

Preconstruction: Value Engineering

- **Training Objectives:**

- Understand the Concept of VE and its importance to Brinkmann
- Be able to identify potential VE while reviewing plans or conceptually estimating projects.

- **Goals:**

- Exhibit the “Brinkmann Way” to our Customers
- Be creative in an effort to change Owner/Architect paradigms

- **Results:**

- Allow projects to meet pro-forma goals and proceed with construction
- Raise project profits and/or project contingency
- Differentiate ourselves from our competition
- Provide **VALUE** to the client

Preconstruction: Value Engineering

VE Approach: What is Value Engineering?

- By definition: Value Engineering is substituting a method or material which results in a time and/or money savings without compromising the quality or design intent of the original element.
- **Concepts of Value Engineering**
 - Big Picture Approach = Macroscopic Outlook
 - Detail Approach = Microscopic Outlook
- It is NEVER TOO LATE for Value Engineering. Value Engineering can even take place during construction – i.e. alternate product during submittal review OR minimizing costs of a potential owner/architect change.

Preconstruction: Value Engineering

Big Picture (MACRO) Approach

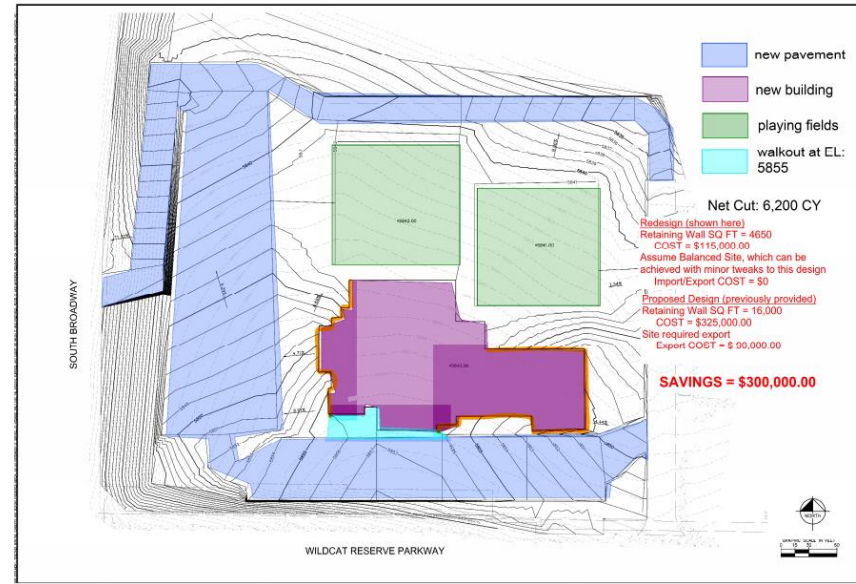
- Ask yourself questions:
 - “What are the big elements driving the schedule and cost on this project?”
 - “Why is this preliminary budget not performing the way we would have expected it to based on costs of other projects?”
 - “What would be the effect of changing... on a project?”
- List the Pros and Cons associated with the change

Preconstruction: Value Engineering

- List the Pros and Cons associated with the change
- Analyze how hard it would be to overcome the cons to get an idea of the total effort required by all parties. Is it a total redesign? What time is associated with redesign? Sometimes you may not be able to overcome the cons, however, in many instances you can at least achieve a portion of the savings.
- Examples – Revamp overall site layout/grades; modifying structural systems; foundations systems; HVAC systems; analyzing options of the soils report, etc. Typically larger scale modification.
- Often these changes need to be made at the Schematic Design Level

Preconstruction: Value Engineering

BIG PICTURE (MACRO) APPROACH



Preconstruction: Value Engineering

Detail Scope (MICRO) Approach

- Identifying minor design and material changes that can be made during design review or drawing development. **IMPORTANCE OF DRAWING CHECK SET, SPEC REVIEW & DRAWING CONTROL**

BALFOUR AT STAPLETON
BRINKMANN CONSTRUCTORS
VALUE ENGINEERING SAVING LOG
2/18/16 - UPDATED 2/23/18, 2/25/16, 3/8/16

#	DIVISION	DESCRIPTION OF VALUE ENGINEERING ITEM	PROPOSED SAVINGS	ACCEPTED*	TBD	DENIED	COMMENTS/STATUS
1	2	Eliminate 4" gravel layer under building slab on grade - place directly on subgrade	(\$19,570)			(\$19,570)	2.18.16 - Accepted by Balfour/NSCP/DW - provided approval from Geotechnical and Structural engineer is received. 2.25.16 - Confirmation received from Terracon this is acceptable. 3.8.16 - Unable to accept - Gravel layer is necessary for radon mitigation system.
2	2	Revise the Type 4-2 Sandstone Finish Colored Sidewalks to Standard Grey with Scoring Pattern	(\$14,548)			(\$14,548)	2.18.16 - Open to review. Would require Stapleton ARC approval. 2.25.16 - Per 2.24 meeting - Type 1 Sandstone to remain at back patio element at water feature; Type 2 to be revised to colored or grey scored - eliminating Sandstone finish. 3.08.16 - VE rejected - Sandstone finish to remain.
3	5	Eliminate rainscreen at Hardi board and batten siding - not anticipated to be required by manufacturer under this application	(\$20,000)	(\$20,000)			2.18.16 - Davis Winco to review/confirm acceptable. 2.25.16 - Accepted by Davis Winco.
4	6	Revise countertops at interior of AL & MC units from 2 CM Quartz with Laminated Bullnose Edge to 3 CM Quartz with Laminated Bullnose Edge	(\$19,610)	(\$19,610)			2.18.16 - Accepted by Balfour/DW in theory - need to further review other VE options to see if they would be preferred
5	6	Revise countertops at interior of AL & MC Units from Cambria to Mustang - same color choices and very similar appearance. (in addition to 3 CM vs 2 CM)	(\$10,200)	(\$10,200)			2.18.16 - Accepted by Balfour/DW in theory - need to further review other VE options to see if they would be preferred
6	6	Revise countertops at interior of AL & MC Units from Cambria Quartz to Stonezza Quartz G100 or G200 series	(\$77,824)	(\$48,014)			Reflects additional savings beyond Items #5 & 6 & 7 if accepted. 2.18.16 - Brinkmann procuring samples for review. 3.8.16 - Stonezza color Loyal Royal was theoretically deemed acceptable for use in units based on small sample. Brinkmann to procure full size sample for final signoff/acceptance.
7	6	Revise countertops at interior of AL & MC Units from Cambria Quartz to 3 CM granite in Santa Cecilia or equal color	(\$83,224)			(\$5,399)	Reflects additional savings beyond Items #5 & 6 & 7 if accepted. 2.18.16 - Brinkmann procuring samples for review. 2.25.16 - Brinkmann received Balfour spec for Grade A granite 'Ivory Cream'. 3.8.16 - Balfour/DW prefer proceeding with Stonezza in lieu of Granite.

Preconstruction: Value Engineering

Detail Scope (MICRO) Approach

- This is typically where Brinkmann lives – compiling lists of ‘stupid’ that we find in the drawings and figuring out how to get it accepted by the owner or design team
- Don't underestimate the significance of MICRO VE.** Always remember, a lot of small changes can add up to significant savings. Consider the old CSI - 16 divisions; if you can save just \$10,000 in each division, that's \$160,000!!!!

21	21	Downell - Added per 2.24.16 meeting - Remove ceilings to eliminate secondary ceiling in interior of all units with exception of shower area to allow shower area at 1st floor and drop down to 1' within bathrooms and 1' above shower area at 1st floor.	(681,471)	(681,471)			2.25.16 - Ductwork will need to be routed within floor cavity and attic space as well as limiting of recessed light fixtures.
21	21	Remove window blinds from specified Hunter Douglas 1st Edition Blinds to Graber Lake Forest 2" Faxn Wood Blinds	(523,196)	(523,196)			2.18.16 - Actual Savings TBD - Brinkmann pricing desired marion blinds with CCI per request of Balfour in lieu of Hunter Douglas 2.25.16 - Balfour accepting as long as Blinds are WHITE and 2" Samples/alternatives for alternatives to Hunter Douglas will be provided.
22	12	Provide specification of commercial food service equipment	TBD		TBD		2.18.16 - Balfour indicated they could review Huskerberg's equipment list to determine if any equipment could be modified to realize savings
22	12	Within One Elevator in lieu of specified Thru-roofing - will need to evaluate ability to utilize Oth System as they require side access to the elevator shaft via access panel	(\$1,937)	(\$1,937)			2.8.16 - Reviewed proposed drawing modification to allow for the installation of Oth required access doors. Balfour/DW accepted in theory. DW to evaluate best solution to increase width of shaft by 7" to accept Oth.
24	24	Remove specification to allow for use of solid core PVC for water/wast in lieu of cast iron as well as utilize CPVC & PE8 water distribution in lieu of copper	(2,900,000)	(2,900,000)			2.18.16 - Acceptable from perspective of Balfour & NSCF. Need final blessing from DW & HDP Engineering.
25	15	Remove the specified piping specification to allow for use of CPVC for rec system in lieu of black steel and use of black steel for artistic dry system in lieu of galvanized steel/40	(\$1,450)	(\$1,450)			2.18.16 - Acceptable from perspective of Balfour & NSCF. Need final blessing from DW & HDP Engineering.
25	15	Eliminate if savings is available in light fixture VE package	TBD		TBD		
TOTAL HARD COST APPROXIMATE SAVINGS - SUBTOTAL			(1,846,111)	(544,498)	(1,301,613)		(281,200)
TOTAL BIDDING SAVINGS & FE ADJUSTMENT ON P.E.			(252,648)	(126,324)	(126,324)		(126,324)
TOTAL APPROXIMATE SAVINGS TOTAL			(2,100,120)	(670,822)	(1,429,298)		(407,524)
Approx cost reduction per SF			61.281	61.281	61.281		61.281
Approx cost reduction per SF			61.281	61.281	61.281		61.281

*Value Engineered Savings are approximations based on subcontractor input and historical cost - subject to variation upon re-design of specific design elements.

Preconstruction: Value Engineering

Standard Red Flags

- See handout entitled “Brinkmann VE – Standard Red Flags” – items that we should be thinking about while completing our plan check set (and spec review)
- Sample VE Logs from older projects for reference:
 - Mainstreet Fitzsimmons
 - Balfour at Stapleton
 - Diversified Transfer & Storage

Preconstruction: Value Engineering

Value Engineering Philosophy

- Brinkmann is known throughout the construction industry for our Value Engineering. We often use value engineering as a sales tool.
- Repeat Business – Many examples of repeat business have been generated as a result of clients recognizing our value engineering skills.
- Make sure the reward outweighs the change – don't want to put Brinkmann in a compromised position over insignificant savings.
- There is an overall connection between value engineering and understanding unit costs on a project. Knowing unit costs is an important part of career self development. Most companies have estimating departments that they rely on to understand unit costs and cost ramifications of potential changes. Being able to accurately discuss cost impacts of changes with Owners on a conceptual level in meetings, etc. can make a significant impression.