StreetBond™

StreetBond Substrate Guide

QUEST
CONSTRUCTION PRODUCTS

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Updated: OCT 2011

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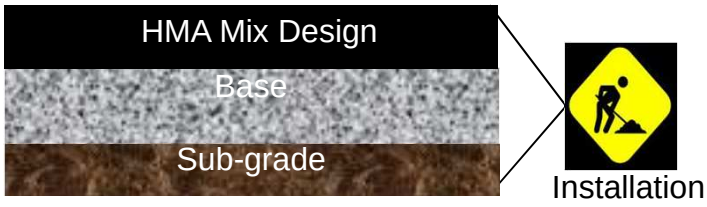

Assessing an existing concrete cement substrate for StreetBond

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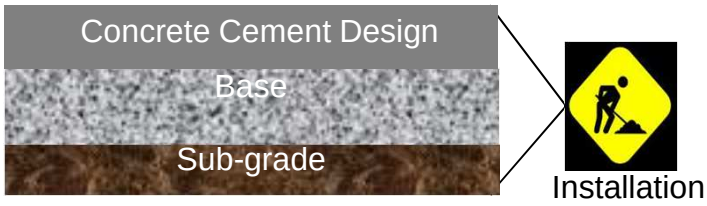
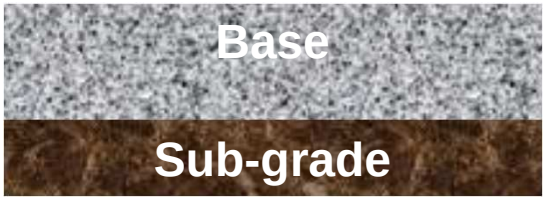


"StreetBond is only as good as the surface that it is placed on"

Key Substrate Properties

Stable base and sub-grade



A stable base and sub-grade refers to the stability in the base layers underneath the HMA (Hot Mix Asphalt) surface that are necessary for proper HMA pavement performance.

- Sub-grade. The layer of natural earth on which the pavement is built. Sub-grade needs to be removed to a stable layer that can be prepped and compacted. Proper moisture content is important for compaction; if the sub-grade is too moist, or too dry, it will not compact properly and can result in settlement issues. Settlement can cause cracking in the asphalt, aesthetically lowering the decorative value of StreetBond.

- Base. Base refers to the aggregates that are placed on top of the sub-grade to build the pavement to the correct height. Typically made up of crushed aggregates, this layer is graded and compacted to form the foundation for the asphalt layer. Thickness and compaction of the base course is important to avoid settlement.

Proper HMA Mix design (for the intended use)

HMA (Hot Mix Asphalt) is engineered / designed for specific use by modifying ingredients such as aggregate particle size and AC (asphalt cement) content and grade.

The way these ingredients are combined affect the stability, durability and workability of the pavement and are designed for usages ranging from driveways to highways. Each mix design has been developed for the best performance for the intended use. Since StreetBond is a topical treatment for asphalt, it is extremely important that the appropriate mix design for the intended traffic use be installed; otherwise common asphalt issues like scuffing, shoving, and rutting will affect StreetBond.

An example would be placing a smooth and sandy mix design, designed for pedestrian use, in a traffic environment because a smooth StreetBond finish is preferred. This mix design has not been developed for traffic and will be unstable, causing the asphalt to rut, shove and/or scuff, which will affect StreetBond.

Always ensure a stable mix design, engineered for the intended traffic use, is used with StreetBond.

Installation

Correct HMA installation.

The proper installation of HMA is important to StreetBond as it can affect aesthetics and performance if it is installed wrong. The key installation factors that most affect StreetBond are:

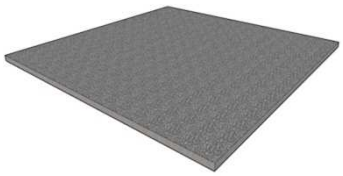
- Compaction – HMA needs to be compacted at a specified temperature, using a specified weight. This varies with mix design, but generally, if an asphalt is compacted at too low of a temperature the AC is too tacky and resists compaction, and if it is too hot it will shove during compaction. In the correct temperature range, the AC acts as a lubricant and allows all materials to compact together. If the asphalt is not properly compacted it will not be as stable and can cause adverse affects, such as scuffing/shoving/rutting on the StreetBond surface. Ensure that the HMA is compacted at the proper temperature using the proper compaction equipment.
- Segregation – Refers to an inconsistent surface texture of the asphalt, usually caused by large aggregates brought to the surface during hand work (raking). The finished texture is important as these areas can stand out more when coating is applied. When hand working asphalt, removal of large aggregates from the surface, rather than broadcasting them on top of the surface, is recommended. This will produce a more consistent surface texture.
- Finishing detail – The detail of workmanship around things like curbs, manhole covers and edges can affect how StreetBond looks. Care should be taken to ensure that asphalt that finishes into a curb, or into landscaping is done so in a clean, consistent way. Straight, clean and level finishing should be done with aesthetics in mind.

ATTENTION:

Generally all new HMA projects regardless of mix design will produce black tire tracking between the new and old surface until the fresh asphalt cement has had time to fully cure. New asphalt tracks will be especially noticeable on lighter colored StreetBond coatings. Please reference the "Care, Maintenance, and Repair Guide" for recommended cleaning options.

Assessing an existing ASPHALT substrate

Age of asphalt If the pavement is more than 5 years old it may not be suitable to print. UV rays oxidize the AC (asphalt cement) found in asphalt. Those asphalts may be difficult for the StreetBond coatings to adhere to. Asphalt pavements over 5 years in age should be carefully considered.



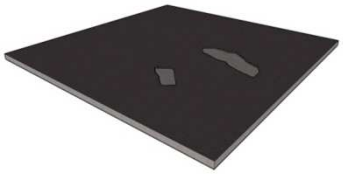
Finishing detail If asphalt installation is sloppy around walls, edges, curbs and manholes, it will reflect on aesthetics of the finished product.

Polishing of aggregates Polishing occurs when traffic volumes cause the aggregates in the asphalt to wear smooth or polish. Aggregate polishing may suggest that traffic volumes may be too great for StreetBond and that increased maintenance will be required. Also, when certain aggregates are polished smooth the StreetBond coatings may have difficulties adhering to them. Avoid placing StreetBond in areas in which aggregates are polished.

Surface texture Patch repairs, segregation and raveling can all affect the finished look of StreetBond as they can create inconsistent textures in the surface.

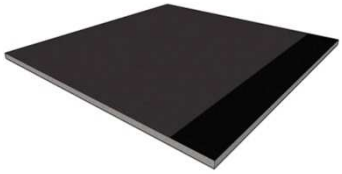
Rutting and Shoving A depression or ripple of the pavement in the wheel path, it is a structural failure due to excessive loading of that pavement. It is a sign of an unstable asphalt pavement experiencing plastic flow.

Raveling and potholes Severe pavement fatigue cracking which results in a total loss of asphalt pavement, in a localized area, creating a hole in the road. Asphalt will need to be replaced.

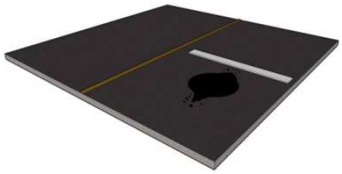


Bleeding / Flushing Through the action of vehicle tires, heat and migration of excessive asphalt cement (AC) to the surface. Surface texture becomes filled with liquid AC, creating a weakened bond for the StreetBond coatings. This may indicate an excessive amount of AC in the mix.

Utility repairs. Asphalt patching made when repairing underground utilities. Most repairs are not installed to meet the asphalt stability requirements needed for their traffic conditions. This can lead to distortion and cracking of StreetBond along saw cuts. Ensure that utility repairs are carefully done with aesthetics and performance in mind.



Surface Contaminants. There are many types of surface contaminants that may affect the performance and aesthetics of StreetBond. Contaminants prevent the coatings from adhering to the asphalt which can affect adhesion. The most common surface contaminants are:



- ***Vehicle fluids*** – Oil, fuel and grease can affect the bond of coatings to the asphalt. These contaminants need to be removed using an environmentally friendly degreaser and power washing. If the fluids have soaked in to the surface and cannot be washed away, then the pavement must be removed and replaced.

- ***Traffic markings*** – Areas that have traffic markings should be avoided. Going over traffic markings like road paint and thermoplastic will result in that marking being visible through the coating, and possible adhesion issues. Removing the marking will create a different surface texture that will be noticeable after completion.

- ***Asphalt sealant*** – Asphalt surfaces treated with asphalt sealant should be avoided. By placing StreetBond coatings on top of the sealer, you are relying on that sealer to bond the coatings to the asphalt surface. If the sealer fails, the coating will fail.

Settlement and Cracking. Cracking occurs due to shrinkage of the sub-grade or asphalt pavement, or excessive bending of the pavement surface. Cracks found in the asphalt will be visible after StreetBond is installed. This may not be aesthetically pleasing. Raveling is a loss of aggregate from the surface as a result of poor installation and/or lack of AC in the mix. It will appear as a different texture on the pavement surface. StreetBond coating can reduce the amount of raveling and further degradation.

Assessing an existing CONCRETE substrate

Age of the concrete Newly placed concrete is designed to develop its full design strength typically in 28 days, at which time topical coatings can be applied.

Curing Compounds The presence of compounds or agents that have been applied to the surface of the concrete to aid in the curing process may function as a bond breaker if not properly removed. Most curing agents are based on silicones, hydrocarbon oils, sodium silicates or paraffins that can impede the adhesion of StreetBond coatings. Caution should always be taken with regard to new construction projects, and it is always best to assume that the concrete has been cured with a compound that will impede proper adhesion. Even if an approved method of concrete cure was originally specified, the surface should be tested and cleaned appropriately.

Surface Contaminants There are a variety of compounds which can penetrate into the concrete surface including free form release agents, surface hardeners, greases, oils, food by-products, chemicals, previously applied coatings or simply dust and dirt. If any of these contaminants are present they MUST be removed so they will not impede the adhesion of the StreetBond coatings to the concrete substrate.

Laitance Is a residue of weak and non-durable material consisting of cement, aggregate, fines, and impurities brought to the surface of over wet concrete by overworking and over manipulating concrete at the surface while finishing.

pH Levels The pH level of a concrete substrate, whether too high or too low, will also effect the overall coating or bond strength. The ideal pH value for applying a polymer system is 7, although 6.5- to 9.9 is acceptable and is necessary for obtaining optimum adhesion. When the pH level is 10 or higher, acid etching is required, and when the pH value falls below 6.5, a caustic etch will be required.

Carbonation Is the result of carbon dioxide in the air reacting with the Calcium Hydroxide in the presence of moisture. Carbonation is an on-going process, and over a period of time can cause the surface to chalk or powder thereby creating a bond breaker which will ultimately, cause the coating system to lose adhesion and fail.