

Muddy River—Cooper Street Bridge
MOAPA VALLEY, NV

EROSION CONTROL

Product: Gabion and Gabion Mattresses, Non-Woven Geotextiles

Problem

Moapa Valley in Nevada has a history of flooding and severe storms that date from the early 1900's. Discharges over 8,000 cfs regularly damaged rail road structures were common, 1938 recorded the largest general flood for the Muddy River basin, with peak discharges as high as 15,000 cfs.

Flooding continued over the years. The Clark County Regional Flood Control District and Clark County Public Works eventually designed a flood control plan.

Solution

GC Wallace Inc. (GCW), a civil engineering firm in Las Vegas, NV, designed the Muddy River—Cooper Street Bridge rehabilitation project that consisted of widening of the Muddy River as a flood control measure to keep the storm flows contained within the channel, adjacent properties and structures were affected when the river swelled up during storm events. This project was the first phase of a much longer plan for river widening to mitigate the flooding along the Muddy River. The Cooper Street Muddy River crossing was a low water crossing



Downstream view of the Channel



Gabions being filled at cutoff walls



January 2005 Flood



Upstream view of new Bridge

Client:

CLARK COUNTY REG. FLOOD CONTROL DISTRICT

Main contractor:

MEADOW VALLEY CONTRACTORS – LAS VEGAS NV

Designer:

G.C. WALLACE ENGINEERING, LAS VEGAS NV

Products used:

PVC GABIONS, GABION MATS, GEOTEXTILES

Date of construction

AUGUST 2015

MACCAFERRI

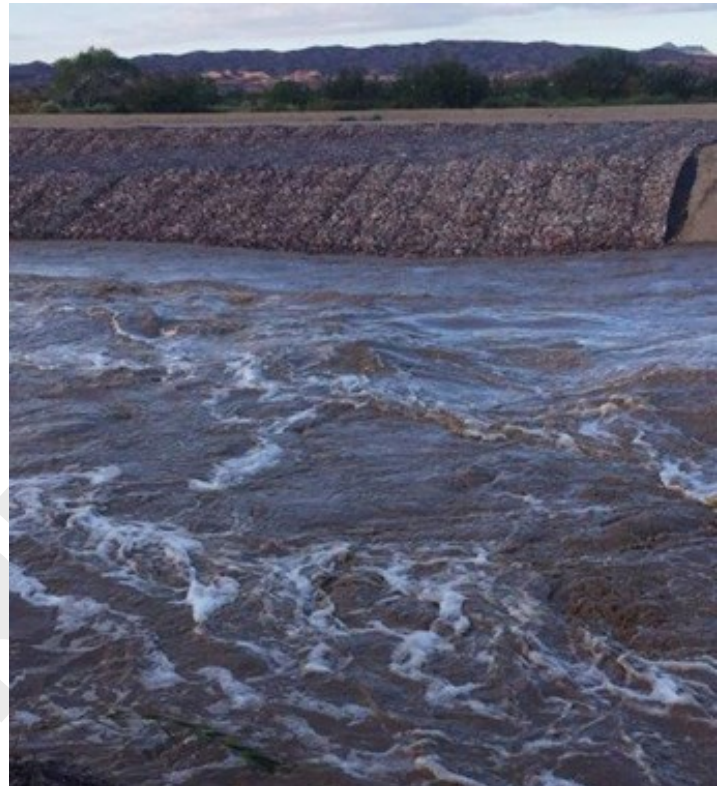
with the river going under the roadway through concrete box culverts during normal flow. During higher flows or following heavy rain, the flow was over the roadway. The existing river was very narrow and lined with heavy vegetation. The new bridge structure is approximately 20 feet above the new concrete channel invert.

In addition to the concrete structures, gabions from Maccaferri were installed, along with riprap.

The project starts upstream with a trapezoidal gabion mattress channel 359 feet in length, to connect to the concrete channel that transitions from trapezoidal to rectangular, then crosses under the new bridge and transitions back to the trapezoidal shape, with a length of 1,484 feet. The concrete channel downstream connects to a trapezoidal gabion mattress channel that runs for 100 feet, then continues with riprap bank protection for about 1,130 feet on the east bank and about 2,050 feet on the west bank.”

The Maccaferri gabion mattresses were placed over a layer of Type II gravel. The gabions are PVC coated, and on this project they were connected with stainless steel Spenax rings to withstand the inimical soils of the area. A nonwoven geotextile (Maccaferri MacTex N47.1) was installed underneath the gabions and mattresses.

Nearly 6,900 cubic yards of Maccaferri 1.5-foot-thick gabion mattresses were used for the channel linings and about 1,300 cubic yards of 3-foot-tall gabions were used for the cutoff walls at the beginning and transition of the channel and toe of riprap bank protection.



Flood of 10/19/15, After project was complete



Project Design

Maccaferri Inc.

10303 Governor Lane Boulevard, Williamsport, MD 21795

T: 301.223.6910 F: 301.223.4590

E: info@us.maccaferri.com

www.maccaferri.com/us

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