



Completed photo of the TensorTech® TW3 Keystone faced reinforced soil retaining wall system in late 2020.



Walls and Slopes Nº 483

Oakdale West Industrial Estate

📍 Sydney, Australia

CONSTRUCTED IN 2020

Benefits

Optimised design

by using wider geogrid spacing and varying geogrid grades

Reduced construction time and effort

using mechanical connection between the TensorTech® TW3 Keystone & Tensor RE500 uniaxial geogrid

TensorSoil software was readily available

to design as per the Australian Standard, AS4678

Time-saving solution with mechanical connection

The industrial estate development needed a grade separation solution for its warehousing industrial hub which involved varying heights. The reinforced soil structure was designed to accommodate a noise barrier wall positioned close to the wall face.

CLIENT'S CHALLENGE

A grade separation solution was needed for the warehouse at Oakdale West Industrial Estate development that will serve as an industrial hub for multiple industrial companies such as online retailers, automotive users, logistic services, and pharmaceutical products. A noise barrier was proposed above the wall to be built close to the wall facing and the top of the wall was designed to enable continuation of services.

TENSAR SOLUTION

Tensor's Australian distributor, Geofabrics, proposed the TensorTech® TW3 Keystone system reinforced with Tensor RE500 uniaxial geogrid. The TensorTech® TW3 Keystone system uses mechanical connectors between blocks and geogrids. The wall design benefitted from the positive connection as it allowed the utilisation of maximum geogrid long term design strength, enabling wider geogrid spacing compared to frictional connection with different geogrid types. Five cross sections for the other geogrid layouts were designed in accordance with AS4678 and prepared using TensorSoil software for the 330m long wall with the height ranging from 3m to 13.4m.



Corrugated pipes for noise wall foundations were installed close to the wall face, surrounded by Tensor RE uniaxial geogrids

PROJECT BACKGROUND

The Oakdale West Industrial Estate is a large-scale precinct in western Sydney that forms part of the development project for the Western Sydney Employment Area (WSEA) with a total area exceeding 300 hectares. Geofabrics worked with the design and build contractor UCBC and their appointed designer, CMW Geosciences, to provide technical support on reinforced soil wall solutions.

The TensorTech® TW3 Keystone system with RE500 uniaxial geogrid was proposed as the grade separation solution. The advantage of using a mechanical connector for this system was reflected in the design as the maximum geogrid design strength could be adopted at the geogrid to modular facing block connection. Therefore, wider geogrid spacing can be adopted which increases construction speed by increasing fill lift thickness and reducing the overall geogrid quantity .

The reinforced soil wall was specifically constructed to incorporate the noise barrier wall close to the wall facing. The noise barrier wall foundation was addressed separately from the wall design by slotting deep poles into the corrugated pipes behind the wall face, then embedding in the foundation soil filling with grout to provide structural support.

The 1m top portion between the wall facing and noise barrier wall was further strengthened with no fines concrete and 2 layers of geogrid at 2m length.

Main contractor

UCBC Pty Ltd

Distributor

Geofabrics Australasia
Pty Ltd

Consultant

CMW Geosciences
Pty Ltd