



**CONTRACT ADMINISTRATION
SUBCOMMITTEE
CHANGE ORDERS: FRIEND OR FOE?**

**DESIGN ENGINEERS LOVE/HATE
(CHOOSE ONE)
CHANGE ORDERS**

Spring 2006

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Introduction

Public Works projects are most successful when they are based on good planning, sound engineering practice, complete and accurate contract documents, and realistic expectations.



Introduction

One component of realistic expectations is the anticipation of some level of change orders. The reasons for change orders, the magnitude of change orders, the manner in which they are negotiated, administered, and processed can mean the difference between a good project and a disaster.



Types and Formats of Public Works Contracts

- State of Washington Standard Specifications for Road, Bridge, and Municipal Construction (WSDOT)
 - Widely used and accepted throughout Washington State
 - APWA Special Provisions
 - 25% increase/decrease in quantities
 - Minor Changes bid item
 - Force Account



Types and Formats of Public Works Contracts

- EJCDC (ACEC, NSPE, ASCE)
 - A Change Order is “A document recommended by the Engineer which is signed by the Contractor and the Owner and Agency and authorizes an addition, deletion, or revision in the Work or an adjustment in the Contract Price or the Contract Times, issued on or after the Effective Date of the Agreement.”



Types and Formats of Public Works Contracts

- Specific Municipal Contracts
 - Often closely correlate with the WSDOT Specifications
 - May reflect past experience of the City, the City Attorney, or the Engineer

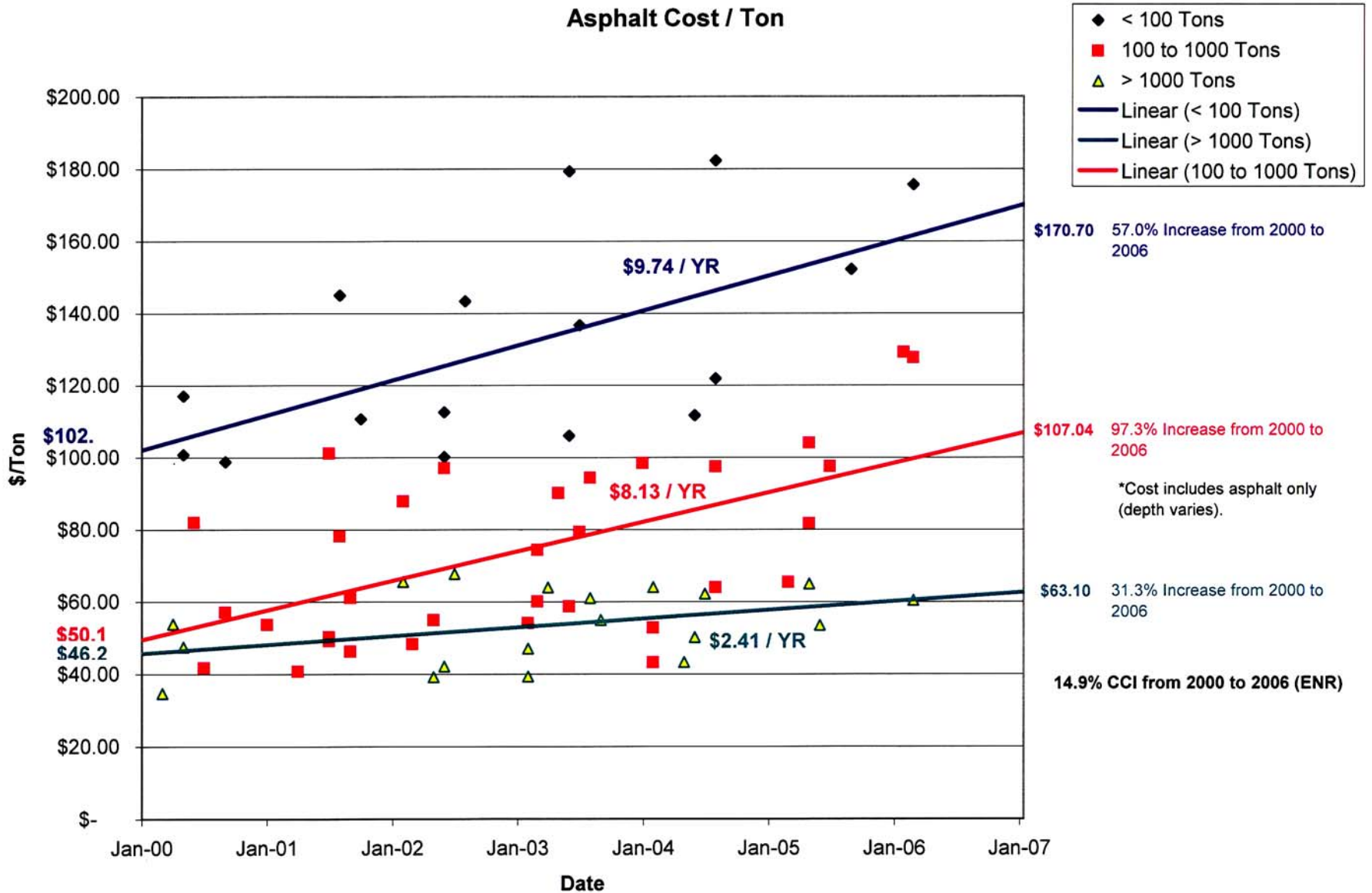


Rising Costs of Public Works Contracts

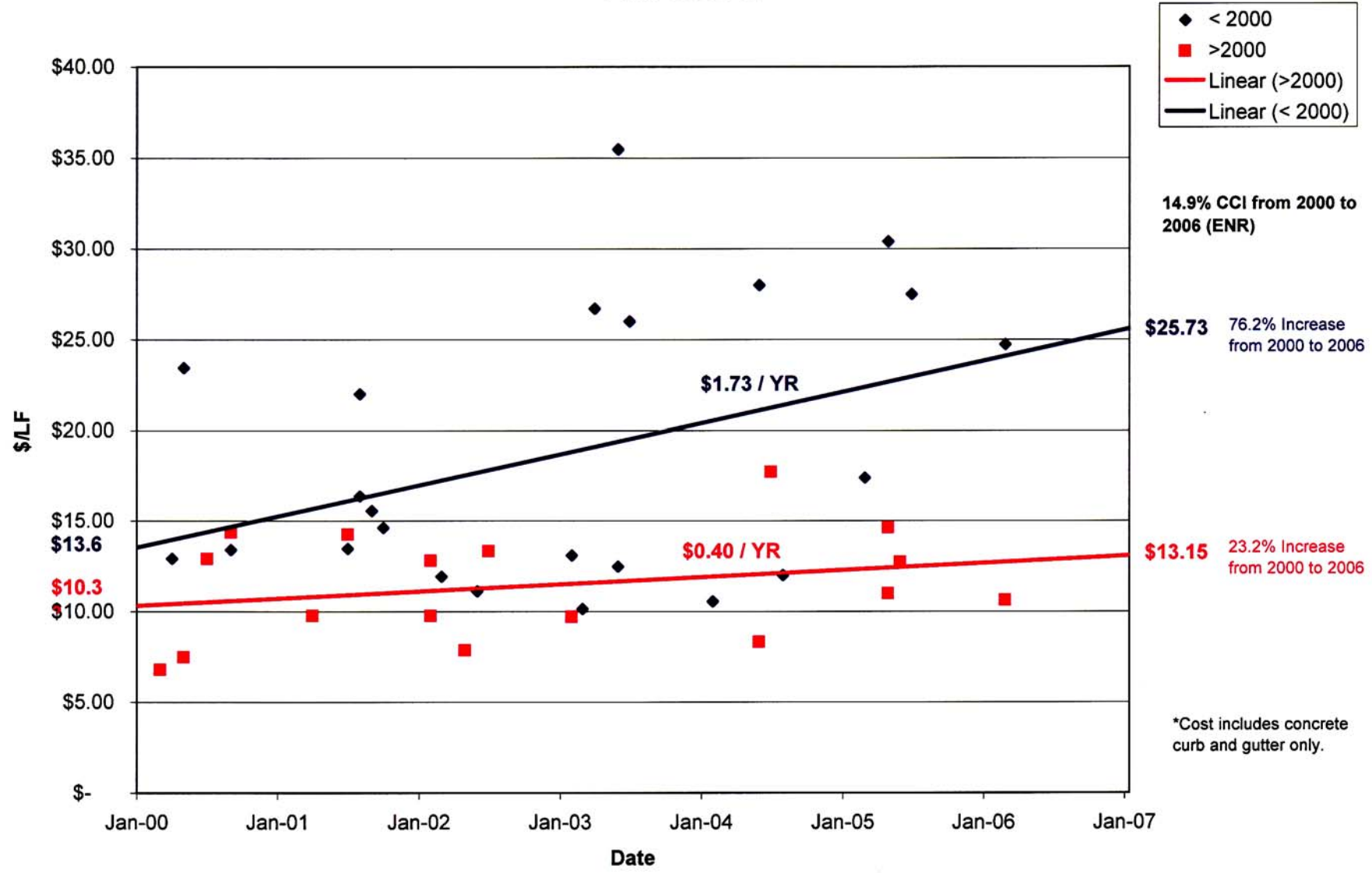
- Inflation, Oil Costs, Katrina, China, and Iraq have all had an impact
- ENR Index may not tell the whole story
- Individual unit price costs have wide variability but consistently trend upwards



Asphalt Cost / Ton



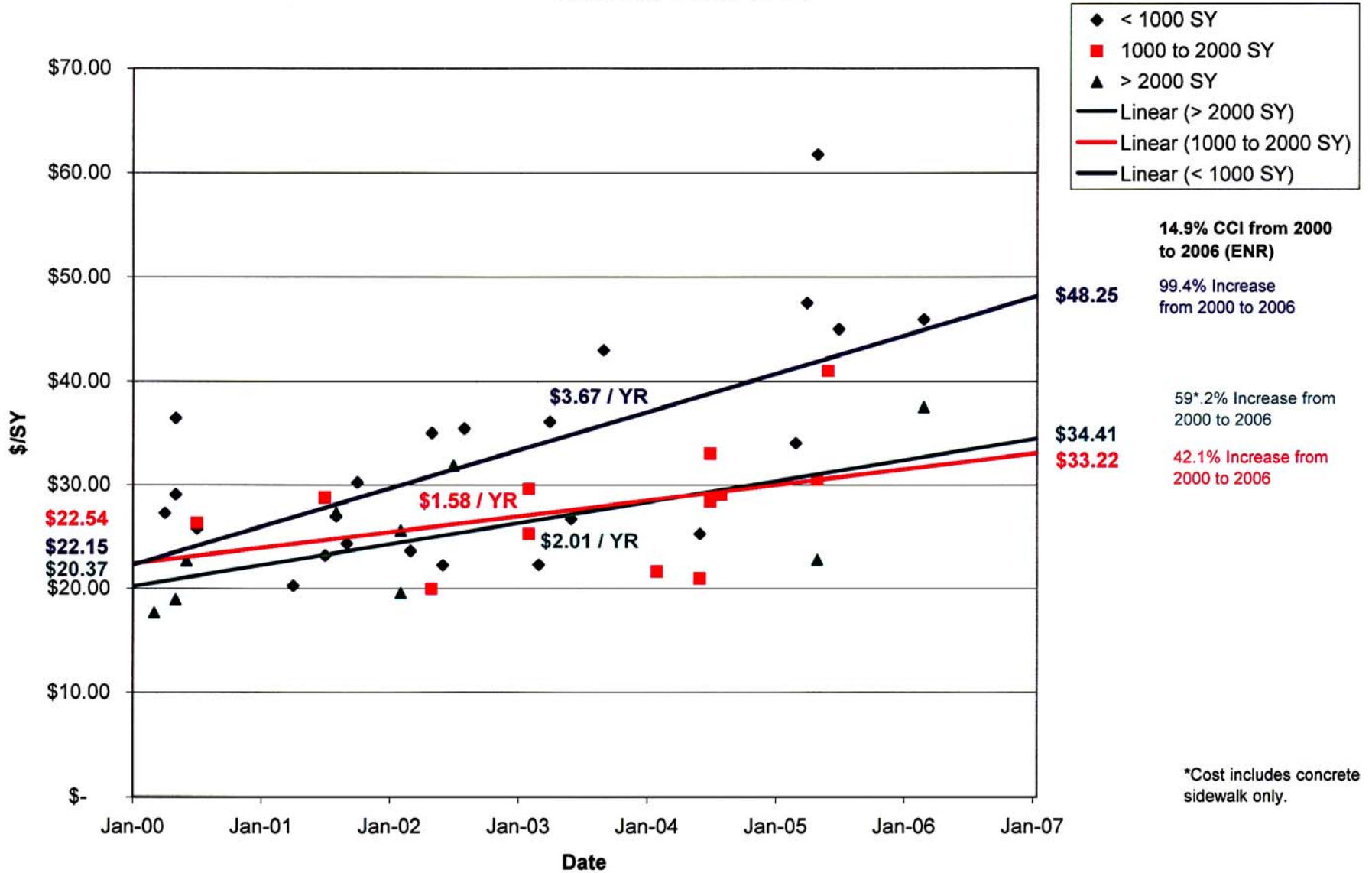
Curb Cost / LF



*Cost includes concrete curb and gutter only.



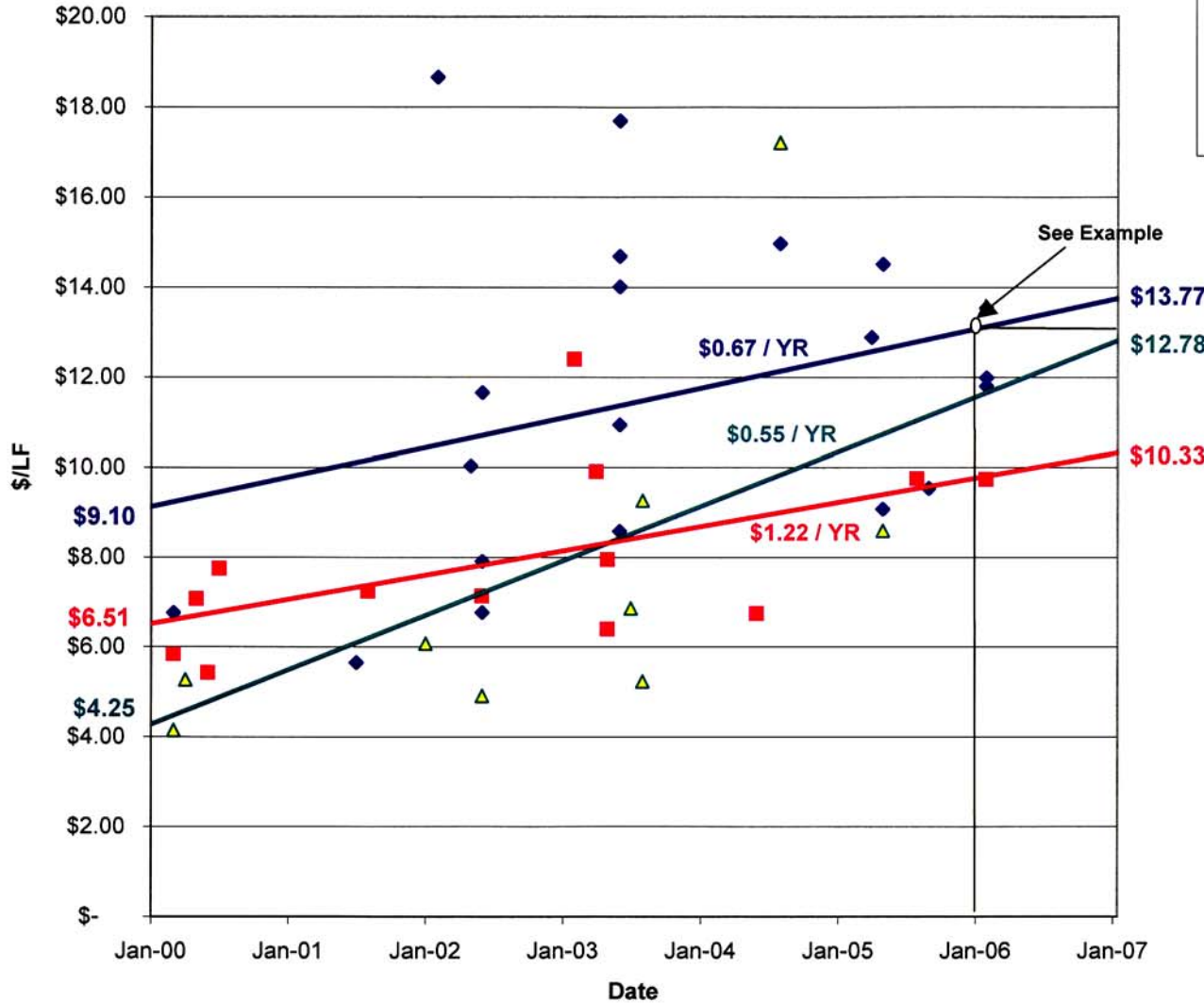
Sidewalk Cost Per SY



*Cost includes concrete sidewalk only.



Water Pipe Cost / Inch Diam. / LF



- ◆ < 1000 LF
- 1000 LF to 2000 LF
- △ > 2000 LF
- Linear (> 2000 LF)
- Linear (1000 LF to 2000 LF)
- Linear (< 1000 LF)

14.9% CCI from 2000 to 2006 (ENR)

44.2% Increase from 2000 to 2006

112.4% Increase from 2000 to 2006

77.6% Increase from 2000 to 2006

*Cost includes pipe, pipe bedding, utility locate, sawcutting, hydrants, valves, fittings, connections to existing system, service connections, thrust blocks, shoring, and backfill. Does not include surface restoration.

EXAMPLE

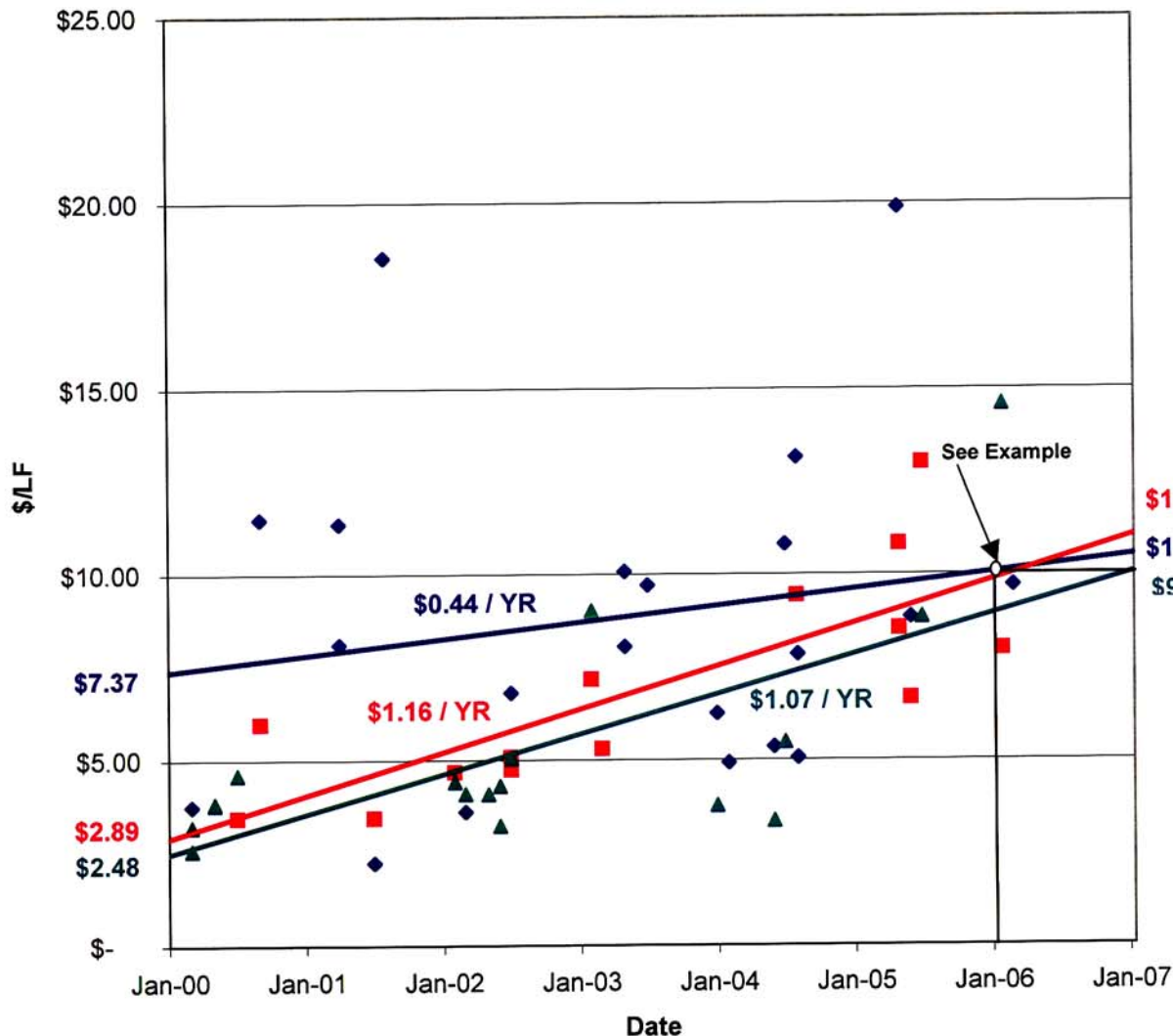
Water job that is 800 feet long consisting of 400 LF 8" DI and 400 LF 12" DI.

Estimated Cost for January 2006

$$\text{Cost} = (\$12.95 \times 8 \times 400) + (\$12.95 \times 12 \times 400) = \$103,600$$



Storm Pipe Cost /Inch Diam / LF



- ◆ < 500 LF
- 500 LF to 1000 LF
- ▲ > 1000 LF
- Linear (< 500 LF)
- Linear (500 LF to 1000 LF)
- Linear (> 1000 LF)

*Cost includes pipe, pipe bedding, utility locate, sawcutting, shoring, connections, catchbasins, and backfill. Does not include surface restoration.

14.9% CCI from 2000 to 2006 (ENR)

- 240.8% Increase from 2000 to 2006
- 35.8% Increase from 2000 to 2006
- 258.9% Increase from 2000 to 2006

EXAMPLE

Storm job that is 800 feet long consisting of 400 LF 12" PVC and 400 LF 18" PVC.

Estimated Cost for January 2006

$$\text{Cost} = (\$9.92 \times 12 \times 400) + (\$9.92 \times 18 \times 400) = \$119,040$$



The Three Most Significant Factors in the Cost of Public Works Contracts

- Time of Year and Bidding Climate
- Scope of the Work
- Assignment of Real or Perceived Risks



What are the Contractors Greatest Risks?

- Dewatering
- Traffic Control
- Labor Costs
- Unpredictable or Unreasonable Owners or Contract Administrators
 - Recent CM Committee Survey
 - 13/17 impacted decision to bid
 - 4/17 impacted price
 - 16/17 indicated that there were agencies to whom they would not submit bids



The Most Significant Factor in the Cost of Public Works Contracts

Time of the Year and Bidding Climate

Example:

- Municipal Road Project in Rural Pierce County
- Low Bid received in November 2005: \$840,000
- Rebid and coupled with additional schedules (\$2.3 M total)
- Low Bid received in March 2006: \$ 745,000



Unit Price Versus Lump Sum Contracts

- Unit Price is preferred for Roadway and Utility projects
 - Payment paragraphs are critical
 - Allows for some flexibility during contract administration



Unit Price Versus Lump Sum Contracts

- Lump Sum is often preferred by architects or for projects with significant vertical, electrical, and mechanical work
 - Schedule of Values
 - Trench Safety is a separate pay item
 - Other separate pay items may be desirable
 - Minor Changes can be a separate pay item
 - More dependent on the change order process



Why Bad Change Orders Happen to Good Projects

- Changed Conditions
- Inaccurate or Incomplete Plans and Specifications
- Changes in Scope Initiated by the Owner
- Inaction or Unresponsiveness of Contract Administrators
- Delay Impacts
- Inequitable or Unfair Administration of the Contract



Why Good Change Orders Happen to Bad Projects

- Changed Conditions
- Inaccurate or Incomplete Plans and Specifications
- Changes in Scope Initiated by the Owner
- Inaction or Unresponsiveness of Contract Administrators
- Prompt and Responsive Action by Contract Administration
- Equitable or Fair Administration of the Contract



What Level of Change Orders is Reasonable?

- 5% or less for “typical” or “routine” projects
- 5 to 10% for more difficult or risk prone projects



Strategies for Controlling or Reducing Change Orders

- Complete and Accurate Project Scoping
- Good Communication between the Owner and the Designer
- Good Communication between the Contractor and the Contract Administrator
- Quality Assurance/Quality Control Process
 - Complete Payment Descriptions
 - Accurate Quantities
- Minor Changes Line Item



Minor Changes Line Item

- Standard Specification allows for \$5,000 or less
 - Part of the Contract, not a Change Order
 - Documented and agreed to by the Owner and Contractor
 - Larger Amounts May Be Appropriate on Some Projects



The Role and Responsibility of the Resident Inspector

- Read the Specifications!!!
- Communicate and Follow Procedure
- Anticipate Problems and Difficulties Before They Occur
- Document Production, Labor, and Equipment
- Always Professional, Never Personal



Three Methods for Change Order Pricing

- Unit Prices
- Negotiated Lump Sum
- Force Account
 - Reduces Risk to the Contractor
 - Standard Specification Mark Ups
 - Documentation is Critical



Preventing Change Orders From Developing into Claims

- Responsiveness of the Contracting Agency
- Notification Procedure
- Additional Information is Often Required
- Cost and Contract Time May be Issues; Liquidated Damages May Provide the Contracting Agency Significant Leverage
- Meet Face to Face with Decision Makers Present
- Keep Talking!



Coaxing Claims into Change Orders

- Detailed Claims Analysis is Critical
 - Objective Analysis by a Dispassionate Party
 - Audit of Contractor's Records
- Consider Total Cost to the Contracting Agency
- Nonbinding Alternative Disputes Resolution
- Meet Face to Face with Decision Makers Present
- Keep Talking!



Conclusion

Change Orders should be neither loved nor hated, reviled or revered. When properly documented, negotiated and controlled, they are an indispensable tool for the equitable administration of public works contracts.



Questions, Comments
and
Discussion

