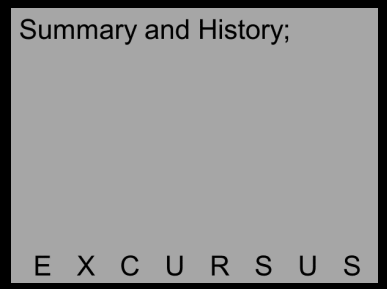
QUALITY PROGRAMS

The Devil is in the Details

FR103
FRIDAY JUNE 7, 2019 8:00AM
1.00 LU/HSW/GBCI/RIBA

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

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Acknowledgements/Credits

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Speaker

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

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Summary and History;

Mies said that God is in the Details, which was a proper sentiment accepted by the Master Builder. However, the architecture industry has evolved over the last few decades, creating one that would be virtually unrecognizable to the great architects that came before us. This presentation serves to:

- Uncover the problems of an industry that fails to promote proper detailing and quality programs to enhance design and prevent liability concerns.
- Understand the fundamental principles of a good quality management program and how to scale them according to project requirements, practice size, and executive commitment.
- Explore ways to ensure internal third-party reviews are conducted to verify coordination of consultant drawings, confirm constructability, and establish details critical to design.
- Learn to communicate the benefits of a quality program to firm leaders and clients so all involved promote quality program goals from the start of design through construction completion.

E X C U R S U S

Architect

noun

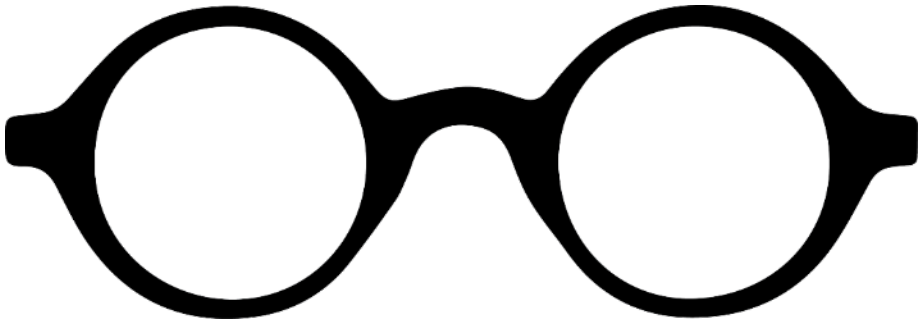
ar · chi · tect | \ är-kə-tekt

synonym: 

1 : a person who designs buildings and **advises** in their construction

2 : a person who designs and **guides** a plan or undertaking

Role of the Architect



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Historically

designer
+
engineer
+
artisan
+
innovator
+
master builder

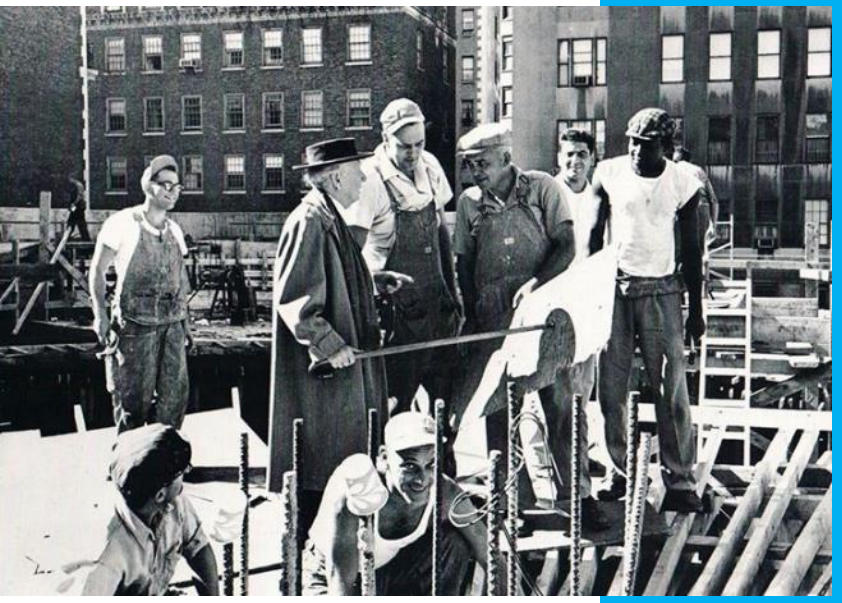
Explainer

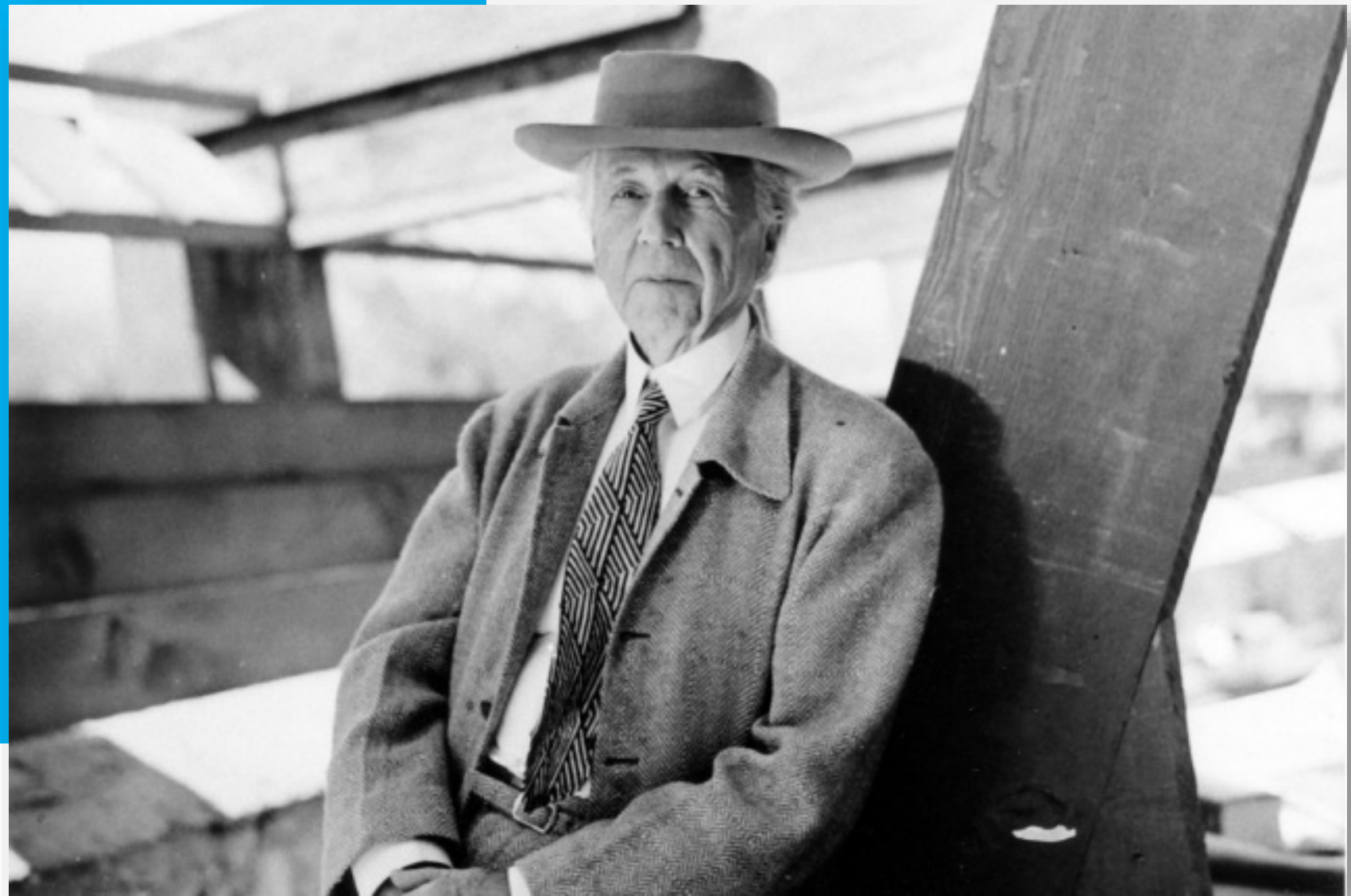
Our studies of the greats shaped our vision for our careers. Architects were designers, engineers and artisans. They had creative vision to innovate, to change the world. And this is what type of Architect I always admired. These Architects did it all…they were master builders, creators of grand designs with the technical skills to turn them into vast structures

Into the 20th century, many Architects still did everything on a project – aside from doing any actual construction. These Architects were not only responsible for design vision, they had to also play a role in execution of the vision. Engineering structures and creating with new technologies and systems was the norm. Frank Lloyd Wright is an icon and my ideal example of what I always thought an architect was and should be

E X C U R S U S

Frank Lloyd Wright





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June 6–8, Las Vegas

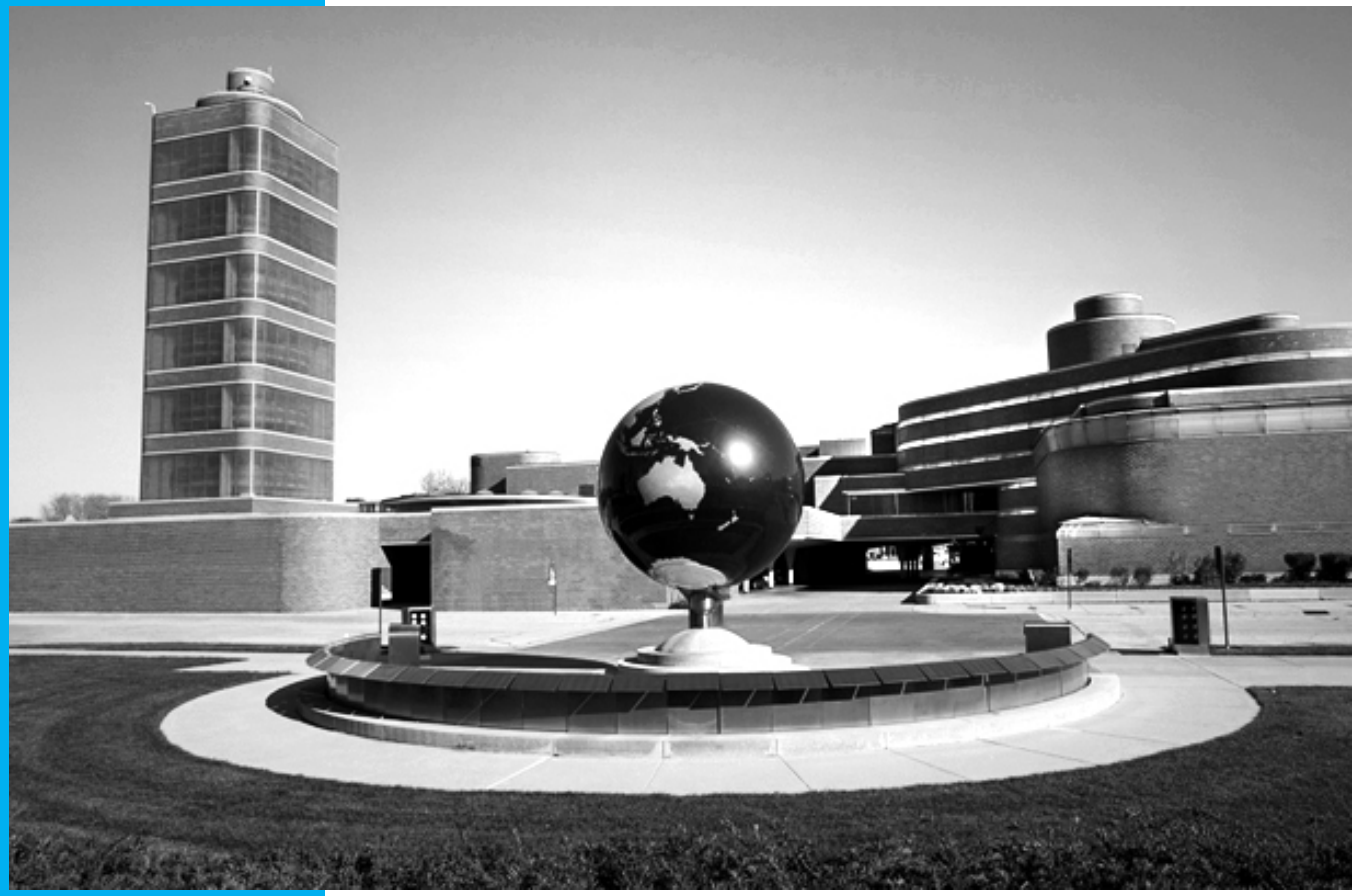
SC Johnson Wax Campus

Administration Building

designed+constructed 1936 – 1939

Research Tower

15-story building added 1950

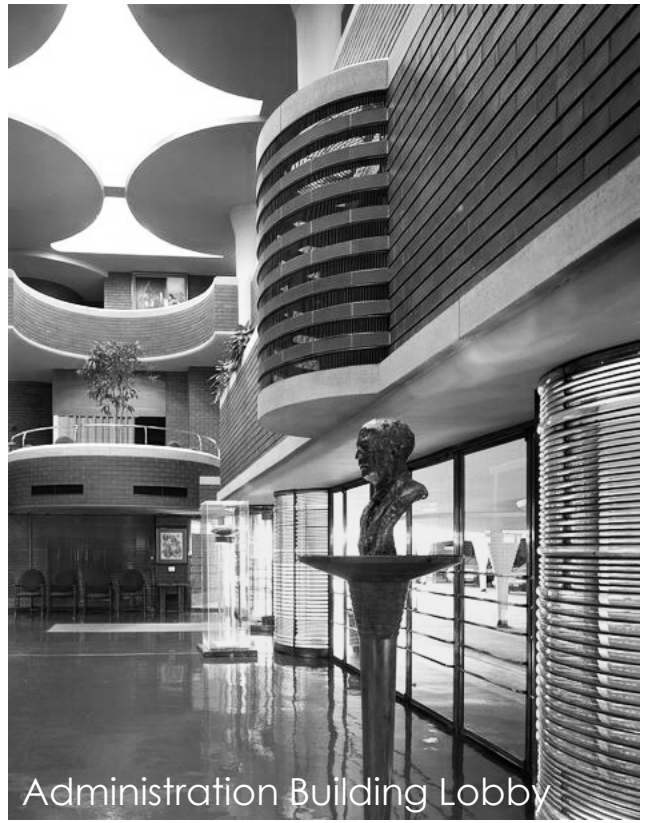


as designer


Great Workroom


Research Tower Entry


Administration Building Carport


Administration Building Lobby

as designer

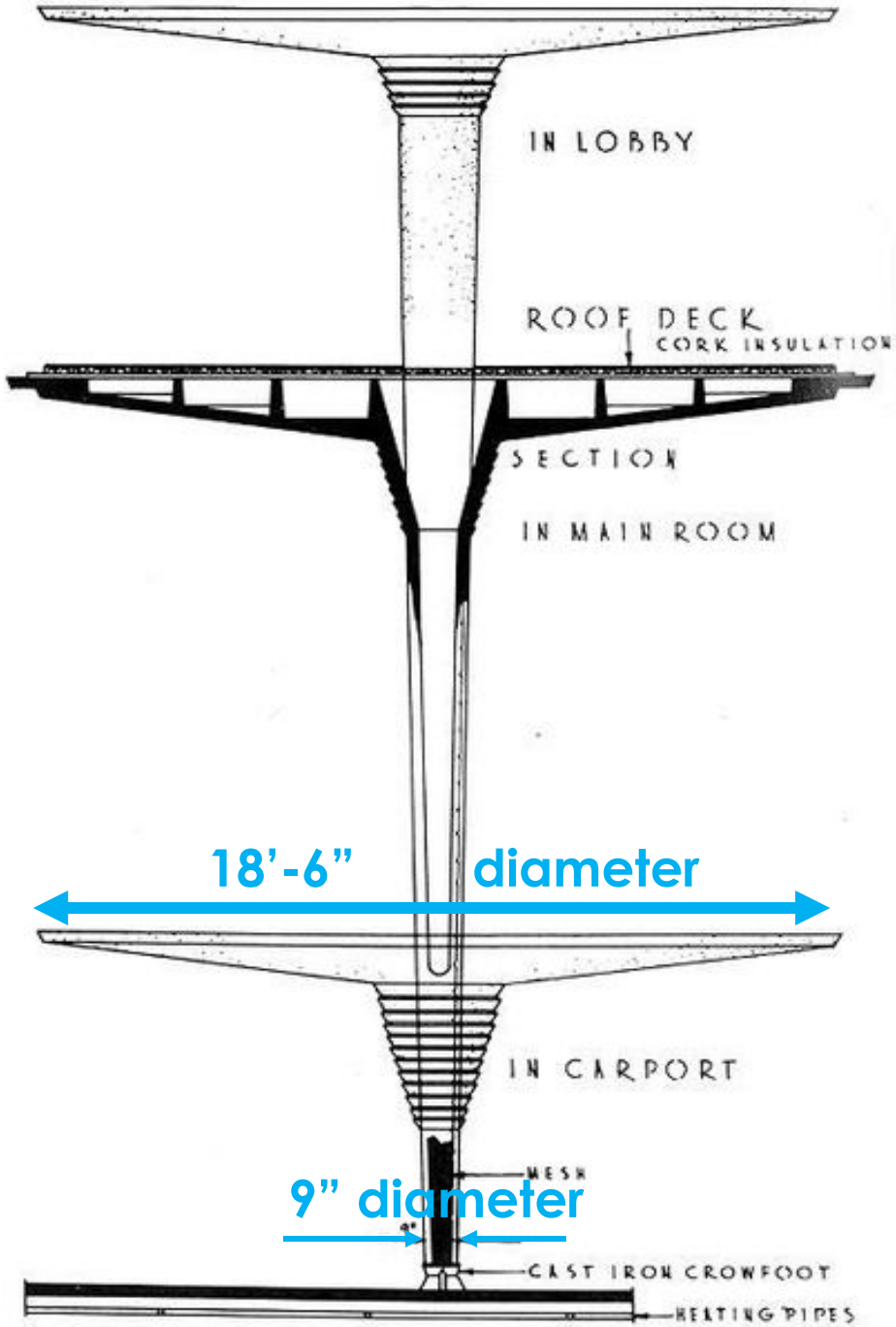
Wright designed over 40 pieces of furniture for the administrative building

as designer

Wright created custom light fixtures and collaborated with Hamilton Manufacturing and SC Johnson R&D on the lab furnishings

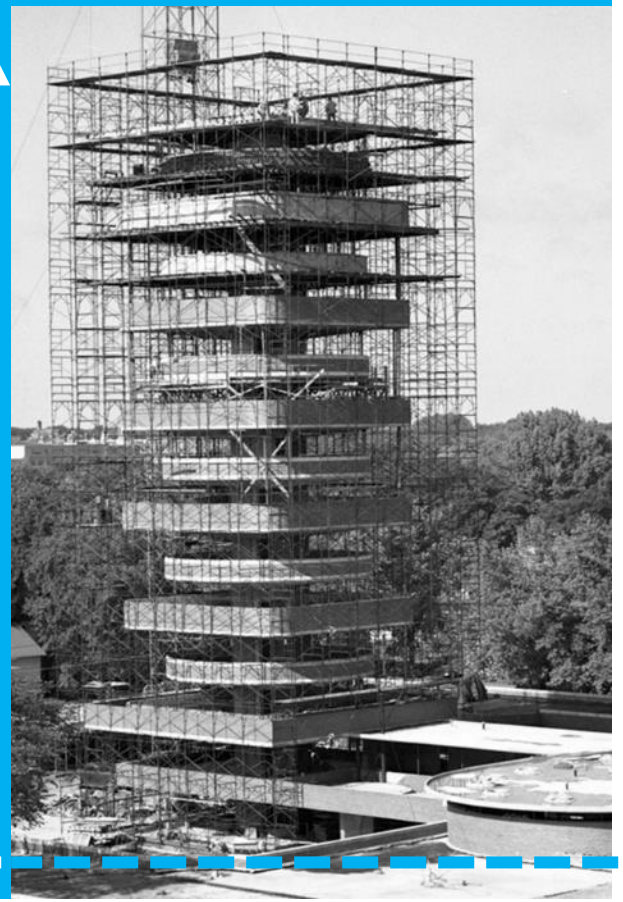
as engineer

Wright performed a structural test of a built column – proving that the columns could support a 60 ton load – five times what the design required.

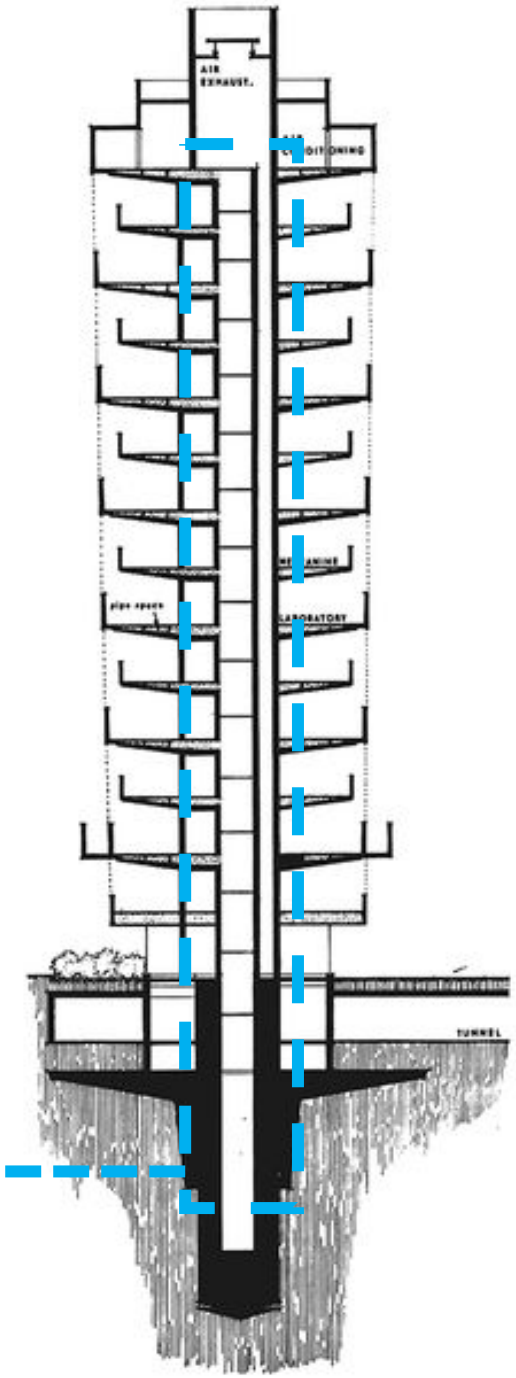


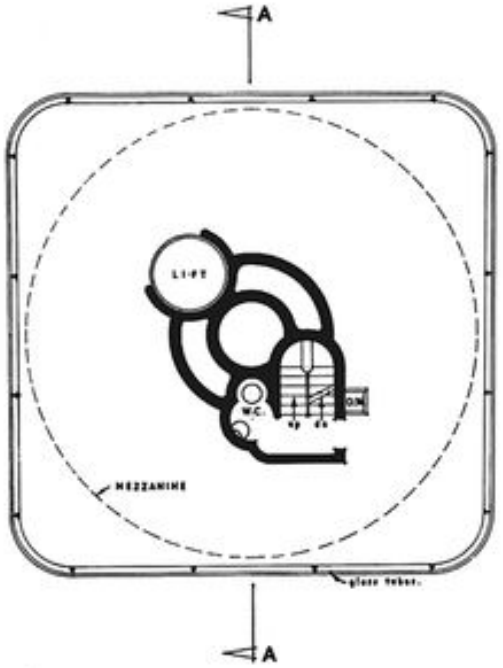
as engineer

Tallest cantilevered floor building



13' wide core acts as trunk and roots of a tree, extending 54' underground.





Plan of the laboratory tower, showing how the lift, stairs, cloakrooms and all services are concentrated in the centre, leaving the entire floor area free.

Section A—A through the laboratory. The structure —trunk, branches, root—has a masterly simplicity, yet this is surely the first time such a natural form has made a building.

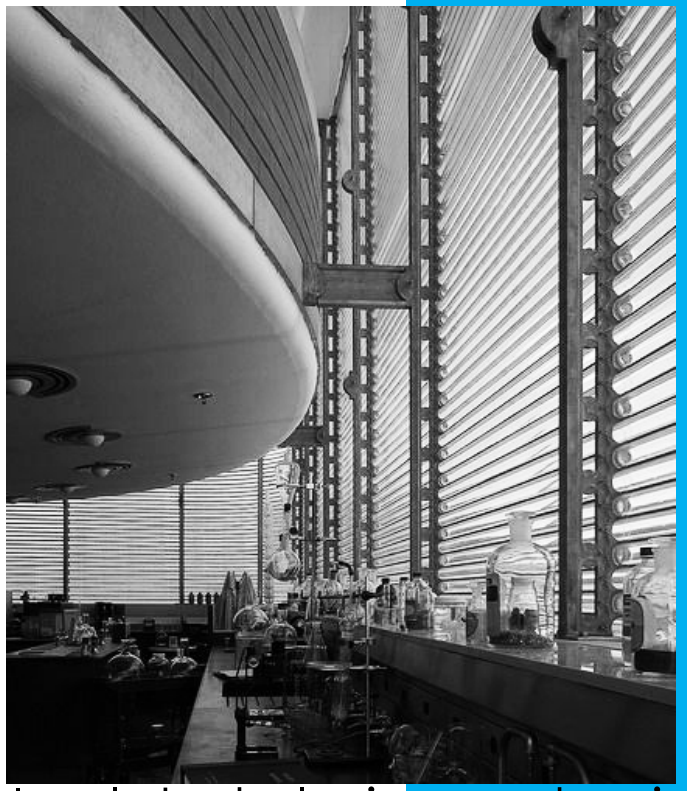
as artisan

Wright created over 200 customized Cherokee Red brick shapes to accommodate his designed curved brick facades

as artisan

Wright visualized a custom glass system for the glazing on the entire project, which diffused light as well as blocked views out to the industrial surroundings. He used 43 miles of glass tubing on the Administrative Building

as innovator



Insulated glazing and point supported structural glass systems

as innovator

Open office environment

as master builder

Architect

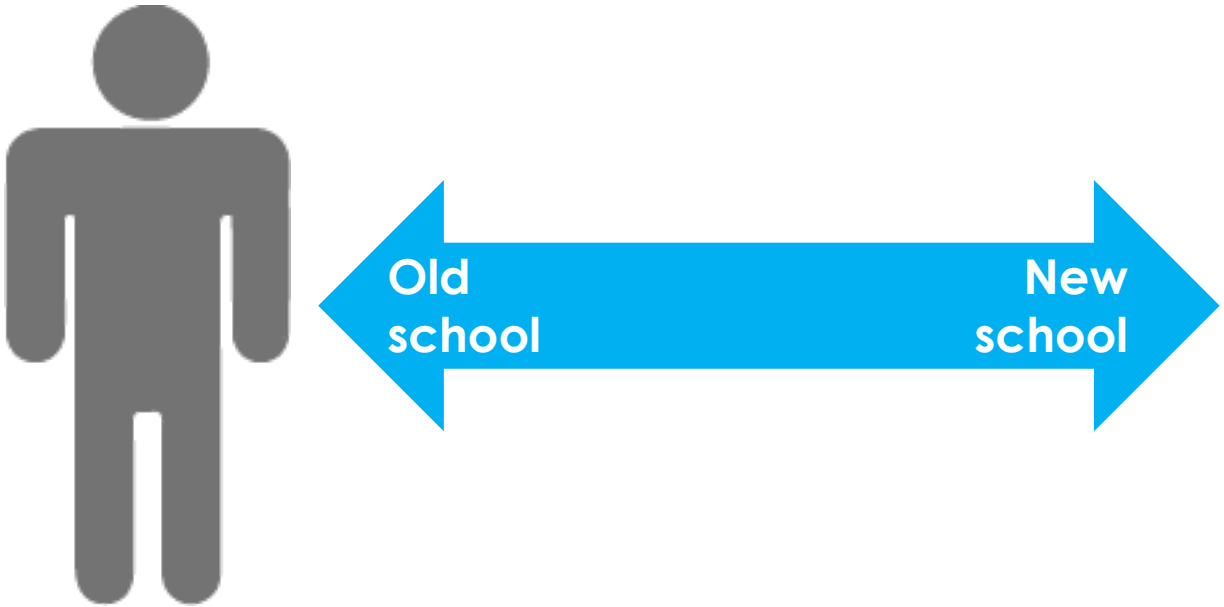
designer
innovator
building sciences
technical applications
custom fixtures & furniture
environmental studies
engineer
master builder
interior designer

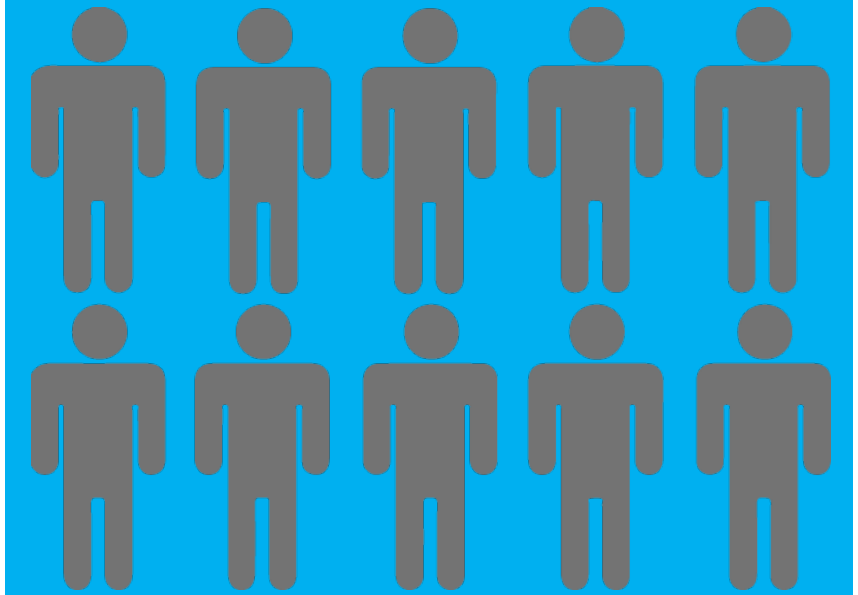
owner

subcontractors
trade specialist

Role of the Architect

Evolved





Divide Amongst Architects

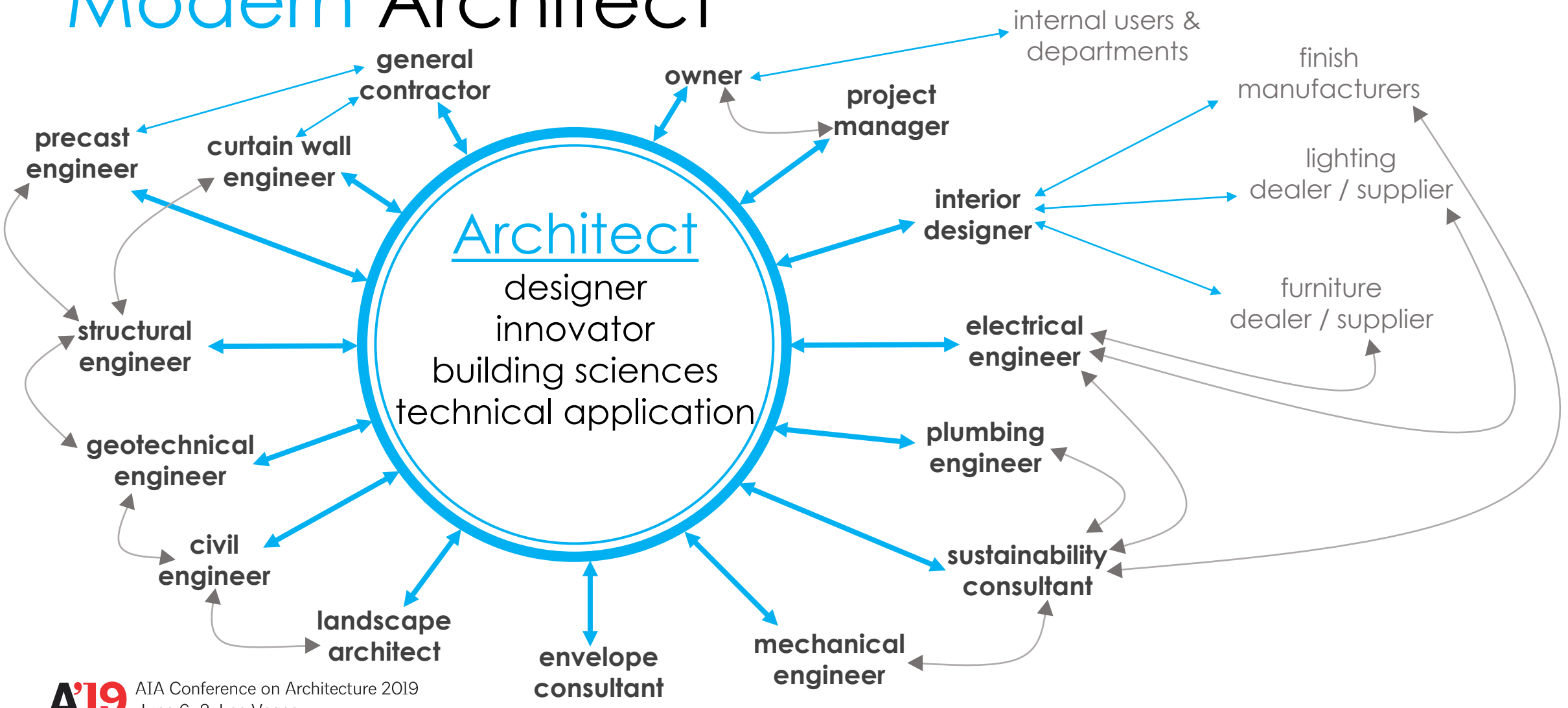
Production Architect

Principal
+
Project manager
+
Project team leader
+
Production team
+
Specification writer
+
Construction administrator

Design Architect

So where does this leave us ??

Modern Architect



Modern Architect Model

Modern
Methods

Concepts
Data
Form
Intent
Quality
Safety
Roles

The big idea here is;

After so much evolution from the role of Master Builder to Modern Architect, we have opened up so many lines of communication now that didn't exist before. The industry has created professionals to do even the smallest function of what the master builder did.

With so many layers of complexity, it is no wonder so many things get lost and missed along the way….

So now, where we once had design and technology at the center of our universe, we have a gigantic communication matrix and a big chart of role responsibilities. Communicating even the most basic design idea becomes an immensely difficult task. You have to not only be able to say what something looks like, now the architect must decide what other role players will need to play a part in the execution. With different professionals holding unique roles on projects, the responsibilities can become muddled to a point where things get lost, they get dropped by the wayside because the assumption is that someone else is handling that task.

E X C U R S U S

Challenge: How do we get closer to the Master Builder model?

Coordination

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Communication

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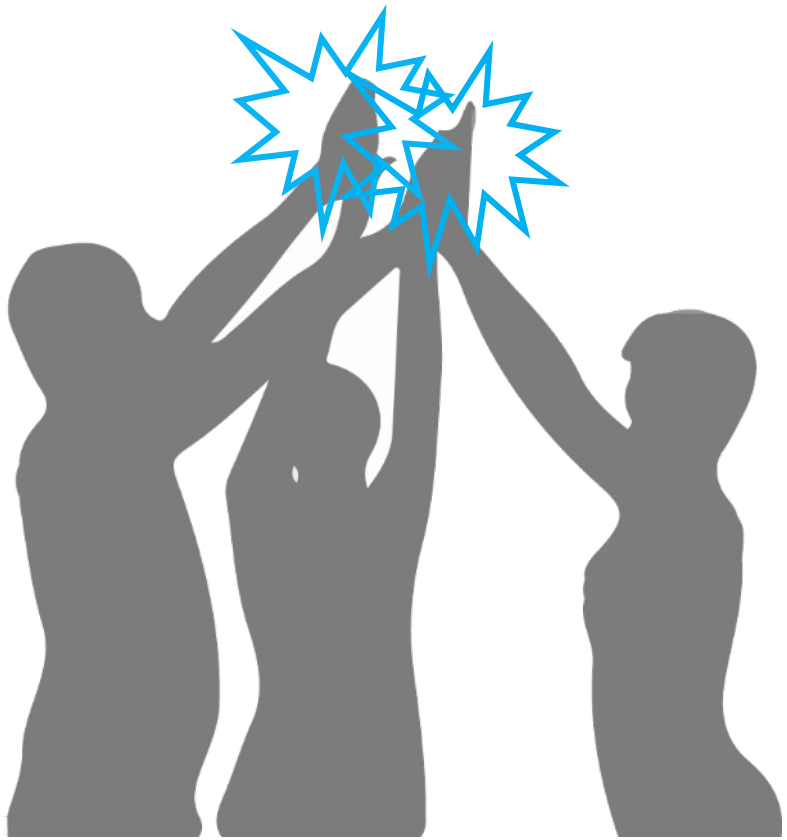


How do we get control back ?

Architecture firms need a focused development toward **QUALITY PROGRAMS** to ensure a systematic approach to every project

What is a Quality Program?

QAQC
IS NOT
ENOUGH!

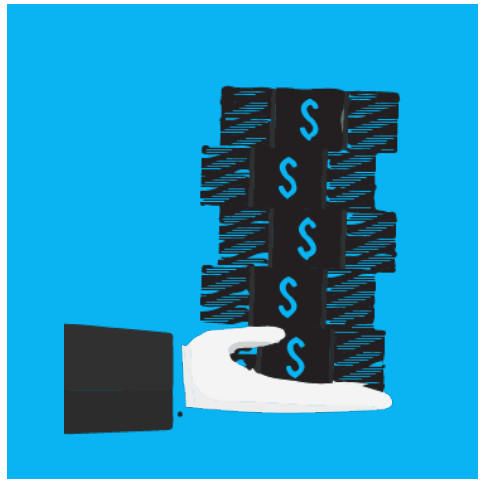
Keys to Creating a Quality Program

1. Integrate into the business plan

2. Consistent implementation and enforcement

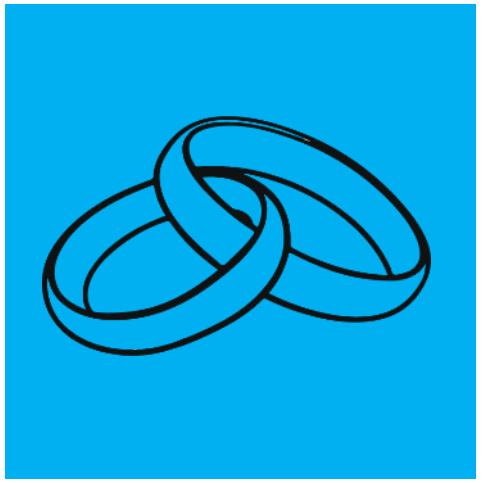
3. Invest in global company standards

Why do firms **avoid** investing in **quality**?



Cost

Time



Commitment

The Business of a Quality Program

Quality Programs can :

reduce errors/omissions and insurance premiums

encourage proper mentorship which aides in retention of staff

prevent litigation

Company standards are the foundation of an entire Quality Program

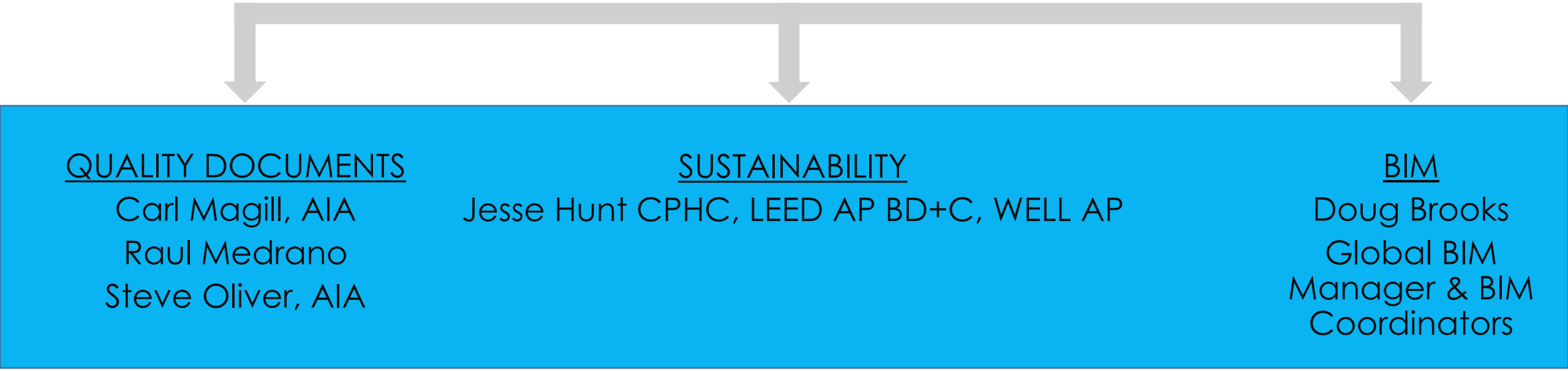
All firms should have a systematic way of doing things globally.

Company Standards

- Define design deliverables and aesthetics
- Use BIM drawing templates to control documentation standards
- Ensure drawing sheet numbers and scales are uniform
- Utilize standardized details where possible and logical
- Generate standards for CA processes

Anatomy of a Quality Program

DIRECTOR OF QUALITY AND SUSTAINABILITY
Jeanette Shaw AIA, RID, LEED AP



QUALITY DOCUMENTS
Carl Magill, AIA
Raul Medrano
Steve Oliver, AIA

SUSTAINABILITY
Jesse Hunt CPHC, LEED AP BD+C, WELL AP

BIM
Doug Brooks
Global BIM Manager & BIM Coordinators

Anatomy of a Quality Program

A **Quality Control Program** contains 3 basic components:

1. Proper staff training

2. Proper planning of documentation before work begins

3. Proper review of completed documents

Staff Training

Staff Training

Training new staff and young graduates is imperative to the success of any firm

Industry Standard

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

+

Company Standard

- Staff has knowledge of internal systems and procedures

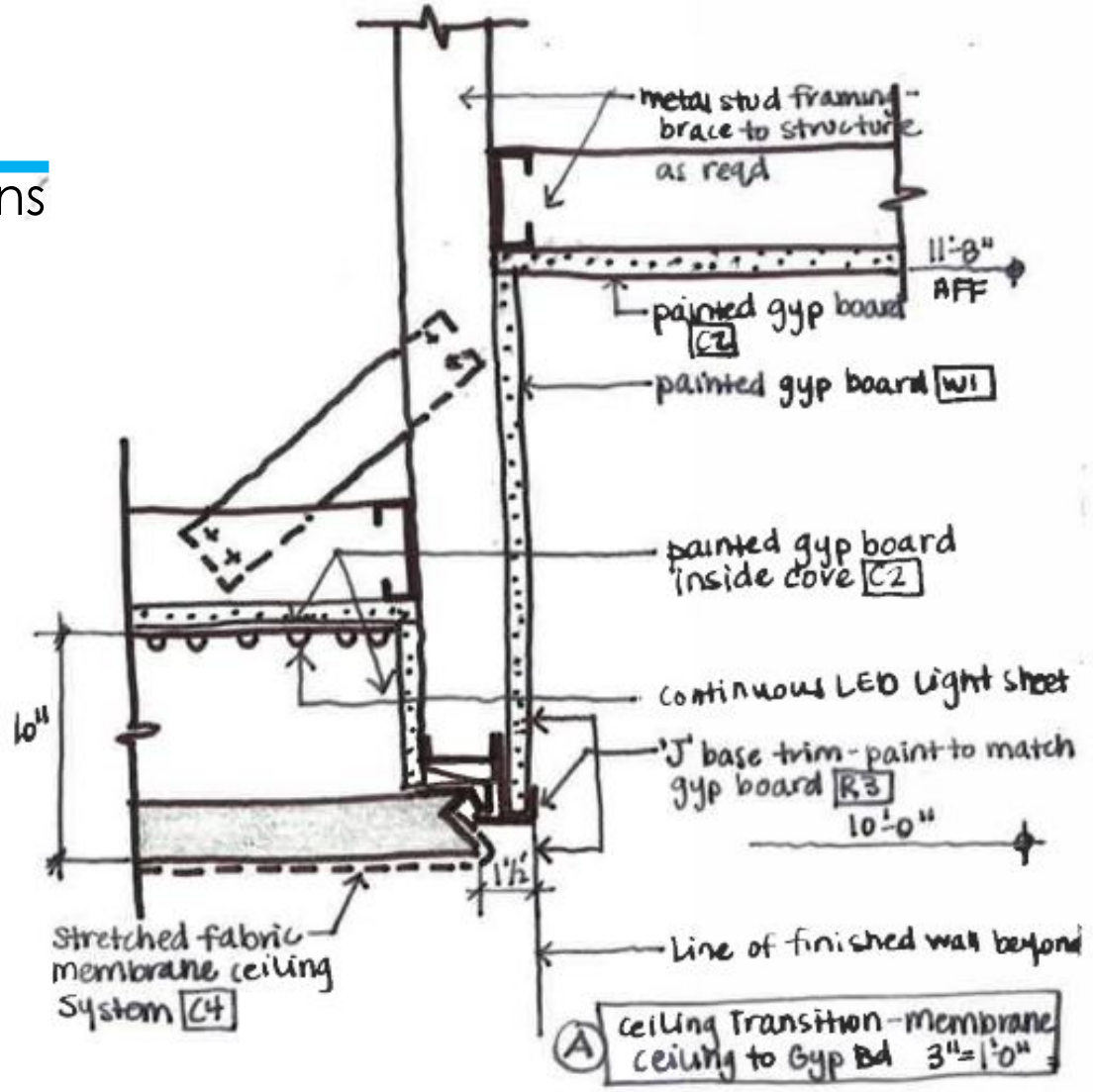
Staff Training

Formal Company Training Program

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	

Staff Training

Explain Details to Interns



Documentation Planning

Documentation Planning

Design

All team members must understand the design vision to ensure it is properly implemented

Industry Standard

- Identify critical design elements
- Identify any design components that may not be fully developed yet

+

Company Standard

- Conduct in-house project hand-off meetings once the design is heading into documentation

Documentation Planning

Design

Identify Critical Design Elements

Documentation Planning

Cartooning

A cartoon set is critical to planning the layout of the documents

Industry Standard

- Indicate a focused effort on drawing what is most difficult and complex first
- Determine steps for documenting the critical design elements which were defined
- Create critical break-down of the documentation requirements as they relate to the schedule

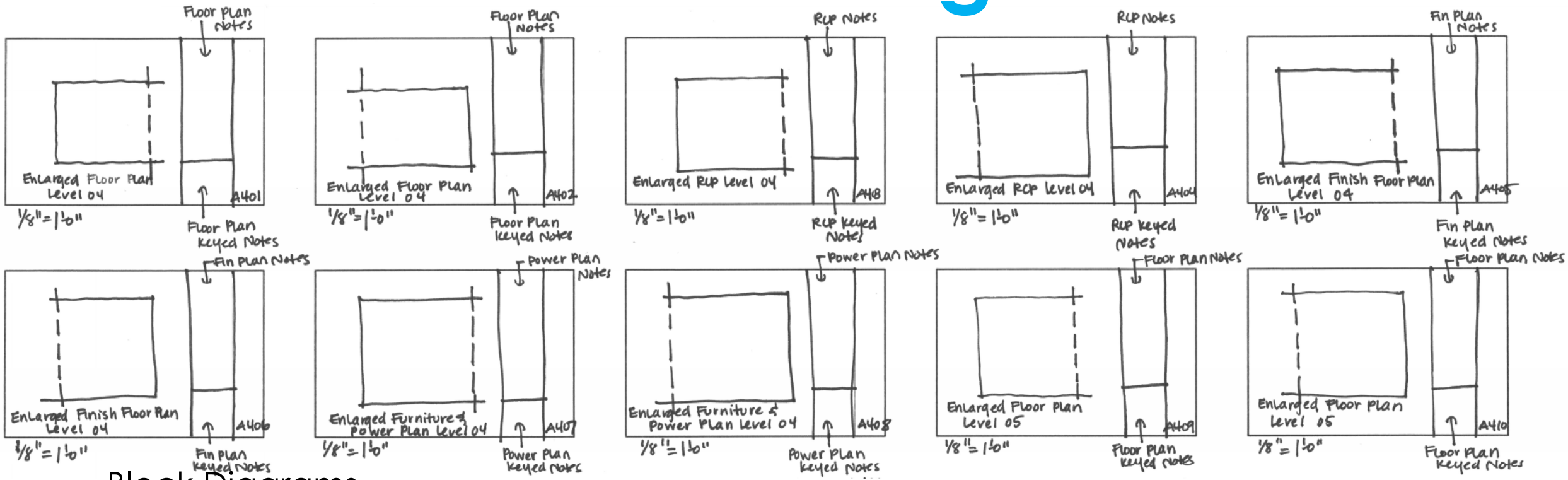
+

Company Standard

- Start the process with block diagrams showing sheet numbers, sheet names, and scales

Documentation Planning

Cartooning



Block Diagrams

Documentation Planning

Process

Planning what to draw is an iterative process that occurs continually

Industry Standard

- As sheets are created using the block diagrams, additional reviews will address the new items that will need to be explored
- All drawings should be sheeted prior to major pushes on annotation

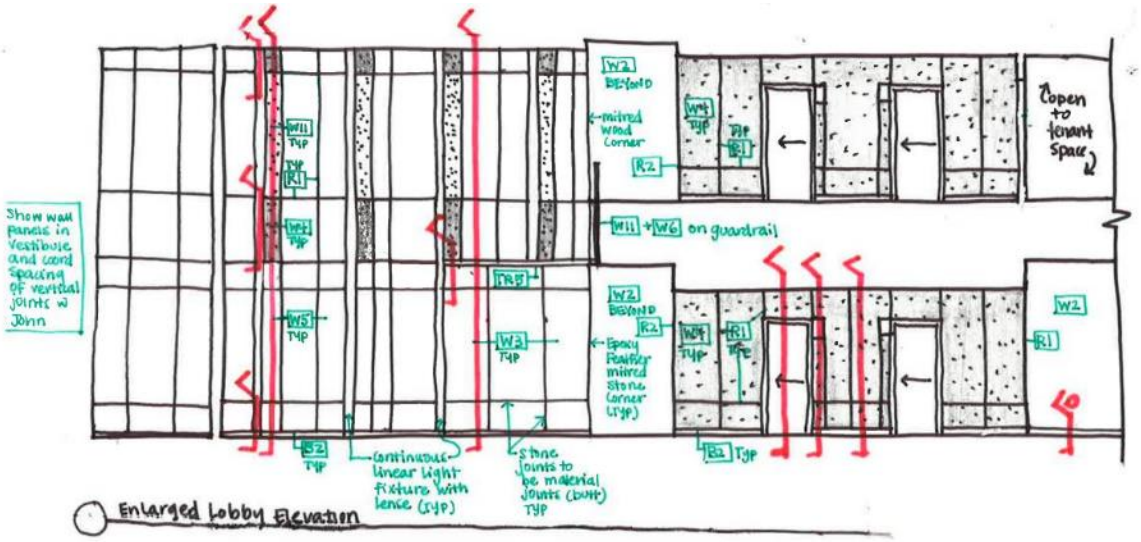
+

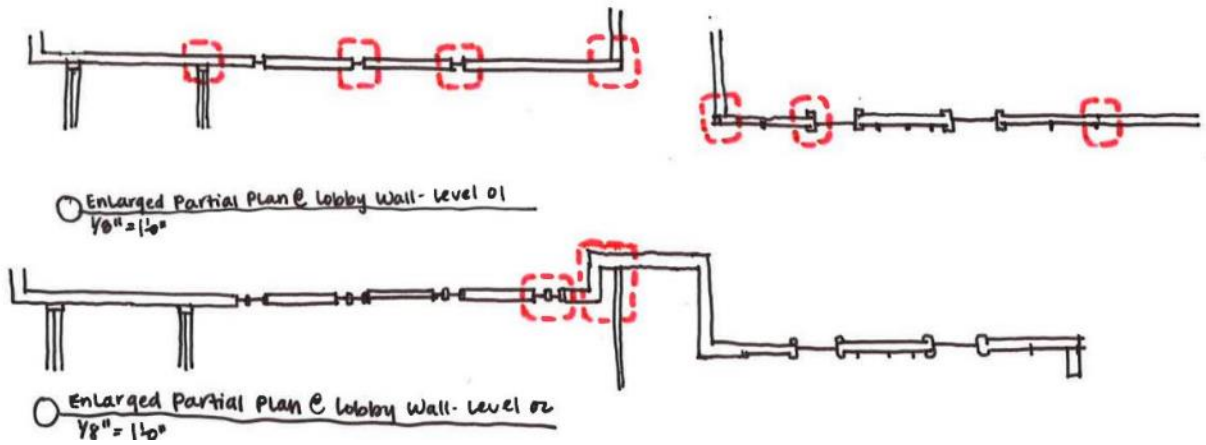
Company Standard

- Enlarged details will be more easily identified as drawings get sheeted

Documentation Planning

Process

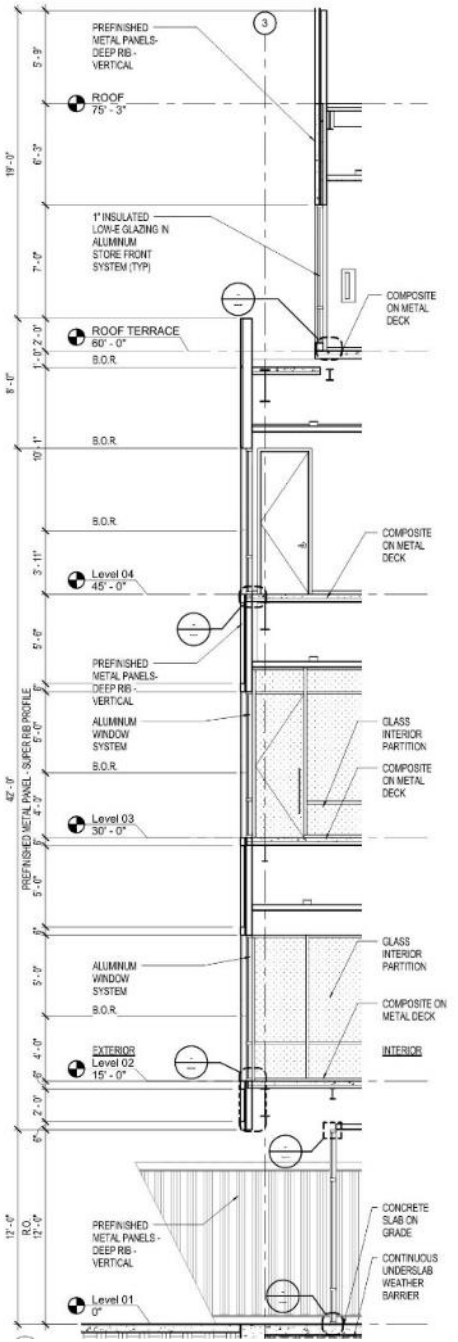


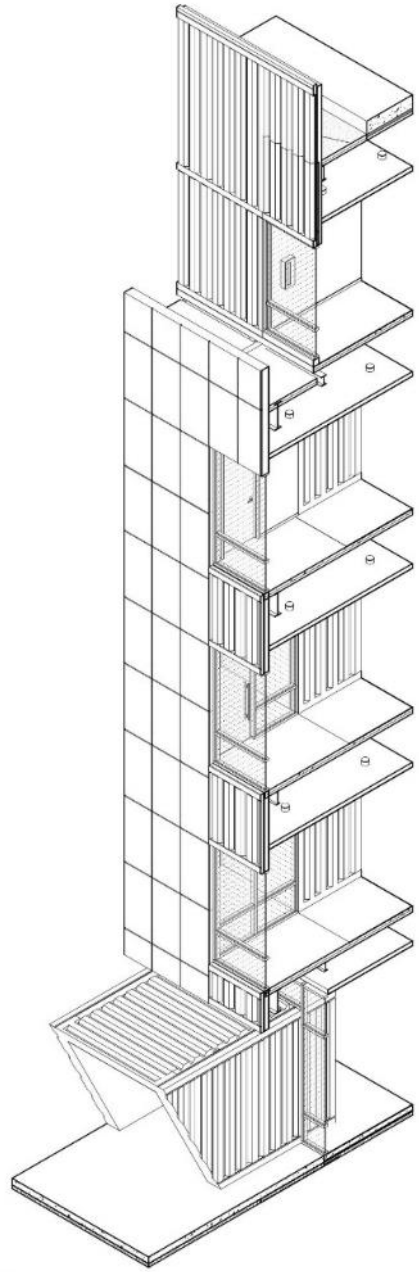


Identify Enlarged Elements

Documentation Planning

Process





Detail Difficult Items First

Drawing Reviews

Drawing Reviews

Process

Drawing reviews start at Design Development

Industry Standard

- Always review code items early on – this should be done by a neutral set of eyes to ensure nothing is missed
- Drawing progress should be reviewed daily
- Always keep a live set of drawings

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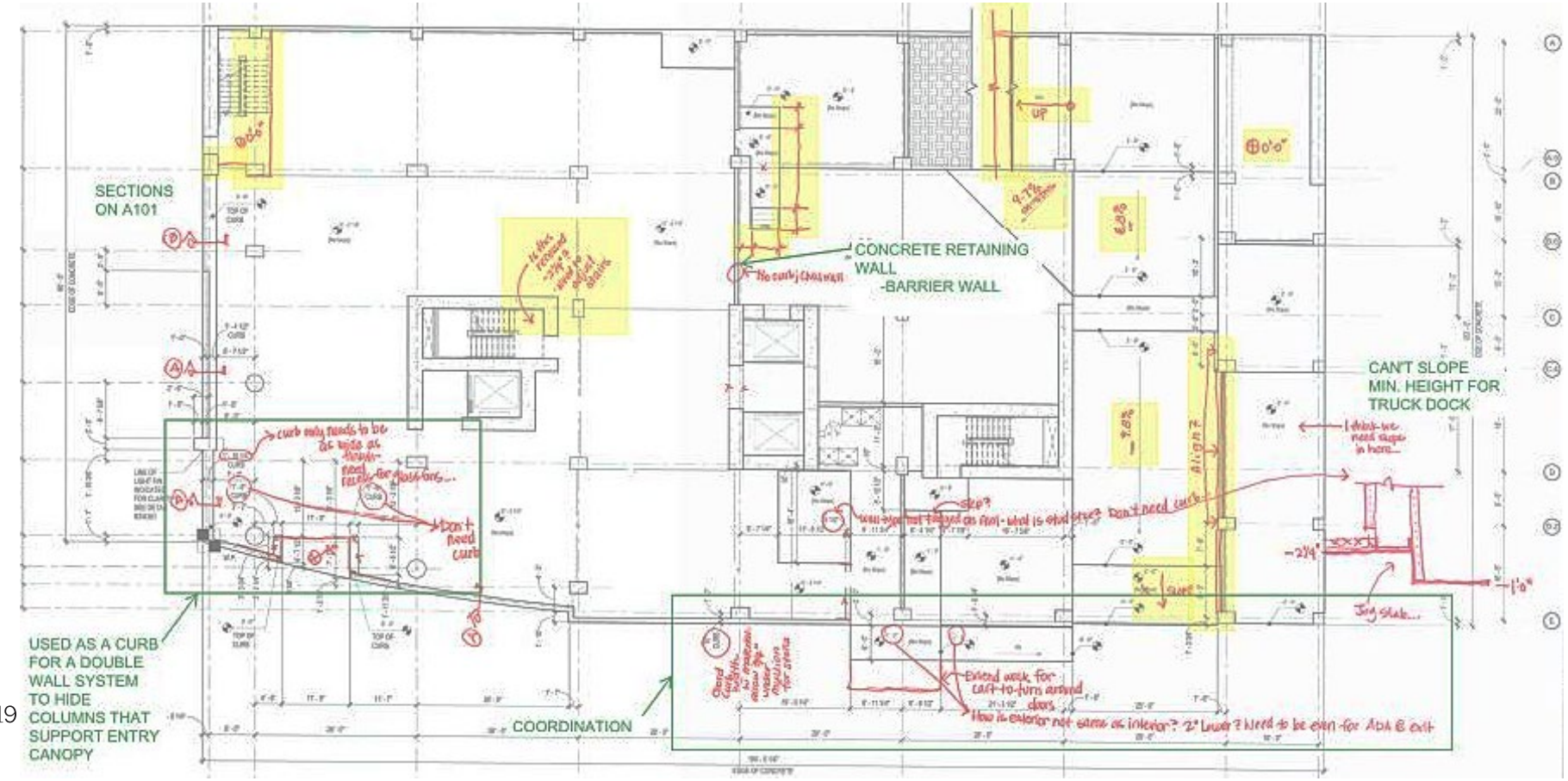
Company Standard

- Firms should have a system for daily drawing reviews

Drawing Reviews

Process

Create a System for Daily Drawing Reviews



Drawing Reviews

Completed CD's

Drawing reviews at the end of documentation are critical to coordination confirmation

Industry Standard

- Code requirements are addressed properly to eliminate inspection failures in the field
- Coordination items should be reviewed
- Mistakes in detailing must be identified
- Proper time must be scheduled to allow drawing corrections prior to bidding and/or construction

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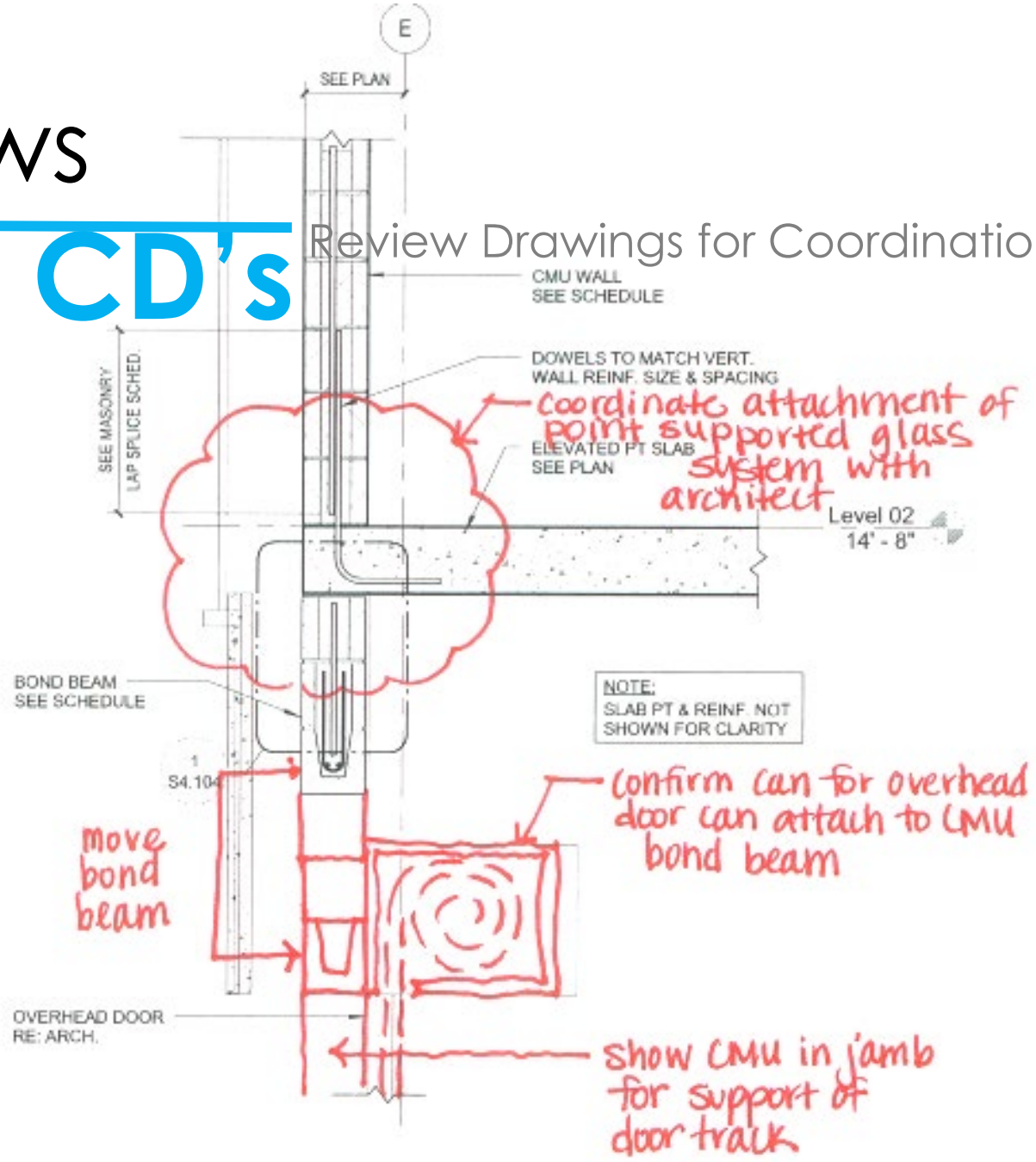
Company Standard

- Review EVERY set of drawings produced by the office

Drawing Reviews

Completed CD's

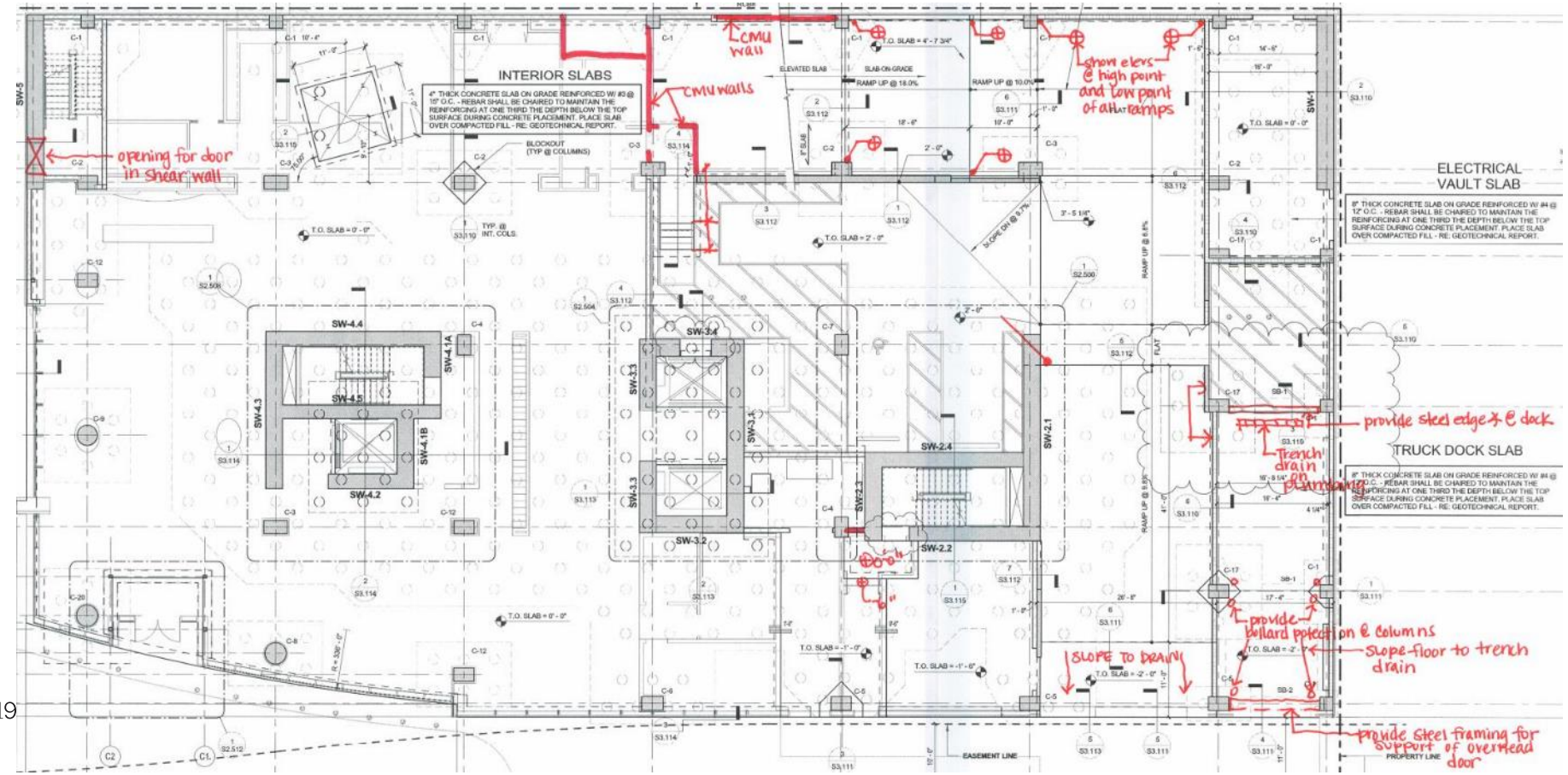
Review Drawings for Coordination



Drawing Reviews

Completed CD's

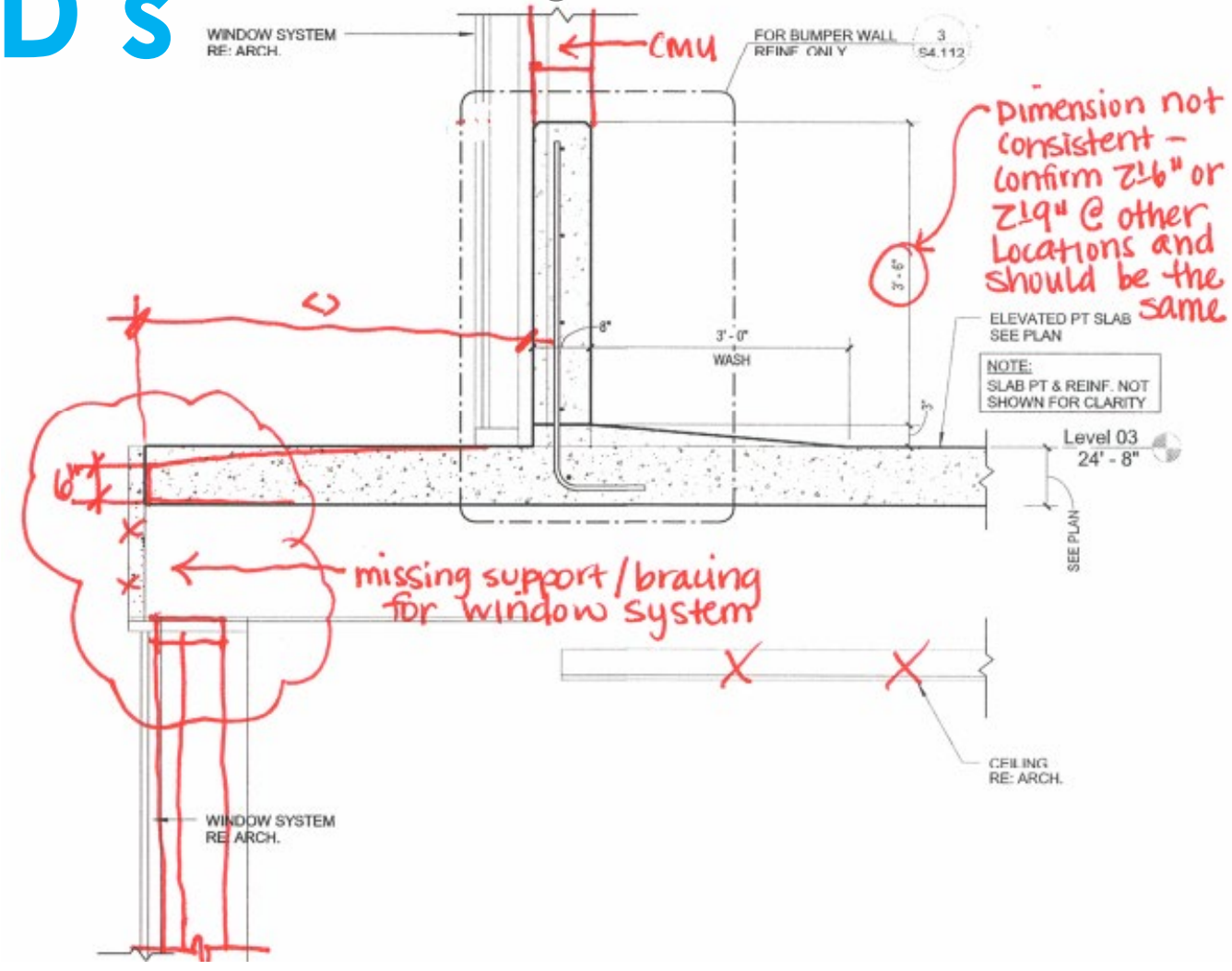
Review Drawings for Coordination



Drawing Reviews

Completed CD's

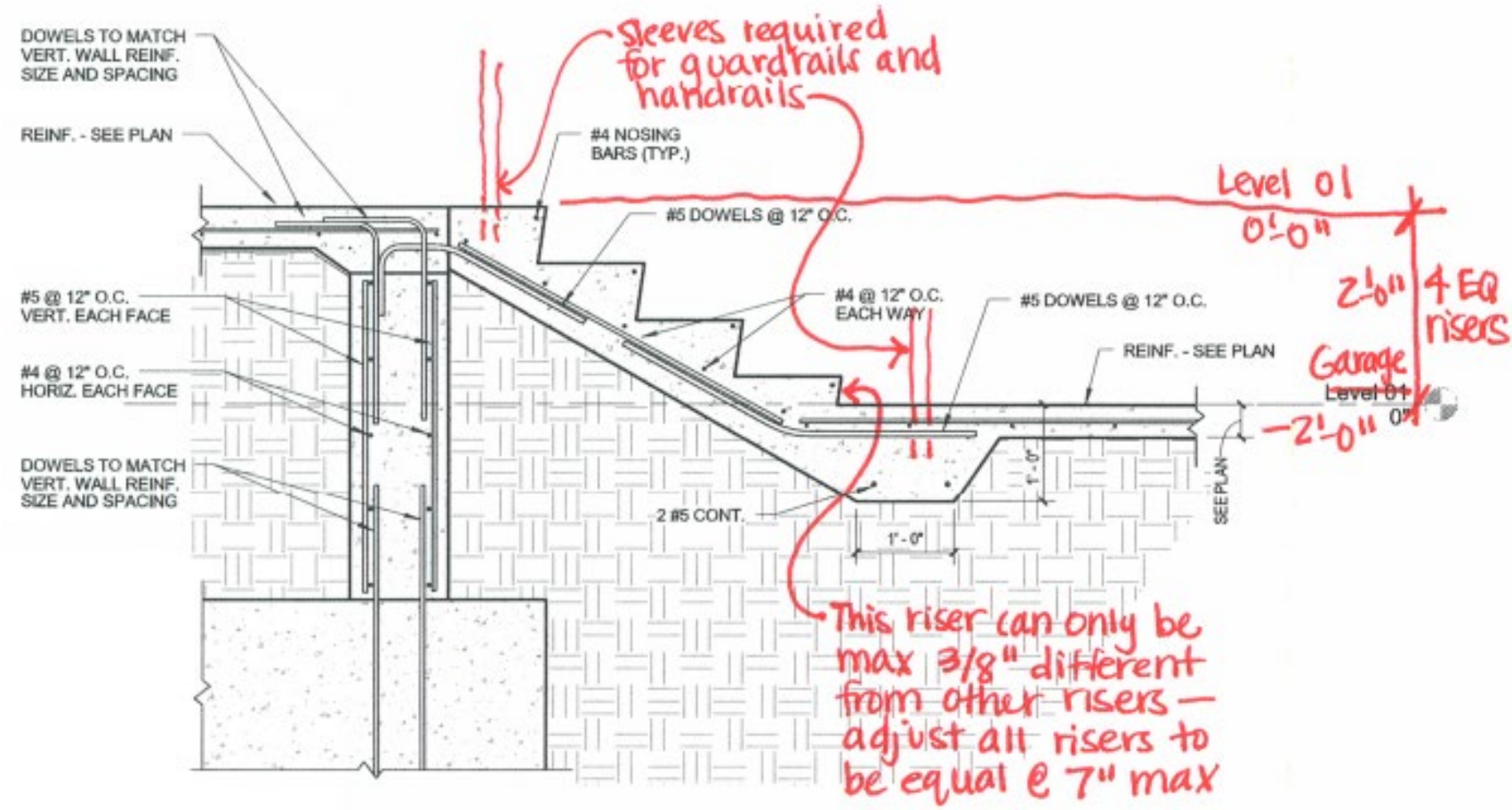
Review Drawings for Coordination



Drawing Reviews

Completed CD's

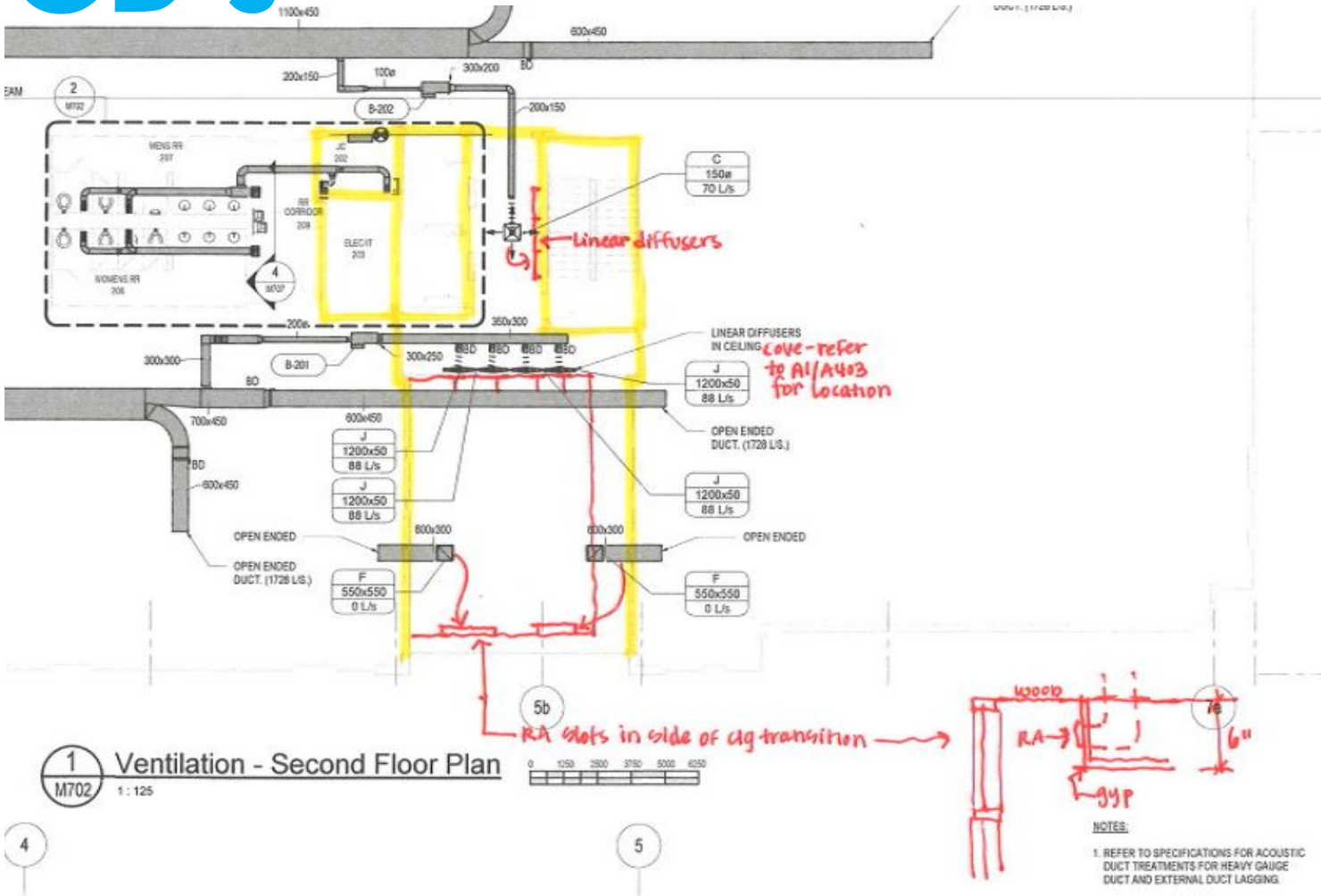
Review Drawings for Coordination



Drawing Reviews

Completed CD's

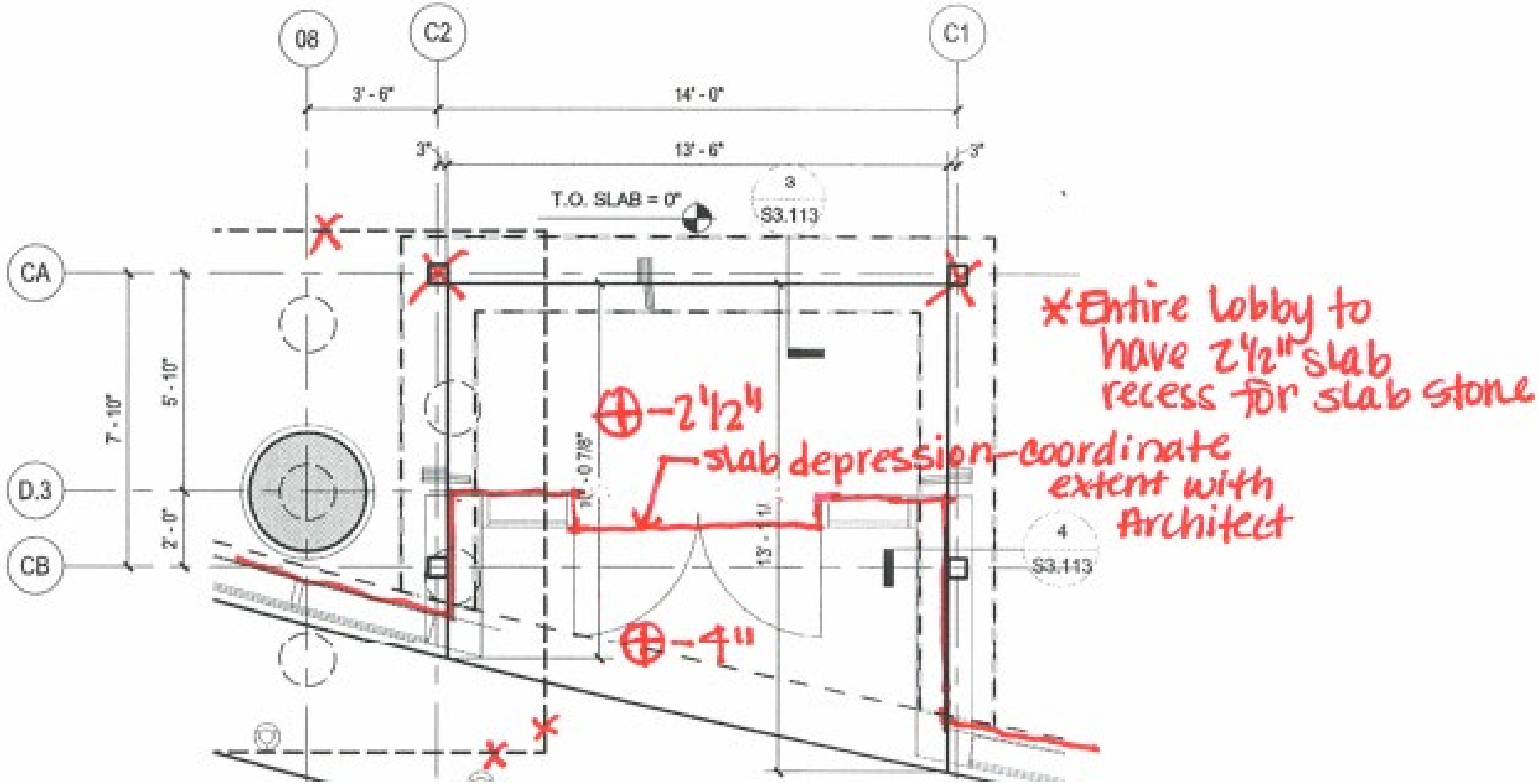
Review Drawings for Design



Drawing Reviews

Completed CD's

Review Drawings for Design

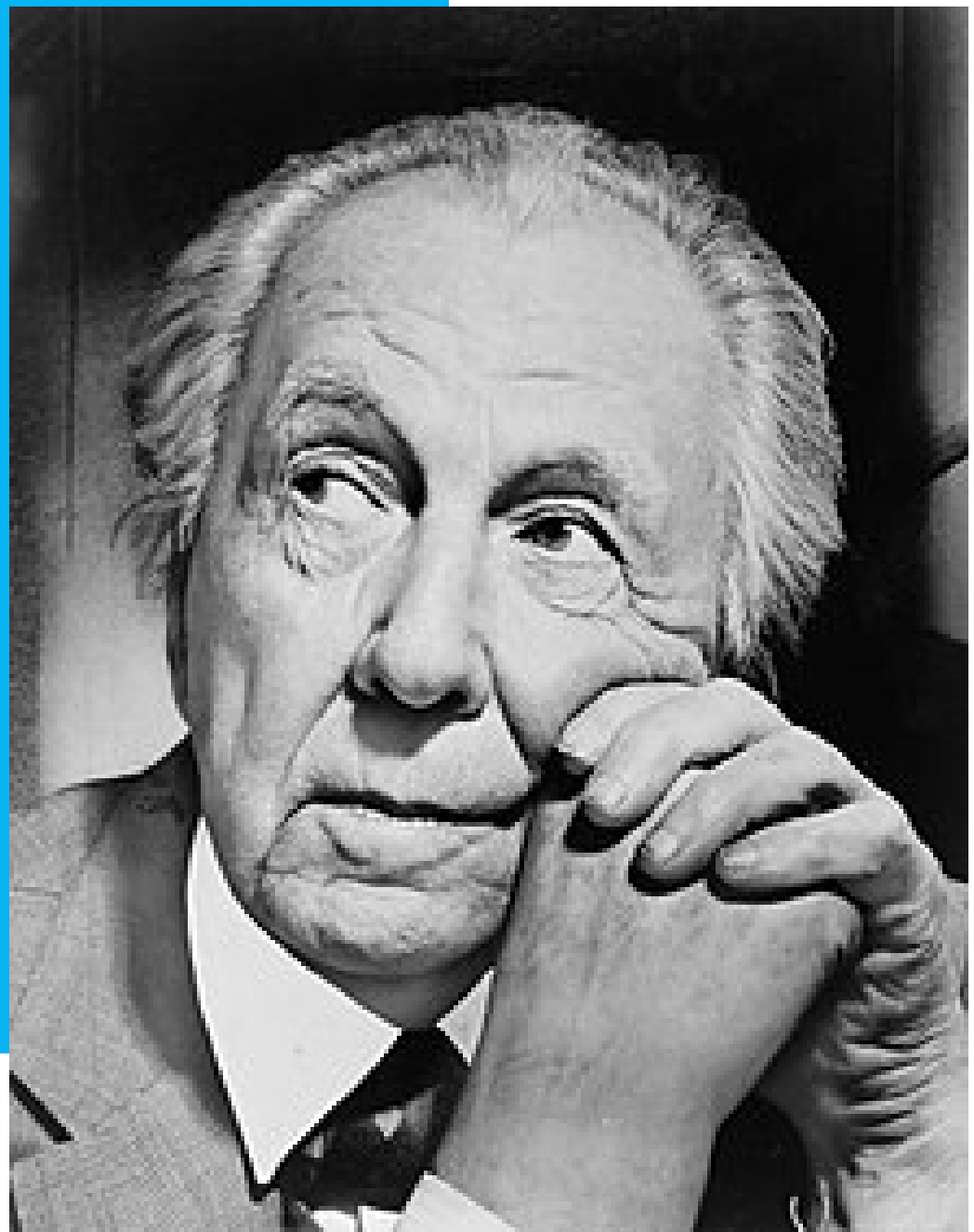


Keys to a Quality Program's Success

1. Consistency – program must be the way you do business always

2. Enforcement – you cannot let any project, team, or staff member be an exception to the program rules

3. Education – the program goals and standards must be shared with every employee



A'19 AIA Conference on Architecture 2019
June 6–8, Las Vegas

Questions ?

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Thank you!