



"O" Avenue Street Extensions Cedar Rapids, Iowa

The O Avenue – Rogers Road Realignment project in Cedar Rapids, Iowa originally called for 3,185 square feet of Keystone Compac II units to be used in the creation of a traditional two-tier retaining wall as well as 7,495 square feet of another product that would veneer over a soil nail wall. When the other product failed to meet the contractor’s and city’s expectations, the Keystone Compac II unit proved its versatility and was selected to replace the original veneering application material as well.

The O Avenue – Rogers Road Realignment project began as a typical retaining wall installation for the contractor, Culvers Landscape, and called for the extension of a roadway and the elevation of the adjacent homes in comparison to the elevation of the road. Keystone Compac II units were selected for the segmental retaining wall portion of the job to match an existing wall nearby that Culvers Landscape installed two years prior. In addition to the traditional segmental retaining wall, a soil nail wall was specified on the project due to concerns about eliminating mature trees that were in close proximity to the back of the wall. Culvers Landscape completed the installation of the reinforced Keystone wall in typical fashion while the soil nail wall was installed and then moved on to installing the veneer.

The Culvers Landscape team quickly identified several problems with using the specified units for this specific veneering application. The units specified for the veneer utilized an aluminum channel attached to the wall for installation and had no batter or radius to them, which posed a problem when the soil nail wall curved back into the embankment. The batter and gradual radius of the soil nail wall created a situation that required cutting the units so that the vertical alignment remained plumb. By cutting the units, the chamfer around the unit was



Project:	<i>O Avenue Street Extension</i>
Location:	<i>Cedar Rapids, Iowa</i>
Keystone Product:	<i>Keystone Compac II</i>
Licensed Manufacturer:	<i>King’s Material, Inc. Cedar Rapids, Iowa</i>
Total Wall Area:	<i>11,000 square feet</i>
Developer:	<i>City of Cedar Rapids, IA</i>
Contractor:	<i>Culvers Landscape</i>
Engineer:	<i>Snyder and Associates</i>
Architect:	<i>Civil Solutions Group LLC</i>

removed, greatly reducing their aesthetic appearance. In addition to the problems they experienced in maintaining the vertical alignment, the face of the soil nail wall had been hand finished which resulted in inconsistent variations along the wall’s surface. Because the units were directly attached to the soil nail wall via an aluminum channel, the veneer followed the wall’s surface exactly and offered no forgiveness for its surface variations. This made it necessary to shim the H-channel of the units to compensate.

The City of Cedar Rapids was displeased with the situation created by using the originally specified veneering units. Larry Pernicka, Construction Contract Administrator for the City of Cedar Rapids says, “*We had a serious problem. There was no way that we could proceed with the original plans. I wasn’t familiar with using Keystone in a veneering application but Curt Richey knew it could be done. I am glad that the job could be done with a product that was both pleasing to the eye and within our budget parameters.*”

In order to minimize the damages for the general contractor, it was necessary to implement a solution that would be simple, quick, and cost-effective. Curt Richey of Culvers Landscape states, “*I knew that Keystone Compac IIs could easily be used to veneer the soil nail wall and would provide the City of Cedar Rapids with continuity in the look of the walls on the site. I proposed that the city consider them as an alternative.*”



CASE STUDY



The City of Cedar Rapids quickly agreed to use Keystone Compac II units as the veneer on the soil nail wall. Twenty-four hours later, the project was completely redesigned by Mike Johnson of Civil Solutions Group LLC to include the additional Keystone units.

The only significant challenge that Culvers Landscape faced while installing the Keystone Compac II veneer was the limited workspace available to complete the veneer. They were able to install the units by hand until the wall reached chest height. From there up to the top of the 22 foot high wall, a method to install the Compac II units had to be found. To meet this challenge, Culvers Landscape used a KeySet™ to make installing the remaining units easier. KeySet eases the workload on any crew by setting the units in place. Suspended from the boom of any size track hoe or skid steer, KeySet uses the hydraulics already on the equipment to give a work crew the power and versatility that manual devices can't offer. Simply connect two hoses from the KeySet device to the auxiliary hydraulics and KeySet is ready for operation. The use of the Keystone KeySet made what might have been an impossible job simple to complete for the Culvers Landscape team.

The Keystone Compac II units offered a number of benefits to the project. Most importantly, the Compac II units allowed Culvers Landscape to veneer the soil nail wall and gloss over the surface imperfections that had been readily apparent when the other type of unit was used. This is because the Keystone Compac II units were

not attached to the soil nail wall with a rigid connection. Instead, pieces of u-shaped coated rebar were attached to the soil nail wall. Then the Keystone Compac II units were attached to the rebar with geogrid. This allowed the veneered surface to remain flexible enough to be placed so that the surface was seamless while still maintaining a secure connection. Using Keystone Compac II units, along with quick turnaround on the revised plans, limited the time lost on the job, which was especially beneficial to the general contractor and the owner – the City of Cedar Rapids.

Switching to the Keystone Compac II unit for the veneering application offered the City of Cedar Rapids an unexpected benefit. In the original site plans, the segmental retaining wall and the soil nail wall were separated by a 30 foot gap. This created a visual break in the wall, which was unavoidable when the plans called for two different systems. Switching the entire project to Keystone Compac II units allowed the designers to extend the lower tier of the traditional segmental retaining wall and tie it into the veneer used to cover the soil nail wall. The result is a wall that flows seamlessly from the segmental retaining wall to the area serviced by the soil nail wall. This adds to the project's visual impact, providing continuity within the walls on the site. Curt Richey states, "All of the courses from the segmental retaining wall match up exactly with the courses in the veneering application, perfectly masking the fact that we needed to use two completely different systems on the site and making it seamless to the outside observer."

According to Gary Pribyl, Vice President of King's Material, "This project required creativity and flexibility on the part of all parties involved. When a team is formed, as was on this project, the end result is beneficial for all concerned."

The Keystone family of products is known for its strength and flexibility. The versatility of the Keystone Compac II unit is exactly what kept the O Avenue – Rogers Road Realignment project on track and within budget.

For more information on the Keystone Compac II or innovative Keystone products, please visit www.keystonewalls.com or call (800) 747-8971.

