Design Build: Project Scope and Management Approach

Design Build Project Elements & Definition

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Design Build: Project Scope and Management Approach

- Design Build Project Elements & Definition
  - Roles & Responsibilities
  - Project Definition
  - RFP, Procurement & Evaluation
  - Performance Requirements
  - Prequalification of Design Build Team & Sub Contractors

- Discussion: Parallels between New Buildings and Renovations

- Design Build Success Factors
  - Strategies for Implementation
  - Behavior – Human Dynamic
  - Innovation - Added Value
  - “Best Practices” & Lessons Learned
Why use Design Build?  
(Integrated Delivery)

- Improve our Odds for Success
- Manage risk better
- Anticipate and Plan for Changes
- Improve Value Received

- Demand to Work Differently
- Evolve Skills and Relationships
- Revised Thinking
Measurable Benefits

• Overall project schedule reduction
  – 25% - 35% schedule reduction
    • Savings varies depending on economic conditions

• Reduced Change Orders
  – Experience less than 2.5% w/o program changes

• DB Team owns coordination of drawings
  – Typically a major source of change orders

• Integrated team: New ideas/concepts from DB proposals
  – Sub & A/E produce permitted drawings
  – Incremental innovation by DB Team
  – Improve sustainability performance - LEED Platinum

• Team resolution of issues – no claims
Decision Metrics

- Integrated team delivery
  - Partnership vs. potential adversarial low bid relationship
- Partnership on performance outcomes
  - Alignment of entire team
- Value-based selection
  - Selection based on “Best Value”
  - Savings through DB team innovations
- Reduced overall schedule
  - Savings in escalation (varies)
- Elimination of claims due to drawing coordination
- Risk transfer or reallocation
UCI Douglas Hospital

- 4 Months Ahead of Schedule
- No Claims
- Cost of Change Orders 3.2%
  - On Original Scope
- $30M Added Scope During Construction
- Team Wants Another Project Together
- Quality is Superb
- Award Winning Design
- State of the Art Technology
Project Schedule Comparison

TRADITIONAL

2011
Planning/Programming

2012
Design,

2013
Construction Drawings

2014
AHJ Permits
18-24 months

2015
Bid

2016
CONSTRUCTION

2017
TURN OVER KEYS

2018
(10)

2019
(10)

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2 YEAR TIME REDUCTION

DESIGN-BUILD

2011
Planning/Programming

2012
RFP/BID

2013
Complete Design & Construction Drawings

2014
CONSTRUCTION

2015
Move-in

2016
TURN OVER KEYS

2017
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Project Delivery Defined

• Comprehensive Process:
  – Planning, design, construction & other services necessary for organizing, executing and completing a project

• Three Fundamental Owner Decisions:

<table>
<thead>
<tr>
<th>What Project Delivery System (Method)?</th>
<th>What Procurement Method?</th>
<th>What Contract Format?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Typical:</td>
<td>Typical:</td>
<td>Typical:</td>
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<tr>
<td>Design Bid Build</td>
<td>Competitive (Could be Limited)</td>
<td>Lump Sum/Firm Fixed Price</td>
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<tr>
<td>Construction Manager</td>
<td>Negotiated</td>
<td>Cost Reimbursable</td>
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<tr>
<td>Construction Manager @ Risk</td>
<td>Direct (Sole Source)</td>
<td>Cost Plus Fee</td>
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<tr>
<td>Design Build (or Variation)</td>
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<td>Guaranteed Maximum Price</td>
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<tr>
<td>Multiple Primes</td>
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<td>Target Price</td>
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<tr>
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<td>Unit Price</td>
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Planning the “Acquisition Strategy” + Design Process Options
General Design Build Procurement Methods

- **Fixed Price Design Build** — (Often Design Competition)
  - Performance Based
    - Programming
    - Criteria
  - Bridging/ Prescriptive

- **Progressive Design Build**
  - GMP - (Possible to converted to Lump Sum)
  - Cost Plus Fee
Fixed price

• Fixed Price
  – Known cost at time of selection
    • Cost may be to a pre-established maximum allowable cost (MAC)
  – Involvement of Design Builder during development of design
  – Benefit of multiple design solution and innovation
  – Owner must define program and design criteria to minimal level
  – Cost significant factor in selection
  – Significant investment by DB Teams in selection process
  – Stipend is required
Progressive Design Build

- Progressive
  - Final Cost established after selection of DB Team
    - Target Value Design budget may be established prior to selection
    - GMP or Lump Sum
    - Need to clearly define components of GMP or Lump Sum
  - Involvement of Design Builder during the development of design
  - Lower cost of procurement (Specifically A&E)
  - Open book on cost estimating
  - Cost is not as significant of a factor in selection
Fixed price vs Progressive similarities & differences

**FIXED PRICE DESIGN-BUILD**
- Known Cost at time of selection,
- Involvement of Design Builder during development of design
- Benefit of multiple design solution and innovation through competition
- Owner must define program and design criteria to minimal level
- Cost significant factor in selection
- Significant investment by DB Teams in selection process

**PROGRESSIVE DESIGN-BUILD**
- Final Cost after selection of DB Team, Open book on cost estimating
- Involvement of Design Builder during the development of design
- Owner involved in the design solution options during concept stage
- Design-Builder is engaged at the preliminary planning level
- Cost is not as significant of a factor in selection
- Lower cost of procurement (Specifically A&E)
Project delivery method

- Establishes when the parties engaged in a contract,
- Influences the choices for contractual relationship among the parties,
- Influences the programming and design process,
- Influences ownership and impact of changes and modification of project cost & schedule.
Procurement & Contractual relationships

- Relationship between owner, design professionals, contractors
- Responsibility of each party
- Liability of each party
- What this means to owners
- Design, cost and schedule
Contract Format

- Lump Sum/Firm Fixed Price
- Cost Reimbursable
  - Cost Plus Fee
  - Guaranteed Maximum Price (GMP)
- Target Price
- Unit Price
Design Build Relationships

Owner to determine desired level of information

- Programming/Criteria Consultant
- Optional Consultant Owner Representative/Program Manager

Single Contract

Design Builder (A/E & General Contractor)

Depending on Subcontractor Scope, T&C’s, the Subcontractor **may only** responsible for what is in plans & specifications developed by the design professionals (Spearin doctrine)

Consultants
Suppliers & Subcontractors
Design Builder Relationship with Consultants/Sub Contractors

ROLES & RESPONSIBILITIES

Design Builder
(A/E & General Contractor)

Subcontractors w/ In-House Design Professionals
Consultants
Subcontractors
Consultants
Subcontractors
Summary of Roles

Characteristics

- Integrated process-overlapped design & construction
- Often fast tracked
- Two prime players: Owner & Design Build entity
- Entity can take on many forms
- One contract
  - Owner to Design Builder

Responsibilities

**Owner**
- Program, design direction, performance requirements, & finance*

**Design-Build**
- Design & Construction. Can include programming & post construction services

*Note: D-B can expand services to include programming, finance, operate, etc.*
Design Build Entity Structural Arrangements

- Integrated firm
- Contractor led
- Designer (A/E) led
- Joint Venture

Source: Zweig White
Project Definition
Project Delivery Framework

Chart shows logic flow, not timing or sequence of steps which vary depending on methods used.
Percentage of Design in the RFP

CRITERIA DOCUMENTS
Describes End Result

- Qualifications Emphasis
- Design Criteria
- Preliminary Engineering
- Design-Build
- Pre-Design

PREScriptive DOCUMENTS
Prescribes How to Achieve End Result

- Low Price Emphasis
- Technical & Price Emphasis
- Design-Build
- Design
- Basis of Design
- Pre-Design

This line can slide
Design Criteria

• **Design Standards**
  – Object or Community
    • Vision Statement
  – Experience (Faculty, Student, Staff, Community, etc.)
  – Architectural Scale, Materials, Context, etc.
  – Architectural Vocabulary
    • Words, Photos, Bridging Documents, etc.
  – Quality
    • Refer to Other Projects
  – Sustainability
  – Life Cycle Cost
  – Siting Values
  – Communicate Image
    • What Do You Want To Accomplish?
Design Criteria - Program

- Indoor/Outdoor Spaces
  - Use, Quantity, Requirements, etc.
- Size
  - Special Dimensions
- Room Data Sheets
  - Detailed Information
- Specific Room Diagrams
- Functional Requirements
- Performance Requirements
- Infrastructure
- Equipment, Security
- Other as Required
Functional Operations

- DB Team needs to know:
  - Performance Goals
  - Operational Goals
  - Functional Relationships
  - Community Issues/Relationships
  - Streamlining Goals
  - Best Practices
  - Maintenance Criteria
  - Operating Criteria
Design & Performance Criteria
# Performance Criteria - Details

## Critical Path
- DB Team Architect/Engineers
- DB Team Interior Designer
- DB Healthcare Tech & IT Consultant
- Owner - See Note 1A

## DB's Construction Budget
- DB Team Architect/Engineers
- DB Team Interior Designer
- DB Healthcare Tech & IT Consultant
- Owner - See Note 1A

## DB's Materials Mgmt/Transport Budget
- DB Team Architect/Engineers
- DB Team Interior Designer
- DB Healthcare Tech & IT Consultant
- Owner - See Note 1A

## DB's Furniture Budget
- DB Team Architect/Engineers
- DB Team Interior Designer
- DB Healthcare Tech & IT Consultant
- Owner - See Note 1A

## DB's Equipment Budget
- DB Team Architect/Engineers
- DB Team Interior Designer
- DB Healthcare Tech & IT Consultant
- Owner - See Note 1A

## DB's Healthcare Tech & IT/LV Budget
- DB Team Architect/Engineers
- DB Team Interior Designer
- DB Healthcare Tech & IT Consultant
- Owner - See Note 1A

## Owner's Activation Budget
- DB Team Architect/Engineers
- DB Team Interior Designer
- DB Healthcare Tech & IT Consultant
- Owner - See Note 1A

## D Builder w/ Architect/Engineers assist
- DB Team Architect/Engineers
- DB Team Interior Designer
- DB Healthcare Tech & IT Consultant
- Owner - See Note 1A

## DB Team Materials Mgmt/Transp Planner
- DB Team Architect/Engineers
- DB Team Interior Designer
- DB Healthcare Tech & IT Consultant
- Owner - See Note 1A

## DB Team IT & LV Consultant
- DB Team Architect/Engineers
- DB Team Interior Designer
- DB Healthcare Tech & IT Consultant
- Owner - See Note 1A

## Procurement
- DB Team Architect/Engineers
- DB Team Interior Designer
- DB Healthcare Tech & IT Consultant
- Owner - See Note 1A

## Installation / Receiving / Warehousing / Unpacking & Cleanup / Placement / Set-up
- DB Team Architect/Engineers
- DB Team Interior Designer
- DB Healthcare Tech & IT Consultant
- Owner - See Note 1A

---

1. ANESTHESIA EQUIPMENT
   - a. Anesthesia Machines
   - b. Anesthesia Columns
   - ALSO SEE "LIGHTS AND BOOMS"

2. AUDIO / VISUAL SYSTEMS & EQUIPMENT
   - a. Portable
   - b. Projection Screens - Fixed
   - c. Projection Screens - Movable
   - d. A/V Systems
   - e. Video Projectors - Fixed
   - f. Video Projectors - Movable
“Best Practice” Visits

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

**Comments:**

**Do’s:**

Good décor 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.
Know Your Budget!

- Align the Project Scope and Budget
  - Independent Estimates
  - Recommend a Builder
  - Develop a Parallel Cost Estimate
- Do Not Proceed until ALIGNED
- One of Owner’s biggest Challenges

There is no magic and HOPE is not a strategy!!!!
RFP, Procurement & Evaluation
Design Build Process

GMP BID/
LUMP SUM
Proposal
$MAC

Owner
Develop
Program

Pre-qualify
D-B Teams

Proposal
Phase

Evaluation
Process

Award
Part 1

Award
Part 2

Programming

Preliminaries

Development
Off Site /
Foundation
Package / Etc.

Construction
Drawing &
Construction
Progressive Design Build Process
(Simplified Diagram)

- Owner Develop Program
- Pre-qualify D-B Teams
- Proposal Phase
- Evaluation Process
- Award Part 1
- Award Part 2

**Programming ?? * Note: DB Team can also provide Programming Services**

- Program Validation & Alignment of Target Value Budget & Development of Design/Drawings to allow GMP or Lump Sum
- Construction Drawing & Construction
Solicitation Process Summary

- Prequalify Design Builder w/ A & E Partners
- Draft RFP
- Issue RFP to 3 Prequalified Teams w/ $XX,000 MAC
- Public Pre-proposal Meeting
- Confidential One-on-One Meetings
- Addendum Issues as required
- Technical Proposal Submitted
- Price Proposal Submitted
- Technical Evaluation by Committee of 12
- Interview of DB Teams
- Award of Contract
Request for Proposal Includes:

- Instructions to Proposers
- Project Schedule & Key Delivery Dates
- Submittal Requirements & Format, Deadline & Address
- Proposal Selection Criteria, Scoring Process & Basis for Award
- Pre-submittal Conference Walk
- Design Build Agreement & General Conditions
- Other Project Specific Information
- Criteria Documents
- Services Required
• Project Description & Scope (Detailed)

• Building Program
  – Functional Programs
  – Program, Stacking, Adjacencies
  – Design Parameters/Criteria
  – Special Equipment or Systems

• Design Information – New & Existing
  – Define Architectural Vocabulary and Siting
  – Building Massing, Scale and Materials

• Financial Model - REALISTIC
  – Budget w/Maximum Allowable Cost (MAC)
  – Allowances, Unit Cost, Alternates, etc.

• Performance Standards and Criteria
  – Compliance & Quality
  – Reviews
EXAMPLE

• Two-Part Proposal
  – Technical Proposal
    • Schematic/Concept design drawings
    • Outline specifications
    • Model/Fly Thru of project
    • Renderings
    • Statement that program/design standards have been met
    • No deviations
  – Cost Proposal
    • Lump sum cost
    • Cost breakdown
One–On–One Meetings
Confidential

• Change to Budget/Scope/Performance Addendum to Contract
• Proprietary Ideas
• Questions: Does this meet your programmatic needs?
• Provide Mission/Vision
  – Existing Facilities
  – Desire For Future
• Respond to Questions
• Input on Options Presented
Program & Design Flexibility

• Project Description & Scope (Detailed)

• Building Program
  – Functional Programs
  – Program, Stacking, Adjacencies
  – Design Parameters/Criteria
  – Special Equipment or Systems

• Design Information – New & Existing
  – Define Architectural Vocabulary & Siting
  – Building Massing, Scale, and Materials
Program & Design Flexibility

• Financial Model - REALISTIC
  – Budget w/Maximum Allowable Contract (MAC)
  – Allowances, Unit Cost, etc.

• Performance Standards and Criteria
  – Compliance & Quality
  – Reviews

• Services Required
Design Excellence & Quality

- Owner Vision, Mission, Values Statement
- Architectural Importance
  - Owner, Community, Client Group, etc.
- Financial
  - Improved Business Operations
  - Return on Investment
  - Stewardship
- Life Cycle
  - Initial Capital
  - Operating Cost
  - Maintenance
- Quality
  - Materials, Image, Facility Renewal, Life Span, etc.
- Others
  - One-on-One Meetings
  - Lean
Quality Clarity

- Define how quality is measured on your projects
- What are your internal processes?
- How is Owner engaged?
  - User Group
- How are “Mock-Ups” used with Subcontractors?

Do not leave to “This is what I think…..”
Proposal Components

- Technical Proposal
- Schematic Drawings
- Presentation Boards
- Scale Model and/or Fly Thru
- Price Proposal

$000,000 Stipend
Technical Evaluation Criteria

• Architectural image & character
• Program development and enhancement
• Technical innovation, environmental sustainability & energy efficiency/performance
• Functional/operational efficiency & flexibility
• Quality of materials & systems
• Quantity of usable area
• Access (ADA, vehicular, service, pedestrian)
• Safety & security
• Quality program
• Operational & maintenance cost
• Cost/value comparison
• Completion schedule
<table>
<thead>
<tr>
<th>Description</th>
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<tbody>
<tr>
<td>Description</td>
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<tr>
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<tr>
<td>Executive Summary</td>
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<tr>
<td>TAB 1 – Architectural</td>
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<td>TAB 2 – Landscape / Site Design and Civil Design</td>
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<tr>
<td>TAB 3 – Project Program Compliance</td>
</tr>
<tr>
<td>TAB 4 – Medical Equipment &amp; Health Care Low Voltage IT Integration</td>
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<tr>
<td>TAB 5 – Medical Equipment</td>
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<td>TAB 6 – Life Cycle Cost Analysis and Features Incorporated into Design</td>
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<tr>
<td>TAB 7 – Structural Design</td>
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<tr>
<td>TAB 8 – Plumbing and HVAC Design</td>
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<tr>
<td>TAB 9 – Electrical Design</td>
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<tr>
<td>TAB 10 – Mitigation of Subsurface Conditions and Negative Construction Impacts</td>
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<tr>
<td>TAB 11 - Project Enhancements and Added Value</td>
</tr>
<tr>
<td>TAB 12 – Deviations from Request for Proposal (DOES NOT INCLUDE SPACE PROGRAM)</td>
</tr>
<tr>
<td>TAB 13 – Quality Control Plan</td>
</tr>
<tr>
<td>TAB 14 – Project Work Plan/Schedule</td>
</tr>
<tr>
<td>TAB 15 - Construction Expertise Summary from Prequalification Submittal</td>
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<tr>
<td>TAB 16 - Skilled Labor Force Availability Agreement</td>
</tr>
<tr>
<td>TAB 17 - Safety Record</td>
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<td>TAB 18 – Non-Collusion Affidavit</td>
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<td>Oral Presentation</td>
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<tr>
<td>Subtotal:</td>
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Scoring

Total number of points from all evaluators added together and divided by number of evaluators.

Total Points = Evaluators 1-14 Points Added
             Number of Evaluators (14)
Cost Proposal in $  
Points of Technical Proposal  
= $/Point

(Low $ / Point is Successful Bidder)

If a MAC is established the weighting leans towards design and quality

Important corollary:
Stipend paid to all responsive DB teams
Lowest dollar is not the determining factor
Scoring....

• What does the person on committee think each category means....? how would success look to them?
  – Ask questions....
  – Is it the same for all committee members?
  – Where has success been achieved on campus...? or.....
  – Is there a “Wild Card” Scoring? WHO?
Value of a Point

• Assume $200M proposal value
• Assume 100 points possible
• Each point is worth $2,000,000

Perceived Value vs. Cost
Points vs. Cost
## Scoring Example

<table>
<thead>
<tr>
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<th>Red</th>
<th>Green</th>
<th>Purple</th>
<th>Orange</th>
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<tbody>
<tr>
<td><strong>Maximum Allowable Cost</strong></td>
<td>200,000,000</td>
<td>199,950,000</td>
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<td><strong>Alternates</strong></td>
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<td>25,000,000</td>
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<tr>
<td><strong>Unit Cost (Total)</strong></td>
<td>4,500,000</td>
<td>3,500,000</td>
<td>2,000,000</td>
<td>3,500,000</td>
</tr>
<tr>
<td><strong>Compensable Unit</strong></td>
<td>10,000,000</td>
<td>8,000,000</td>
<td>9,000,000</td>
<td>11,000,000</td>
</tr>
<tr>
<td><strong>Total Cost</strong></td>
<td>237,500,000</td>
<td>226,450,000</td>
<td>236,000,000</td>
<td>254,500,000</td>
</tr>
<tr>
<td><strong>Number of Points</strong></td>
<td>60</td>
<td>45</td>
<td>63</td>
<td>85</td>
</tr>
<tr>
<td><strong>BEST VALUE = Lowest $/Pt.</strong></td>
<td>$3,958,333/Pt</td>
<td>$5,032,222/Pt</td>
<td>$3,746,031/Pt</td>
<td>$2,994,117/Pt</td>
</tr>
<tr>
<td><strong>BAFO Points</strong></td>
<td>5</td>
<td>5</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td><strong>BEST VALUE = Lowest $/Pt.</strong></td>
<td>$3,653,846/Pt</td>
<td>$4,529,000/Pt</td>
<td>$3,630,769/Pt</td>
<td>$2,959,302/Pt</td>
</tr>
</tbody>
</table>
Design Builder Oral Interviews

• Technical evaluation is blind, first time the evaluators know identity of proposers
• Clarification of Proposal
• Commitments made during interview are binding - Verify
Design Implementation

- Design Risk
  - Proposal Commitments
  - Program to Design
- Design Management
  - Coordination: Design Assist Subs and Design Consultants
- Equipment
- Shared Data
- Mock-Ups
Design Management

- Co-Location
- BIM Model Agreement
- Timely Information & Decisions
- Design Decision Log
- End Client Reviews
- Managing Quality
- Options
- Communications
- Transparency
Common Pitfalls

- **Design Build:** Interpretation of what you defined!
- Interpretation is not uniform;
  - I didn’t know you wanted or expected THAT!
- **Result:** CHANGES!
  - Resolve cost & time impacts immediately
- **Require financial agreement every month**
  - Primary Contracts
  - Non-Primary Contracts
Keys to Success

- Prequalify and short list offerors
- Provide criteria in lieu of bridging documents in RFP
- Develop performance based criteria in lieu of prescriptive specifications
- Limit design in RFP
- Provide reasonable stipend
- Reasonable submission requirements
  - Consider financial impacts
- Disclose selection criteria & weighting
- Best Value vs. low price emphasis on scoring
Performance Requirements
Performance Requirements

(Criteria Documents)

- What are Performance Requirements?
- Performance Requirements in RFP
- Industry Best Practices
- Ask and Create Measurable Outcome
- Get what you want without owning the risk
- Prescriptive Requirements on DB Projects
- Drawbacks of Prescriptive Specs?
Prescriptive vs Performance

**PRESCRIPTIVE DOCUMENTS**

- Plans, specifications or other documents in the RFP that **prescribe HOW** to accomplish the owner’s criteria requirements
- Owner is responsible for performance and cost of changes if resulting performance is not acceptable
- Design details of elements assembly and contents, layouts and dimensions, and specified products and materials

**CRITERIA DOCUMENTS**

- Instructions in the RFP that describe **WHAT** the owner expects but **NOT HOW**
- Design Builder is responsible to meet Owner’s established Criteria Documents
- Programming, levels of quality, performance specifications, standards, objectives and other measuring information
PERSCRIPTIVE DOCUMENTS

✓ Owner responsible for results: Spearin Doctrine

CRITERIA DOCUMENTS

✓ Design Builder’s Means and Methods to meet criteria

3.0 SPACE PROGRAM REQUIREMENTS

3.2 LABORATORY DESIGN CRITERIA

LAB TYPE FLEX 1 - GROUP ALLOCATION

LAB TYPE FLEX 2 - GROUP ALLOCATION

LAB TYPE DRY / COMPUTATIONAL - GROUP ALLOCATION

REFER TO THE LAB PROGRAM AREA REQUIREMENTS OF INDIVIDUAL PROGRAM SPACES
PRESCRIPTIVE REQUIREMENTS

- AKA design Specification, Expressed in terms of specific product or configuration detail
- Traditional approach typical to design-bid-build documents
- Owner is responsible for performance and cost of changes if resulting performance is not acceptable
- No room for innovation
- Requirement is rigid and defined in detail: Prescriptive → Spearin Doctrine

PERFORMANCE REQUIREMENTS

- Expressed in terms of an expected outcome or acceptable performance standard
- Includes a measurable objective
- Design Builder is responsible to meet Owner’s established Performance requirements
- Approach allows the design-builder to innovate to meet requirements
- Cost effective and time efficient, relies on DB’s expertise + Means and Methods
6.0 ARCHITECTURAL PERFORMANCE CRITERIA

6.2 GENERAL DESIGN CRITERIA

- Brick:
  - Using the accepted "U blend"—match existing precedence in dimensions, texture, color and pattern.
  - Brick should be used volumetrically, carefully detailed, and planned on a full module.

- Clear anodized or pre-finished aluminum:
  - Curtain wall and infill panels.

- Pre-finished aluminum or unfinished zinc:
  - Rain-screen cladding systems, equipment screens.

- Exposed architectural steel:
  - At sunshades, railings, projections, canopies, etc.

- Glass:
  - Insulated, low-e, selected for high transparency and low reflectivity.

- Materials that are discouraged include:
  - Cement plaster and EIFS.
  - Painted metal cladding in brightly or deeply saturated colors.
  - Glass: Reflective (i.e., exceeding the reflectivity of PPG Solarban 70), or deeply tinted.
Types and Allocation of Project Requirements

FUNCTIONAL
- High Level Goals

PERFORMANCE
- Criteria with Measurable Standards

DESIGN
- Specific and Prescriptive

FUNCTIONAL ➔ PERFORMANCE ➔ DESIGN

PERFORMANCE SPECIFICATIONS
DEVELOPMENT OF PROJECT REQUIREMENTS: HOW-TO PROCESS IN RFP

1. Determine & Prioritize Functional Requirements in alignment with Owner’s budget and schedule

2. Develop Performance Requirements & Draft RFP in alignment with Owner’s, budget, schedule, and the functional requirements

What is the project about, goals and objectives???

Consolidate Performance Requirements in the RFP Documentation

Prescriptive Requirements?

Only where and if absolutely necessary. Understand Risk to Owner.
1. Determine & Prioritize Functional Requirements in alignment with Owner’s budget and schedule

- Brainstorm to determine goals/constraints/problems
- Organize functional requirements
- Include functional requirements in RFQ/RFP
- Complete a risk assessment
- Prioritize functional requirements

WORKING WITH THE STAKEHOLDERS

- Who’s got an interest in the project?
- Who’s got the money/power/influence over the project?
- Who’s got to live with/operate/maintain the completed facility?
- Who can stop you?
- Who can help you?
2. Develop Performance Requirements...

- Refine with Uniformat at Level 2
- Select performance standards: Code requirements adequate?
- Determine code+ and/or commercial/industrial/organizational standards
- Include in the requirements document

**DETERMINING PERFORMANCE STANDARDS**

- American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE)
- American National Standards Institute (ANSI)
- American Society for Testing and Materials (ASTM)
- National Electrical Manufacturers Association (NEMA)
- National Fire Protection Association (NFPA)
- National Electrical Code (NEC)
- Sheet Metal and Air Conditioning Contractors’ National Association (SMACNA)
- Institute of Electrical and Electronic Engineers (IEEE), etc.
...Consolidate Requirements in the RFP Documentation

- Draft the preamble, including the functional requirements
- Ensure correct code invoked in requirements document
- Group all performance requirements by Uniformat Level 2
- Complete a quality check
- Produce draft requirements document

PRODUCING THE DRAFT RFP

- Are the requirements and evaluation criteria written in such a manner that your innovative solution can be considered? If not, what changes are recommended?
- Are there inconsistencies or conflicts in the performance requirements?
- Are there conflicts in the RFP?
- Does the RFP clearly communicate the owner’s requirements and priorities?
RFP Quality Check List

- Is requirement attainable and feasible? Is it possible to construct a facility that meets this requirement?
- Is requirement necessary? What would/could happen if this requirement were not included?
- Is requirement unambiguous? Will all readers give the same interpretation?
- Is requirement traceable from a higher-level functional requirement? If not, why is it included?
- Does requirement have an objective, measurable standard and a means of substantiation?
Prequalification of Design Build Team, DB Sub Contractors and Sub Contractors
Selection of Design Build Team Builder & Design Professionals

Pre-Qualify Your Team

• Company & Team Experience
• Staff Experience
• Design expertise - Innovation
• Retain ability to qualify changing team members
• Dispute history
• Experience with Design Build
• References
Design Build Team

- Contractor
- Architect
- Laboratory Consultant
- Structural Engineer
- Mechanical Engineer
- Electrical Engineer
  - Low Voltage, AV
  - Security
- Plumbing Engineer
- Others depending on project requirements
Prequalification: Significant Subcontractors

- Structural Steel
- Mechanical – Dry
- Mechanical – Wet
- Electrical
- Low Voltage
- Plumbing
- Stud and Drywall
- Concrete
- Audio Visual
- Others depending on the project
Prequalification of contractor & sub/specialty contractors can be either concurrent or sequential
Ask contractors for input on sub/specialty contractors
How to Get what You Want in Design Build!

• **Design and Cost**
  • Level of design in the RFP
  • Shifting risk
  • Who controls the “details” of the design?
• Design management
• Best without “Bridging Documents”
• **Selecting your Team**
• Prequalification
• **Management & Decision Making**
• Risk Strategies