



**The ST. OLAF COLLEGE
Fieldhouse Project**

*A Case Study in
Designing to Target Cost*

**Vision to
Value**

**IGLC
2004**

The ST. OLAF COLLEGE Fieldhouse Project



BOLDT™

Designing for X

Cost, Assembly, Durability, Flexibility, Sustainability, Etc

The Challenges

- **How to incorporate the relevant specialists in the design process.**
- **How to make tradeoff decisions between the characteristics**
- **How to drive design decision making to the targets.**

Designing to Target Cost...

- ...requires a fundamental shift in thinking from 'expected costs' to 'target costs'.
- ...strives to reduce the waste and rework in the Design/Estimate/Redesign cycle.
- ...necessarily involves cross functional teams. No one person has all the knowledge.
- ...cries out for an integrated product/process /cost model.

The budget becomes an influence on design and decision-making, rather than an outcome of design.

The Target Cost of the Facility Can Never Be Exceeded

Applying the Cardinal Rule

- **Ensuring that whatever target costs increase somewhere in the facility, costs are reduced elsewhere by an equivalent amount without compromising program and quality.**
- **Refusing to add scope to a project that will overrun the target cost.**
- **Managing the transition from design to construction to ensure the target cost is never exceeded.**

Target Cost Model

Legend:
Worth (Target)
Current Estimate

| Const TOTAL per SF |
|--------------------|
| 89.33 |

| D-B TOTAL per SF |
|------------------|
| 94.12 |

Project: Fieldhouse Expansion
 Location: St. Olaf College, Northfield MN
 Phase of Design: Schematic Target
 Date: June 21, 2001

| | | | | | | | | |
|---------------------|---|-----------------------|---|-------------------|---|---------------------------|---|---------------------------|
| Construction | + | Owner Reserves | + | Escalation | = | Construction TOTAL | = | Design-Build TOTAL |
| 9,840,302 | | 343,115 | | | | 10,183,417 | | 10,729,883 |

Incl Design at \$504,886+41600

NOTES:
 Bldg. Type: Recreational
 Target (SQFT): 114,000
 Floors: Single story plus mezzanines

| SITE WORK | BUILDING | INTERIOR | MECHANICAL | ELECTRICAL | SPECIAL | GENERAL |
|-----------------------------|--------------------------------|---------------------------|--------------------------|--------------------------------|-------------------------------|------------------------------|
| 594,500 | 9,245,802 | 1,710,386 | 1,111,402 | 794,890 | 706,862 | 587,774 |
| Site GC OH&P | SHELL | | | | | |
| | 4,334,488 | C10 Interior Construction | D20 Plumbing | D5010 Service and Distribution | E10 Specialties & Equipment | Z1010 Project Administration |
| G10 Site Prep, Demo & Excav | A10 Foundation A20 Basement | 528,427 | 85,927 | 739,390 | 492,534 | |
| 146,500 | 1,006,004 | C20 Stairs | D30 HVAC | D5020 Lighting & Branch Wiring | E20 Furnishings Fixed/Movable | Z1030 General Conditions |
| G20 Site Improvements | B10 Superstructure | 62,639 | 824,160 | | 34,000 | |
| 373,000 | 1,218,797 | C30 Interior Finishes | D40 Fire Protection | D5030 Security Comm/Data | F10 Special Construction | Z1060 Fee |
| G30-40 All Utilities | B20 Exterior Closure | 1,069,320 | 109,740 | | 89,520 | |
| 75,000 | 2,007,061 | D10 Conveying | Testing and Special Mech | D5090 Other Electrical | F20 Selective Demolition | Z20 Risk and Contingency |
| G90 Other Site Structures | B30 Roofing | 50,000 | 91,575 | 55,500 | 90,808 | 587,774 |
| | 102,626 | | | | | |

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| | St. Olaf Fieldhouse | Carleton College Recreation Ctr |
|--|----------------------------|--|
| Completion Date | Aug 2002 | April 2000 |
| Project Duration | 14 months | 24 months |
| Gross Square Feet | 114,000 | 85,414 |
| Total Cost (incl. A/E & CM fees) | \$11.7 mil. | \$13.5 mil. |
| Cost per square foot | \$102.79 | \$158.44 |

Development Opportunities

- Include collaborative workshops in schematic design.
- Be more formal and rigorous about creating the target cost.
- Perform target costing at every level, beginning at systems, then down into subsystems and components.
- Apply more value engineering tools including function analysis, and life cycle costing.
- Engage more suppliers and installers earlier in design.
- Move budget development from 'conceptual estimating' to 'cost modeling' - rapid costing of design alternatives.