

Concrete Paving: Opportunities for Virginia



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What is Portland Cement Concrete?



- Cement
- Fine Aggregate
- Coarse Aggregate
- Water

Virginia's Concrete Industry

- Virginia has one major cement production facility, 79 ready mix concrete plants, and 11 cement terminals with 7 cement companies serving the market
- Concrete industry employs more than 58,000 Virginians
- The industry has an annual payroll of \$649 million
- The estimated contribution to the Commonwealth's economy is over \$5 billion
- Our industry contribute about \$234 million in local, state and federal taxes

Sources: US Census Bureau; Portland Cement Association

Roanoke Cement's Production Facility



Virginia's Concrete Pavements

- 1,553 lane miles of the Interstate and Primary roadways are concrete
- Typical age: 35 years (range 2-72 years)
- VDOT has spent about 7.6% of their paving dollars per year on concrete over the past 5 years
- Through June of 2012 – 2.9%
- Only 4 slipform paving/construction jobs have been built over the last 10 years

REMEMBER:
Virginia's Concrete Pavements
are 100% Recyclable



Virginia Can Use Concrete Paving to Provide Opportunities to Optimize its Limited Transportation Funds by:

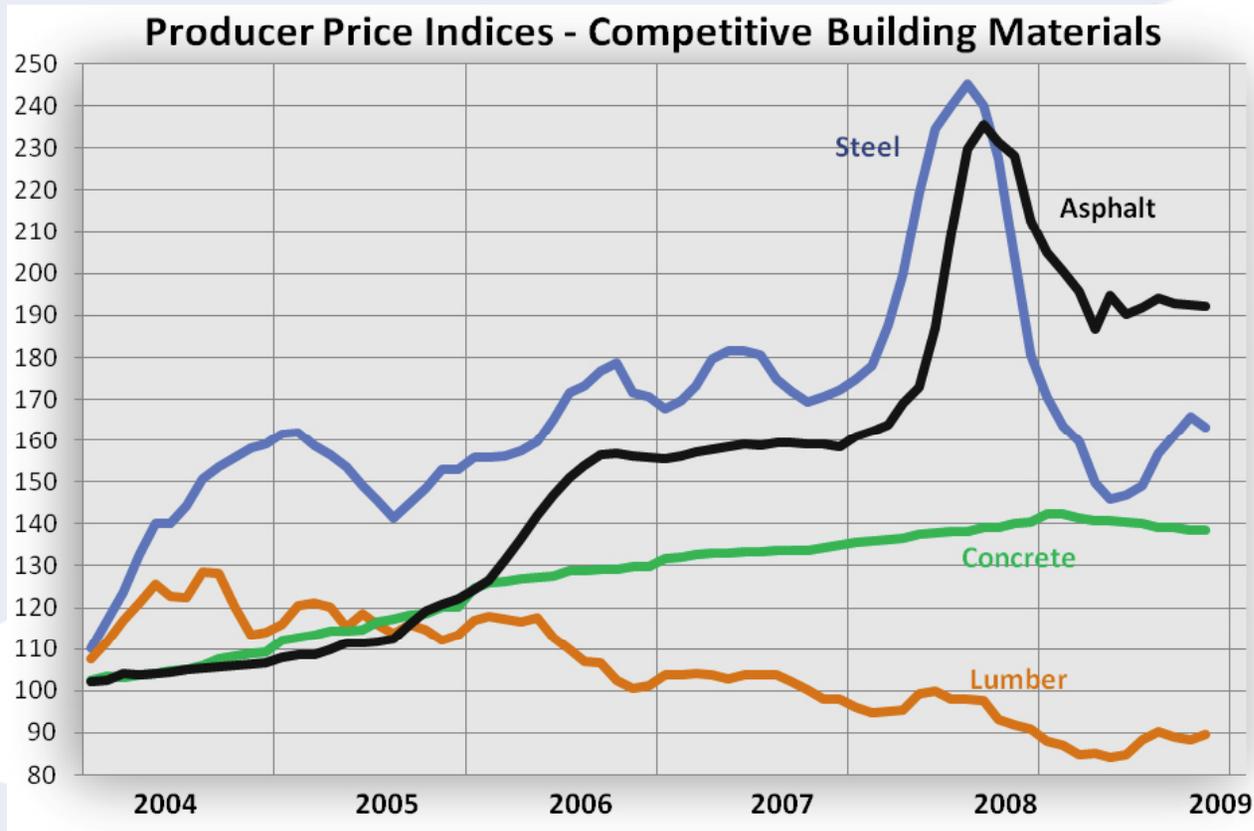
- Including concrete pavement alternatives
- Balancing your “pavement portfolio”
- Using alternate bidding to encourage competition
- Utilizing new paving technologies for Virginia that will expand pavement and rehab options

OPPORTUNITY #1



Include
concrete
pavement
alternatives

It's a new day with new realities



(Source: US BLS)

The new realities

- Reduced purchasing power is compounding the issues created by the funding shortfall
- Oil prices are not expected to return to 2005 levels
- Concrete pavements are first cost competitive
- Concrete's life cycle cost advantages are even greater

OPPORTUNITY #2



Balance your
"pavement
portfolio"

Balancing Your Pavement Portfolio Means Mixing Pavement Service Lives

- Consider a hypothetical network analysis of a 3,000-mile system.
 - One-third (1,000 miles) of the system consists of pavements that will require work in 5 years.
 - Another one-third (1,000 miles) of the system consists of pavements that will require work in 10 years.
 - The final one-third (1,000 miles) of the system is to be new construction, to be constructed of either asphalt or concrete.
- Assume the anticipated service life of the asphalt pavement is 15 years, and the anticipated service life of the concrete pavement is 30 years.

Miles in Segment of Highway System	Years to Next Fix	Years of Service in Segments
1000	5 (1000×5)	5000 yr-mi
1000	10	10000 yr-mi
1000	15	15000 yr-mi
		<hr/>
		Total = 30000 yr-mi

Average Remaining Service Life for each mile
= $30000/3000 = 10$ yr.

Miles in Segment of Highway System	Years to Next Fix	Years of Service in Segments
1000	5 (1000×5)	5000 yr-mi
1000	10	10000 yr-mi
1000	30	30000 yr-mi
		<hr/>
		Total = 45000 yr-mi

Average Remaining Service Life for each mile
= $45000/3000 = 15$ yr.

The FHWA's Position

- "By viewing the network in this manner [with each pavement as an asset in a collected network], there is a certain comfort derived from the ability to match pavement actions with their physical/functional needs."
- "A palette of pavement preservation treatments, or Mix of Fixes, is available to address the network needs at a much lower cost than traditional methods."
- "'Remaining Service Life' (RSL) is the tool we need to apply."

Source: "A Quick Check of Your Highway Network Health", FHWA

OPPORTUNITY #3



Use alternate
design
alternate bid to
increase
competition

Alternate Design Alternate Bid

- Increases competition and lowers prices
- Simplifies pavement type selection by letting the market decide
- Eliminates the need for mitigating material price fluctuations
- Can lead to a healthy two pavement system for the Commonwealth

Alternate Bidding

As of: March 16, 2011

Alt. Bidding Used

21

3

Before 2008

Since 2008

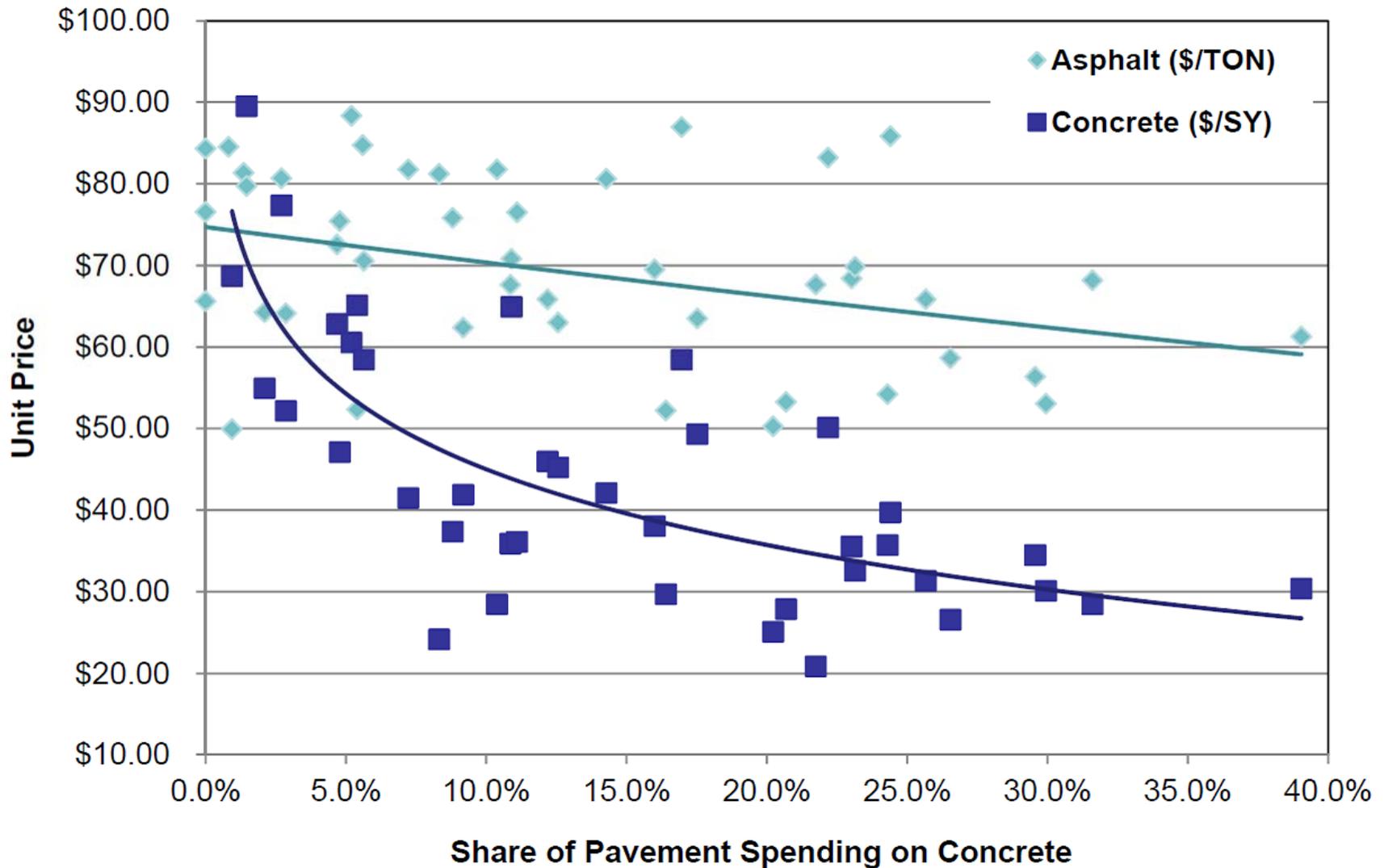
■ Number of States

WV incorporated alternate bidding in 2008

- Has saved over \$16 million over the asphalt alternate on 6 jobs
- Has seen the typical number of bidders rise to 5-6 on each job

Healthy Competition = Savings!

Figure 1. 2011 weighted unit costs versus five-year average balance of state pavement type usage (based on publicly available data in Oman Systems bid tabulation database).



OPPORTUNITY #4



Utilize new
pavement
technologies

Route 58 in Southampton County: New Ways to Fix Concrete Pavements



Unbonded Concrete Overlay Construction





Bonded Concrete Overlay Placement





A Testament to Longevity

Route 316, Accomack County

- **Longevity** - hallmark of concrete pavements
 - VDOT's oldest concrete pavement
 - Built in 1940
 - 72 years old
 - Repaired twice
 - Scheduled for a third in 2013

Route 316, Accomack County



Summary/Challenge

- Support competition for your paving dollars
- Implement alternate bidding for new construction and rehabilitation
- Encourage a two pavement system for Virginia
- Use life cycle cost analysis with real costs to guide pavement investments
- The bottom line is: Don't be satisfied with the status quo when it comes to the Commonwealth's pavement system

THANK YOU!
Questions?

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