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Company



# Agenda

1) Review Contract/Construction Documents

2) Communication of Documents

3) Coordination

3) Delivery Methods

4) Top Ten List



# Many Documents & Terms

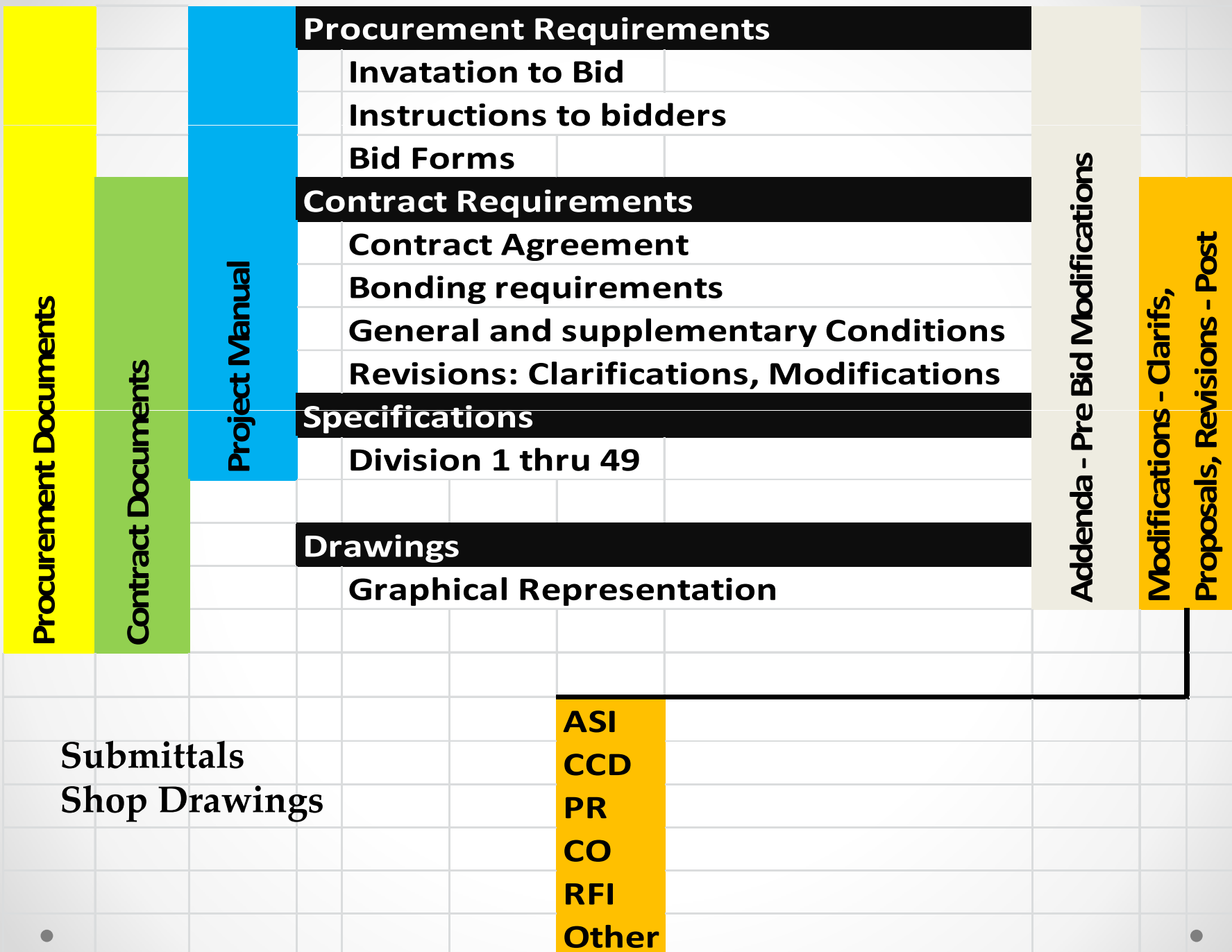
- Procurement Requirements
  - Invitation to bid
  - Instructions to Bidders
  - Forms and Supplements
- Contract Requirements
  - Contract Agreement, Contract Forms
  - Bonds
  - General and Supplementary Conditions of the Contract
  - Revisions: Clarifications, Modifications
- Project Manual

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# More Documents and Terms

- Specifications
  - Division 1 thru 49
- Drawings
  - Graphical Representation
- Modifications to the Contract
  - Addenda = Pre-Bid Modification
  - ASI = Architectural Supplemental Instructions
  - CCD = Construction Change Directive
  - PR = Proposal Request
  - CO = Change Order
  - RFI = Request for Information
- Other



# So what is really part of the contract?

- Technically, Everything becomes part of the contract.
- Any form of written documentation can become part of the contract.

# Construction Documents are not Trade Specific

- There is only one "Contractor", the General Contractor. It is the General Contractor's choice to subcontract for multiple scopes of work.
- The Contract Documents do not assign work.

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# Why it is Important to Understand all this?

- 1) Knowing the terminology and relationships is important.
- 2) Know what end result needs to be, Goal
- 2) Manage Risk
- 3) Manage Cost
- 4) Improve Efficiency

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# Contract Documents vs Construction Documents

- Sometimes used interchangeably
- More times than not, Construction Documents is intended to refer to the Drawings and Specifications

# Construction Documents = Drawings & Specs

The written and graphic documents for communicating the project design for construction and administering the construction contract



# Construction Documents

Successful Construction  
Relies on

Communication of Project Design



# Construction Documents

Effective Communication of  
Project Design

Depends on  
Complete & Coordinated  
Construction Documents



What happens when  
Construction Documents  
do not Communicate the  
Design Well?



# RFI

## Request for Information

- Everyone's Favorite Part of Construction
- Contractors love to write them
- Engineers Can't wait to answer them

# RFI's are caused by

- 1) Less skilled contractor, needs more information
- 2) Poor document quality
- 3) Spatial Coordination issues
  - Difficult layouts
  - Not enough coordination up front
  - Not skilled enough contractor to resolve

# More Specific RFI Causes

- Intent is not clear
- Contractor not skilled enough to interpret intent
- When there is a conflict between written information in the documents
- When there is an error in the documents
- When there is a coordination conflict

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# How do RFI's Effect the delivery of a project?

- Costs everyone Time and Money
- Can breed adversarial relationships between engineer and contractor
- Create more opportunity for mistakes
- Create more opportunity for claims
- There is nothing positive about RFI's

# RFI's how to reduce

- 1) Contractor's : become more competent and skilled and reading and understanding ALL documents.
- 2) Engineers: Improve quality of documents, be more clear of intent and eliminate inconsistencies.
- 3) Reduce Spatial Coordination issues

# Coordination



# Yesterday

- Pencil
- Mylar
- Blueprints

Quality over Speed

# Today

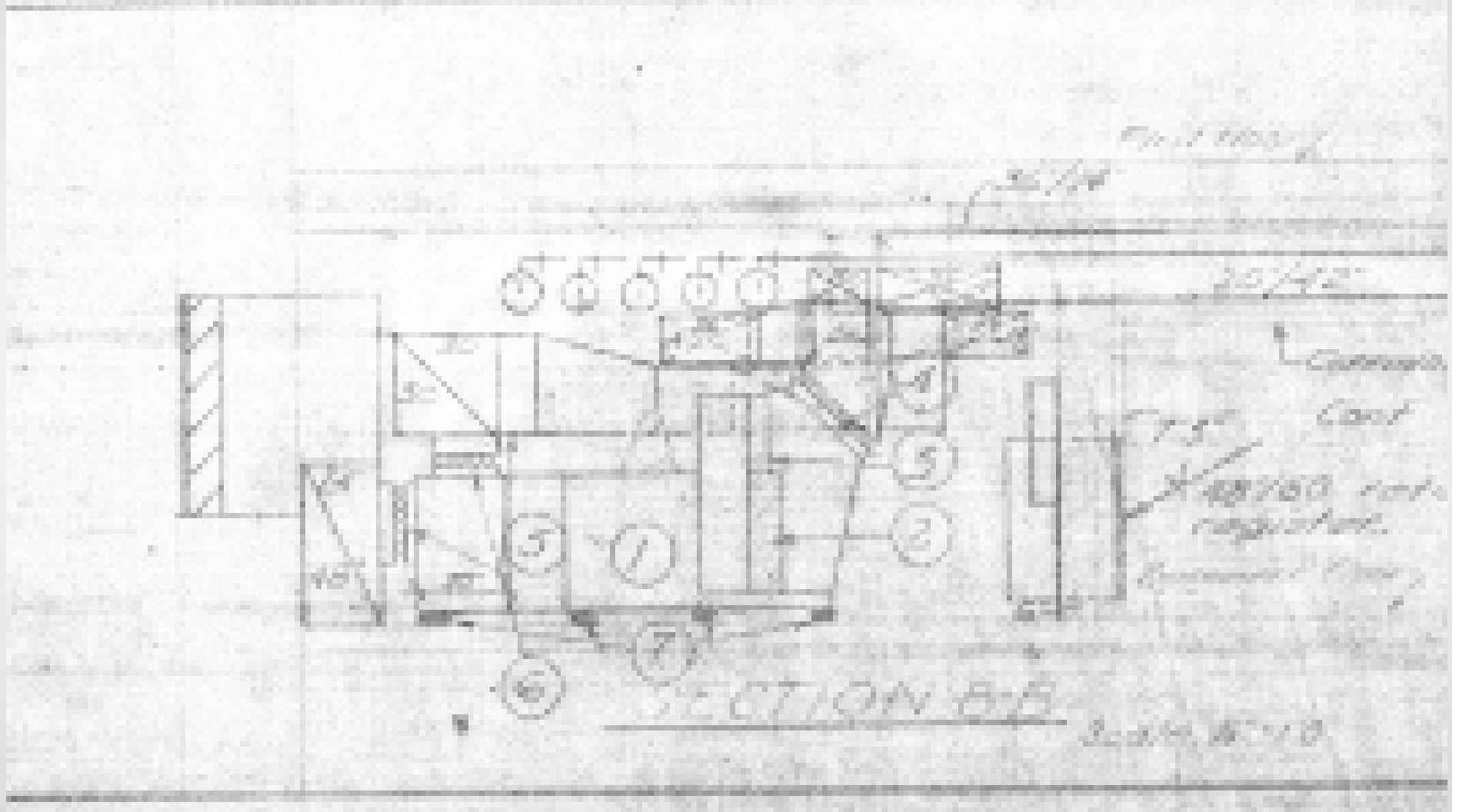
- CAD
- 3D
- BIM
- Electronic Documents
- FTP Sites

Speed over Quality

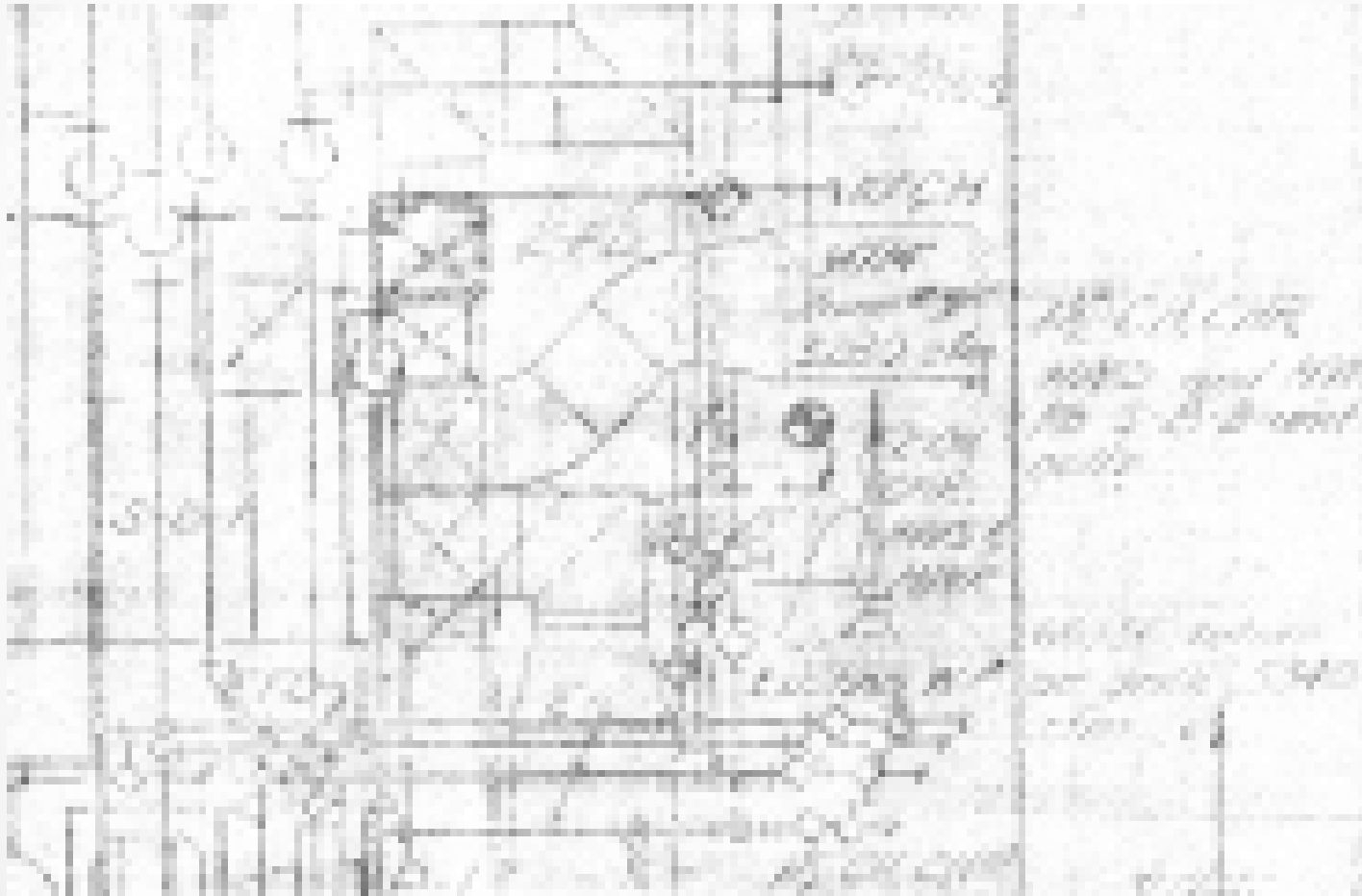
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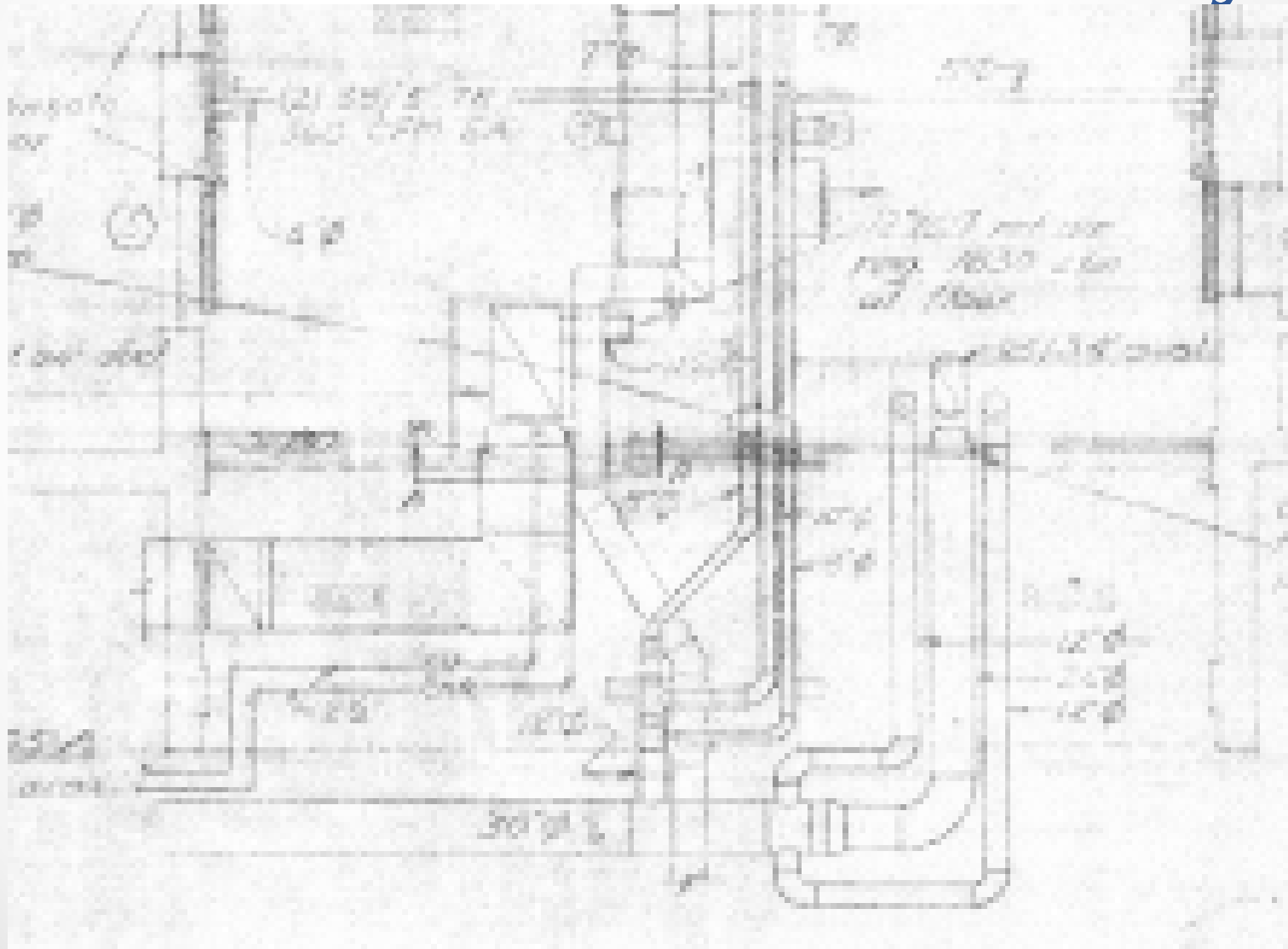
# Coordination - Yesterday



# Coordination - Yesterday

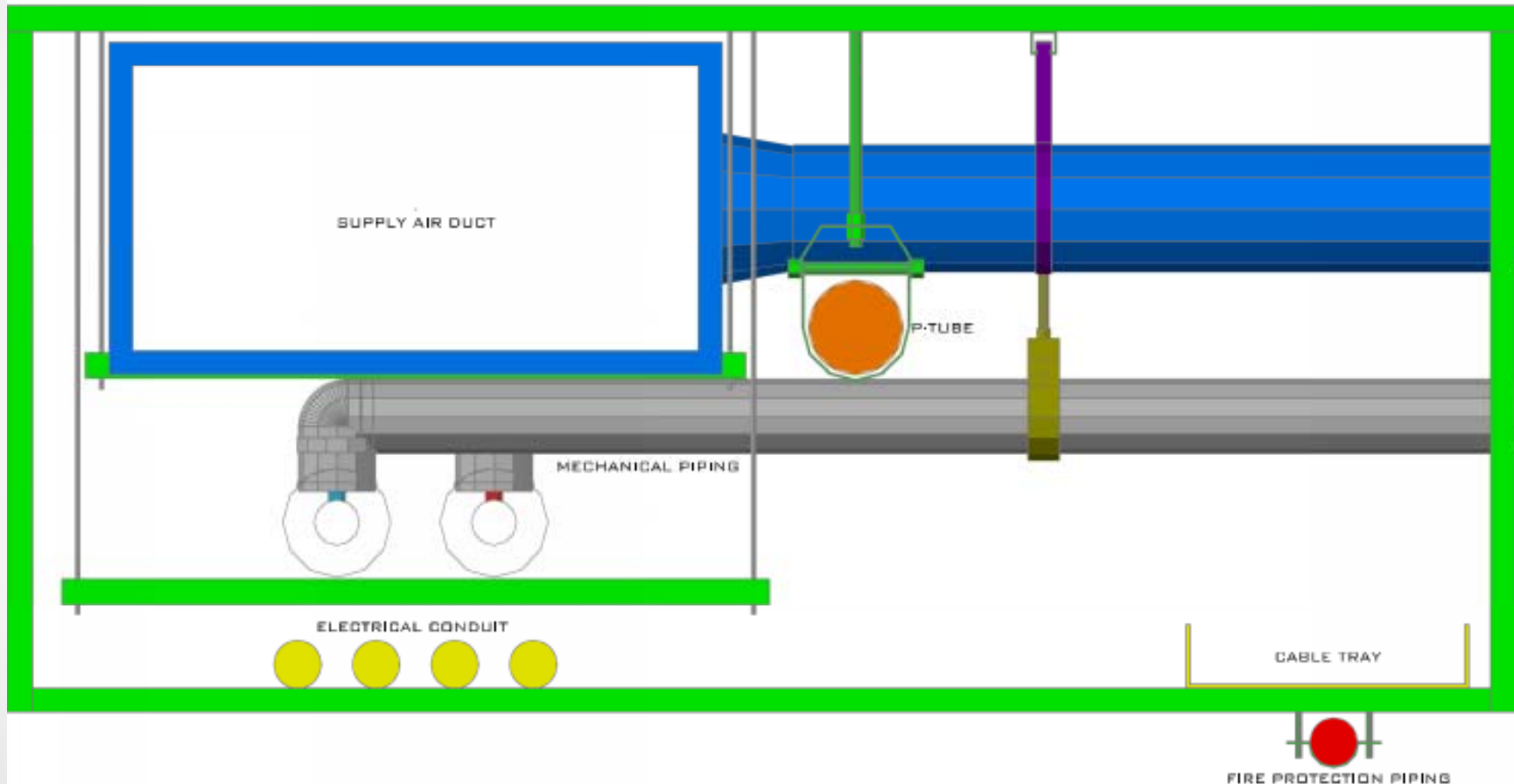


# Coordination - Yesterday

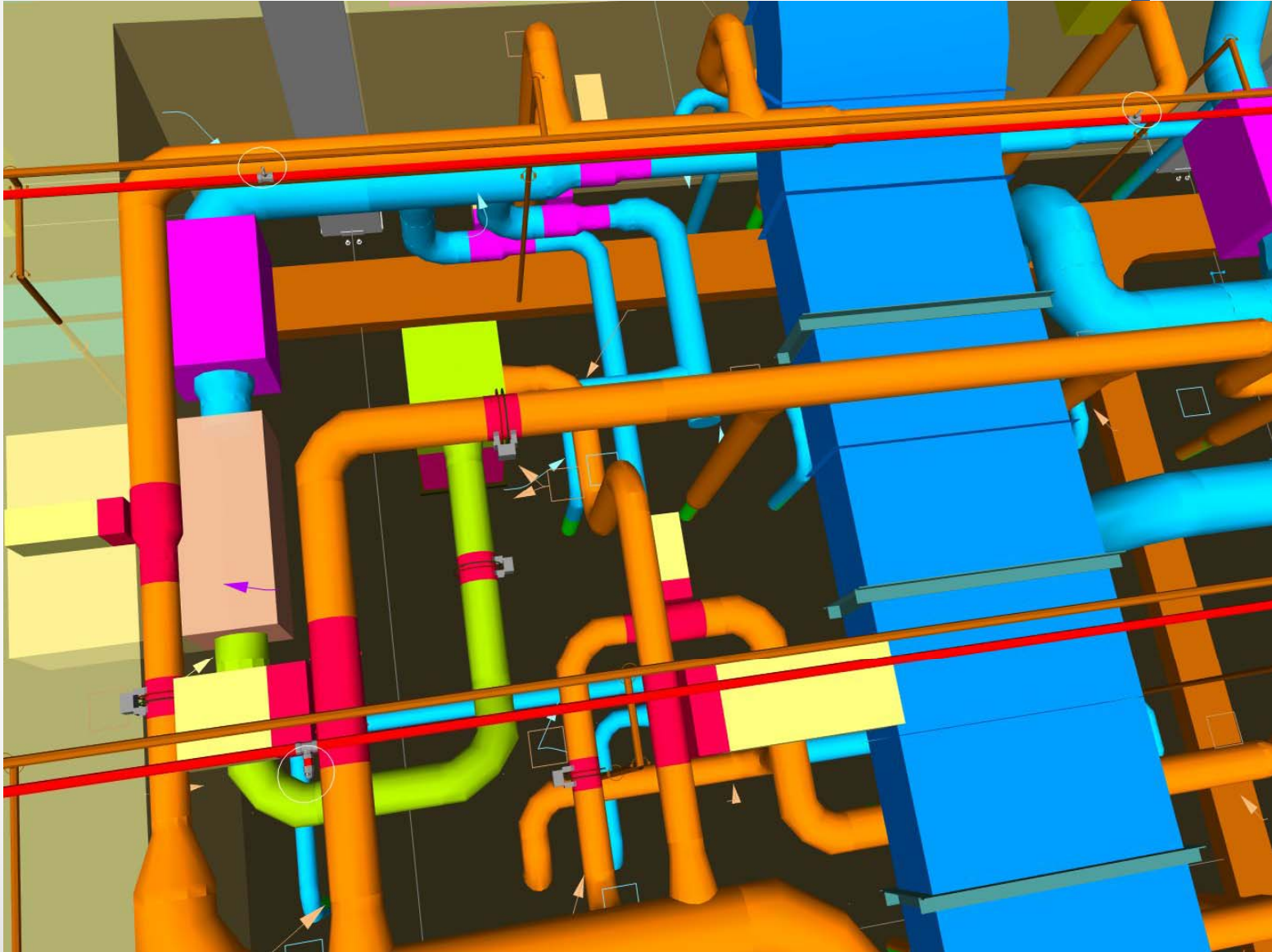




# Coordination - Today



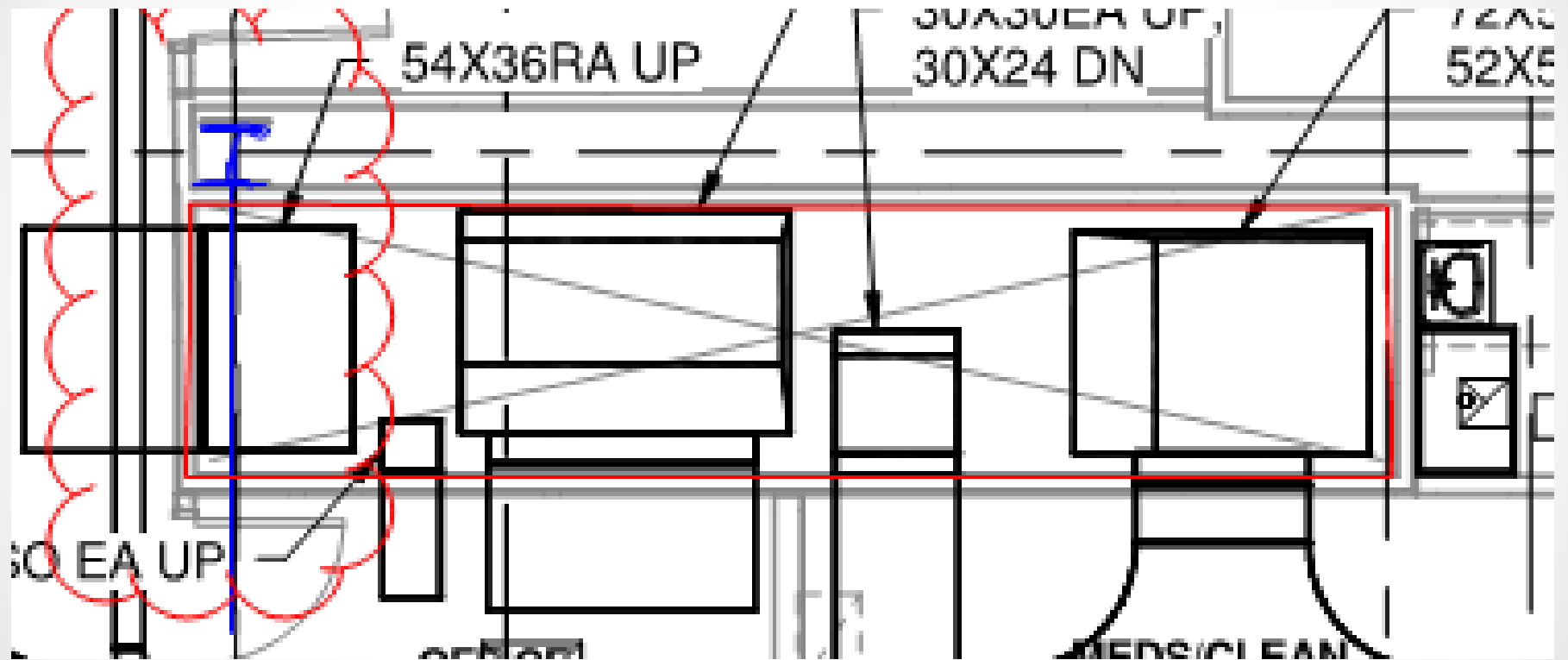
# Coordination - Today



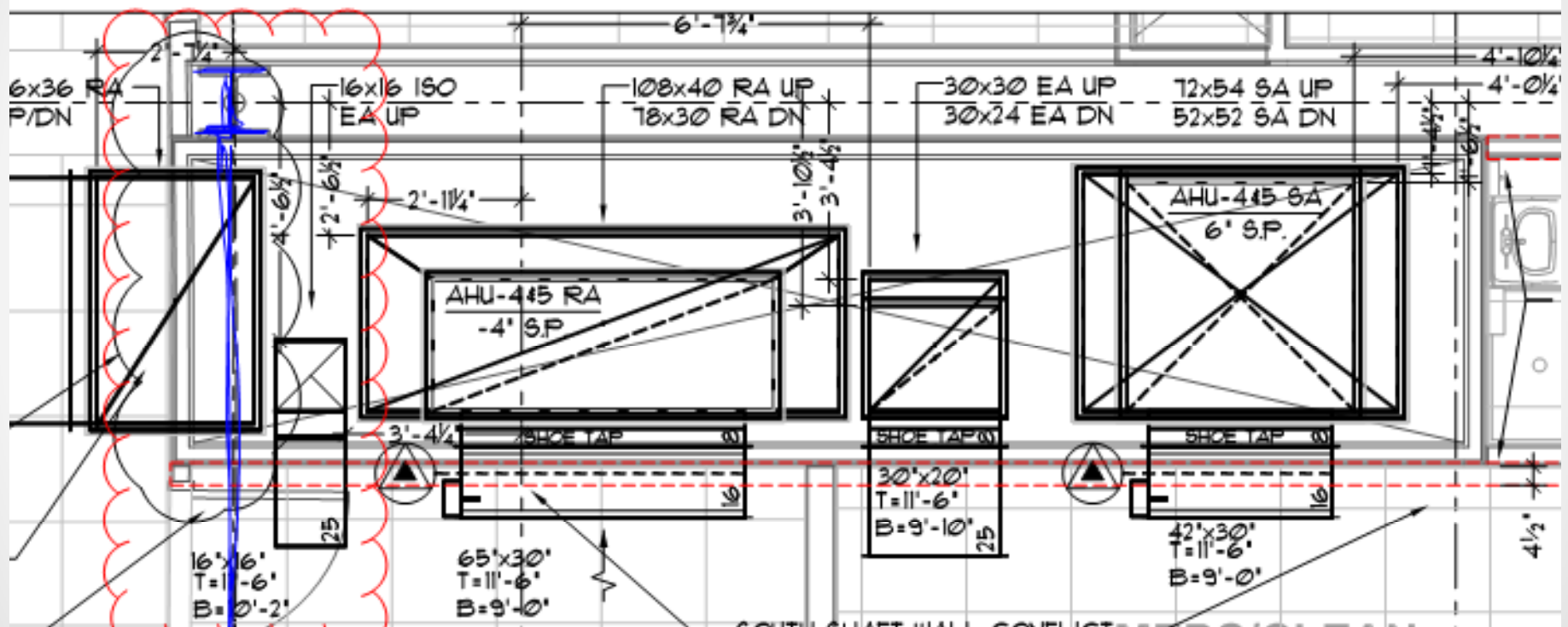
# Fly Thru



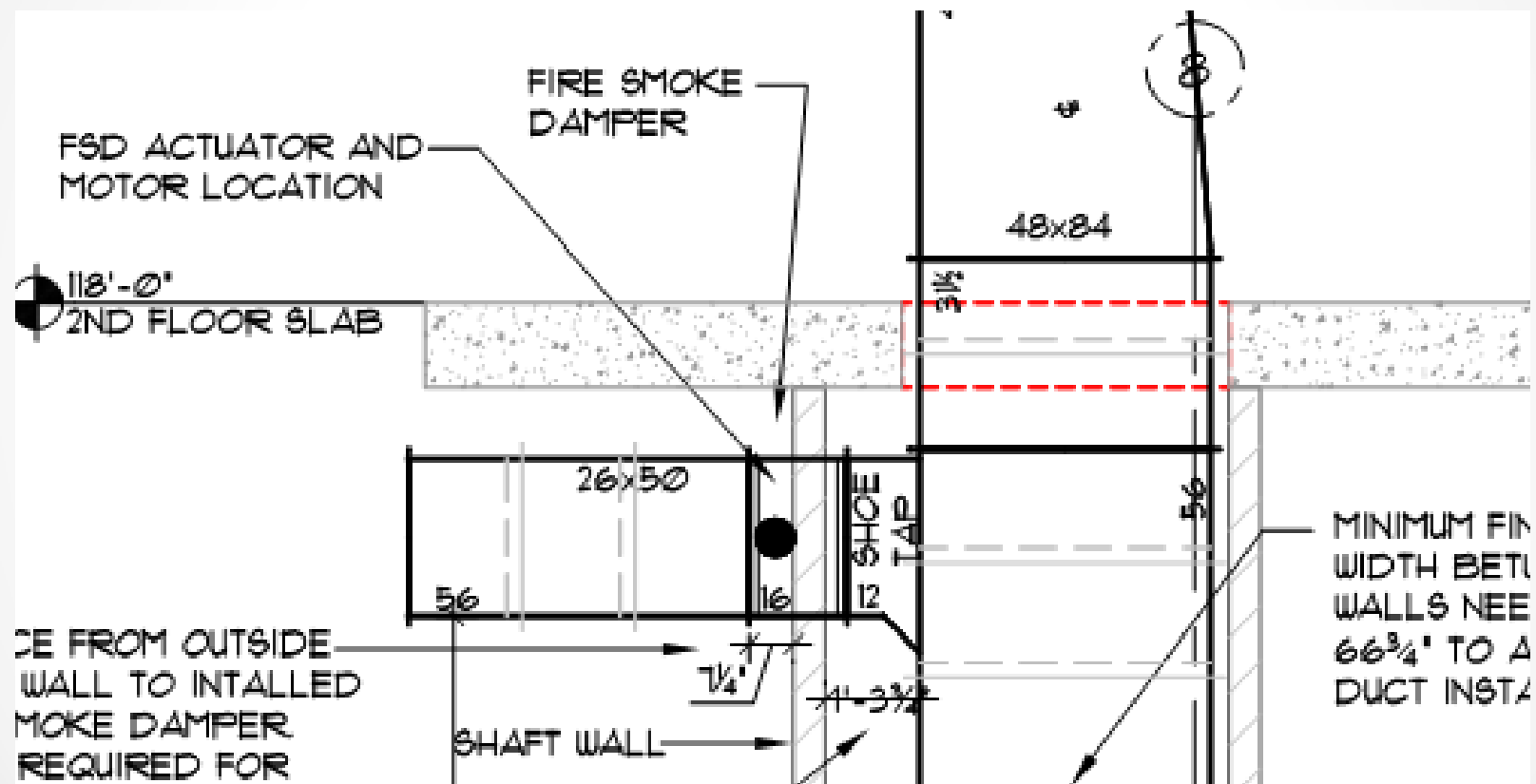
# Shaft as Designed



# Shaft during Coordination



# Details of Construction are Important



# Contractors must Coordinate

- Building structures are tight. Engineers do their best to fit in everything. Contractors have to utilize the available space to coordinate. It is not the Engineers job to work out every detail.
- Fire Protection Contractors, the days of just getting an elevation or plane to route piping in are gone.

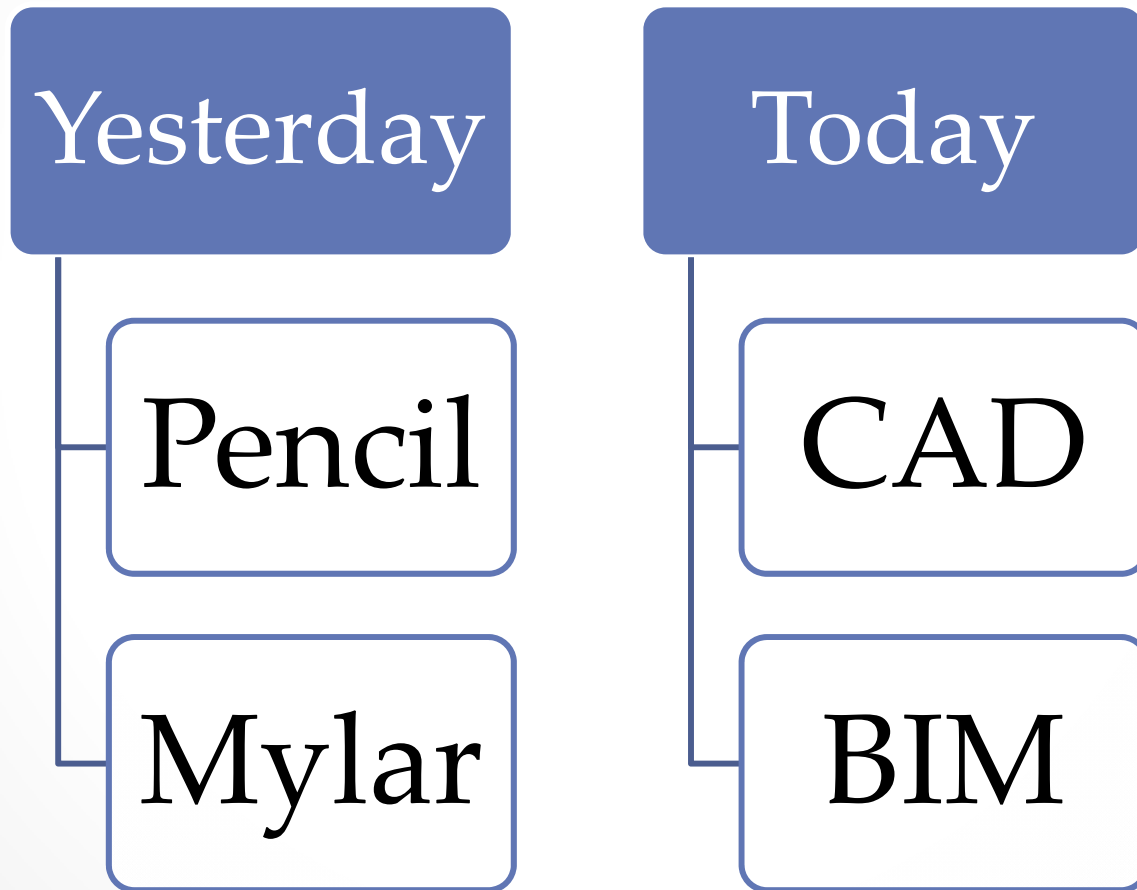


# So who is responsible for Coordination?

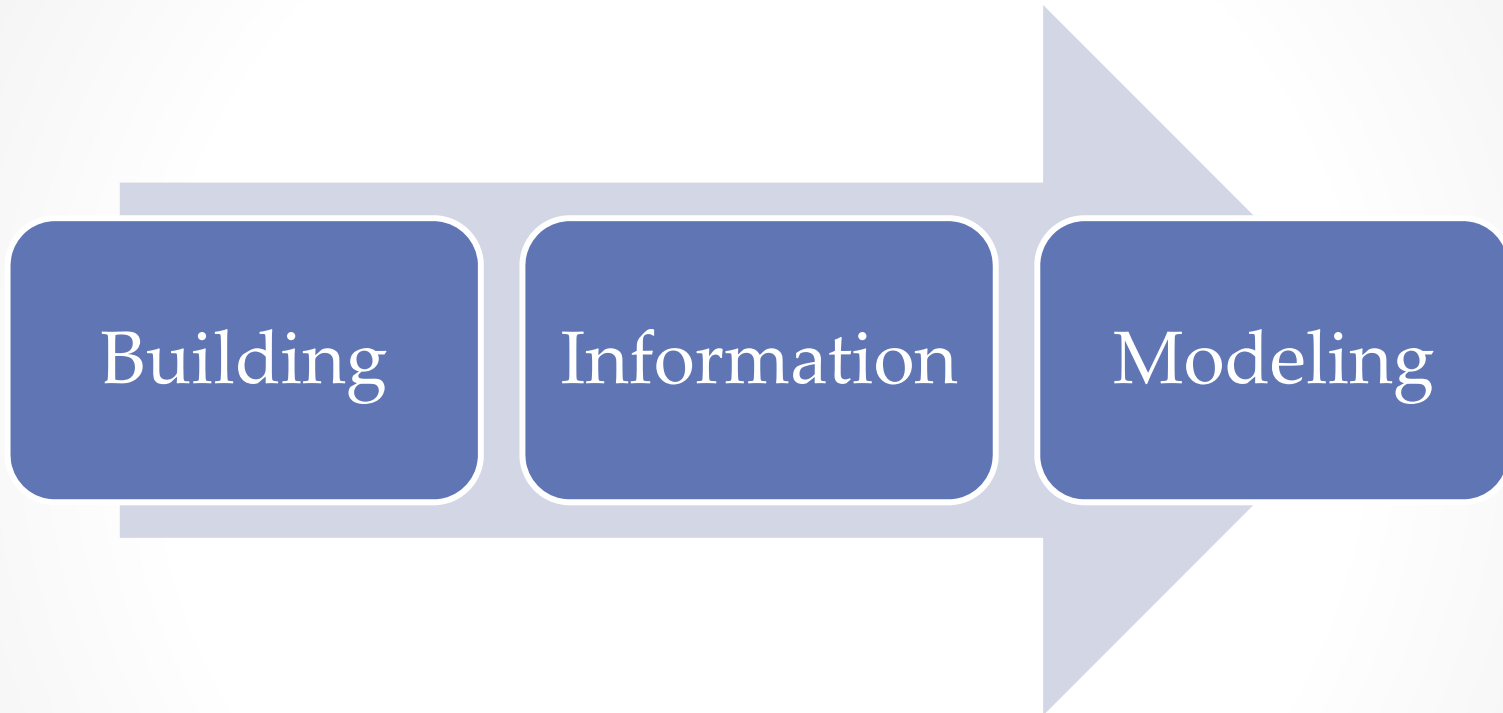
- Engineer
- Contractor
- Both



# Has this responsibility Changed over Time?



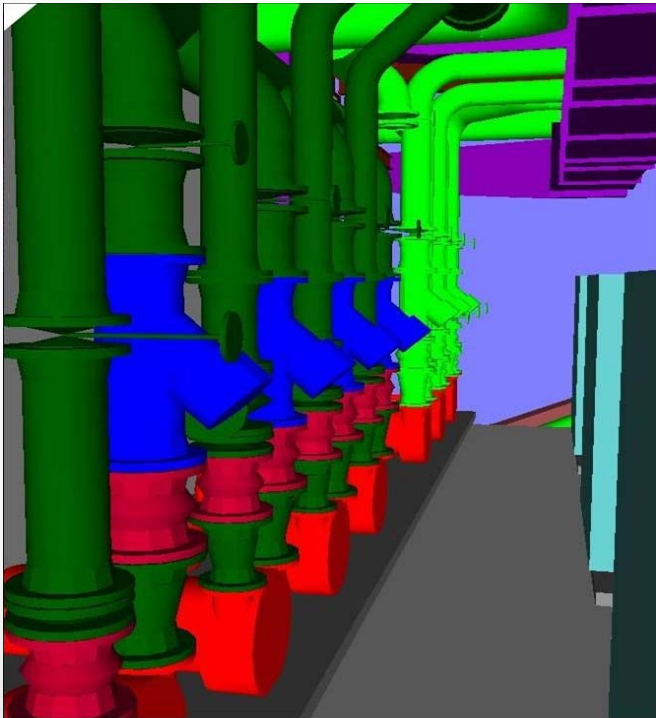
# BIM



Technology is rapidly changing the future of construction documents

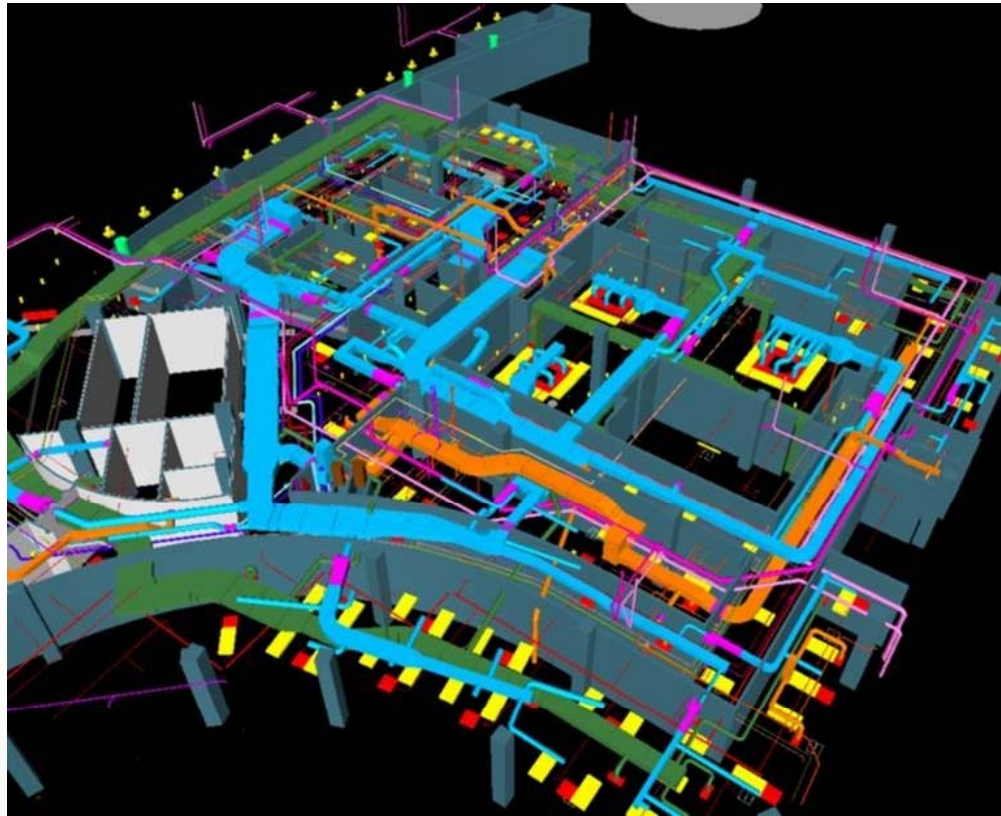
# BIM to Fabrication

- The future is BIM and the utilization of the electronic model to design, coordinate, and fabricate, one time.

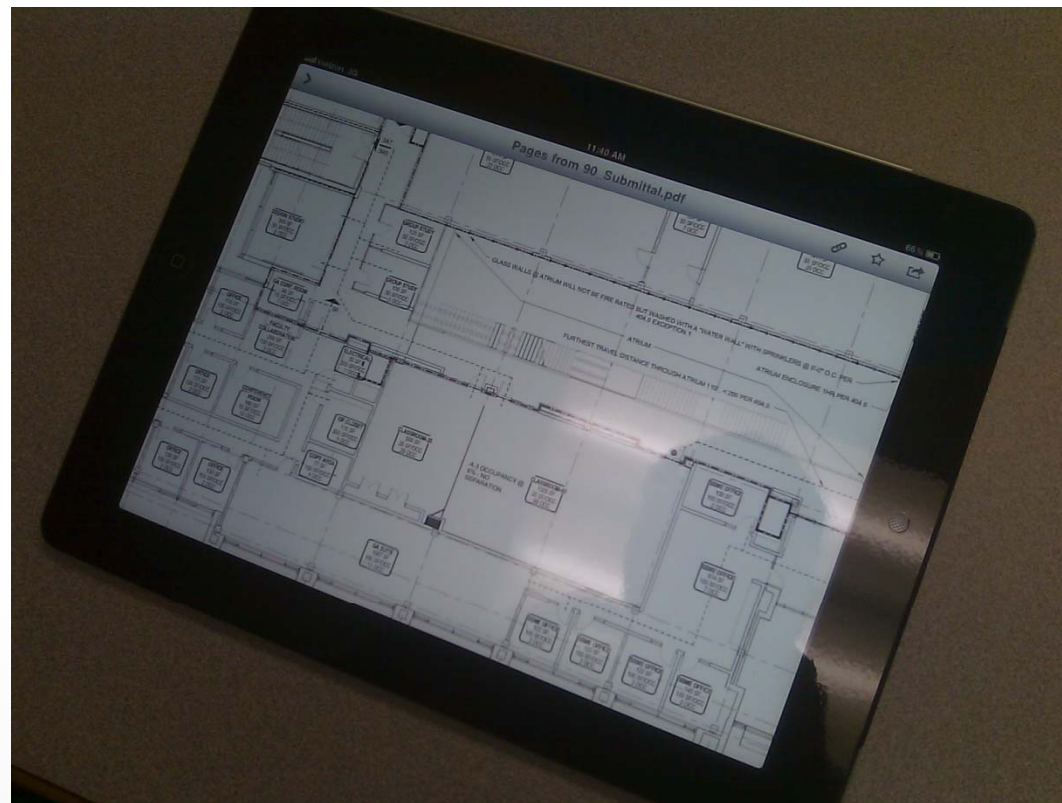


# BIM to Facility Management

- BIM is a tool with capabilities beyond coordination and construction.



# Mobile Technology



Are Construction Documents the same for all Contract Types?



# Delivery Methods

Design – Bid –  
Build

Design Assist

Design Build

Integrated  
Project Delivery

# Top Ten List to Improve Construction Documents & Construction

- 10) Contractors and Vendors, Read and understand the specifications.
- 9) Engineers, Know your own specification.
- 8) Edit the specification and standard details to fit the needs of the project specifics. More is not better here.
- 7) Use the one location rule. Try and avoid stating the same requirements in 2 locations. Chances are, they will conflict.

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# Top Ten List to Improve Construction Documents & Construction

- 6) Education: Contractors, educate yourselves on systems, codes, and design principles. Engineers, Become more familiar with construction methods. Knowing the details do help.
- 5) Collaborate, be a Team: Have a meeting after bid, before construction. Work together for solutions.
- 4) Efficient Submittals: Organized submission. Pre-submittal review on complex equipment. Contractors, you are always responsible for meeting the requirements of the contract documents, even with "No Exceptions Taken"



# Top Ten List to Improve Construction Documents & Construction

- 3) Contractors ask quality questions with proposed solutions. Also, lowering the ceiling is not the first option.
- 2) Time is of the Essence. Contractors need to ask questions with proposed solutions, not what should I do here. Engineers must be responsive to avoid unnecessary delays.
- 1) Think in terms of being responsible for coordination. This applies to both Contractors and Engineers. Take more responsibility not less, in the end, the project will benefit and so will the Owner.



Questions?

