Rainworks Blog

Our Global Fresh Water supply is in CRISIS.

Posted by: ***rainworks*** *| September 7, 2009*

A service road and Golf Cart path on a Caribbean island

With an average of 126 inches of annual rain that runs through in the low areas, construction proved to be a simpler process than the prior road design which required hundreds of truckloads of stone and many pieces of heavy equipment. GeoWeb and GeoTextile products were selected to enable a porous road surface over highly organic wet areas, and over tree roots. This allowed the natural flow of rain water to follow its natural path to the Mangroves and Caribbean Sea, and while continually nourishing the jungle growth.

Starting laying the GeoWeb® Service Road

After a rough base of river stone and gravel was put down, (allowing water movement laterally under the road surface) compacted by hand and smoothed, a GeoTextile membrane was applied to the base surface. The GeoTextile allows some water seepage but does not allow earth (mud) from pumping up to the road surface, or roots from entering up into the road surface. Then as shown in the photo; sections of GeoWeb® were stretched outward from both sides with wood stakes and red nylon cord. A continuous GeoWeb base was created by connecting GeoWeb sections with heavy duty Nylon ties.

Temporary drainage while filling GeoWeb

Temporary drainage was dug to assist construction during the rainy seasons. A crushed stone aggregate was then filled in the GeoWeb surface and raked into the GeoWeb cells forming a reliable surface for the Bobcat front loader to quickly deposit more aggregate. The right center of the photo shows the GeoWeb bundles as shipped, and prior to stretching and attaching.

Still into day one, progress moves along. After the two day construction was complete, the 192m service roadway was compacted with a walk behind power roller and finished to a smooth surface.

Continued progress of Service Road construction with Geoweb® sections.

After 4 years the GeoWeb® Porous road still holds no water

Four years after completion the Service Road/Golf Cart Road still holds no water due to its porous design. This rain forested Jungle road was designed with minimal excavation and with a huge reduction in heavy aggregate and heavy equipment. Where necessary, the first 3km of the rough grade/base required earth retention/revetment walls which were made with terraced GeoWeb, and pillow bases for the culverts were also made utilizing GeoWeb.

A porous foot path from the waterfront up to the Island's B&B.

Typically the indigenous Indians inhabiting the island wear no shoes and simply trod along on mud trails much like the game trails of North America. However, as an international tourist destination the project required suitable paths for those wearing sneakers, sandals, and especially flip flops. Climbing 90 feet up the hill, a porous road design was used, and because of the wet soil and Rainwater shedding conditions, a semi rigid design was required.

GeoBlock® units laid on a base of course aggregate, and a preview of what a section of GeoBlock looks like.

First a GeoTextile membrane was placed on the base surface. Then a 1 inch crushed aggregate was placed on the GeoWeb to assist lateral drainage. The 1 x 0.5 meter sections of GeoBlock were then placed on the aggregate with the interlocking tabs screwed together with 1 inch #12 Pan Head stainless steel sheet metal screws.

After the 2 inch deep GeoBlock base mat was laid and adjusted, it was filled with gravel. The major rise in the center of the path was completed by building a series of steps with 1' x 1' x 4" Landscape webbed concrete blocks, these also were filled with pea gravel, and several 10' long 5-8 degree slopes were also added. This path was created with tourists in mind, especially the potential retired crowd with luggage and or canes. Therefore each step rise was limited to 4 inches, and minimum tread length of 14 inches at center was used.