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Canadian company provides answers for soil erosion control

by Clive Scarlf

A Vancouver, B.C. company, Deltalok Inc., has devised a unique mechanism that interlocks soil bags, now making them practical as both soft, and hard, armour application solutions. Its use extends to such areas as erosion control, retaining walls, and environmental restoration, and has been put to use in various projects around the globe. In addition, Deltalok soil bags can vegetate and produce a visually pleasing, natural green finish.

Hun S. Kim, Group Chairman & CEO of Deltalok Inc. saw that there was a significant void in the industry—a gap between traditional hard and soft armour applications. He then posed the simple questions, "How can we give the market a completely natural looking earth wall solution, while not compromising structural integrity and permanence?" In search of an answer Kim devised the Deltalok system of interlocking, and structurally reinforcing, soil bags for the construction of retaining walls, culvert headwalls, and a myriad of other applications that were never before possible without the use of hard armour. He then put his numerous resources to work to take the ideas beyond the concept stage, and began manufacturing the Deltalok System for use in the civil engineering field.

A simple idea—a big impact

The Deltalok System is based on combining a simple, yet unique (patents are pending worldwide) soil bag interlocking mechanism with traditional soil reinforcement methods that have been practices for over 20 years. This combination now means a single system is available to provide for both soft and hard armour applications in the building of structural vegetated retaining structures - without the need for concrete or steel. The Deltalok System has been designed to incorporate existing materials, such as geotextiles and geogrids, that have been widely accepted within the industry for years. Deltalok comprises key components that work together as a system, or in tandem with other existing materials on the market.

The Deltalok "Standard Unit" is made of a tough yet lightweight plastic, is rectangular in shape with strategically positioned "claws" top and bottom to "grab" soil bags as they are stacked in a "delta" (pyramid) formation. Thus, it "interlocks" conventional soil bags, improving height, stability, and strength of self-standing bagwork walls like never before.

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The Deltalok "Engineered Unit" interlocks soil bags and acts as a mechanical connection to geogrids, for engineered walls. The Deltalok "GTX Bag" is used for the wall face, making attractive vegetation of the wall face a reality.

Aside from the pleasing visuals of naturally vegetated retaining walls, Deltalok also means ease in construction, and transport of materials. For example, Deltalok System materials needed for 1,000 square feet can comfortably fit inside a typical Sport Utility Vehicle. Also, as far as Deltalok Inc, is aware, it is the first retaining wall system in the world to be shipped by FedEx overnight to a customer. To put this in perspective, similar square-footage of retaining wall components - using traditional hard armour materials - would require over 1,000 blocks weighing over 75,000 pounds, not to mention the equipment required to put them in place.

Good ideas address needs

The City of Abbotsford, B.C., had a distinct need—to create culvert headwalls in projects that required an eco-sensitive solution, due to their proximity to fish-bearing streams. The structural integrity of the Deltalok System made it possible for the City to save an existing roadway from further erosion damage. Steep and strong bagwork wall faces were created by using Deltalok Standard Units and Engineered Units to interlock Deltalok GTX bags together. Once the bagwork wall face had been built, the wall face surface was hydro-seeded to provide the headwall with full vegetation, resulting in natural, vegetated retaining walls that now blend into their surroundings.

In South Korea, the large multinational, Daewoo, preferred to build a vegetated retaining wall at a Golf Course that would support a golf cart path to make it easy for golfers and their power carts to move from one hole to the next. Due to the inherent natures of a golf course, having a green, natural look was very important to Daewoo as they wanted the retaining wall to be as visually unobtrusive as possible. Traditional methods and materials could not solve this problem quickly and easily, given the structural and aesthetic requirements of the project. The Deltalok System provided structural integrity for the retaining wall required, and provided vibrant vegetation that now blends in with the aesthetically pleasing golf course environment. A variety of native species were used, and full vegetation was quickly established.

Conclusion

The Deltalok system does many things. It bridges the gap between soft and hard armour applications, improves the structural integrity of typical soft armour applications removing the need to use hard armour materials for many applications, and also opens the door to a new way of thinking for many common civil engineering applications.

With less than one year of marketing, various projects in Canada, the United States and various Asian countries are already completed and more are specified. With its "building block" nature, and benefits including convenience, ease of installation, compatibility with existing materials, and ultimately cost-savings, it is no wonder that interest in the Deltalok System is spreading rampantly.

Deltalok Inc.