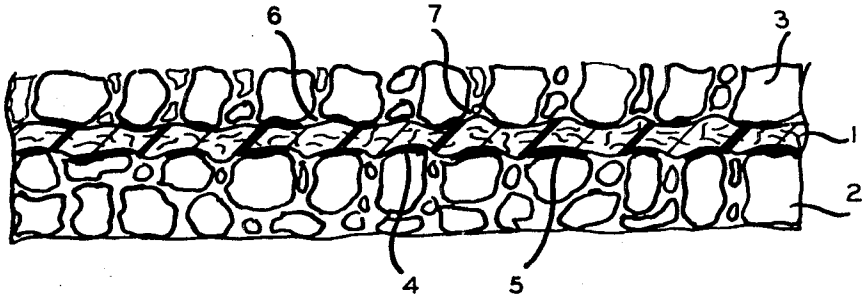
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PAVEMENT LAYING OR PATCHING WITH AGGREGATE, FABRIC, AND ADHESIVE

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PAVEMENT LAYING OR PATCHING WITH AGGREGATE, FABRIC, AND ADHESIVE

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ABSTRACT OF THE DISCLOSURE

A fabric is laid upon a layer of intentionally rough surface of, say, aggregate or earth, adhesive, e.g., asphalt, is applied to wet the fabric and the aggregate or other surface and then the fabric is covered with additional aggregate in a manner to stress or stretch at least portions thereof between the interpositioned or interlocking pieces or points of the two layers of aggregate. The thus laid composite can be further covered with adhesive as by spraying and then rolled. In one embodiment, wrinking and bubbing of the fabric containing composite, as in a road surface or patch, is prevented. A fabric now preferred to be used and which has presented the wrinkling and bubbling problem is one made of a heat sealed nonwoven polyolefin fabric, e.g., polypropylene.

This invention relates to the laying or patching of pavement. In one of its aspects it relates to the laying or patching of a pavement employing a fabric. In another of its aspects it relates to the laying or patching of a pavement employing aggregate, a fabric and adhesive.

In one of its concepts the invention provides a composite forming a surface comprising two layers of rough material with a fabric laid therebetween so that the fabric is stresssed or stetched purposefully between the interpositioned or interlocking points or parts of the two rough surfaces. In another of its concepts the invention relates to such a composite which has been made firm using an adhesive. In a still further concept of the invention it provides such a composite prepared from layers of aggregate having a fabric laid therebetween. In a further concept of the invention it provides a surface or patched surface in which, at least in the patch, there have been provided two layers of aggregate and at least one layer of fabric firmly held therebetween, as described herein, the entire mass having been wetted through with adhesive which ultimately solidifies. In one embodiment of the invention a layer of aggregate is laid on a surface which is to be prepared or patched, then a layer of fabric is laid upon the aggregate, then a further layer of aggregate is laid upon the fabric and the whole composite or assembly is sufficiently wetted to suitably bind most, if not substantially all, of the aggregate, the fabric and the further layer of aggregate together to form a solidified surface or patch. In a now preferred embodiment of the invention a road surface or patch is prepared by placing available aggregate into the place in which the composite is to be, the aggregate is sprayed with asphalt emulsion, a polyolefin, e.g., polypropylene, fabric is laid upon the aggregate, the assembly may be sprayed further, then a further layer of aggregate is laid and after further spraying, as may be desired, is rolled and allowed to set.

It has been observed when using a fabric layer, as herein described, that wrinkling and bubbling of the fabric patch will occur. We have discovered that such wrinkling or bubbling problem can be substantially eliminated by laying the fabric on an intentionally rough surface so that it is stressed during the composite laying operation. Such a stressing or stretching of at least portions of the fabric provide take-up of what otherwise might result in wrinkling and/or bubbling.

It is an object of this invention to lay a surface such as a roadway. It is another object of this invention to patch a road surface. It is a further object of this invention to provide a composite containing a fabric which will not wrinkle and/or bubble.

Other aspects, concepts, objects and the several advantages of this invention are apparent from a study of this disclosure, the drawing and the appended claim.

According to the present invention there is prepared a pavement, surface, or patch upon a pavement or surface by incorporating between roughened or rough portions of said composite a fabric which is stressed or stretched by said rough portion or portions. More specifically according to the invention, the fabric is laid upon intentionally rough aggreate or other surface, whereupon a further rough aggregate or material is laid upon the fabric so that the interpositioned or interlocking points of the layers of aggregate or other material will tend to finger in to the fabric from opposite sites thereof, thus producing points of stresss or stretch thereof.

In the now preferred embodiment of the invention the fabric is made of a polyolefin. The polyolefin now preferred is polypropylene, although other polyolefins as are now known in the art can be used. It will be noted by one skilled in the art that any fabric or layer of material which tends to cause wrinkling or bubbling can be treated similarly.

In one specific embodiment of the invention which will now be described in connection with patching of a surface, the following steps are executed carefully.

(1) The surface to be patched is cleaned.

(2) About five pounds of aggregate per square yard are spread on the area in a uniform manner. The spreading leaves one of the rough surfaces required. The aggregate is preferably round, clean, and free of dust and is composed of pieces one-half inch maximum, approximately, to number four sieve size, approximately.

(3) Cationic asphalt emulsion is now sprayed at a rate of approximately 0.1 to approximately 0.2 or slightly more gallons per square yard.

(4) The fabric, in this instance polypropylene fabric, is placed upon the sprayed aggregate.

(5) The patch is now sprayed with approximately .2 to approximately .4 gallon per square yard of cationic asphalt emulsion. In lieu of the asphalt emulsion, other suitable adhesive can be used.

(6) Aggregate is applied uniformly at the approximate rate of 15–25 pounds per square yard on the patched area. The aggregate is similar to that used in Step 2.

(7) The patch is then rolled, as with a steel wheel roller or a pneumatic roller to orient the aggregate in the patch. This step causes the fingering in, as it were, of the fabric, as earlier set out.

(8) The aggregate can now be further sprayed or covered with adhesive unless it already is an aggregate which bonds by itself. The patch thus preparel is allowed to cure. When asphalt emulsion has been used, the emulsion will begin to break and the patch cured in from about 30 minutes to 2 hours after laying.

It will be evident to one skilled in the art having studied the disclosure that there need not be two layers of aggregate to accomplish the fingering in or stressing of the fabric layer. Thus, the fabric could be laid on the ground, provided the ground is suitably rough or is of such a nature that the aggregate can finger into the ground the fabric. However, at this time, best results will be obtained using two layers of aggregate.

The aggregate used can be of itself such that it will bond, i.e., it can be self-bonding. Such aggregate would be road laying aggregate which already contains bitumen or asphalt. Available asphalt emulsions, whether these be cationic, anionic, or otherwise, can be used.

The point to be noted in connection with a concept basic to this invention is that the fabric which might wrinkle or bubble or cause wrinkling or bubbling of the surface or patch laid therewith is stressed or stretched so that as setting of the work product takes place, there is a take-up provided thus to avoid the wrinkling or bubbling.

In the drawing is shown a vertical cross section of a composited surface according to the invention.

Referring now to the drawing, **1** is a layer of fabric, in this instance, polyolefin fabric, which can be woven or nonwoven, as the case may be; **2** and **3** are layers of aggregate. It is evident from the drawing that the portions of layers **2** and **3** which are contiguous to the fabric are pushing against the fabric. Some points or mounds, as at **4** and **5** of the lower layer of aggregate, push the fabric upward, respectively, into recesses **6** and **7** of the upper layer of aggregate **3**. This provides a take-up which has been discussed.

Asphalt emulsions now considered to be especially well suited to application of the invention are the ASTM designated CRS–1 and CRS–1h-cationic rapid setting emulsion. The penetration of the base asphalt of CRS–1 is 100 to 250. The penetration on the base asphalt for CRS–1h is 40–90. The invention can be applied using any kind of asphalt adhesive.

As a further example of the invention, the following is given.

A test run with no aggregate beneath it, but with a rough textured, spalled concrete surface (bridge deterioration) is holding up well after nine months in service.

While herein fabrics generally have been discussed and polyolefin, e.g., polypropylene, have been mentioned in particular, it will be clear to one skilled in the art that any fabric which lends itself to the practice of the invention can be used.

A fabric with which the buckling problem has been met and which has been particularly satisfactorily used, according to the invention, is known as "Loktuft" (a trademark). Loktuft is a non-woven polypropylene fabric having heat-sealed surfaces. The heat sealing of the surfaces may be the cause of the blistering and wrinkling when this fabric is used as a road patch. The invention

overcomes the problem. The heat-sealed Loktuft is heat sealed on both its surfaces to cause fusion of the fibers at those places where they overlap. The heat sealing does not ordinarily permeate through the entire thickness of the fabric which remains pliable and pervious.

Reasonable variation and modification are possible within the scope of the foregoing disclosure, the drawing and the appended claim to the invention the essence of which is that there has been provided a composite or layered surface or patch in which there is a stressed or stretched layer of fabric, the layer or layers of aggregate fingering in, as it were, the fabric into interpositioned or interlocking portions of two rough surfaces provided thereby.

We claim:

1. A method for preparing a surface such as a roadway or a patch thereon wherein an aggregate is laid to prepare an intentionally roughened surface, a fabric is laid on the surface and the whole is sprayed with an adhesive so that adhesive permeates the fabric tending to bond the same to the aggregate therebelow, then laying further aggregate and rolling the composited materials to interlock and to stress portions of said fabric between the layers of aggregate to produce a stressed interlocked composite which hardens upon standing or curing, said fabric being a non-woven polypropylene which has heat-sealed surfaces.

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