CASE STUDY

SOLMAX

DEKALB COUNTY, GEORGIA

Innovative installation of paving fabric for airport pavement rehabilitation

Industry: Transportation
Application: Airports
Location: DeKalb County, Georgia
Product: Petromat MPV600

Overview

Reflective cracking on airport pavements can lead to fatigue and premature cracking in the surface layer, making the pavements susceptible to further damage from moisture infiltration and traffic loading. One of the tarmacs at DeKalb-Peachtree Airport experienced cracking, prompting DeKalb County to rehabilitate the pavement. The project engineer decided to incorporate an asphalt interlayer due to the higher strength of the cement treated base (CTB) than anticipated, which increased the risk of shrinkage cracking. To prevent premature reflective cracking, it was recommended to use a paving fabric between the CTB and the asphalt (inter)layers.

The contractor had two options: either remove and replace the CTB or utilize a 4 oz/sq (118 g/sq) nonwoven paving fabric. They selected Petromat MPV600, which is a 4.6 oz/sq (136 g/sq) nonwoven fabric known for effectively reducing the risk of reflective cracking. When saturated with asphalt liquid, Petromat MPV600 forms a stress-absorbing crack relief membrane and moisture barrier.

Challenge

The proposed pavement section consisted of two asphalt layers on top of the aggregate cement treated base, making the typical placement location for the paving fabric between the two asphalt layers. In asphalt or flexible pavements, tensile strains increase with depth, so the most optimal position for the paving fabric is at the lowest point in the asphalt. Therefore, to achieve the best life cycle performance, Petromat MPV600 was installed directly on the CTB, providing protection to both overlaying layers of the asphalt. This approach had not been used historically because it was considered too messy to be considered a sustainable surface for installation. However, this project demonstrated that installation on a CTB can be successfully carried out.

Petromat MPV600 was installed directly on the CTB, providing protection to both overlaying layers of the asphalt.

Solution

Approximately 11,000 yd^2 (9,197 m^2) of Petromat MPV600 was installed on a section of the airport's pavement. The maximum ambient temperature during installation was 65 degrees Fahrenheit (18 degrees Celsius), and the chosen asphalt binder was a PG64-22. The application rate of the asphalt binder was approximately 0.28 gal/sy (1.37 L/m^2). Placing the paving fabric directly on the CTB expedited the installation process and ensured the interlayer could remain in service for future rehabilitations.

Petromat MPV600 will serve as a long-term moisture barrier for the airport pavement, mitigating reflective cracking and preventing surface water from penetrating into the subgrade.