Getting Value out of Value Engineering

Combining Technology and Expertise to Reduce Cost NOT Scope
About Satterfield & Pontikes

- Leading Houston-based construction firm
- $500M average annual volume
- *ENR* Top 400 Contractor
- *ENR* Top Green Builder
- Specialties in General Contracting, CMAR, Design-Build, BIM, LEED and Select Services
About Assemble Systems

• Leading construction data management solution
• Assemble unlocks the power of modeled data to create intelligent building information across the project life cycle
Assemble is Easy as 1, 2, 3

1. PUBLISH
Create a complete data inventory of your design in minutes.

2. MANAGE
Easily access, condition and sync your data to leverage BIM software investments.

3. SHARE
Share BIM data with the entire project team.
Our Definition of BIM

Building Model
The “BM” in BIM
3 Dimensional Model of a Project

Information
The “I” in BIM
The proprietary data we can put into or pull out of the “BM” using Assemble

We extract data from and associate date to the model
We can then use the information to make our projects more efficient and cost effective
Cypress Park High School Background

- Approved as part of 2007 bond program
- Budget: $120 M
- Lowest bid came in $20M over budget
- Only 9 days until Board approval – no time for traditional Value Engineering
Our Solution

- Gathered Owner, A/E team, and subcontractors into S&P’s BIM cave for detailed VE process
- Associated unit costs to model using Assemble
- Visually reviewed potential changes to assess design impact
- Spent nine days evaluating project components
Value Engineering

- Collaborate Visually and Quantitatively with Project Teams
- Tag Individual Value Engineering Options and Track Related Costs
- Create Clear Audit Trail Between Assemble, the Design-Model, and External Reports and Contracts
Example: “Blade” Wall

• Architectural feature that was important to the owner
• System as drawn was expensive, primarily CMU and stone
• Identified areas that could be changed to metal stud and alternate finishes
• Used Assemble to quickly determine the delta between the original system and VE system
• Used the model to view the blade wall from all angles to determine if expensive materials were needed in unseen areas
• Final solution retained architectural feature saved over $600,000
• Cut out wall section between Bar and Commons - $272,000
  • 5,000 SF stone, 2,500 SF CMU, 60 tons steel, 130 CY concrete

• Changed from double wythe CMU wall anchored by steel supporting the stone above roof line
  • Removed masonry above roof line and framed openings, changed to metal stud - $9,000
  • Changed stone to plaster at the backside of walls above roof line, eliminating 90 tons of steel required to support CMU & stone (6,400 SF) - $84,000
  • Lightening the structure eliminated the need to grout all the cells of CMU blocks - $34,000

• Changed stone product from Arriscraft to burnished product (24,000 SF) - $206,000

• Lowered top of the wall by 1’, used the model to see if roof equipment could be seen from ground level - $35,000
Cy Fair HS #11

<table>
<thead>
<tr>
<th>Name</th>
<th>Quantity</th>
<th>Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>BLADE WALL</td>
<td>31,632.25</td>
<td>SF</td>
</tr>
<tr>
<td>Walls: Base Wall: Exterior - 12' CMU w/ STONE</td>
<td>19,731.45</td>
<td>SF</td>
</tr>
<tr>
<td>Walls: Base Wall: Exterior - 12' CMU w/ STONE 2 SIDES</td>
<td>7,256.40</td>
<td>SF</td>
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<tr>
<td>Walls: Bond Wall: Exterior - 8' CMU w/ STONE veneer</td>
<td>4,554.64</td>
<td>SF</td>
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<tr>
<td>Not Assigned</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Name</td>
<td>Quantity</td>
<td>Unit</td>
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<tr>
<td>------</td>
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<td>BLADE WALL</td>
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<td>SF</td>
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<tr>
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<td>SF</td>
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<tr>
<td>Walls: Base Wall: Exterior: 12&quot; CMU w/ STONE 2 SIDES</td>
<td>4,291.12</td>
<td>SF</td>
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<tr>
<td>Walls: Bond Wall: Exterior: STUD w/ STONE (IE Slider)</td>
<td>8,320.36</td>
<td>SF</td>
</tr>
</tbody>
</table>

Note: The image shows a 3D model of a building with various elements highlighted, indicating areas of interest or measurement. The table on the left provides a breakdown of the quantities and units for different types of walls, with the options to show changes.
Key Results

- Evaluated over 150 potential options totaling over $13M
- The District selected approximately $10M of savings
- Changes were documented in the model and written into subcontracts
Takeaways

• Process aligned entire team before day of construction
• Removed adversarial environment of traditional VE
• Saved weeks in Owner review time
• Subcontractors originally did not trust data, but bought in during the process – made later pricing or scope questions easier
• Assemble served as a powerful tool that S&P was able to customize to fit our internal process