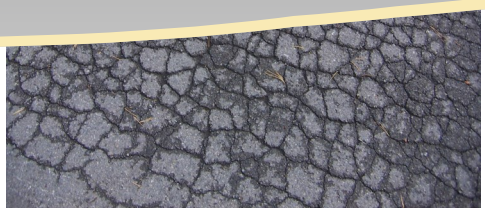
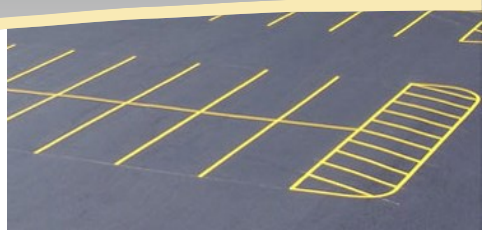
The source for pavement rehabilitation information

PavementPrinciples





SJUSD: it's about value

Now, more than ever, our dollars need to go farther. That's the view of former San Jose Unified School District school construction manager, John Cimino, who currently serves as director of facilities for the Milpitas USD.

When he hired PEI in 1999 to assess SJUSD's 48 school sites, he was intent on understanding the condition of all the district's hardscapes and wanted an analysis independent of architects or contractors.

"We wanted a meaningful assessment, a clear report of what was going on not just on the surface but the actual condition of the pavement beneath the surface," Cimino said. "That level of detail provides a much better finished pavement product that stands the test of time."

For SJUSD, one of the advantages of an assessment report was having budget numbers that took the guesswork out of planning. The other advantage was having experienced pavement specialists provide project oversight from design, bidding and inspections through completion. "It gave us confidence the work that needed to be done would be done right," said Cimino. "You definitely don't want contractors cutting corners, and in that respect, the study paid for itself for both the short and long term."

Though Cimino moved on to the Milpitas USD, he didn't leave PEI behind. "We are guardians of public funds, so it's important that every project is built to a level of quality that our community expects. They help us achieve that goal."

Part two of a three-part series

Protecting your pavement investment

Developing maintenance strategies for your district's pavement can extend the service life of these surfaces by several years beyond the typical 20-year pavement lifespan. A few years is significant when budgets are tight. It's all about applying the right treatment to the right pavement and the right time using the right materials.

Maintenance strategies that protect pavement and impede aging include crack sealing, surface seals, patch paving and overlays. As with all maintenance procedures, there are tradeoffs between appearance, effectiveness and cost, but correcting surface layer problems promptly, before that layer degrades substantially, is key to protecting your investment.

Crack sealing

Crack sealing is the right treatment for block or longitudinal and transverse cracking, the result of the oxidizing effects of sun and water. Applying this inexpensive procedure when cracks are first visible slows pavement deterioration by preventing water from seeping beneath the asphalt to the sub layers where structural damage occurs.

This procedure involves routing small cracks, cleaning and sealing with either a hot, flexible rubberized material that bonds to the cracks and moves with the pavement or a non-rubberized material that is static. Flexible sealers are required for parking lots and roadways that experience heavy traffic. Non-rubberized treatments are appropriate for playgrounds and other pedestrian areas where flexing is not as critical.

Crack sealing can be applied with or without seal coats to maximize pavement life. At a time when school budgets are tight, crack sealing provides the most cost-effective use of dollars over time when compared with other pavement maintenance treatments.

Surface treatments

Asphalt pavement that has a rough surface, or what pavement engineers call "weathering" or "raveling," requires a surface treatment.

The most common surface treatments for school pavements are seal coats that can be applied in single or double applications and slurry seals, which are single application treatments.

A seal coat is an inexpensive layer of emulsified oil and small aggregate that fills in minor cracks and surface imperfections and provides a smooth,

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Protecting your pavement investment

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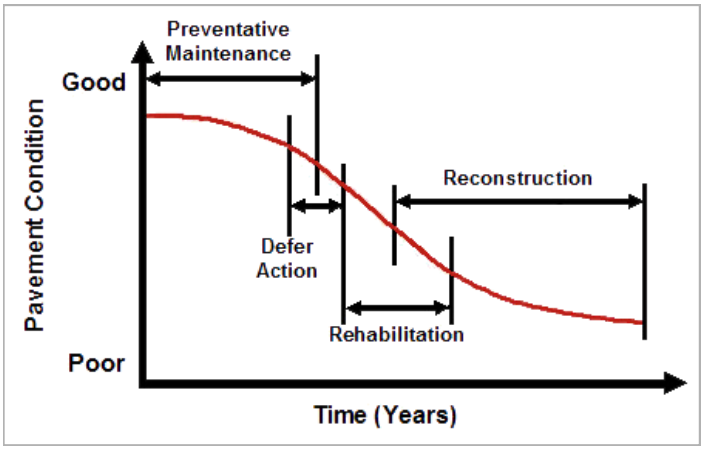
uniform finish that protects against the environment. A double layer provides protection for up to three years whereas a single layer is effective for only a year or two and, consequently, must be applied more frequently. Seal coats are not skid resistant and should not be used in traffic areas with speeds exceeding 15 mph; however, seal coats are effective for playgrounds and walkways. A single layer seal coat costs about 8 cents per square foot.

Slurry seal

A slurry seal is an effective treatment for high traffic areas, such as parking lots and roadways. Because it has a much higher concentration of aggregate than a seal coat, it is more durable though still economical. In addition to filling in cracks and depressions and creating a uniform, dense mat, it provides a weather-tight surface with improved skid resistance. A typical slurry seal lasts between three and five years and costs about 20 cents per square foot, or slightly more than a double-layer seal coat, but it has twice the lifespan.

Patching

When pavement has degraded to the pothole stage, it is the right time for patching repairs, provided the subbase or subgrade layers are stable. Patching involves digging out damaged pavement and replacing it with new asphalt mix. Left untreated, water that accumulates in potholes can quickly penetrate the subgrade, causing additional structural failure. When combined with a seal coat, patching significantly extends pavement life.



Pavement Treatment Strategy Based on Condition
Caltrans Maintenance Technical Advisory Guide

Rehabilitation treatments

For asphalt pavement that has reached the end of its service life, there are a couple of reasonable options in lieu of a very expensive reconstruction. One of these is an overlay. As the name implies, an overlay is bituminous asphalt concrete overlaid on top of existing pavement. Done at the right time, an overlay will strengthen the pavement's overall structure. The cost depends on the original pavement's condition and the overlay type. It is important to consult with an experienced pavement engineer when considering this option because an improperly applied overlay can create unanticipated drainage problems that may affect other paved surfaces.

Finally, the last step before complete reconstruction may be a remove-and-replace strategy. If the road base is stable but the pavement has reached the alligator cracking stage as described in last month's newsletter, then removing and replacing all or some of the asphalt layer is necessary to ensure safety and durability.

Next issue: Pavement preservation timing.

Tip of the month - Often what some contractors refer to as a slurry seal is, in reality, a seal coat. Both fill in pavement cracks and create a smooth, uniform appearance, but there is a big difference. A seal coat is a mix of 85% emulsion and 15% aggregate and is not skid resistant, so it is not recommended in areas with a speed limit exceeding 15 mph. A slurry coat is 15% emulsion and 85% aggregate and provides a new wear surface with skid resistance. It is the preferred surface treatment for pavements with a speed limit exceeding 15 mph. Slurry seals also have double the service life of a seal coat. Do you have a pavement maintenance question? Let us know, and we will answer it in an upcoming issue.

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Pavement Engineering, Inc. is California's premier pavement engineering and rehabilitation expert, specializing in evaluating, designing, implementing and maintaining asphalt and concrete surfaces for public and private entities.

We provide the technical expertise to maintain roadways and parking lots cost-effectively, the managerial experience to make sure things run smoothly from inception to completion, and the proven track record that builds trust and loyalty.

Our number one goal is client satisfaction. We manage every dollar our clients spend as if it were our own – with common sense.