

## Concrete Not a Key Factor in Home Building Cost Increases

### Introduction

During the past year the cost of materials needed to build a single family home has escalated significantly. A July survey performed by the National Association of Home Builders (NAHB) estimates these increases at \$5000 to \$7000 per new home.

As the use of concrete has grown, cement shortages have surfaced in a number of states. Some have concluded that concrete price increases are a principal contributor to the escalation in home material cost increases. *In reality, despite shortage conditions concrete prices have increased modestly and are not an important factor in overall single family material cost increases.* Material specifiers frequently have to choose between concrete and alternative building materials. This Flash Report is an effort to provide specifiers accurate information about concrete cost increases as they relate to single family construction activity as represented in the NAHB report.

### Point 1: Concrete accounts for a relatively small portion of overall construction costs for a new home.

According to NAHB estimates, the average single family home built in 2003 was 2,347 square feet in size. Based on NAHB estimates, roughly 76 cubic yards of concrete is required to build the average single family home. While PCA calculations of cement and concrete usage per single family home are slightly higher, NAHB estimates have been used to maintain consistency between reports. Using NAHB concrete volume, at 2003 prices this translates into roughly \$6,500 per home in concrete costs. Concrete costs represent slightly more than 4% of estimated overall home construction costs and less than two and one half percent of the price of a new home on the market estimated by the Bureau of Census at \$274,200.

### **Concrete Usage: Average Single Family Home**

	<b>Cubic Yards</b>	<b>Share (%)</b>
<i>Total Concrete Usage</i>	<b>76.00</b>	-----
<i>Composition of Concrete Usage:</i>		
- Basement & Crawl Space, Foundation Wall	12.16	16.0%
- Basement Floor	6.6	8.7%
- Foundation Footings	7.4	9.7%
- Above Grade Walls	4.64	6.1%
- Slabs & Floors	13.92	18.3%
- Concrete Products	10.12	13.3%
- Fireplaces, Hearths and Chimneys	0.48	0.6%
- Landscaping & Paving	20.68	27.2%

Source: NAHB Research Center data on cement converted to concrete assuming 500 pounds per cubic yard.

### **Point 2: Despite tight market conditions in some states, concrete price increases during 2004 have been modest.**

According to the Bureau of Labor Statistics (BLS), the government's authoritative source for producer price assessments, concrete prices stood only 4.6% higher than the year earlier levels reported at the time of the NAHB report. While price increases per cubic yard of concrete have continued since the time of the NAHB report, the increases have been well below increases recorded by competing building materials such as steel and lumber. Year-to-date through October, the producer price index for concrete has increased 8.4%.

### **Concrete Producer Price Index**

	Concrete PPI 1982=100	Annual Change (%)	Change 2004-2000 (%)
2000	147.1	-----	-----
2001	150.3	2.2%	-----
2002	150.2	-0.1%	-----
2003	150.8	0.4 %	-----
July 2004	157.3	4.6%	6.9%
October 2004	163.4	8.4%	11.1%

Source: Bureau of Labor Statistics

**Point 3: Concrete price increases contributed a meager \$283 of NAHB's \$5,000 to \$7,000 total cost increase estimate.**

By combining NAHB cement usage per single family home with BLS producer price indices as well as a base concrete price, 2004 concrete cost increases per single family home can be estimated. Using the same time frame as the NAHB study, concrete costs associated with the construction of a typical single family home has increased from \$6,449 to \$6,732 - *a meager \$283 increase per home, that accounts for only 5.7% of NAHB's cost increase estimate.* Since the NAHB report, tight market conditions have characterized the concrete industry – prompting further increases in the cost of concrete. Even when these subsequent increases are considered, concrete cost increases have resulted in roughly a \$399 cost increase per single family home during 2004.

***Rising Home Construction Costs: Concrete's Contribution***

	Cubic Yards Per Home	BLS PPI Concrete	Concrete * Cost Per Home	Cost Increase
July 2003	76	150.6	\$6,457	-----
January 2004	76	153.8	\$6,594	-----
July 2004	76	157.3	\$6,731	\$274
October 2004	76	163.4	\$6,993	\$399

\* Monetized based on Engineering News Record estimate of Concrete Prices March 2003

**Point 4: Other materials account for a significant portion of material cost increases.**

Among the largest building material components for single-family construction is lumber, accounting for roughly one-third of the total material costs according to NAHB. On average, building a new single family home requires nearly 17,400 board feet of lumber and 7,100 board feet of structural wood panels such as plywood.

During the past year lumber prices have increased 26.2% from year ago levels. Strong demand conditions originating from low mortgage rates and robust single-family construction, tariffs on Canadian lumber and restrictions against harvesting from federal lands have all contributed to the increase in lumber prices.

Combining lumber price increases with the board feet of lumber required to build a new home yields an estimate of total new home lumber costs. At 2003 prices, lumber costs for the average new home construction equaled \$10,900. With lumber price escalation, the current cost now stands at roughly \$14,600, accounting for more than half of NAHB's estimated \$7,000 building material cost increase.

Aside from concrete and lumber, building a new home requires a multitude of other materials. Steel reinforcing bars, gypsum, copper tubing, plastic plumbing products have all recorded double-digit annual increases compared to year-ago levels. These building materials, as well as other construction products have contributed to the cost increase in single-family construction.

**Point 5: Over the past four years, concrete price increases have only kept pace with inflation.**

Concrete prices stand only 11.1% higher than 2000 levels – a remarkable statement in price stability during a four-year period. In contrast, overall US inflation, which has been quite tame by historical standards, increased the consumer price index by 11.0% during the same four-year period. Discounting for inflation, concrete has experienced a real price increase of 0.1% during the past four years.

Concrete price stability has not been lost on material specifiers that must choose between concrete and alternative building materials and has contributed to the growth in concrete usage. During the past 18 months, prices for competing materials such as steel have increased dramatically. This improved competitive price position of concrete and has resulted in increased demand for concrete. This phenomenon is partially responsible for heightened demand for concrete and a contributor to the cement shortage conditions that have surfaced in some regions of the United States.

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**PCA Contact:**

Ed Sullivan, Staff Vice President and Chief Economist, (847) 972-9006