



# CONSTRUCTION CONTRACT ESTIMATING

Adjusted path forward

# Issue

- **Recent Bids much higher than estimates – out of range**
- **Impact on Six Year Plan**
- **Opportunity to look at process that had not been changed and adjust it to changed circumstances / situation**
  - **Process/Error**
  - **Market**
  - **Downstream adjustment to shift in project development.**
    - People → Workforce Development
    - Process → System – Lessons learned and Training
    - Tools → Estimating Guide and focus tools for Risk/Complexity

# SMART SCALE has changed how we do business

- **Normal project development (old)**
  - As design progresses more information available
  - Scope, schedule, and budget likely to change
- **SMART SCALE changed process**
  - **Scope**
  - **Schedule**
  - **Estimates**
    - All set with limited design – really before design – no survey
- **VDOT develop and implement downstream change for new cost estimating system**
- **Legacy**

# Initial Review

- **Internal Review of each Project involved**
- **Discussions with Industry & project drill downs**
  - **Partner with industry – no one in Virginia more experienced**
- **Contact with External National Experts – *new ground***
- **Queries to other state DOTs**
- **Identified Initial Findings**
  - **What we think we know**
- **Identified Immediate Actions**
  - **Immediate efforts without complete information**
- ***Establishing a long term plan – flexible to adjust as we find out more or firm up findings***

# Initial Findings

- **Error**
- **Process**
- **Market**
  - **Labor**
  - **Equipment**
  - **Materials – asphalt binder rising**
  - **Environmental**
  - **Selective in bidding**
    - Downstream impact when under construction – importance of incentives
- **People – Experience and Training**
- **Capturing Risk and Complexity**

# Success – Level of Accuracy

**Available references/history for best practices and remedial actions.**

- **NCHRP 574**
  - National Cooperative Highway Research Program
  - 2006 baseline – starting point
  - Develop current and new ground with national experts

**Define how accurate to be successful.**

# Accuracy to be successful

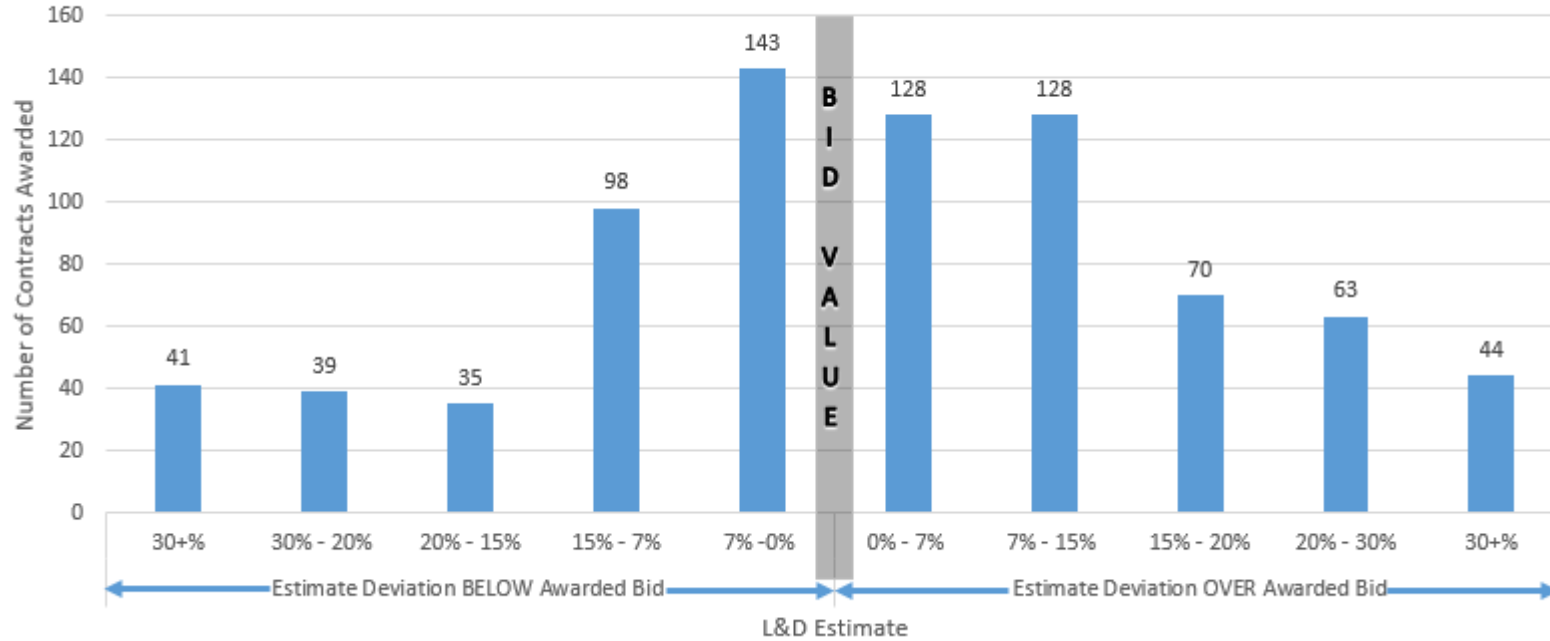
## Examples(DB):

- **Tight bids (8% between 3 bidders)\***
  - I 64 widening MM 200-205 \$43.4M to \$46.9M
- **Medium Spread (15% between 3 bidders)**
  - I 95 Southern Terminus Extension @ Garrisonville \$31.1 M to \$35.6M
- **Medium Spread (19% between 3 bidders)**
  - I 64 Peninsula Segment III, \$138.7M to \$165.6M
- **High Spread (61% between 3 bidders)**
  - Route 29 Solutions, \$116.7M to \$188.0M

\* % calculated before rounding

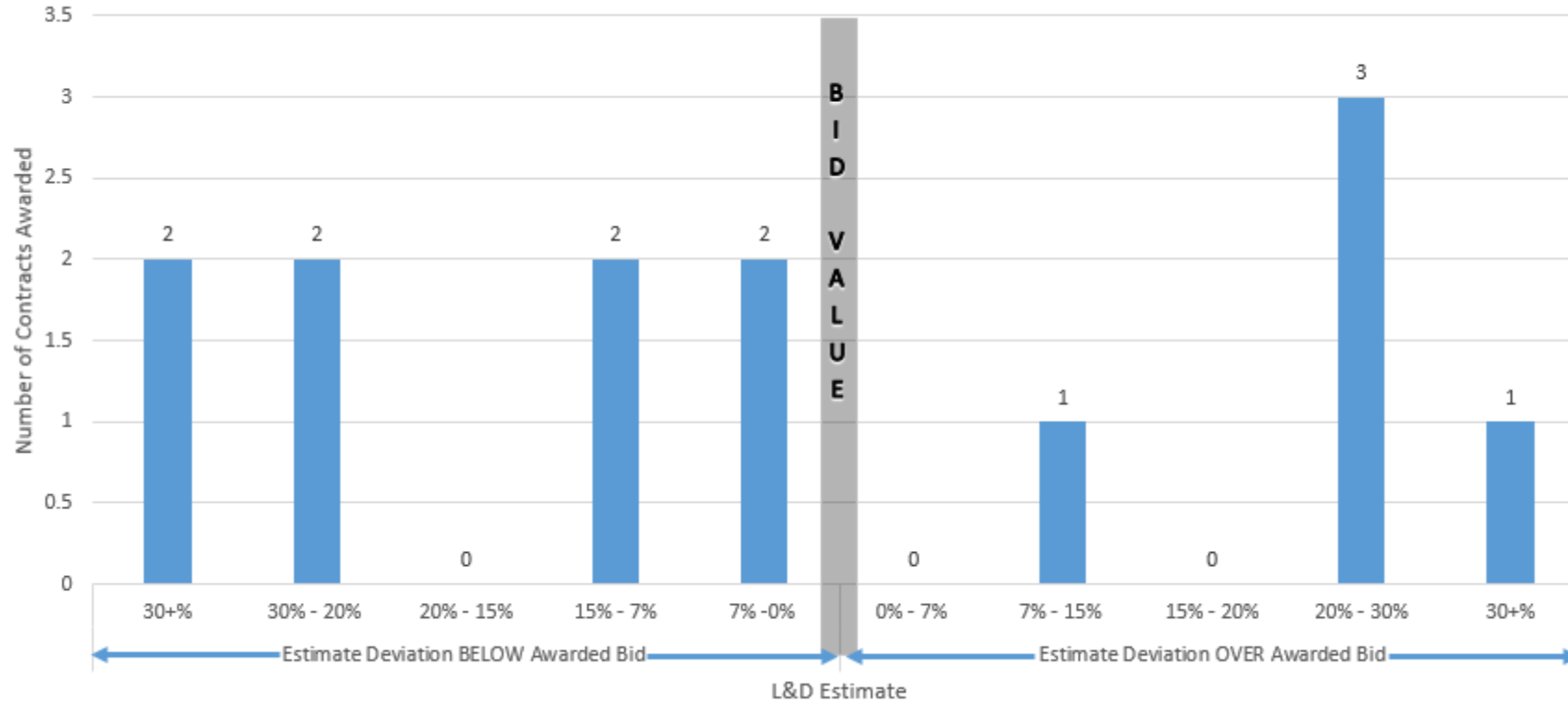


### Design Bid Build - January 2017 - April 2019 L&D Estimate to Bid Comparison



Total Design Bid Build January 2017 - April 2019 Awards	L&D Estimate	Estimate Deviation BELOW Awarded Bid					Estimate Deviation OVER Awarded Bid				
		30+%	30% - 20%	20% - 15%	15% - 7%	7% - 0%	0% - 7%	7% - 15%	15% - 20%	20% - 30%	30+%
Contracts - 789	L&D Estimate	41	39	35	98	143	128	128	70	63	44

### Design Build - January 2017 - April 2019 L&D Estimate to Bid Comparison



		Estimate Deviation BELOW Awarded Bid					Estimate Deviation OVER Awarded Bid				
Total Design Build January 2017 - April 2019 Awards	L&D Estimate	30+%	30% - 20%	20% - 15%	15% - 7%	7% - 0%	0% - 7%	7% - 15%	15% - 20%	20% - 30%	30+%
Contracts - 13		2	2	0	2	2	0	1	0	3	1

# Action Plan Forward

**Immediate**

**Long Term**

# Initial

## Error, Process, People and Training/Tools:

- Ensure procedures followed
- Peer review to include experienced construction personnel
- Personal brief to and review by district engineer – cost reduction
- Feedback loop

## Market and Risk:

- Increased use of *notification* in procurement if may exceed threshold
- Full use of designer's contingency and options in procurement
- Increased use of options
  - Higher local standard
  - Value that should be in, but may not be affordable
- Careful use of more recent or forward looking numbers - *tradeoff*

# Long term

## There are other examples to learn from.

- **Task Group to overhaul estimating and establish system**
  - Current procedures to System
- **External review by national experts**
- **External review spot checks**
- **Request peer exchange through AASHTO with DOTs with best record**
- **Revision to practice and guidance**
- **Guide Manual/Training**

# Examples of Bids

- **29 solutions**
  - spread
- **Tight bid examples**
- **Looking for opportunity for the right situation – how do we inform CTB?**
  - **Options**
    - Telegraph Avenue example
    - 29/215 example

# How we handle risk?

- **Contract completion dates**
  - Discussed with industry
  - A + B bidding – in addition to incentive
- **Pushing value**
  - Bid options reduce chances of exceeding bids.
- **Reduce risk/complexity when possible**
  - When not possible - focused methods to price in Risk/Complexity and other potential cost increase drivers.

# How to handle price inflation/deflation?

- Possible move to materials + local labor & and real estate indexes.
- Backwards look every 2 years to change forecast with actual change (+ or -)
- Combined with evaluation of forecast trend line – abrupt change at end of trend line hard to reliably forecast
- Examples for labor – not just boom/growth vice recession
  - Silver Line wind down
  - 495 Maryland/Virginia Buildup
  - CBBT peak to wind down
  - HRBT Buildup – High rise and I 64 Buildup – peak – wind down



# Issues

- **Policy for handling adjustments**
- **CTB member stated concern of over reaction.**
  - **Contingency upon contingency.**

# Questions

