Paving Interlayers

Quality Installation For Over 20 Years
Overview

**Paving Interlayers** consist of engineered geotextile fabric, mat or grid installed under a layer of new asphalt pavement or chip seal. Since 1965, these systems have had an outstanding track record for improving pavement performance while reducing maintenance and roadway lifecycle costs. Paving interlayers are currently being used at a rate of over 15,000 equivalent lane miles per year in North America alone.

With proper installation, paving interlayers become an integral part of the roadway section. They can extend the life of a pavement section in several ways; by forming a barrier to water infiltration, absorbing stresses to reduce reflective and fatigue cracking as well as reinforcing the new asphalt surface layer, all depending on the type of interlayer employed.

Missouri Petroleum has been installing paving interlayers for more than 20 years. Our crews are professional, reliable, efficient and skilled in the application process. Contractors and owners know they can trust Missouri Petroleum to provide quality installation at a fair price every time, on time.

**Paving Interlayers** have been used in a multitude of applications including:

- Asphalt Rehabilitation Overlays
- PCC Concrete Overlays
- New Asphalt Construction
- City Streets and Highways
- Airport Runways & Taxiways
- Lane Expansion
- Parking Lots
- Fabric Reinforced Chip Seals
- Bridge Deck Waterproofing
- Tennis Courts
- Golf Cart Paths & Biking Trails

"Whether it be estimating, scheduling, on-site coordination or quality of work, I can count on Missouri Petroleum to deliver first-class service on my projects from start to finish."

Brad Fritsche, Ford Asphalt Co., Inc.
Incorporating a paving fabric interlayer is always a cost competitive repair strategy. On a road in a typical “needs repair” condition, the paving fabric repair strategy clearly gives the most bang for the buck.

GMA Paving Fabric Study, J Sprague, 2005

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**Benefits**

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Moisture Barrier

Paving interlayers that create a moisture barrier stop surface water from entering the road base. This barrier is created by placing the geotextile fabric or mat over an application of asphalt tack coat during installation.

- The number one cause of subgrade failure is a saturated base which leads to pavement failure. FHWA studies show that one-third to one-half of all precipitation falling on a road surface can infiltrate through the pavement which weakens the base and subgrade.
- Pavement base materials that are saturated just 10% of the time can reduce pavement life by up to 50%. Thus, with as little as 37 days of saturated base per year, pavement life expectancy can be decreased by up to one-half. However, with the introduction of a paving interlayer, moisture is kept out of the base, resulting in prolonged pavement life.

Stress Absorbing Membrane

Paving interlayers that are stress absorbing membranes increase pavement fatigue life and retard reflective cracking by absorbing movements from cracks and joints in the underlying existing pavement. Some paving interlayers offer greater tensile strength at low strain than others, while paving grids provide through hole bonding for efficient stress transfer.

- Laboratory tests demonstrate a 100 – 300% increase in fatigue life and field performance indicates a 50 – 100% delay in reflective cracking occurs with the use of a paving interlayer.
- Paving interlayers are shown to be equivalent to placing an additional 1.2” to 1.8” of asphalt overlay in terms of retarding crack reflection.
- The use of a paving interlayer generally yields a savings in pavement rehabilitation system costs of more than $7,000 per lane mile. The installation of a paving interlayer is less expensive than placing additional asphalt or increasing roadway maintenance.

“We use paving fabrics to attain increased value through enhanced durability. I do not resurface without them.”

Craig J. Wilde, P.E., Director of Public Works, Town and Country, MO
POLYPROPYLENE PAVING FABRIC is a needle-punched nonwoven fabric weighing a minimum of 4.1 oz/sy and meets AASHTO M 288 specifications, MODOT Type A Geosynthetic Interlayer specifications and IDOT System A Reflective Crack Control specifications. When embedded in a field-applied asphalt cement tack coat (typically PG 64-22) it becomes an asphalt saturated fabric membrane. Polypropylene paving fabric is millable and recyclable. This paving fabric is also available in 4.6 oz/sy style.

FIBERGLASS PAVING MAT is a fiberglass mesh embedded into a high performance polyester mat making it a hybrid geosynthetic. It is constructed in nominal 4.0 oz/sy and 7.0 oz/sy weight mats. The 4.0 oz/sy mat meets ASTM D 5035 specifications and MODOT Type C Geosynthetic Interlayer specifications. In the pavement structure a paving mat provides greater tensile strength at low strain. This higher tensile strength helps retard crack reflection and extends pavement service life. Fiberglass paving mats mill easily and recycle completely. *Fiberglass Mats are installation sensitive and require an experienced installer for long term positive results.*

REINFORCING GRIDS are made of high-tensile fiberglass strands that are coated with a polymer resin and combined to form interlayer grids. These grids use a pressure sensitive adhesive or in some cases pre-installed tack film to adhere to existing pavement. When the new asphalt overlay is placed over the grid, the grid embeds into and interacts with the overlay to create “through hole bonding.” This bonding results in efficient stress transfer which stabilizes and strengthens the overlay. Grids are currently manufactured in two different tensile strengths and grid opening sizes. *Reinforcing Grids are very installation sensitive and require a highly experienced installer for long term positive results.*

Ask about Pavement Distress Guidelines for use when designing with Interlayers.
**Interlayer Types**

**STRIP MEMBRANE INTERLAYERS**

**MEDIUM DUTY** strip membranes are composed of a rubberized asphalt waterproofing adhesive laminated to a nonwoven polypropylene fabric backing. The membrane is wound onto a disposable silicone treated release paper to prevent the membrane from sticking to itself. The rubberized mastic bonds the membrane to the pavement. They are available in 12”, 24” and 48” widths. When applied over local pavement joints and cracks or placed full width on bridge decks and overlaid with new asphalt, they perform the functions of a moisture barrier and stress absorption interlayer. This system is also widely approved as a bridge deck membrane.

**HEAVY DUTY** strip membranes are durable pavement repair membranes with two layers of high strength polymeric fabric, usually a woven and nonwoven geotextile that is used for backing and reinforcement. They are available in 12”, 24” and 48” widths as a hot applied or self adhesive rubberized mastic strip membrane for the treatment of localized distresses. This membrane performs the function of stress absorption, stress transfer, and moisture barrier for heavy duty stress applications.

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**Keys to Success with Interlayers**

- Quality design and installation makes all the difference in the long term performance of a Paving Interlayer. Therefore design with the following considerations:
  - Know the pavement distresses you are encountering and repairing (utilize distress guidelines).
  - Know the underlying subgrade factors such as water table, drainage, soil type, load bearing capacity, etc.
  - Know anticipated traffic volume and loads for the given pavement.
  - Know regional climate factors such as thermal expansion, freeze thaw conditions, temperature shifts, etc.
  - Determine the need for a water moisture barrier. Limiting water penetration helps maintain the structural base.
- Realistic expectations: What is the expected life of the pavement? Interlayers are not a cure-all. Over time reflective cracking will return. However, studies show that reflective cracking is delayed considerably when using an interlayer.
- Maintain minimum compacted asphalt overlay thickness of 1 ½” but 2” or more is recommended.
- Follow manufacturer’s installation guidelines.
- The best surface for interlayers is an asphalt wedge course. Leveling removes pavement surface irregularities where water can be trapped. Leveling courses provide a smooth clean surface to maximize adhesion between asphalt layers.
- Make sure the existing surface is clean and dry – wet surfaces trap moisture in the system and can cause de-bonding and potential shoving of the overlay. Asphalt tack WILL NOT stick to wet or dirty surfaces.
- Use the proper tack and application rate as recommended by the manufacturer for your local conditions.
- While agency specifications may vary, AASHTO recommended temperature for asphalt paving is 50° and rising.
- Surface preparation must be complete, including crack filling if necessary – interlayers cannot bridge gaps and voids. If there is poor load transfer across a crack, an interlayer will not fix the problem. Load transfer testing can provide beneficial design information.

“Using Missouri Petroleum for my fabric installation needs gives me peace of mind. And that’s worth a lot.”

Mike Czeschin, Byrne & Jones Construction
**Baltimore Avenue: “A Tale of Two Cities…One Street”**

Baltimore Avenue splits the boundary between the City of St. Ann, and the City of Overland, Missouri from Ashby Road to Glenwood Court. This section of street was paved in 1995. The north side included Petromat 4599 paving fabric in the overlay but the south side did not. There is an elementary school (upper left in pictures) on this section of road with bus traffic twice every school day, along with regular residential traffic and weekly trash trucks. Within four years reflective cracking was observed on the south side of the street while the north side of the street was in very good condition. By 2004, there was a significant increase in the reflective cracking on the side without a fabric interlayer. In 2010 the south side of the street was repaved and the north side left unpaved. The paving interlayer provided more than 15 years of superior performance and significantly increased the service life of the pavement.

Missouri Petroleum also carries the following high quality construction products:
- Geotextiles: Filter, Drainage, Separation, Stabilization, Reinforcement, Cushion, Erosion Control;
- Geogrid for Road Stabilization; Grass and Gravel Porous Paving Systems;
- Rainwater Detention, Retention and Harvesting Systems.

Contact us to schedule a one on one consultation or a lunch & learn presentation for your group. More information about our products and services along with technical research studies on the use of paving interlayers can be found at www.missouripetroleum.com

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