

CASE HISTORY

Rev:01, Date : 01.06.2020

SIX LANING OF KM 108+700 TO KM 192+000 ON VADODARA - BHARUCH SECTION OF NH-8 IN THE STATE OF GUJARAT ON BOT BASIS GUJARAT, INDIA



RS Wall with Segmental Panel facia

Client:	Products used:
L&T VADODARA BHARUCH TOLLWAY LIMITED	TECHGRID KNITTED & PVC COATED POLYESTER GEOGRID WITH TENSILE STRENGTH OF 40 TO 250 KN/m
Main contractor:	NONWOVEN GEOTEXTILE
L&T ECC DIVISION, AHMEDABAD	
Manufacturer & Supplier:	Year of construction:
TECHFAB (INDIA) INDUSTRIES LTD.	AUGUST 2009

Project description:

L & T ECC Ltd. has awarded the work of Reinforced soil wall to M/s Techfab India Industries Ltd. The scope of work include, design of reinforced soil wall, their approval, submission of drawings, supply of moulds and supervision at site. There are two ROB approaches, eleven flyovers and one vehicular underpass for reinforced soil work for approaches. Total stretch length of the project is around 70 Km, which starts from Vadodara city to Bharuch city in Gujarat, India.

Project Challenges:

Area is located, where the black cotton soil is available up to the depth of 3m to 8m. It was difficult to achieve required safe bearing capacity at the depth to 1 to 1.5 meter. Maximum height of the reinforced soil wall is 10 meter as it has to connect the ROB's as well as Flyover's.



Elevation view of RS Wall

Solution:

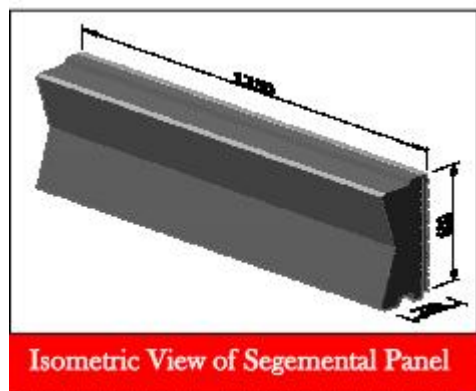
Detailed soil investigation has been carried out to know the actual extent of black cotton soil. Area, where the depth of soil is up to 2.0 to 2.5 meter has been replaced with good quality granular fill. Other areas, where the depth of black cotton soil is on higher side, it has been replaced up-to 2.5 meter, then provide the plate form with the layers of Geosynthetic material with granular fill with maximum of 500mm to 750mm. Over the plate form leveling pad has been placed for the erection work. Also to ensure the increased safe bearing capacity, plate load test has been done for verification.

Salient Features of the Reinforced Soil Walls :

- Wall Facing Area: 68,323 Sqm.
- Wall Height: 10m
- Soil Reinforcement: TechGrid knitted & PVC coated polyester Geogrids with Tensile Strength of 40 to 250 KN/m
- Facing: Segmental Panel Fascia
- Design Methodology: BS 8006: 1995 (Static Condition)
FHWA-NHI-00-043 (Seismic Condition)
- TFIL's scope of work: Detailed Engineering designs & drawings, supply of Geogrids, supply of Moulds for casting of Panels, Nonwoven Geotextile & Supervision of construction

Table-1 shows the property of the reinforced infill, retained fill and foundation soil taken into consideration in the designs.

Table-1



Property/Fill	Cohesion (C) - KN/m ²	Angle of Internal Friction (φ) -	Unit Weight (γ) - KN/m ³
Reinforced Infill Soil	0	35	20
Retained Soil	0	35	20
Foundation Soil	0	30	18

The borehole and foundation soil test report showed existence of black cotton soil in the area where the RS Wall was to be constructed. Thereby experts advice was taken and multi layers of good soil were provided by excavating the black cotton soil to achieve the required safe bearing capacity that will be sufficient to withstand the bearing pressure exerted by the weight of the infill and other external loads.

The design of the walls was carried out using the BS 8006: 1995 for Static Condition & FHWANHI-00-043 for Seismic Condition, which comprised checks for external, internal and global stability under static and seismic conditions.

Construction of the wall was carried out under the supervision of TechFab India Industries Ltd.



Elevation view of RS Wall



Abutment of RS Wall



Completed Wall

Conclusion:

The project was successfully completed in August 2009.

For further details kindly contact :

TechFab India Industries Ltd.

711/712, Embassy Centre, Nariman Point, Mumbai – 400021
Tel: + 91- 22 - 2287 6224 / 6225 Fax: + 91- 22 - 2287 6218
E: info@techfabindia.com
W: www.techfabindia.com