



## TCS Clifton

Clifton, New Jersey

### *Space Constraints call for Special Solutions in New Jersey Wall System*

Sandwiched between a property line and an underground storm water retention system, designers of a New Jersey luxury corporate suite complex called on the versatility of Keystone products for use in a series of unique applications.

The storm water retention system on the TCS Clifton property consisted of two 48" drainpipes that were installed approximately five feet behind the Keystone wall, making traditional geogrid reinforcement impossible. Two separate special applications of Keystone were required to address the soil retention requirements on this key section of wall.

*"Simply put, where Keystone performed best was in the area of value engineering,"* said Ed Ellis of project general contractor, Global Construction Company, LLC. *"When we started this project, we were not aware of the challenges that existed in that area of wall."*



<b>Project:</b>	TCS Clifton
<b>Location:</b>	Clifton, New Jersey
<b>Owner/Developer:</b>	Togar Corporate Suites
<b>Keystone Product:</b>	Keystone Standard & Keystone Compac Units
<b>Licensed Manufacturer:</b>	Anchor Concrete Products Manasquan, New Jersey
<b>Total Wall Area:</b>	7,500 square feet
<b>General Contractor:</b>	Global Construction Co. LLC
<b>Concrete Wall Engineer:</b>	DHNS Engineering, Inc.
<b>Geotechnical Engineer:</b>	The Reynolds Group



CASE STUDY



# CASE STUDY



*The job was already sold and we needed a way to make what we had work. Using Keystone provided a substantial cost savings and also supplied a great aesthetic that the property owners really like.”*

According to Dan Tix, Keystone Staff Engineer, a common solution to the problem of tight spaces is the utilization of a back-to-back gravity wall. In this scenario, Keystone Standard units are oriented in an interlocking “tail-to-tail” manner. “Using this interlocking

wall system effectively increases the maximum height of a typical gravity, or non-reinforced wall,” he said. “In addition, Keystone’s overlapping, pin-connected design creates a very strong and cohesive wall system.” The tail-to-tail Keystone Standard wall section spanned over 240 linear feet, with a height of approximately seven feet.

There are, however, height limitations to all gravity walls, including the tail-to-tail type. Because a 110 foot section of wall needed to reach heights of approximately 12 feet, another solution was required. To create a consistent appearance around the perimeter of the wall, project planners chose to veneer a cantilevered concrete wall with Keystone Compac units. Keystone Compac and Keystone Standard units have identical face dimensions, making the transition between wall types seamless for the observer. The wall contractor attached Keystone Compac units to the concrete wall with geogrid, looped around a galvanized pipe. The pipe was attached to the wall with pipe loop connectors fastened during casting. According to Salim Massoud, PE, who designed the concrete wall, the Keystone Compacs in this section of wall offer no structural benefit. “The work on this structure is all done by the reinforced concrete wall and footing,” he said. “Keystone is effective here, but mostly in the area of aesthetics.”

“Our ability to deliver Keystone instead of concrete, on the back-to-back portion of the wall, secured us the job,” said Tom Hoffman of Keystone licensed manufacturer, Anchor Concrete Products. “In my estimation, using Keystone offered a cost savings of approximately \$200,000 over cast-in-place concrete. And, by suggesting Keystone as a veneer for the other section of wall, we were able to promote a uniform look for the entire property.”

The TCS Clifton site had several additional Keystone Compac walls constructed using traditional reinforcement and assembly methods. In all, approximately 7,500 sq. ft. of Keystone walls were built on the property.

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