

METRO MATERIALS

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Improving Asphalt Pavement by Addressing Base Layer Issues

When discussing premature pavement surface mix failures, the National Asphalt Pavement Association (NAPA), in their publication “**Understanding the Impact of Base Layer Issues on Asphalt Pavement Surface Failures**,” highlights several key factors contributing to these failures. These issues are often linked to base layer deficiencies, which significantly impact the durability and performance of the surface mix. The main concerns include inadequate base compaction, subgrade problems, moisture infiltration, frost heave, insufficient base thickness, and the presence of organic material or soft spots in the base.

Cement Treated Base: The Solution to Pavement Base Challenges

Base Compaction: Metro Materials’ Cement Treated Base offers a durable solution to address this base issues. First, CTB is a one and done compaction without the need for reshaping or re-compaction. Once laid and consolidated, the base is stable, eliminating the risk of base layer regrades and possible lamination. CTB eliminates these issues to create a highly effective and long-lasting pavement structure.

Subgrade Problems: Metro Materials’ CTB excels in addressing subgrade issues. It boasts the best bridging potential of any base. Its single step installation effectively spans localized soft spots due to its angular matrix and bridging ability. Additionally, there’s much less subgrade pumping since CTB involves less traffic across the subgrade compared to other products. Also, if a subgrade failure is spotted before CTB installation, it’s easy to “dip out” the area for form a compression course in the subbase.

Moisture Infiltration: Cement Treated Base is impermeable to moisture. Essentially, CTB functions like an economical version of concrete. Just as a block of hardened concrete remains unaffected by water, CTB performs identically in this regard. This sets CTB apart significantly from all other granular base products.

Frost Heave: CTB mitigates frost heave by creating a rigid and durable layer that minimizes the capillary rise of water into the pavement structure. When water within the soil bases freeze, it expands, leading to frost heave. However, CTB’s low permeability significantly reduces or eliminates water movement through the base, thereby limiting the amount of water that can freeze and expand. This control of moisture within the subgrade and base play a crucial role in preventing the disruptive effects of frost heave.

Base Thickness: The Portland Cement Association conducted extensive plate deflection tests comparing the effectiveness of 5” of Cement Treated Base against 10” of crushed limestone. The results revealed that a 5” layer of CTB can support three times the load capacity of a 10” layer of limestone. Additionally, CTB spans the increased load over twice the subgrade area, demonstrating superior load distribution and bridging capabilities. In essence, CTB is more forgiving on cross-sectional thickness than its closest granular competitor.

Organic Material: Metro Materials guarantees the highest quality base by using superior recycled and sustainable aggregates in the production of Cement Treated Base. This careful selection ensures that organic issues commonly associated with natural materials are entirely absent. By incorporating environmentally friendly materials, Metro Materials not only promotes sustainability but also delivers a product that maintains structural integrity and longevity. The absence of organic impurities in CTB results in a more durable and reliable base, capable of withstanding various environmental conditions without compromising performance. This eco-conscious approach highlights Metro Materials commitment to both quality and sustainability in their construction materials.