



Retaining Excellence™

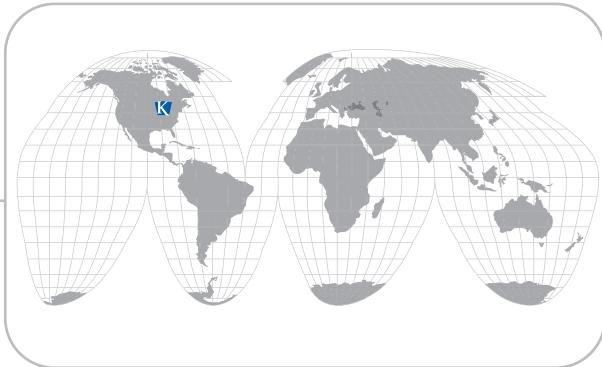
Haynes International

Kokomo, Indiana

Keystone Provides Unique Solution to Flood Issue

Located in a flood plain, Haynes International of Kokomo, IN sustained flooding of its building's first floor every few years when the city system was unable to accommodate rainfall. The high potential for flood damage made it increasingly difficult for Haynes International to find an insurance carrier for their company.

According to their insurance carrier, Haynes International had to reduce potential flood damage to keep their premiums at a reasonable rate. Several traditional methods, including earth berms and concrete, were first considered. However the solution came in a more unique form—two back-to-back walls built with Keystone Standard Units to form a moat-like structure that could hold water and release it systematically. The Keystone Standard Unit, with its superior construction, allowed both a highly durable and aesthetically pleasing structure to be built.



Project: *Haynes International*

Location: *Kokomo, Indiana*

Keystone Product: *Keystone Standard Unit, Straight Face*

Keystone Supplier: *Schuster's Building Products*

Wall Area: *12,175 square feet*

Contractor: *Structures*

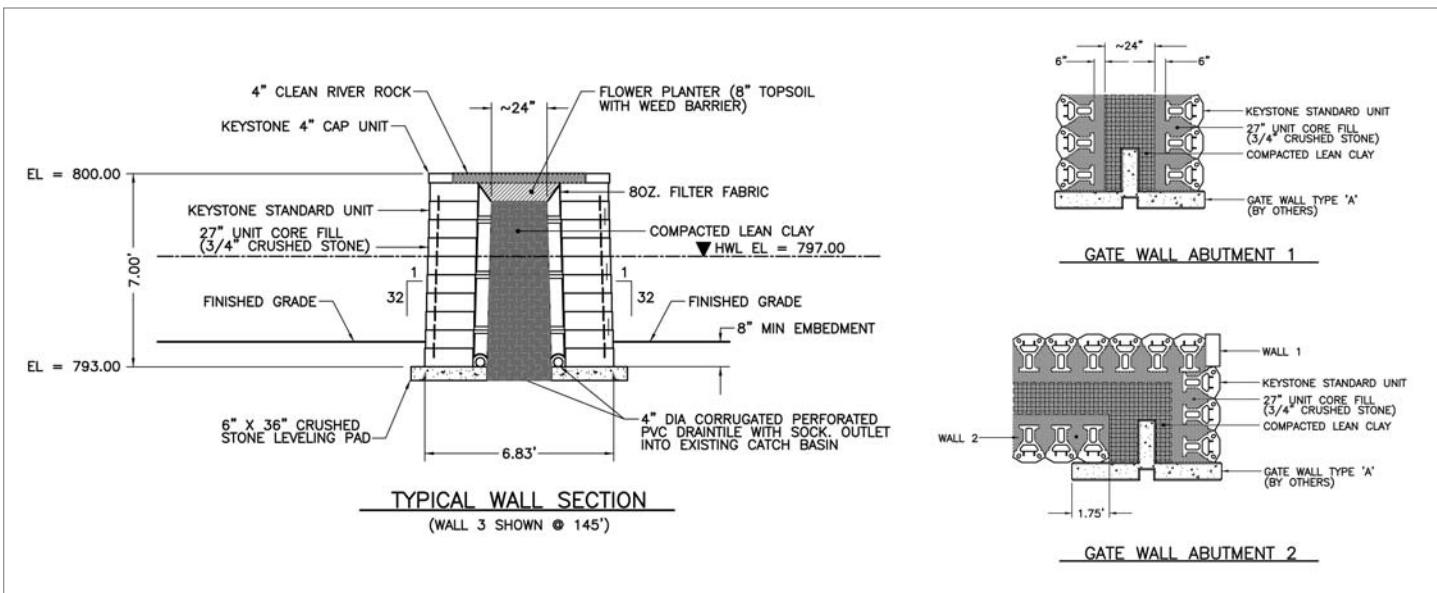
Engineer: *Civil Solutions Group*

Architect: *William Bassett and Associates*



CASE STUDY





"We designed the wall to hold the water back and not allow for any penetration. We wanted it to be impervious, basically we didn't want anything to get through," said civil engineer, Mike Johnson of Civil Solutions Group.

The wall structure reaches approximately seven feet in height and consists of two back-to-back walls. The walls are set approximately seven feet apart and constructed at a near vertical setback. The walls are placed on a 6" crushed stone leveling pad and between them are two feet of onsite lean clay. The clay was compacted to a minimum of 100% of standard proctor density. Flood gates located at wall abutments systematically release the held water through drainage pipes which flow into a catch basin.



The unique design left a smaller area for wall installation crews to work within that came into effect when needing to get 100% compaction without pushing either one of the walls out. According to Contractor Jeremy Banken of Structures, even with the space constraint, installation did not require use of special equipment or change in method.

The wall structure can withstand pressure from up to 3' water levels. With repeated and long-term exposure to water pressure, the wall's durability and stability were major concerns. The Keystone Standard Unit's use of Keystone's patented pin connection system provided the superior strength needed in the wall.

"The primary reasoning behind using Keystone over any other option is the positive connection that the pins provide. This feature of the system coupled with the aesthetic benefit over poured concrete, nailed it down," said Keystone Sales Representative, Wade Locklear of Schuster's Building Products.

For more information on the Keystone Standard 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 (ESS), Inc. For more information on the CONTECH ESS family of erosion control products visit www.contechess.com.

