



**Tensar**<sup>®</sup>



TensarTech<sup>®</sup> TW1 Retaining Wall System – KRL Railink Basoetta

## Elevated rail link solution

To create a more efficient access from the city centre of Jakarta to the Soekarno-Hatta International Airport (Basoetta), an electrified airport rail link was built from Batu Ceper, Tangerang to the airport terminals in 2017.

PT Multibangun Rekatama Patria provided a construction solution using the versatile TensarTech<sup>®</sup> TW1 Retaining Wall System - marketed in Indonesia as Multiblock Retaining Wall System.

### CLIENT'S CHALLENGE

This section of the project presented various challenges, including a short construction period and restricted access, which crossed densely populated settlements. Moreover, due to land acquisition delays, this prevented equipment and materials being delivered to the entire length of the retaining wall from the start of construction. Also, social concerns demanded that high levels of construction noise and vibration from heavy machinery were not permitted. However, because the structure was required to support the load from trains, a high standard of construction was essential.

### TENSAR SOLUTION

PT Multibangun Rekatama Patria (the distributor of Tensar geogrids and systems in Indonesia) designed, supplied and installed the TensarTech<sup>®</sup> TW1 Retaining Wall System to support this 2 km section of elevated rail track. The construction started in March 2017 and was completed in 9 months, which was 3 months shorter than the targeted construction time. Despite the time and access restrictions, this excellent result was possible due to the flexible nature of the retaining wall system, permitting access to many locations at the same time so that the installation programme could be optimised by careful planning.

## KRL Railink Basoetta

Earth Retaining Walls

📍 Jakarta, Indonesia

### BENEFITS

**0.2 g earthquake acceleration**

included in the design

**25% time saved**

over the targeted one-year construction period

**2 km length retaining wall**

with a maximum height of 10 m

**300,000 modular concrete blocks**

successfully installed with restricted access

REF TEN417



The completed TensarTech® TW1 Retaining Wall System decorated by local artists with murals and an earlier view of construction in progress

## PROJECT BACKGROUND

The TensarTech® TW1 Retaining Wall System supports both sides of the double track railway for 2 km of the route heading towards the Soekarno Hatta Airport and with a maximum height of 10 m.

This system consists of modular concrete facing blocks with a high strength mechanical connection to the Tensar uniaxial geogrids used to reinforce the fill. For this project, a well graded sandy gravel fill was used, to help meet the tight construction schedule, and ensure a high degree of compaction with minimum post-construction deformation.

Design calculations were carried out based on the two-part wedge method of analysis using the TensarSoil design program, which was also used to verify the design for the seismic loading case for which both horizontal and vertical accelerations were taken into account. When designing a retaining wall to support a railway, a high degree of certainty is required in all aspects of the techniques used, including design methods, materials and the installation procedure.

As well as supporting important infrastructure, some parts of the project have now become a tourist attraction with local community involvement from young artists adding artwork and murals to decorate the wall.

Main Contractor:  
**PT Waskita Karya**

Consultant:  
**PT Virama Karya**

Client:  
**PT. KAI**  
**(Kereta Api Indonesia)**

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*“This construction technique is flexible, especially in dealing with problems on site, both technical and social”*

PT Multibangun Rekatama Patria

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