



Use of Polymeric Strip for the construction of Reinforced Soil Wall

Reinforced Soil wall with concrete facing panels and geogrid as reinforcement are well-known systems used in India and abroad for the construction of retaining walls, abutments, and wing walls. The polymeric strip was introduced as a replacement for the metallic strip reinforcement in the early 1960s, which represented evolution and a significant advantage for both cost-effectiveness and performance over the metallic strip.

Polymeric strip-reinforced Soil walls are recommended in the construction of RSW in case of poor subsoil conditions, chemically aggressive environment, or in warm climates, where steel could represent an issue. The general behaviour of the reinforced soil wall structure depends on the interaction between the soil reinforcing elements and the surrounding soil, which is linked to the properties of the materials used and the construction methods adopted. As an alternative to traditional systems, high adherence polymeric soil reinforcing strips have been introduced in order to increase the design life of the wall even in highly aggressive environments, reduce the overall project costs and provide design flexibility.

RSW with polymeric strips are popular structures all over the world but relatively recently getting popular in India. We would like to share a similar case study as follows

REINFORCED SOIL WALL FOR BRIDGE APPROACH AND RECONSTRUCTION OF ROB 39A AT GONDAL RAILWAY PORTION, GUJARAT

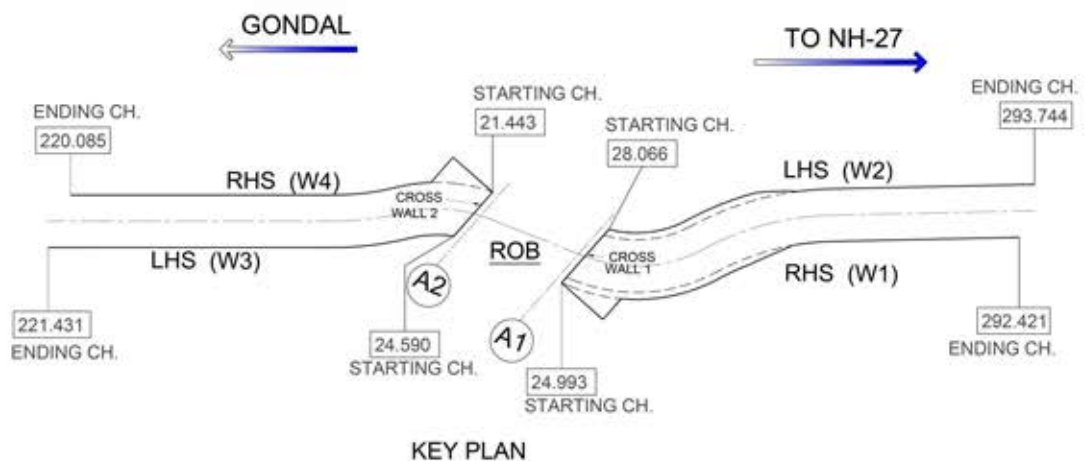
Products used : TECHSTRAP POLYMERIC STRIP

Quantity supplied : 72473 M

Year of construction : NOV 2019 - OCT 2020

Problem: Project scope included reconstruction of ROB in the prime area of Gondal. Old ROB was aligned in skew and there was no other alignment possible for approaches due to city congestion. For ROB, maximum wall height was approximately 11m and for such height, RCC walls would not only be costlier but also difficult to construct. Due to various reasons such as limited right of roadway; to minimise land acquisition, poor founding soil conditions, aesthetics, economy considerations & ease of construction etc., Consultant suggested to construct Reinforced Soil Walls (RSW) for approach of ROB

Solution: After going through soil investigation report and site visit, consultant proposed construction RSW with polymeric strip as it this system can reduce project cost and environmental impact compared with traditional methods.



RS walls with Polymeric Strip have many advantages compared with conventional solution. Some of these are:

- Simple and rapid construction procedures and do not require large equipment
- Need less space in front of the structure for construction operations
- Has flexibility and capability to absorb deformation due to poor subsoil conditions in the foundations.
- Deep foundation are not required.
- Cost effective and aesthetically pleasing.

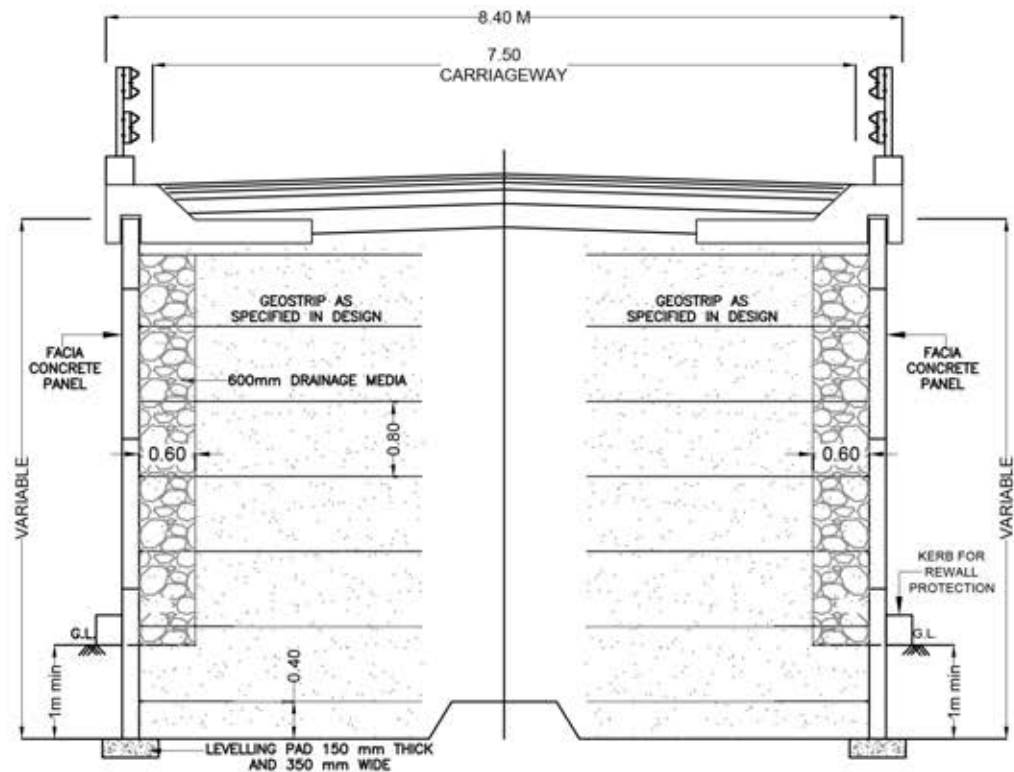
What is TechStrap Polymeric Strip?

TechStrap Polymeric Strips are geosynthetic strips (polymeric strips/straps with a flat webbing like structure) specifically engineered for the reinforcement of soils and other fills for the construction of reinforced soil or mechanically stabilised earth structures. TechStrap Polymeric strips comprise a core of closely packed and tensioned high tenacity polyester filament yarn tendons encased in a

tough and flexible sheath of linear low-density polyethylene. The Polyester filament yarns used in Strips are of high tenacity, high molecular weight and low carboxyl end groups, ensure high tensile strength and stiffness, low creep and excellent durability. The LLDPE sheath on the strip provides a tough, flexible and textured covering to the polyester tendons imparting dimensional stability, protection to the tendons from weathering and mechanical damage and developing excellent frictional interaction with fill. The Polymeric strip with high long-term design strength and stiffness and excellent bond strength is ideal for the reinforcement of soils and other fills for the construction of reinforced soil structures.

Proposed standard cross section drawing for variable height is as given below:

Based on height of RSW, strength of Polymeric strip and length of reinforcement of polymeric strip may vary. The project was successfully completed in October 2020.



CROSS SECTION OF RE WALL

NOTE:- ALL DIMENSIONS ARE IN METERS
UNLESS OTHERWISE SPECIFIED



Erection of RCC Panel in progress



Installation of Techstrap polymeric strip in progress



Completed RSW with TechStrap Polymeric Strip



About Techstrap polymeric Strip



TechStrap Polymeric Strips are manufactured from high-quality materials using state-of-the-art machinery. The manufacturing facility is ISO 9001:2015 certified and the product range is CE certified.

Our in-house laboratories have the latest equipment and accessories for testing the polymeric strips in accordance with ASTM and ISO standards. We have a stringent quality control programme for testing both incoming materials and finished products on a regular basis.

TechStrap Polymeric Strips have undergone a comprehensive series of third-party performance testing at TRI/Environmental Inc., USA, BTTG, U.K., BICS U.K, a world-renowned independent accredited laboratories.

The performance of TechStrap Polymeric Strips has been demonstrated through the successful completion of a large number of reinforced soil structures in India. The end-users of TechStrap Polymeric Strips include the National Highways Authority of India, State PWD's, Municipal Corporations, and Northern Railways etc.

Please Contact for further details :
Namrata Bichewar (Design Engineer)

Manish Barot
 Head of Technical Sales and Business Development,

TechFab (India) Industries Ltd.
 phone : 91- 22-2287 6224 / 6225
 e-mail : info@techfabindia.com
 website: - www.techfabindia.com