KEYSTONE® RETAINING WALL SYSTEMS
A CONTECH COMPANY

Retaining Excellence™

McKinney Boyd High School

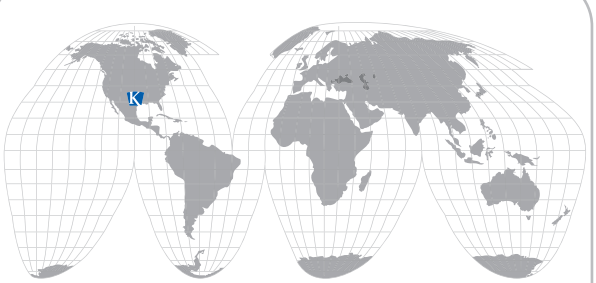
McKinney, Texas

Keystone Compac Unit Walls Shape High School Campus

With state-of-the-art facilities, McKinney Boyd High School in McKinney, TX opened its doors in 2006 after an initial phase of construction established the majority of the school's classrooms, offices, music, athletic and parking accommodations. An extensive grade change running throughout the new school's site required extensive site preparation and development that resulted in more than 20,000 square feet of segmental retaining walls being built on campus during this first phase. The Keystone Compac unit was selected as the final solution because it provided structural integrity and design flexibility as well as superior aesthetics to complement the school's state-of-the-art design.

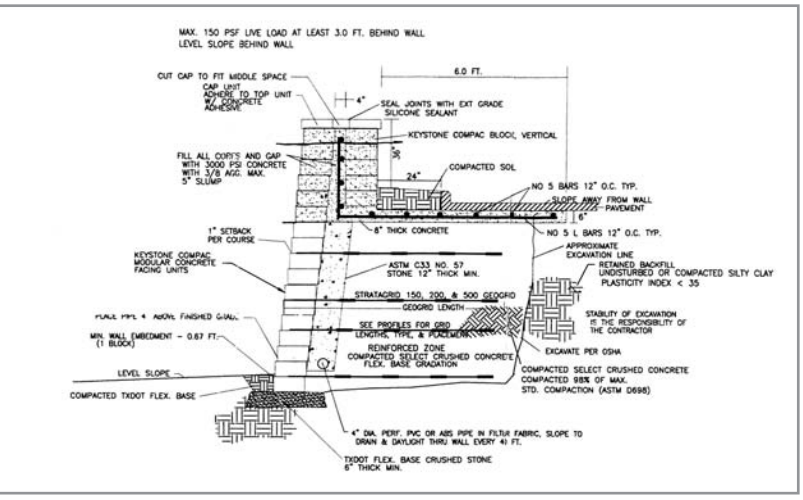
Project Site Challenges
McKinney Boyd High School is located on 52-wooded acre site with expansive clay soils that in its original state fell approximately 60 feet from its highest to lowest point. Along with major excavation efforts that included balancing out the site with its existing soils, retaining walls were also established as critical elements for the site's overall development. Two substantial retaining walls with approximate heights of 12 and 20 feet were to be built at the front of the school and by the athletic fields. Original design plans called for poured concrete retaining walls. However, the higher cost of the poured concrete walls was a major factor in deciding on the final solution.

"For the amount of concrete needed for this size of a project, the cost of concrete walls compared to a segmental retaining wall system was significantly higher, so Pogue Construction recommended using an alternative design. Building segmental retaining walls resulted in significant savings and really



Project:	*McKinney Boyd High School*
Location:	*McKinney, Texas*
Keystone Product:	*Keystone Compac Unit, Series II*
Keystone Manufacturer:	*Jewell Concrete Products*
Total Wall Area:	*Approximately 28,000 square feet*
Wall Contractor:	*Builder Services Company*
General Contractor:	*Pogue Construction*
Architect/Engineer:	*PBK, Inc.*
Wall Engineer:	*Scott Miller Consulting Engineer, Inc.*

CASE STUDY



allowed the school to utilize the space to their highest benefit," said J.D. McRae, Superintendent, Pogue Construction.

Design/Installation

The school's main entrance is located directly off a main city street and gradually winds down 20 feet to the parking area. At this location, the Keystone Compac Unit was used to construct a vehicle barrier to create a flow of traffic and also serve as a safety structure for pedestrian traffic from the nearby sidewalk. The vehicle barrier structure features the Keystone Compac unit in a back-to-back parapet wall design.

"The back-to-back design was used because the same appearance was wanted on both sides without having to use a concrete face or something different on the uphill or big vehicle side. Typically a guardrail is used on these projects, however an internal reinforced concrete member to take the vehicular crash loads was incorporated instead," said Scott A. Miller, P.E., Consulting Engineer.

With the back-to back design, the wall's sides have different total heights. The side facing the street is approximately three to four feet tall and the side facing the school is approximately 12 feet tall with grid reinforcement. The street's side is a vertical construction with an eight-inch thick concrete leveling pad. Also, the pavement on this side is sloped away from the wall. The school's side has one-inch setback and six-inch thick minimum crushed stone leveling pad. A four-inch perforated PVC or ABS pipe is used for drainage in both walls.

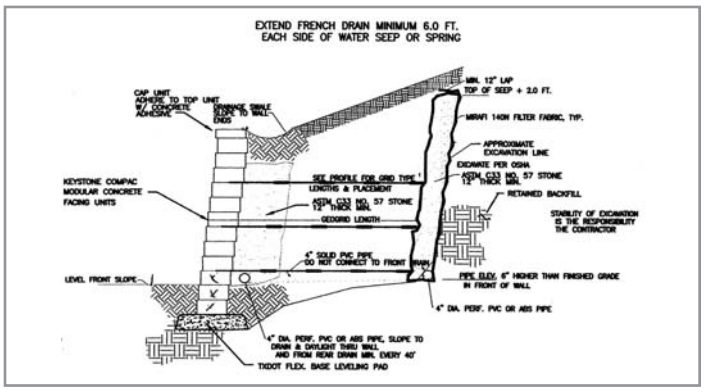
The grid lengths for reinforcement of the side facing the school were slightly increased because of traffic loads and global stability concerns resulting from the slope in front of the wall. Three grid strengths were used at varied lengths between 70-90% of wall height depending on the geometry in front of the wall and loads behind the wall. All cores and gaps are filled with 3000 PSI concrete with 3/8 aggregate max. The walls are also capped for the cohesive look of one continuous wall.

"When confronted with the challenges that a project like this exhibits, we are able to utilize our extensive knowledge of retaining walls gained from years of hands-on experience to overcome the difficult site conditions and satisfy the end user," said Shawn Perronne, General Manager, Builder Services Company.

The other Keystone Compac unit wall built during this construction phase is located behind the school at the athletic field. This 20-foot tall wall runs along the soccer/football field to reach approximately 350 feet in length. In the area of the wall where steps were to be located, concrete walls were built in coordination with the Keystone Compac unit wall. Railings and fencing were also part of the overall wall/protective barrier design.

A spring occurs in this area which required incorporating a French drain underneath the wall, a chimney drain at part of the wall and filter fabric. The French drain extends a minimum of six feet from each side of the spring. Select granular soil fill was used for all reinforced areas for both walls and as filter fabric fill. Surface water run-off is also directed away from the wall by a drainage swale that slopes to the wall ends.

"The project is really interesting because the walls are built throughout the site and specifically used in some applications such as the vehicle barrier that were anticipated to be a more little more difficult. However, the walls created a uniformed, consistent and more appealing appearance," said Miller.



The Keystone Advantage

With the site's extensive grade change, the McKinney Boyd High School project required major land development solutions. The Keystone Compac unit with its structural, aesthetic and economic benefits provided a key component to help shape McKinney Boyd High School with a look that complemented the new school's state-of-the art facility in a cost-effective manner.

For more information on Keystone Compac Unit or other innovative Keystone products, please visit **www.keystonewalls.com** or call 800-747-8971. Keystone Retaining Wall Systems, Inc. is a subsidiary of CONTECH Earth Stabilization Solutions Inc. (**www.contechess.com**).

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