



NewGrids Limited

Case Study

B-Avenue Flyover, New Delhi, India

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| <u>Structure Type:</u> Reinforced Soil structure for B-Avenue Intersection flyover, New Delhi | |
| <u>Project Location:</u> Ring Road, New Delhi, India | <u>Project Owner:</u> Public Works Department, Govt. of NCT Delhi, Zone III |
| <u>Project Design Consultant:</u> TANDON CONSULTANTS PVT. LTD. | <u>Installation Contractor:</u> Nagarjuna Construction Company Limited. |
| <u>Type & Quantity of E'GRID products used:</u> UNIAXIAL GEOGRID E'GRID 100 R = 10,900 Sq.m., E'GRID 130 R = 1950 Sq.m., E'GRID 170 R = 1100 Sq.m. | <u>Project Start Date:</u> July 2004 |
| | <u>Project Completion Date:</u> December 2004 |
| <u>Project Description:</u> The Reinforced Soil Structures Division of M/s. AIMIL Limited, New Delhi has participated in the design and construction of MSE walls for flyover at B-Avenue intersection on the ring road, New Delhi. | |
| <u>The Challenge:</u> The Public Works Department needed a grade separator at B-Avenue Crossing being on the busy ring road, in order to decongest the intersection, hence enabling smooth and uninterrupted flow of traffic. M/s Tandon consultants Pvt. Ltd., exercised an elaborate design for the flyover with mechanically stabilised wall approaches in order to minimise excavation limits, reduce use of formwork and volume of concrete and facilitate speedy construction and timely completion of the project. The Public Works Department, Government of Delhi turned to AIMIL Ltd. for constructing the approaches to the Flyover at B-Avenue junction on the Ring Road in New Delhi using reinforced soil wall technique. | |
| <u>The Design:</u> AIMIL Ltd. the largest Mechanically stabilised earth structure construction company in India was asked to build perfect vertical walls as there were | |

space restrictions, with clear heights up to 7.5 m with a total face area of 2365 m², using 180mm thick pre-cast T shaped panels as facing elements with feature finishes and E'GRID High Density Poly-Ethylene (HDPE) Uniaxial geogrids as soil reinforcing structural members. The design of the walls followed BS: 8006-1995 procedures of limit state design. The seismic design, foundation analysis, and global stability analysis were executed from classical methods following Indian Standards provisions. The walls were designed to meet the serviceability limit requirements. The backfill in the reinforcing and retained zone used selected sand from the Yamuna river.

The Construction:

Construction of the MSE wall began by excavating the existing native soil to the required levels for placement of PCC levelling pad. Tailpieces of HDPE grids were cast into the T –shaped panels. The panels were cast at the casting yard, cured and transported to site before erection in sequence of work program and installation plan.



Bodkin connectors were used to stitch the tail ends to the main reinforcement Geogrids.

The ability to execute the work with simple propping of the first course panels helped to build the walls within space restrictions. This is illustrated in the picture below.

The speed of wall construction depended on the pace of backfill work, as the placement of panels and Geogrids and stitching the bodkin connectors required minimal time.



Performance:

The MSE walls were completed in December 2004 and thereafter the exteriors were painted with anti-carbonisation coating to give long life to concrete. The walls are in full service and show excellent performance since they were built.

