

Pavement Strengthening at Gandhinagar-Pethapur-Mahudi Road

Gandhinagar-Pethapur-Mahudi, Gujarat, India

TYPE OF PROJECT
**Asphalt Pavement
Reinforcement**

YEAR OF CONSTRUCTION
2022

CLIENT
R&B Department, Gujarat

CONTRACTOR
M/S L G Chaudhary

DESIGNER

PROD. RELATED
MacGrid AR (1.1 Lac Sqm)

Challenge

The road linking Gandhinagar to Mahudi via Pethapur has developed numerous cracks, signaling significant pavement distress. This damage arose because the pavement could not endure its full design life, largely due to an unexpected surge in traffic volume. The original design parameters were exceeded as heavier and more frequent traffic loads put excessive stress on the road. Consequently, the pavement began to deteriorate more rapidly than anticipated, with visible signs such as cracks and potholes emerging on the surface. The road's compromised condition not only affects its functionality but also poses safety risks for drivers.



Application of Tack Coat



Unrolling of MacGrid AR

Solution

The damaged pavement needed to be repaired by adding an asphalt layer to enhance its load-carrying capacity, ensuring it can handle the design traffic and maintain the required level of serviceability. Overlays remain the most widely used solution for extending the lifespan of worn pavements. Although specifying special asphalt mixes and using thicker overlays can improve performance, incorporating a geosynthetic interlayer over the distressed pavement before applying the overlay can create a cost-effective, durable overlay system.

Rehabilitating cracked roads with a simple overlay often fails to provide a lasting solution, as the underlying cracks quickly reappear on the new surface—a process known as reflective cracking. A geosynthetic interlayer can enhance the durability of the overlay by offering stress relief and reinforcement, thereby extending the lifespan of the repaired pavement.

MacGrid AR5G.7 was recommended as a reinforcing element. It was laid at the interface or junction of bituminous macadam and built-up spray grout (BUSG). The tack was applied over BUSG layer to ensure proper bonding of MacGrid with the surface.

MacGrid AR5G.7 is a specialized reinforcing geogrid material designed specifically for use in pavements. It comprises of glass fibre strands arranged in a grid shape with squared polymeric coated mesh with a pressure sensitive adhesive.

Using this solution can improve both the quality and longevity of the pavement section.



Laying of MacGrid AR



Laying of overlay



Compaction of Overlay



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