

Transportation Forum Coordinator: Wendy Dyson (absent)

GENERAL ITEMS:

- Welcome (Mario Macrina, AECOM)
- Introductions
- Next meeting February 7th, 2017; Michael L. 'Sully' Sullivan, ACEC Georgia Legislative Update

Survey Committee update: Tate Jones

- **Shared discussion/concerns (Benny Walden)**
 - Recommendation to use all methods available to communicate with home owner/ property owner.
 - Also, under no circumstances is the surveyor to cut down or clear without the property owner's being aware of field work.

Construction Cost Estimate Issues & Lessons Learned, by Erik Rohde, GDOT Office of Engineering Services

Presentation document follows notes

- **'Reality Check'**
 - Many issues = 'it is a lot of small errors that add up.'
 - Use judgement to establish Unit Price
 - GDOT Policy and Procedure 3A-9
 - Gut Checks at each phase (Concept, PFPR, FFPR, annual updates or costs have increased or decreased 10%)
 - Unclassified Excavation – 'Is it a waste job? Likely Location to waste identified?'
 - Signing and Marking – can be LS in Concept Phase, but if Level of Design is there, then itemize quantities and provide at concept stage
 - 70% of estimates being 'RETURNED' vs Letting
 - 2017 Programmed cost comparison 55 projects = 36.2% increase: \$626 Million (last estimate updates) to \$852.4 Million (low bids)
 - 2017 Bridge Replacements 20 projects = 41.6% increase from Designer estimates to Low bid
- **'Can We Do Better': Programming Construction Funds Depends on it – more details presentation slides**
- **"Lessons Learned" more details presentation slides**
 - PAY ITEMS
 - Hot Mixed Asphalt (HMA) – often incorrect – Guidance document is on GPTQ webpage
 - Look at correlation between items
 - Include bridge items (develop from bridge plans) instead of LUMP SUM items
 - Stop overuse of Grading Complete – missed opportunity if wait till last minute
 - Stop missing obvious items -i.e. roundabouts truck apron
 - QUANTITIES
 - Math errors – *where is QC/QA*
 - Lack of experience – not able to visualize quantities
 - Missing quantity relationships between items
 - Earthwork mistakes – shrinkage and swelling
 - UNIT PRICES
 - It is not just Lump Sum items
 - Bad item history from CES
 - Location information from CES
 - Over reliance on CES
 - Not understanding manual entry in CES
 - Lack of experience – not able to visualize quantities
 - Not using current Item Mean Summary for bid item prices
 - Not using Bid Tabs from letting to support LS prices
 - No Reality Check applied

- **Lessons Learned” continued**
 - **COST CHANGES AT LETTING**
 - Bridge Replacement Projects – **mainly Bad Prices**
 - Complexity of Project
 - Earthwork – shoring, clearing and grubbing being included in Grading Complete
 - Other Projects – a mix of little things
 - Missing items
 - Quantity changes
 - Traffic Control and Earthwork

- **WHAT HAPPENS? Albert Shelby**
 - Lose PE – affecting monies marked for other projects
 - STIP amendment required if over 20% change
 - QA/QC signature required for milestone submittals and cost estimates. If bad reviews and issues -this will affect your firm and firm’s prequalification
 - GDOT is pulling old projects to compare
 - State funded – more design to budget concepts. Need to get it right early.

Information was condensed from Forum meeting notes provided by Rob Lewis. Please send any additions and/or revisions to Ossie Brewer, obrewer@dpengr.com Thank You!



Construction Cost Estimate Issues & Lessons Learned

GDOT Office of Engineering Services Perspective

Erik Rohde

Office of Engineering Services - Role

- Programmed Cost Estimate Updates Are Submitted to Us for Review & Processing
- Review Role Has Expanded
- We Have 2 People
- All We Have is the Estimate
 - We Search for Additional Information
- We Compile and Submit to Program Control then Chief Engineer before OFM Updates Costs
- We Also Review Concept Reports



What Are The Issues?

- Construction Cost Estimate Challenges
 - Pay Items and Quantities
 - Unit Prices
 - Not Submitted In A Timely Manner
- Construction Cost Changes At Lettings
 - these items above are essential to success with
- Programming Construction Funds



Estimate Challenges Examples – Pay Items

- Missing
 - new 160-ft x 38.25-ft bridge cost
 - Clearing and Grubbing for 10.02-miles of reconstruction and widening
 - Submitted August 28, 2017
 - FFPR was held March 2017. February 2018 let date
- Incorrect
 - Earthwork Items
 - Unclassified Excavation and Inplace Embankment
 - Clearing & Grubbing and Grading Complete
 - Unclassified Excavation/Borrow Excavation without Clearing & Grubbing
 - Recycled Asphaltic Concrete Surface Course
 - Without Hydrated Lime
 - Wrong Surface Course Aggregate Group



Estimate Challenges Examples – Quantities

- Approach Slab quantity of 10,050 SY for a single bridge with an estimated cost of \$1,893,471
 - Proposed bridge estimated cost was \$1,327,500.
- 1,700 Construction Exits - \$2,473,725
- 1,900 CY of Flowable Fill – would fill about 29,000-ft of 18-inch pipe
- 1,796 LF of MSE Wall Traffic Barrier questioned
 - Revised to 4,807 LF of Barrier and 400 LF of Coping – increased estimate \$697,177.
- Class A Concrete quantity of 10,773 CY for one Box Culvert – over \$10,000,000
- HMA quantities questioned
 - Revised increased by 76,177 TN – about \$6 Million



Estimate Challenges Examples – Unit Prices

- Removal of Existing Bridge - \$6.82/SF
- \$7,000 for Grading Complete on Bridge Replacement Project
 - Revised estimate had \$19,700
- \$27.00/SY for 184,000 SY of 10.5-inch Plain PC Conc Pvmnt
- \$5.22/CY for 3,130,000 CY of Unclassified Excavation
 - Cross Sections up to 400-ft wide and 140-ft cut



Estimate Challenges – Timely Submission

- GDOT Policies & Procedures 3A-9
 - Concept Development Phase Cost Estimate
 - Preliminary Field Plan Review (PFPR) Cost Estimate
 - Final Field Plan Review (FFPR) Cost Estimate
 - Annual Update
 - Anytime There's a 10% Increase or Decrease

Which One Of The Above Is Not Getting Done?

ANYTIME THERE'S a 10% INCREASE or DECREASE



Timely Submission – Is The Focus Right

	<u>COST EST AMTS</u>		
PE	\$1,002,812.14		
ROW	\$312,000.00	2/6/12	
CST	\$5,516,889.62	11/7/17	
UTL	\$133,000.00	11/7/17	

It Needs To Be Here (with arrow pointing to the CST cost estimate)

Focus Seems To Be Here (with arrow pointing to the CST date)

- On Time is Useless if the Estimate is Bad
- FFPR Cost Estimate Update is Too Late for Large Changes
- Designers and Those Providing QC/QA Reviews Need to Focus on Quality



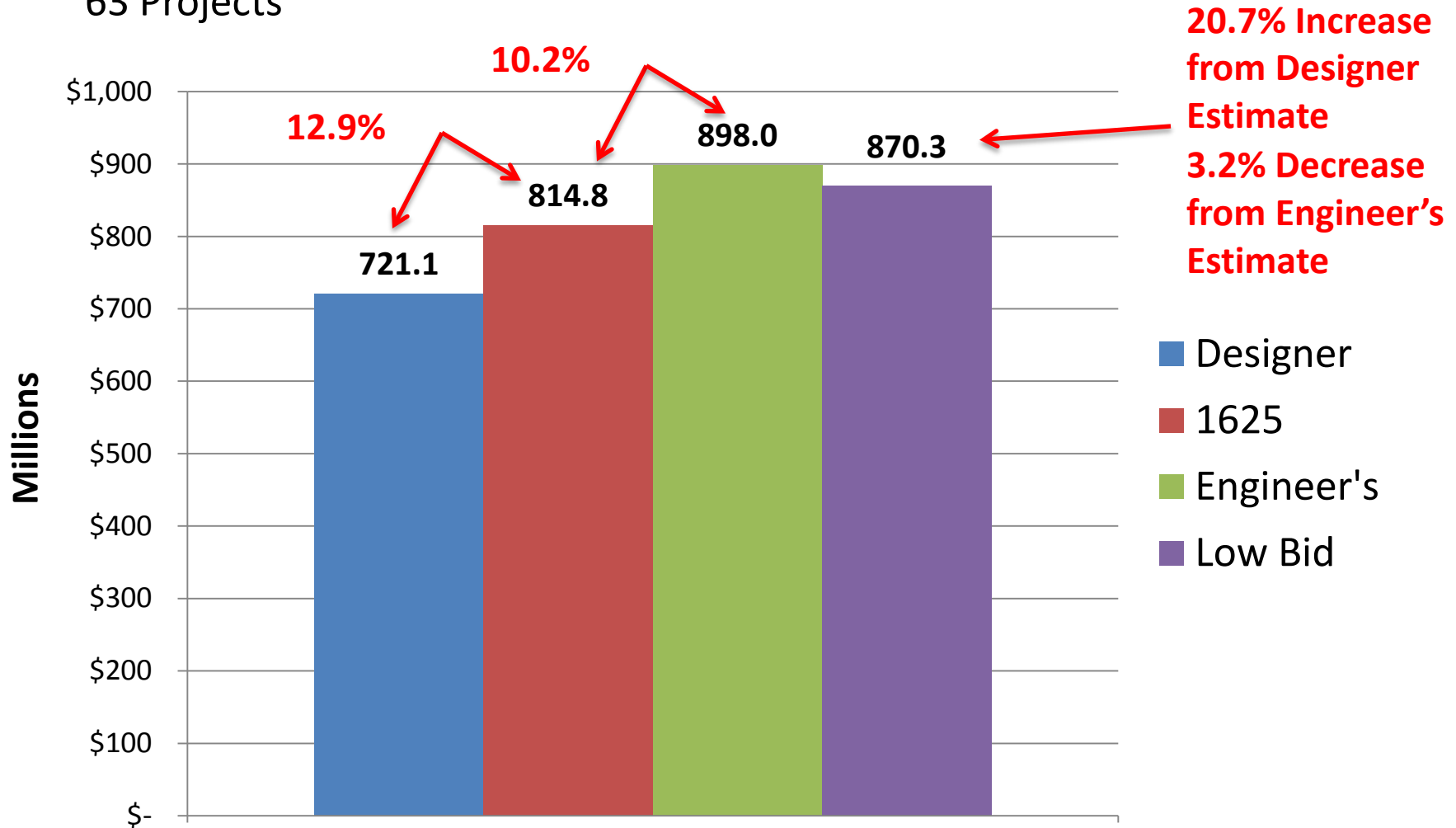
Estimate Challenges – Update Submittal Review Results

June 15, 2017 though December 4, 2017		Total	Submitted as Initially Received for Approval		Returned to Project Manger for Correction and Resubmittal	
		Number	Number	Percentage	Number	Percentage
Projects Submitted with CES Available		291	108	37.1%	183	62.9%
Breakdown by Submission Number from Project Manager	First Submission	189	44	23.3%	145	76.7%
	Second Submission	82	50	61.0%	32	39.0%
	Third Submission	18	13	72.2%	5	27.8%
	Fourth Submission	1	0	0.0%	1	100.0%
	Fifth Submission	1	1	100.0%	0	0.0%



Construction Cost Increases At Lettings - 2017

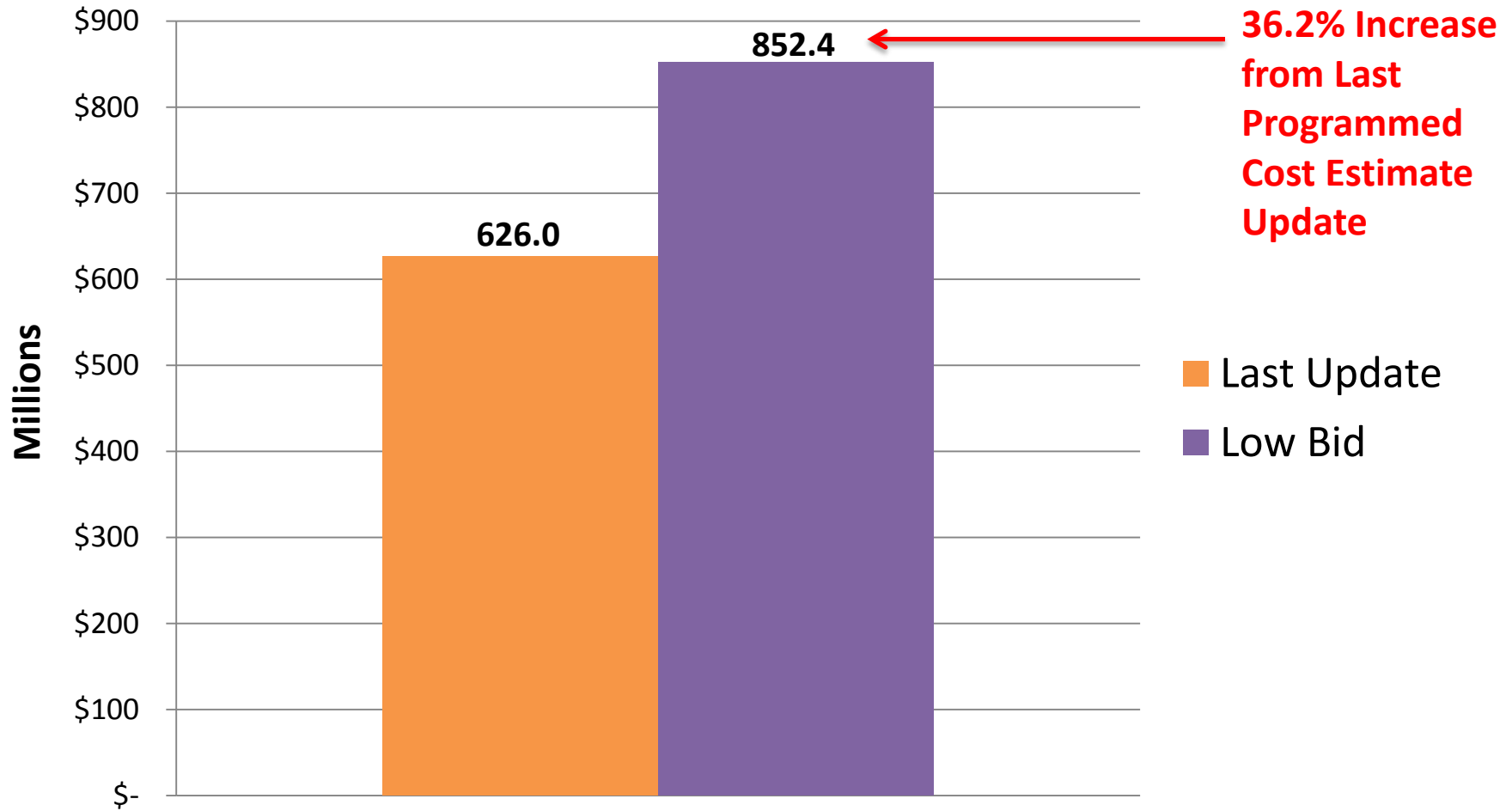
63 Projects





Construction Cost Increases From Last Programmed Cost Estimate Update to Letting - 2017

55 Projects

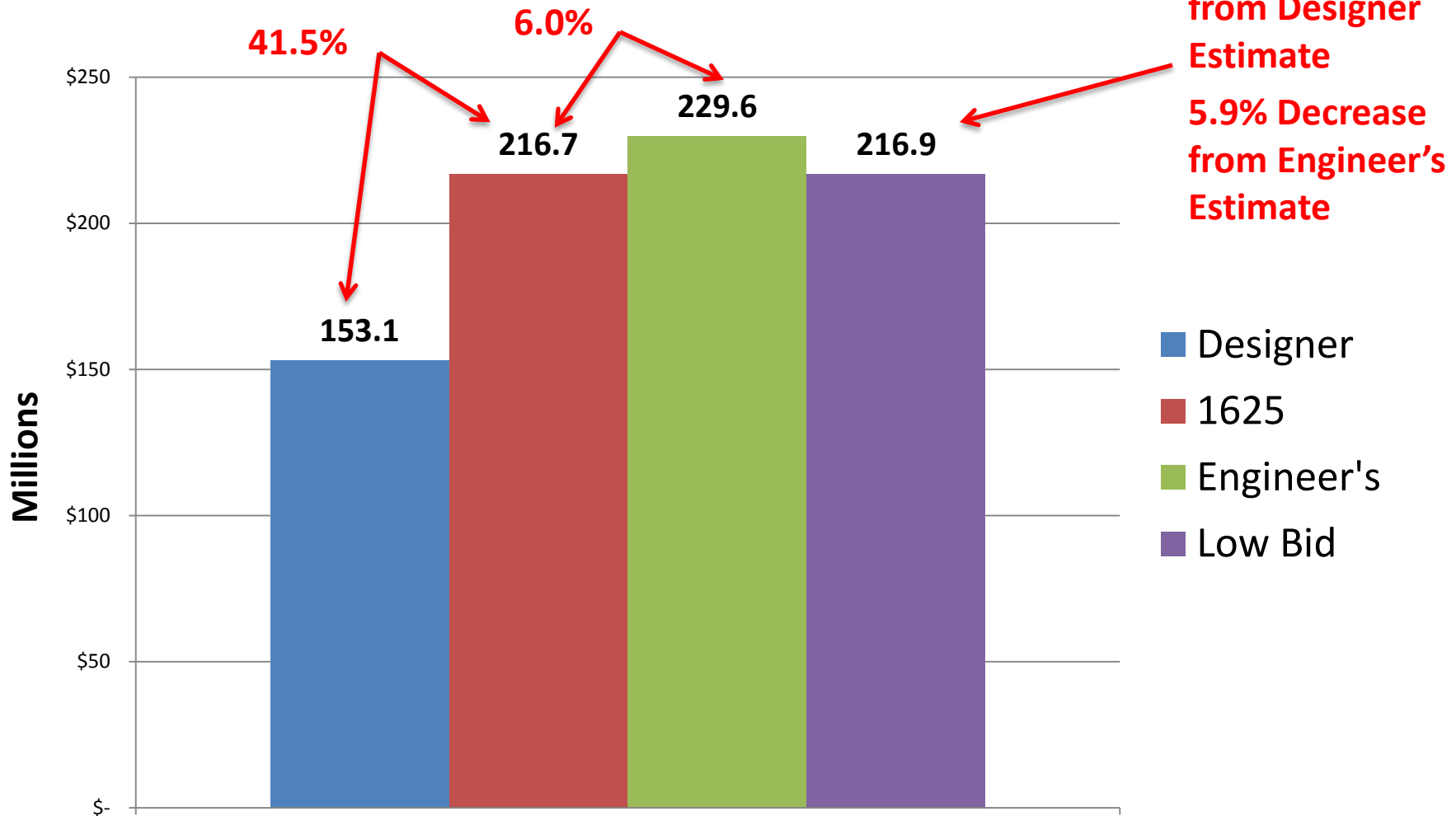




Construction Cost Increases At Lettings – 2017

Bridge Replacements

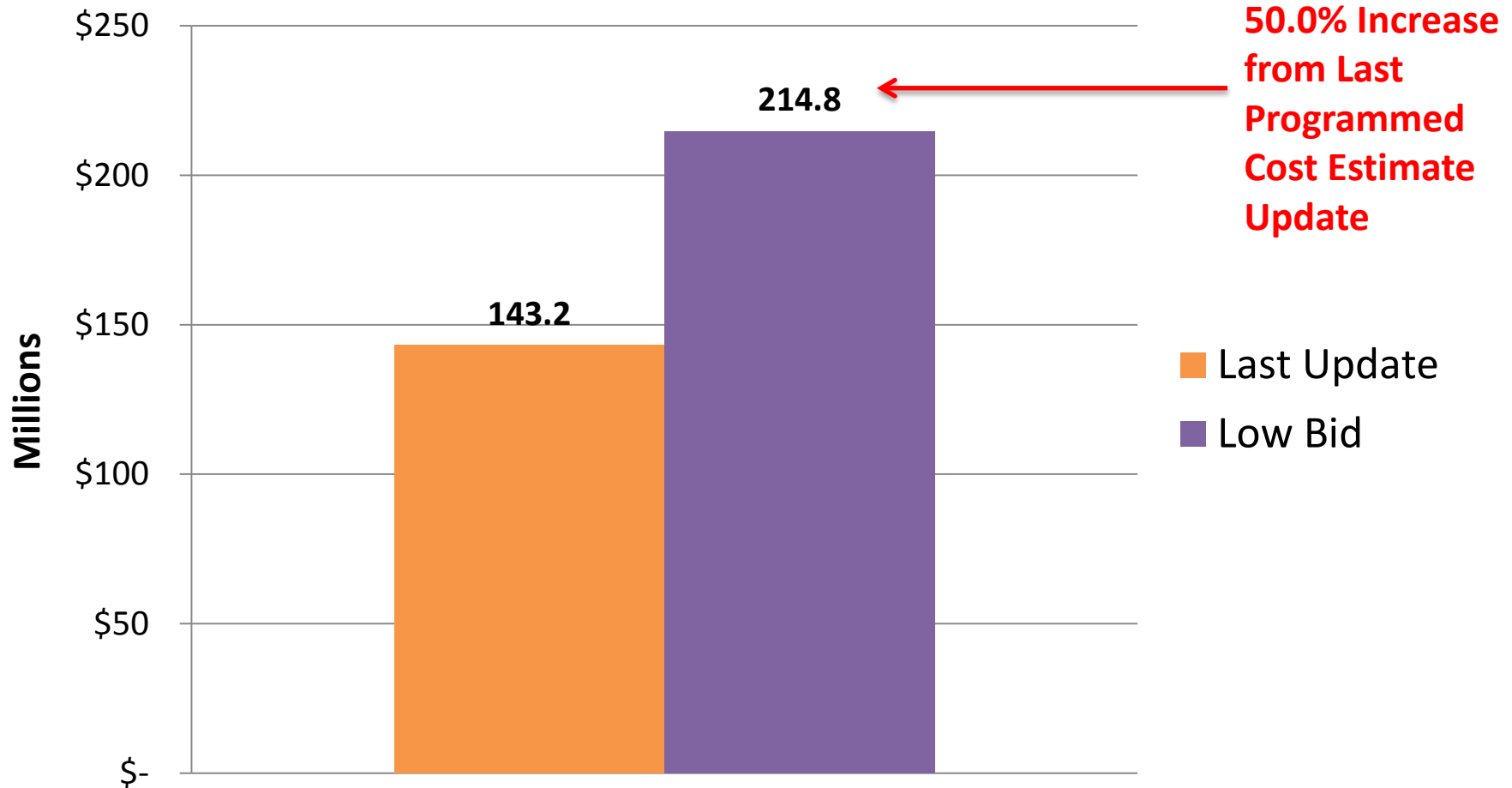
20 Projects





Construction Cost Increases From Last Programmed Cost Estimate Update to Letting – 2017 Bridge Replacements

19 Projects





Can *WE* Do Better?

- Pay Items and Quantities – Most Certainly
- Unit Prices – Can Be a Challenge but Yes
- Not Submitted in a Timely Manner - Yes
- Construction Cost Changes at Lettings – Yes
- Programming Construction Funds - ???

Dependent on the Items Above



Lessons Learned – Pay Items

- Hot Mixed Asphalt – Often Incorrect
- Lack of Correlation Between Items
- Individual Bridge Items vs. Lump Sum Item
- Overuse of Grading Complete
- Missing Obvious Items



Lessons Learned – Quantities

- Simple Math Errors
- Not Able to Visualize Quantities and Units
- Lack of Quantity Relationships Between Items
- Earthwork is Often Calculated Incorrectly
- No Reality Check



Lessons Learned – Unit Prices

- It's Not Just Lump Sum Items
- Bad Item History Being Used in CES
- Location Information in CES
- Over Reliance on CES
- Not Understanding Manual Price Entries in CES
- Not Using Item Mean Summaries
- Not Using Bid Tabs from Lettings to Support Lump Sum Prices
- No Reality Check



Lessons Learned – Cost Changes at Letting

- Bridge Replacement Projects – Mainly Bad Prices
 - Complexity of Construction
 - Earthwork
- Other Projects – Items, Quantities, and Prices
 - Missing Items and Quantities
 - Quantity Changes
 - Traffic Control and Earthwork Prices



Lessons Learned – Time for My Opinions

- Engineer's are Supposed to Solve Problems
- Since Our Designers are Engineers Why Do We Have This Problem – 2 Possibilities to Consider
 - They Aren't Putting Forth the Effort Needed
 - They Aren't Any Good At It
- How Would I Grade Engineering Services (A to F scale)
 - Reviewing Estimates: **C+**
 - Helping Solve the Problem: **D-**
- How Would You Grade Your Organization?