MACCAFERRI

CASE HISTORY

Ref: USA003 - Rev: 003, Issue Date 14.12.2004

PROTECTION OF EXPOSED SEWER LINE
SANTA FE, NEW MEXICO, USA

RIVER BANK PROTECTION - WALLED SURFACE
Product: Gabions and Geogrids

Problem

A late winter storm caused extensive erosion of the Santa Fe River, NM. The high flows exposed a 24" diameter sewer main serving the City of Santa Fe, which created the potential for the pipework to fail.

The City of Santa Fe Watewater Management Division responded rapidly, as the imminent rainy season could bring additional rainfall problems. The solution had to retain the river bank, protect the pipework, and provide long term erosion protection for the future.

Preparation of embankment to receive structure

Solution

A mechanically stabilized earth (MSE) structure with a gabion face was selected as the most effective solution. The gabions would provide long term high capacity erosion protection and the geogrid would reinforce the reinstated embankment.

Coated polyester soil reinforcement geogrids were used to facilitate the reuse of on-site material. Polyester geogrids are effective with a wide range of structural backfills.

The MSE structure was 15ft in height, of which 6ft was beneath the channel bed to provide an allowance for future scour. A geotextile was installed on the back of the gabion facing units to prevent the structural backfil migrating into the voids within the gabion, particularly during high water flow conditions in the river.

Securing geogrids to the rear of the gabions

A 2,750 lb/ft geogrid was secured to the rear of the gabion facing, at the designed levels, and back fill was placed and compacted in 8" lifts upon the geogrid.

The wall was keyed into the existing slope at both the downstream and upstream ends to provide a smooth transition between the protected and unprotected river banks, limiting erosion.

Compacting structural backfill onto the geogrids

Client:

CITY OF SANTA FE, WASTEWATER MANAGEMENT DIV.

Main contractor:

EKER BROTHERS, SANTA FE

Designer:

MACCAFERRI INC

Products used:

GABIONS, RENO MATTRESSES, 40kN MACGRID

Date of building:

SUMMER 2001

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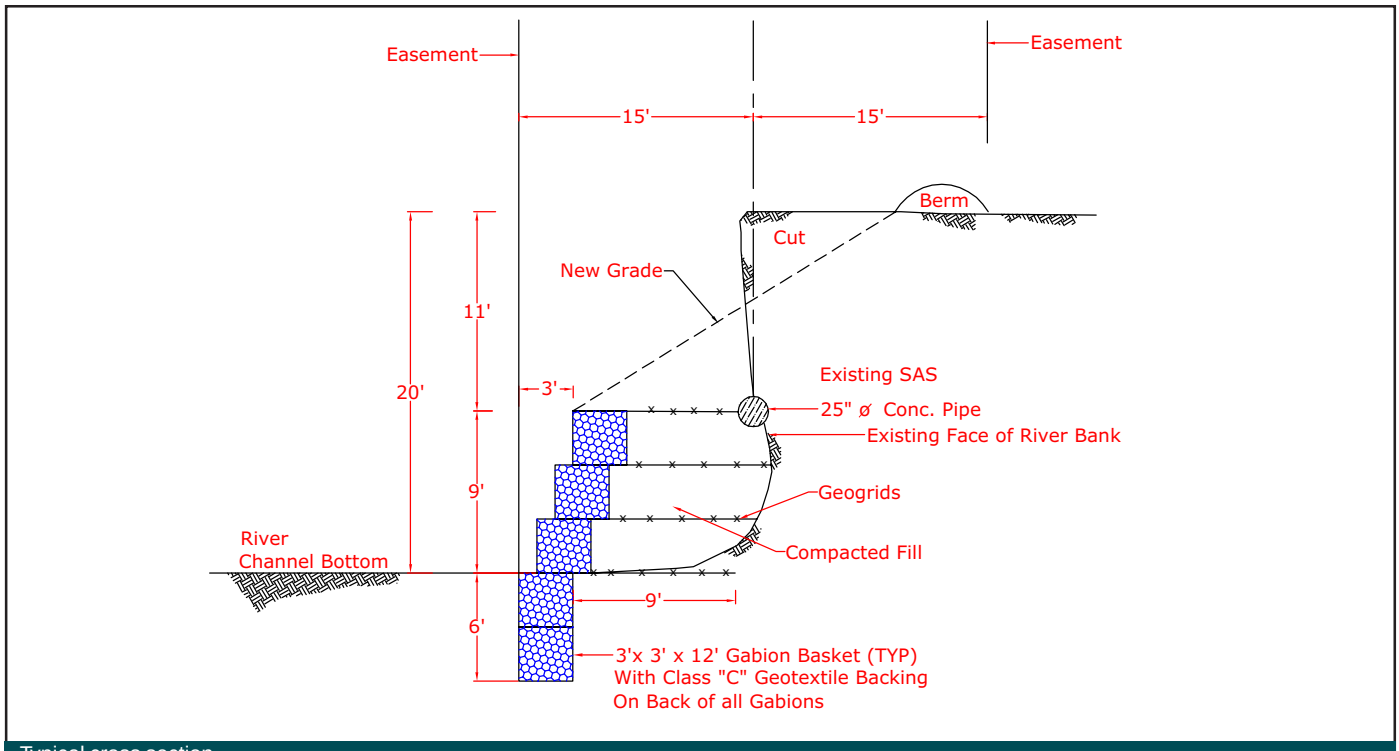

Typical cross section

Completed structure

By reusing on-site material, the import of selected granular material was avoided, reducing the cost of the project, both financially and environmentally. Sustainability of scarce resources is an important consideration in construction projects.

Construction was achieved within the clients budget and program.

Maccaferri Inc. gabions and mattresses are manufactured strictly in accordance with ASTM 975. The double twist hexagonal mesh is very robust, and can accommodate large differential settlement without rupturing or 'unzipping'. The junction strength (or weave) between adjacent wires in the mesh is as strong as the wire itself. Stresses in the mesh can be dissipated in two dimensions throughout the mesh. This ability continues even if wires are cut or damaged.

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

Working with Maccaferri

For over 120 years, Maccaferri has provided engineering expertise to clients around the world. We believe that the combination of our professionalism, design software, technical and site assistance service and our aim of providing the best products in the market, sets us apart from our competitors. We hope you agree

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