GLASGRID®
PAVEMENT REINFORCEMENT SYSTEM

Rehabilitation of Distressed Airport Pavements

Using the GlasGrid® Pavement Reinforcement System to Mitigate Reflective Cracking

REFLECTIVE CRACKING

Reflective cracking in composite or asphalt pavements is typically caused by traffic loading, age hardening, thermal cycling or Portland Cement Concrete (PCC) joint movement. The onset of such cracking generally signals the start of rapid pavement deterioration and an urgent need for rehabilitation.

Failure to act on reflective surface cracking in a timely manner will result in permanent damage to the lower layers within the pavement and in time, the need for a more costly replacement of the entire pavement structure. This problem is particularly troublesome in airport runways, taxiways and aprons where loadings from the aircraft can be extremely high.

When reflective cracking is present, the traditional remedy has been to apply thicker asphalt overlays. However, this solution can be both disruptive and expensive in the long-term; it is generally accepted that for every one (1) inch of overlay applied, existing reflective cracks will be deterred from reaching the surface for a period of one year. The thicker overlay solution is therefore temporary at best.

THE GLASGRID SYSTEM ADVANTAGE

The GlasGrid® Pavement Reinforcement System provides additional support to resist the migration of reflective cracks in airport pavement structures. When GlasGrid mesh is installed between a leveling course and surface course, it becomes the hidden strength in the airport pavement – designed to redirect vertically migrating cracks horizontally, thereby effectively arresting them.

The GlasGrid® System becomes the hidden strength in airport pavement structures.

The principal benefits of using the GlasGrid Pavement Reinforcement System are as follows:

- **Extension of Pavement Design Life** – Field and laboratory tests have demonstrated that the GlasGrid System can delay reflective cracking in overlays by three to five times.
- **Less Disturbance** – Extended pavement life equals decreased maintenance in the future.
- **Cost Efficient Pavements** – When overall life cycle costs are considered, the GlasGrid System can offer savings of up to 30% of the total cost for an airport pavement rehabilitation.
- **Recycling Potential** – Unlike most other interlayer systems, the GlasGrid System can be milled using conventional equipment. Asphalt millings containing GlasGrid products are easily recycled.
- **General Acceptance** – Asphalt Reinforcement is recognized as a standard technique to mitigate reflection cracking in hot mix asphalt overlays (FAA Advisory Circular 150/5230-6D).

AIRPORT APPLICATIONS

The GlasGrid® Pavement Reinforcement System has been used successfully on more than 100 airport projects over the past 20 years. It has been particularly effective when installed in airport runways, taxiways and aprons where transverse thermal cracking or PCC joint cracking is prevalent in the pavement surface.

In airport applications, the GlasGrid System is typically used for:

- Full width repairs of aged, random block cracked or alligator cracked pavements – GlasGrid 8501/8501 TF or 8511/8511 TF
- Detail repairs applied over local transverse-cracked areas – GlasGrid 8502 or 8512

CASE STUDY – INYOKERN AIRPORT INYOKERN, CALIFORNIA

The Challenge: Inyokern Airport is located in the Indian Wells Valley, 140 miles from Los Angeles, CA. Three large, paved runways can accommodate almost any class of aircraft. Due to severe, sudden daily temperature variances, thermal stresses on the airport pavements can be quite high, leading to significant transverse cracking. Prior to undertaking rehabilitation, large (1-1½ in. wide), closely spaced, transverse cracks were observed on the runway. It was determined that the intensity of cracking was significant enough to negatively affect aircraft maneuvers and safety.

The Solution: The existing cracks on Runway 15-33 were first air-cleaned and filled with a rubberized crack sealer. Next, a 1¼ in. thick leveling course was placed. Directly on top of the leveling course, 18,000 sq yds of GlasGrid 8501 was installed in a full-width application. Finally, a 1¾ in. thick wearing course was placed on top of the GlasGrid mesh.

A site visit on January 31, 2007, showed that following 11 years of service, the runway where the GlasGrid System was installed has experienced minimal cracking. In contrast, an area that was left unreinforced for comparison purposes showed significant cracking with crack widths up to 1 in. wide.

The airport general manager, Scott Seymour, recently stated, "Prior to the rehabilitation of Runway 15-33, we were dealing with thermal transverse cracks ranging in width from 1 to 1½ in. wide. The use of the GlasGrid System in the rehabilitated overlay has resulted in delaying the propagation of these cracks significantly. Our experience with the GlasGrid System has been very good and when a similar need arises in the future, we will certainly consider the use of this product again."

Pavement surface condition following 11 years of post-rehabilitation service.

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