

Dust Suppression With Gravelpave2

Use of Gravelpave2 for pavement surfaces to restrict dust is a very viable suggestion, provided careful selection of the fine gravel fill is followed. Dust from gravel surfaces is created when vehicles pass over the surface - greater speed = greater dust and higher into air. Most gravel surfaces will have a wide range of particle sizes - from 1" to <200 screen (clay and silt sizes) or "dust". As tires pass over the surface, air is compressed below and adjacent to the tire, blowing the dust away from the tire and lifting it away from the surface. Then vehicle aerodynamics come into play to lift the airborne dust higher and faster away from the surface, creating a dust cloud.

This action is eliminated (minimized over time) when a "washed gravel", which is free of fines, is used at the pavement surface. However, one function of the fines is to help stabilize the larger aggregate and prevent migration. With washed gravel, our Gravelpave2 rings, grid and mesh/fabric act to provide this stabilization action, and eliminate any lateral migration. Dust sized particles contained within the base material (existing gravel surface or dirt), will be 1" below the Gravelpave2 surface, and nearly impossible to extract by moving tire or wind forces.

The client must remember, however, that any "dust" that settles on the surface from outside sources, such as wind or water (runoff) or dust from sanding operations, will be captured by the washed gravel layer and be subject to uplift by wind.

Washed gravel placed in Gravelpave2 has a very high void content - a lot of air surrounding each particle. These air spaces allow tires to move over the surface and provide a relief valve for the pressures created. This action is similar to tires rolling over open graded asphalt on highways - where hydroplaning and tire sound levels are reduced dramatically because air and water can move freely into these spaces without reducing tire contact with the surface.

Indeed, we are looking to develop a porous asphalt overlay system with a modified Gravelpave2 structure and asphaltic binder for gravel fill, for bridge decks, and elevated structures where noise barriers are impossible to construct. This method will enable durable concrete structures to be built as a subsurface, with Asphaltpave2 used as a long term wearing surface, which can be recycled with standard milling equipment, and replaced quickly and efficiently per standard overlay processes.