

THE COMMUNITY BUILDER

Future Capital Replacement Items

A couple of issues ago, we began thinking about the preparation of budgets for the next year's operating year. A big part of the budgeting process is the funds that are set aside in the form of Reserves for future capital replacement items. As that future replacement can have a huge impact on all of the residents, the more structured your savings plan is, the less likely it will be that when one of these major items requires replacement, no special assessment will be needed. Some of those items are: Paving (if you have private roads or a parking lot); painting (this can be townhome style homes; patio homes, condominium homes or your amenity structures such as clubhouses, pool cabanas, entry gate structures, walls, etc.), roofing, landscape replacement, storm water maintenance, etc.

In the next several issues of our newsletter, we're going to look at some of these items in detail to learn about how chemistry, construction, proper selection and application affect the project and ultimately, the cost. In this week's issue, the first component that we will explore is asphalt because everyone has it in some form or some location.

Asphalt is the material of choice for most roads and parking lots. It is a mix of about 92% stone aggregate and mineral filler combined with 8% asphalt binder. This combination allows it to stay in place and repel water. Because it stays dry, it has the strength to carry traffic loads and lasts a long time. It does, however, have drawbacks:

Poor resistance to sun, salts and chemicals.

Asphalt is a complex mix of thousands of chemicals with predominantly open-chain molecules with a high degree of double bonding. What this means to the average mortal is that open chained molecules provide easy access for sun, salts and chemicals which break them down and destroy their binding and waterproofing properties. The visual indicator of this breakdown is the change of color from dark black/brown to gray.

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Poor resistance to petrochemicals.

Asphalt is the heaviest and final component of petroleum distillation. The distillation process separates the asphalt from other byproducts like gasoline and oil. Since these byproducts are similar in molecular structure, they easily dissolve chemicals in asphalt.

The drying process.

As unprotected asphalt ages, the oils migrate to the surface and are burned off. As this continues, the pavement hardens and shrinks producing hairline cracking. Cracking allows water to penetrate the water repellent barrier to the ground below which, in turn, causes ground swelling and sinking which causes more damage to the asphalt. Advanced deterioration causes "alligating" (cracked surface area resembles an alligator's back), heaving, sinking and disintegration.

Pros and cons of traffic.

Major roads have an advantage over community streets and parking lots because of the heavy traffic which continuously "kneads" the oxidized surface back into the pavement bringing up fresh material. After the asphalt binder is exhausted, major roads are either overlaid with fresh asphalt or the pavement is completely removed and reinstalled. Low traffic community roads do not receive the same traffic loads and must apply different maintenance techniques to preserve the asphalt.

Protection.

So, what is the best way to protect asphalt pavement? Sealcoating or slurry coating is recommended. Sealcoating uses refined coal tar. Coal tar is a byproduct of coal being converted to coke in steel mills. Coal has different origins than petroleum so it has different properties than asphalt. It has a much more stable molecular structure that is resistant to weather and chemicals. Coal tar is mixed with clay, mineral fillers, and water to produce an emulsion or slurry which is easily applied to the asphalt. The mineral fillers give it durability. The coating is both flexible and protects against weather, sun and chemicals.

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A sealant should be applied should occur approximately every 5 years (sooner in high traffic areas). Major cracks should be sealed and spot pavement repairs made before each sealcoat application. If sealcoating is done as recommended, the life of the pavement can be extended up to 100%. It also leaves a satin, black finish which adds to the beauty and value of the property. Clearly asphalt maintenance should be a high priority in every community association. This work should be done by a qualified paving contractor.

Why Maintain Your Asphalt?

Asphalt pavement is basically sand, gravel and glue. The glue used to keep the sand and gravel together is asphalt, a heavy by-product of oil refining. While sand and gravel do not deteriorate significantly, the asphalt binder does quite rapidly due to oxidation, solar radiation, pollution and chemicals spilled from vehicles.

No pavement has ever been constructed that does not need maintenance. Many community associations find out too late that proper maintenance could have prevented costly replacement.

Maintenance is the art of keeping pavements in full service, with minimum expense, and the least inconvenience to the public and the resident. Improper maintenance is usually worse than none at all. Preventative maintenance is a wise investment. There are several basic forms of maintenance:

Sand slurry sealer.

Also called sealcoating, this procedure will protect against oxidation and spills while making the asphalt visibly attractive. This application should be applied at least every 5 years or more frequently if use is heavy and deterioration is apparent. Applied at proper intervals, it will prolong the life of pavement indefinitely at a fraction of the replacement cost.

Crack sealing.

Cracks are usually caused by either a failure of the base, water damage, or excessive weight on the pavement surface. Cracks can easily be repaired by installing a hot pour material to fill them. The crack sealer provides a waterproof bond and is rubberized to give support while the pavement expands and



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contracts in changing temperatures. Cracks that go unsealed will continue to allow water into the base structure, causing severe damage to the pavement as the base deteriorates. A pavement crack inspection and correction should take place annually.

Patching.

If significant deterioration has taken place, removal and replacement of certain areas may be possible. If excessive ground water or poor soil conditions have aggravated the problem, corrections, should be performed before applying the patch.