

KILDARE ROUTE: IRELANDS TRANSPORT 21 SCHEME CHERRY ORCHARD, DUBLIN

SLOPE REINFORCEMENT

Product: Gabions, MacMat-R

Problem

The Kildare Route Project has its origins in Ireland's National Development Plan which identifies the need to invest in public transport and in particular to improve the quality, speed and reliability of rail services, in order to reduce private car usage.

The project facilitates the provision of new commuter stations as well as upgrading existing stations. It will also deliver improved transport services to Kildare, Carlow and Laois.

The Kildare Route was looking for various types of retaining structures as these were needed along the new track alignment. The solution was dependent on available space and material that could be retained.

In this location to the south of the centre of Dublin, the railway was to be widened from 2 tracks to 4 tracks.

Solution

Byrne Looby and Partners were engaged by main contractor Siac Ltd, to value engineer the originally designed proposals as detailed on the project drawings.

Multiple types of retaining structures had been detailed depending on available space and material retained along the new track alignment. This included concrete crib, sheet piles and king-pile/shutter retaining systems.

Byrne Looby approached Maccaferri for assistance in the selection of suitable alternative retaining systems.

Where concrete crib was detailed, Maccaferri proposed gabions. These were accepted due to cost savings, plus the time to install was similar. The gabion walls were typically used at pinch points and where the retained material was made ground.

In certain areas, the ground to be retained was suitable for reinforcement by soil nailing. Byrne Looby designed a soil nail solution to structurally reinforce the 60 degree slopes. MacMat R was detailed as the fascia to the soil nailed slopes.

Client:

IARNROD EIREANN (IRISH RAIL)

Designer:

SIAC CONSTRUCTION LTD

Main contractor:

SIAC CONSTRUCTION LTD

Sub-contractor:

ALBION DRILLING LTD

Products used:

MACMAT- R, GABIONS

Date of construction

Spring 2008 and March 2009



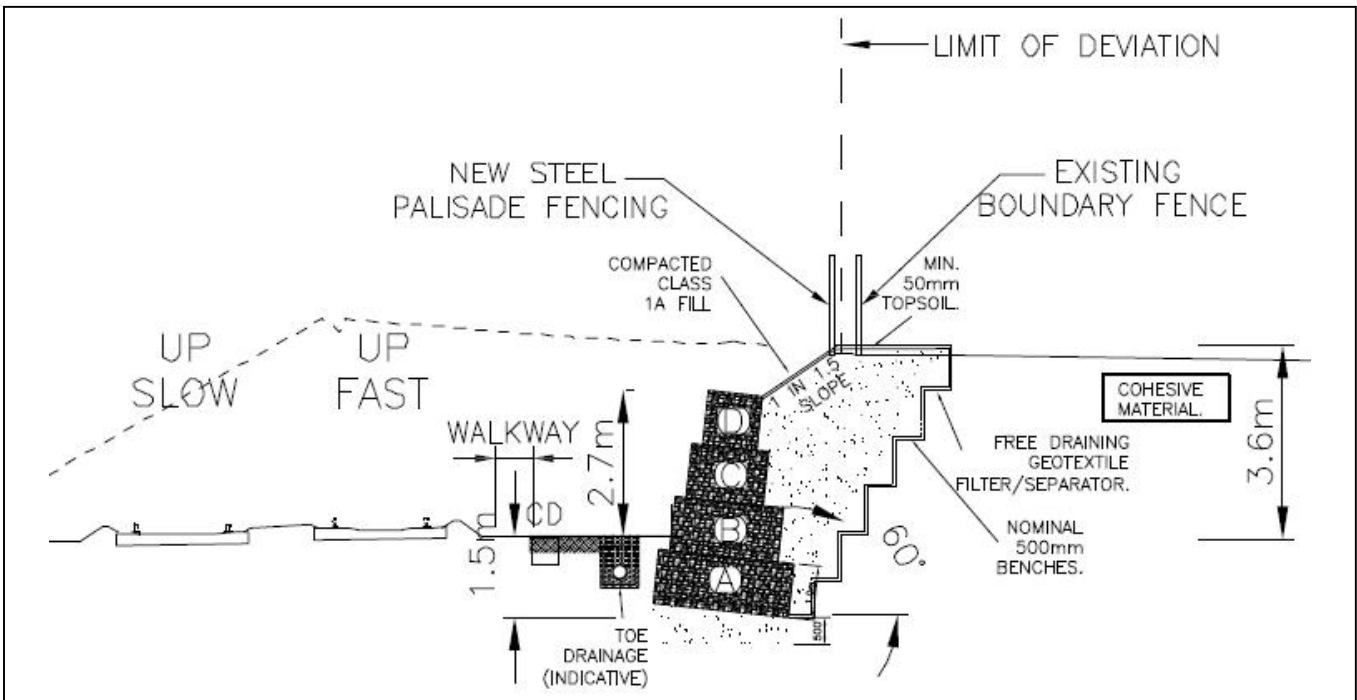
During construction



Gabion installation



MacMat-R and soil nails



Typical cross section through gabion retaining structure

MacMat R and soil nails, in conjunction with decent topsoil, create a vegetated face finish. On this project, the MacMat R face was hydroseeded to accelerate the establishment of vegetation.

MacMat R is a steel mesh reinforced geomat. The geomat is a 3-dimensional matrix of polymer fibres, which are extruded onto the PVC coated steel wire mesh reinforcement, enveloping it. This one-piece product is more robust and is faster to install than 'two piece' systems, which can easily delaminate under site conditions.

Successful vegetation relies upon intimate contact between the MacMat R and the topsoil beneath. As vegetation develops through the mesh, the mesh reinforces the root-system of the plants, enhancing the binding function of the vegetation on the topsoil.

The gabions selected were woven double twist PVC coated units. These offer a far greater ability to accommodate differential settlements in the poor ground than welded gabion units are capable of withstanding, including Maccaferri's own welded gabions. The woven double twist units are BBA Certified with a recommended design life of up to 120 years.



MacMat R and Soil nails after hydroseeding



Gabion Structure nearing completion

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