



CASE STUDY:

SOIL REINFORCED WING WALLS

**COBBLER CREEK, SOUTH AUSTRALIA
SEPTEMBER 1989**

UPDATED FEBRUARY 2019

Maccaferri ® Terramesh ®

Maccaferri Terramesh is a versatile, modular system for reinforced slope systems and mechanically stabilised earth walls that can be a more cost effective solution than the mass gravity Gabion wall because of the speed of installation and reduced rock fill requirements.

The Maccaferri Terramesh system comprises of a gabion type facing with integral woven mesh soil reinforcement panels that can be used to construct structures with either a stepped front face or vertical facing.

They are pre-assembled units of double twisted wire mesh.

They can be used individually or combined with geogrid reinforcement for the stabilisation of soil slopes in a wide range of applications including slip repair work and steep slope construction.

In 1988 the Highways Department of South Australia requested Maccaferri to prepare a design suggestion for a bridge using a gabion type facing in combination with a large horseshoe culvert.

The structure would need to support a roadway over a flood-prone stream with unstable banks.

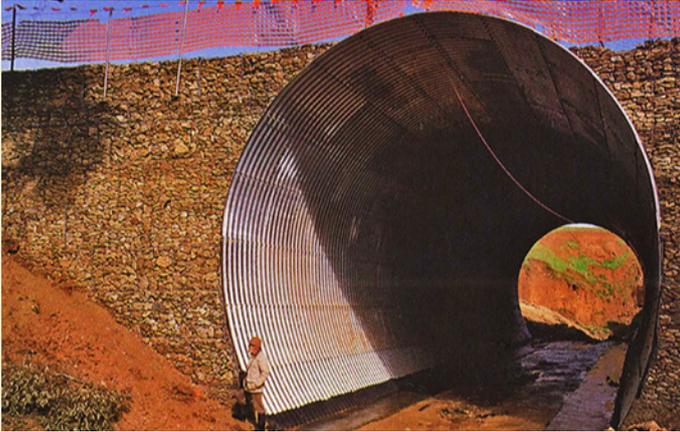
The solution prepared by Maccaferri was chosen as the most cost effective, technically suitable to the ground conditions, and environmentally acceptable.

An eight metre high multi-plate steel horseshoe arch was constructed on concrete footings, with Terramesh vertical structures installed as wingwalls upstream and downstream to provide flexible, durable and aesthetic faces at each end. The Terramesh Mechanically Stabilised Earth (MSE) system consists of a gabion type facing with integral polymer coated woven mesh soil reinforcement extending into the backfill.

The arch was embedded in concrete footings, at the creek bed, and built by assembling multi-plate steel sections in-situ.

The Terramesh system was installed to form vertical end faces, up to road pavement level. Abutment fill was placed and compacted as the Terramesh work progressed, with the soil reinforcement panels laid six metres back into the select fill material.

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During construction in September 1989



The Terramesh structure upon inspection in 2008, nearly 20 years after installation.



30 years later and the structure is still in excellent condition. Photo taken February 2019.

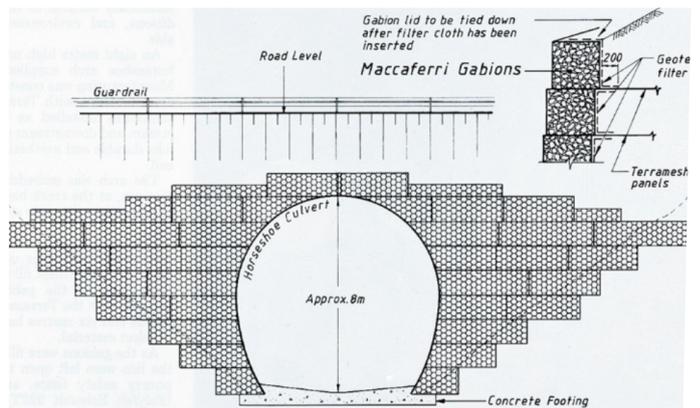
Whilst the gabion facing was filled with rock, the lids were left open to form a temporary safety fence, and filter cloth (Non-woven geotextile) was placed between gabion facing and backfill to form a separation layer, yet allowing filtration and the ability to overcome hydrostatic pressure. The polymer coated reinforcing mesh panels were sandwiched between the geotextile layers for a short distance behind the facing.

Since the creek embankments consist of unstable loamy clay soil, prone to slips, the Terramesh walls were selected to accommodate subsidence and any movement of the structure without failure.

The project is located at the Grove Way about 17km north of Adelaide. The Terramesh work was supplied and overseen by Recreation Consultants Pty Ltd for the Highways Department.

The Highways Department was no stranger to steel arch crossings and installed a number of smaller ones nearby on Grove Way.

The structures were inspected in October 2008 (almost 20 years after they were installed) and in February 2019 (30 years after they were installed). The polymer coated woven mesh appeared to be in excellent condition and showed no signs of corrosion or stress. Definitely a long term solution.



Original drawing of culvert and wing-walls from 1988.