

# **NCDOT Construction Cost Index and Cost Containment Initiatives**

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21st Century Transportation Committee  
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# **Presentation Outline**

## **NCDOT Construction Cost Index (CCI)**

- **Description and History**
- **Competition**
- **Market Conditions**
- **Composite CCI Values and Trend Line**
- **NCDOT vs. Other States vs. FHWA**
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## **NCDOT/Contractor Cost Containment Initiatives**

- **Meetings with Partners**
- **Initiatives Implemented**
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# NCDOT Construction Cost Index

## Description

The **Construction Cost Index (CCI)** is a measure of the change in the price over time of what the Department is paying for the following categories of highway construction by contractors:

**Surfacing – 61%** (surface course, intermediate, base, asphalt cement, binder, etc.)

**Structures – 15%** (deck slab, concrete girders, steel, concrete slabs, piles, etc.)

**Excavation – 9%** (unclassified, borrow, undercut, drainage)

**Miscellaneous – 15%** (erosion, shoulder, milling, guardrail, pipe, markings, etc.)

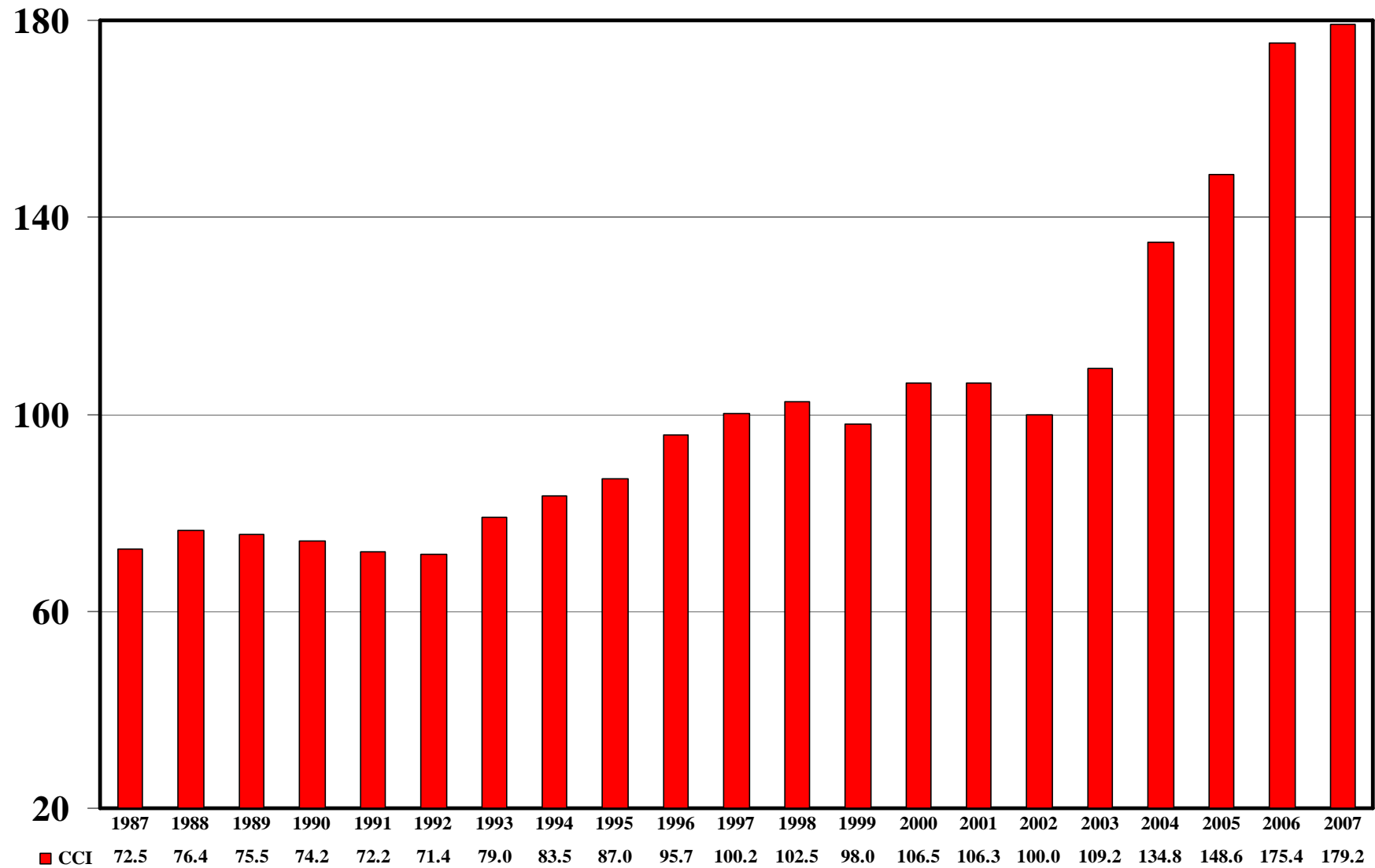
A total of 61 major bid items are used to calculate the index for the above categories and the consolidated index for all categories is called the composite rate. Only about fifteen states currently compute a composite index and the methodology is similar but they may or may not group bid items into the above sub-categories. NCDOT began producing its CCI in 1987.

# Bid Items in the CCI Surfacing Index

## Sample of Items Used in CCI (2007 4th Quarter)

Item #	Item Description	Units	Current Qtr Avg Price	Current Qtr Total \$	Item's \$ % of Composite Index
<b>Surfacing</b>					
10	Item Group: Asphalt Concrete Surface Course	Tons	\$37.72	\$45,384,961	32.5%
5	Item Group: Asphalt Concrete Intermediate Course	Tons	\$43.33	\$11,378,416	8.2%
3	Item Group: Asphalt Concrete Base Course	Tons	\$43.87	\$9,479,350	6.8%
3	Item Group: Asphalt Cement	Tons	\$367.71	\$36,227,228	26.0%
2	Items Not Grouped:	Tons			
1	Aggregate Base Course	Tons	\$22.72	\$1,728,651	1.2%
1	Asphalt Binder for Plant Mix PG 76-22	Tons	\$555.00	\$3,661,327	2.6%
				<b>\$107,859,933</b>	<b>77.3%</b>

## NCDOT Composite CCI By Calendar Year (2002 is base year.)



# Competition in NC Contract Award Statistics 97-07

1997 - 2007								
	Total Dollars Awarded (Millions)	Design Build \$ in Total	NCDOT Engineering Estimate	% of Estimated Cost	Total No. of Bids	No. of Contracts Awarded	Avg. No. of Bidders per Contract	National Average*
1997	\$722.0		\$758.0	-5%	876	223	3.9	-
1998	\$733.0		\$770.0	-5%	862	209	4.1	-
1999	\$1,184.0		\$1,230.0	-4%	1082	255	4.2	-
2000	\$1,034.0		\$1,059.0	-2%	816	202	4.0	-
2001	\$1,026.0	\$70.9	\$1,053.0	-3%	923	242	3.8	4.0
2002	\$1,117.0	\$227.9	\$1,187.0	-6%	1225	287	4.3	4.2
2003	\$1,261.0	\$58.9	\$1,242.0	2%	764	210	3.6	4.1
2004	\$1,326.0	\$245.9	\$1,290.0	3%	726	231	3.2	3.8
2005	\$475.0	\$55.8	\$481.0	-1%	451	125	3.6	3.4
2006	\$726.3	\$286.9	\$722.8	0.5%	541	149	4.1	3.6
2007	\$1,018.0	\$166.6	\$991.6	3%	744	186	4.1	-
Totals	\$10,622.3	\$1,112.9	\$10,784.4	-2%	9,010	2,319.0	3.9	3.9
* AASHTO 2007 Survey								

# Market Conditions - 2004



**Erin Moriarty**  
**Atlanta Business Chronicle**  
**November 5-11, 2004**

The **shortage of steel** is perhaps the most acute and troubling. Economists say the producer price index for scrap steel doubled from August 2003 to August 2004. It all began a couple of years ago when China began buying all the steel scrap it could, and, by September 2003, the nation had absorbed all of the world's excess capacity. "They have a huge demand for steel right now for infrastructure projects," Simonson said. "They've got massive dams, highway projects and bridges going on, and, of course, they're preparing for the Olympics."

# Market Conditions - 2004



**BBC News Friday, 20 August, 2004**

**Oil stays below \$50 a barrel mark**

**Oil prices** have slipped back from record levels, narrowly avoiding a breach of the \$50 a barrel mark. Fresh violence in Iraq triggered yet another oil price surge on Friday, before dealers starting taking profits. New York light crude rose as high as \$49.40 after reports of a new attack on an Iraqi oil pipeline, but then slipped back to close at \$47.86. "I am concerned to see oil prices continuing to increase. Oil at \$70 is entirely conceivable," for example if "there is a big supply problem and Iraq and Venezuelan oil came off the market", said Bruce Evers, an oil expert with Investec.



# Market Conditions - 2006



## High prices hinder construction

Source: PUBLIC WORKS MAGAZINE

Publication date: August 1, 2006

By Ashley Trent

With no end in sight to **rising oil prices** and the **increasing global demand for cement**, transportation projects continue to experience significant delays.

According to the American Road and Transportation Builders Association, highway and street construction costs increased 16.4% in May 2006 compared to May 2005. Over the past two years, material costs have jumped 22%.

# Market Conditions - 2006

## KIPLINGER FORECASTS

By Jerome Idaszak, Associate Editor, *The Kiplinger Letter*

March 2, 2006

The rising cost of key materials will force many states to curtail or postpone highway-building and maintenance projects, hurting suppliers, contractors and equipment operators in this segment of the market.

Average total costs for **asphalt, concrete and diesel fuel**—used heavily by road-building equipment—will increase 10% to 15% this year after a 20% advance last year. Bill Buechner, vice president of economics and research of the American Road and Transportation Builders Association, says that these higher prices are inflating bids states receive from contractors for highway work." It's causing concern around the country" and forcing belt-tightening moves, he notes.



# Market Conditions - 2006

**Potomac News April 17, 2006**  
**VDOT faces rising road costs**  
**By KAFIA HOSH**

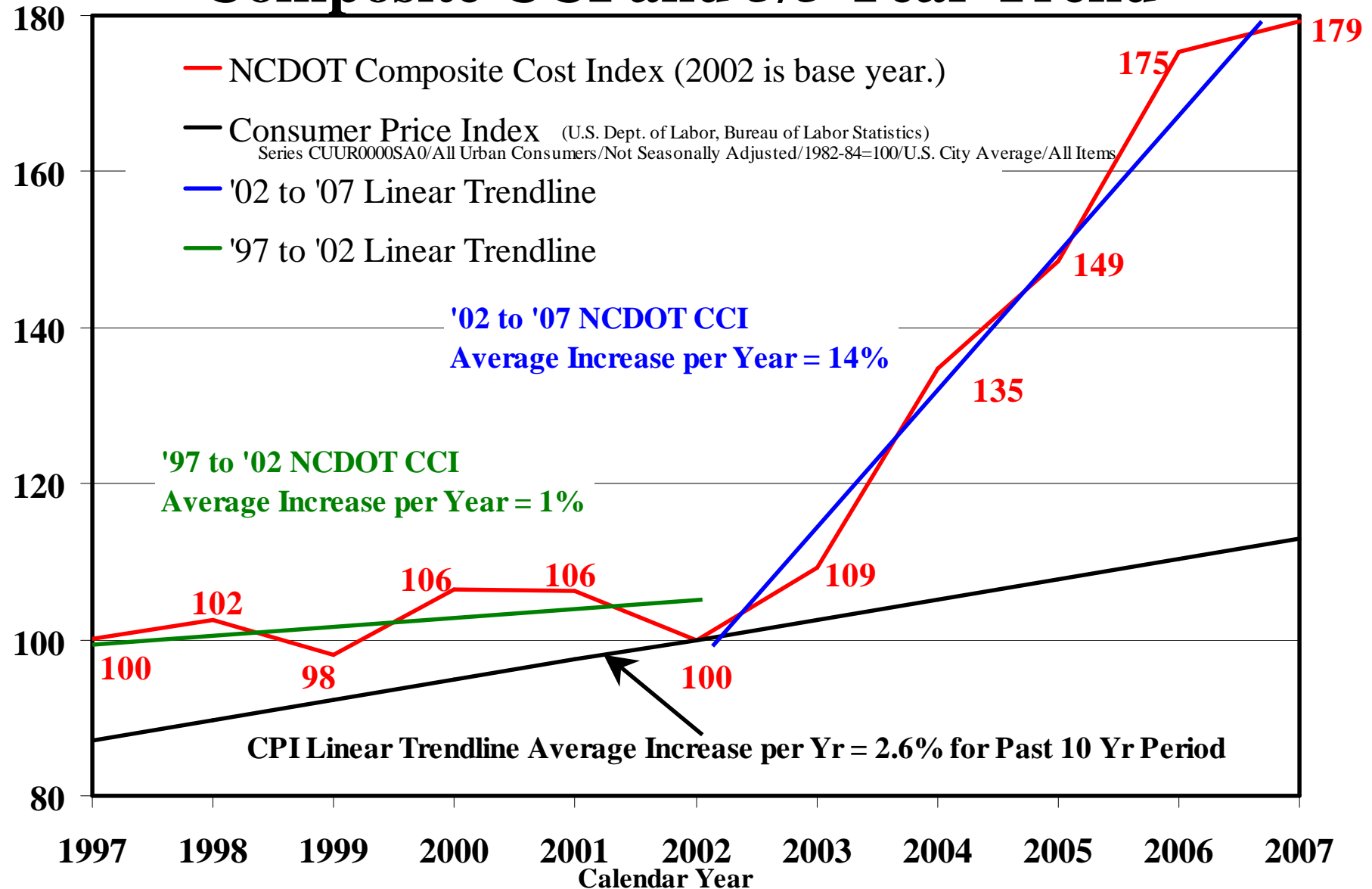


Sharp increases in **raw material prices** are expected to cost the Virginia Department of Transportation an additional \$180 million this year for road and maintenance projects, and will double the price tag of one local bridge renovation. In the last year, there was a 16 percent increase in contract prices for asphalt, and the cost of sand, gravel and crushed stone used in pavement rose by 8 percent, said VDOT spokeswoman Joan Morris.

## Composite CCI Values CY 2002 - 2007

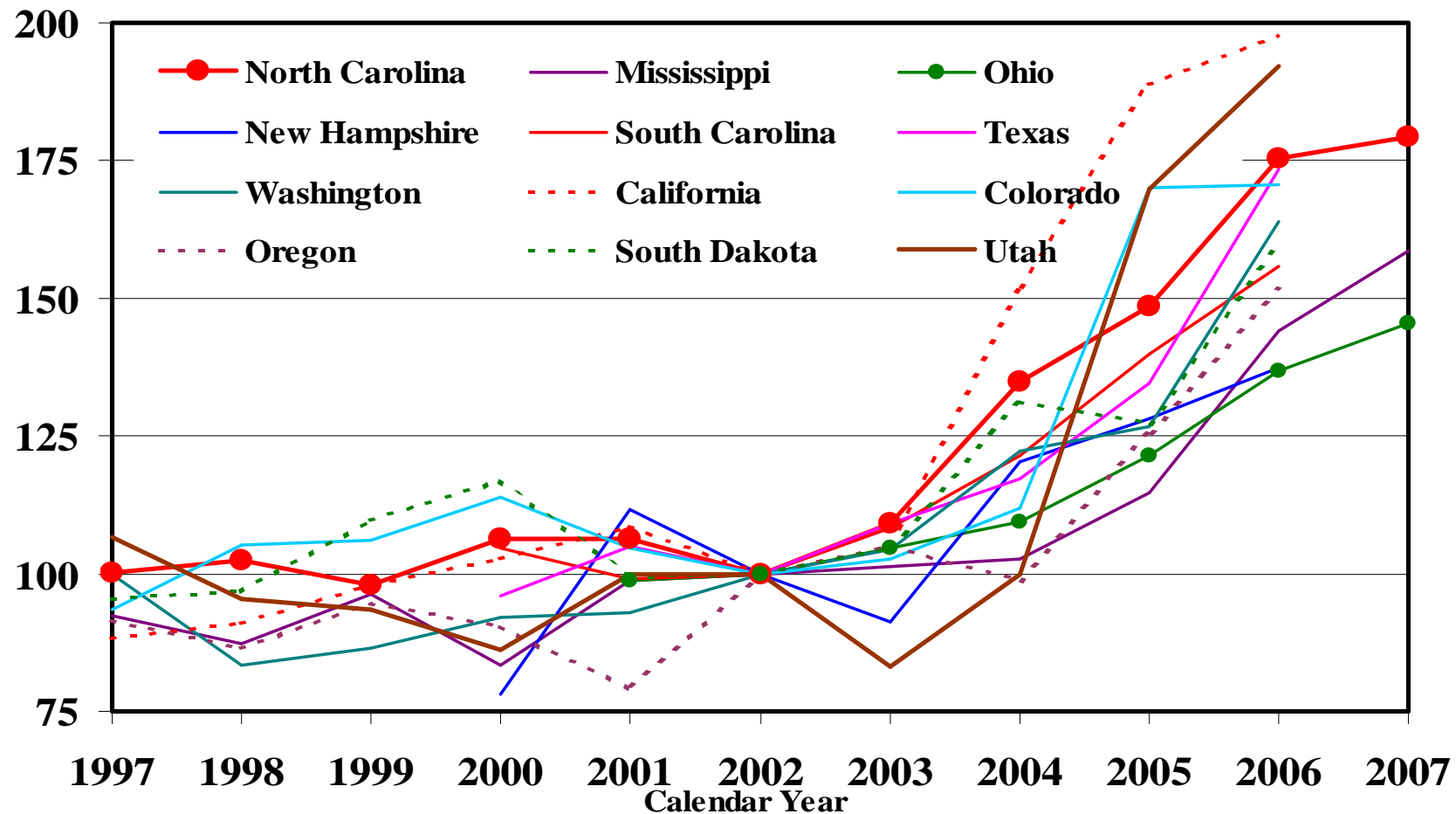
<u>Calendar Year</u>	<u>Composite CCI</u>	<u>% Change from Previous Year</u>	<u>Change since 2002</u>
<b>2007</b>	<b>179.2</b>	<b>2.2%</b>	<b>79.2%</b>
<b>2006</b>	<b>175.4</b>	<b>18.0%</b>	<b>75.4%</b>
<b>2005</b>	<b>148.6</b>	<b>10.2%</b>	<b>48.6%</b>
<b>2004</b>	<b>134.8</b>	<b>23.4%</b>	<b>34.8%</b>
<b>2003</b>	<b>109.2</b>	<b>9.2%</b>	<b>9.2%</b>
<b>2002</b>	<b>100.0</b>		

# Composite CCI and 5/5 Year Trend



# NCDOT's Cost Behavior vs. Other States

**NCDOT Highway Construction Cost Index and Other States**  
(Scaled to 100 in 2002)



## Price Information from Other States

Asphalt Cement per Ton						
Monthly Terminal FOB Asphalt Binder Prices						
<u>2007</u>	<u>NJ</u>	<u>VA</u>	<u>SC</u>	<u>NC</u>	<u>GA</u>	<u>TN</u>
Qtr. 1	\$297.78	\$304.96	\$311.32	\$309.29	\$310.33	\$320.82
Qtr. 2	\$319.44	\$314.17	\$311.52	\$309.88	\$303.33	\$306.90
Qtr. 3	\$343.33	\$333.17	\$334.78	\$332.62	\$319.33	\$302.64
Qtr. 4	\$342.50	\$336.83	\$321.67	\$320.12	\$295.33	\$294.97
Avg.	\$325.76	\$322.28	\$319.82	\$317.98	\$307.08	\$306.33

# Comparable Data in Texas 2004-07

## Road inflation leveling off

After three years of double-digit hikes in road-building costs, inflation in 2007 was less than 2 percent

By Ben Wear

AMERICAN STATESMAN STAFF

Monday, January 14, 2008



According to TxDOT's highway cost index (which is specific to Texas), the cost of road building inflated just 1.98 percent in fiscal 2007, which ended Aug. 31. That follows three grinding fiscal years when costs jumped 9.2 percent (2004), 19.8 percent (2005) and 22.9 percent (2006).

**TX** 9.2 + 19.8 + 22.9 + 2.0 = 53.9%

**NC** 23.4 + 10.2 + 18.0 + 2.2 = 53.8%

The net effect is that TxDOT's costs (including compounding and 2007's gentle rise) have increased by 93 percent in the past 10 years, 60 percent since 2002.

TxDOT spokesman Chris Lippincott cautioned last week against breaking out confetti; however, Inflation seems to be settling but it is settling at a high number and we do not expect it to recede."



# Federal Aid Highway Bid Price Index (BPI)

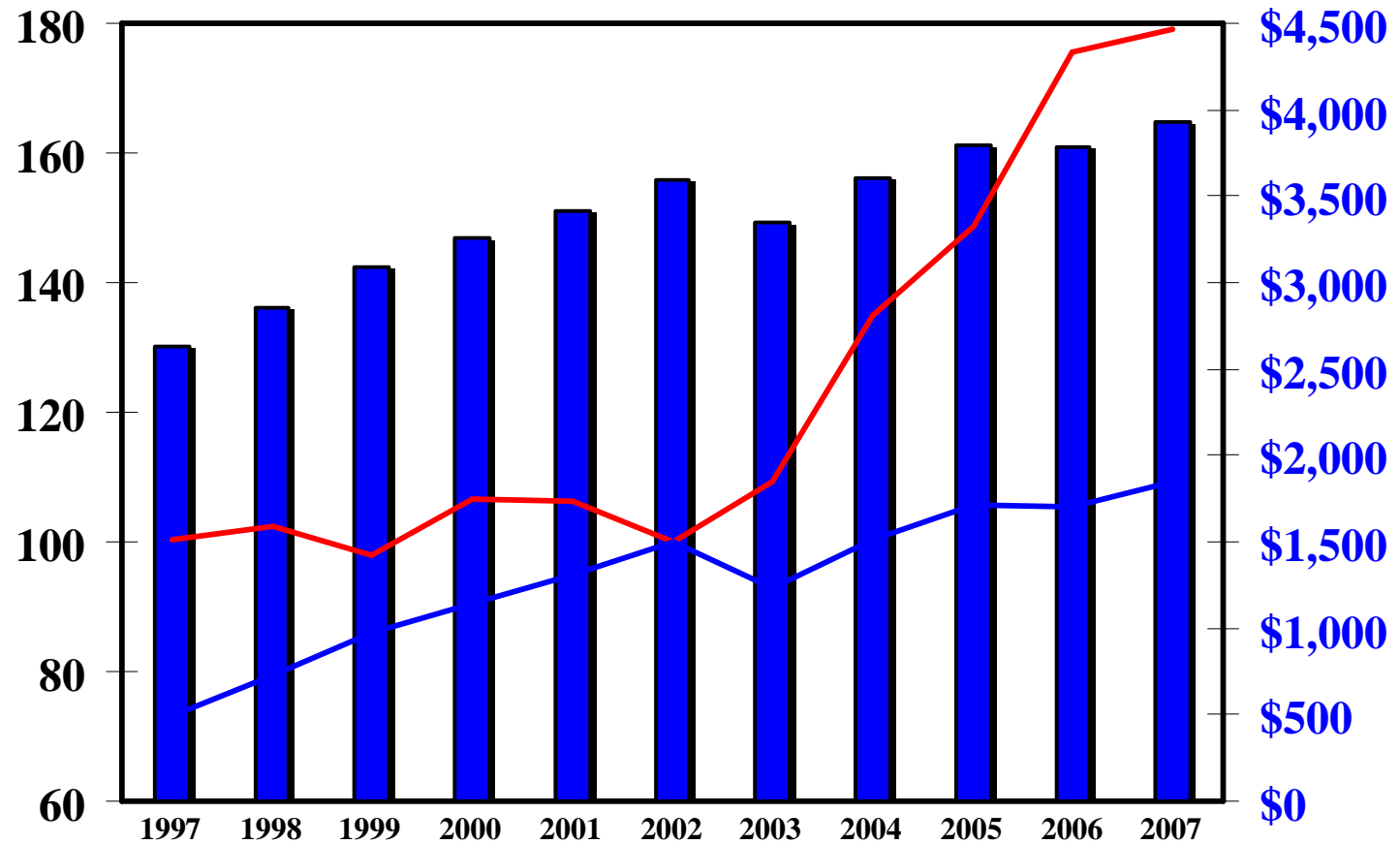


**GAO Report 04-113R, Nov 3, 2003, “States Highway Construction Costs” - “FHWA recognizes that it has problems with the quality of its bid price data. According to FHWA officials, underreporting and, to a lesser degree, inconsistent reporting are the biggest problems affecting data quality.”**



**FHWA OIG Report CR-2007-079, Sept 26, 2007, “Growth in Highway Construction and Maintenance Costs” - “FHWA had not made any changes to the FHWA BPI (Bid Price Index) data collection methodology to address recommendations outlined in the 2003 GAO Report before discontinuing it on May 22, 2007.”**

## NCDOT Composite Construction Cost Index and Total Revenue



<span style="color: blue;">■</span> Total Revenue \$ Millions	\$2,631	\$2,860	\$3,087	\$3,253	\$3,413	\$3,596	\$3,344	\$3,609	\$3,798	\$3,789	\$3,927
<span style="color: red;">—</span> Cost Index All Contracts	100.2	102.5	98.0	106.5	106.3	100.0	109.2	134.8	148.6	175.4	179.2
<span style="color: blue;">—</span> Total Revenue Index*	73.2	79.5	85.8	90.5	94.9	100.0	93.0	100.3	105.6	105.4	109.2

# **NCDOT/Contractor Cost Containment Initiatives**

## **2003 & 2004**

**Brainstorming sessions with steel fabricators, cement industry and contractors as a result of increasing steel and cement prices.**

## **July 2006**

**Brainstorming session with 6 contractors and NCDOT. Decided to expand the contractor/ DOT input to generate more ideas.**

## **Winter 2007**

**Conducted 3 hour breakout sessions at OT/Contractor conferences involving 200+ contractors and 300+ DOT personnel.**

# **NCDOT/Contractor Cost Containment Initiatives**

**The following items have already been implemented:**

- **Allowed material substitutes when possible**
- **Developed a procedure to identify project types that require a longer advertisement period**
- **Grouped bridge projects together to get better bids**
- **Established an Electronic Plans Committee to establish procedures to provide totally electronic plans**
- **Granted more authority at the local level for decision making**

# **NCDOT/Contractor Cost Containment Initiatives**

**Implementation plans are in process for the following items:**

- 1. Constructability and design reviews with contractors during plan development process**
- 2. Identification of borrow and/or waste sites during the design process**
- 3. Streamline Contractor submitted Value Engineering proposals**
- 4. Relocate utilities prior to letting of construction contracts**
- 5. Increase use of recyclable asphalt materials**
- 6. Alternative bid items in proposals**

# **NCDOT/Contractor Cost Containment Initiatives**

**Implementation plans are in process for the following items (continued):**

- 7. Conduct pre-bid meetings with bidders prior to letting**
- 8. Balance earthwork on projects**
- 9. Level of detail needed in traffic control plans**
- 10. Utilize time + money bidding on time sensitive projects**
- 11. Utilize more road closures to facilitate faster project completion**
- 12. Asphalt Summits**