

ASPHALT: TO PETROMAT OR NOT TO PETROMAT?



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Some time ago, Petromat, a brand name for what is properly termed Pavement Reinforcement Fabric (PRF,) entered the pavement refurbishment scene with loads of promise. Unfortunately it has become “out of fashion” this decade, and discounted as an ineffective and potentially hazardous installation. PRF is a sound product that has beneficial applications, but only if it is chosen for the right reasons and installed to the correct specifications.

What is PRF? Technically, it is a non-woven petroleum fabric. Its purpose is to retard crack reflection in asphalt pavement overlays, and to retard water penetration into the pavement’s sub-grade when cracks reappear. It is an installation that is more than a simple surface treatment for asphalt, but not as extensive as complete removal and replacement of a paved surface. It is not a cure-all for cracks in asphalt pavement. The owner should expect to see some hairline reflective cracks (cracks above where cracks existed in the prior surface) within the first year of installation. The cracks will increase over time, but the water-retardant properties of the PRF will keep surface run-off out of the structural asphalt base (sub-grade).

When is it effective? When used in common interest developments, PRF can extend a pavement’s life for 10 to 15 years. It should be considered for developments with wide streets, at least 27’ from gutter to gutter, with good drainage that will not be detrimentally affected by the addition of asphalt material. It is also important that the existing asphalt pavement be stable and of an adequate thickness. The edges of the existing pavement must be milled down to accommodate the installation of an overlay. If the existing pavement is too thin or weak to accommodate the milling process and construction process, then a PRF overlay is out of the question. Further, if the existing pavement is too old, excessively cracked, already had a PRF installed, or shows signs of serious sub-grade failure, it is not a good candidate for a PRF overlay. A civil engineer or expert should be consulted to assist in evaluating an existing pavement’s eligibility for the installation.

How is PRF properly installed? PRF is to be installed using a mechanical fabric spreader and applied on top of hot, PG grade oil. Some contractors save installation costs by rolling fabric out by hand over SS-1h asphalt emulsion (the base material used in sealcoat.) The machine-spread fabric is stretched tightly over the surface, while the hand-rolled method often leaves the fabric

loose and wrinkled. In addition, the PG grade oil used with a mechanical spreader glues the fabric to the existing pavement, while SS-1h emulsion allows the fabric to be pulled from the existing asphalt with ease (thereby creating an unstable surface for the pending overlay).

Further, PRF requires a minimum of 1 ½ inches of asphalt (after compaction,) installed on top of it. If you've ever encountered a failed PRF overlay, you'll typically find what looks like fuzzy carpet sticking through cracked asphalt. In some instances, as little as ½ of an inch of compacted asphalt was placed over paving fabric. Thin installations of asphalt over fabric are a disaster in that it is difficult for an owner to determine the thickness of the pavement after it is laid, and defects will likely remain unseen for several years; long after the warranty faded away and the board members familiar with the project have moved on. This is another good reason to have an engineer or expert on hand to verify quantities of material used are in line with theoretical estimations.

Is it hazardous? PRF is not hazardous to anyone's health. What has become controversial about the material is the difficulties that can be encountered when it is removed. At some point, a PRF will be removed when the entire asphalt section is ground out. Asphalt and concrete are 100% recyclable, and as a result, new hot mix asphalt typically contains up to 15% Recycled Asphalt Product (RAP.) Asphalt grindings have become a commodity because hot mix manufacturers need to meet recycling requirements, and as an added benefit, RAP is less costly than virgin aggregate and new asphalt oil. Unfortunately, PRF is considered a contaminant. If found in asphalt millings, there will be additional charges for disposal of the material when it is received from the work site, at the asphalt recycling plant. In some cases, it is flat out rejected, causing disposal costs to skyrocket.

This is because the PRF melts when heated in an asphalt plant, and it adheres to the internal workings of the machinery which causes damage and inefficiency. Fortunately, alternate uses for grindings with fabric in them other than being recycled into new asphalt are beginning to appear. Even so, heightened disposal costs due to PRF are an important consideration when evaluating life-cycle costs.

In conclusion, if a common interest development is evaluated by a professional and PRF is an option, the customer will find it is considerably less expensive than complete removal and replacement of the pavement. But since it only extends the life of an existing installation 10 to 15 years, it has a shorter Useful Life cycle than complete removal and replacement. If professional evaluation reveals that installation of PRF meets the physical needs of the Association, and if projected life-cycle-costs are similar to complete removal and replacement, PRF can remain a viable pavement maintenance option.