

RETAINING STRUCTURE SUPPORTING HIGHWAY CITY OF CAPE GIRARDEAU, MISSOURI, USA

GRAVITY RETAINING STRUCTURE

Product: Gabions, MacTex Geotextile

Problem

The City of Cape Girardeau had observed the ongoing erosion of a slope, caused by a creek at its base. The slope supported a busy highway and the City was concerned that if the erosion was allowed to continue the stability of the road was in jeopardy.

Solution

City of Cape Girardeau design engineers wanted a rapid to install, cost effective solution that would retain the vulnerable highway as well as stop erosion caused by Mt. Auburn Creek.

A Turf Reinforcement Mat (TRM) used as a light revetment protection was rejected, as the slope crest was very close to the highway. A retaining structure would allow the City to backfill between the structure and the highway, thereby re-creating a verge / shoulder to the road.

Double twist steel wire mesh gabions offered the following advantages over traditional retaining structures, such as concrete and steel sheet piling;

- Free-draining, thereby limiting the build up of pore water pressure
- Flexible enough to accommodate large differential settlements
- Can be amended on site to suit obstructions, e.g. pipes
- High capacity erosion protection

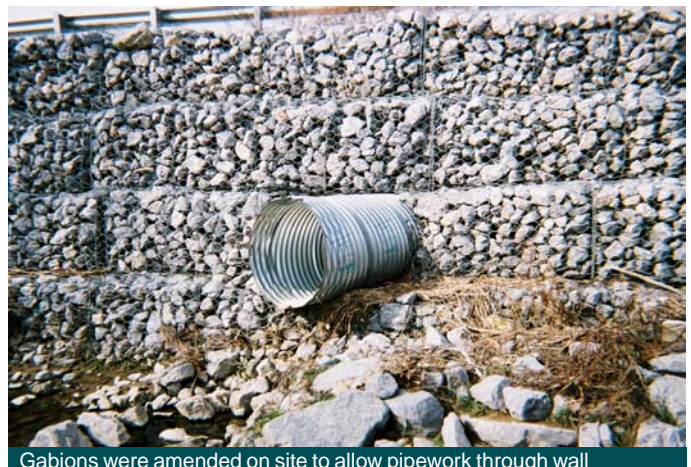
As the gabion retaining structure was to to be used as river training works as well, an allowance had to be made for future scour at the toe of the structure. A 3 ft deep embedment was therefore detailed.



Gabion wall retaining highway



View of gabion wall



Gabions were amended on site to allow pipework through wall

Client:

CITY OF CAPE GIRARDEAU, MO

Main contractor:

LAPPE CEMENT

Consultant:

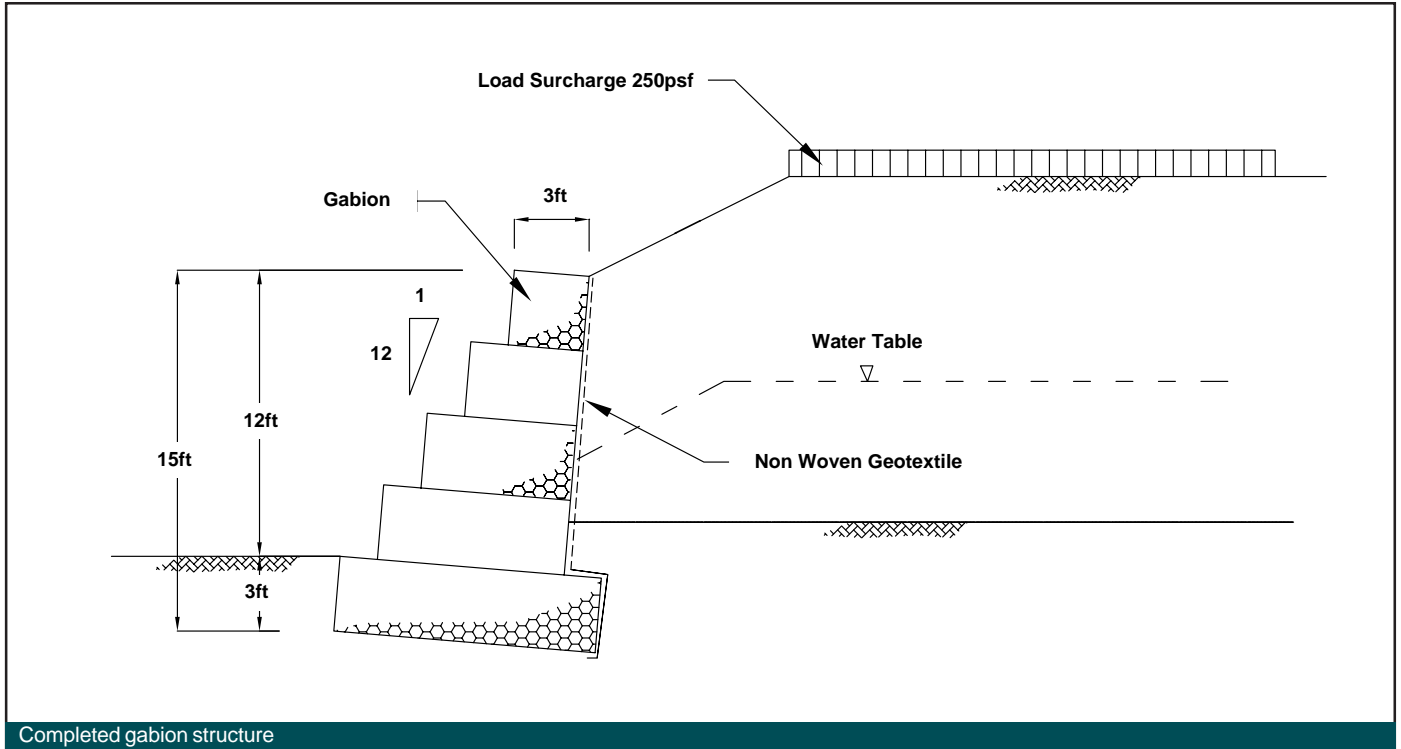
CITY OF CAPE GIRARDEAU

Product used:

450 M³ OF GABIONS

Date of building:

FEBRUARY 2003



A 3ft diameter aluminum pipe had to be passed through the gabion wall. The gabions were locally cut and relaced together on site, to allow the pipe to pass through them. The gabion stone fill was packed tightly around the pipework to minimize settlement.

A high survivability non-woven needlepunched geotextile was placed behind the gabions to prevent the wash out of fine material through the gabions during flow conditions. This is good engineering practice when using gabions in water environments.

Due to the need to stop the erosion problem, the 15ft high gabion structure was constructed rapidly, and backfilled. The highway verge was reinstated,



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Headquarters - East Coast

10303 Governor Lane Blvd, Williamsport, MD, 21795
Tel.: (301) 223 6910 Fax: (301) 223 4356

MACCAFERRI INC.

E-mail: hdqtrs@maccaferri-usa.com
Web site: www.maccaferri.com

West Coast

3650 Seaport Blvd, West Sacramento, CA 95691
Tel.: (916) 371 5805 Fax: (916) 371 0764