

PROTECTION OF ERODED RIVER BANK TUCKER GULCH, COLORADO, USA

RIVER BANK PROTECTION

Product: Gabions and Reno Mattresses

Problem

In the Summer of 2003, the City of Golden, Colorado, suffered a 1:100 year storm event. The storm water flows were sufficiently high to wash 5000lb boulders downstream. At Tucker Gulch the erosion was severe and properties adjacent to the river were in jeopardy.

Solution

The City of Golden approached Maccaferri Inc. for assistance in designing a gabion mass gravity structure that would retain the unstable river bank and also provide erosion protection for the future. This dual function is an ideal application for gabions.

The channel was 7 ft deep prior to the storm. However, a 15 ft high retaining structure was now required - evidence of the amount of erosion caused by the storm.

An 18" thick scour protection apron was detailed at the toe of the retaining structure, protruding 9 ft into the channel. This provides scour protection and limits erosion undermining the toe of the structure.

The upstream end of the gabion retaining structure was cut back into the existing river bank to provide a smooth transition between the unprotected river bank and the new structure.

Maccaferri gabions are manufactured in accordance with ASTM 975 from double twist hexagonal galvanized steel wire mesh. The woven mesh is very robust and can accommodate large differential settlements without rupturing or 'unzipping'. The junction strength (or weave) is at least as strong as the wire itself. Stresses in the mesh can be dissipated in two dimensions throughout the mesh.

This characteristic of the double twist woven mesh is vital in critical infrastructure applications where there is the potential for differential settlement.



The eroded river bank showing debris carried by storm flow



Completed gabion structure



Completed gabion structure at downstream end

Client:

CITY OF GOLDEN, COLORADO

Main contractor:

CITY OF GOLDEN CONSTRUCTION CREWS

Designer:

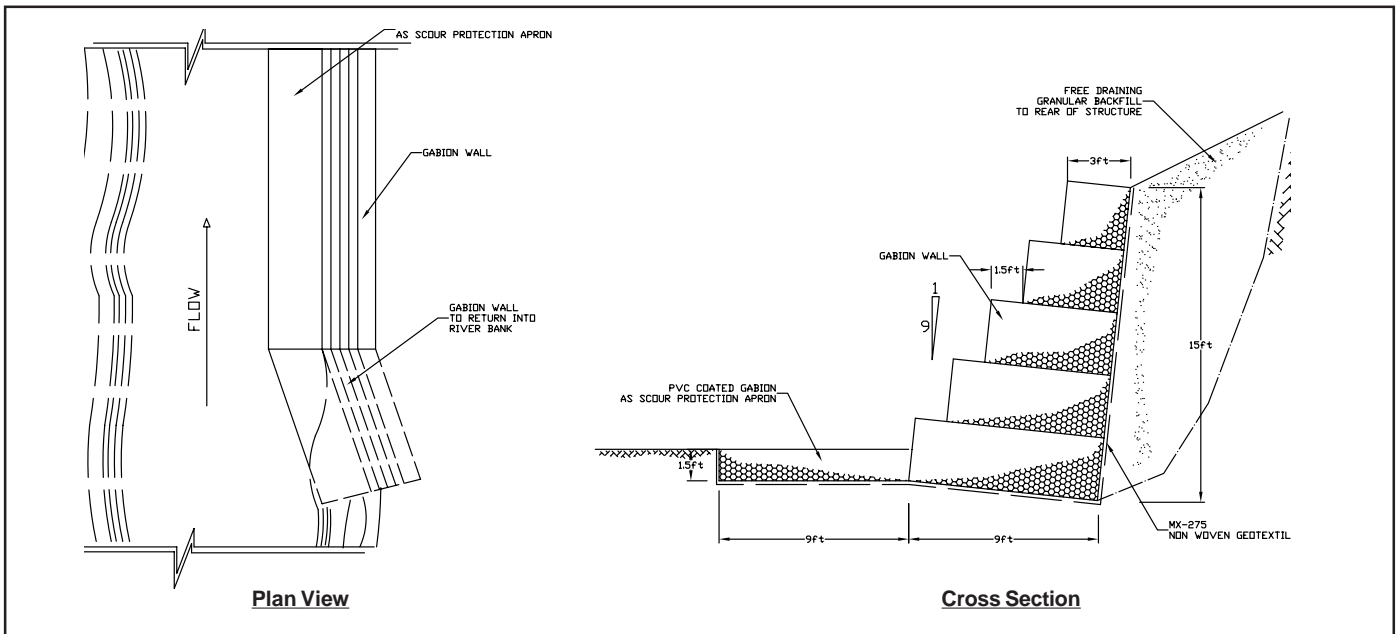
CITY OF GOLDEN, MACCAFERRI INC.

Products used:

GABIONS, MACTEX

Date of building:

FALL 2003



Typical details showing plan view and cross section through the gabion retaining structure



Tucker Gulch after the 1:100 year storm event looking downstream



Tucker Gulch after the 1:100 year storm event looking upstream



Completed gabion structure looking downstream



Completed gabion structure looking upstream

<p>Headquarters - East Coast 10303 Governor Lane Blvd, Williamsport, MD, 21795 Tel.: (301) 223 6910 Fax: (301) 223 4356</p>	<p>MACCAFERRI INC. E-mail: hdqtrs@maccaferri-usa.com Web site: www.maccaferri.com</p>	<p>West Coast 3650 Seaport Blvd, West Sacramento, CA 95691 Tel.: (916) 371 5805 Fax: (916) 371 0764</p>
--	---	--