

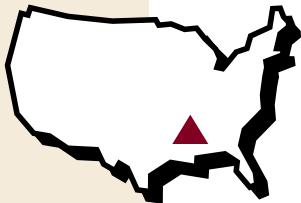


# ▶ CASE STUDY: WATER APPLICATION

## Keystone Offers Protection from Frequent Flooding



Flood Protection and Pedestrian Riverwalk come together at Historic Riverfront



### HISTORIC RIVERWALK RESTORATION

At historic **Ross's Landing** on the Tennessee River in **Chattanooga, TN**, the **U.S. Army Corp of Engineers** has designed a new structure to alleviate the erosion and slope instability due to frequent flooding of the river.

A series of new terraced retaining walls and walkways was proposed to replace the existing deteriorated and eroded structures along the river. The wall design called for a solution to eliminate erosion while enhancing the use of the historic walkway and amphitheater.

Keystone Retaining Wall Systems was the accepted solution. The entire system of Keystone concrete units, high strength fiberglass shear pins and water resistant geogrids, afford a free draining yet interlocked structural solution with the ability to meet the demands of flood conditions. Keystone units were supplied by Keystone's manufacturer/representative **Superrock Block - Birmingham, Alabama**.

The project was designed as terraced walls, where the maximum single wall was 12' (3.7 m) high while the maximum terrace series was 18' (5.5 m). The design required a slope stability evaluation



**PROJECT:** Ross's Landing  
**LOCATION:** Chattanooga, TN  
**PRODUCT:** Keystone Standard Unit

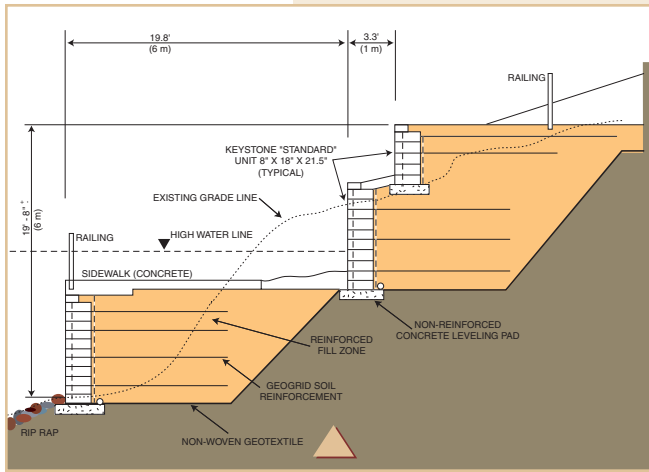
**SQUARE FOOTAGE:** 11,500 sq. ft.

**ENGINEERING:** U.S. Army Corps of Engineers

**CONTRACTOR:** ABS Services  
Jackson, Mississippi

**OWNER:** US Army Corps of Engineers  
Nashville District

**KEYSTONE REPRESENTATIVE:** Superrock Block  
Birmingham, Alabama



*Cross Section Detail*



*Retaining Wall Solution Protects Park Area*

along with a submerged hydraulic drawdown analysis due to the frequent flooding. Analysis for the 1 year flood event called for waters to submerge the lower terrace by 3'-4" (1 m) and the 20 year event anticipates a total submersion of the entire structure at 18' (5.5 m).

Construction of the project began in the summer of 1998. The retaining walls were built by an experienced Keystone Systems installer, **ABS Services of Jackson, Mississippi**. After the lower terrace walls were completed, the system was put to the test with river flooding inundating the lower walls. Construction halted until the waters subsided, where examination found no erosion or damage to the structure. ABS was then able to continue the completion of the project. To provide scour resistance to the wall base, heavy stone rip-rap over geotextile was used below the lower terraced walls.



*New Terrace wall protects amphitheater from erosion*

Once the walls, reinforcing and backfills were in place, the concrete sidewalks, light bollards and site poured concrete coping with railing were added along with the final landscaping to provide the finishing touch.

The final results are stunning! Serpentine walls, with the aesthetic appearance of stone, maintain the meandering feel of the original Ross's Landing. The Army Corp of Engineers has been able to achieve its desired protection solution with the additional benefit of creating an inviting setting for pedestrian traffic and riverfront activities.

