

PCA Perspectives:

Special Report:

Dramatic Shift in Paving Costs Could Save Taxpayers Billions

(This is the third in an ongoing series on the impact of the Economic Stimulus Plan)

By Al Perlman

Just as the United States is about to embark on its largest infrastructure investment since the 1950s, a dramatic paradigm shift is taking place in the short-term and long-term costs of building materials for the paving of roads. If state and local governments are aware of this shift and choose their materials accordingly, they could save taxpayers tens of billions of dollars during the next several years by building their roads with concrete as opposed to asphalt.

There are a variety of factors causing this unprecedented paradigm shift. Volatility in the price of oil as well as changes in the way oil is refined are creating shortages and price escalation for asphalt, an oil-based material. Whatever the reasons, the bottom line is powerful: As of 2009, concrete is by far a more cost effective long-term solution than asphalt for road construction and is also a far less expensive initial investment.

To give a sense of the magnitude of this shift,

consider the cost for one mile of standard two-lane roadway. Six years ago asphalt held a \$120,000 initial bid cost advantage versus a concrete-paved road, according calculations made using DOT paving cost software (Wispave, from the Wisconsin Department of Transportation). Today that situation has reversed completely and it is concrete that enjoys the initial bid advantage, to the tune of \$82,000 in fiscal 2009.

As state and local governments look to the future, they need to be aware that the gap favoring concrete will widen considerably: By 2015 concrete will enjoy a \$500,000 initial bid cost advantage over asphalt for a one mile of standard two-lane roadway, according to the Portland Cement Association. This represents a cost savings of approximately 41%.

••• **New Evaluation Criteria**

This turnaround in the cost of initial bids for paving materials should create a huge adjustment in the way in which state Department of Transportation (DOT)

executives evaluate road-paving projects because it dispels long-standing beliefs about the value of concrete versus asphalt.

To make matters even more persuasive in favor of concrete as the material of choice, it is well known that concrete is far more durable than asphalt and enjoys a life-cycle advantage that is even more significant than its initial bid advantage. Using DOT cost analysis software, PCA calculates that concrete-paved roads enjoyed an advantage of more than \$185,000 versus a similar asphalt-paved road during fiscal 2009, based on the projected life-cycle costs of the road. By 2015, primarily because of price increases and shortages of asphalt, that gap will widen to more than \$730,000—a difference of 45%.

When you couple the initial bid advantage of concrete with the life-cycle benefit, the results could account for tens of billions of dollars in savings for U.S. taxpayers during the next several years.

Billions of Dollars At Stake

These potential savings are coming at a critical time because the nation will be investing heavily in road and highway infrastructure as part of the \$787-billion 2009 American Recovery and Reinvestment Act, as well as a potential new highway bill that could bolster infrastructure investment by as much as \$400 million starting in late 2011.

During the period between 2008 and 2015 approximately 14.9 million additional licensed drivers will be added to roadways in the U.S. If we are just to maintain congestion levels at their 2007 numbers, we must build more than 75,000 highway lanes each year.

If state governments were to pave all of those roads in 2015 with concrete, they would save taxpayers \$37.5 billion in initial paving costs compared to asphalt. During the entire life cycle

of these roads, they would be saving taxpayers approximately \$55 billion.

For state and local governments, the potential savings engendered by choosing concrete versus asphalt as their building material of choice have to be overwhelmingly compelling, particularly at a time when they are facing high unemployment rates as well as the potential for significant increases in entitlement spending for programs such as Medicare, which will siphon more funds as the baby boomer generation gets older.

Why Infrastructure Investment is Critical—NOW

The findings described here are included in a new Flash Report entitled “Update: Paving, The New Realities,” written by Ed Sullivan, the widely respected chief economist for the Portland Cement Association.

Sullivan points out that during the past 25 years investment in highways and roads has not kept pace with demographic changes in the nation. This lack of investment has led to increased traffic congestion, wasted fuel, higher carbon dioxide emissions, wasted time and increased logistical costs.

Failure to invest cannot continue, Sullivan notes: Demographic changes in the next 25 years will demand that the U.S. not only repair its aging highway system, but expand it as well. By 2030, the U.S. will have added 49 million licensed drivers and 58 million vehicles, compared to 2007 levels.

For decision-makers at the state and local government, saving valuable dollars by re-evaluating how they choose building materials for paving—in light of the significant cost advantages of concrete—will be critical.

“The need to accelerate highway investment, coupled with new budgetary pressures, suggests that states must re-asses how to best stretch scarce

infrastructure dollars,” Sullivan states, adding that the potential savings of using concrete “must be considered in the context of growing entitlement burdens by the states and their impact on overall fiscal conditions.”

The Problems with Asphalt

The paradigm shift that is taking place in the costs and value of concrete versus pavement is actually coming at a time when demand is down for both materials. In fact, because of low demand, asphalt prices have dropped this year after a staggering increase of 250% during the period 2005 to 2008.

Sullivan warns, however, that the dip in asphalt prices is just a temporary lull linked to soft demand as well as a short-term drop in oil prices. Long-term trends in the oil industry and an increased demand for paving materials caused by the infrastructure investment will create shortages of asphalt in the

future, as well as a continuation of the price escalation that has marked asphalt for much of the decade.

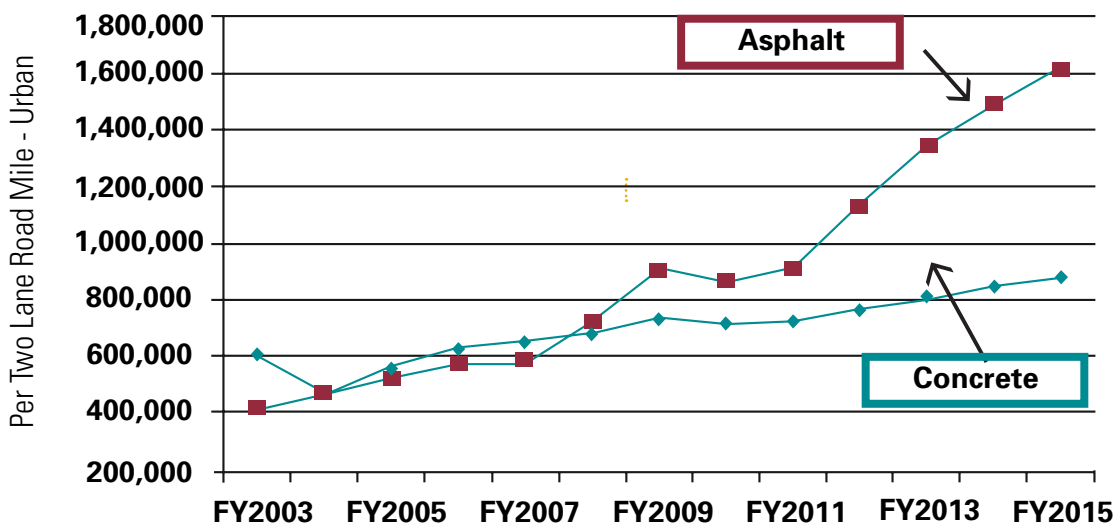
These trends in the oil industry include the increased use of equipment called “cokers” in the refining process, which yields an increase in light crude and a decrease in heavy crude oil, which is used to produce liquid asphalt. The margins for light crude oil are much greater than heavy crudes, and oil refineries are continuing to invest in coker equipment. By 2014, 21 new coker projects are expected to be operational at refineries that currently produce liquid asphalt. Sullivan estimates that, by 2014, new coker capacity additions will reduce the liquid asphalt supply in the U.S. by 35% compared to 2006 levels.

Sullivan notes: “Shortages of this magnitude imply large price increases.”

Concrete: The Time Is Now

It has been more than a year since Sullivan issued

Projected: Life Cycle Concrete Vs Asphalt Paving Costs



Concrete Advantages Materialize in Fiscal 2009

his first report on “Paving, The New Realities.” In that time, the shift he anticipated in the cost of concrete versus asphalt for initial bids has taken place, and, during this fiscal year, concrete has surpassed asphalt for the first time as the lower-cost initial bid solution.

Given the advantage concrete has always enjoyed compared to asphalt as the lower-cost solution over the life cycle of a road—and the reality that concrete is more durable, efficient and cost effective—the next logical step is for state and local officials to take advantage of these cost savings and build better roads for less money.

The pressure is there for decision-makers, but so is the opportunity. Certainly, taxpayers will be hoping that they not only recognize the paradigm shift, but that they take advantage of it as well. After all, billions of dollars could be at stake.

About the Author:

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The Portland Cement Association, based in Skokie, Ill., represents cement companies in the United States and Canada. It conducts market development, engineering, research, education and public affairs programs. More information on PCA programs is available at www.cement.org.