CASE HISTORY
Ref: USA112 - Rev: 00, Issue Date: 10.08.2012

BOX CULVERT HEADWALL AND WINGWALLS
CASA VERDE DEVELOPMENT, RIO GRANDE, PUERTO RICO

Products: Gabions
Terramesh® System

Problem
The designer of a residential housing project in Rio Grande, Puerto Rico, contacted Maccaferri in April, 2011 to consult on the design of a gabion headwall and wingwalls for a two cell pre-cast box culvert. The purpose of the walls was to reduce the length of the culvert and fill slopes.

Solution
In order to lessen the mass of the walls to a required minimum, the original designs were verified, and optimized, cutting project costs. Additional calculations were made to provide the pre-cast company with information required to determine the width of the culvert walls in the area that would support the gabion headwalls. Maccaferri’s Terramesh® System was used in conjunction with double twist mesh at the back of the headwalls, over the box culvert, to provide an additional resistance to any frictional loss between the culvert and the headwalls and anchor both headwalls to each other. A special detail was developed to fasten the wingwalls to the sides of the culvert cells. Detailed elevation, profile, and sectional views were developed to show the varying wingwall sections.

A gabion scour protection apron was constructed at both ends of the culvert. MacTies were used to stiffen the gabions, and to help standardize the assembly process throughout the project. Construction was completed in a timely manner, despite an unusually heavy rainy season.

Client
INTEC CONSTRUCTION GROUP

Main Contractor
CORATEX CONSTRUCTION CO. INC. (coratexpr@yahoo.com)

Products Used
GABIONS & TERRAMESH® SYSTEM

Date of Construction
NOVEMBER 2011 — FEBRUARY 2012

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Scour apron and wingwalls during construction

Upstream end near completion

Headwalls linked across roadway

Upstream end after completion