

### MSE STRUCTURE SUPPORTS DEVELOPMENT

LAS VEGAS, NV, USA

#### RIVER BANK PROTECTION

**Product:** Terramesh<sup>®</sup>, Gabion Mats

##### Problem

Clark County, in the heart of Las Vegas, wanted to improve senior facilities in the area. A senior center was to be developed at Cambridge Park on a site immediately adjacent to Flamingo Wash. To maximize the land area available for development, retaining structures would be used instead of graded slopes. A near-vertical retaining structure was proposed along the banks of the Wash to train the river and support the new parking lot above.

##### Solution

Local engineer, K.J.E. Consulting Engineers Inc., approached Maccaferri Inc. for assistance in the design of the retaining structure.

Maccaferri proposed its Terramesh<sup>®</sup> mechanically stabilized earth (MSE) system. Terramesh<sup>®</sup> consists of a gabion facing unit with an integral soil reinforcing 'tail' element. The tail is compacted within the structural backfill embankment material, interlocking with it and reinforcing it.

The Terramesh<sup>®</sup> structure has a maximum height of 21'. The foundation of the MSE structure is 5' below the typical river water flow level. Being adjacent to the river, there was the risk that the flow could erode the river channel beneath the toe of the MSE structure, possibly destabilizing it. Maccaferri therefore detailed a 1' thick gabion mat as a scour protection apron at the toe of the Terramesh<sup>®</sup> wall. The design of the structures assumed that the river had a design flow of 550 cfs at a slope of 0.9%.

The gabion mats are made from Maccaferri double twist steel woven wire mesh with an additional PVC coating. The double twist mesh is very robust and can accommodate large differential settlement without rupturing or 'unzipping' - an essential characteristic in this river environment.

The design was completed in late 1998 and Clark County received bids for the project in December 1999.

Client:

CLARK COUNTY, NV

Main contractor:

EVON CONSTRUCTION INC.

Designer:

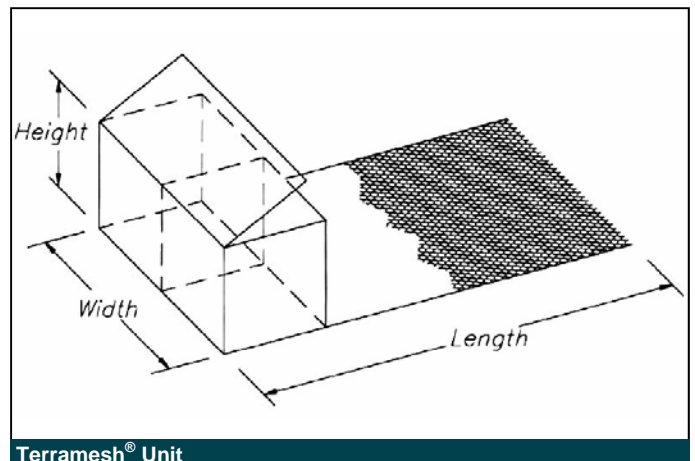
K.J.E. CONSULTING ENGINEERS, LAS VEGAS, NV

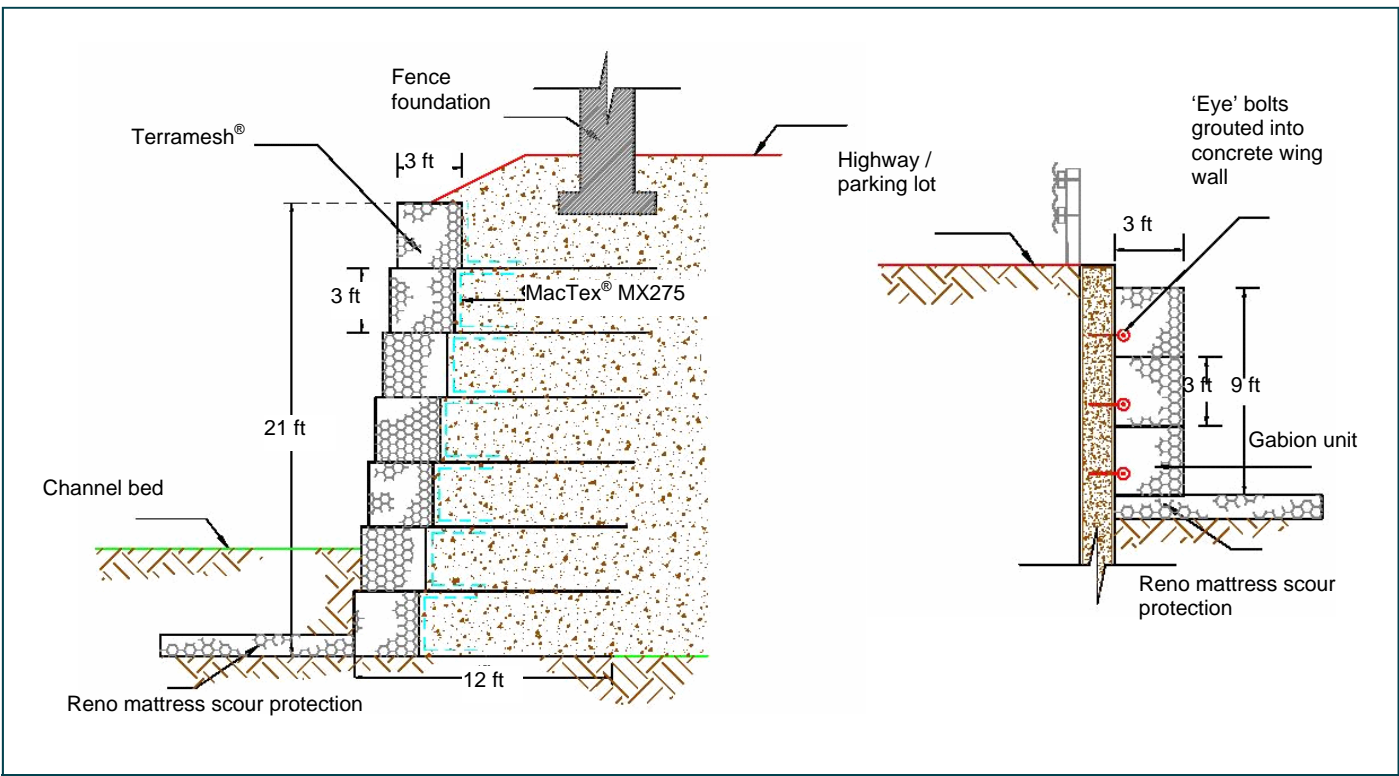
Products used:

2,100 CY TERRAMESH<sup>®</sup>, GABION MATS

Date of construction

SPRING 2000





Project section and wingwall fixing detail

EVON Construction was engaged as specialist sub-contractor to install the Terramesh® and gabion mats. The grading and utilities subcontractor completed the soil compaction behind the wall.

The Terramesh® and gabion mats were filled with a hard durable, non-friable rock, to offer many years of life. Where the Terramesh® MSE structure met the existing highway bridge over Flamingo Wash, the units were locally shaped on site to suit the individual conditions.

To limit the river washing out fine material and soils from behind and beneath the structure, a geotextile was installed beneath and behind the structure.

Maccaferri Terramesh® MSE System has been assessed by HITEC, an independent organization created through collaboration of the FHWA, TRB and the ASCE to assess innovative solutions for use in public sector civil engineering projects. This report is available from the HITEC website at [www.cerf.org/hitec](http://www.cerf.org/hitec).

To date, all parties involved are very pleased with the appearance and quality of construction. The entire project has a very high approval rating in the area.



Completed Terramesh® structure

Date: Spring 2000

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