DESIGN-BUILD FROM ALL ANGLES

July 9, 2015
Long Beach, CA
Overview

• Housekeeping & Introductions
• Planning – Delivery Method Selection
• Planning – Program & Criteria
• Procurement & Competition
• Design Phase
• Construction Phase
• Questions
Overview

• **Housekeeping & Introductions**

• Planning – Delivery Method Selection

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• Construction Phase

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Housekeeping

- Cellphones and Pagers Off or Silent
- Safety Moment- Note Egress from Facility
- CMAA – Membership!
- Questions – 15 mins reserved at end
- Concluding at 10:30 am
- PowerPoint to be Posted on Website
  www.cmaasc.org
Panel Introductions

David Hart - Steinberg Architects

Rebekah Gladson - rggroup, inc.

Todd Cozolino - Spire Consulting Group, LLC.

Marc Kersey – Clark Construction Group

Barbara Gadbois – Gibbs Giden Locher Tuner Senet & Wittbrodt LLP
Design-Build From All Angles
Discussion Format

• **Presented in four lifecycle phases:**
  – Planning and Program/ Criteria Phase
  – Procurement & Competition Phase
  – Design Phase
  – Construction Phase

• **Presented from four perspectives:**
  – Designer’s Perspective – David Hart
  – Owner’s Perspective – Rebekah Gladson
  – Project/ Program Manager’s Perspective – Todd Cozolino
  – Contractor’s Perspective – Marc Kersey
  – Legal Perspective Throughout – Barbara Gadbois
Overview

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• **Planning – Delivery Method Selection**

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• Construction Phase

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Planning Phase

Delivery Model Selection Process

• Assessment of Objectives
  – Risk Shifting, Cost Savings, Schedule, Best Value Selection
  – Special Design Requirements

• Assessment of Enabling Legislation/Limitations for Public Entities

• Budget and Funding Parameters
Planning Phase

Delivery Model Selection Process

• Comparison with Other Alternative Delivery Options
  – Design-Bid-Build
  – CM At-Risk
  – Lease-Leaseback

• Licensing Requirements
  – Contractor
  – Designer

• Insurance and Bonding Requirements
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Planning Phase

D/B Trend –
moving beyond risk shifting, schedule and cost control to
design excellence, innovation, and strategic partner.
Planning Phase

Three basic types of Criteria Packages:

• General Program with Guidelines

• Detailed Project Program with Standards (sometimes with a concept design)

• Bridging Design with Schematic Design (or Design Development)
Planning Phase

**Program**
1. Whole Project Program (Building, Site, Equipment)
2. Project Requirements
3. Areas of Flexibility
4. Room Data & Diagrams
5. Code Analysis
6. Operational Issues

**Criteria**
1. Guidelines and Standards
2. Building Systems Requirements
3. Project Data (soils, surveys, CEQA)
4. Site Requirements (fire + service access, setbacks, easements)
5. Infrastructure + Scope Requirements
6. Sustainable + Energy Efficiency Goals
7. Schedule

**Cost**
1. Cost Tied to Program, Criteria, and Aspirations
2. Develop Full Project Budget
3. Look for Gaps
Planning Phase

Key Foci

a. Master Plan, Design Guidelines, and Standards – Compliance or Guide?

b. Describe project aspirations clearly to get the best design (link value add points to those aspirations)

c. Tie project requirements, goals, and aspirations back to the scoring, evaluation, and selection process
Goal: To develop criteria documents that bring focus to the Design/Build team.
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• **Procurement & Competition**
• Design Phase
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Procurement Phase

• Primary Considerations
• Decision Makers
• Prequalification
• Primary Considerations
• Design Competition Considerations
• Cost Competition
• Project Management Competition
• Process Content
Procurement Phase

Primary Considerations

– **Policy Parameters**
  - Public Agencies – Statutes, Regulations, Codes
  - All Entities – Institutional Policies & Procedures

– **Project Goals**
  - Product Performance – Does the function of the project drive decision making?
  - Schedule Criticality – Is delivery speed paramount?
  - Speed to Operation – Revenue drivers.
Primary Considerations (continued)

- **Cost Sensitivity**
  - What’s the funding nature?
    - use it or lose it vs. re-allocable
  - Is it program at lowest cost?
    - Commodity (e.g. parking)
    - Level of Program Criteria Package
  - Most Bang for the Buck?
    - most square footage, most amenities or best finishes within the budget?
  - Capital Cost vs. Lifecycle/Operational Cost?
Procurement Phase

• **Decision Makers**
  – **Participant familiarity with capital works**
    • Have those charged with selection been exposed to construction project before?
    • What level of preparation, education and presentation is warranted?

  – **Participant roles and skill sets**
    • Will all participants evaluate all aspects of the proposals?
      • Will the maintenance manager evaluate the courtroom security considerations of the layout?
    • Will the history professor evaluate the quality of the mechanical system?
Procurement Phase

• Prequalification
  – Which Team Members to Prequalify?
    • Depending on the Project Typology (e.g. Concrete for Parking Structure)
    • Depth of Specialty Market
  – Multi-use pool or single project shortlist?
    • Custom Team versus Efficiency of Process
    • Frequent Updating or Open RFQ can Sacrifice Efficiency Gains
  – Size of shortlist?
    • Inclusiveness and Competition versus Administration and Cost
  – Serial Project Considerations
    • Prime and Subcontractor Depth
    • Relevance of Experience – “Cherry Picking”/ Own-Agency
Procurement Phase

• Design Competition Considerations
  – Design Quality
    • Compliance with purpose, space efficiency, and value, solutions to challenges, compliance with program, flow and use, operation and function, flexibility
  – Technical Quality
    • Equipment & materials, longevity, maintainability, durability
  – Lifecycle Cost
    • energy consumption, anticipated service life, replacement cost/deferred maintenance, consumables, obsolescence risk/horizon
Procurement Phase

• Cost Competition Considerations
  – Approach
    • MAC, Lump Sum, GMAX, Shared Savings
  – Weighting
    • Typically 30-50%
  – Scoring
    • e.g. “Must” system – lowest $ gets all points, reduce proportionally in excess, % under stated budget, Cap
  – Flexibility Tools
    • Alternates
    • Unit Pricing
    • Allowances
Procurement Phase

- **Management Competition Considerations**
  - **Resumes of Key Personnel**
    - Serial project availability
    - Depth and Adequacy
    - Must enforce!
  - **Detailed CPM Schedule**
    - Phasing and Internal Milestones
    - Cost & Resource Loading,
    - Logic and Quality Metrics
      - Lead/Lags, Constraints,
      - Get the P6 File and Analyze!
      - Completion date, assumptions
- **Site Logistics Plan by Phase**
- **Safety / Management Plan**
Procurement Phase

- **Management Competition Considerations (continued)**
  - **Site Logistics Plan by Phase**
    - Pedestrian path of travel
    - Traffic management/protections
    - Lay down, Facilities, Parking
    - In Process Aesthetics – Community
  - **Safety Record and HASP**
    - EMR, TRIR, Fatalities
    - OCIP/CCIP, Self Insured Retention
  - **Management Plan**
    - Quality Management Plan
    - eTools (familiarity for your system?)
    - BIM/coordination tools, As Built approach
    - Commissioning
Procurement Phase

General Process Considerations

• **Stipend/ Honorarium**
  – Amount, internal messaging, Intellectual Property

• **Interview Frequency, Duration, Participation**
  – Cost/Burden versus Responsiveness
  – “Cross-Pollination” Avoidance

• **Proposal Deliverables**
  – Renderings, Drawings, Models, Copies, Boards, Electronic, Format

• **Confidential Review Comments**
  – Best and Final Offer Opportunity

• **Debriefing Policy, timing and content**
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DESIGN AND EXCELLENCE

Rebekah G. Gladson, FAIA, DBIA, President,
UCIMC Clinical Laboratory Building
48,000 GSF
Douglas Hospital
480,000 GSF
Common Pitfalls

• Design Build: Interpretation of what you defined!
• What is Design Excellence?
• Interpretation is not uniform in industry.
  – I didn’t know you wanted or expected THAT!
• Design Builder really does want to provide what they think/understand the client needs,
• Quality and Cost: No common understanding,
• Communication of Ideas is Difficult.
Pre-Qualify Your Team/Owner

• Experience with Design Build
• All the Typical Pre-Qual Requirements
• Know who you are working with and how they work! - BOTH SIDES
• What is DB Team and Owner’s understanding of Excellence?
Example: Contract Design Clarity

• Clearly define program for project
  – Get buy-in from final user group (client)
  – Understand impacts of technology changes
• Identify & allocate funds for DB interface
  – Program to Final Design
• Clearly define role of owner
• Define time for your decisions
  – Days / Hours
• Define dispute resolution process
• What does the contract say, What does the client expect?
Example: Need to Know?

• Strategic Business Plan
  – Market
  – Clients
  – Budget
  – Schedule

• Design Criteria

• Performance Required/Expected

• Business Model

• Communicate
Example: Design Criteria - Program

- Indoor/Outdoor Spaces
  - Use, Quantity, Requirements, Etc.
- Size
  - Special Dimensions
- Room Data Sheets with Equipment Req’d
  - Detailed Information
- Specific Room Diagrams
- Functional Requirements
- Infrastructure
Example: Know Your Budget
Example: Requirements
Example: Design Criteria

• Design Standards
  – Architectural Vocabulary
    • Words, Photos, Bridging Documents, Etc.
  – Quality
    • Refer to other projects
  – Object or Community
    • Vision Statement
  – Communicate Image
    • What do you want to accomplish
Example: “Best Practice” Visits

<table>
<thead>
<tr>
<th>Picture Location:</th>
<th>Rady’s Childrens Hospital</th>
</tr>
</thead>
<tbody>
<tr>
<td>Description:</td>
<td>Main Lobby</td>
</tr>
</tbody>
</table>

Comments:

Do’s:
- Good decor for children. Good use of decorative drywall panels in lieu of more complicated architectural treatments. Good use of indirect colored light to create an upbeat, cheerful ambiance.

Don’ts:
- Try to avoid curved walls and curved ceiling soffits. It is especially costly to successfully detail the air diffusers, soffits, and wall curvatures.
Performance Required/Expected

• Community engagement

• Innovation and Value - “Iron Sharpens Iron”
  – Subcontractors
  – Specialty, etc.

• Competition versus Progressive
  – Contract Requirements

• Flexibility and Multiple Solutions

• Excellence - Motivated and Driven
Clark’s Approach to Model Based Estimating

**START**

- **BIM**
  - Autodesk
    - Quantity Takeoff
      - Autodesk
        - Electronic Model
          - Attribute Based
            - Quantity Takeoffs
          - Flexible Visual Aid
  - Model Based Take Off (QTO)
    - Electronic Model
      - Attribute Based
        - Quantity Takeoffs
        - Flexible Visual Aid

**DESIGN**

- **DESIGN DECISION**
  - Incorporate into BIM Model
    - Estimates

**MODEL BASED ESTIMATING**

- **COST ESTIMATING**
  - Customized Cost Estimating
    - Web Based Software
  - Output
    - Reliable Project Specific Cost Information
    - Accurate Baseline Budget
    - Fast Real Time Budget Updates
    - Milestone Estimates

**RISK ANALYSIS | SET CONTINGENCY**

- Inflation Rates
- Lead Times
- Labor Availability
- Delivery Logistics
- Forward Staging Availability

**INSTANTANEOUS FEEDBACK**
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Construction Phase

1. Contractor Input during Prior Phases (Planning/Procurement/Design)

2. How to Deliver what was Agreed to in prior Phases
Construction Phase

1. Early Contractor Involvement
   A. Detailed Cost Model
   B. Scope Differentiation
   C. Risk Assessments & Allocation
   D. Employ LEAN practices – Pull Planning & TVD (target value design)
   E. Subcontracting Options
   F. Schedule for the Project
   G. Constructability Reviews
## Early Contractor Involvement – A. Starts w/Cost Model

### Preliminary Cost Model

**LA Federal Courthouse**

<table>
<thead>
<tr>
<th>Description</th>
<th>2012 Cost Model</th>
<th>2019 Cost Model</th>
<th>Scope Notes for SB Courthouse Assumptions</th>
</tr>
</thead>
<tbody>
<tr>
<td>General Requirements</td>
<td>$ 12.00</td>
<td>$ 13.50</td>
<td>Includes General Items, cranes, hoisting, safety, survey, security, etc.</td>
</tr>
<tr>
<td>Site Improvements / Earthwork</td>
<td>$ 25.00</td>
<td>$ 10.15</td>
<td>Includes Earthwork already made: this includes S/C Utility, SWAT Work, inclusion of steel at LA $50K per ton plus deck, stairs, Misc &amp; Ornamental Metals</td>
</tr>
<tr>
<td>Concrete</td>
<td>$ 22.00</td>
<td>$ 28.17</td>
<td>Assumes Spread Foundations</td>
</tr>
<tr>
<td>Masonry (Interior Only)</td>
<td>$ 8.00</td>
<td>$ 8.00</td>
<td>This scope would include holding cell/masonry and ACM Masonry</td>
</tr>
<tr>
<td>Steel &amp; Metals</td>
<td>$ 15.00</td>
<td>$ 15.00</td>
<td>Includes waterproofing and floors</td>
</tr>
<tr>
<td>Wood &amp; Planes</td>
<td>$ 16.00</td>
<td>$ 13.50</td>
<td>Assumes Courtrooms and Chambers per RFP</td>
</tr>
<tr>
<td>Thermal / Moisture Protect</td>
<td>$ 9.00</td>
<td>$ 9.00</td>
<td>Assumptions: Assumptions: Includes HVAC and MEP per RFP</td>
</tr>
<tr>
<td>Doors / Windows (Including Skin)</td>
<td>$ 60.00</td>
<td>$ 37.00</td>
<td>Very similar scope as LB: Includes Rooftop, Below Grade WP</td>
</tr>
<tr>
<td>Fire Sprinkles</td>
<td>$ 65.00</td>
<td>$ 20.00</td>
<td>Includes New Title 24 plus LED Fixtures</td>
</tr>
<tr>
<td>Firefighters</td>
<td>$ 1.61</td>
<td>$ 5.80</td>
<td>Includes New Title 24 plus LED Fixtures</td>
</tr>
<tr>
<td>Equipment</td>
<td>$ 2.00</td>
<td>$ 6.00</td>
<td>Assumes 4 passenger, 1 freight elevator</td>
</tr>
<tr>
<td>Furnishings</td>
<td>$ 2.50</td>
<td>$ 5.80</td>
<td>Assumes 4 passenger, 1 freight elevator</td>
</tr>
<tr>
<td>Conveying Equipment</td>
<td>$ 15.00</td>
<td>$ 11.00</td>
<td>Assumes increased scope to meet LEED Silver</td>
</tr>
<tr>
<td>Fire Protection</td>
<td>$ 5.21</td>
<td>$ 4.30</td>
<td>Assumes increased scope to meet LEED Silver</td>
</tr>
<tr>
<td>Plumbing Systems</td>
<td>$ 6.50</td>
<td>$ 4.40</td>
<td>Includes plumbing for holding cells, junior chambers, typical R &amp; Ds</td>
</tr>
<tr>
<td>Mechanical / Controls</td>
<td>$ 55.00</td>
<td>$ 52.00</td>
<td>Includes plumbing for holding cells, junior chambers, typical R &amp; Ds</td>
</tr>
<tr>
<td>Electrical / Low Voltage</td>
<td>$ 65.00</td>
<td>$ 38.15</td>
<td>Assumes increased scope to meet LEED Silver</td>
</tr>
<tr>
<td>Subtotal of Trades</td>
<td>$ 525,000</td>
<td>$ 314,189</td>
<td>Includes Steel at 18 lbs/SF at $4,000 / ton plus deck, stairs, Misc &amp; Ornamental Metals</td>
</tr>
<tr>
<td>Subcontractor Bonds</td>
<td>$ 480,025</td>
<td>$ 480,025</td>
<td>Includes Steel at 18 lbs/SF at $4,000 / ton plus deck, stairs, Misc &amp; Ornamental Metals</td>
</tr>
<tr>
<td>Subtotal Cost of Work</td>
<td>$ 1,004,000</td>
<td>$ 794,189</td>
<td>Includes Steel at 18 lbs/SF at $4,000 / ton plus deck, stairs, Misc &amp; Ornamental Metals</td>
</tr>
<tr>
<td>Escalation to 2012</td>
<td>$ 5,465,643</td>
<td>$ 5,465,643</td>
<td>Includes Steel at 18 lbs/SF at $4,000 / ton plus deck, stairs, Misc &amp; Ornamental Metals</td>
</tr>
<tr>
<td>Contingency</td>
<td>$ 2,242,700</td>
<td>$ 2,242,700</td>
<td>Includes Steel at 18 lbs/SF at $4,000 / ton plus deck, stairs, Misc &amp; Ornamental Metals</td>
</tr>
<tr>
<td>Art in Architecture (by AEC)</td>
<td>$ 300,400</td>
<td>$ 300,400</td>
<td>Includes Steel at 18 lbs/SF at $4,000 / ton plus deck, stairs, Misc &amp; Ornamental Metals</td>
</tr>
<tr>
<td>Builders Risk Insurance</td>
<td>$ 213,283</td>
<td>$ 213,283</td>
<td>Includes Steel at 18 lbs/SF at $4,000 / ton plus deck, stairs, Misc &amp; Ornamental Metals</td>
</tr>
<tr>
<td>General Liability Insurance</td>
<td>$ 277,208</td>
<td>$ 277,208</td>
<td>Includes Steel at 18 lbs/SF at $4,000 / ton plus deck, stairs, Misc &amp; Ornamental Metals</td>
</tr>
<tr>
<td>Gross Receipts Tax</td>
<td>$ 426,507</td>
<td>$ 426,507</td>
<td>Includes Steel at 18 lbs/SF at $4,000 / ton plus deck, stairs, Misc &amp; Ornamental Metals</td>
</tr>
<tr>
<td>GC Bond</td>
<td>$ 525,206</td>
<td>$ 525,206</td>
<td>Includes Steel at 18 lbs/SF at $4,000 / ton plus deck, stairs, Misc &amp; Ornamental Metals</td>
</tr>
<tr>
<td>GC Fee</td>
<td>$ 2,122,833</td>
<td>$ 2,122,833</td>
<td>Includes Steel at 18 lbs/SF at $4,000 / ton plus deck, stairs, Misc &amp; Ornamental Metals</td>
</tr>
<tr>
<td><strong>Grand Total</strong></td>
<td>$ 15,439,272</td>
<td>$ 15,439,272</td>
<td>Includes Steel at 18 lbs/SF at $4,000 / ton plus deck, stairs, Misc &amp; Ornamental Metals</td>
</tr>
</tbody>
</table>
Early Contractor Involvement –

B. Scope Differentiation – Who has What?
C. Risk Allocation – Hazardous Mat’ls, Unforeseens, Insurance Options, Performance Guarantees, Damages for Delay
D. Employ LEAN practices for Planning Design
Early Contractor Involvement –

E. Review of Subcontracting Options (high performance/high tech design = design/assist, versus d/b sub selections)

F. Never too early to schedule the work

G. Constructability impact on design, scope, and cost
Early Contractor Involvement –

G. Constructability impact on design, scope, and cost
Early Contractor Involvement –

G. Constructability impact on design, scope, and cost
Early Contractor Involvement –

G. Constructability impact on design, scope, and cost
Construction Phase

2. Delivery as Promised
   A. Annotate the Criteria
   B. Execute the QA/QC Plan
   C. Subcontractor Integration
   D. Continue w/LEAN practices – Pull Planning
   E. Vendor/Supplier Integration
   F. Efficient use of A/E team for CA
   G. Avoid redesign during Construction
   H. Models/3-D imagery/Mockups!
   I. Tenant Management
   J. Begin w/End in Mind
Construction Phase

2. Delivery as Promised
   
   A. Fully Annotate the Criteria w/CD input
   
   B. Execute the QA/QC Plan w/Owner’s Input
   
   C. Subcontractor Integration is Key
Construction Phase

D. Continue w/LEAN practices – Pull Planning

E. Vendor/Supplier awareness of Project Criteria – (i.e.: performance objectives, LEED, etc.)

F. Plan for efficient use of A/E team for CA

G. How to avoid redesign during Construction
Construction Phase

H. Models/Samples/3-D imagery/Mockups!

I. Planned Owner touch points during Construction – (i.e., tenant management)
Construction Phase

J. Begin w/End in Mind
QUESTIONS
THANK YOU!