

CASE HISTORY

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CONSTRUCTION OF FLYOVER AT NANA VARCHHA ON VARCHHA ROAD IN SURAT, GUJARAT

SURAT, GUJARAT, INDIA



RS Wall with Discrete Panel facia

Client:	Products used:
SURAT MUNICIPAL CORPORATION	• TECHGRID KNITTED & PVC COATED POLYESTER GEOGRID WITH TENSILE STRENGTH OF 40 TO 250 KN/m • NON WOVEN GEOTEXTILE
Main contractor:	
RAJKAMAL INFRASTRUCTURES PVT LTD.	
Consultant:	Year of construction:
S N BHOBHE & ASSOCIATES PVT LTD.	JANUARY 2008
Manufacturer & Supplier:	
TECHFAB (INDIA) INDUSTRIES LTD.	

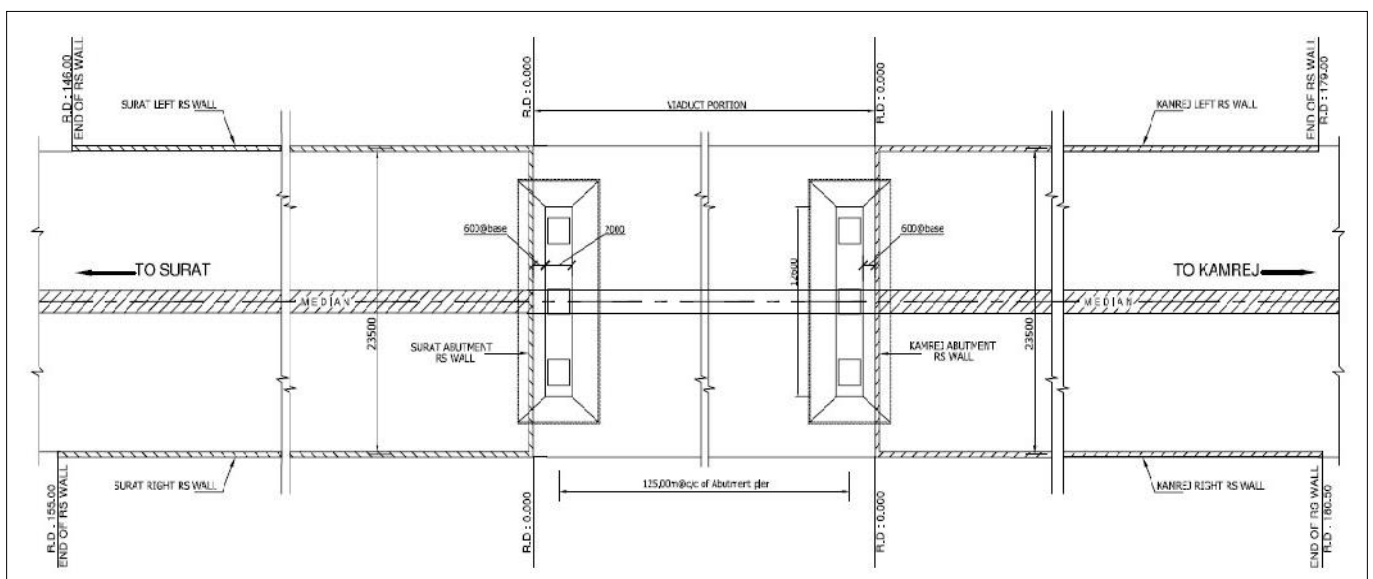
Project description:

Surat Municipal Corporation awarded the work of construction of Flyover at Nana Varchha on Varchha Road in Surat to M/s Rajkamal Infrastructures Pvt. Ltd. TechFab India Industries Ltd was awarded with the project for providing the detail designs and drawings for the Flyover with RS Wall. The Project consisted of RS Wall on Surat Left Side (146m) & Surat Right Wall (155m) and Kamrej Left Side (179m) & Kamrej Right Wall (180.5m) and their abutments. Techfab India Industries Ltd. provided the detailed designs and drawings for the project.

Solution:

After a careful evaluation of the project requirements and the existing site conditions a geogrid reinforced soil wall with discrete panel facia was considered as the feasible solution.

TechGrid knitted and PVC coated polyester geogrids, manufactured by TechFab (India) Industries Ltd. at their state of the art ISO 9001: 2000 certified plant in Silvassa, were used as the soil reinforcement. TechGrid geogrids are manufactured from select grades of high tenacity, high molecular weight polyester yarns using an advanced weft insertion warp knitting process and coated with a specially formulated PVC plastic. The high performance characteristics of these world class geogrids enabled the walls as high as 9m to be designed safely and economically.



Key Plan

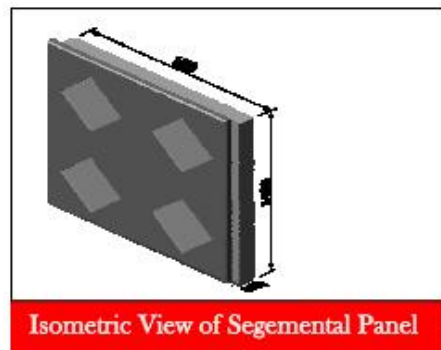
Salient Features of the Reinforced Soil Walls :

- Wall Facing Area: 3760 Sqm.
- Wall Height: 9m
- Soil Reinforcement: TechGrid knitted & PVC coated polyester Geogrids with Tensile Strength of 40 to 250 KN/m
- Facing: Discrete 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 Discrete Panels, Nonwoven Geotextile & Supervision of construction

Properties considered in the design of the RS Wall are shown in Table-1.

The fascia type used was a discrete panel type of size 1.48m x 1.48m x 0.18m. Due to the shape and size of the panel it was able to absorb differential settlement of magnitude significantly higher than other panel types.

Table-1



Property/Fill	Cohesion (C) - KN/m ²	Angle of Internal Friction (φ) - Degrees	Unit Weight (γ) - KN/m ³
Reinforced Infill Soil	0	32	20
Retained Soil	0	32	20
Foundation Soil	0	30	18

The borehole and foundation soil test report showed very low friction angle and high cohesion. So in designing the RS wall it was considered that after excavation of 2.25m foundation depth the foundation soil was again excavated for 500mm depth and replaced with compacted fill according to the approved quality. Therefore the total depth of excavation at the site was taken as 2.75m from existing service road level. Also, the unsuitable soils were removed and replaced with compacted fill of approved quality where it is required.

The design of the walls was carried out using the BS 8006: 1995 for Static Condition & FHWA-NHI-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's supervision.



Elevation view of RS wall



Elevation view of RS wall

Conclusion:

The project was successfully completed in Jan 2008.

For further details kindly contact :

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