from 16,500 square feet of residence hall roof surfaces flows through gutters and downspouts connected to an extensive web of underground collection lines.
2 - Prior to entering the cistern, the rain water from collection lines is filtered to remove leaves or other matter that could clog irrigation piping.
3 - Using data from sensors, the system's microprocessor pumps water from the cistern through the underground supply piping to nearly 5,600 square feet of planting beds.
4 - The buried irrigation piping in each planting bed is perforated to allow water to slowly drip into the surrounding soil, minimizing the loss of water from run-off and evaporation.

With every inch of rainfall, the system will harvest an estimated 10,000 gallons of rainwater for reuse, enough to completely fill the storage cistern.