

# Raleigh retail project demanded customized engineering



[Amanda Jones Hoyle](#)

Staff Writer - *Triangle Business Journal*

RALEIGH – When the \$20 million Market at Colonnade shopping center opens on Six Forks Road in April, most shoppers won't know about the creative engineering that went into the walls and even underneath the building's parking lot to make the project work on such a small site.

Market at Colonnade will be the first retail center in the Triangle to seek Leadership in Energy and Environment Design certification – a tough assignment because of the amount of surface parking required.

Its anchor tenant, Whole Foods Market, is working with the U.S. Department of Energy as a participant in the Net Zero Energy Program commercial building initiative.

But one of the site's biggest challenges will test the boundaries of stormwater management engineering.

Traditionally, a builder will incorporate a retention pond onsite to reduce stormwater runoff on a commercial or dense residential property, but the 6.25 acres that Florida-based Regency Centers bought in 2008 for Colonnade was barely big enough for the 57,000-square-foot buildings and parking lot.

Instead, Regency has built a “pond” underneath the parking area with the blessing of the city of Raleigh and the North Carolina Clean Water Management Trust Fund.

Regency and its engineering consultants at Soil & Environmental Consultants in Raleigh have incorporated three large cisterns on the edges of the buildings to capture up to 300,000 gallons of rainwater and condensate from the roof.

Also, underneath the main parking lot, they have placed more than 140 concrete vaults side-by-side to store any water running off the site's surfaces.

The 180-foot-by 60-foot detention area underground will be able to store another 500,000 gallons of water from the site and properly filter through perforated pipes, gravel and sand any oil, rubber or other contaminants from the surface before the water seeps back into the ground.

The total cost will top \$1 million for the stormwater system and monitoring, says David Smith, construction manager at Regency Centers' office in Raleigh.

“This is something that hasn’t been done before, and it’s the equivalent of a separate building project itself,” Smith says.

“We challenged our engineers to come up with a design that would be in keeping with the sustainability standard we have developed as a company,” Smith adds.

Because of its complexity, Regency Centers appealed to the city of Raleigh and the North Carolina Clean Water Management Trust Fund, which awarded a \$562,000 grant to help cover the construction cost.

The remaining funds will help cover monitoring costs by N.C. State University engineering students led by stormwater engineering expert **Bill Hunt**.

Hunt says he’ll be studying the site for about a year and half to track its hydrology, or the amount and rate of water runoff, as well as the amount of nutrient and sediment loads that reach tributaries of the Neuse River.

He’ll be monitoring storm drainage along the wooded area on the west side of the property and comparing its measurements to similarly developed sites that have conventional stormwater ponds and drainage systems.

“NCSU is interested because very few low impact development commercial sites exist in the U.S., let alone North Carolina,” Hunt says.

“We have studied one of them in the eastern part of the state and are now excited to monitor a new one in typical piedmont clay soils,” Hunt adds.

The goal, says **Patrick Smith** with S&EC, is to maintain the same levels of water discharge – or less – on the site after construction is complete.

“So if we have a 10-year event, we will actually improve the rate of runoff down the street by putting less stress on the environment,” he says.

Regency Centers is developing Market at Colonnade in conjunction with WelCor Development.