CASE STUDY

The Monteray Wall: Preserving a Historical Landmark Down Under

When Captain James Cook and his botanist, Sir Joseph Banks landed at Botany Bay in 1770, they discovered a pristine beach abundant with native plant species. Nearly 230 years later, this inlet near the city of Sydney is still a favorite stop for visitors to the southeastern state of New South Wales, Australia.

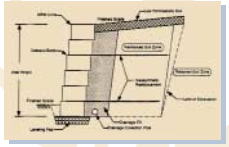
Thanks to decisive action by the Rockdale City Council, the natural beauty of Botany Bay has been preserved with the help of Anchor Wall Systems retaining wall blocks. Until recently, the Monteray Bay shoreline consisted of slowly eroding, and rather unsightly, dumped rock. After careful study of possible solutions, the council requested bids for construction of an 18,000

Over 18,000 square feet of Anchor Vertica® blocks were used to construct this multi-tiered retaining wall project alongside Botany Bay.

square-foot, soil-reinforced segmental retaining wall to maintain and beautify the national landmark.

Maccaferri, an engineering firm and Anchor distributor, prepared a competitive bid that satisfied the technical demands of the project and met the council's requirements. One important specification became a challenge: the block needed to match the gray sand on the beach. Pioneer Building Products, the Australian producer of Anchor products, was able to obtain the desired color using specialty aggregates. "The job was originally specified in a competing block," said Martin Smith, Maccaferri technical manager. "We were able to give the council the benefits of the Anchor Vertica® the job. Says Simac, "The ideal conditions for a conventional gravity wall are a level slope below the wall, plus level backfill at the top of the wall. If these conditions are met, in most lower height cases a conventional gravity segmental retaining wall will do nicely for applications such as a typical tree ring or low garden border."

In general, the maximum that can be safely reached without soil reinforcement is approximately twice



The basic elements of a retaining wall system are the foundation soil, leveling pad (level surface of crushed stone or unreinforced concrete), segmental retaining wall units, retained soil, drainage fill and, for soil-reinforced segmental retaining walls, the soil reinforcement.

the depth of the segmental retaining wall unit. Given this "formula," if your wall unit is 24 inches deep, the approximate maximum height of your conventional gravity structure is two to four feet. In addition, any heavy surcharge in the area should be at least twice the height of the wall away from the back of the wall. A reinforced wall should be specified when these basic criteria cannot be met. The essential components of the soil reinforced segmental retaining wall are depicted in the diagram. Note that the units are each set back from one course to the next as the wall rises, creating a batter that provides increased stability.

Keep in mind that any units laid above the final layer of reinforcement in a reinforced wall behave essentially like a conventional gravity wall, since these units are supported by their mass alone. For this reason, this portion of the structure should be constructed in adherence to the height criteria for a conventional gravity wall.

A registered design professional can help you assess factors such as the strength of the soil behind and at the foundation of the wall, the surcharge at the top of the wall and drainage behind the wall to design a suitable structure. The laws of physics, conditions of the soil and fundamentals of gravity will ultimately determine whether your wall can stand on its own or with the help of soil reinforcement. When you build your wall correctly, the forces of gravity will work for you.

Mike Simac is a Principal Engineer with Earth Improvement Technologies in Cranberton, NC. He has assisted in the design of over 500 retaining wall structures and is the principal author of the NCMA's Segmental Retaining Wall Installation Guide.