CASE STUDY

Lynden Pindling International Airport
Bahamas

Storage Provided:	42,068 cu. ft.
Area:	24,658 SF
Models:	Recharger 180-HD
Number of Units:	1155
Installed:	April 2010
Project Engineer:	Stantec Portland, ME
Contractor:	BMC Underground Services Nassau, Bahamas

When Lynden Pindling International Airport in the Bahamas embarked on a $400 million airport terminal expansion and airside and landside improvements, Stantec was responsible for designing the airport's new stormwater management systems.

The airport site presented several initial challenges, including a very flat terrain with a high groundwater level. Because of this, runoff water had no where to go and was collected and stored in open ditches and swales. Flooding of portions of the site during heavy or extended rainfall was a constant burden.

According to Patrick Clark, P.E. of Stantec, engineers were able to provide stormwater retention using CULTEC's stormwater systems, specifically the Recharger® 180-HD chamber, which offered the largest storage volume and was the best fit given the depth restriction scenario. "CULTEC allowed us to select from a range of chamber sizes to accommodate the site topography," said Clark. "The systems also provided enough storage capacity to handle at least six inches of runoff over the entire drainage area, as required by the Bahamas stormwater regulations."

In total, the two-phased project will implement four separate CULTEC systems in landside areas, each with its own unique storm drainage infrastructure and independent outlet control structures. In the first completed phase, two of the CULTEC systems included approximately 1,150 chambers and provided a combined 42,068 cu. ft. of storage.

Both systems were installed using CULTEC's unique internal manifold, which

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allows manifolding to take place at any point within the stormwater system, thereby condensing the system while decreasing the required footprint. It allows for maximum design flexibility and eliminates the need for costly fabricated pipe manifolds. According to Clark, the underground systems prevented the loss of valuable square footage that would have otherwise been needed for open storage areas.

The systems function independently to distribute and balance the stormwater runoff, yet they are interconnected in the event that any one of the systems reaches capacity or overflows through the outlet structure. Additionally, the systems are connected to several open swales and retention ponds distributed throughout the site to allow for excess capacity and runoff storage. The stormwater is retained until dewatering is complete via nearly a dozen new drainage deep wells.

The underground stormwater systems contributed to solving yet another project challenge. The hard durable rock needed for the installation had to be imported from Jamaica. According to CULTEC's Vice President Fred Dotson, the company's systems use less stone than other comparable systems on the market, lowering the overall installation costs.

Two additional CULTEC chamber systems will be installed during the project's second phase. The total storage capacity for all four systems will be approximately 82,000 cu. ft. and will include approximately 2,250 CULTEC chambers.

CULTEC, Inc.
878 Federal Road • P.O. Box 280 • Brookfield, CT 06804
Phone: 203-775-4416 • Toll Free: 800-4-CULTEC • Fax: 203-775-1462 • Web: www.cultec.com

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