Strata India sets new benchmark in Reinforced Soil Wall Construction

NH-8 Retaining Walls - Surat to Dahisar
The Assignment

• 16 retaining wall structures
  • Maximum ht. - 11.5 meters
    • 6,000 blocks cast in a day
      • 1.1 million facing blocks to cast in 12 months
    • 12,000 blocks erected in a day
      • 6 months to complete full erection of walls
Responsibilities and Scope of Work

1. Full conceptual planning, estimating and submittal of a comprehensive bid.

2. Full retaining wall engineering, final design and construction drawings.

3. Manufacturing and delivery of all required geogrids.

4. Supply of all required geotextiles and other geosynthetics.

5. Manufacturing and delivery of SRW concrete facing units.

6. On-site Strata engineers, inspectors and a project manager.

7. Post-job follow-up support and customer service.
Project Snapshot

- Total RS Wall Area: 106,366 sqm
- Length covered: 57 kms
- No. of Structures: 16

VUP: 4, Max Ht: 8 m

ROB: 2, Max Ht: 11.5 m

F/O: 10, Max Ht: 10.6 m
Client Snapshot

- Client: NHAI
- Location: Surat – Dahisar (NH – 8 in the State of Gujarat)
- Contractor: IRB Infrastructure Developers Ltd.
- Independent Consultant: Intercontinental and Technocrats Pvt. Ltd.
- Design Consultant: Stup Consultants Pvt. Ltd.
- Independent Design Consultant: SVNIT - Mumbai
Strata Geosystems (India) Pvt. Ltd.

Project Location

NH – 8 Surat to Dahisar
NH 8 Retaining Walls - Surat to Dahisar

Project Details
StrataBlock Facing

- Casting of blocks can start before finalization of design
- Provides 100% soil coverage for improved reinforcement
- Blocks are self-aligning with 7% inward batter making it the safest Soil Reinforcement system
StrataBlock Facing

- Stone columns impart additional stability to the system
- Tolerance capacity for higher differential settlements
- Time tested, approved and proven world over
- Most economical wall system available
StrataGrid Features

• Manufactured under stringent quality controls using specialised High Tenacity Polyester Yarn

• Product accepted and marketed world over, having two decades of international legacy.

• Highest selling geogrid in India
StrataGrid Features

• A UV stabilized saturation coating provides enhanced chemical and mechanical properties within the soil mass, ideal for Indian construction conditions

• Low creep, low elongation

• Manufactured at Strata India’s state of the art ISO 9001:2008 certified plant located at Daman
NH 8 Retaining Walls - Surat to Dahisar

Challenges
Challenges

- Location of the project came under the heavy rainfall zone, providing a very small window for project completion
- Extended and heavy monsoons
  - 30% higher rainfall in 2010 than normal
  - Monsoon persisted till mid November
- Scarcity in sand and backfill availability
- Number of blocks to be cast – 1.1 million
- Rigid deadline for completion of project
Strata’s Unique Approach

• Two casting yards were established for efficient and economical logistics

• Automated block making plants comprising automatic batching plant with Columbia block making machines, off bearers, trolleys and forklift were deployed at the yards

• The casting yards were made functional during the rainy season by providing extensive rain protection system
Foundation assessment was carried out by a leading geotechnical consultant.

Designs of the structures were completed well in advance to avoid delays in execution.

Stretch of 57 kms of RS Wall construction area was divided into three sections, each headed by a section in-charge under the over-all supervision and guidance of a dedicated project head.

Synchronized and coordinated effort was put in place for various activities.

A dedicated team of professionals at the head office tracked the project daily, using a proprietary progress reporting system, specifically designed for a project of this magnitude.
### Strata’s Unique Approach

**Proprietary system called the “project tracker”**

![Project Tracker Diagram](image)

**Strata Geosystems (India) Pvt. Ltd.**
NH 8 Retaining Walls - Surat to Dahisar

Quality Control and Assurance
StrataGrid Testing

- Sampling – ASTM D 4354
- Tensile Strength – ASTM D 6637 – 2009
- Molecular Weight – GG - 8
- Carboxyl End Group – GG - 7
- Creep Reduction Factor – ASTM D 5262
- Installation Damage Testing – ASTM D 5818
- UV Stabilization Testing – ASTM D 5818
- Pull Out Testing – ASTM D 6706

Product Tested at:

Strata Geosystems (India) Pvt. Ltd.
Block Testing

- Mix Design
- Compression Strength Check
- Dimensional Check
- Weight Check
- Surface Finish Check
Soil Testing

- Grain Size Distribution – IS 2720
- Plasticity Index – IS 2720
- Compaction Parameter – IS 2720
- Shear Strength Parameters – IS 2720
- Specific Gravity – IS 2720

Direct Shear Machine
NH 8 Retaining Walls - Surat to Dahisar

The Final Product
The Final Product

Name of the Structure: Atul
Type: VUP
Height: 7.9m
Name of the Structure: Balitha
Type: Flyover
Height: 10.6m
Name of the Structure: Balwada
Type: VUP
Height: 7.5m
Name of the Structure: Alipore
Type: Flyover
Height: 9.7m
Name of the Structure: Bhilad
Type: Flyover
Height: 9.9m
Name of the Structure: Bilimora
Type: ROB
Height: 11.2m
Name of the Structure: Chanwai
Type: Flyover
Height: 9.7m
The Final Product

Name of the Structure: Karmbele
Type: Flyover
Height: 9.4m
Name of the Structure: Kundi Phatak
Type: Flyover
Height: 10.3m
Name of the Structure: Renbassera
Type: VUP
Height: 7.7m
The Final Product

Name of the Structure: Salva
Type: Flyover
Height: 9.9m
Name of the Structure: Udwada
Type: ROB
Height: 11.5m
The Final Product

Name of the Structure: United Phosphorous (UPL)
Type: Flyover
Height: 10.2m
Name of the Structure: Valsad
Type: VUP
Height: 8m
Name of the Structure: Gandeva
Type: Flyover
Height: 10.31m
NH 8 Retaining Walls - Surat to Dahisar

Client Certification
To Whomsoever It May Concern

This is to certify that the work of Reinforced Soil Wall from Km 300.000 to km 374.800, Surat – Vapi section of NH-8 containing 2 nos. of ROB’s, 4 nos. of VUP’s & 10 nos. of Flyover’s using Blocks as facia and Strata Grid as Soil Reinforcement was awarded to M/s Strata Geosystems India Pvt. Ltd. The total quantum of work was about 105,000 Sqm of Wall Fascia. We are in opinion that M/s Strata has the capability for taking up & completing the works of Reinforced Soil Wall of such magnitude in given time.

Authorized Signatory

Dated: 18/07/11

M/s Modern Road Makers Pvt. Ltd.
Why Strata India?

- Provides end-to-end technical solutions, from design to execution for geotechnical applications.
- Strata’s organization can manage casting and erection stages with strong focus on technology.
- StrataGrid is made in India which integrates well with project requirements.
- Adherence to time line with impeccable quality standards.
- Proven Track Record of timely project completion.
- Always on the lookout for cost effective and innovative solutions.
Your partner in quality, safety, efficiency and growth

Thank You

www.strataindia.com