



Rehabilitation of Distressed Airport Pavements

Using The GlasGrid[®] Pavement Reinforcement System to Mitigate Reflective Cracking

Reflective Cracking

Reflective cracking in composite or flexible asphalt pavements is typically caused by traffic loading, age hardening or temperature cycling. The onset of such cracking generally signals the start of rapid pavement deterioration and an urgent need for rehabilitation.



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

Failure to act on 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 structure. This problem is particularly troublesome in airport runways, taxiways and aprons where loadings from the keel sections of 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 each 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 only a temporary one 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 “sandwiched” between a leveling course and the surface course asphalt, it becomes the hidden strength in the airport pavement – designed to redirect vertically migrating cracks horizontally, thereby effectively dissipating them.

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 extend an overlay life by two to three times.
- **Less Disturbance** – Extended pavement life equals decreased maintenance in the future.
- **Cheaper Pavements** – When overall life cycle costs are considered, the GlasGrid System can save up to 30% of the total cost for an airport pavement rehabilitation.
- **Thinner Pavements** – Airport overlays incorporating the GlasGrid System retard reflective cracking as well as unreinforced overlays up to twice the thickness.
- **Recycling Potential** – Unlike most other interlayer systems, the GlasGrid System can be milled using conventional equipment. Asphalt pavements containing GlasGrid mesh are therefore easily recycled.



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 on the pavement surface.

In airport applications, the GlasGrid System is typically used in one of two main ways:

- Full width repairs of aged, random block cracked or alligator cracked pavements that have not been rehabilitated for many years – GlasGrid 8501 or 8511
- Spot 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, 80 miles from Palmdale, CA. Three large, paved runways can accommodate almost any class of aircraft. Due to severe, sudden daily temperature cycling, thermal stresses on the airport pavements can be quite high, leading to serious transverse cracking. Prior to undertaking rehabilitation, large (1-1½ in. wide), closely spaced, transverse cracks were observed on the runway. It was felt that the intensity of cracking was such that it could 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. A 1¼ in. thick leveling course was then applied prior to the full-width installation of 18,000 yd² of GlasGrid 8501. 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 resulted in only minor cracking. In contrast, an area that was left unreinforced for comparison purposes demonstrated significantly more severe cracking 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 1-1½ in. wide. The use of the GlasGrid System in the rehabilitation 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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