

Dollar *for* Dollar

By Randell Riley, P.E.

“I don’t get no respect.” That line made famous by comedian Rodney Dangerfield pretty much sums up your situation if you are a pavement promoter. The conversations usually go something like this abridged version:

P (promoter): *We last longer.*

C (customer): *It costs too much.*

P: *We have lower maintenance costs.*

C: *It still costs too much.*

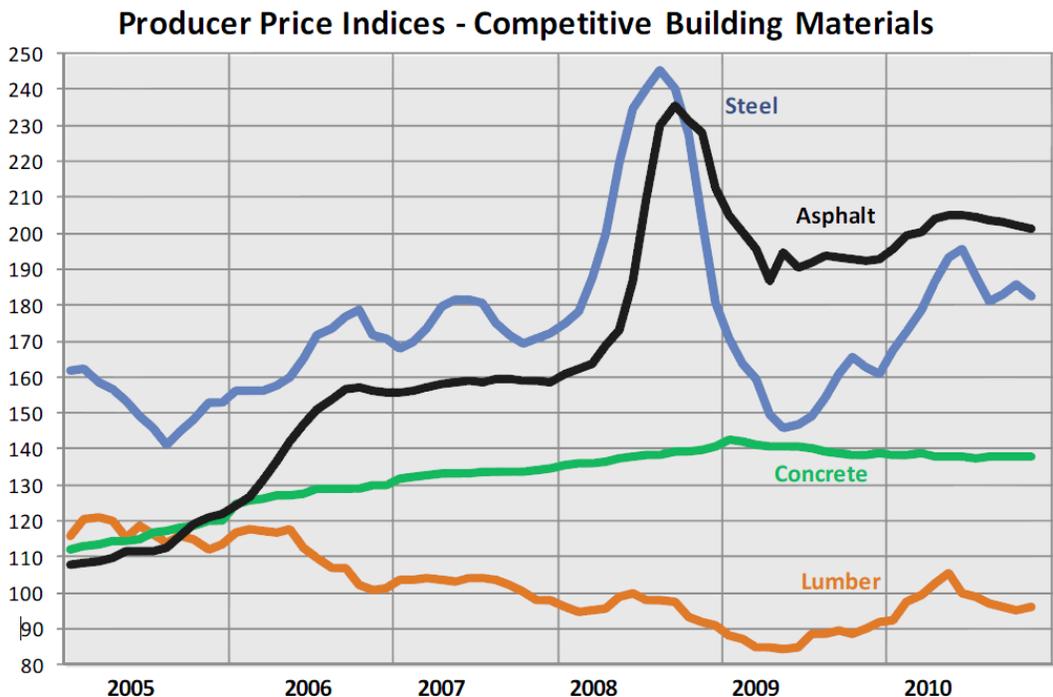
P: *We cost less to light.*

C: *That gets paid out of the utility bill. Not my problem.*

P: *We’re “sustainable.”*

C: *We are done.*

Figure 1 - “The Monitor - Tracking Report,” Portland Cement Association.



The simple fact of the matter is initial cost drives the decision the majority of the time and no matter how many facts or how much research you throw at people, they will not change. First, most folks do not understand your arguments or your research, nor do they really care. To them, right or wrong, it is all about initial costs under whatever system they use for comparison. That is something they can relate to. It seems everybody has respect for the almighty dollar.

Fortunately, in today’s economic environment, concrete paving is increasingly becoming less expensive relative to asphalt. Those of us active in promotion are quite familiar with *Figure 1*, a graph published monthly courtesy of Portland Cement Association. The graph depicts the Producer Price Index over the last few years for the major building products against which concrete competes. Of these materials, concrete has remained the most consistent, but more importantly in the paving market, the price of asphalt relative to concrete has increased dramatically.

The reasons for that are beyond the scope of what we can cover here, but certain rules of supply and demand are in play today, both locally and globally, that were not just a few short years ago. These changes are driving up the costs of asphalt relative to concrete and this appears to be a trend likely to continue. Let’s look at the implications for concrete pavement based on changes in the price of materials. First, we need a good source of information.

Since about 1992 we have collected bid tabs from the Illinois Department of Transportation that allow us to monitor quantities of pavement constructed of both types, but more importantly for our purposes here it collects the prices bid by the winning bidders for various designs in both products. The database develops rough estimates of weighted

average bid price per unit in whatever unit the Department uses for every paving item awarded. The data can also be limited to a certain time period. We can look at what is happening today.

First let’s go back to our original premise and the one we left you with in the last issue of the newsletter. If you will recall we made the claim that “... concrete has always been first cost competitive if you can get an equivalent design.” Now let’s apply

what we know to today's competitive environment using roughly equivalent designs in terms of number of vehicles carried.

Going back to the AASHTO methods using the equations developed at the Road Test done right here in Ottawa, we can develop roughly equivalent sections and adjust these costs approximately to demonstrate our point

from our bidtab history. For simplification, we placed the concrete and the asphalt both on a 4-inch granular subbase. (Most engineers that you deal with are adamant that you need it under concrete, in spite of data and performance indicating otherwise for parking lot sections, so take away that argument.) The results follow in two parts: 1) The relative traffic capacity calculation; and 2) The relative costs of the sections.

Rough Relative Cost by Section	
Estimates of relative cost are based on area estimates and I.D.O.T. bidtab history.	
Equivalent Comparisons	Relative Initial Cost
Equivalent Asphalt 2.5" Surface 5" Binder 4" Agg Base Course	\$ 39.15  1.49
Typical P/L Minimum Traveled Lanes Section 5" Plain PCC on 4" Stone Subbase	\$ 26.27  1.00
IDOT Minimum 6.5" Plain PCC Subbase "Optional"	\$ 37.00  1.41

The relative cost of a roughly equivalent asphalt section today is roughly fifty (50) percent higher to that of the minimum 5-inch concrete pavement section that we normally recommend for traveled lanes in parking lot applications. Indeed, the IDOT minimum section from the Bureau of Local Roads is just a little less expensive, but that section carries roughly 4.5 times as many axle loads as seen in the earlier chart. As long as the ratio of the price of the asphalt section to the concrete is greater than one, concrete is the less expensive alternative. The price of asphalt would have to be about two-thirds that of the concrete section to be competitive if "equivalency" was an actual consideration.

Some of you are probably asking yourself the question, "Is that really true?" After all, even our own industry is sometimes convinced that we cannot compete against asphalt.

In a 2009 concrete overlay project in Logan County, the bid price for a 5 1/4 -inch structural fiber reinforced concrete overlay works out to be roughly \$21.34 per sq. yd. The County's estimate of price for a 5-inch asphalt overlay

Approx. Relative Capacity by Section	
Estimates of relative capacity are based on the 1993 AASHTO Guide for Design of Pavement Structures using typical Illinois design parameters.	
Equivalent Comparisons	Relative Capacity
Equivalent Asphalt 2.5" Surface 5" Binder 4" Agg Base Course	160,000 ESALs  1.00
Typical P/L Minimum Traveled Lanes Section 5" Plain PCC on 4" Stone Subbase	228,000 ESALs  1.00
IDOT Minimum 6.5" Plain PCC Subbase "Optional"	981,000 ESALs  4.32



of the same section at that time worked out to be roughly \$22.81. Setting aside the longer life proven in Illinois on concrete overlays, the concrete was cheaper in initial cost than the similar asphalt section!

Being less expensive by whatever standard, that earns respect! We no longer have to be the Rodney Dangerfield of the paving industry!

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