

Application over milled surfaces



Advantage:

Most milling operations result in an irregular surface to which the tack coat and the paving fabric can readily conform. There are several types of milling procedures. Paving fabrics are appropriate and will give extended life with generally accepted milled surfaces. Paving fabrics will stretch and conform to a this milled surface. Paving fabrics meet a minimum elongation specification of 50% in a grab tensile strength test and most milled surface configurations would only mobilize no more than 5 to 20% of the fabric elongation. The fabric is manufactured to resist tears (20 kN), puncture (27kN) and burst strength (1375 kPa).during construction.

Paving fabrics are quite resistant to damage due to construction traffic even over milled surfaces. The underlying asphalt cement tack coat cushions and mitigate the abrasive forces. Small abrasion type holes in the fabric should not diminish the effectiveness of the paving fabric systems because asphalt also work as a self sealer. To a large degree, the function of the fabric is to provide a long-lasting fibrous reinforcement to the asphalt cement tack coat, not tensile reinforcement. Sizable tears, i.e. greater than one inch, should be patched. Also if possible, as over any paving fabric installation, traffic should be limited to construction vehicles only.

The milling process often induces micro cracking in the milled pavement. This cracking, along with the greater susceptibility to surface water intrusion, makes milled surfaces ideal candidates to benefit from the stress absorption and moisture barrier functions of a paving fabric system.

Construction:

The fabric should be broomed or pneumatically rolled into place.

When placing a paving fabric on a milled surface, the surface needs to be clean and dry. Brooming and/or air blowing will be required to eliminate dust and cuttings left on the pavement surface

An asphalt cement should be used as tack coat over a milled surface. Asphalt emulsions are not recommended because they will tend to run off into the “valleys” of the milled surface prolonging cure time and providing a non-uniform application. In addition the tack coat should be applied 10 to 15% heavier to account for a typically more textured and uneven surface.

A minimum of 1.25 inches compacted asphalt overlay should be placed over all surfaces this is especially important with milling only the curb areas. In some cases milling has penetrated below the asphalt surface into base or sub base, this damaged area should be restored with hot mix asphalt layer.

In some rare cases the milling may result in deeper grooves with near vertical faces. This type of milled surface is not conducive to direct paving fabric application. With near vertical grooves, neither the asphalt cement tack coat nor the paving fabric can easily and uniformly conform to such a road surface. Before placing a paving fabric on such a surface, a dense graded hot mix asphalt-leveling course must be placed. The comments above also refer to any sharp or vertical edges on the pavement to receive a paving fabric, such as faulted joints, etc.

Surface milling is generally used to remove surface ruts, allow for height restrictions or recycling of pavement. The AASHTO guide for Design of Pavement Structures III-135 5.7.6 relays the following on surface milling for design.

“If the AC surface is to be milled prior to overlay, the depth of milling should be considered in the determination of the effective thickness design. No adjustment is need if the depth of milling does not exceed the minimum necessary to remove surface ruts. If a greater depth is milled, the AC thickness remaining after milling should be use in determining the effective thickness designs.” In another words if the pavement is structurally sound, removing the existing surface could lessen pavement strength. When fabric is placed over a milled surface the tack coat rate application should be increased to compensate for irregular surface.

The use of paving fabrics and milling of surfaces assist the engineer in obtaining increased pavement life and solve problems with curb height and other limiting factors that would ordinarily restrict an adequate asphalt overlay for road rehabilitations and increase traffic.