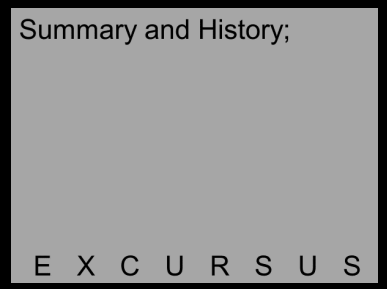
Changing the Low-Bid Mentality: Understanding How to Secure Client Buy-In

Jeanette Shaw, AIA, RID, LEED AP
Director of Quality and Sustainability
Powers Brown Architecture

Lecture Keynotes



At the beginning of each deck, as brief overview or abstract along with a brief history of its origin date, first presentation or generation

Mid deck summaries of the main points for clarity & flow

Mid deck enhanced explanation of the details behind the main points for clarity and flow

E X C U R S U S

Summary and History;

Since Quality Programs are not common in the industry, it is important to be able to identify the benefits to clients….the goal here is to make a fully developed Quality Program a standard for ALL PROJECTS…but if owners don't know a Quality Program exists, and what the benefits are, then how can a design firm with a fully developed Quality Program secure owner buy-in? In this presentation we will:

- Identify metrics that can drive clients to help fund and resource a quality plan on their project, reducing risk for all parties
- Understand how to promote quality management as a key consideration in the bid selection process for all project team members (including architects, engineers, and general contractors), and better prepare the owner to support success of quality initiatives across the entire project team
- Underline how a Quality Program adopted by the architecture and engineering team can assist with reducing bid spreads and RFI's
- Promote transparency throughout the bid process to ensure adequate provisions of contingencies, and ensure all parties maintain a long-term focus on Quality Excellence

E X C U R S U S

About the Speaker:

Jeanette is a licensed Architect and registered interior designer who has 16 years of experience working on a wide range of project types including industrial, office, interiors, laboratories, mixed use, and high-rise condominiums. She has spent the majority of her career at Powers Brown Architecture, starting as an intern, then a Project Architect, Project Manager, and currently as the Director of Quality and Sustainability. Jeanette has a passion for technical proficiency and commands a team that comprises one of the premier Quality Programs among architecture firms in the nation.

Powers Brown Architecture was founded in 1999 in Houston, TX, and now has offices in Denver, Washington D.C., Toronto and St. John's, NL, Canada. Powers Brown Architecture consistently ranks as one of the top architecture firms in Houston, and holds national rankings among the nation's elite architecture-only firms. Powers Brown Architecture sets the standard for quality control procedures, which include pre-planning of documentation, identification of complex design and detailing areas on each project, third-party in-house drawing reviews which include all trades, and a premiere staff training program.

CQEC

Jeanette and Powers Brown Architecture are proud to be the first Architect members of the **Construction Quality Executives Council (CQEC)**, an organization dedicated to a cross-industry initiative to improve construction project delivery through enhanced documentation and communication.

What is a Quality Program?

The QAQC process becomes part of an **Integrated Quality Process** which includes every team member and assigns roles and responsibilities in phases – DESIGN TEAM sets the tone:

Owner provides project parameters including scope, budget, and schedule

The design team's QAQC program must include three basic principles:

1) Proper planning of documentation before work begins
2) Proper review of completed documents
3) Proper training of staff

The design team MUST maintain compliance with owner expectations

What is a QAQC Program?

The QAQC process becomes part of an **Integrated Quality Process** which includes every team member and assigns roles and responsibilities in phases – CONSTRUCTION TEAM continues the process:

The construction transition process could also include a bidding process which requires additional planning and makes the Integrated Quality Process more difficult

The Owner should require the construction quality plan be documented as part of any bid project to verify the Owner's goals are being met

CQEC

A QUALITY PROGRAM SHOULD BE CONSIDERED A VALUE- ADD PROPOSITION

A well developed and established Quality Program is a MARKETABLE COMMODITY

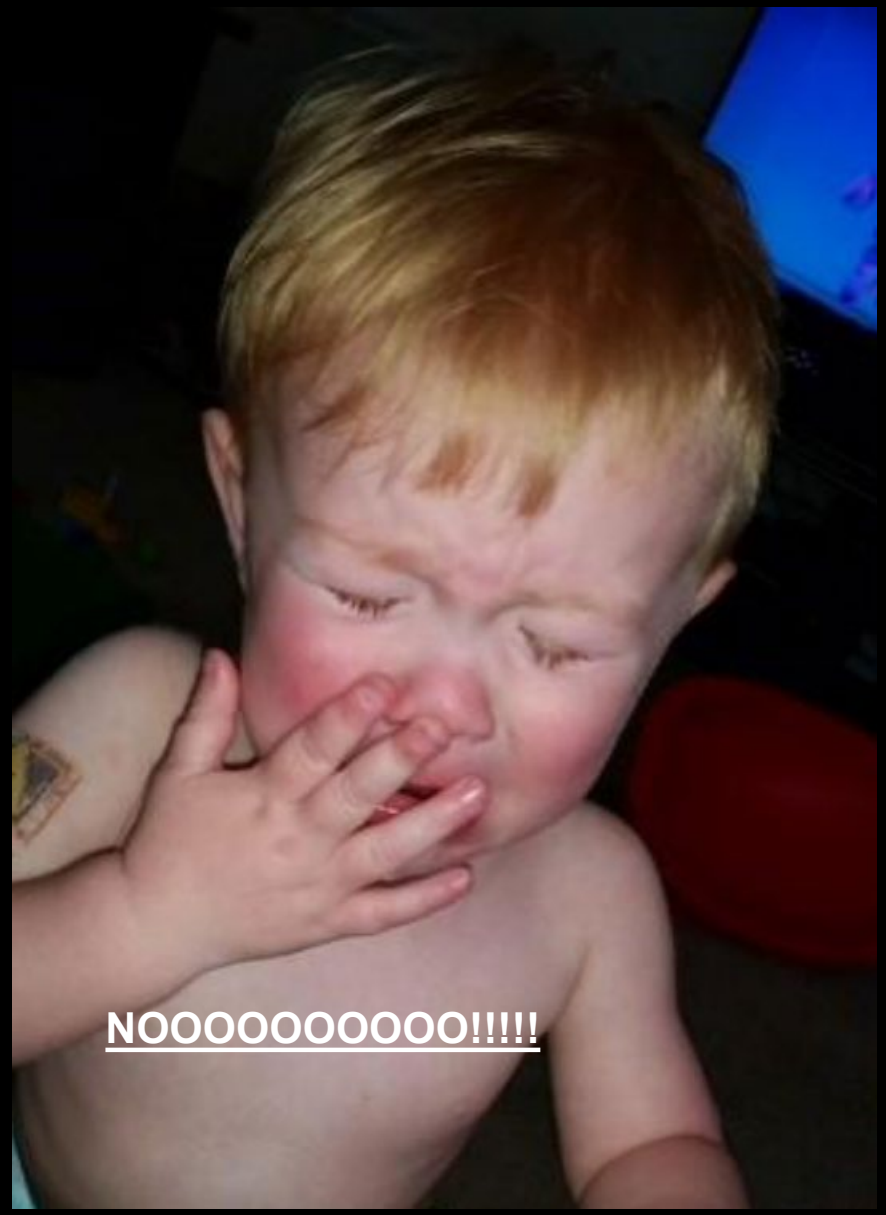
The big idea here is;

In order to motivate clients to accept a quality program as a value-add proposition, it is critical to analyze the motivations of the client. And there are different types of owners with unique traits….

E X C U R S U S

HARD TRUTH:

The success of any Quality Program is dependent on the OWNER



TYPES OF OWNERS:

THE ONE-OFF

THE NOVICE

THE CORPORATE DEVELOPER

INSTITUTIONAL

THE CONGLOMERATE

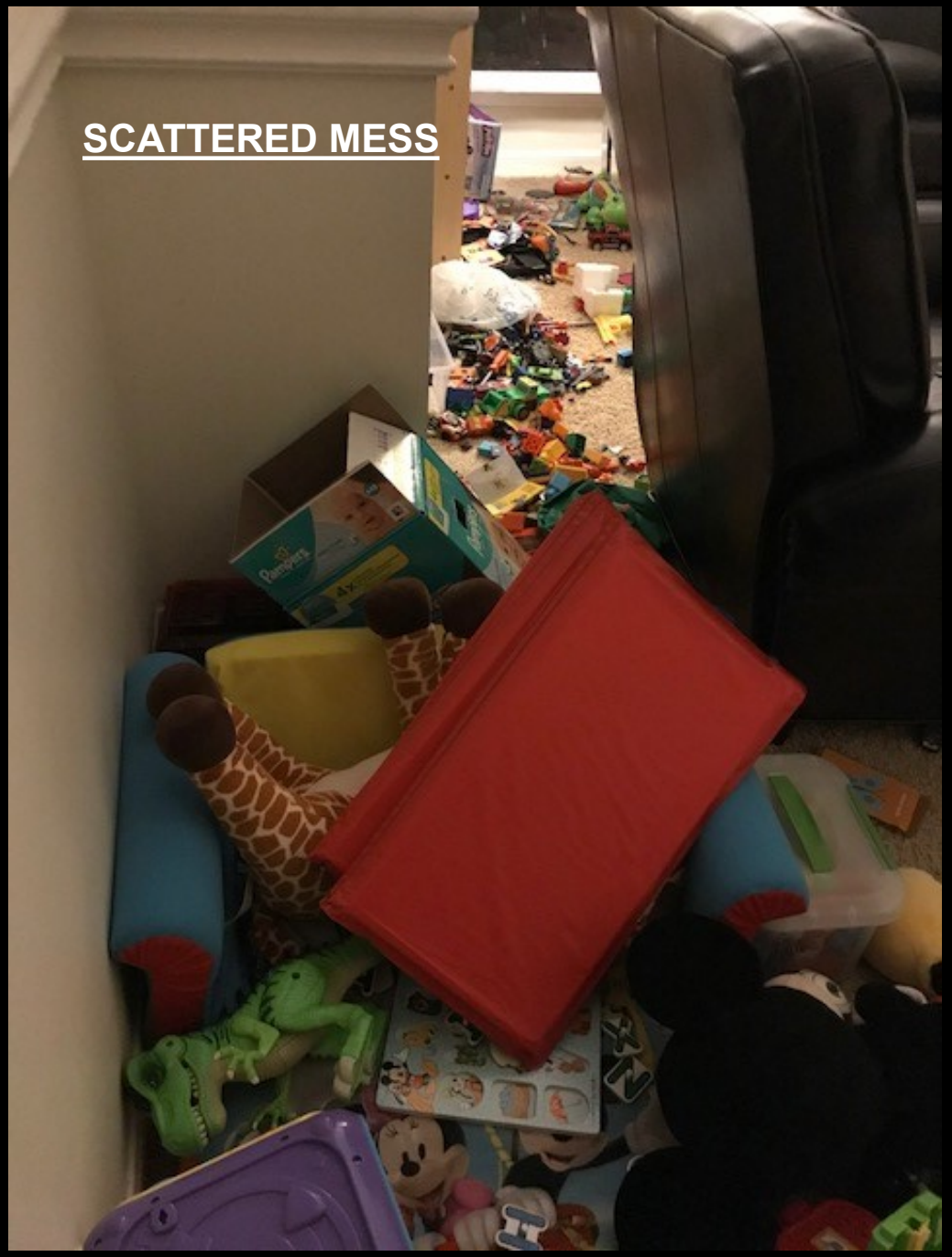
THE ONE-OFF

This Owner has never built a building and will likely never build one again

EXAMPLES:
Medical Office
Church
Home Owner

CHARACTERISTICS:

- Typically follows the advice of the design team
- Limited funding and/or poor funding planning
- Uneducated about the design, permitting, and construction process
- Does not understand schedule and the urgency of prompt decision-making
- Uneducated about systems, materials, and methods



SCATTERED MESS

THE NOVICE

This Owner that has built something small with success and decides to expand

EXAMPLES:
Small Spec Office
Retail Strip

CHARACTERISTICS:

- Thinks he is an expert, won't often listen to the professionals
- Ambitious and unrealistic about outcomes
- Limited funding and/or poor funding planning
- Limited construction knowledge, often in a building type that is different than what he is building now
- Often makes decisions that are contrary to recommendations to save on construction costs
- Has limited knowledge about specific systems, materials, and methods


I HAVE A LICENSE, ARE YOU SAYING I
DON’T KNOW HOW TO DRIVE?

THE CORPORATE DEVELOPER

This Owner has built a large number of buildings and has experience, but often builds speculatively

EXAMPLES:
Industrial
Office
Mixed-Use

CHARACTERISTICS:

- Schedule is usually first to market – GO GO GO
- Understands design, construction methods, and processes
- Funding is typically assigned with only small contingency
- Always looking to save money – savings in budget could equal bonuses
- Often times flipping the building, so not as concerned about longevity and quality
- Generally has relationships within the market with certain designers and contractors; even if he bids the project it will be to people he knows or has worked with before

THE GAMBLER

CRUISING ALONG

INSTITUTIONAL

This Owner has built a large number of buildings and has experience and systems for project development and construction in place

EXAMPLES:
Government
Public Education
Higher Education

CHARACTERISTICS:

- Almost always publicly funded with great transparency required with budgets and costs
- Most likely involves a third-party project manager to organize the project
- Processes are generally well-documented but are often arduous and overly complicated
- Generally uses a mitigated bid process (eg CMAR), sometimes public bid
- Usually have in-house experts that know what is required for the facility and provides details to the design and construction team
- Typically not open to changes to their established system
- Buildings have longer life-expectancy requirements so held to higher standard
- Decision makers not often defined or available

OVERWORKED AND TIRED

CONSTRUCTION SYSTEMS DEFINED

THE CONGLOMERATE

This Private Owner has built a large number of buildings and has experience and systems for project development and construction in place

EXAMPLES:
Build-To-Suit
Corporate Campus

CHARACTERISTICS:

- Extremely sophisticated about building design and construction methods
- Typically have in-house experts in all areas
- Value design
- Value experienced professionals and their expertise
- Budgets vary, but can be virtually unlimited in certain cases
- Generally have systems in place for development, but are open to suggestions for new ways to do things that could improve their systems
- Generally use negotiated procurement methods – rarely bid to multiple General Contractors
- Generally have multiple decision makers that all have different goals

SOPHISTICATED ABOUT PROCESS

BIG BUDGETS

WHY DOES THIS MATTER?

To secure Owner buy-in for a Quality Program, you need to understand the Owner’s goals and motivations

WHICH METRIC WILL DRIVE THE OWNER TO IMPLEMENT A QUALITY MANAGEMENT PLAN?

COST?
EXPERIENCE?
RISK MANAGEMENT?
MAINTENANCE?
SCHEDULE?

Explainer

Now that we understand the different types of owners and their characteristics, it is important to examine which of the metrics are important to each of them….once we know this, we will know how to encourage adoption of a quality program on their projects…..let's examine COST, EXPERIENCE, RISK MANAGEMENT, MAINTENANCE, AND SCHEDULE more in depth….

E X C U R S U S

COST

A Quality Program reduces and controls project costs and changes

- Proper systems coordination and more complete construction documents lead to less guessing during pricing and fewer Change Orders
- Proper quality procedures on site reduce construction errors that could cause maintenance issues later which come out of limited maintenance budgets
- Assessment of long-term value vs first cost is a number one quality decision

THE ONE-OFF

THE NOVICE

CORPORATE DEVELOPER

INSTITUTIONAL

THE CONGLOMERATE

EXPERIENCE

A team with experienced Quality Programs can reduce risks and improve the project outcome, and the Owner has an appreciation and understanding that:

- Quality Programs have proper staff training initiatives
- Experienced contractors with Quality Programs know how to track quality incidents that maximize value to the Owner
- Experienced staff reviews of contract documents increase accuracy
- Experienced A/E and General Contractors make the Owner's job lower maintenance

CORPORATE DEVELOPER

INSTITUTIONAL

THE CONGLOMERATE

RISK MANAGEMENT

A Quality Program does not mean perfection – the goal is to eliminate surprises and create predictable outcomes

- Insurance premiums are reduced for the project team – equating to lower administrative costs to the project
- Proper quality systems eliminate errors in the field which leads to more consistent construction
- Operating under a quality program is integrated into systems and operations – it is not a layer that can be turned off or on; all employees understand how the quality program is run and maintained

CORPORATE DEVELOPER

INSTITUTIONAL

THE CONGLOMERATE

MAINTENANCE

A Quality Program improves construction systems and methods creating a higher quality outcome

- Construction quality programs track quality incidents that lead to rework or failed inspections
- Design quality programs lead to better staff training, and proper selection of quality materials and systems
- Design quality programs lead to proper coordination between trades which can eliminate missed elements
- Design quality programs can be integrated into facilities management software

THE ONE-OFF

INSTITUTIONAL

THE CONGLOMERATE

SCHEDULE

A Quality Program ensures the established project schedule to be met and in some cases exceeded

- Design quality programs allow expedited contract documents to be more complete and better coordinated
- Construction quality programs facilitate changes and rework to help prevent schedule delays
- Design quality programs ensure that the Owner goals are included in the contract documents

THE NOVICE

CORPORATE DEVELOPER

INSTITUTIONAL

METRICS = MOTIVATION

After a summary – many of the motives for requiring a Quality Program are now identified for each type of client

THE ONE-OFF	THE NOVICE	CORPORATE DEVELOPER	INSTITUTIONAL	THE CONGLOMERATE
				
COST	COST	COST EXPERIENCE RISK MANAGEMENT	COST EXPERIENCE RISK MANAGEMENT MAINTENANCE SCHEDULE	COST EXPERIENCE RISK MANAGEMENT MAINTENANCE
MAINTENANCE	SCHEDULE	SCHEDULE		

Explainer

The metrics analyzed have determined the Owner’s motivations, but how do we now convince them of the benefits of a Quality Program? We must first discuss the components of a Quality Program…it is critical to understand why a Quality Program can benefit owners, but without a properly developed and executed Quality Program, they will not see any of the benefits

E X C U R S U S

A QUALITY PROGRAM SHOULD BE CONSIDERED A VALUE ADD PROPOSITION

A Quality Program is not just checking stuff here and there….it should be an evidence based formal program

We now have Gen2 version of QAQC which isn't just layering of standards and checking a couple sets

ANATOMY OF A QUALITY PROGRAM

Now that we know all of the value propositions to Owners, how do we execute a Design Quality Program?

CQEC guidelines advise addressing the following goals:

- Prevent incomplete documents
- Ensure constructability of documents
- Control timeliness of documents

Addressing the first two goals can be done with a Design Quality Program, but you also need the Owner's help with the timing of documents – if drawings are rushed out, then you will have incomplete and inaccurate drawings

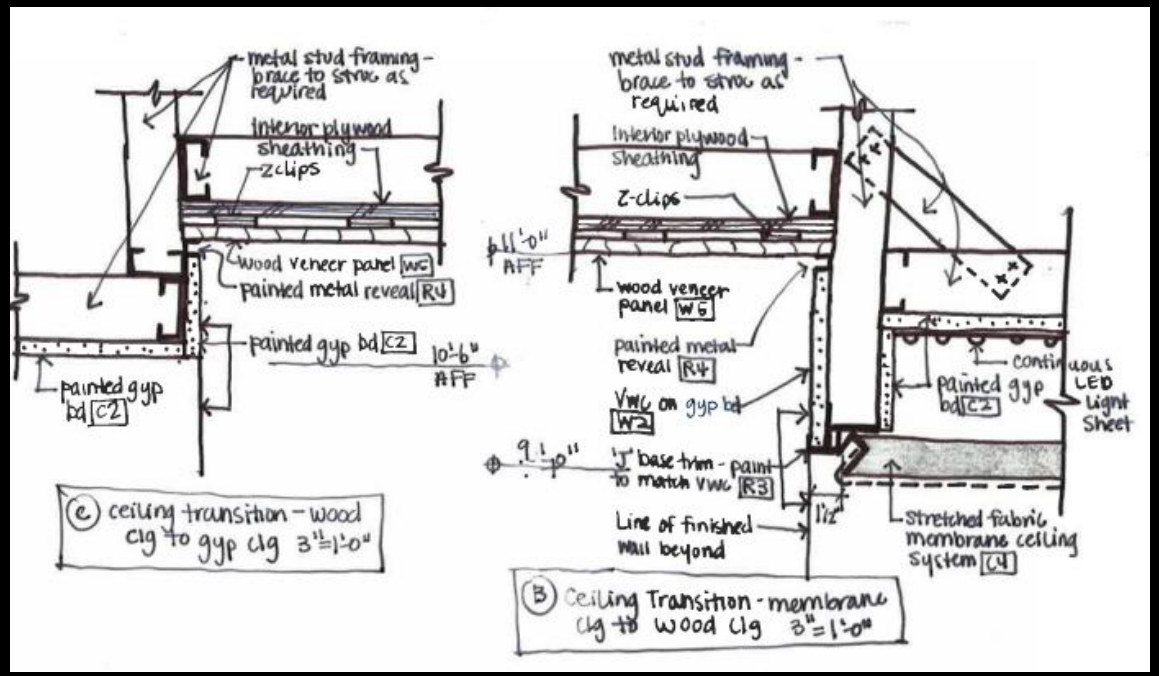
SCHEDULE OF DOCUMENT CREATION IS CRITICAL

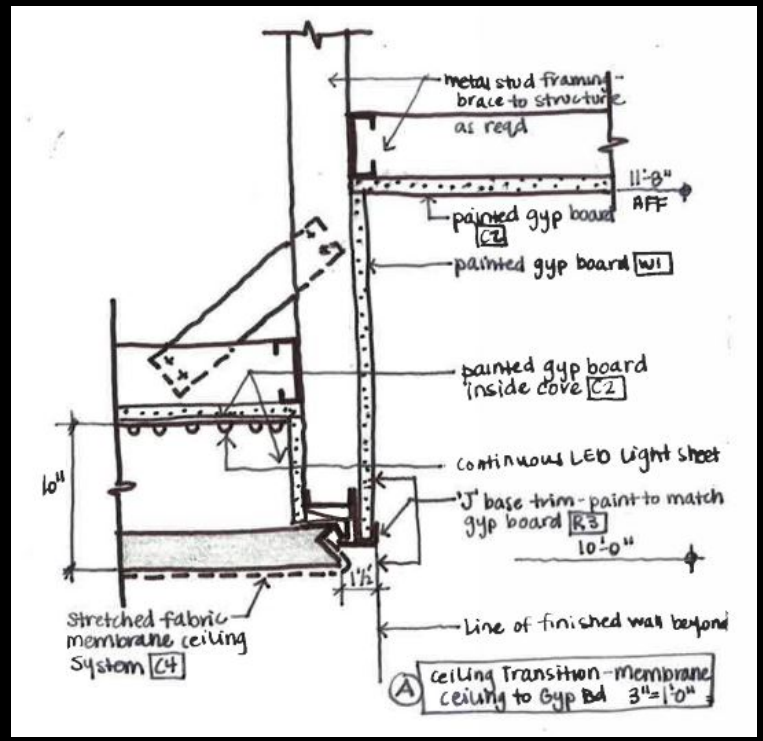
YOU MUST ADVISE THE OWNER: 95% OF THE PROJECT COST IS SPENT ON CONSTRUCTION, INVEST WISELY ON CONSTRUCTION DOCUMENTS AND ALLOW PROPER TIMING TO COMPLETE THEM CORRECTLY OR PROBLEMS WITH THE DOCUMENTS WILL BLEED INTO CONSTRUCTION, LEADING TO CONSTRUCTION CHANGE ORDERS OR COST INCREASES

IMPORTANCE OF DESIGN QUALITY PROGRAMS

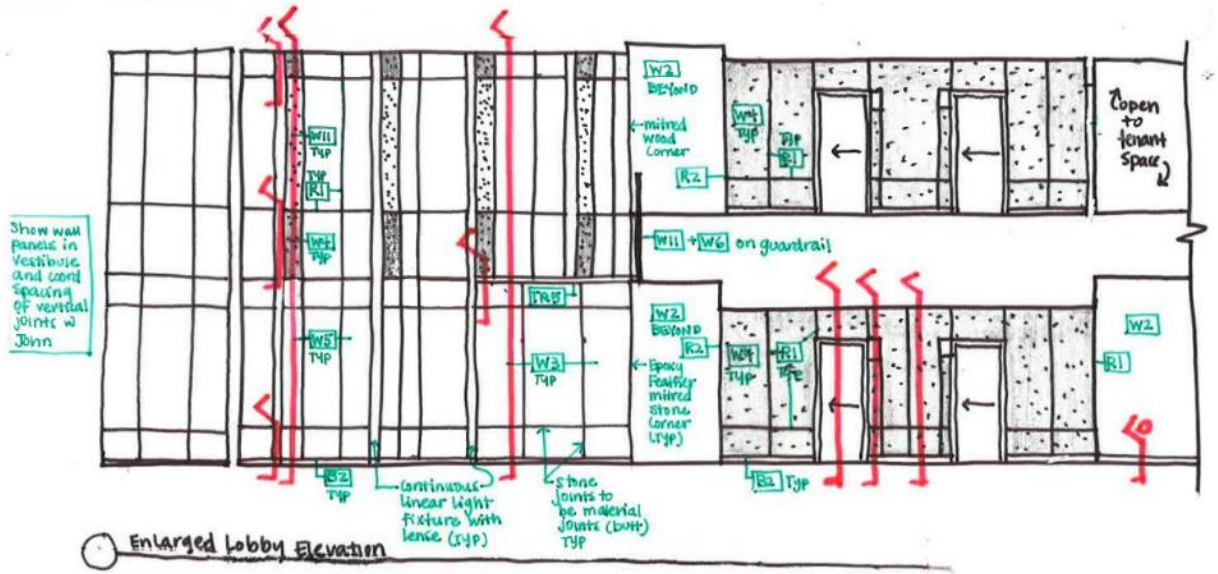
Planning what you will draw:

- Allows focused effort on drawing what is most difficult and complex first
- Identifies the critical design elements
- Creates a critical break-down of the documentation requirements as they relate to the schedule to ensure pricing items are focused on first to ensure that they are appropriately detailed in bid sets



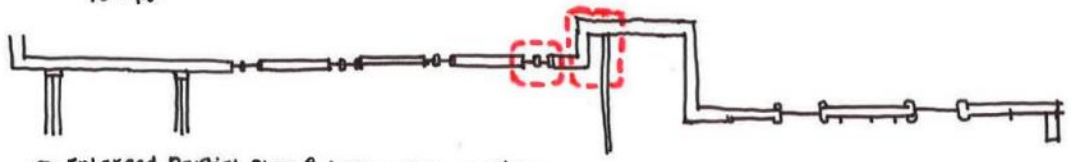


DETAILS OR SECTION



Enlarged Lobby Elevation

Enlarged Partial Plan @ Lobby Wall - Level 01
3/8" = 1'-0"



Enlarged Partial Plan @ Lobby Wall - Level 02
3/8" = 1'-0"

DETAILS

NOTE: DETAILS TAGGED CAN BE LOCATED ON THIS SHEET OR ON A700 SERIES SHEETS WHERE THERE IS SPACE

LOBBY ELEVATIONS

AG03

IMPORTANCE OF DESIGN QUALITY PROGRAMS

Proper staff training ensures:

- Inexperienced staff are properly mentored and provided lessons learned
- Inexperienced staff are able to ask the appropriate questions and have proper guidance on coordination elements
- Staff understands the bid process and what documents are necessary for bid sets

PBA University - Course List

COURSE	LEVEL	CORE	ELECTIVE
AIA Contracts	Advanced		X
Basics of Construction Documentation - Cartoon Sets	Basic	X	
Basics of Construction Documentation - Dimensioning Drawings	Basic	X	
Basics of Construction Documentation - Elevations	Basic	X	
Basics of Construction Documentation - Sheeting Drawings	Basic	X	
Basics of Construction Documentation - Stairs	Basic	X	
Basics of Construction Documentation - Wall Sections and Details	Basic	X	
BOMA Calculations	Intermediate		X
Civil Grading	Advanced		X
Code Analysis	Intermediate	X	
Communication Basics - General	Basic	X	
Communication Basics - Clients	Advanced		X
Communication Basics - Consultants	Advanced		X
Communication Basics - Coworkers	Advanced		X
Consultant Drawings - Civil/Landscape	Intermediate	X	
Consultant Drawings - MEP	Intermediate	X	
Consultant Drawings - Structural	Intermediate	X	
Construction Administration Technology	Intermediate		X
Design Basics - Egress Basics	Basic	X	
Design Basics - Industrial Planning	Basic	X	
Design Basics - Site Planning	Basic	X	
Hardware Basics	Basic	X	
Issuing Drawings and Revisions	Intermediate	X	
Issuing Field Reports	Intermediate	X	
Issuing Meeting Minutes	Basic	X	
LEED	Basic		X
Marketing Basics	Advanced		X
Newforma Basics	Basic	X	
Newforma for Construction Administration	Intermediate	X	
Permitting - City of Houston	Intermediate		X
Permitting - Harris County + Other Municipalities	Intermediate		X
Revit - User Interface Basics	Basic	X	
Revit - Frequently Asked Questions	Intermediate	X	
Roof Plan Design and Documentation	Intermediate	X	
Site Visit - Protocol and Safety	Basic	X	
Site Visit - Interior Construction	Intermediate		X
Site Visit - Site Work + Foundation	Intermediate		X
Site Visit - Steel Erection	Intermediate		X
Site Visit - Tiltwall Panel Forming + Pouring	Intermediate		X
Site Visit - Tiltwall Panel Erection	Intermediate		X
Site Visit - Windows + Skin	Intermediate		X
Submittal Review - Basics	Intermediate	X	
Submittal Review - Panel Books	Intermediate	X	
Submittal Review - Window Systems	Intermediate	X	
Understanding Specifications	Intermediate	X	

PBA University

powers brown architecture

Issuing Drawings - General

Course Description

Whenever drawings or specifications are issued from this office they must be sent to all project team members including the owner, general contractor(s) and consultants. The items to be issued include bidding documents, construction documents, permit documents, Addenda, RFI's, Revisions, etc. Electronic PDF files will typically be distributed, while hard copies will be distributed in some cases (this will be a project by project basis and you should ask your project manager or principal in charge). All issued documents must be inserted into the "live set" of hardcopy drawings or project manual immediately after being issued. The "Current Set" PDF folder should also be updated every time we issue drawings.
This course will teach you the basics of issuing drawings.

Objectives

- Learn the difference between "unofficial" and "official" drawings issues
- Learn how to issue drawings for owner or tenant review / approval
- Learn how to issue pricing drawings and addendums
- Learn how to issue permit drawings, revisions and construction drawings
- Learn how to maintain a live set of drawings (hard copy and PDF)

Course Outline

I. Prior to stamping drawings we may issue "unofficial" drawings for review at different phases.
   a. Examples of "unofficial" issues
      i. SD REVIEW
      ii. OWNER REVIEW
      iii. TENANT REVIEW
      iv. DD REVIEW
      v. CD REVIEW

   b. "Unofficial" drawings should always be saved in the "Issued Sets" folder

II. A signed and sealed set of drawings is an "official" set, which means that it needs to be tracked with proper clouding of changes.
   a. Examples of "official" issues
      i. ISSUE FOR BID / ISSUE FOR PRICING*
      ii. ISSUE FOR PERMIT
      iii. ADDENDUM 01, ADDENDUM 02, etc.
      iv. ISSUE FOR CONSTRUCTION
      v. REVISION 01, REVISION 02, etc.

   *May or may not be signed and sealed – verify with your project manager / principal
   b. "Official" drawings should always be saved in the "Issued Sets" folder
   c. The first time that drawings are signed and sealed, they MUST be submitted to TDLR for review. See the "TDLR Registration and Submission Procedure".

III. Issuing drawings for owner or tenant review / approval
   a. Make sure that the title block reflects the issue name and date. Printing an owner review set may be considered an "unofficial issue", but it should still be tracked.
   b. Drawings that require owner or tenant approval in order to proceed from one phase to another should have the approval signature block – see below. This approval stamp can be found in the Revit template under "Legends".

BY SIGNING BELOW, THE TENANT ACKNOWLEDGES AND APPROVES THIS DOCUMENT FOR THE NEXT DESIGN PHASE. ANY CHANGES FROM THIS POINT FORWARD COULD RESULT IN ADDITIONAL SERVICES AND / OR SCHEDULE EXTENSIONS.

COMPANY SIGNATURE DATE

PRINT NAME

   c. These drawings are not typically stamped drawings. In fact, they will rarely be stamped. Please consult your project manager to verify.

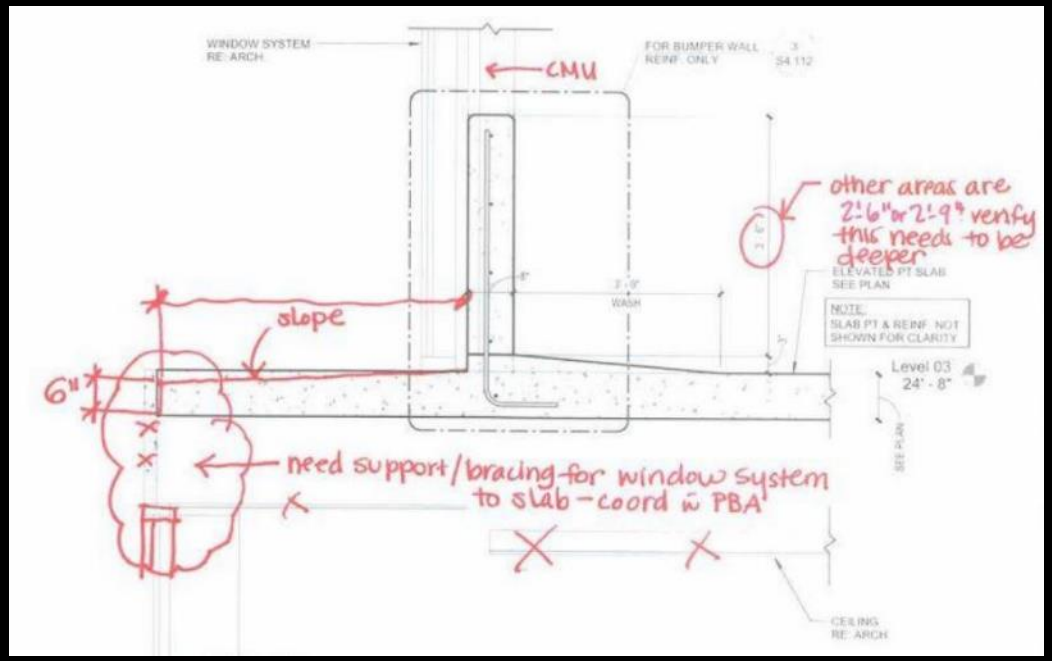
IV. Issuing pricing drawings
   a. Pricing drawings are often the first "official" set of drawings we issue, even if they are not signed and sealed.

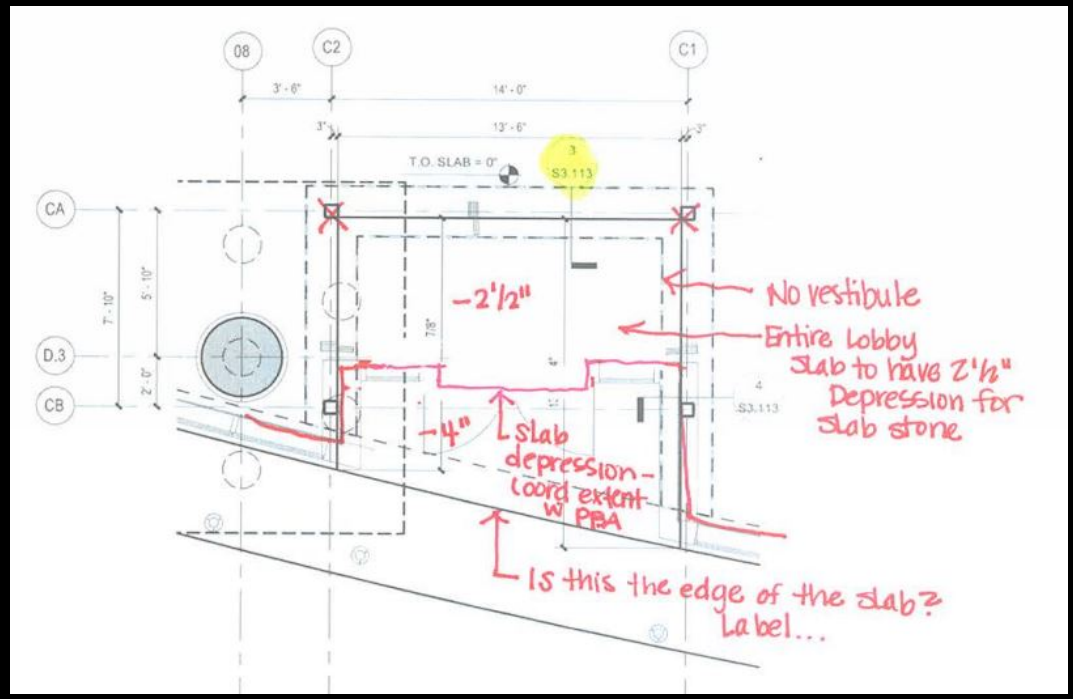
V. Issuing Permit Drawings
   a. Permit drawings will be signed and sealed. If they are the first set of drawings that are sealed, the project must be registered with TDLR (Texas projects only). See "TDLR Registration and Submission Procedure" document for instructions.

IMPORTANCE OF DESIGN QUALITY PROGRAMS

In-house document reviews are imperative:

- Coordination misses are caught early on and can be corrected quickly
- Code requirements are addressed properly to eliminate inspection failures in the field
- Mistakes in detailing are identified and can be corrected to ensure proper systems are included
- Note that proper time must be scheduled in the project schedule to allow drawing corrections prior to bidding and/or construction





The big idea here is;

Remember – we established metrics for convincing the Owner to require designers and contractors to utilize formally defined Quality Programs:

COST, EXPERIENCE, RISK MANAGEMENT, MAINTENANCE, AND SCHEDULE

In order to prove the Quality Program addresses these issues, there are some MEASURABLE metrics that can be analyzed…..

E X C U R S U S

EVIDENCE OF A PROPERLY EXECUTED DESIGN QUALITY PROGRAM:

- Reduced bid spreads
- Reduced amount of RFI’s during construction
- Reduced amount of non-owner generated change orders
- Easier coordination and identification of contingency requirements

BID SPREADS

- 4-story tiltwall core and shell office building
- 3 General Contractor bids
- 5.7% cost difference between high to low bid
- Goal is to have a cost difference of 10% or less between bidders

SITE AND BUILDING BID BREAKDOWNS

Contractor:	GC1	GC2	GC3
Schedule Duration (weeks):	40	48	40
DESCRIPTION			
DIVISION 01 - GENERAL REQUIREMENTS	$ 294,594	$ 624,763	$ 551,553
DIVISION 02 - EXISTING CONDITIONS	$ -	$ -	$ -
DIVISION 03 - CONCRETE	$ 1,717,301	$ 1,617,442	$ 1,798,769
DIVISION 04 - MASONRY	$ 12,896	$ 15,929	$ 13,202
DIVISION 05 - METALS	$ 936,629	$ 904,128	$ 924,666
DIVISION 06 - WOOD, PLASTICS & COMPOSITES	$ 110,740	$ 113,803	$ 135,963
DIVISION 07 - THERMAL AND MOISTURE PROTECTION	$ 249,860	$ 278,077	$ 199,358
DIVISION 08 - OPENINGS	$ 909,753	$ 852,587	$ 918,074
DIVISION 09 - FINISHES	$ 610,616	$ 622,115	$ 596,003
DIVISION 10 - SPECIALTIES	$ 94,102	$ 134,819	$ 135,156
DIVISION 11 - EQUIPMENT	$ 5,920	$ -	$ -
DIVISION 12 - FURNISHINGS	$ -	$ -	$ -
DIVISION 14 - CONVEYING EQUIPMENT	$ 244,000	$ 324,076	$ 245,000
DIVISION 21 - FIRE SUPPRESSION	$ 137,754	$ 186,151	$ 186,207
DIVISION 22 - PLUMBING	$ 235,000	$ 235,299	$ 289,275
DIVISION 23 - HVAC	$ 609,805	$ 620,630	$ 653,200
DIVISION 26 - ELECTRICAL	$ 656,920	$ 529,050	$ 641,650
DIVISION 27 - COMMUNICATIONS	$ -	$ -	$ -
DIVISION 28 - ELECTRONIC SAFETY AND SECURTIY	$ -	$ -	$ -
DIVISION 31 - EARTHWORK	$ 375,616	$ 399,486	$ 413,554
DIVISION 32 - EXTERIOR IMPROVEMENTS	$ 153,100	$ 222,218	$ 242,160
DIVISION 33 - UTILITIES	$ 291,880	$ 249,722	$ 279,078
Building Subtotal	$ 7,646,486	$ 7,930,295	$ 8,222,868
INSURANCE	$ 173,295	$ 133,786	$ 61,984
PROFIT & OVERHEAD	$ 351,626	$ 449,919	$ 371,266
CONTINGENCY	$ -	$ -	$ -
BONDS	$ 65,400	$ 70,000	$ 76,397
Building Total	**$ 8,236,807**	**$ 8,584,000**	**$ 8,732,515**
PROPOSED ALTERNATES:			
1. Finish out elevator lobbies and corridors on levels 2-4	$ -	$ 205,000	$ -
2. Provide F3A base on levels 2-4 in lieu of B4 tile base	$ 59,000	$ 55,000	$ 41,861
3. Furnish and install two flag poles	$ 15,000	$ -	$ 6,000
4. Install monolithic curb in lieu of standard curb and gutter	$ (14,400)	$ -	$ (18,000)
5. Provide alternate controls	$ -	$ -	$ (27,500)
6. Provide and install ships ladder	$ -	$ -	$ -
7. Delete duct cleaning	$ -	$ -	$ (17,500)

RFI’s & Change Orders

- Sample of 43 construction projects from 2018
- Examined project costs, change orders, and number of RFI’s

Project Number	RFI's	RFI's per Cost	Change Orders	Cost Before CO's	CO % Construction Cost
161294	39	0.37	$67,345.00	$14,321,000.00	0.47%
161127	0	0.00	$0.00	$2,344,000.00	0.00%
161293	8	1.40	$49,026.00	$11,176,000.00	0.44%
161204	0	0.00	$0.00	$2,218,000.00	0.00%
171302	12	0.86	$85,693.00	$10,316,000.00	0.83%
171242	22	0.88	$77,450.00	$19,273,000.00	0.40%
171173	4	1.37	$50,952.00	$5,469,000.00	0.93%
141192	493	0.15	$84,589.00	$76,400,000.00	0.11%
141216	124	0.30	$427,878.00	$37,667,000.00	1.14%
161101	4	2.91	$0.00	$11,649,000.00	0.00%
171273	2	4.42	$0.00	$8,836,722.00	0.00%
171271	0	0.00	$0.00	$12,031,592.00	0.00%
151257.5	0	0.00	$0.00	$4,963,929.00	0.00%
151257.6	0	0.00	$0.00	$18,342,263.00	0.00%
161274	8	2.45	$0.00	$19,620,930.00	0.00%
161200	0	0.00	$0.00	$1,323,155.00	0.00%
171249	6	3.74	$105,775.00	$22,455,550.00	0.47%
171251	8	0.22	$49,215.00	$1,765,762.00	2.79%
171255	11	0.68	$0.00	$7,486,524.00	0.00%
171264	2	9.65	$0.00	$19,290,155.00	0.00%
171211	7	0.83	$72,281.00	$5,800,000.00	1.25%
171175	7	0.32	$0.00	$2,245,600.00	0.00%
171296	0	0.00	$0.00	$6,949,000.00	0.00%
171314	45	0.34	$4,812.00	$15,114,602.00	0.03%
181063	2	0.42	$0.00	$837,576.00	0.00%
181027	14	1.35	$350,622.00	$18,908,822.00	1.85%
171098	16	0.41	$0.00	$6,608,500.00	0.00%
171058	0	0.00	$548,629.00	$38,717,059.00	1.42%
171281	9	0.26	$0.00	$2,374,763.00	0.00%
151257	0	0.00	$0.00	$14,000,000.00	0.00%
151220	19	0.36	$19,373.00	$6,816,565.00	0.28%
161064	72	0.07	$187,738.00	$5,084,073.00	3.69%
171270	2	8.56	$0.00	$17,115,592.00	0.00%
171283	1	10.39	$0.00	$10,385,708.00	0.00%
171056	20	0.61	$82,726.00	$12,147,773.00	0.68%
161294	39	0.37	$67,345.00	$14,321,063.00	0.47%
161036	0	0.00	$0.00	$25,022,599.00	0.00%
151145	105	0.82	$95,653.00	$86,225,169.00	0.11%
161098	94	0.15	$74,675.00	$14,458,262.00	0.52%
161100	7	2.92	$0.00	$20,451,630.00	0.00%
161245	21	1.32	$0.00	$27,743,241.00	0.00%
161263	6	1.14	$0.00	$6,838,393.00	0.00%
161265	12	0.63	$0.00	$7,569,895.00	0.00%

RFI'S

Procore lists average number of RFI's on a project should be 15-20 per $1 million of construction cost

FOR 43 PROJECTS EXAMINED, THE AVERAGE NUMBER OF RFI'S IS 28.86 (ABOUT 1.5 PER PROJECT)
AND 1.41 PER $1 MILLION CONSTRUCTON COST
AND 10 PROJECTS OF 43 HAVE 0 RFI'S

Project Number	RFI's	RFI's per Cost	Change Orders	Cost Before CO's	CO % Construction Cost
141192	493	0.15	$84,589.00	$76,400,000.00	0.11%
141216	124	0.30	$427,878.00	$37,667,000.00	1.14%
151145	105	0.82	$95,653.00	$86,225,169.00	0.11%

Projects with the largest number of RFI's have the largest construction cost (all are high rise projects)

CHANGE ORDERS

Industry standard for acceptable change order amounts is about 10% of the project cost

FOR 43 PROJECTS EXAMINED, THE AVERAGE NUMBER OF CHANGE ORDERS IS 0.37% OF THE OVERALL COST OF ALL PROJECTS

AND 23 PROJECTS OF 43 HAVE 0 CHANGE ORDERS

Project Number	RFI's	RFI's per Cost	Change Orders	Cost Before CO's	CO % Construction Cost
151220	19	0.36	$19,373.00	$6,816,565.00	0.28%
161064	72	0.07	$187,738.00	$5,084,073.00	3.69%
171270	2	8.56	$0.00	$17,115,592.00	0.00%
171283	1	10.39	$0.00	$10,385,708.00	0.00%
171056	20	0.61	$82,726.00	$12,147,773.00	0.68%

The highest % of change orders to project cost is 3.69%, well under the acceptable 10% average

IDENTIFYING CONTINGENCIES

VALUE ENGINEERING SHOULD NOT SHORT-CIRCUIT PROJECT QUALITY
Contingencies should be included evenly by all bidders, therefore they must be properly identified for the Owner

During in-house drawing reviews, the A/E team should identify areas of concern in the set that would need to be included as contingency:

- Items not clearly documented when there is not enough time in the schedule to properly document everything before bids are due
- Items that cannot be thoroughly detailed or explained without contractor input, ie: subcontractor design/build items
- Include specific manufacturer details that might be changed if alternate manufacturers are selected

During the bidding process, the General Contractor should identify items requiring contingency, and the Owner must request a budget to be provided to all bidders via Addendum

- This should include quality program costs that might be familiar to one bidder but not to all bidders

KEYS TO QUALITY PROGRAM SUCCESS

We already know that the Owner is the key to Quality Program success – but what else matters?

COMMUNICATION, COMMUNICATION, COMMUNICATION

- Owner MUST communicate their Quality Program goals
- The A/E team and the General Contractor team must communicate issues, concerns, potential problems, etc as these are the keys to ensuring the quality plan is properly executed
- The Owner must review the contract documents and properly communicate with the A/E team if any changes are required BEFORE the documents are sent out for bid
- Proper communication between the A/E team and General Contractor can reduce the number of RFI's and the contingency amounts required on projects and can even eliminate change orders

TEAM SELECTION – OWNER EDUCATION

Owners must understand the value proposition of a Quality Program when selecting the project team

- Owner must set clear goals and abide by them when selecting project team members, regardless of cost savings proposed:
  - Encourage only apples to apples bids or professional fees
  - Throw out any proposed team members that do not have integrated Quality Programs
  - Do not allow material substitutions without proper vetting by all team members
  - Properly evaluate first cost savings vs performance and durability

- A/E must have dedicated, in-house quality control program and this should be included within the contract; note that this program should not be a line item cost to the Owner as it should be included in fee

- A/E and General Contractors should be required to include the quality management plan in their bid response

Questions?

Jeanette Shaw, AIA, RID, LEED AP
Director of Quality and Sustainability
Powers Brown Architecture
shaw@powersbrown.com