



# Using Autodesk® Building Design Suite Premium to Deliver a Lean Modularized Project

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VDC Manager

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**The Whiting-Turner Contracting Company**



# Class Summary

In this class, we will dive into the concepts and practices we used to bring the most to the deliverable for the owner through use of Autodesk® Navisworks® Manage, Autodesk® Revit® Architecture, AutoCAD® MEP, AutoCAD®, and Autodesk® Inventor® software.

We will show you how to work towards bringing only value-added work to a project by eliminating non-value-adding steps while also working towards better quality assurance and quality control by modularizing the construction process where it has proven possible through studies using the design suite.

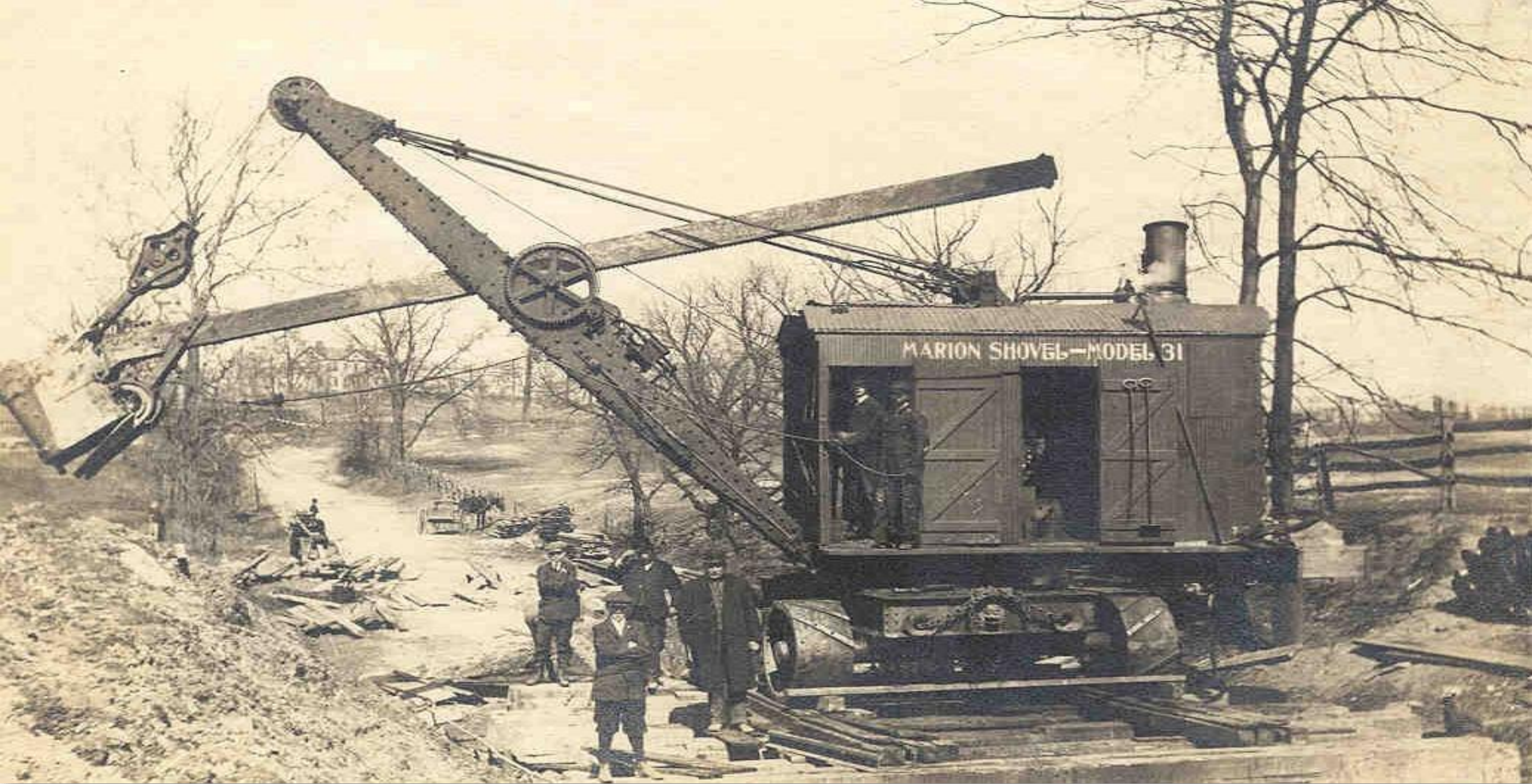
# Learning Objectives

At the end of this class, you will be able to:

- Create a workflow to make your team more reliable by tracking construction issues with Navisworks
- Define a methodology for tracking materials through the delivery process to facilitate the Last Planner® System
- Collaborate better with Autodesk® BIM 360™ cloud-based BIM solution and eliminate unused intellectual capacity by enabling everyone to do the job
- Analyze modularization possibilities by integrating Inventor components into Revit and Navisworks

# INTRODUCTION











30%

of projects do not make schedule or budget

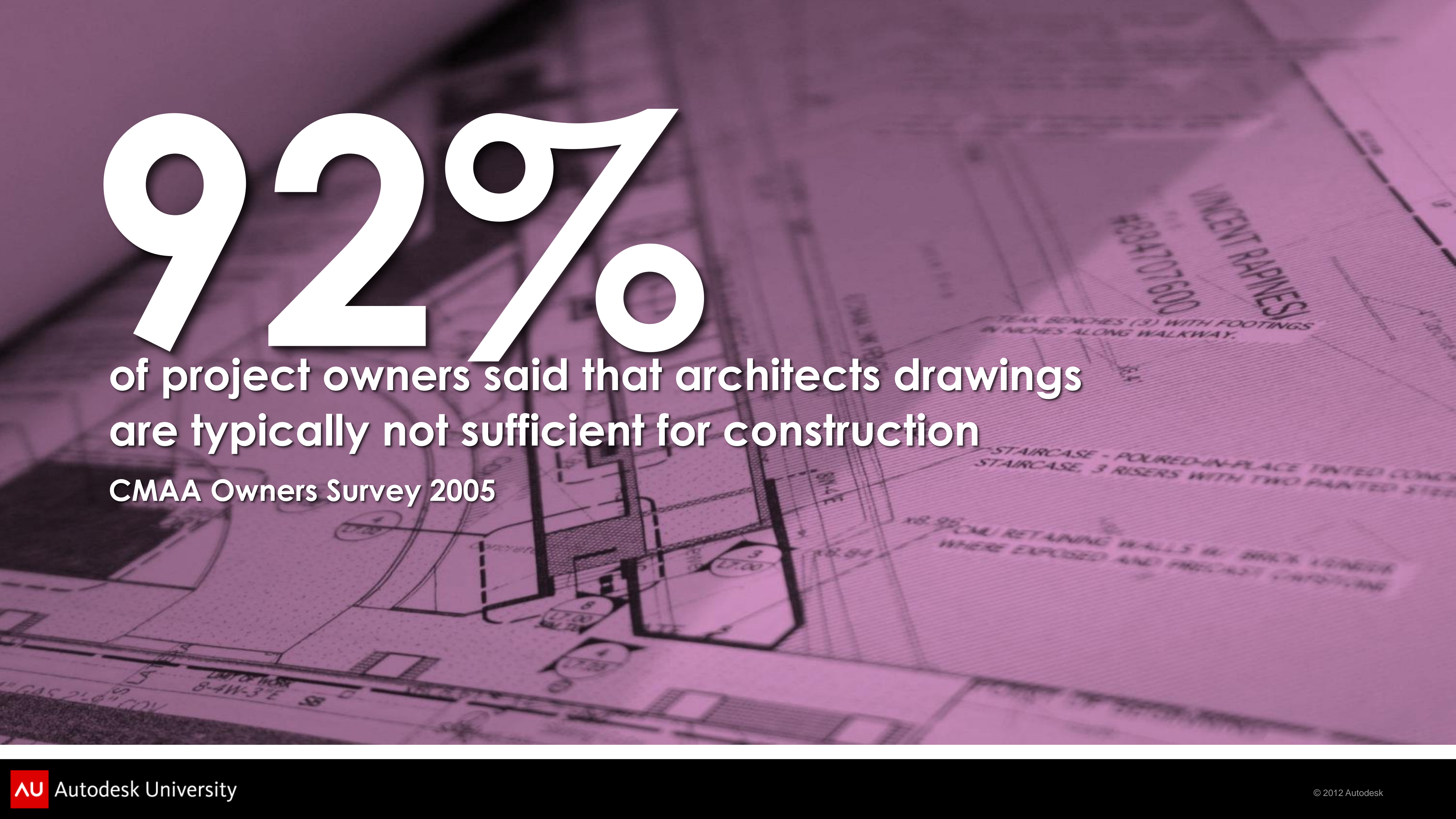
CMAA Industry Report 2007




# 92%

of project owners said that architects drawings  
are typically not sufficient for construction

CMAA Owners Survey 2005





A photograph of a construction site, showing a brick building under construction with several windows and doors. In the foreground, there is a large pile of construction materials, including wooden planks, metal rods, and other debris. The entire image is overlaid with a semi-transparent orange filter.

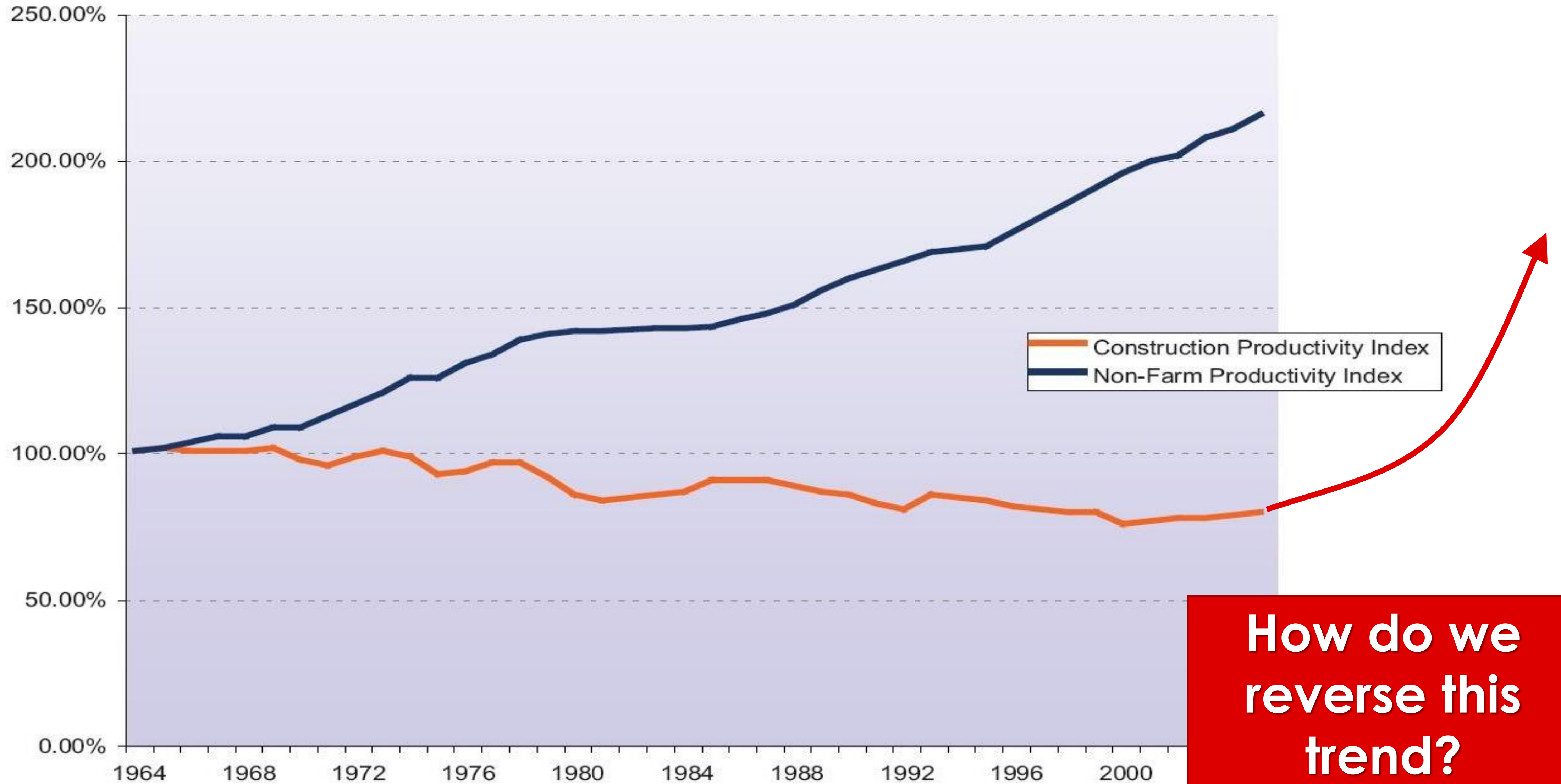
# 37%

of materials used in the construction  
industry become waste

Movement for Innovation Industry Reports and  
Economist Magazine 2002



Constant \$ of Contracts/Workhours of Hourly Workers  
Sources: U.S. Dept. of Commerce, Bureau of Labor Statistics



How do we  
reverse this  
trend?



# How can we do it better?



***... Learn from the practices of other industries***



# INNOVATION

**'There's a way to do it better - find it.'**

**Thomas Edison**



# Technology of Building

**DELIVERY PROCESS**

**BUILDING INFORMATION  
MODELING**

**OFFSITE FABRICATION &  
MODULARIZATION**

# Building Technology

**NEW BUILDING  
MATERIALS**

**INTELLIGENT BUILDING  
SYSTEMS**

**SUSTAINABLE BUILDING  
PRODUCTS**





# DELIVERING A LEAN PROJECT

DETAILED VISION PROJECT



# ГЕИМ ЛУЦИДИГ2





# Seeing Waste :: Excess Inventory



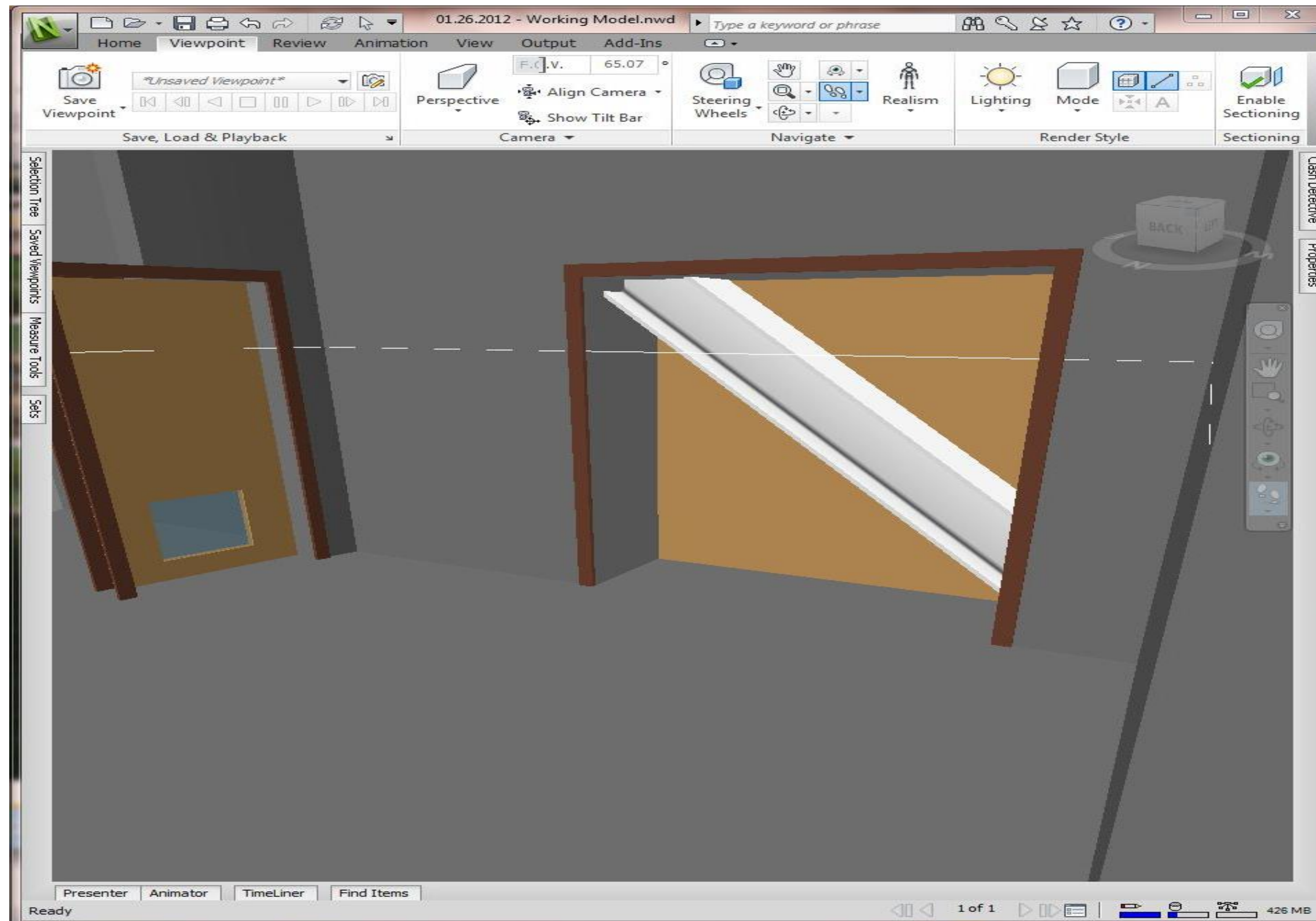


# Seeing Waste :: Excess Motion



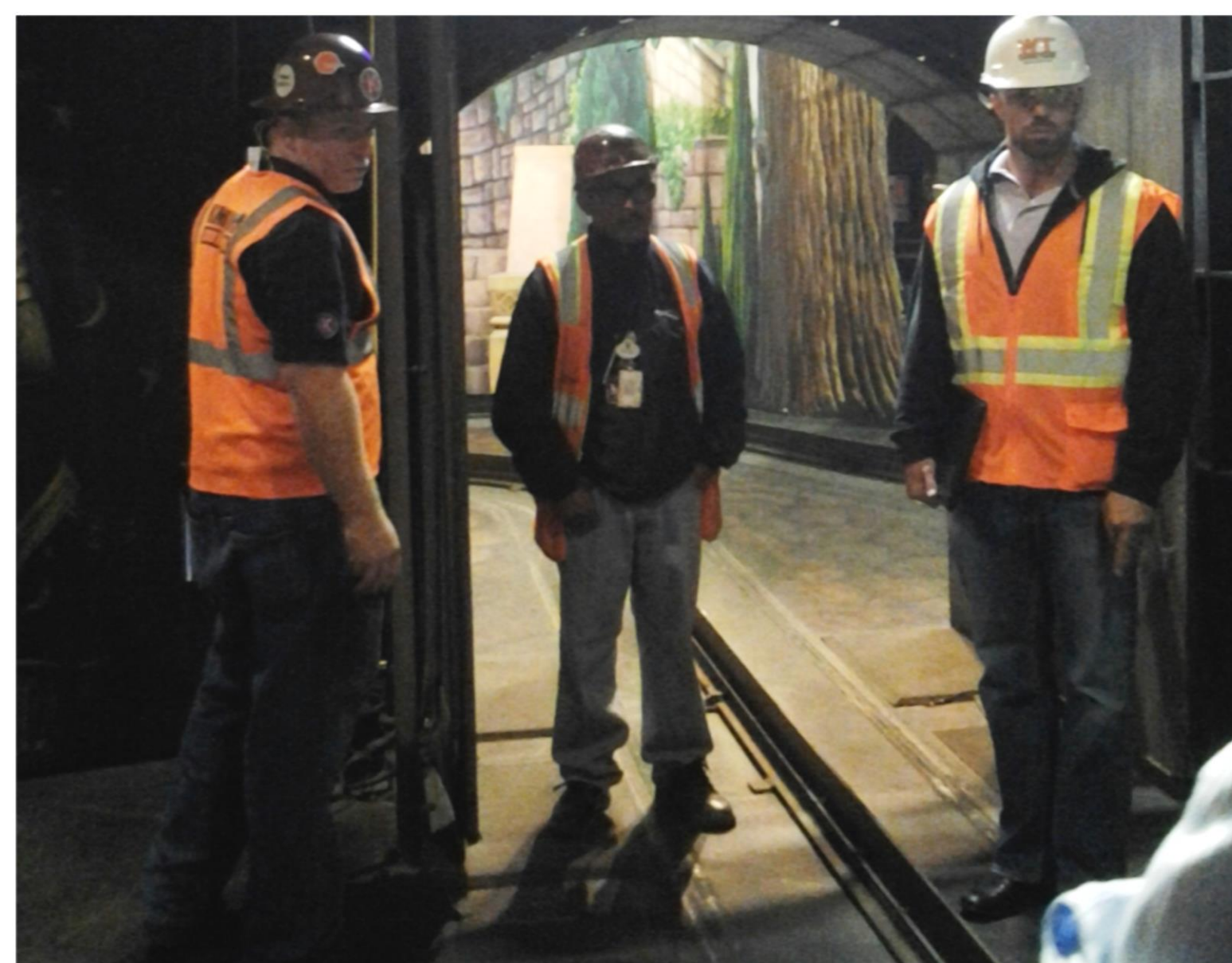
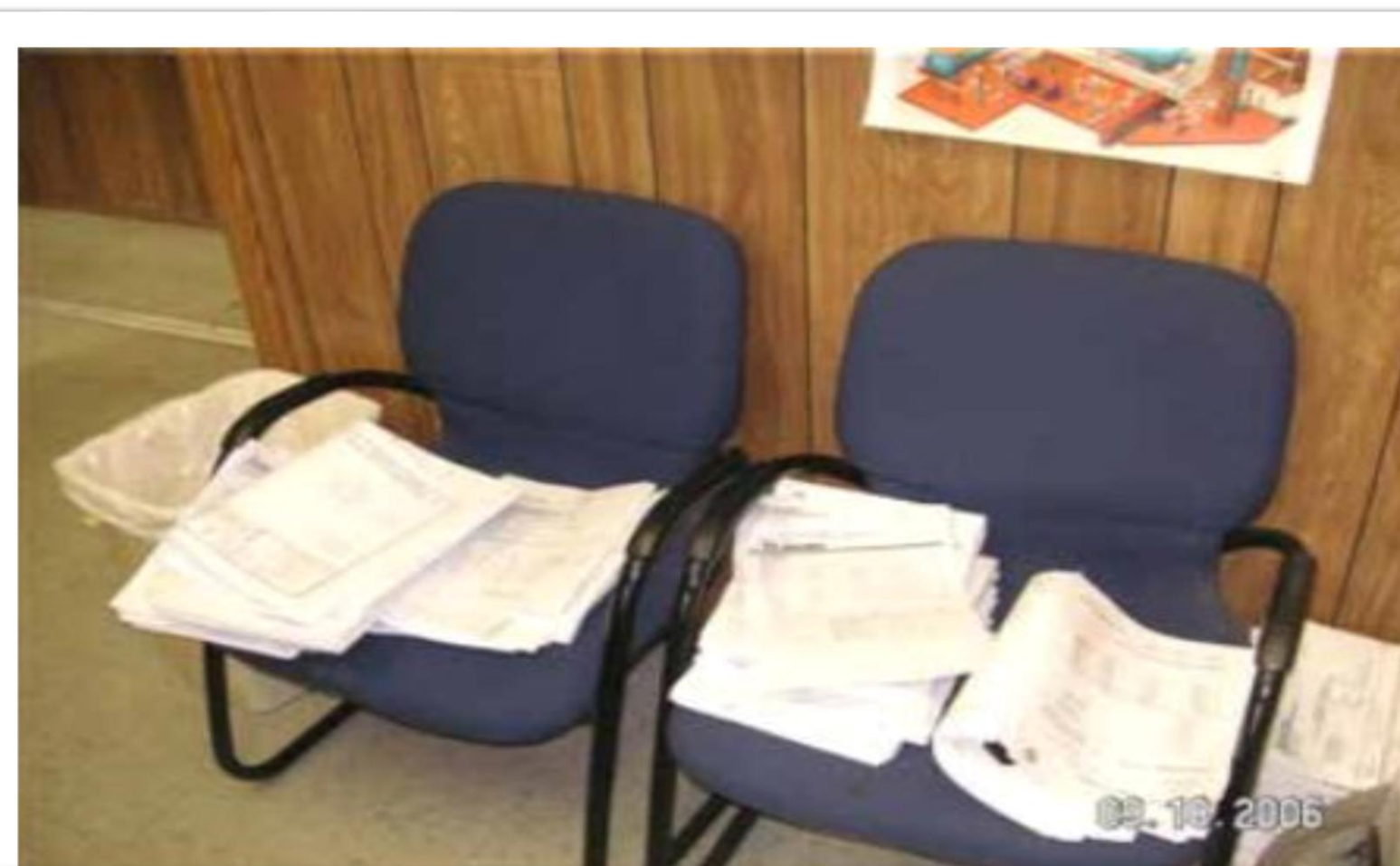


# Seeing Waste :: Defects



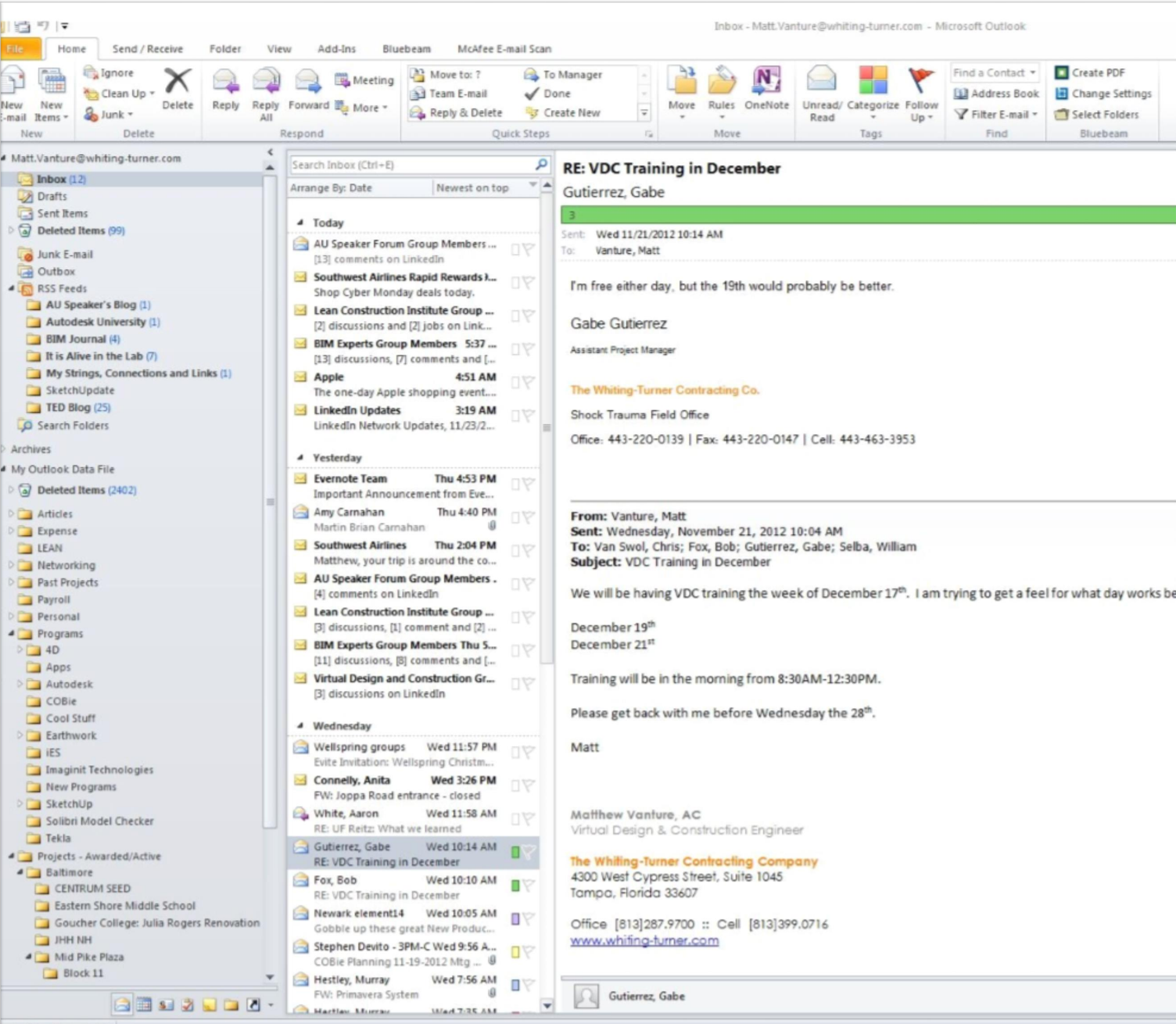


# Seeing Waste :: Unused Intellectual Capacity





# Seeing Waste :: Chase-Up





# The Last Planner System



- 1<sup>st</sup> Meeting – What are you doing?
- 2<sup>nd</sup> Meeting – Did you do what you said you were going to?
  - If not,
    - Why not in a few words
    - Categorize [weather, planning, coordination, materials...]
  - What are you doing?
- 3<sup>rd</sup> Meeting - Did you do what you said you were going to?
  - If not,
    - Why not in a few words
    - Categorize [weather, planning, coordination, materials...]
  - What are you doing?
- Etc.

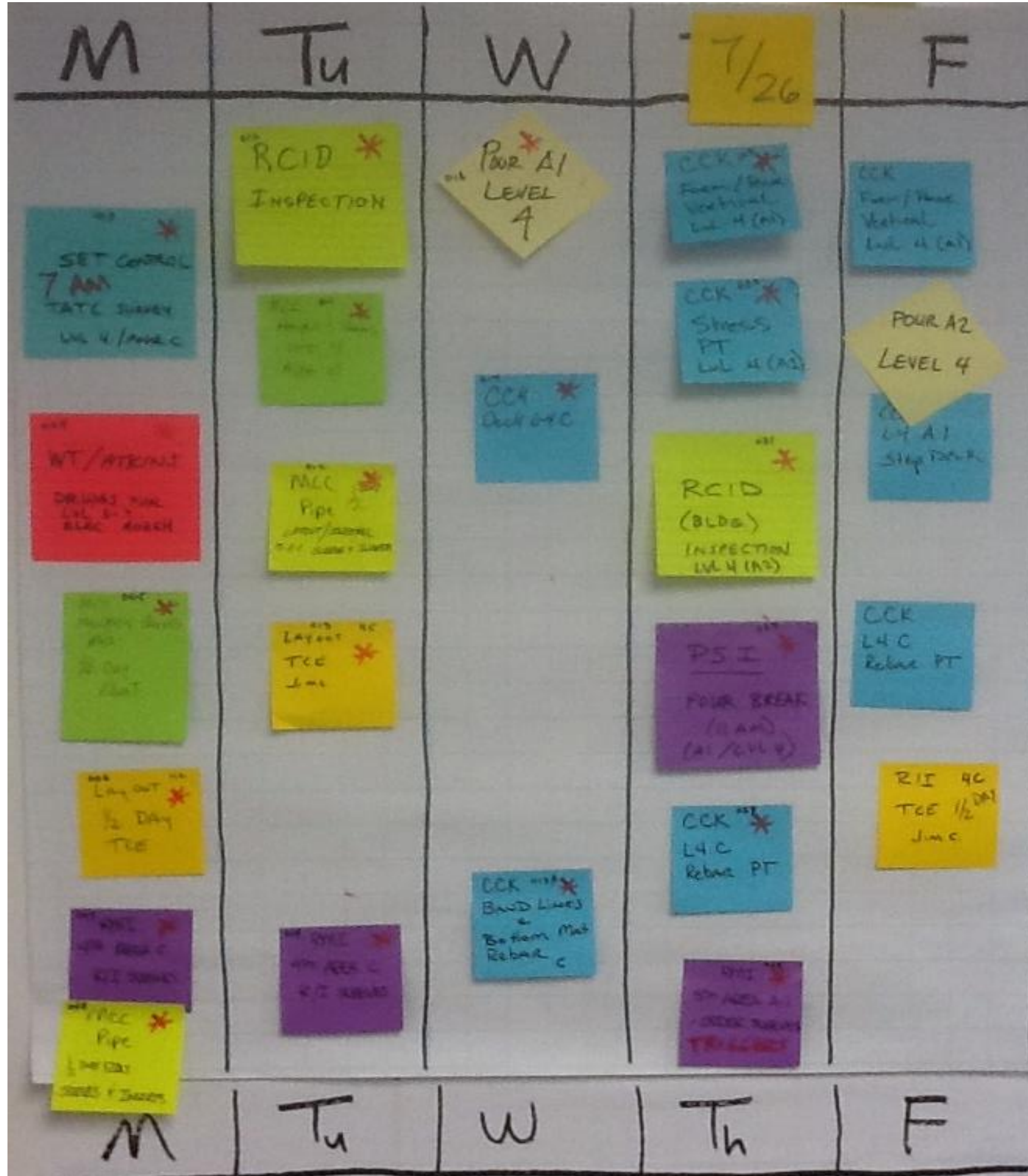


# Weekly Pull Scheduling



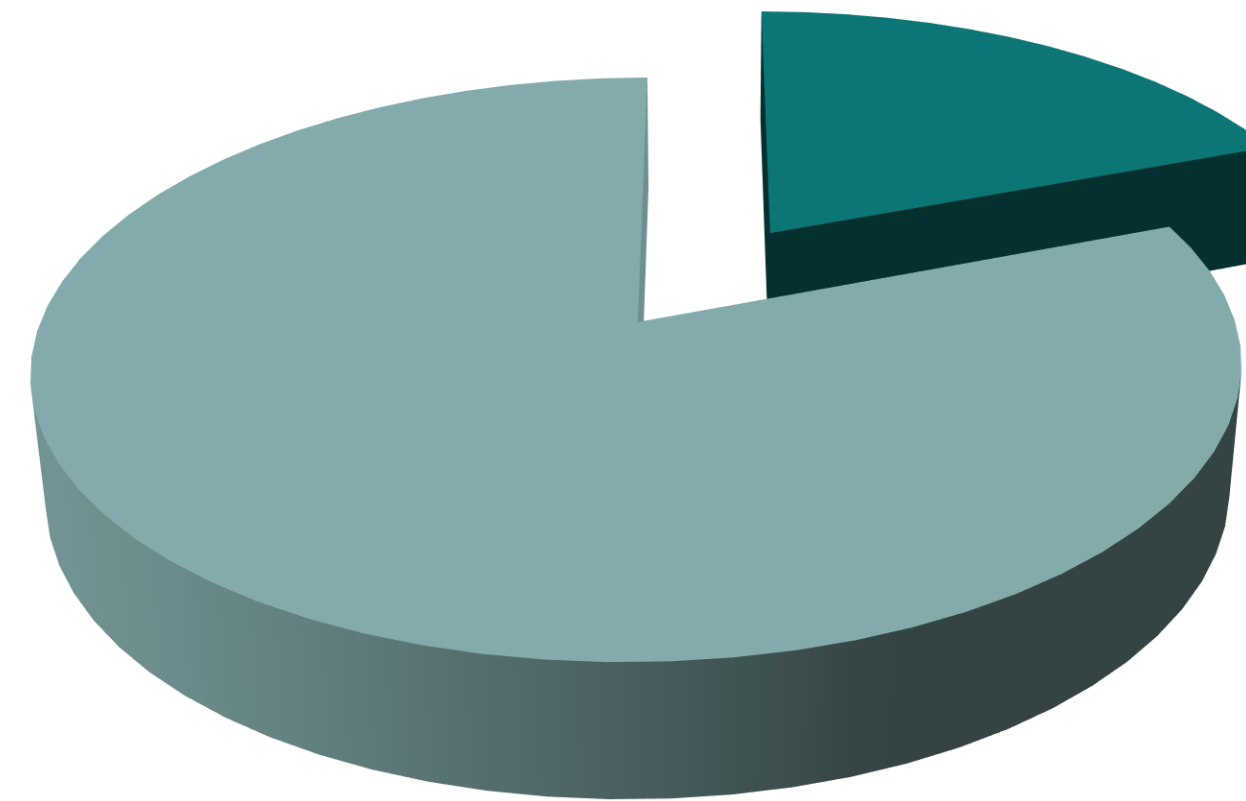


MEKIA Lñi 2CUEdñiüd



WEEKLY WORK PLAN																
CONTRACTOR			WHITING-TURNER			CATEGORIES OF VARIANCE							TOTAL ACTIVITIES		26	
PROJECT NAME			GRAND FLORIDIAN EXPANSION			1	RESOURCES					ACTIVITIES COMPLETED		21		
PROJECT LOCATION			WALT DISNEY WORLD, FL			2	PLANNING/COORD					PERCENT PLANNED		81%		
JOB NUMBER			12930			3	WEATHER					COMPLETE				
PLANNER NAME			ALFREDO LODI			4	LOGISTICS									
ASSIGNMENT DESCRIPTION Criteria for release of assignments Safe - Defined - Sound - Proper Sequence - Right Size - Able to Learn			RESPONSIBLE PERSON			ORGANIZATION			5	RFI's						
									6	OWNER CHANGES						
#	Q					7	STARTING ON		20-Jul-12			PPC ANALYSIS			Cate- gory	
							FRI	MON	TUE	WED	THR	DONE?				
							20-Jul	23-Jul	24-Jul	25-Jul	26-Jul	YES	NO	REASONS FOR VARIANCE		
001		COMPLETE LVL 4 - POUR C DECK FORMING - 90%	S.DELLER	CCK CONCRETE		X						YES				
002		ROUGH-IN SLEEVES - LVL 4 - POUR B & C	C. MORETA	RANDALL MECHANICAL		X						YES				
003		SET SURVEY CONTROL - LVL 4 - POUR C	M. RETTSTATT	WT (TATC)				X					NO			
004		DRAWINGS FOR LVL 5-7 ELEC ROUGH-IN	A. LODI	WT				X				YES				
005		SET HANGERS / SLEEVES - LVL 4 - POUR C (1/2 DAY)	J. MARTIN	MCC MECHANICAL				X				YES				
006		LAYOUT SLAB - LVL 4 - POUR C	J. CURL	TRI CITY				X					NO			
007		ROUGH-IN SLEEVES - LVL 4 - POUR C	C. MORETA	RANDALL MECHANICAL				X				YES				
008		SLEEVES & INSERTS - LVL 4 - POUR C	J. MARTIN	MCC MECHANICAL				X				YES				
009		DEP WATER APPROAL	A. LODI	WT				X					NO			
010		RCID INSPECTION (LVL 4 - POUR C)	M. RETTSTATT	WT					X				NO			
011		SET HANGERS / SLEEVES - LVL 4 - POUR C	J. MARTIN	MCC MECHANICAL					X			YES				
012		LAYOUT/INSTALL SLEEVES & INSERTS - LVL 4 - POUR A1	J. MARTIN	MCC MECHANICAL					X			YES				
013		LAYOUT SLAB - LVL 4 - POUR C	J. CURL	TRI CITY					X				NO			
014		ROUGH-IN SLEEVES - LVL 4 - POUR C	C. MORETA	RANDALL MECHANICAL					X			YES				
015		ROUGH-IN ELECTRICAL - LVL 4 - POUR B	J. CURL	TRI CITY					X			YES				
016		POUR SLAB LVL 4 - POUR A1	S.DELLER	CCK CONCRETE						X		YES				
017		FORM DECK - LVL 4 - POUR C (REMAINING 10%)	S.DELLER	CCK CONCRETE						X		YES				
017A		SET BAND LINES & BOTTOM MAT REBAR - LVL 4 - POUR C	S.DELLER	CCK CONCRETE						X		YES				
018		ROUGH-IN ELECTRICAL - LVL 4 - POUR B	J. CURL	TRI CITY					X			YES				
019		FORM / POUR VERTICAL WALLS/COLUMNS - LVL 4 - POUR A1	S.DELLER	CCK CONCRETE							X	YES				
020		STRESSABLE LVL 4 - POUR A1	S.DELLER	CCK CONCRETE							X	YES				

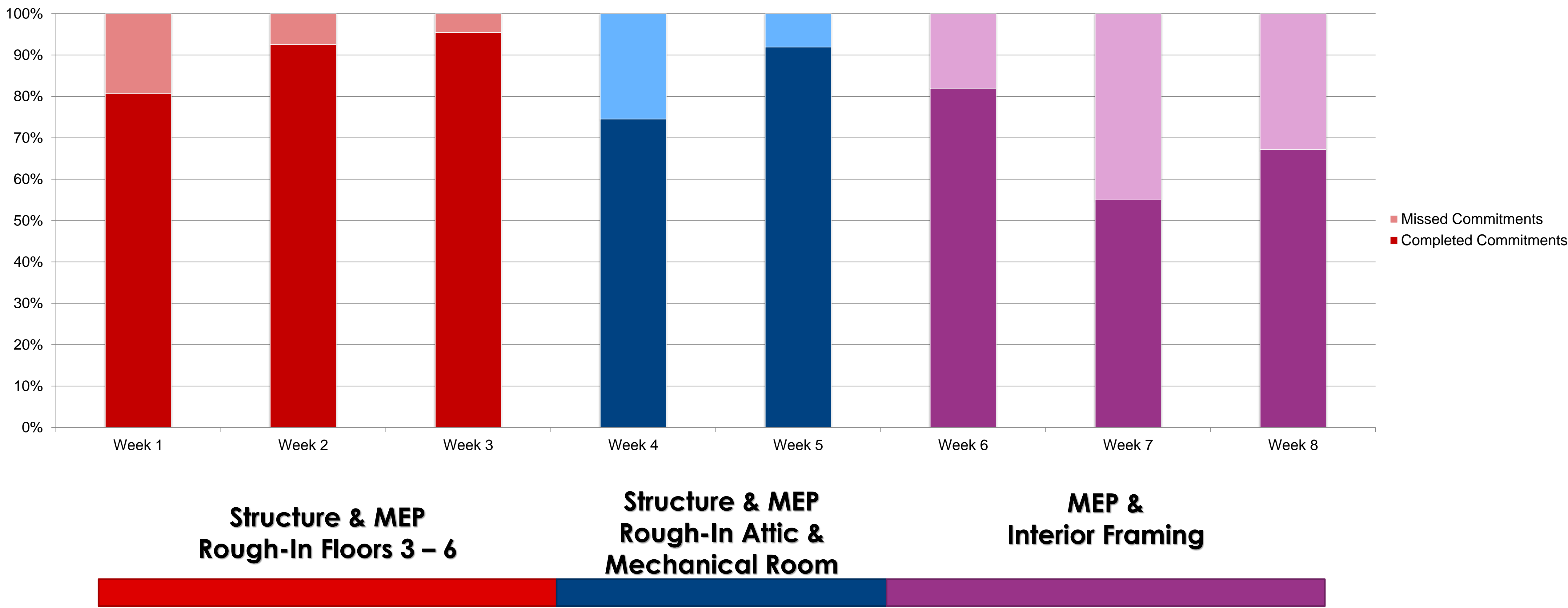
## WEEKLY WORK PLAN



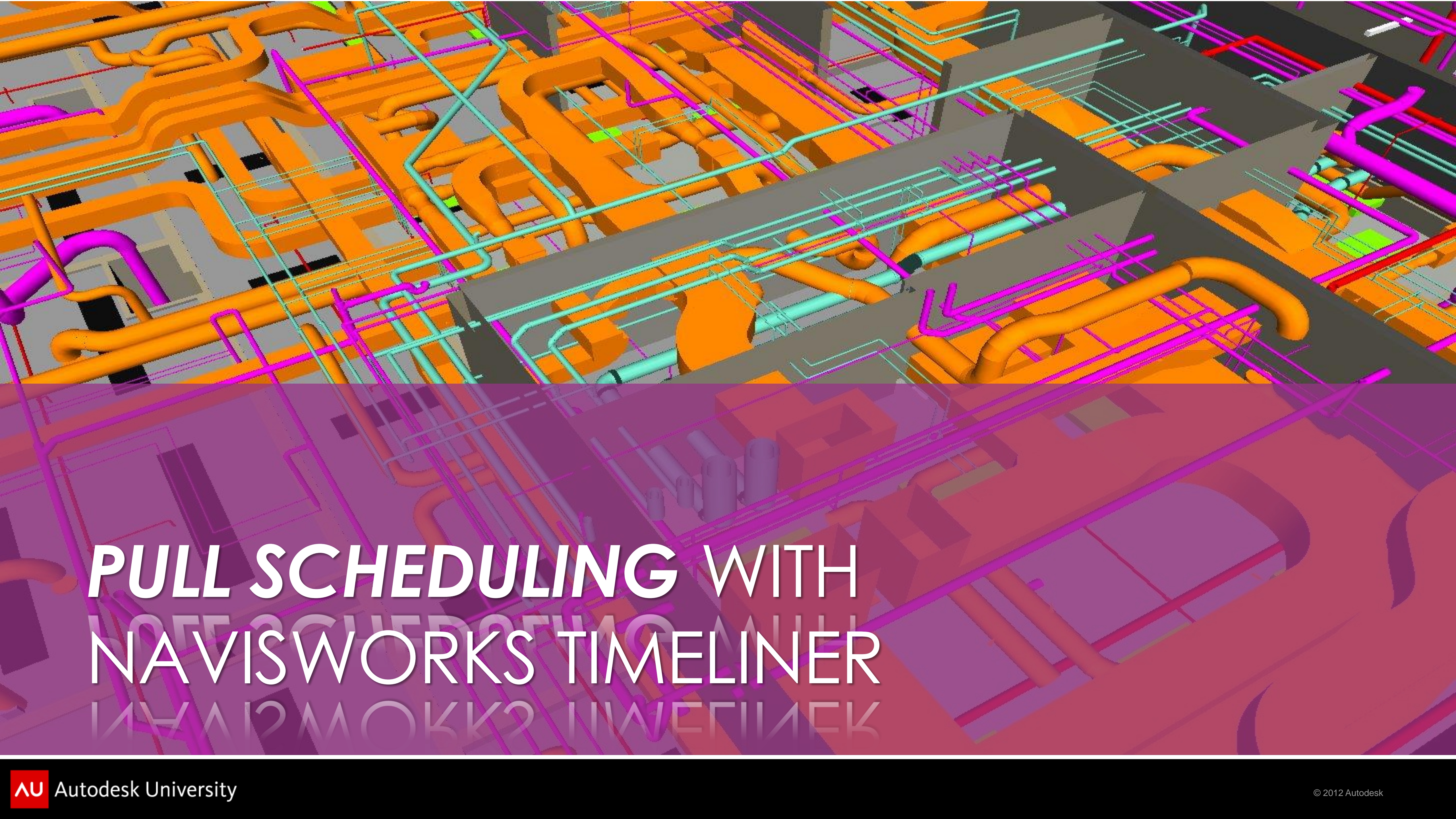
**First Week Results :: 07.26.12**  
Percent Planned Complete  
**81% of 26 Total Activities**



# Weekly Pull Scheduling



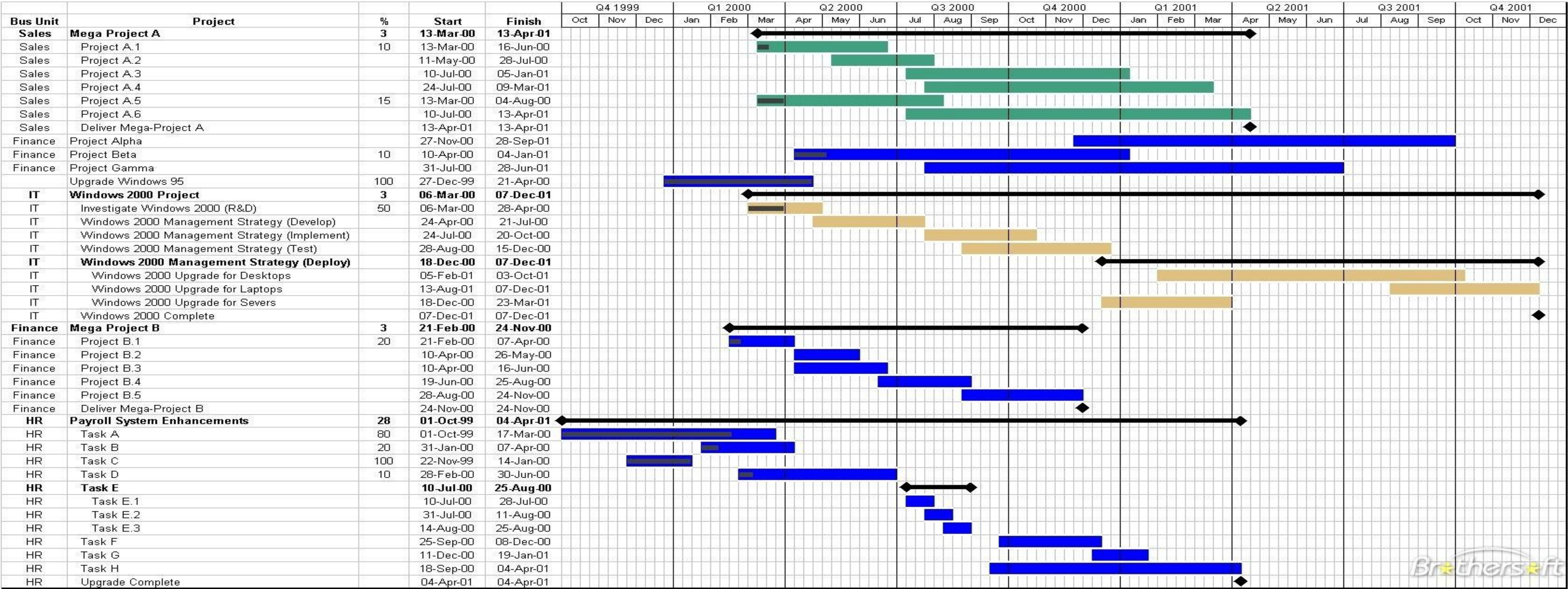




# ***PULL SCHEDULING*** WITH NAVISWORKS TIMELINER

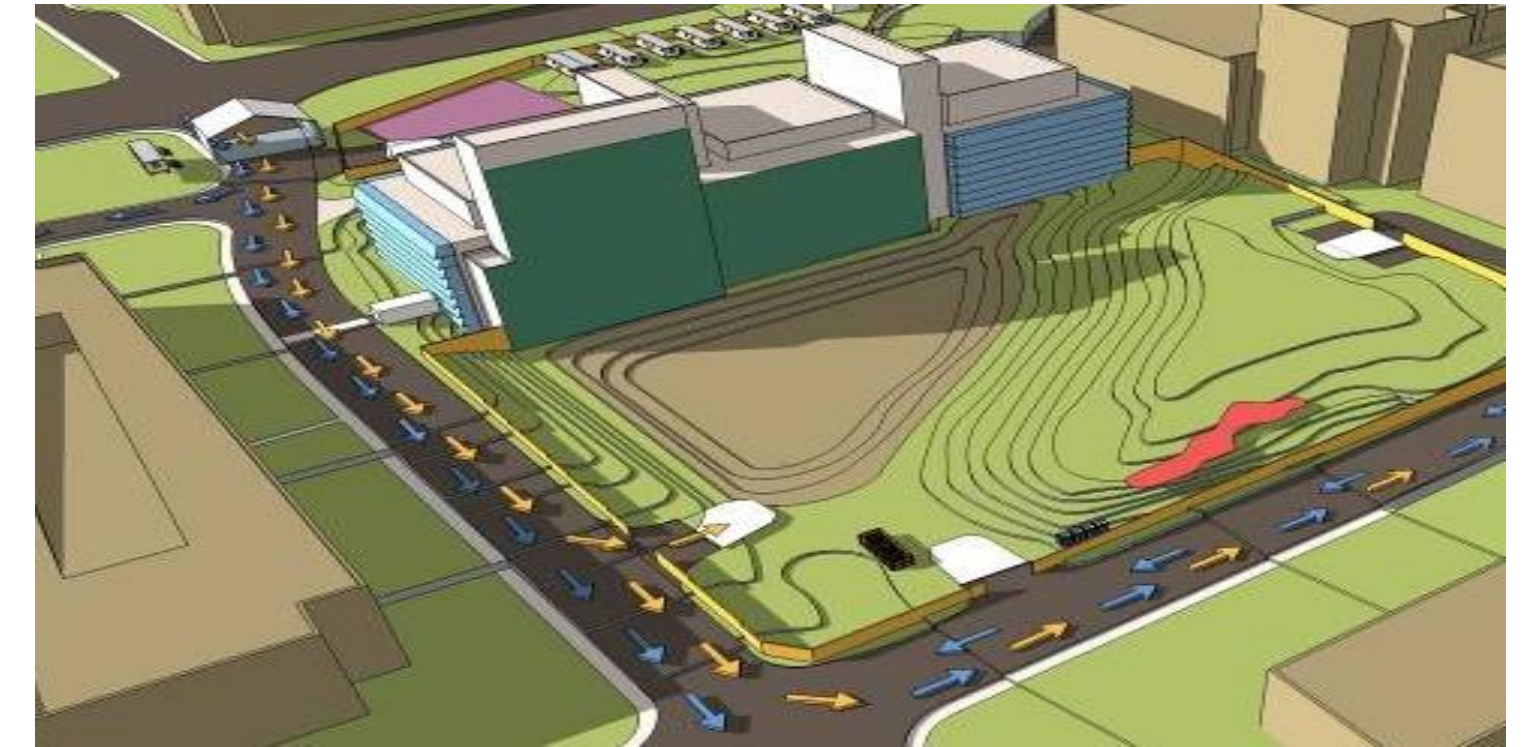


# Traditional Project Scheduling



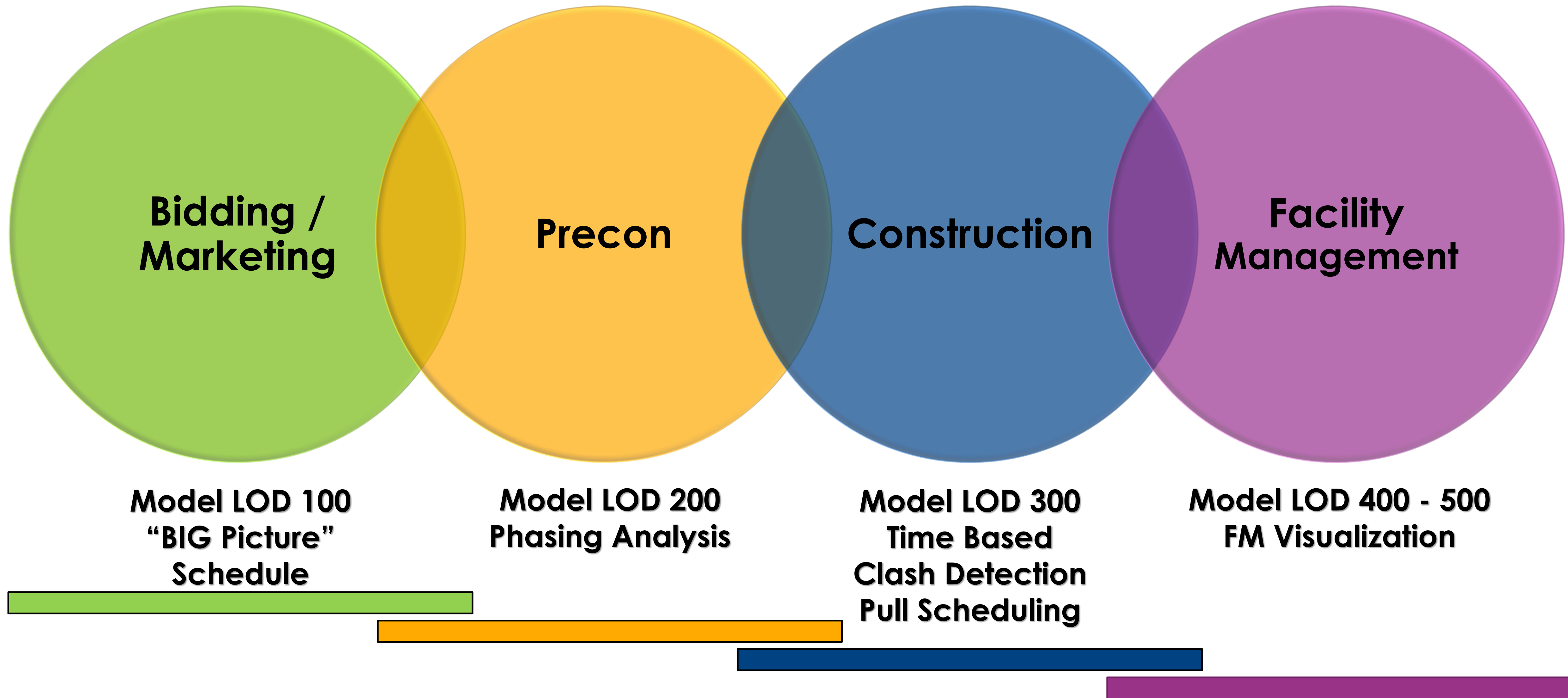


# 21<sup>st</sup> Century Project Scheduling





# 4D Scheduling





# NavisWorks :: TimeLiner







[Barcode]

A

[ID] B

[Flipchart] C

[User Name] D

[Field 01] E

[Field 02] F

[Field 03] G

[NxtNote]

H

A

B

C

D

E

F

G

H

**Barcode:** [Required] The upper left corner of the sticky note is reserved for the 2D barcode, which represents the comments that have been entered. The more data entered, the larger the barcode will become.

**ID:** [Required] As NxtNotes are submitted, each is given a unique ID number. This ID number is printed directly onto the NxtNote for easy identification.

**Flipchart:** [Required] The Flipchart Types can be completely customized by the event facilitator. When you select the Flipchart Type option button, this category is printed directly onto the NxtNote, so that as it comes off the printer, the facilitator or user will know which flipchart to place the NxtNote onto.

**User Name:** [Optional] The User Info section is used to identify the person who submitted the NxtNote(s). If you enter your user information, you will be able to filter on all the NxtNotes that you, or other participants have submitted.

**Field 01:** [Optional] A second piece of information can be captured in this section. This is defined by the facilitator.

**Field 02:** [Optional] A third piece of information can be captured in this section. This is defined by the facilitator.

**Field 03:** [Optional] A fourth piece of information can be captured in this section. This is defined by the facilitator.

**NxtNote:** [Required] The actual comment that you type is displayed in this section. Due to the limited space available, the number of characters available is limited to 275. If required, the font size can be increased or decreased, based on what information is being captured.



# Integration into NavisWorks

TimeLiner

Tasks

Data Sources

Configure

Simulate

+ Add

Delete

Refresh

Microsoft Project 2007-2010

Primavera Project Management 6-8

Microsoft Project MPX

Primavera P6 (Web Services)

Primavera P6 V7(Web Services)

Primavera P6 V8(Web Services)

CSV File

Choose TimeLiner Columns

☒ Active

☒ Name

☒ Status

☒ Planned Start

☒ Planned End

☒ Actual Start

☒ Actual End

☒ Task Type

☒ Attached

☒ Material Cost

☒ Labor Cost

☒ Equipment Cost

☒ Subcontractor Cost

☒ Total Cost

☒ Data Source

☒ Display ID

☒ Comments

☒ Script

☒ Animation

☒ Animation Behaviour

☒ User 1

☒ User 2

☒ User 3

☒ User 4

☒ User 5

☒ User 6

☒ User 7

☒ User 8

☒ User 9

☒ User 10

☒ Provided Progress %

Move Up

Move Down

Show All

Hide All

OK

Cancel

Field Selector

CSV Import Settings

☒ Row 1 contains headings

☐ Automatically detect date/time format

☒ Use specific date/time format

M/d/yyyy h:mm

Sample: 11/28/2012 5:49


Column	External Field Name
Task Name	
Display ID	
Task Type	
Synchronization ID	
Planned Start Date	
Planned End Date	
Actual Start Date	
Actual End Date	
Material Cost	
Labor Cost	
Equipment Cost	

Reset All

OK

Cancel

Help

 Autodesk University

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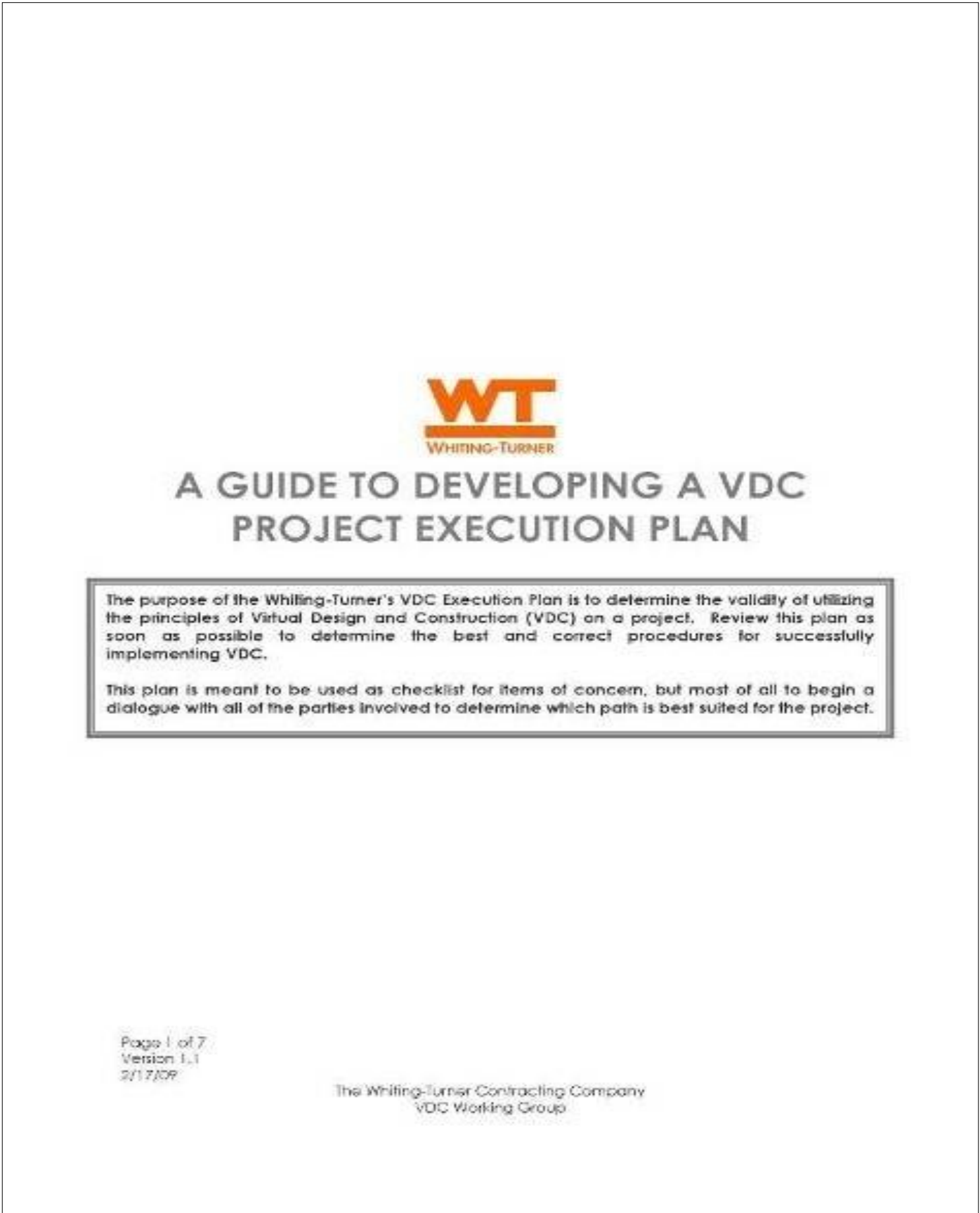




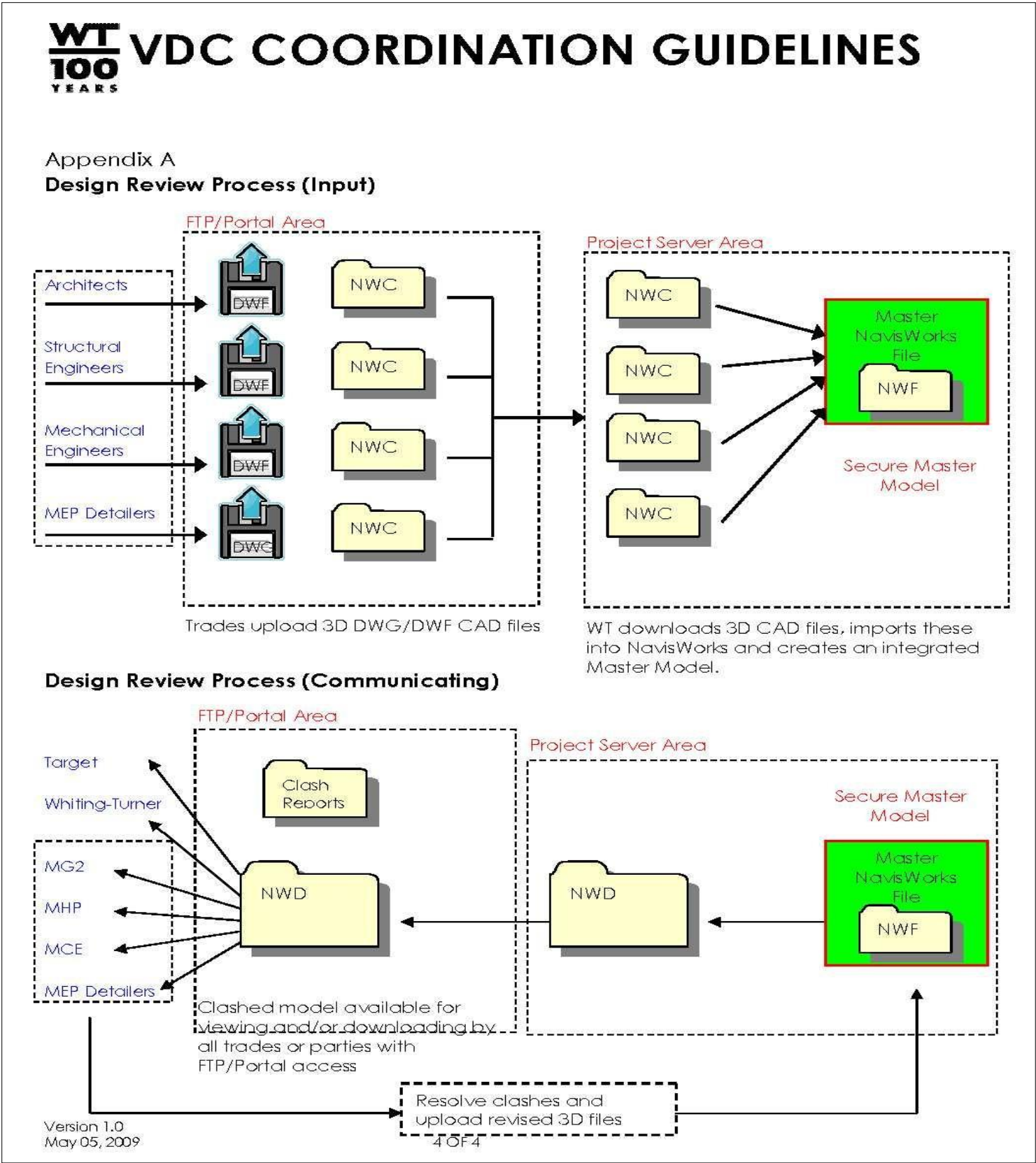
# PROJECT COORDINATION



# Coordination Methodology



Develop VDC Execution Plan



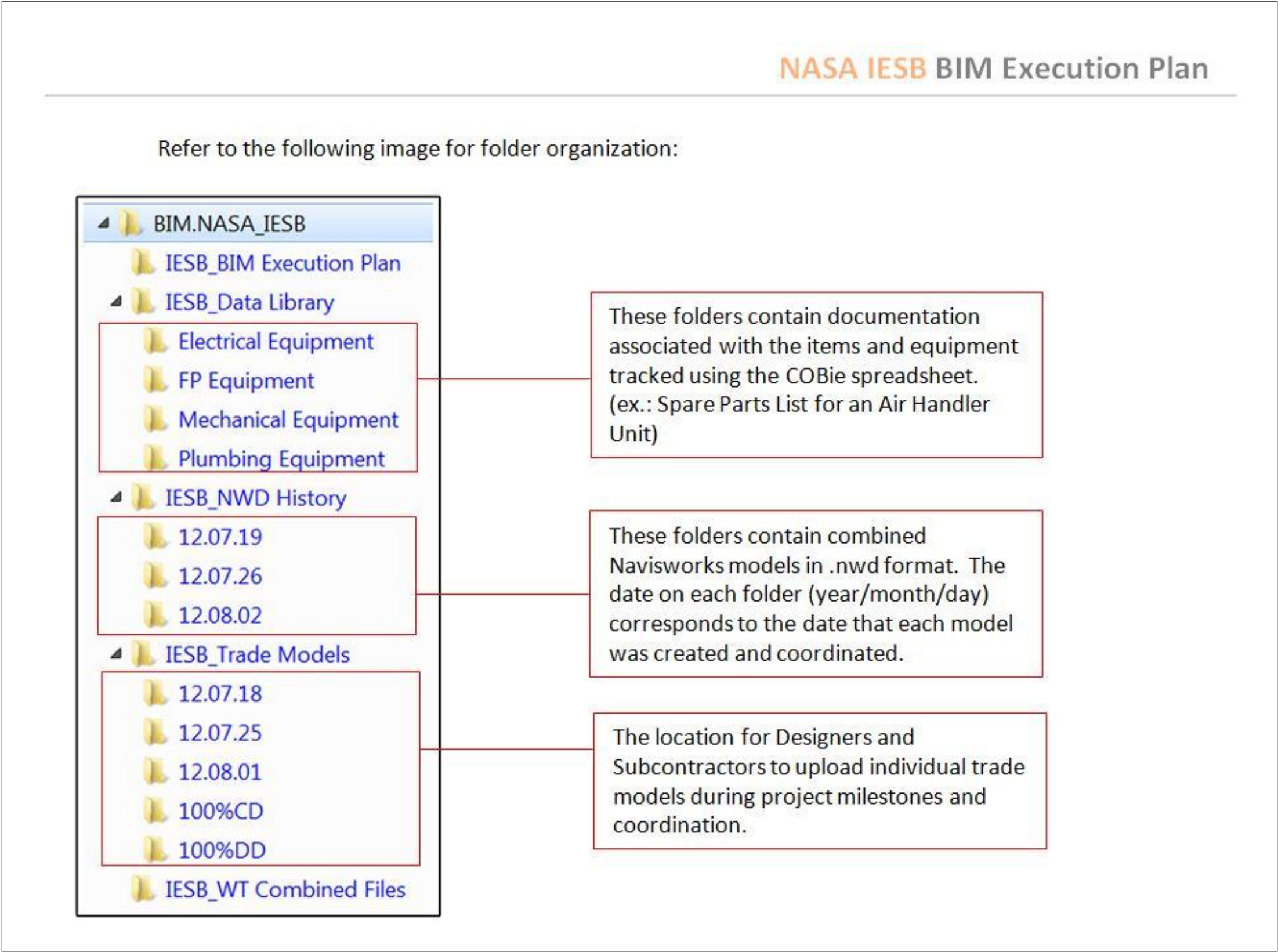
VDC Coordination Guidelines

VDC Execution Plan: Model Responsibility Matrix									
Project Name:									
Element to be modeled	Modeled By	Program/Version	File Name	Object Name/ Family or Layer	Collaboration Formats	Model Uses	Users	Level of Detail (LOD)	Comments
Example: Doors	Architect	Revit Arch.	Project_Trade_Level_Date	Interior Doors	DWG, IFC, NWC	CD's, 3D coord, QTY/EST.	Arch, Struc, WT	Door and Frame only, no hardware required	
Architectural: Conceptual/Massing Model									
Insert items to be modeled									
Architectural: Design Model									
Interior									
Floors									
Finishes									
Floor Penetrations									
Walls									
Full Height Walls									
Walls above ceiling grid									
Low walls									
Wall Finishes									
King Studs									
Wall Penetrations									
Doors & Windows									
Door & Frame									
Window Frame and Glass									
Door numbers as hyperlinks									
Window numbers as hyperlinks									
Ceilings									
Acoustical Ceiling									
Acoustical Ceiling Grid									
Hard lid Ceilings									
Ceiling Penetrations									
Casework & Furniture									
Toilet Partitions & Accessories									
Bathroom Fixtures (other than plumbing)									
General Furniture									
Casework									
Other									
Exterior									
Door & Frame									
Curtain Wall									
Storefront/Windows									
Exterior Walls/Façade									
Exterior Cornice									
Roofs									
Site Work									
Grading									
Sidewalks/Platwork									
Site Accessories									
Landscaping									
Miscellaneous									
Railings and Guards									
Decorative Columns									
Stairs									
Architectural Louvers									
Water Features/Swimming Pool									

VDC Responsibility Matrix



# Coordination Methodology



## Folder Breakdown Structure



## File Set-Up [search Sets]



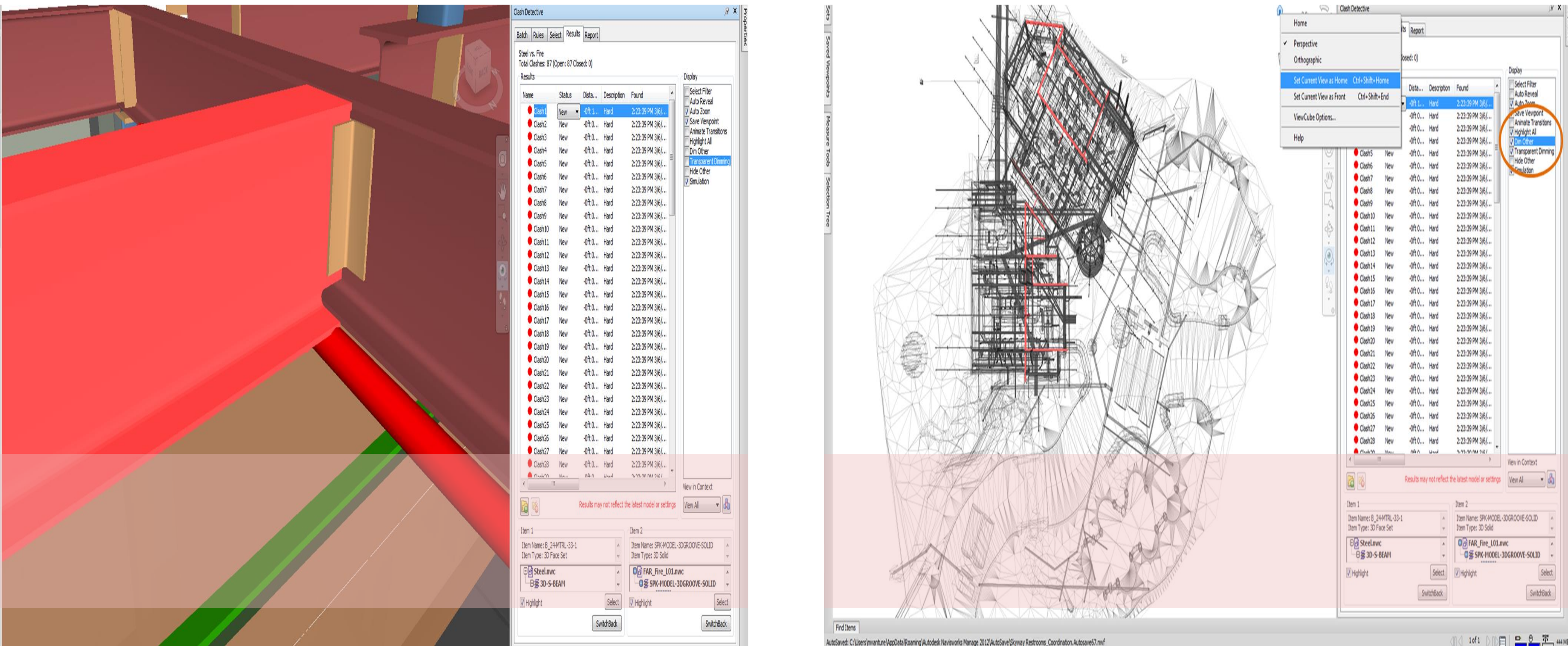
# Coordination Methodology

	A	B	C	D	E	F	G	H	I	J	K	L
1		KSCVC Orbiter Facility										
2		BIM Coordination Meeting #006										
3		General Action List										
4		2/15/2012										
5												
6		Architectural	Floor	Area	Status	Responsible	Comments/Notes	Money	Comments	Delay Schedule	Money Per Schedule	Total
7	VP#1	[Previous issue] Steel needs to be covered	Second	1	Pending	Whiting-Turner	Waiting on RFI	(\$9/ sf. * 10sf) = \$90	Bulkhead and bump-out wall	No		\$ 90.00
8	VP#2	[Previous issue] Steel needs to be covered	Second	1	Pending	Whiting-Turner	Waiting on RFI	(\$9/ sf. * 10sf) = \$90	Bulkhead	No		\$ 90.00
9	VP#4	[Previous issue] Steel needs to be covered	Second	1	Pending	Whiting-Turner	Waiting on RFI	\$50	Cost of material and labor to put up wall	No		\$ 50.00
10	VP#5	[Previous issue] Steel in doorway	Third	1	Pending	Whiting-Turner	RFI Received	\$8,000	Cost to move wall and door	Yes - 2 Days	\$ 5,000.00	\$ 13,000.00
11		Concrete						-	-	-		
12	Item#1	Model in dig-outs		All	Pending	CCK		-	-	-		
13								-	-	-		
14		Structural Steel						-	-	-		
15	VP#3	[Previous issue] Catwalk intersecting Steel	Catwalk	1	Pending	Met-Con	Steel still being designed	-	Potential delay of schedule	Yes - 1 Day	\$ 2,500.00	\$ 2,500.00
16	VP#6	[Previous issue] Steel needs to be lowered to support landing	Catwalk	1	Pending	Met-Con	Railing to be moved in	\$5,000+	Cost to cut steel and relocate lower	Yes - 1 Day	\$ 2,500.00	\$ 7,500.00
17	VP#8	Steel penetrating display case near column lines F,1	Third	3	Pending	Met-Con	Above grade not discussed at meeting	(\$9/sf * 16.66') = \$150	Cost to extend wall to allow display case to fit	No		\$ 150.00
18								-	-	-		
19								-	-	-		
20		HVAC & Plumbing						-	-	-		
21	VP#7	[Previous issue] Hydronic piping penetrating Architecture skin	First	1	Pending	Precision	Need pipe to be moved	-	Shorten Pipe on approach	-		
22	VP#9	Mechanical Duct hitting wall	Catwalk	1	Pending	Lapin	Need to move duct or shrink duct or twist	-	-	No		
23	VP#10	Mechanical Duct Running through steel	Catwalk	1	Pending	Lapin	Need to move duct	(64lbs * \$8.5/lbs) = \$540	Cost to jump duct up or over/ Could delay schedule a week	Yes	See Clash Report	\$ 540.00
24	VP#11	Hydronic piping running through Mechanical Duct	Second	1	Pending	Precision	Piping needs to be moved out of duct	-	-	No		
25	VP#12	Underground plumbing hitting footer	Below Grade	3	Pending	Precision	Piping cannot hit footer	(50LF * \$27.5/LF) = \$1375	Time to make new adjustments	Yes	See Clash Report	\$ 1,375.00
26	VP#13	Underground plumbing hitting footer in multiple locations	Below Grade	1	Pending	Precision	Piping cannot hit footer	-	Time to make new adjustments	Yes	See Clash Report	
27	VP#14	15" Storm drain hitting multiple footers	Below Grade	1	Pending	Precision	Piping cannot hit footer	-	Rearout; Delay on schedule	Yes	See Clash Report	
28	VP#15	Pipe hitting own pipe and multiple footers	Below Grade	1	Pending	Precision	Piping cannot hit footer	(90LF * \$57/LF) = \$5130	Delay on schedule and cost to jog around footings	Yes	See Clash Report	\$ 5,130.00
29	VP#16	Hydronic piping hitting footers	Below Grade	1	Pending	Precision	Piping cannot hit footer	(20LF * \$43.5/LF) = \$870	Delay on schedule and cost to jog around footings	Yes	See Clash Report	\$ 870.00
30	Item#2	Mechanical Duct vs Architectural		All	Pending	Lapin	Review clashes and make appropriate changes	-	Twist/Turn to fit	No		
31	Item#3	Mechanical Duct vs. Steel		All	Pending	Lapin	Review clashes and make appropriate changes	-	Need to bump around steel/ RFI from MEP Engineer for correct flow	Yes	\$ 20,000.00	\$ 20,000.00
32	Item#4	Mechanical Duct vs. Hy Piping		All	Pending	Lapin	Review clashes and make appropriate changes	-	Shorten Pipe on approach	No		
33	Item#5	UG Plumbing vs. Structural Concrete	Below Grade	All	Pending	Precision	Review clashes and make appropriate changes	-		Yes - 1 Day	\$ 2,500.00	\$ 2,500.00
34	Item#6	Hy Piping vs. Structural Concrete	Below Grade	All	Pending	Precision	Review clashes and make appropriate changes	-		Yes - 1 Day	\$ 2,500.00	\$ 2,500.00
35												
36												
37											UG Savings	\$ 12,375.00
38											Total Savings	\$ 56,295.00

## Tracking



# Coordination Methodology



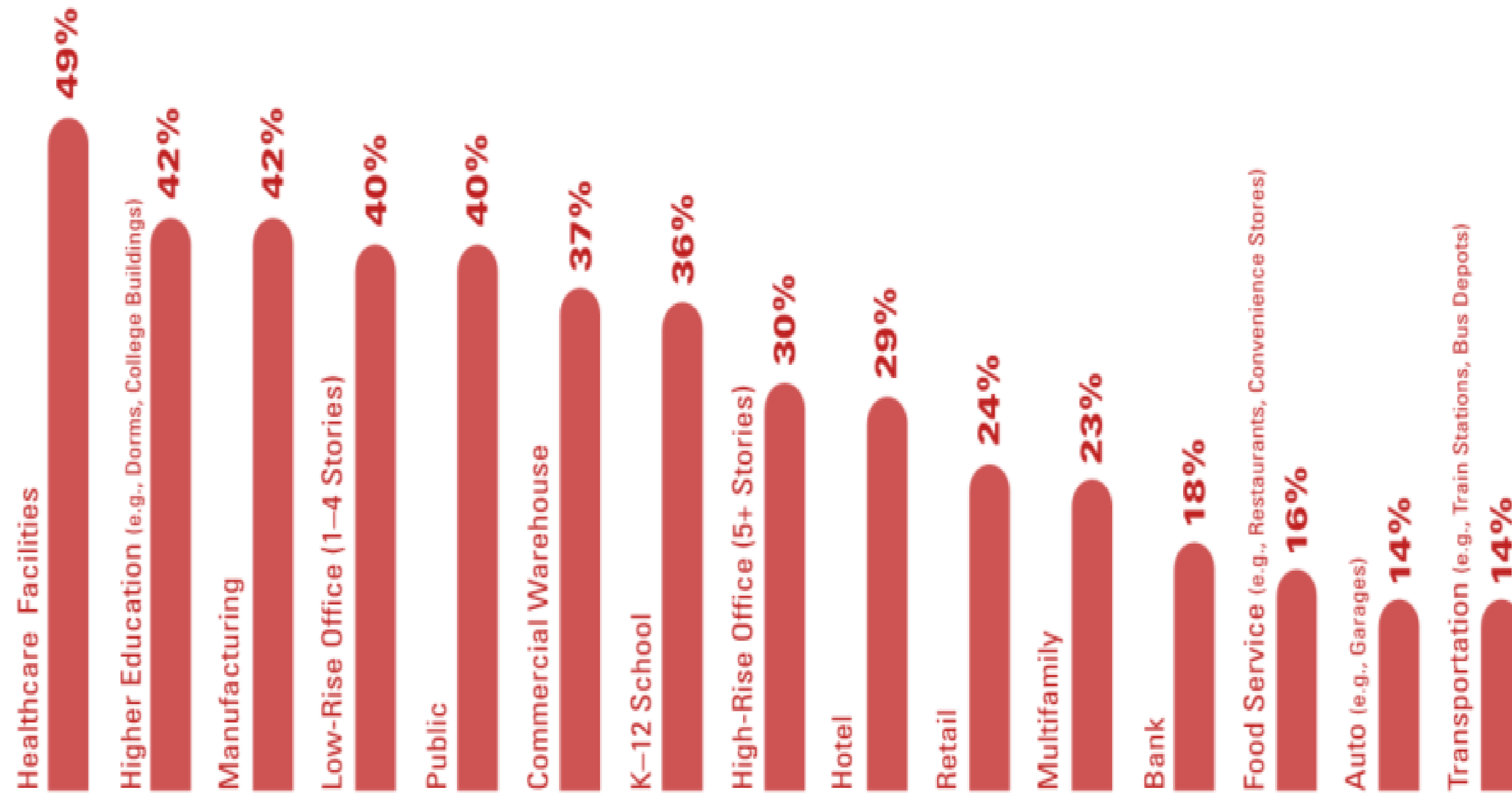




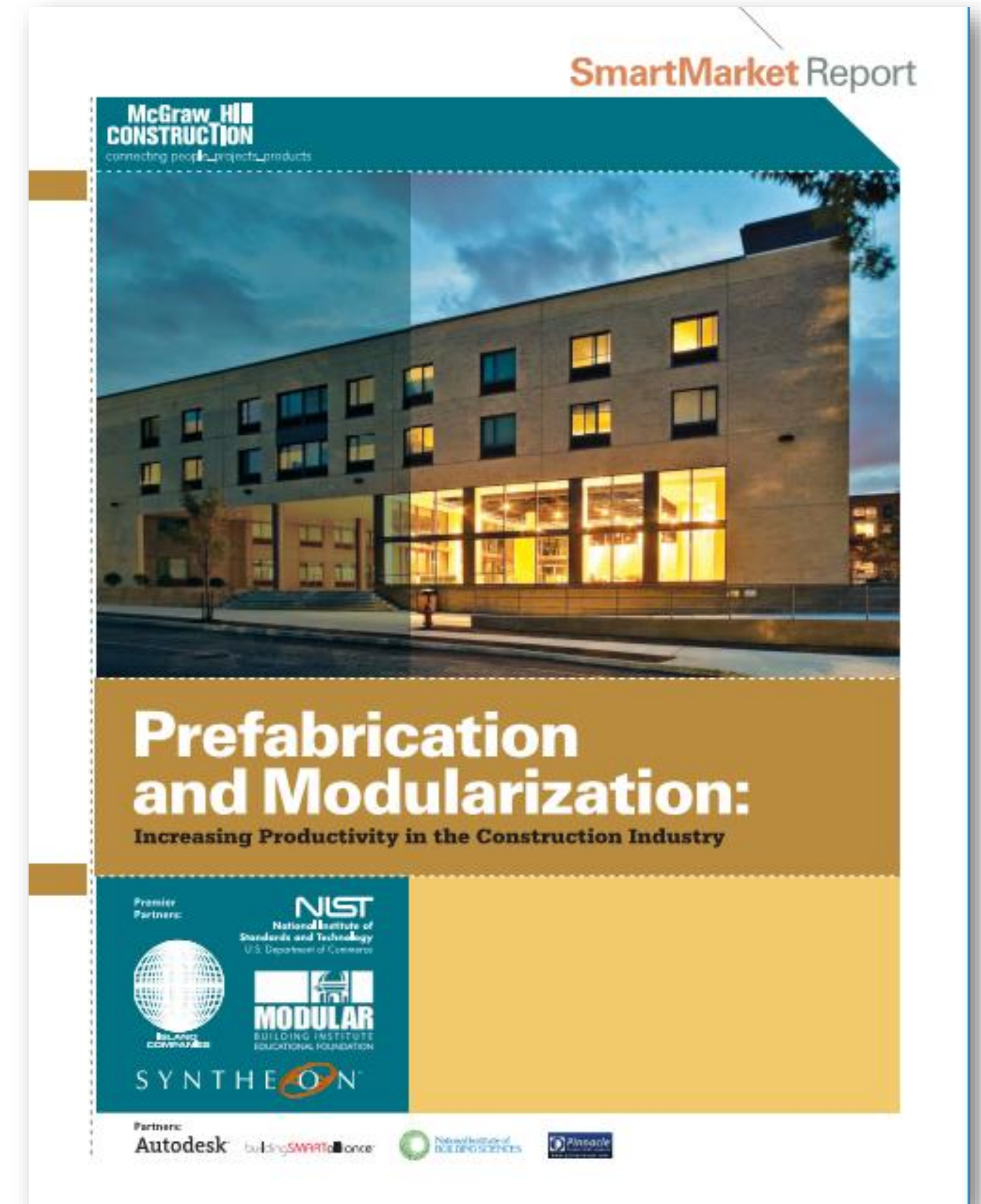
# MULTI-TRADE PREFABRICATION & OFF-SITE MODULAR



# Why Prefabrication?

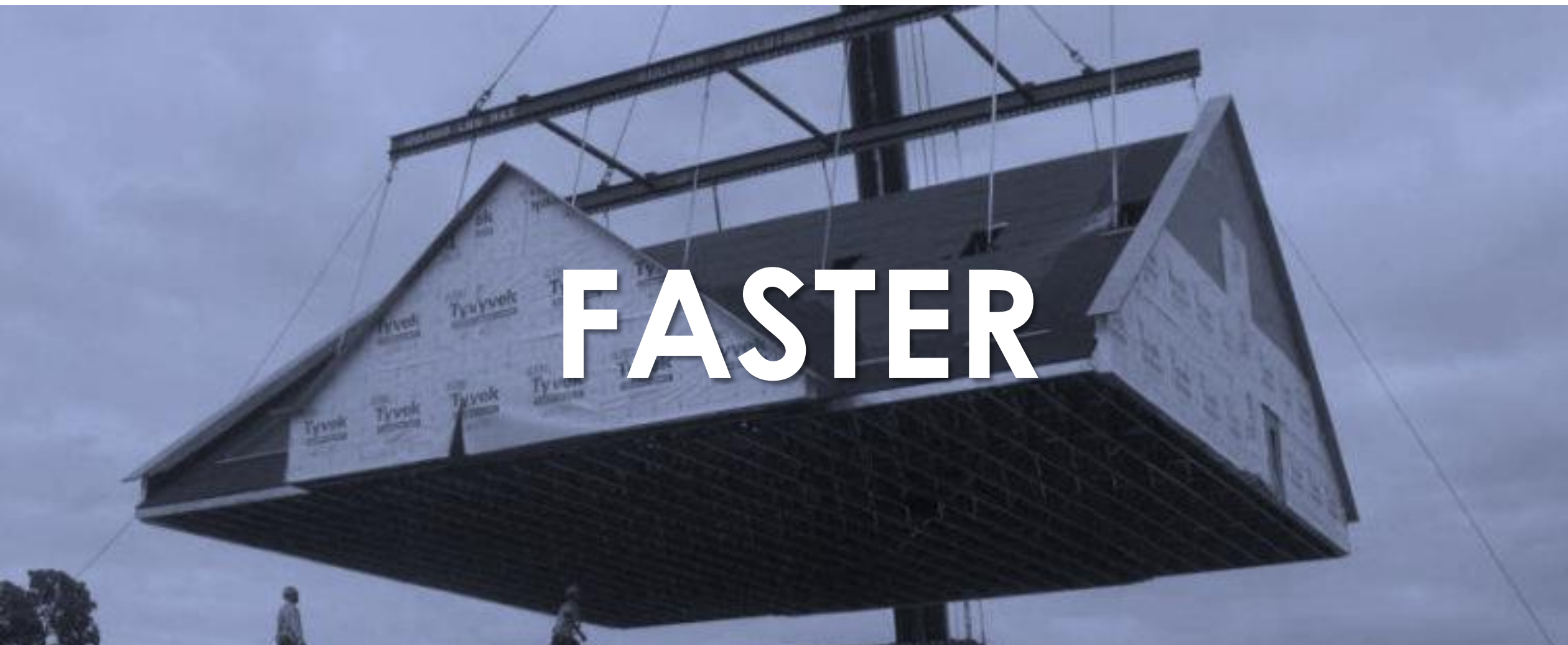


**Industries with Prefab Opportunities**





# Why Prefabrication?



**FASTER**



**HIGHER  
QUALITY**



**LESS  
EXPENSIVE**



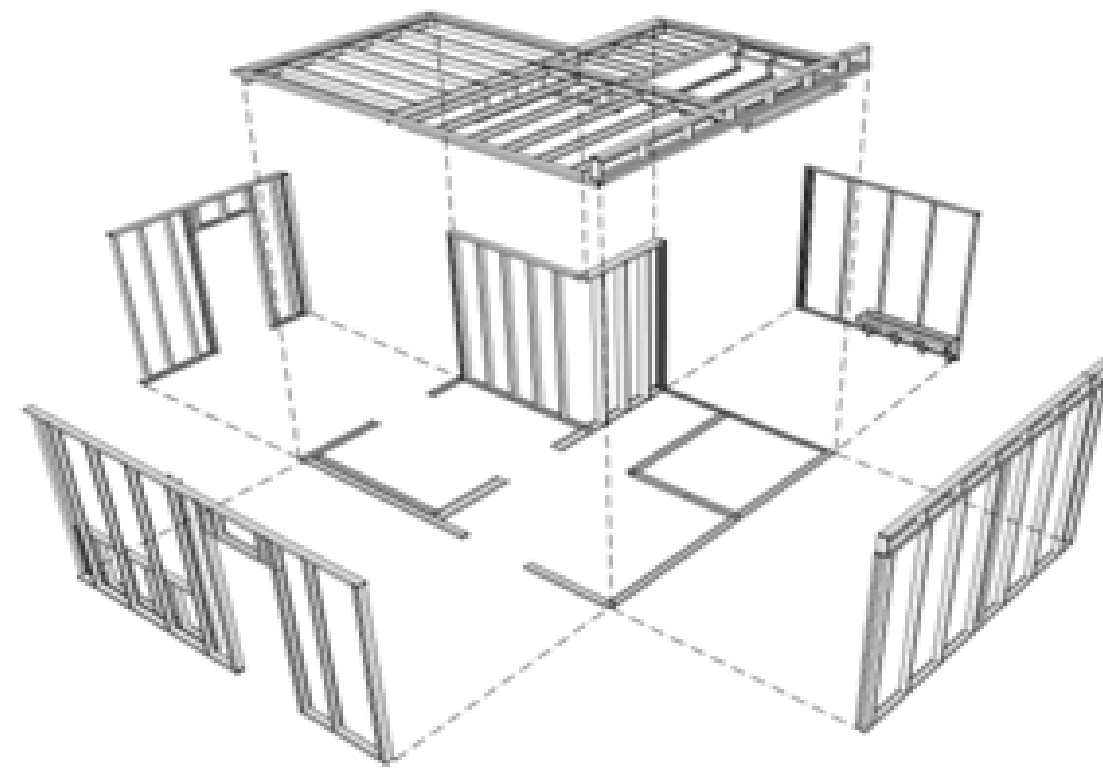
**SOLVING  
PROBLEMS**



# Prefab Execution Plan

A Guide to Prefabrication,  
Modular Design & Construction

Whiting-Turner Contracting Company



21<sup>st</sup> century construction requires fresh approaches toward creating buildings that accurately convey mature and expanded green building methodologies. Whiting-Turner is adopting these changes to improve the industry that has traditionally been entrenched in traditions of the past. This guide will help project teams understand the benefits and challenges of building with components, panels and modules and how these techniques provide a more efficient delivery of a project.

Whiting-Turner  
[www.whiting-turner.com](http://www.whiting-turner.com)

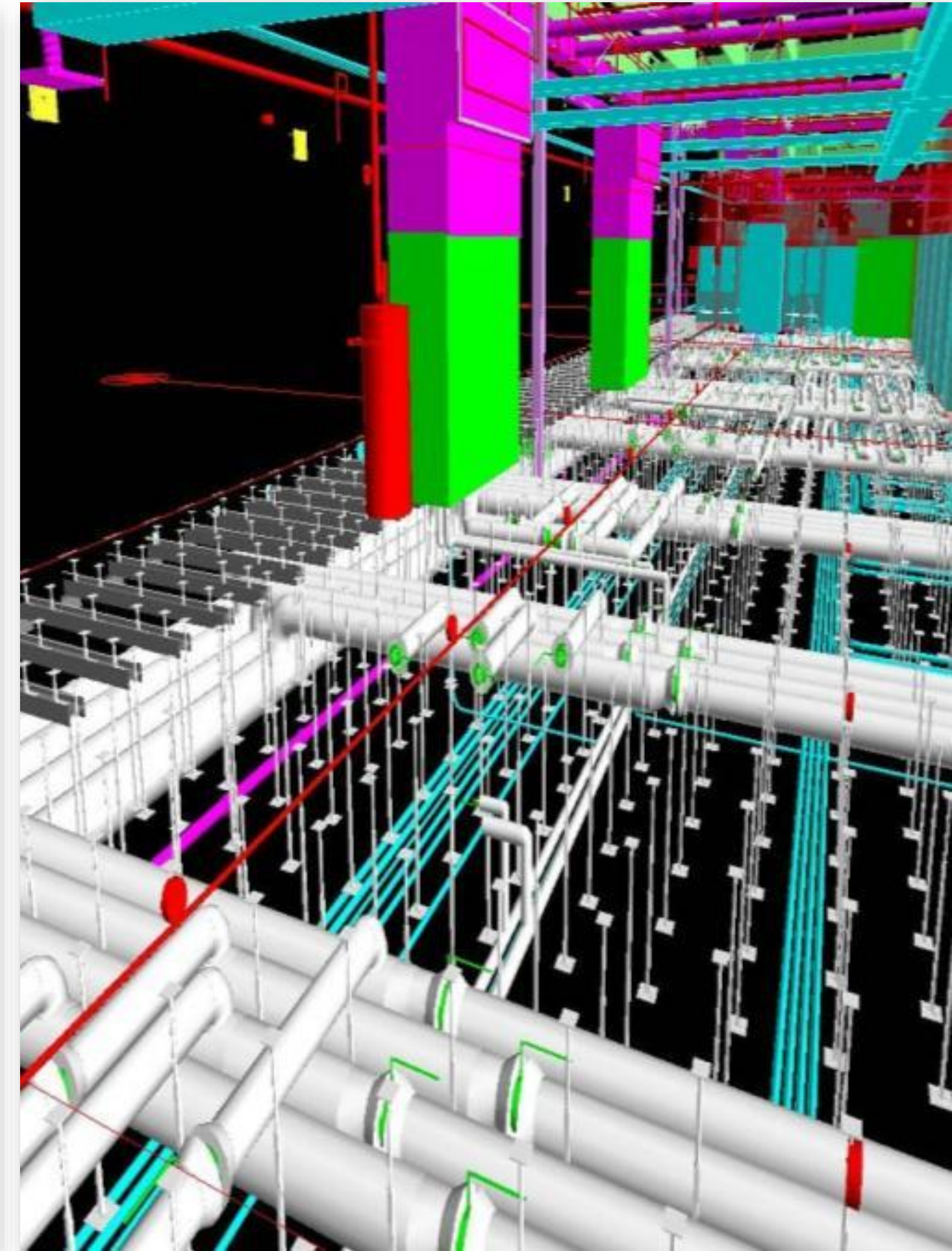
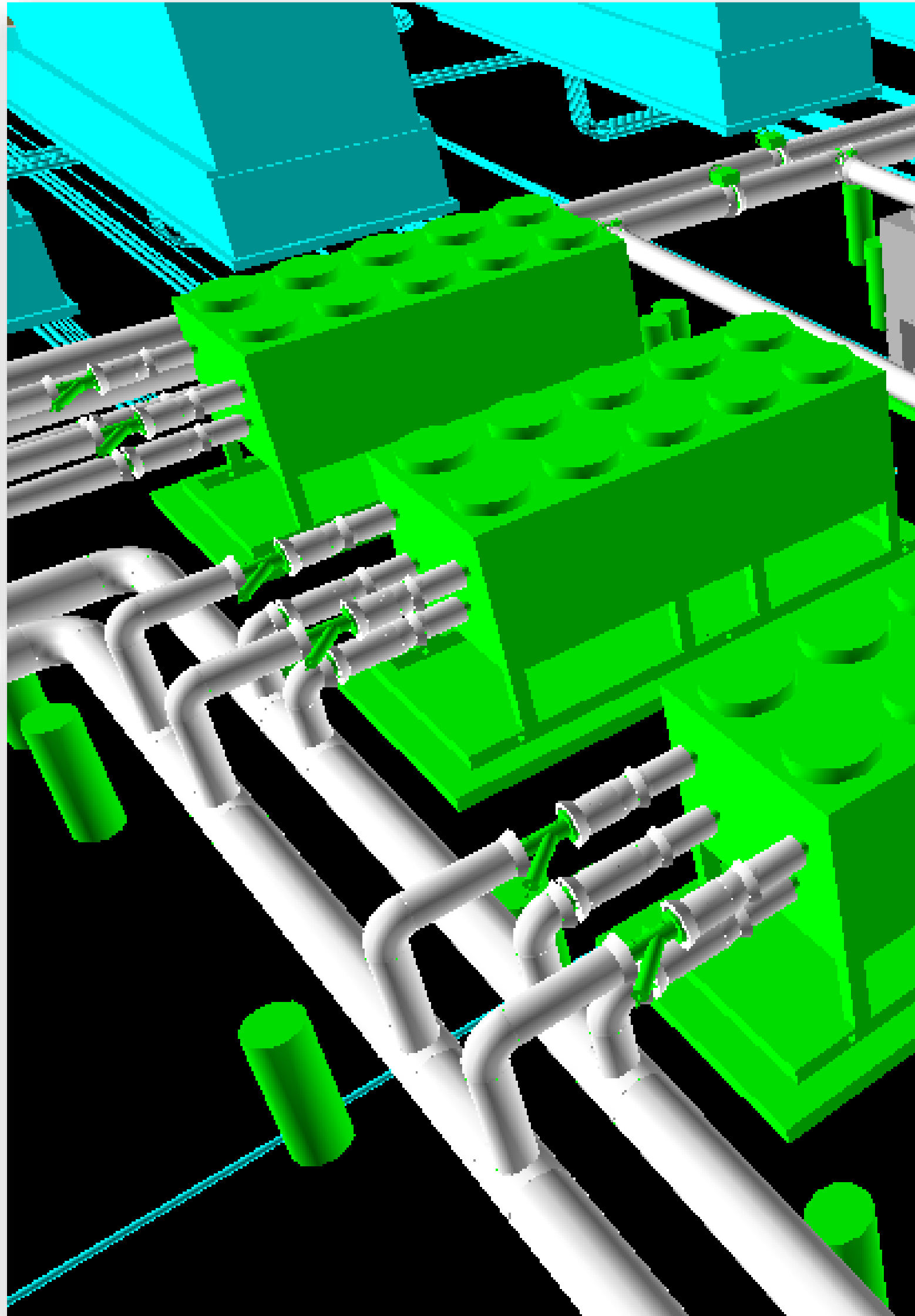
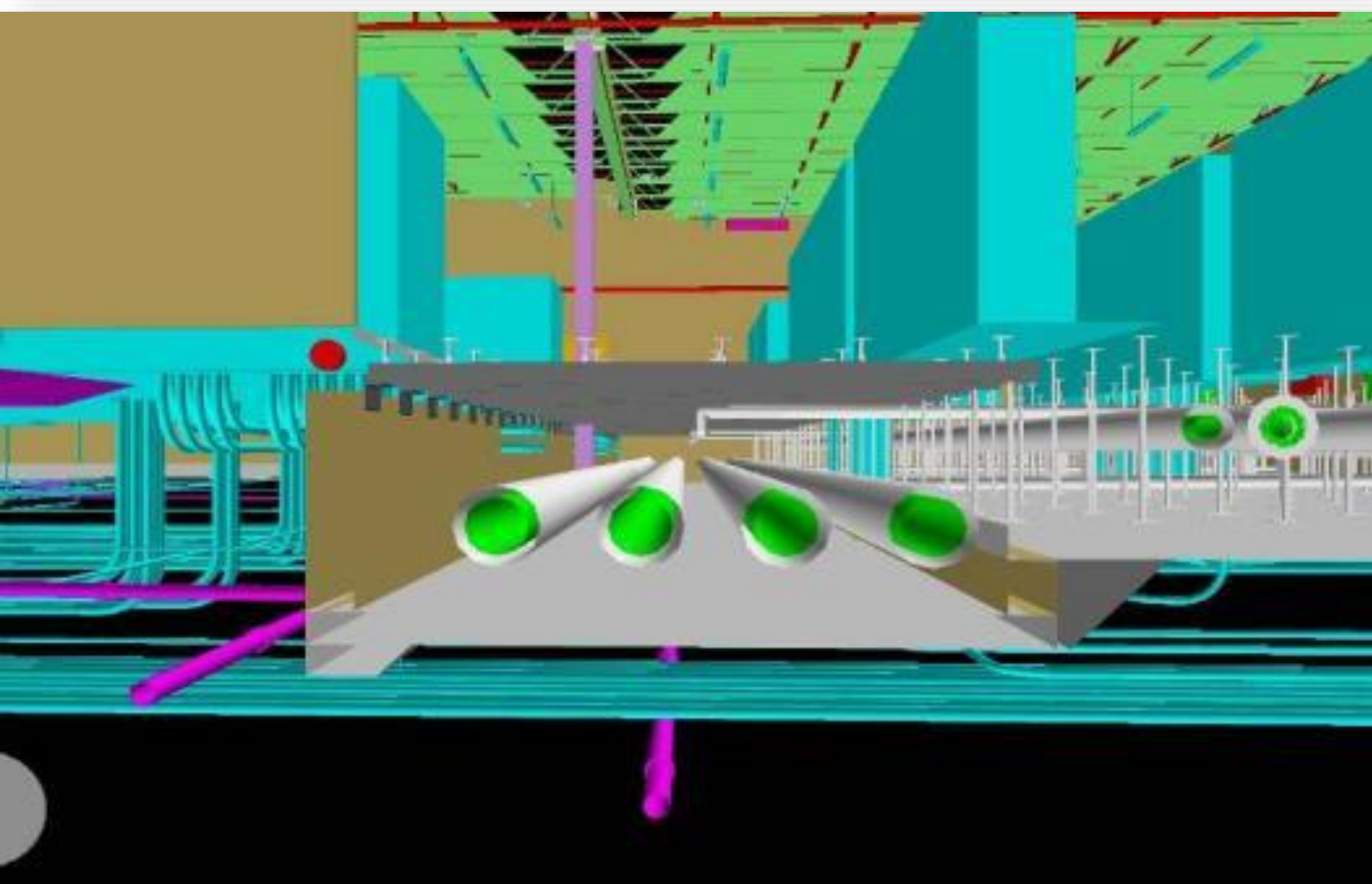
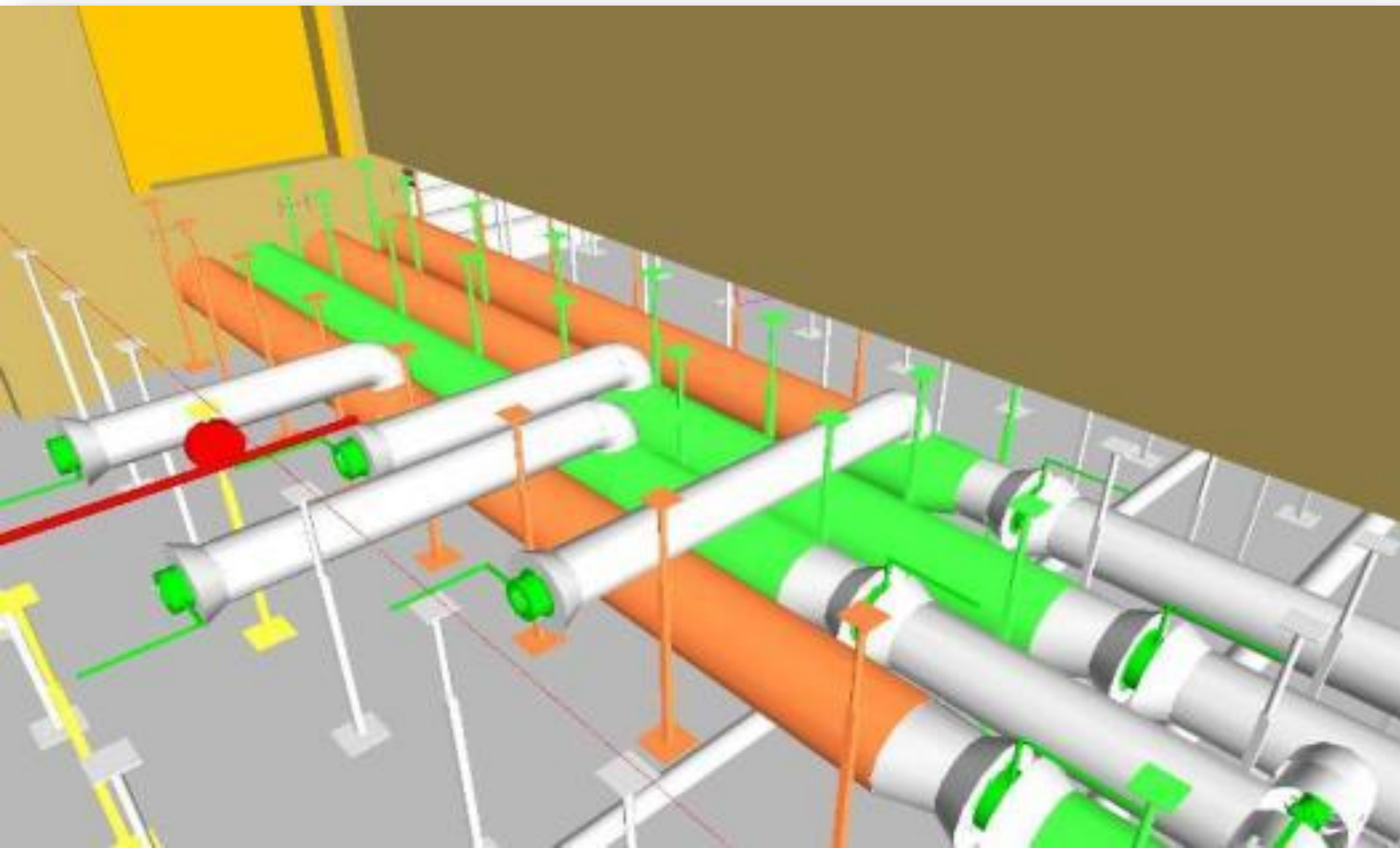


What can we build off-site?  
What can we modularize?





# MEP Prefab Experience





# Multi-Trade Prefab Experience





# Multi-Trade Prefab Experience





# Modular Experience





# Modular Experience

WOODEN EXPERIENCE



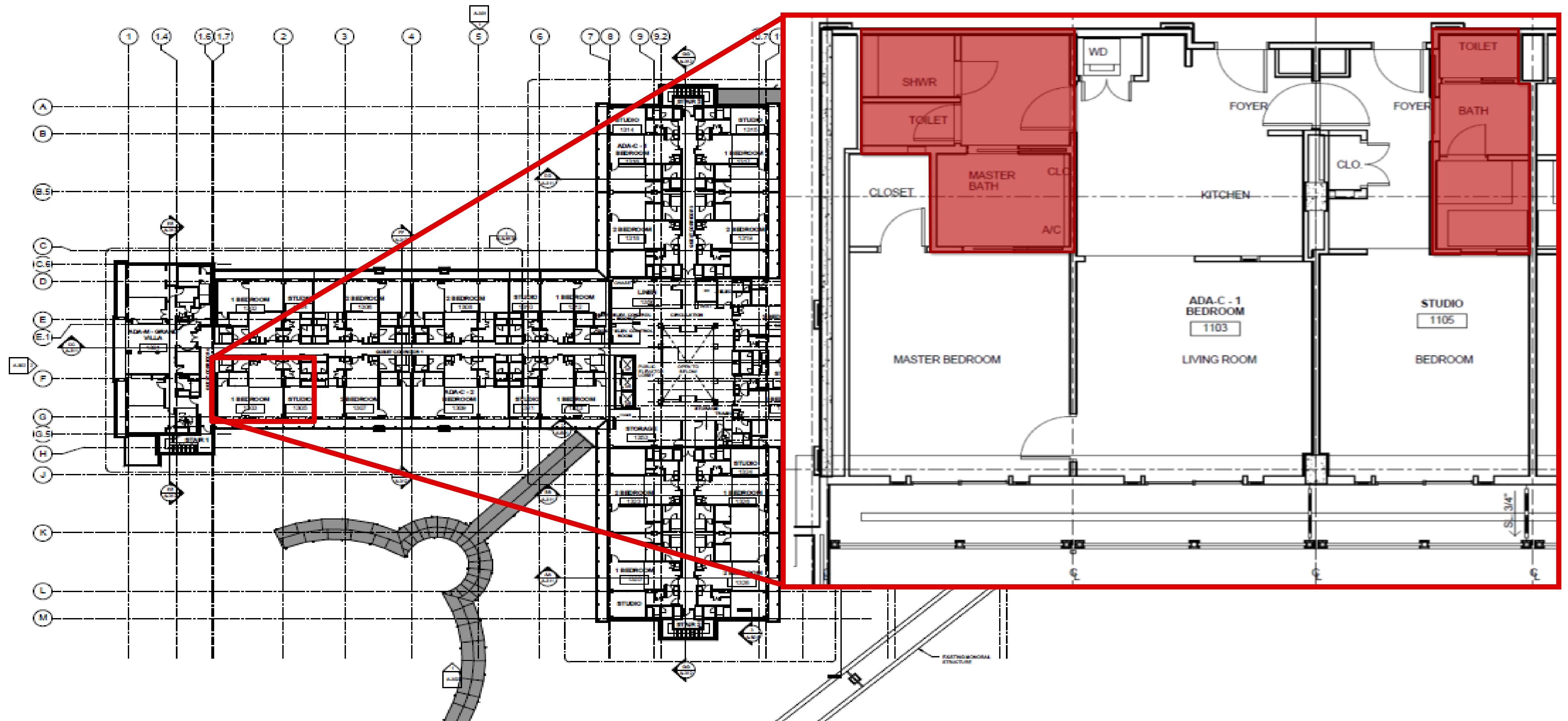


# Orlando Area Resort





# Modular & Prefab Goals





# Co-located vs. Turn Key Pods

## RFQ went out to 4 companies:

- Eggrock
- Neopod
- Ameripod
- Kullman

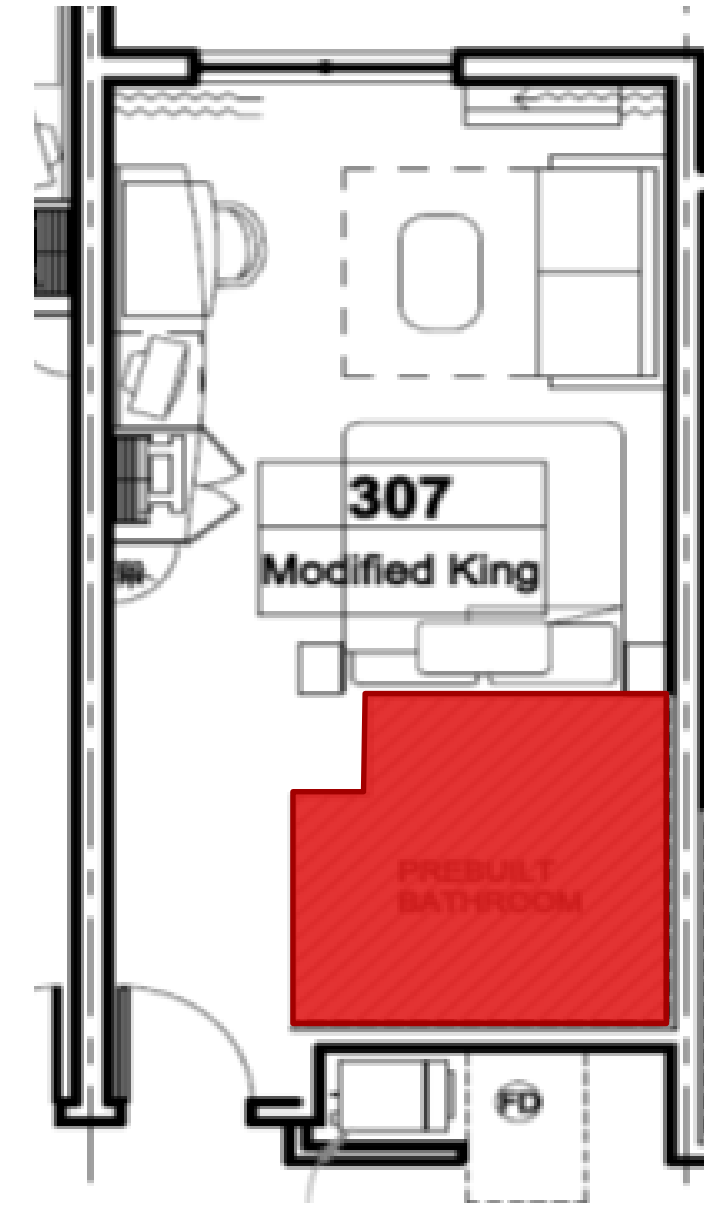
## Constructability concerns:

- Size of pods
- Required depressed slabs
- No experience with high-end finishes
- Requires early finish information to begin manufacturing

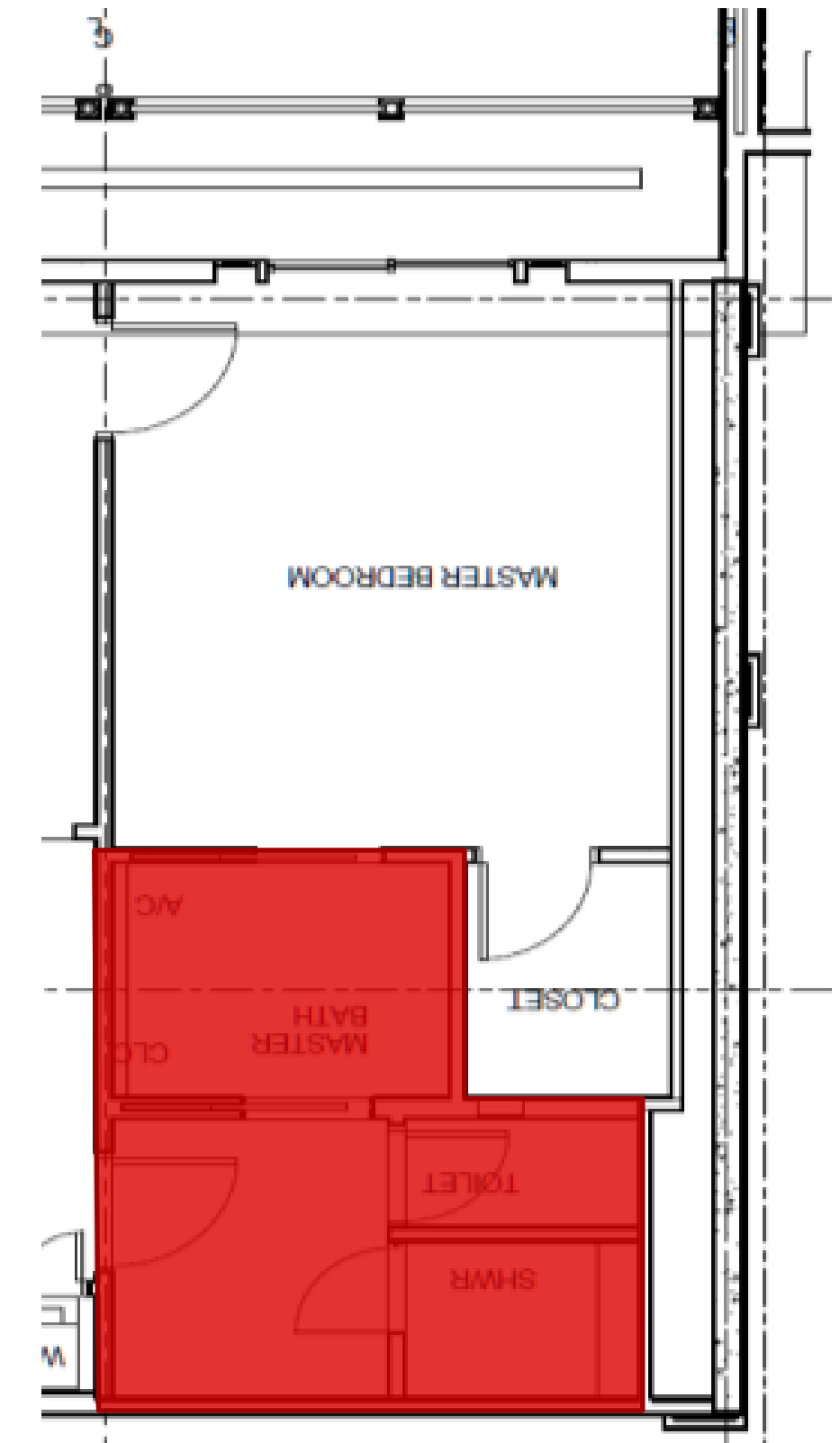




# Modular Challenges :: Finish & Size Restrictions



Typ. Eggrock  
Floor Plan



Orlando Area  
Resort Floor Plan



# Co-Located Pod Solution

*Maintains key advantages of turn-key pods,  
while overcoming some of the constructability issues.*

**Reduced Waste**

**Improved Schedule**

**Reduced on-site man hours**

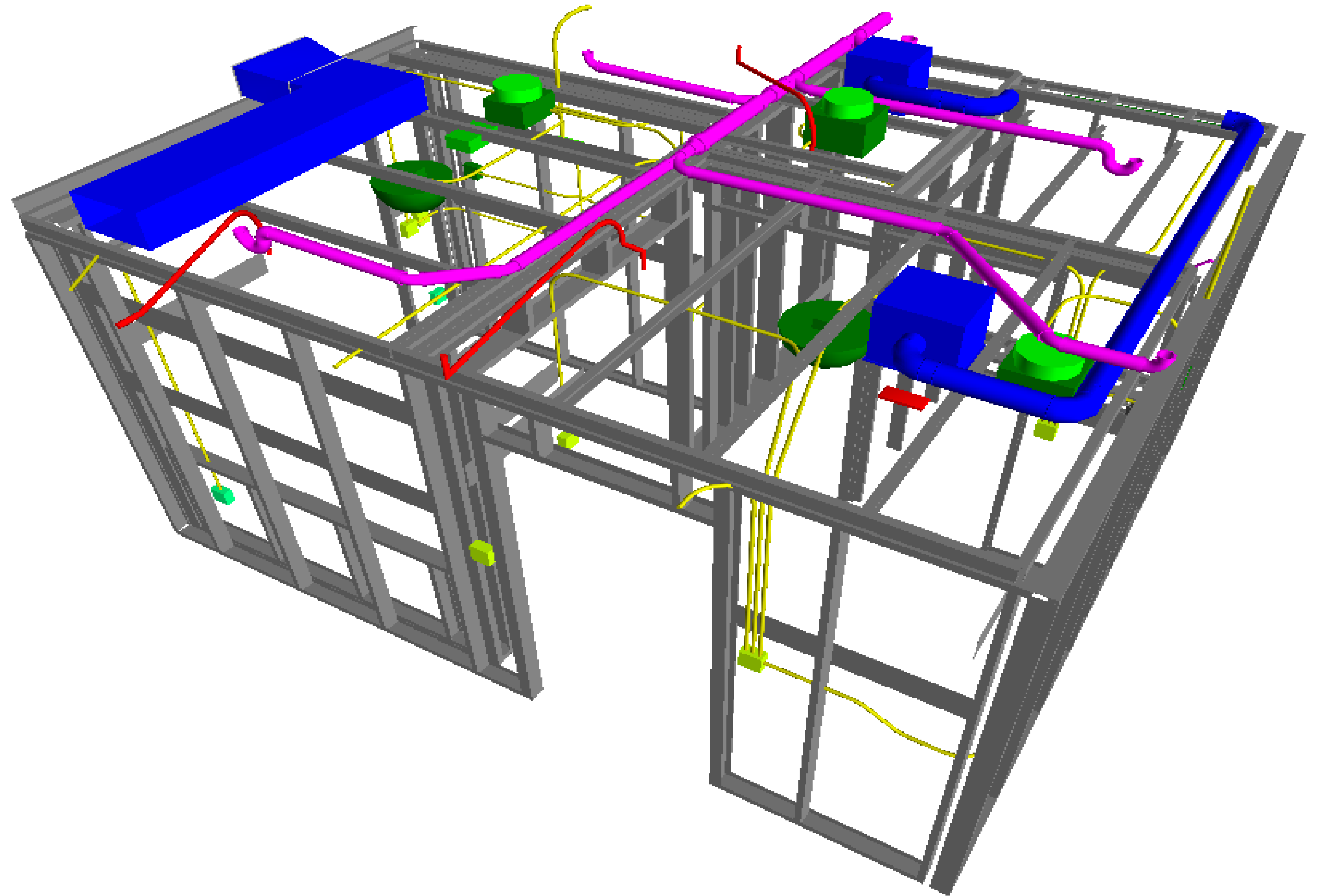
**Increased Quality**



# Multi-Trade Prefabrication

## What's In?

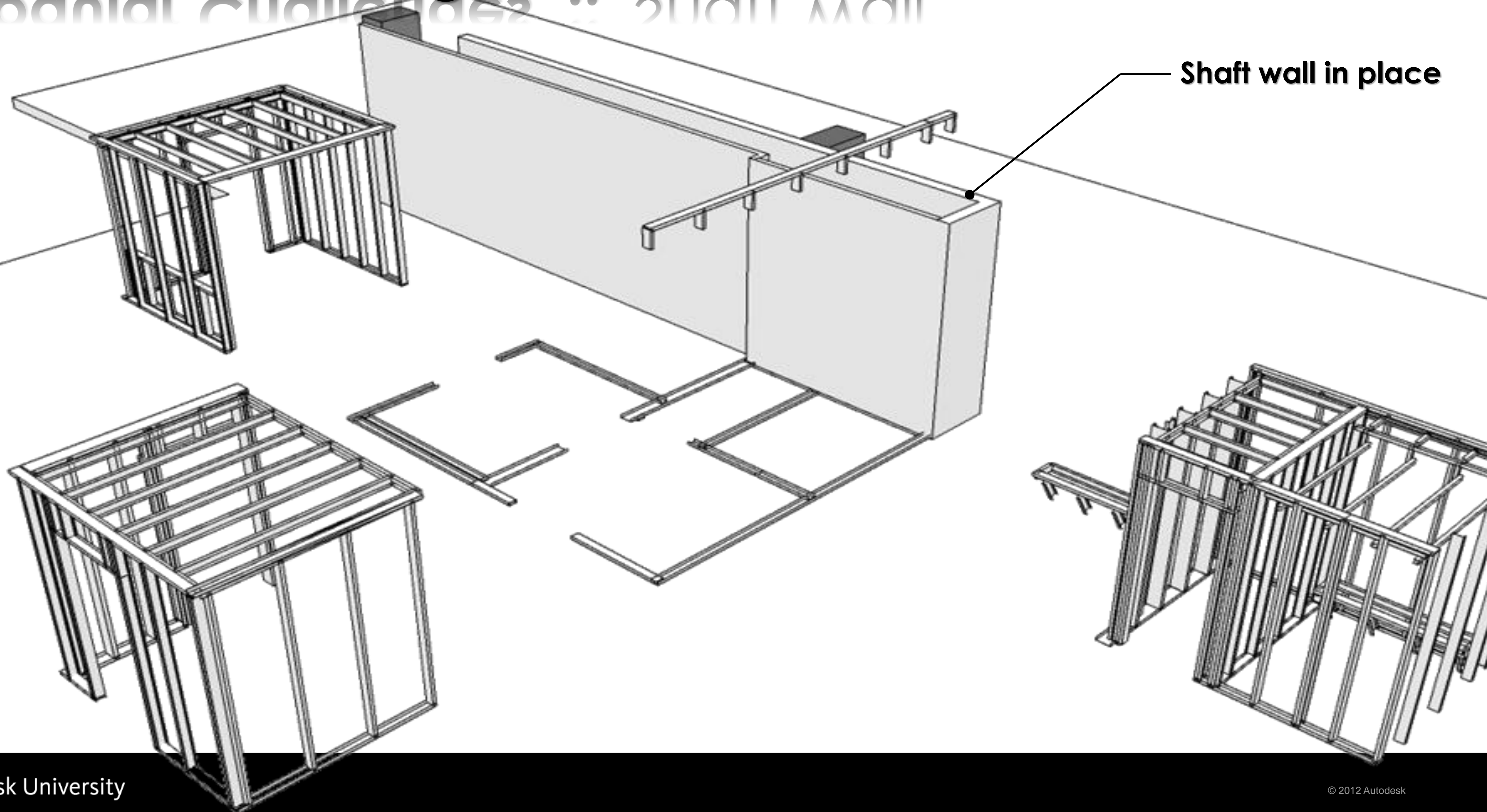
- Framing and Drywall
- Blocking
- Door Frames
- Electrical Rough-in
- Plumbing
- Mechanical Ductwork and Exhaust Fans
- Fire Protection Heads





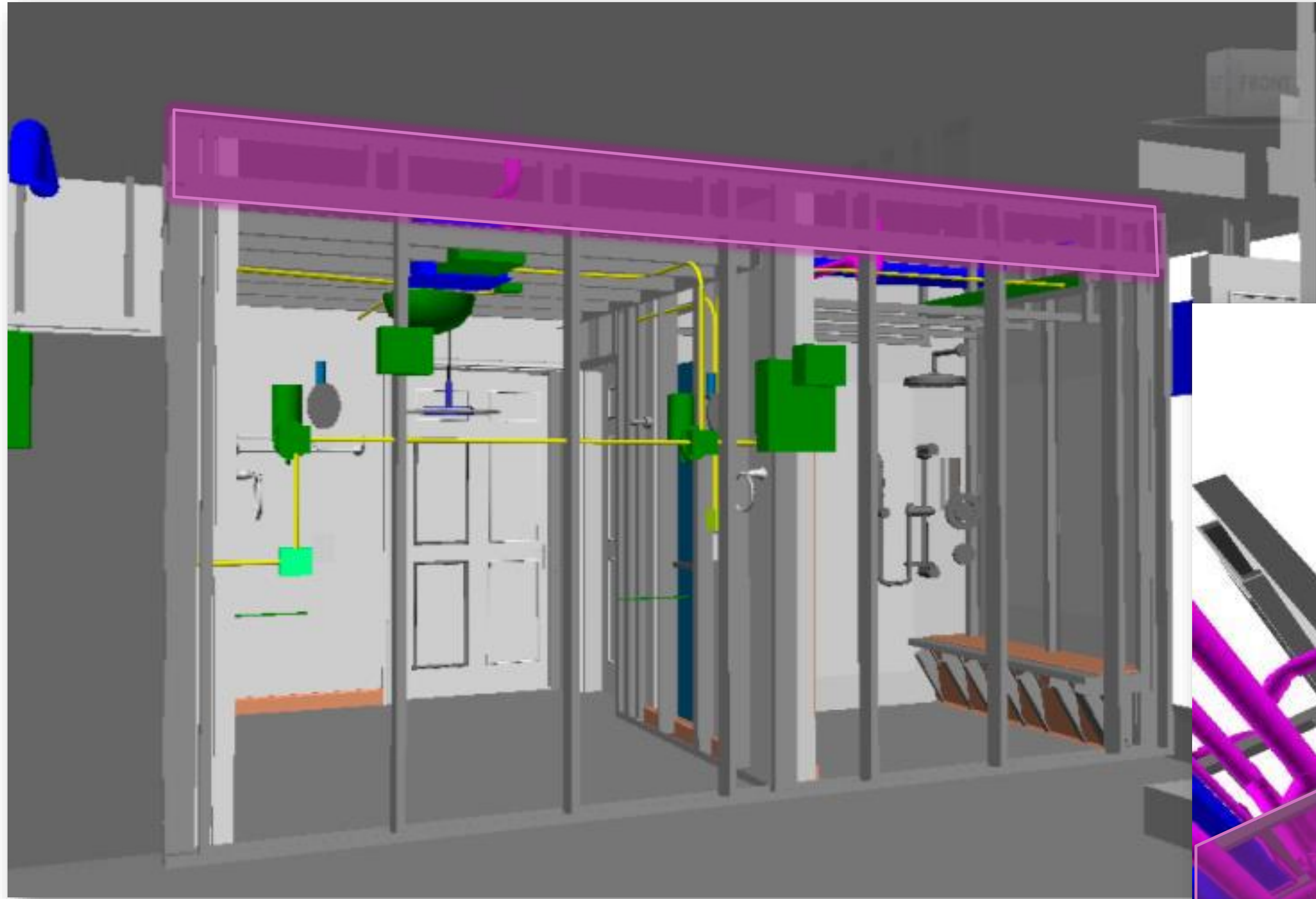
# Modular Challenges :: Shaft Wall

Shaft wall in place

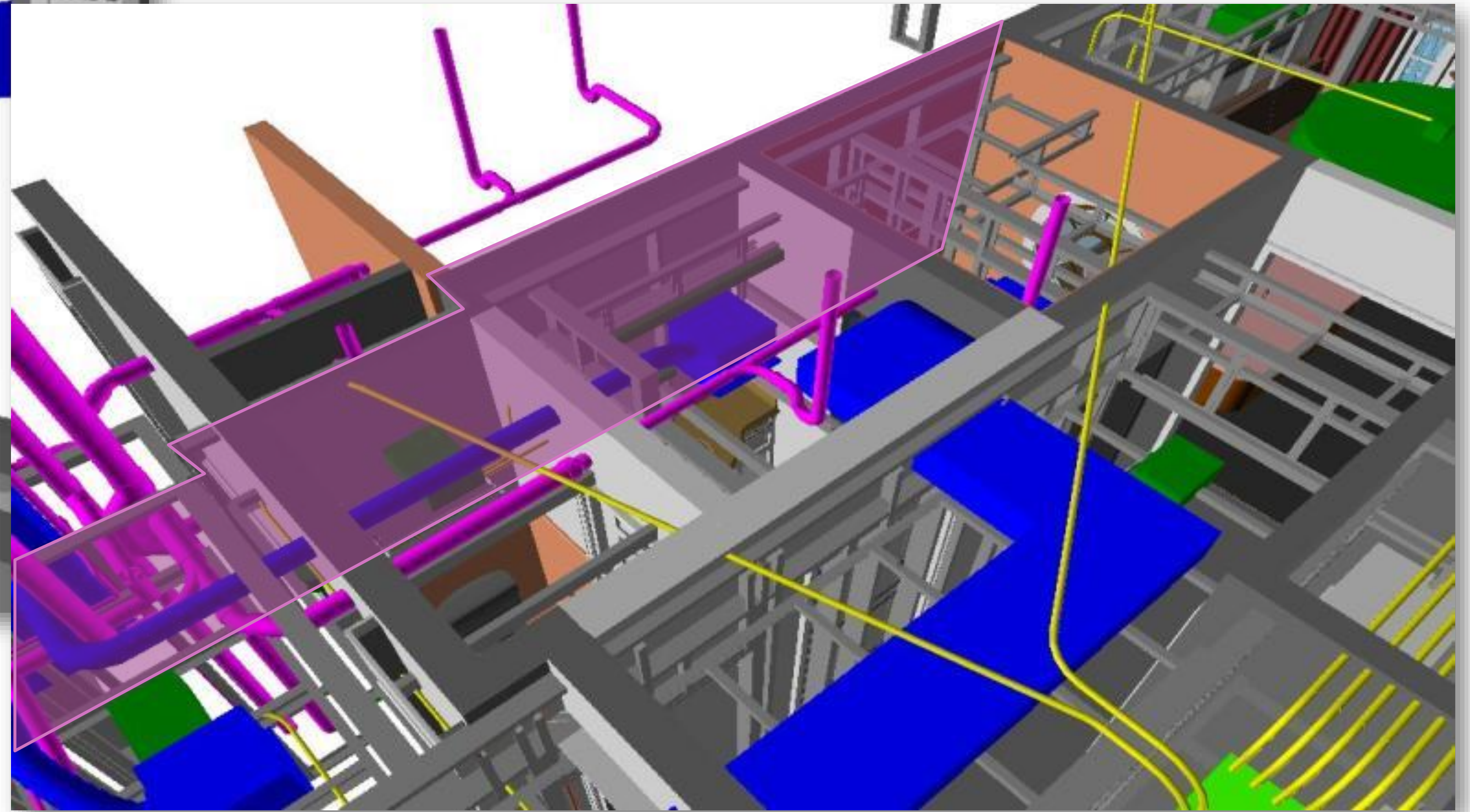




# Modular Challenges :: Rated Assemblies & Inspections



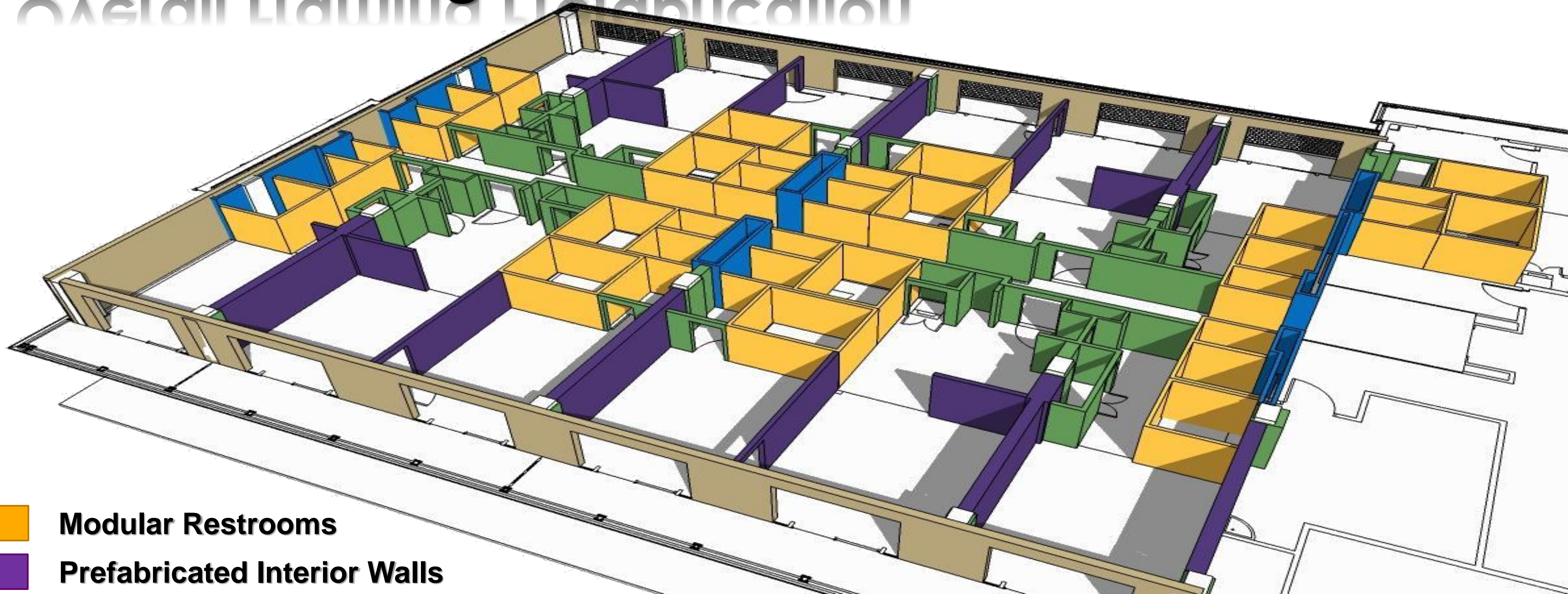
Corridor Wall in 2 Sections



Shaft wall in place



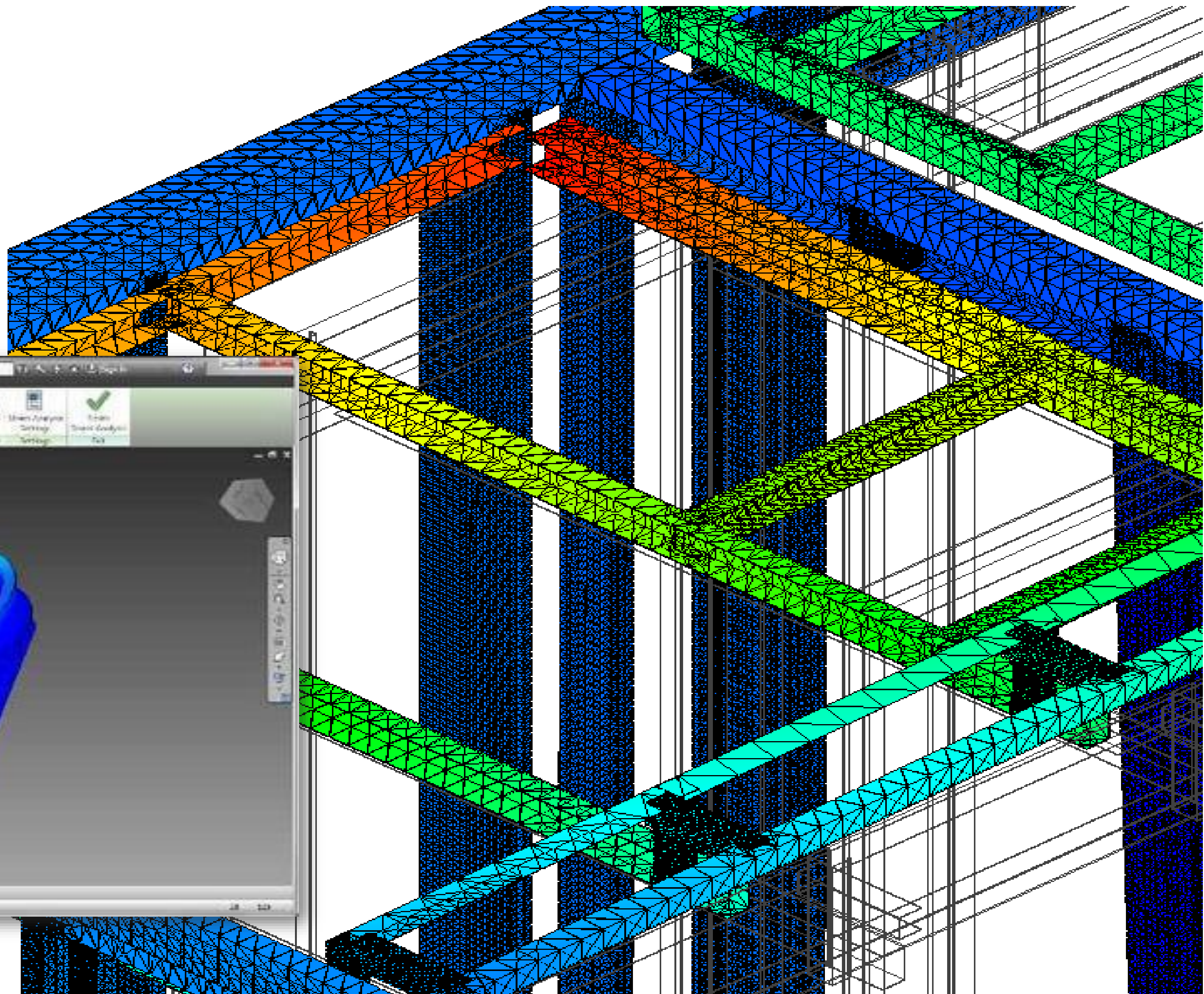
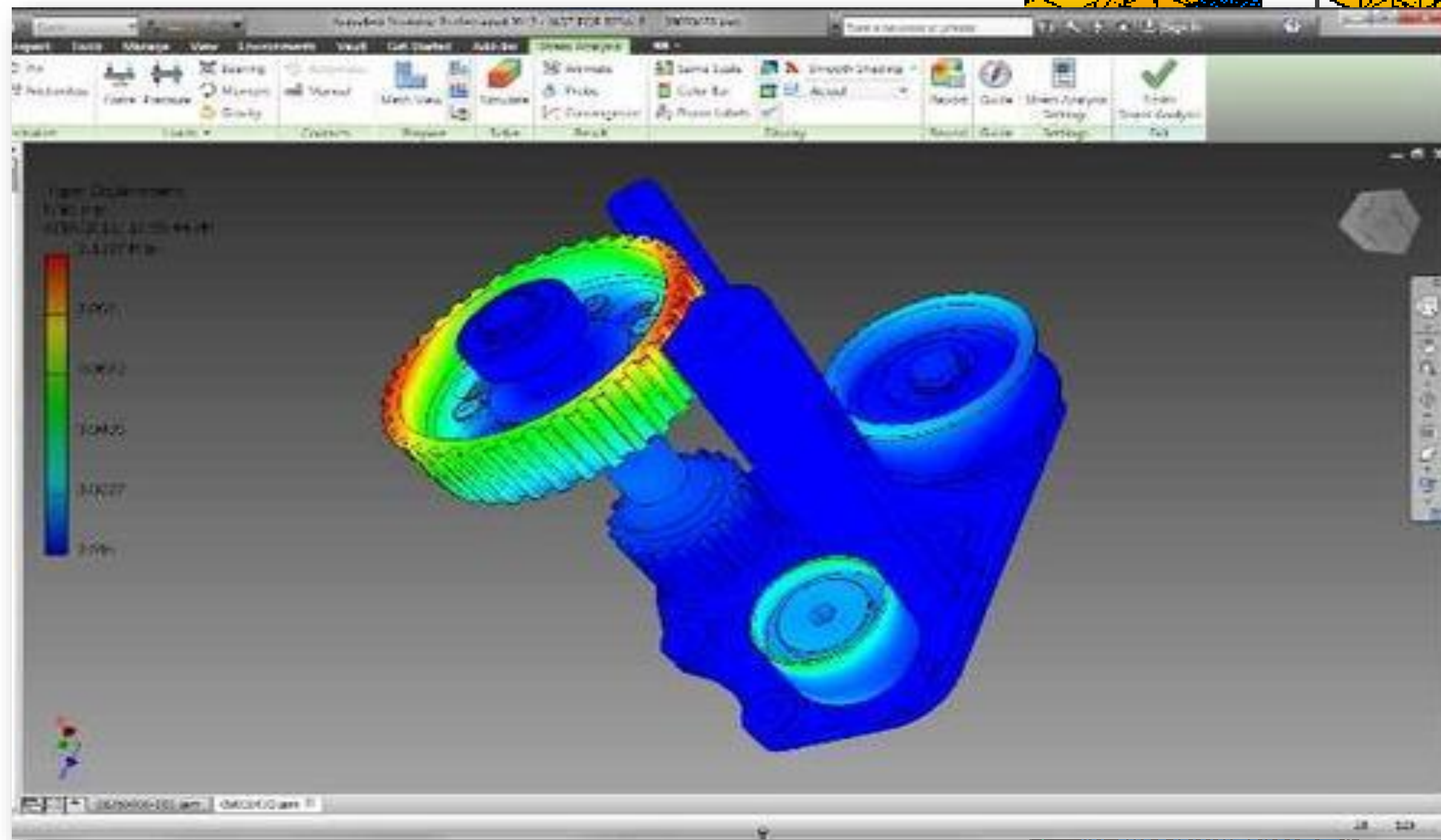
# Overall Framing Prefabrication



-  **Modular Restrooms**
-  **Prefabricated Interior Walls**
-  **Conventional Framing**
-  **Conventional Shaft Wall Framing**
-  **Prefabricated Exterior Wall Framing**

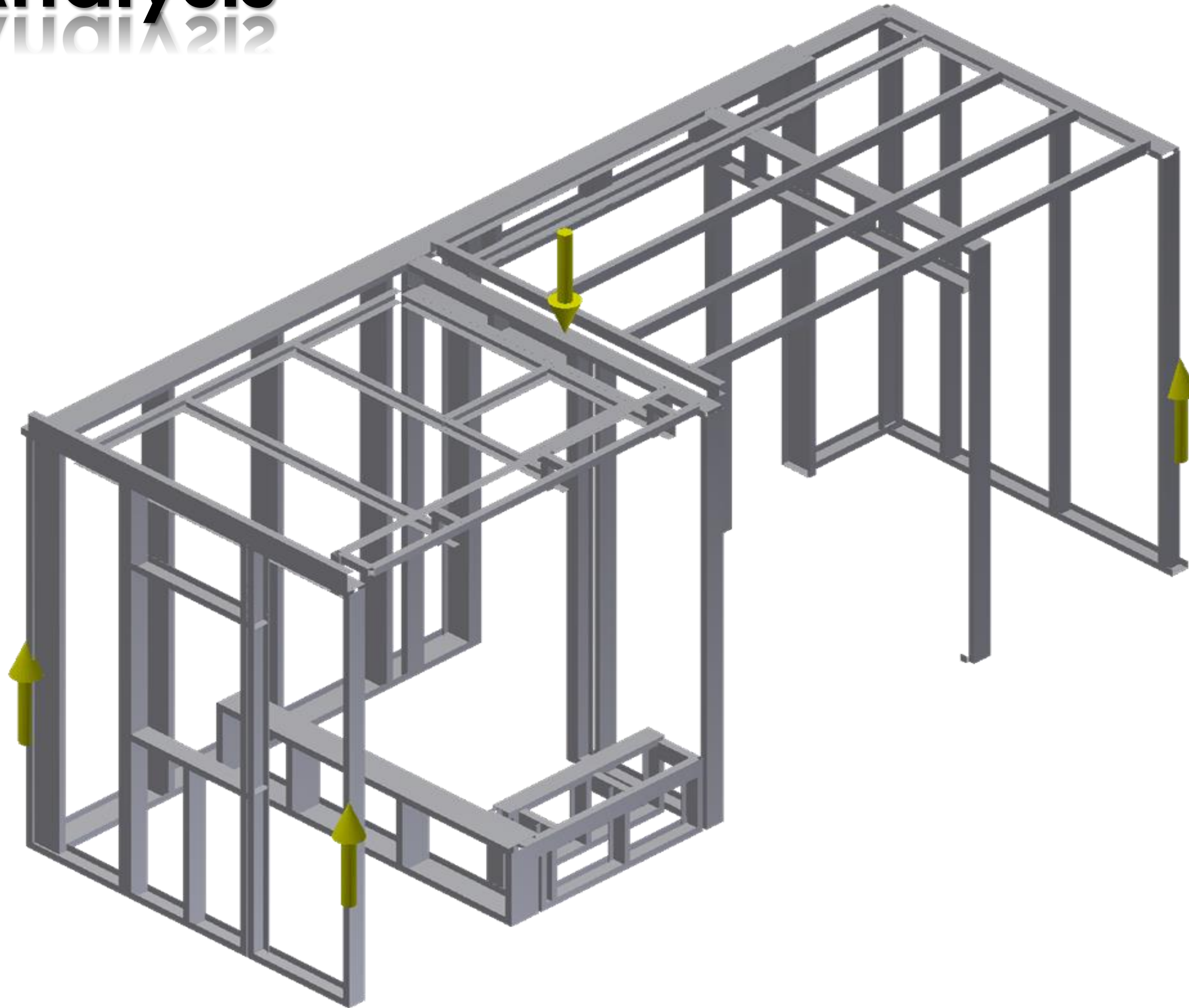


# Stress Analysis



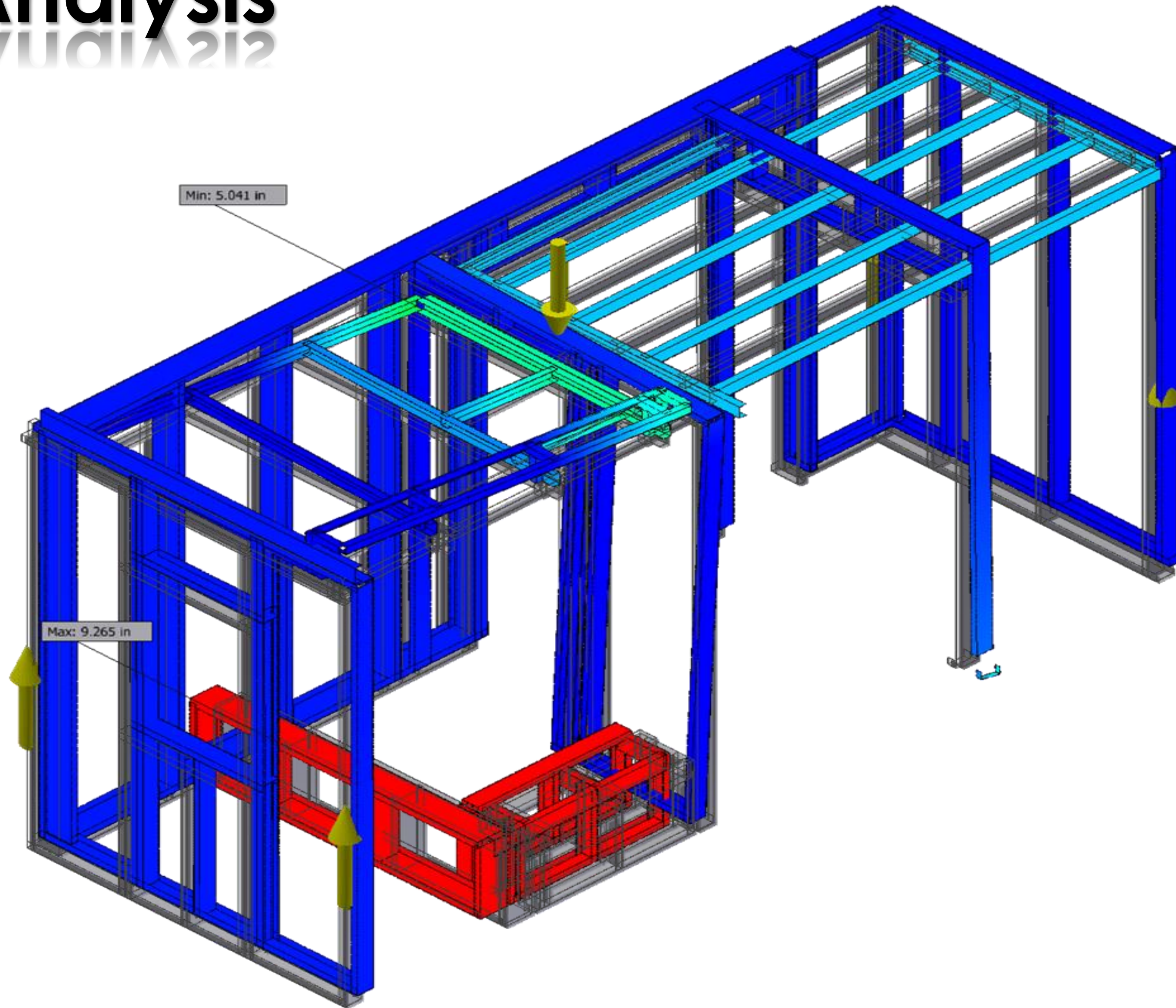


# Stress Analysis



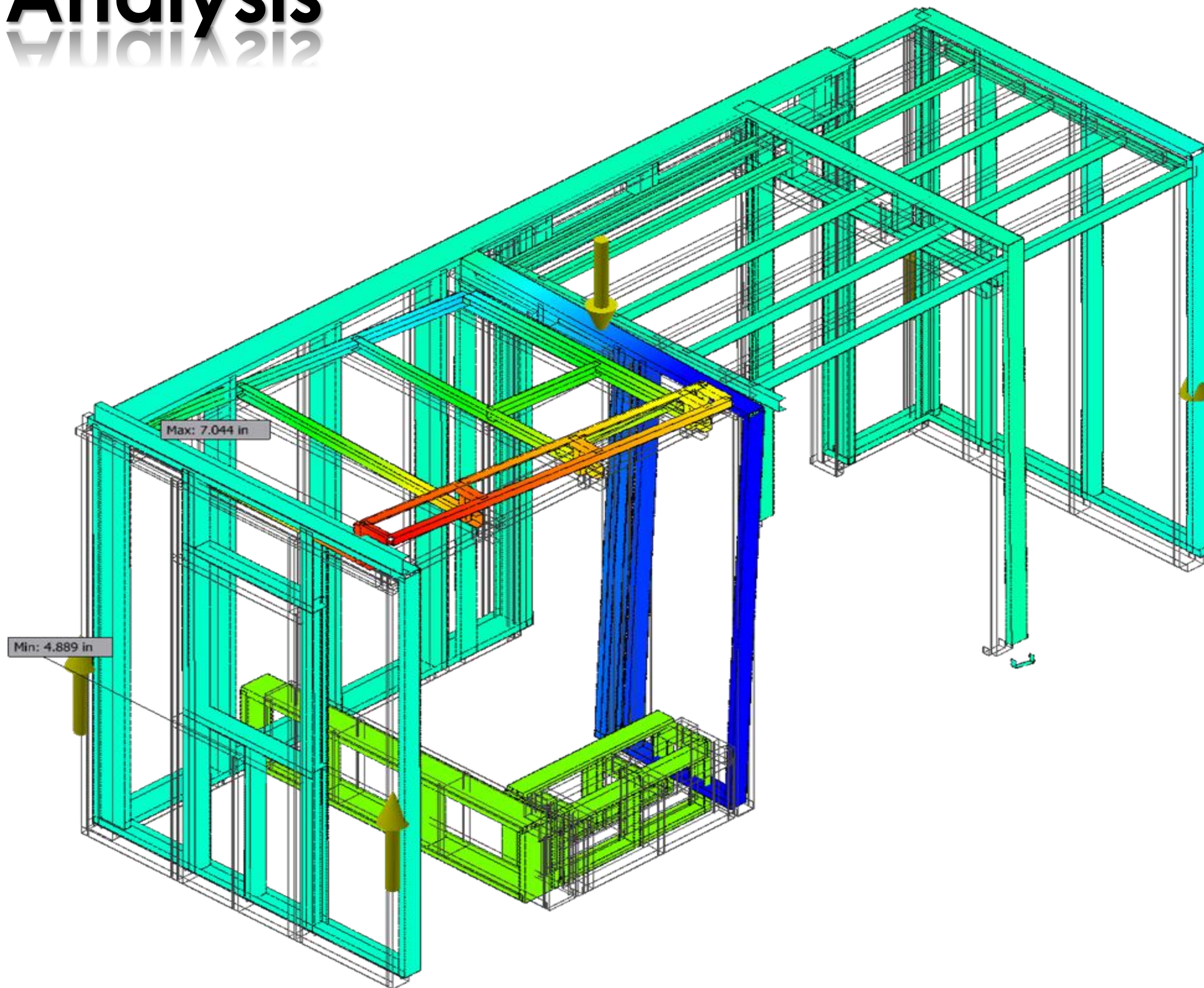


# Stress Analysis



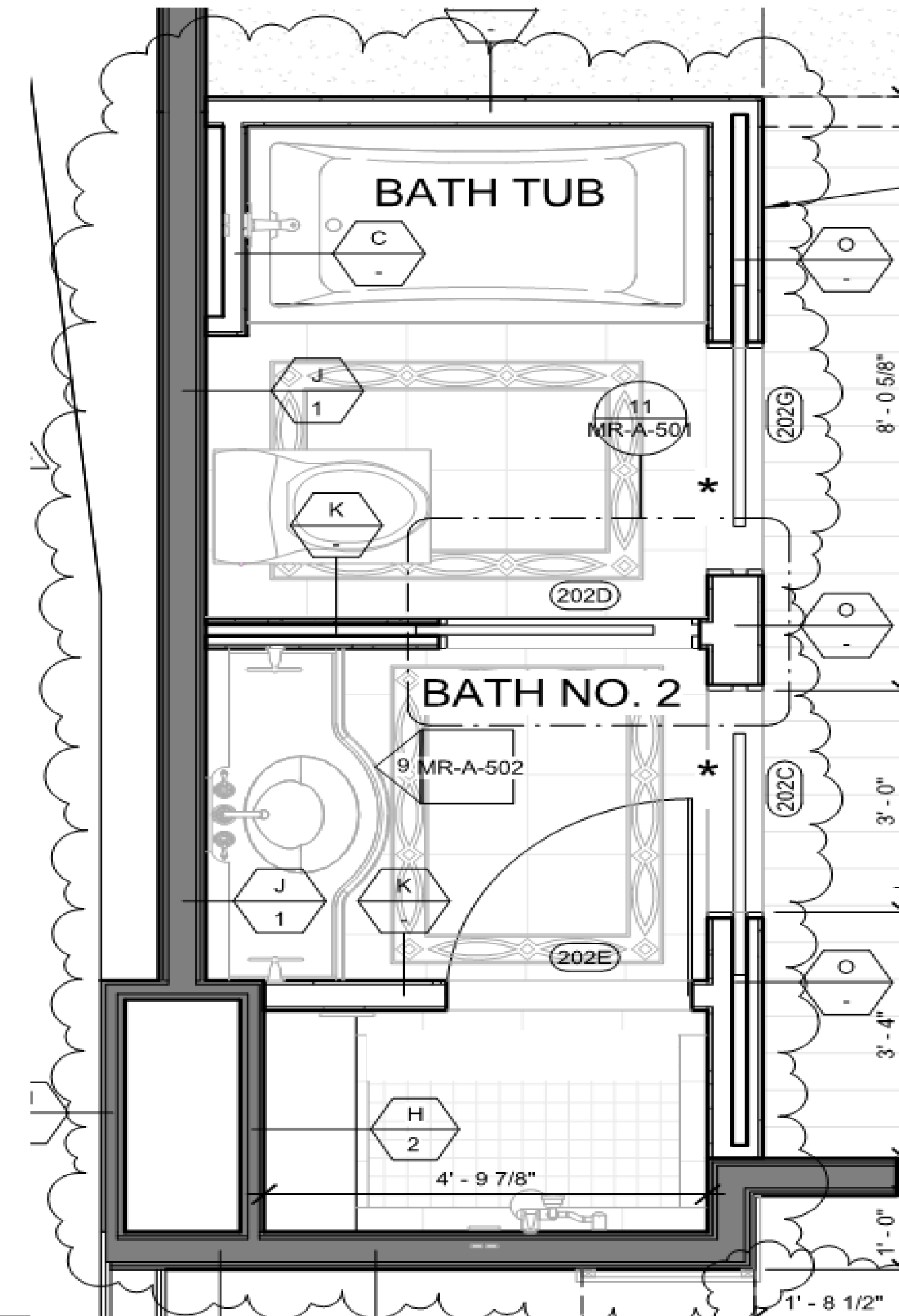
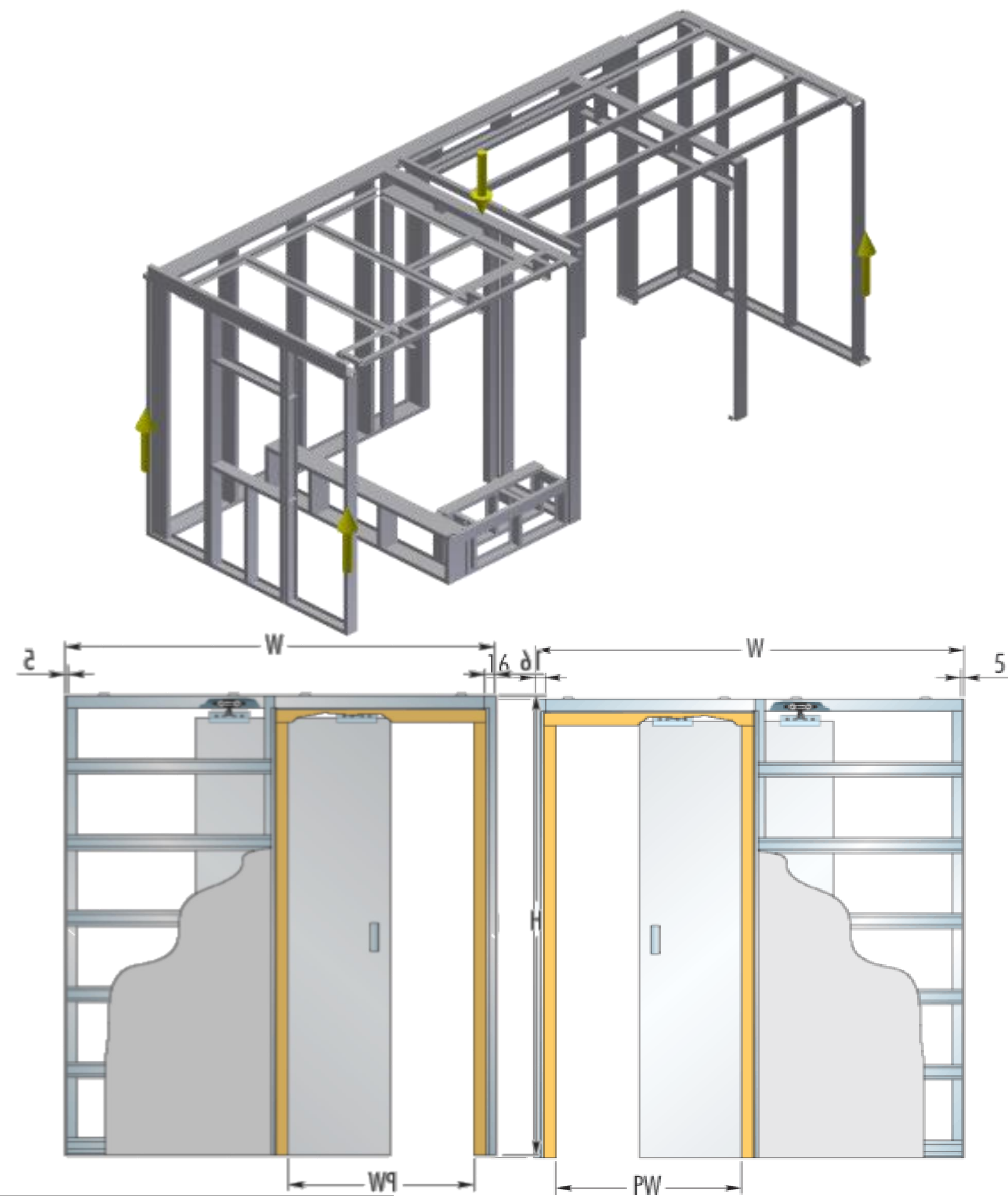


# Stress Analysis



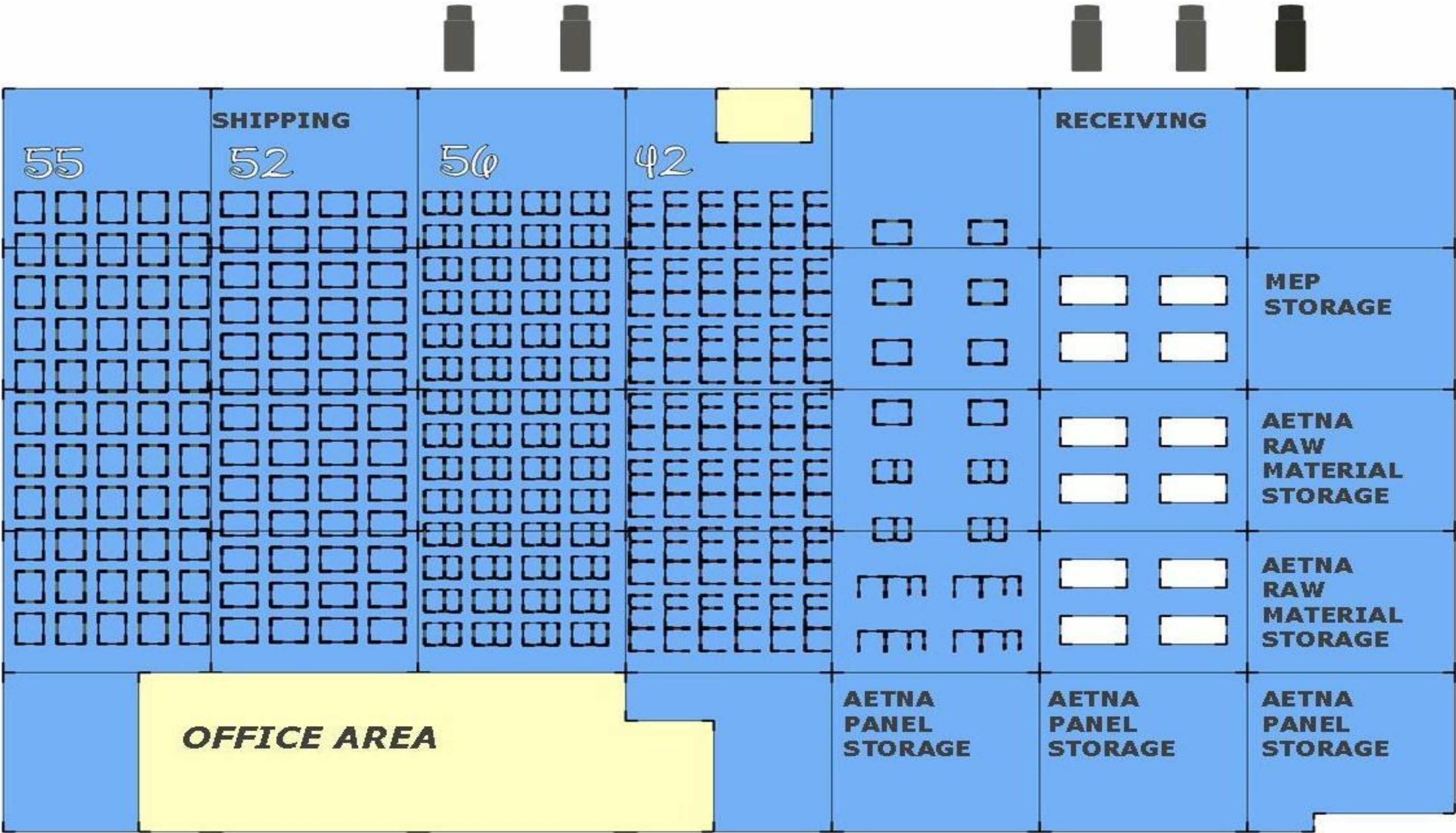


# Modular Challenges :: Studio Pods



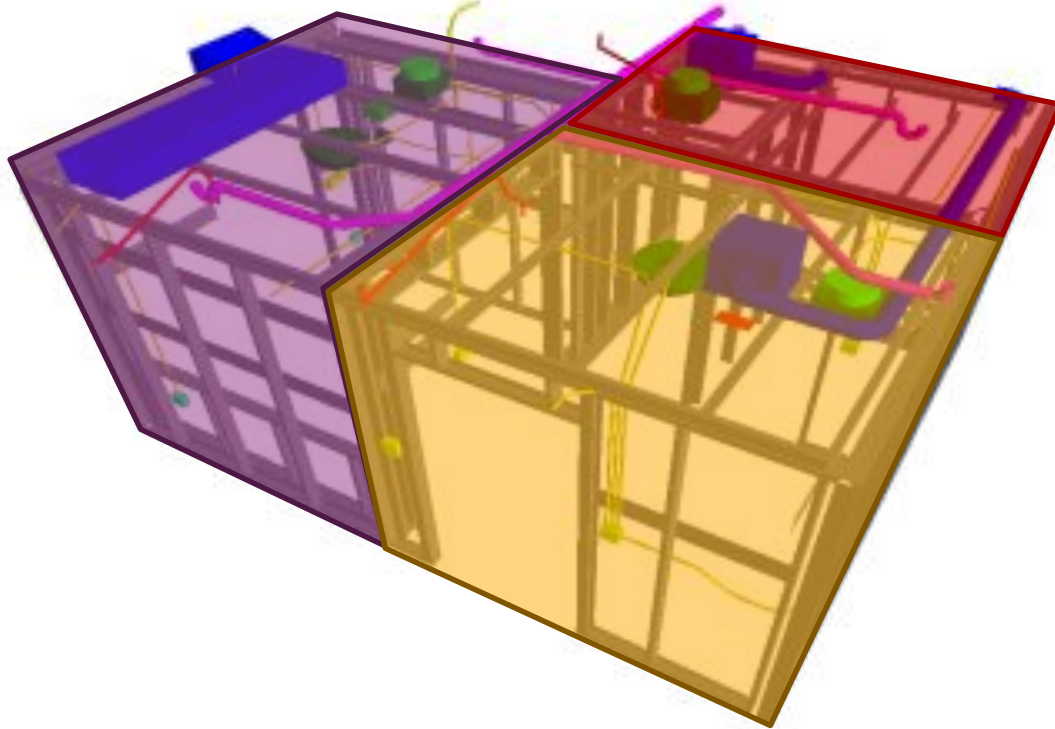


# Warehouse Concepts



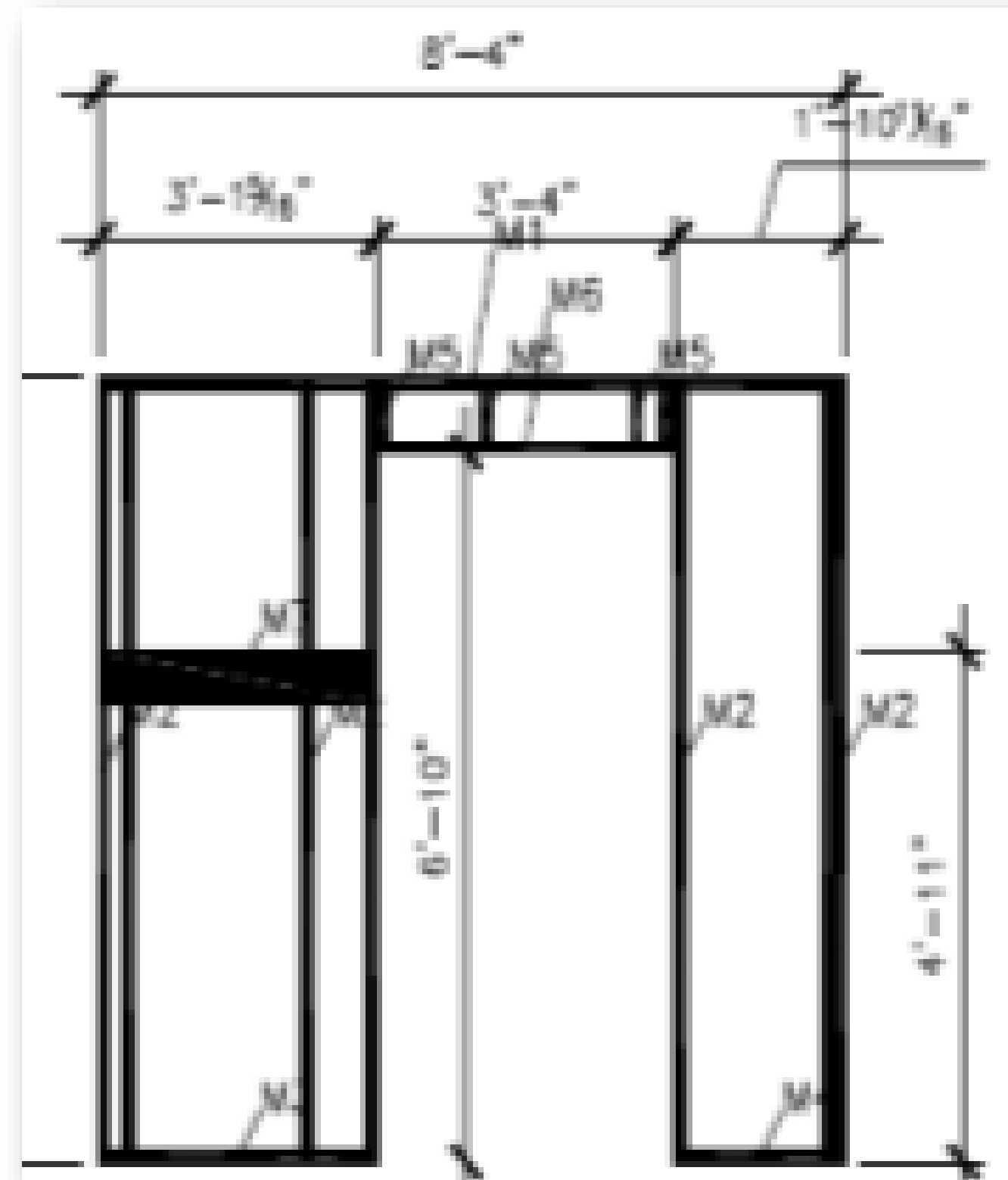


Ἦσιν αἱ μαθηταὶ ὁρῶντες τὰ λόφους





# Quality Control





# Manufacturing Mindset





# Manufacturing Mindset





# Manufacturing Mindset





# Pod Delivery



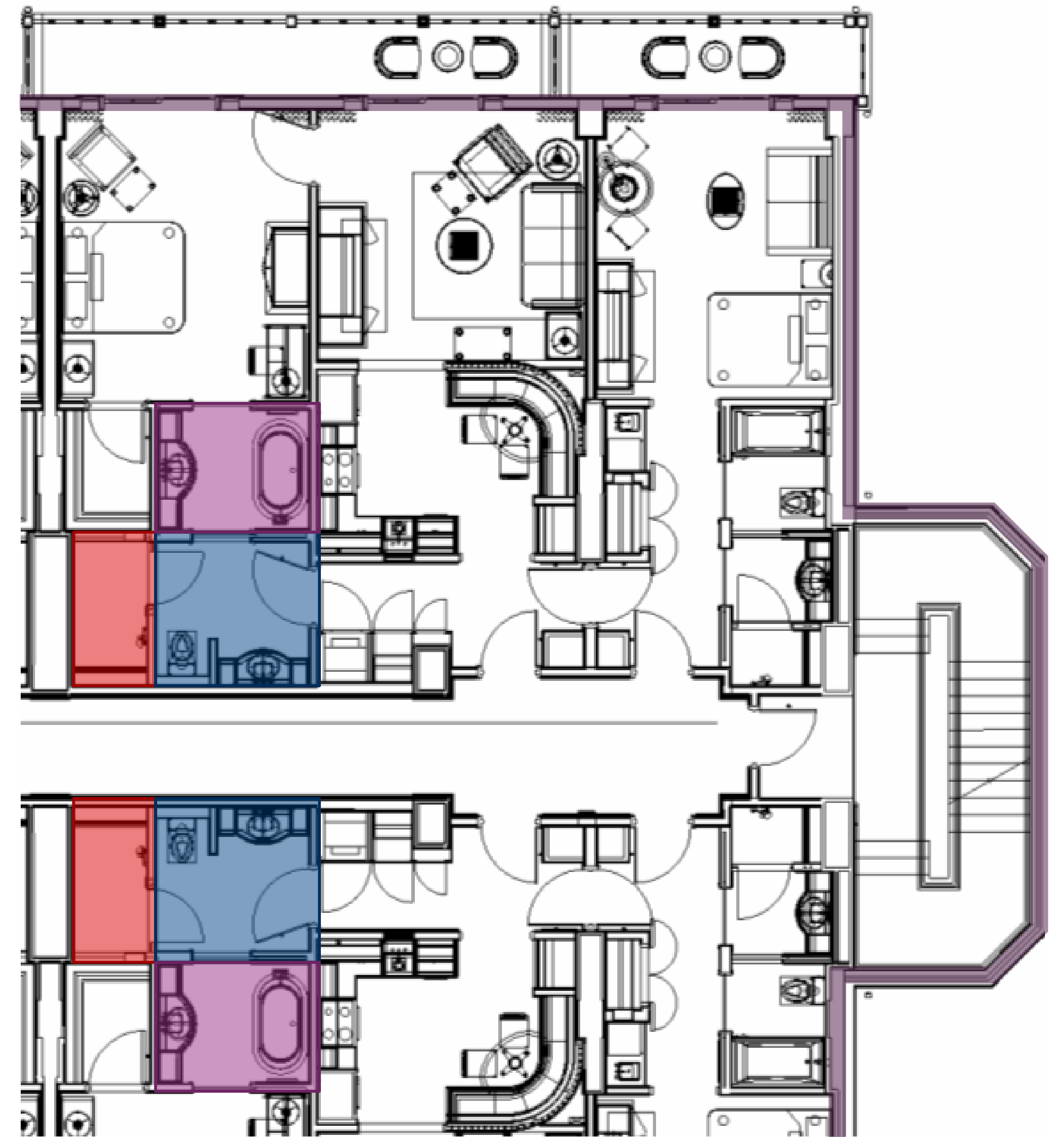
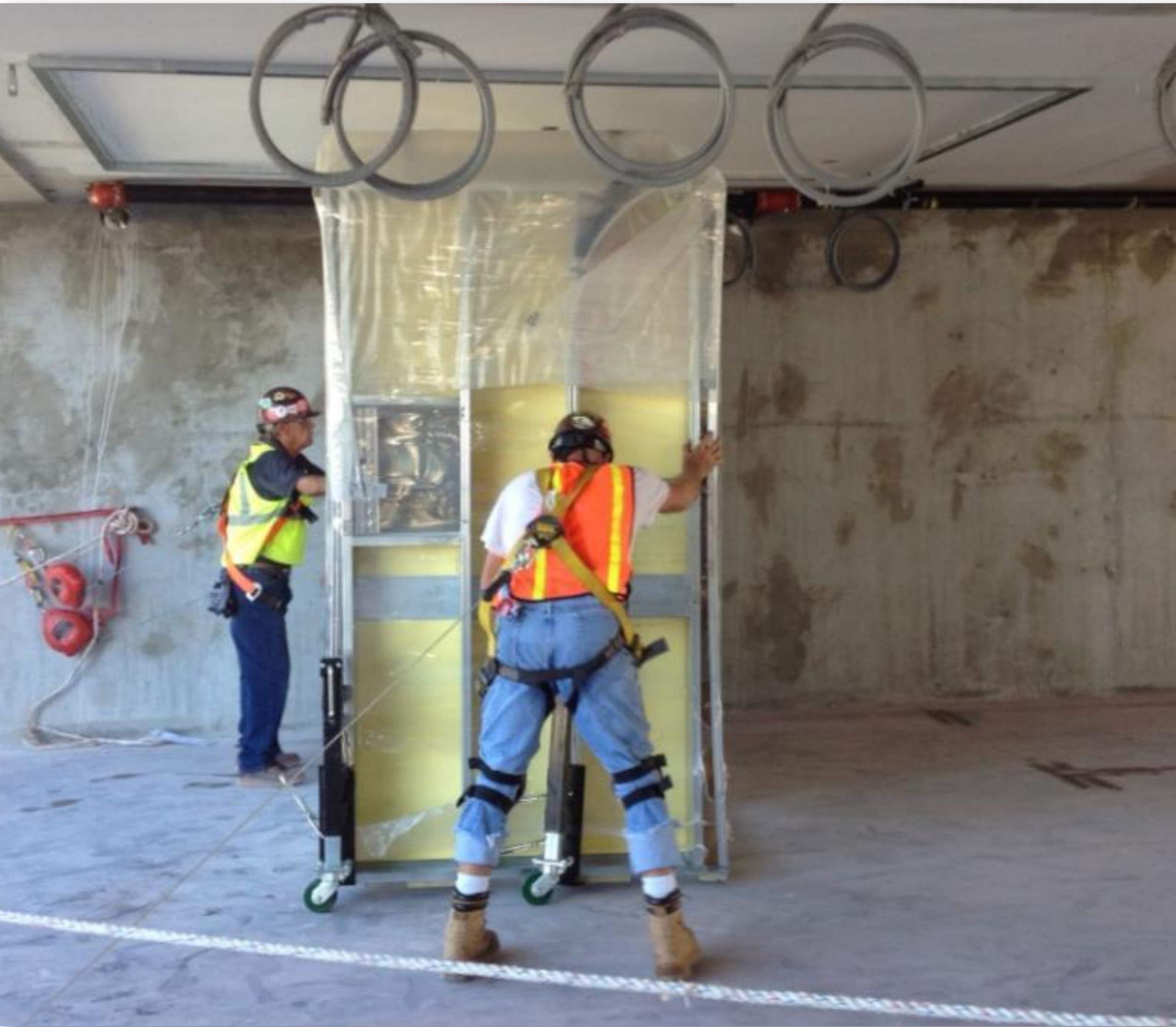


# Pod Installation





# Pod Installation





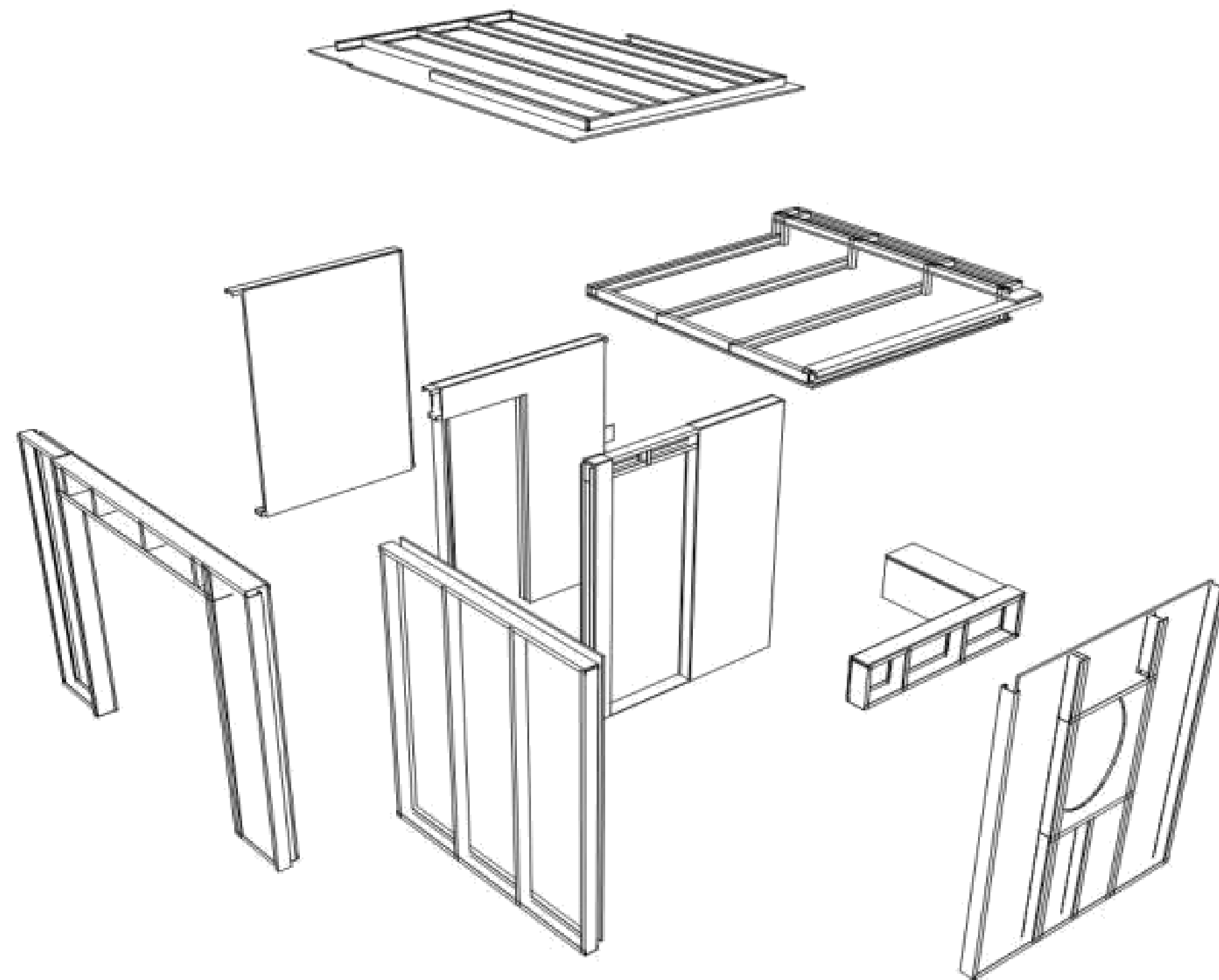




# Change of Mindset

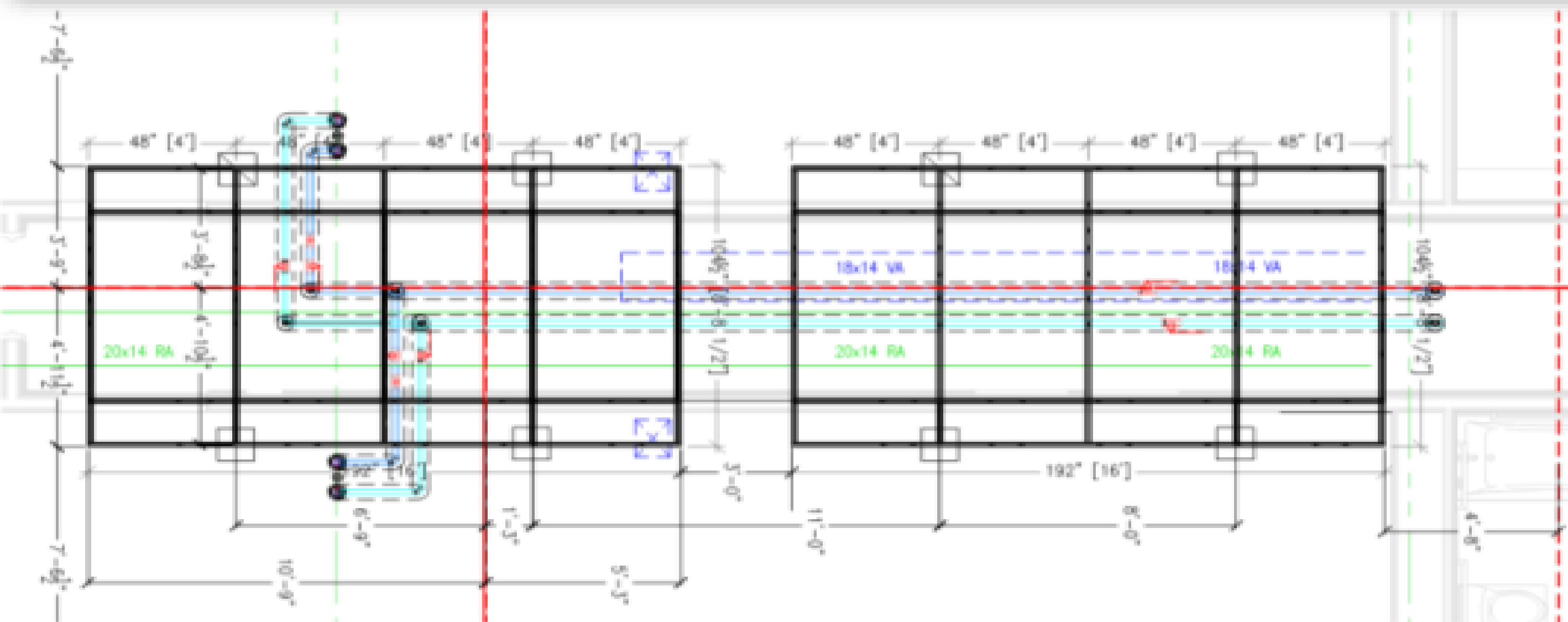
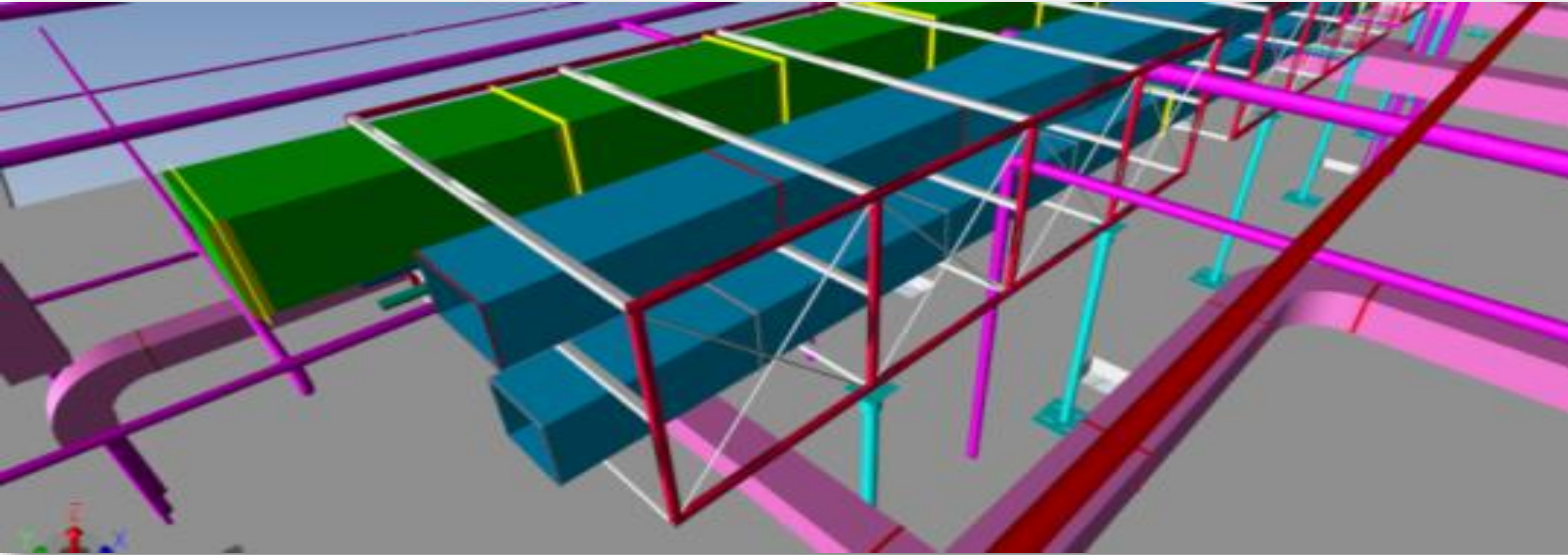
**This level of prefabrication requires a change to the way we traditionally deliver projects:**

- Need design decisions made earlier in the process
- Can reduce the ability to make changes without significant impacts
- Requires some design flexibility to maximize efficiencies
- Absolutely requires GC and Design Assist input at early stages of design process



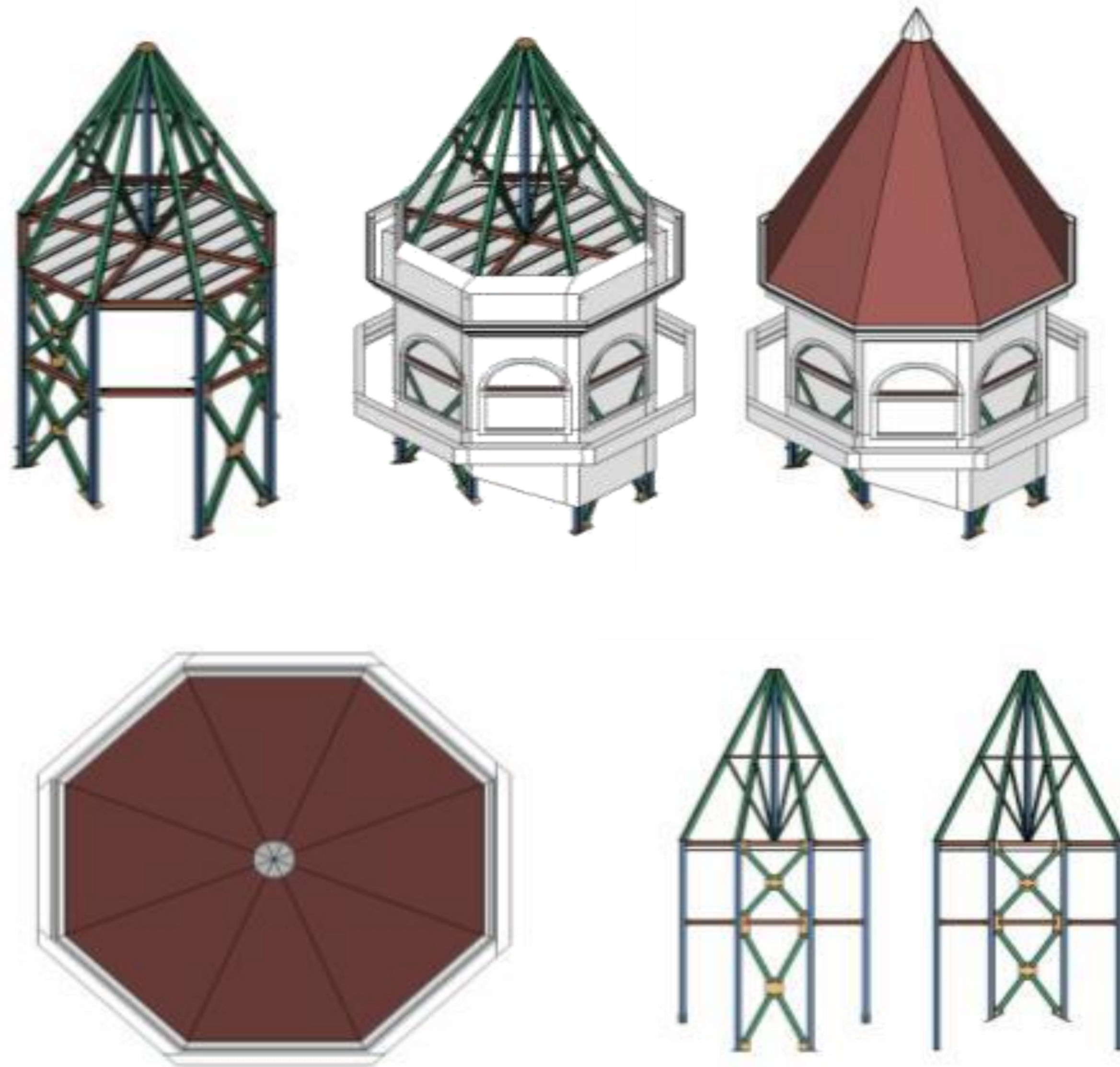
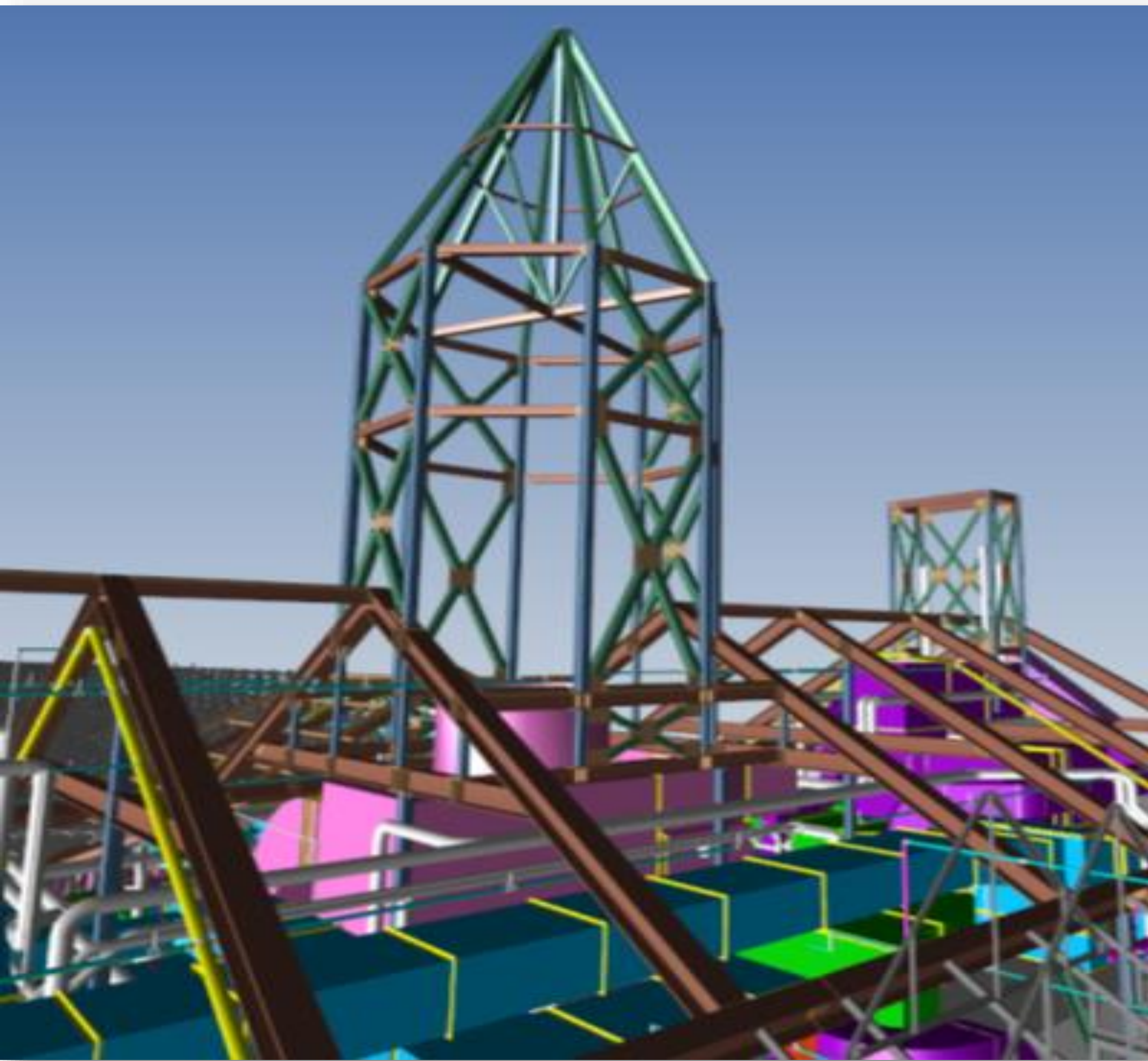


# Mechanical Racks





# Other Opportunities...





# Modular & Prefab Summary

## Design Assist Shift of Man Power Hours

### (Framing & Drywall)

Total Hours on the Job	84,100
Prefab Hours	9,600 (just over 10%)

### (Plumbing)

Total Hours on the Job	22,800
Prefab Hours	2,900 (just over 10%)

### (Electrical)

Total Hours on the Job	47,490
Prefab Hours	1,900 (just under 5%)

### (Mechanical)

Total Hours on the Job	19,568
Prefab Hours	7,248 (just over 37%)

### (Fire Protection)

Total Hours on the Job	5,400
Prefab Hours	120 (just over 2%)



**Approx. 12% shift in hours  
to Prefabrication**



# Early Metrics

Man Hours to Frame *reduced* by **12.5%**

Man Hours to Hang Wallboard *increased* by **18.4%**

Combined Productivity *reduced* by **6.2%**





# AUTODESK BIM360

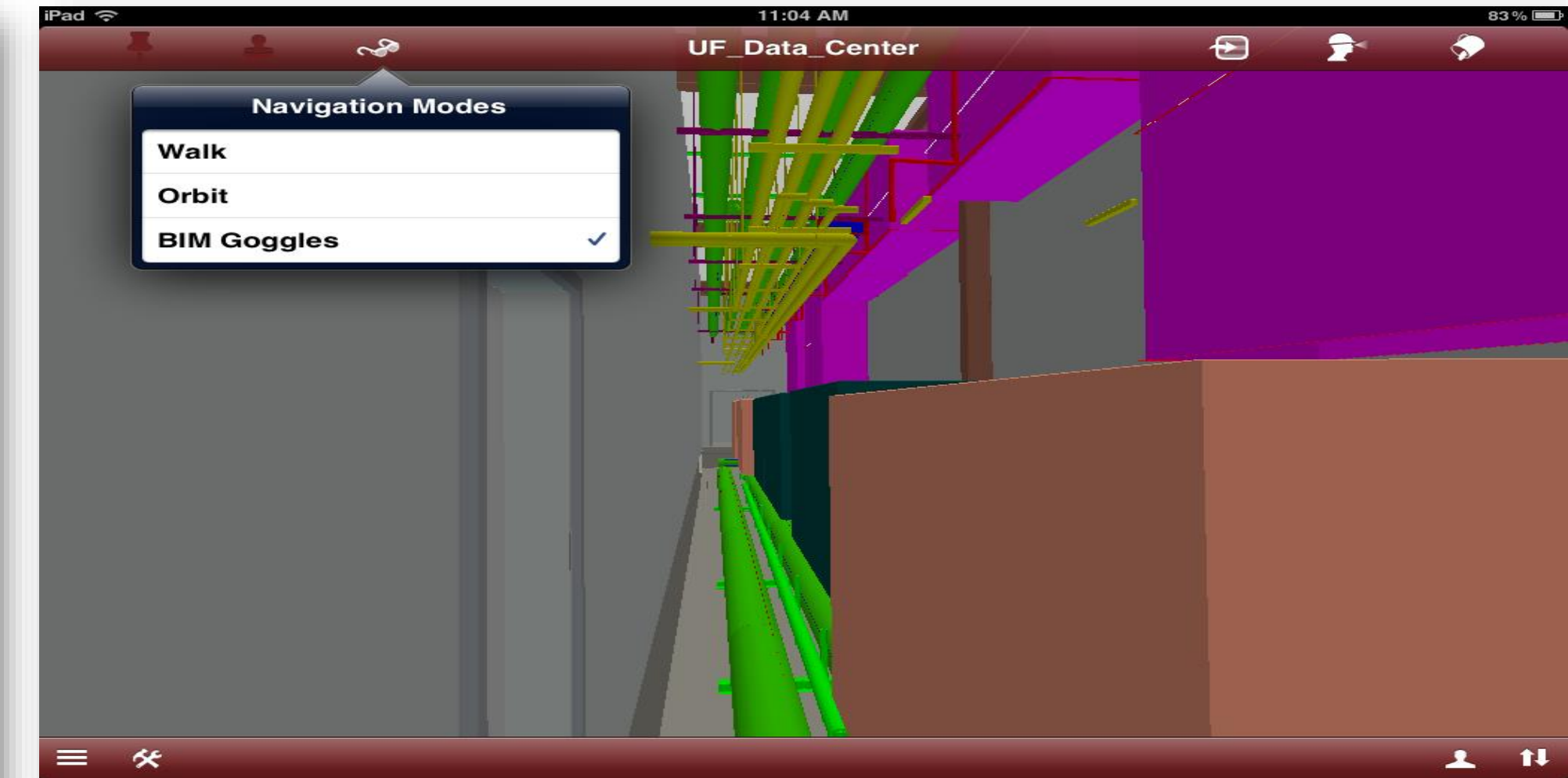


# Traditional Project Management





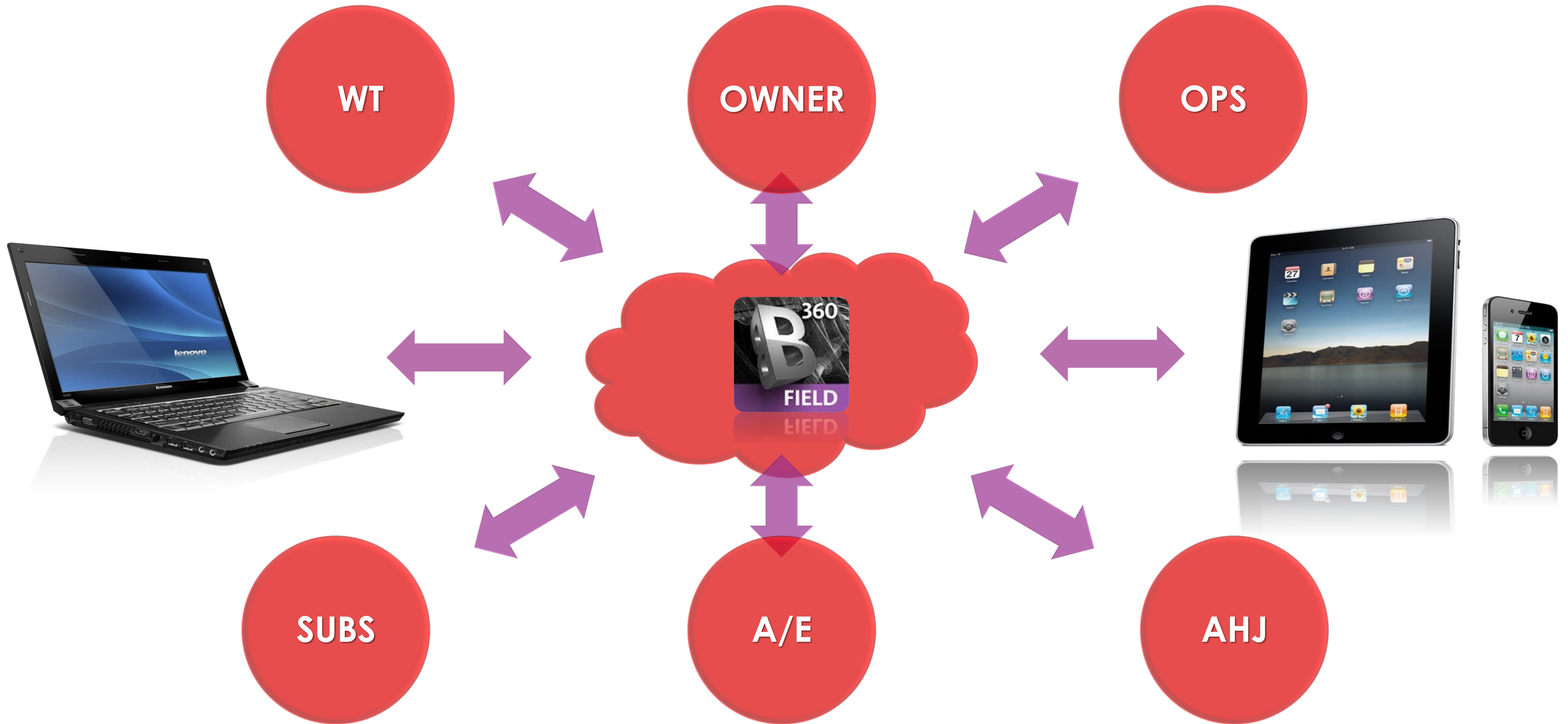
# 21<sup>st</sup> Century Project Management





# BIM360 Field

BIM360 Field

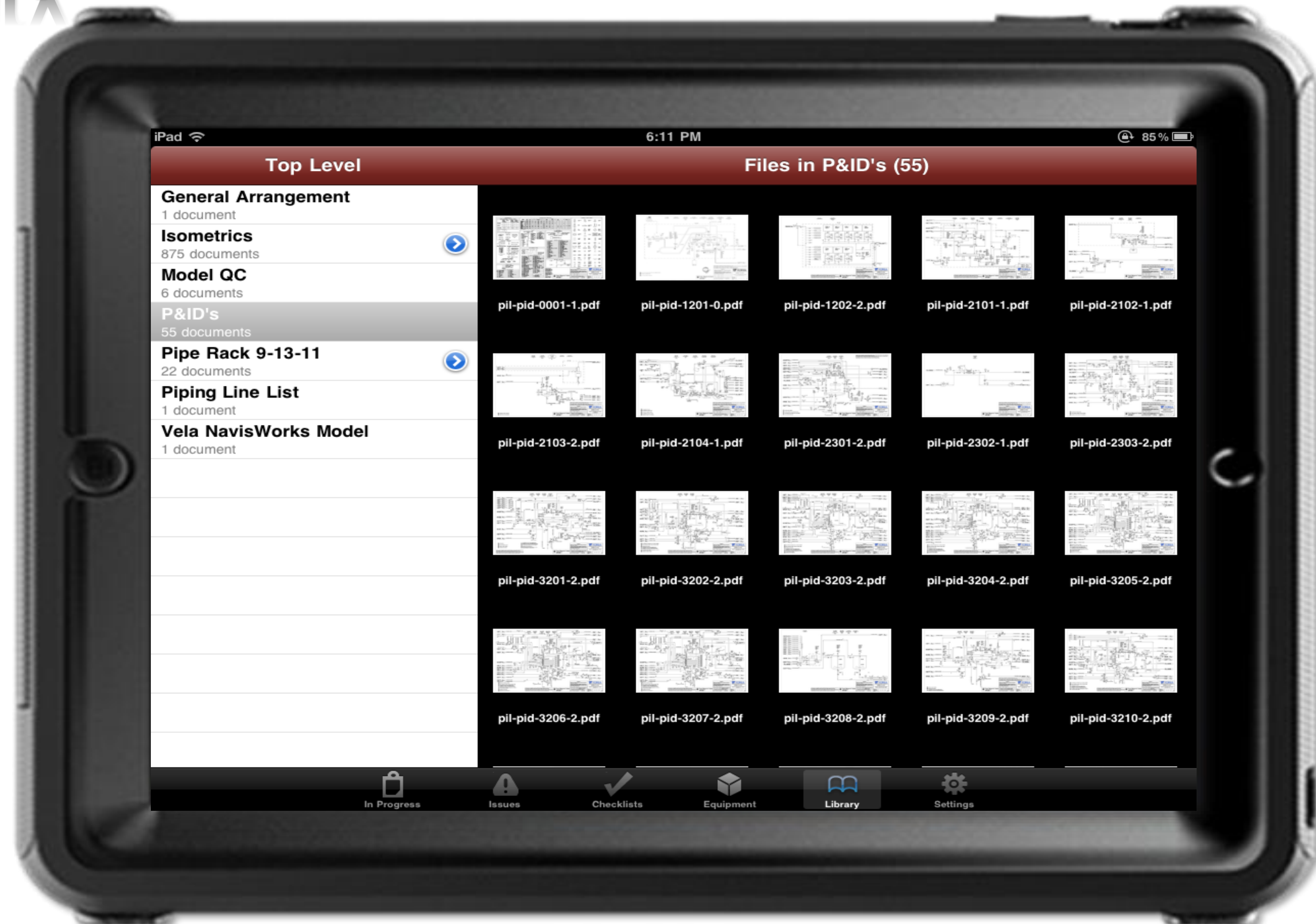




# 360 Field :: Library

## Library

- Specs
- Contract Documents
- Updates

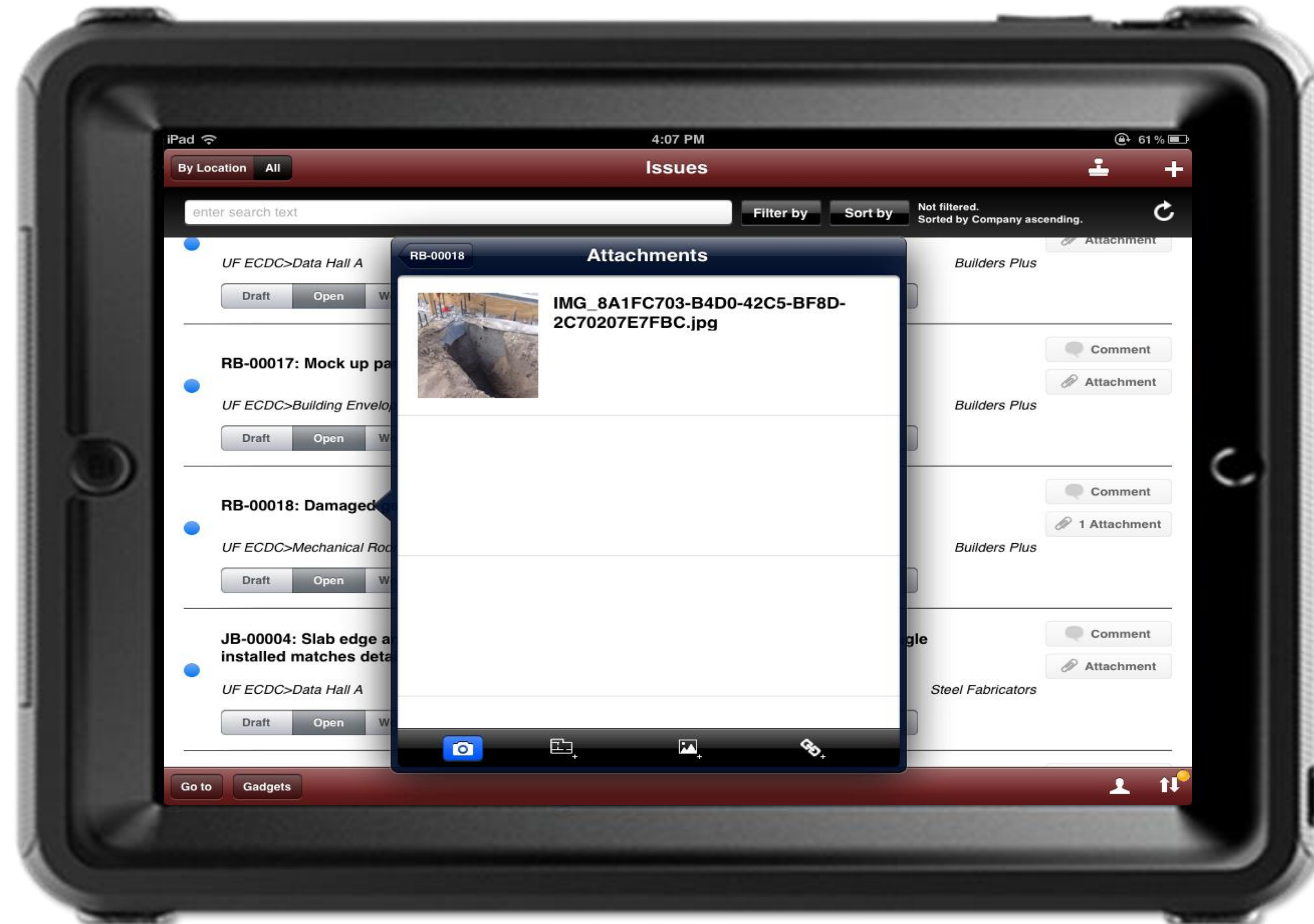




# BIM360 Field :: Quality Control

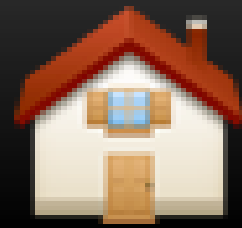
## Checklist

- QA/QC
  - Work to Complete
  - Conforming
  - Non Conforming
  - W-T Specific
- Punch List
  - Owner Punch
  - Contractor Punch
  - Pre-Punch
  - Engineer Punch





# BIM360 Field :: Material Tracking



**Equipment > POD-1102**

User: RJ Reed



Add Users

Project: Project 2011-1

Saved at  
09:02:44 EDT

- \* = required
- = COBie-standard field

## Profile

### \* Name

POD-1102

### • Type

Other

### • Description

Modular Master Bathroom - First Floor

Location

1102-ADA 1 Bedroom with Shower



Status

Specified

## Identifiers

### • Barcode

POD-1102



Checklists



Issues



Attachments



Comments

POD Warehouse Checklist



Edit



Checklist

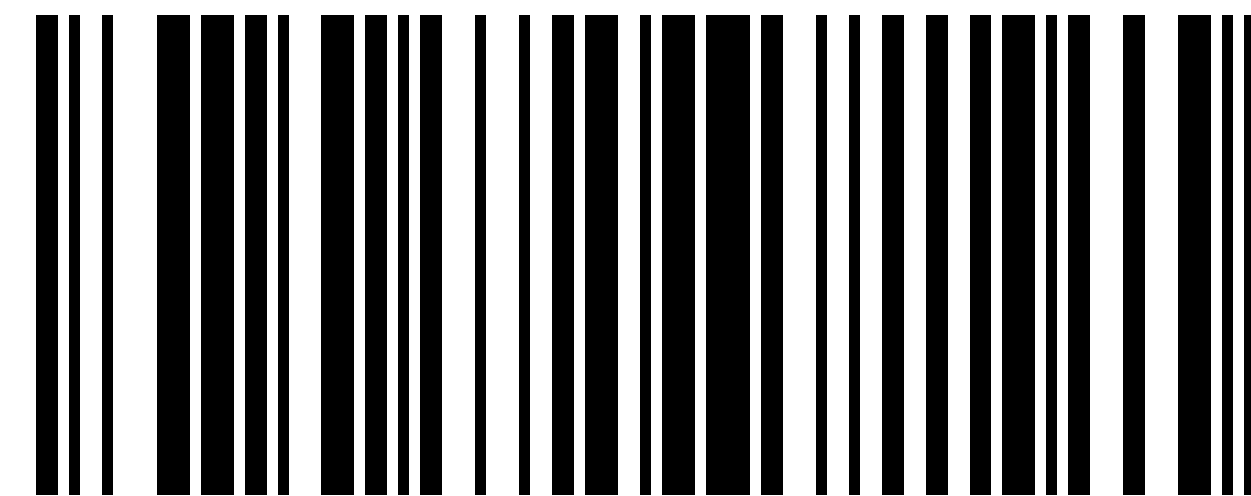
Attach Checklist

Created

Modified

Name

Author



POD-1102

BIM360Field



FIELD

FIELD



# NavisWorks Model Sync

Autodesk Navisworks Manage 2013 UF Data Center.nwf

Home Viewpoint Review Animation View Output BIM 360 Glue Add-ins Item Tools

Append Refresh Select Append Reset All... File Options Project Select & Search Select All Select Same Quick Find Selection Tree Sets Hide Require Hide Unselected Unhide All Visibility Links Quick Properties Properties Display Clash Detective TimeLiner Presenter Animator Scripter Compare Appearance Profiler Batch Utility DataTools

Selection Tree

- Roof
- Steel
- Power
- Plumbing
- Structural
- 6" Floor Slabs
- Electrical
- MPipe
- MDuct
- Ceiling Tiles
- ALL WALLS
- CBL Tray
- Canopy
- FP
- RAF
- XFMR-3A
- XFMR-2A
- XFMR-1A
- MSB-1A
- MSB-2A
- MSB-3A
- GEN SWBD
- SWBD SPD
- E\_GEN\_3D
- UPS-2A
- UPS-1A
- UPS-3A
- Load Bank

Properties

Item	TimeLiner	Vela	Hyperlinks
Property		Value	
Status		Specified	

Vela Field Management

https://manage.velasystems.com/equipment

Virtual CADLearning... Beyond Design Vela Field Managem... Autodesk 360 DIVE IN Tampa Bay Davis Islands Garden... Chipotle Online Ord... ActiveTrainer OEM Consultants Inc.

Equipment

User: Matt Vanture Add Users Project: UF East Campus Data Cei

Reports Library Inbox(3) Setup

Edit Add Library Files Export All Download Vela Field BIM Plugin

Name	Barcode	Type	Description	Location Path	Status	# Issues	# Open Issues	# Checklists	# Open Checklists
XFMR-3A		Other			Specified	0	0	0	0
XFMR-2A		Other			Specified	0	0	0	0

1 of 35 checked Filter: All Equipment Show: 50 Previous 1 Next

Support & Training | What's New © 2012 Vela Systems, Inc. | Legal Suggestion Box | Log Out

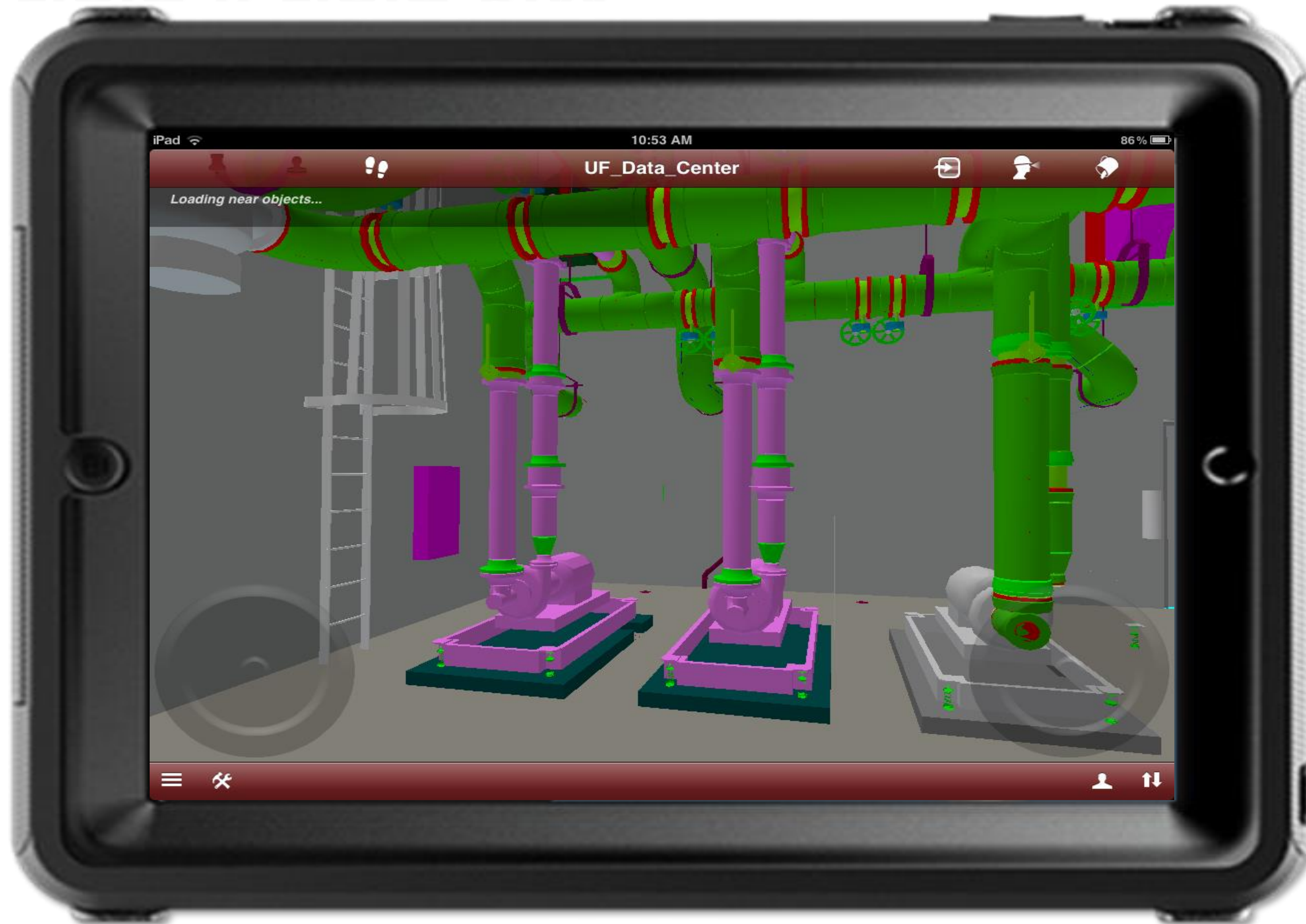


# BIM360 Field :: Field BIM



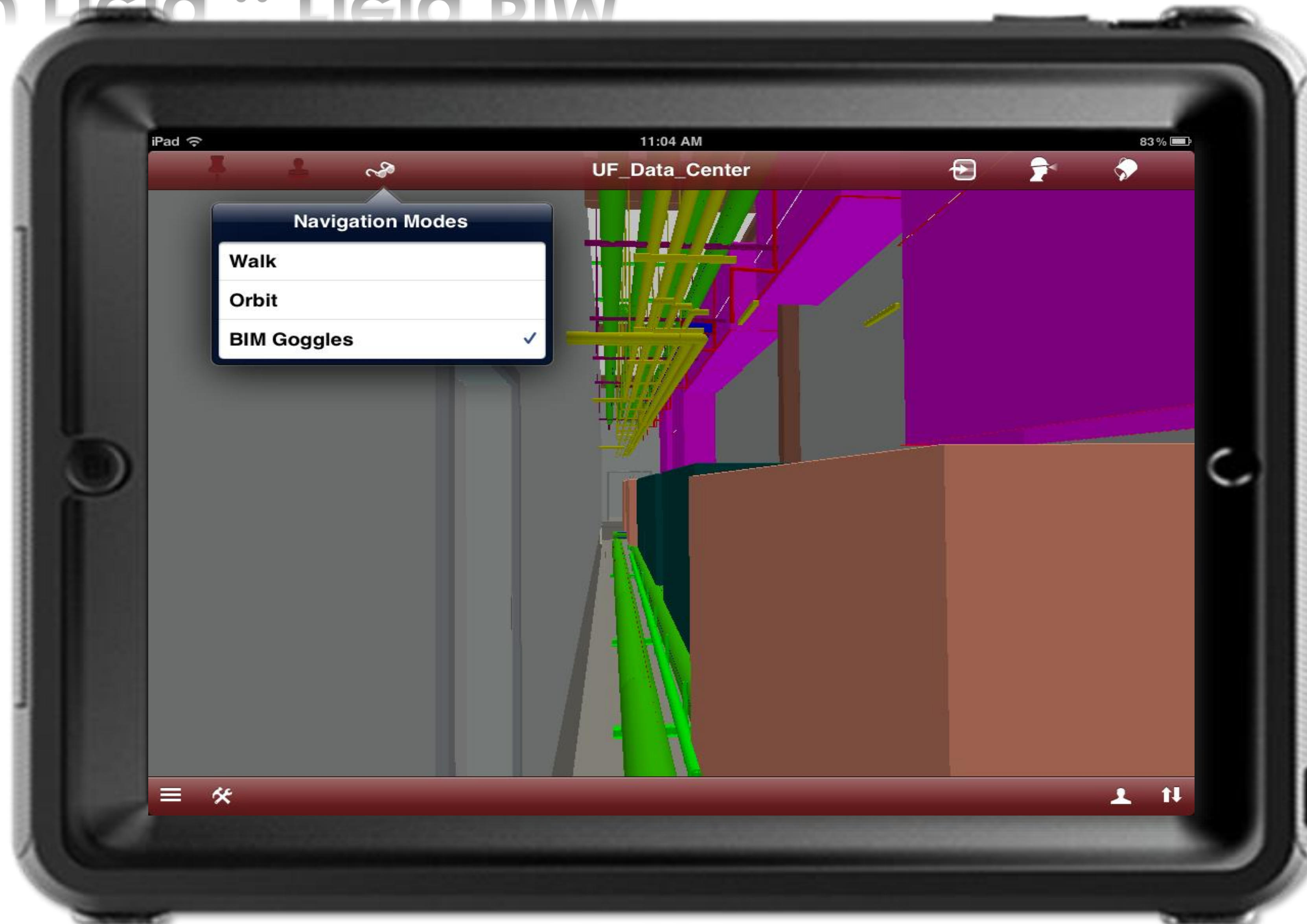


# BIM360 Field :: Field BIM



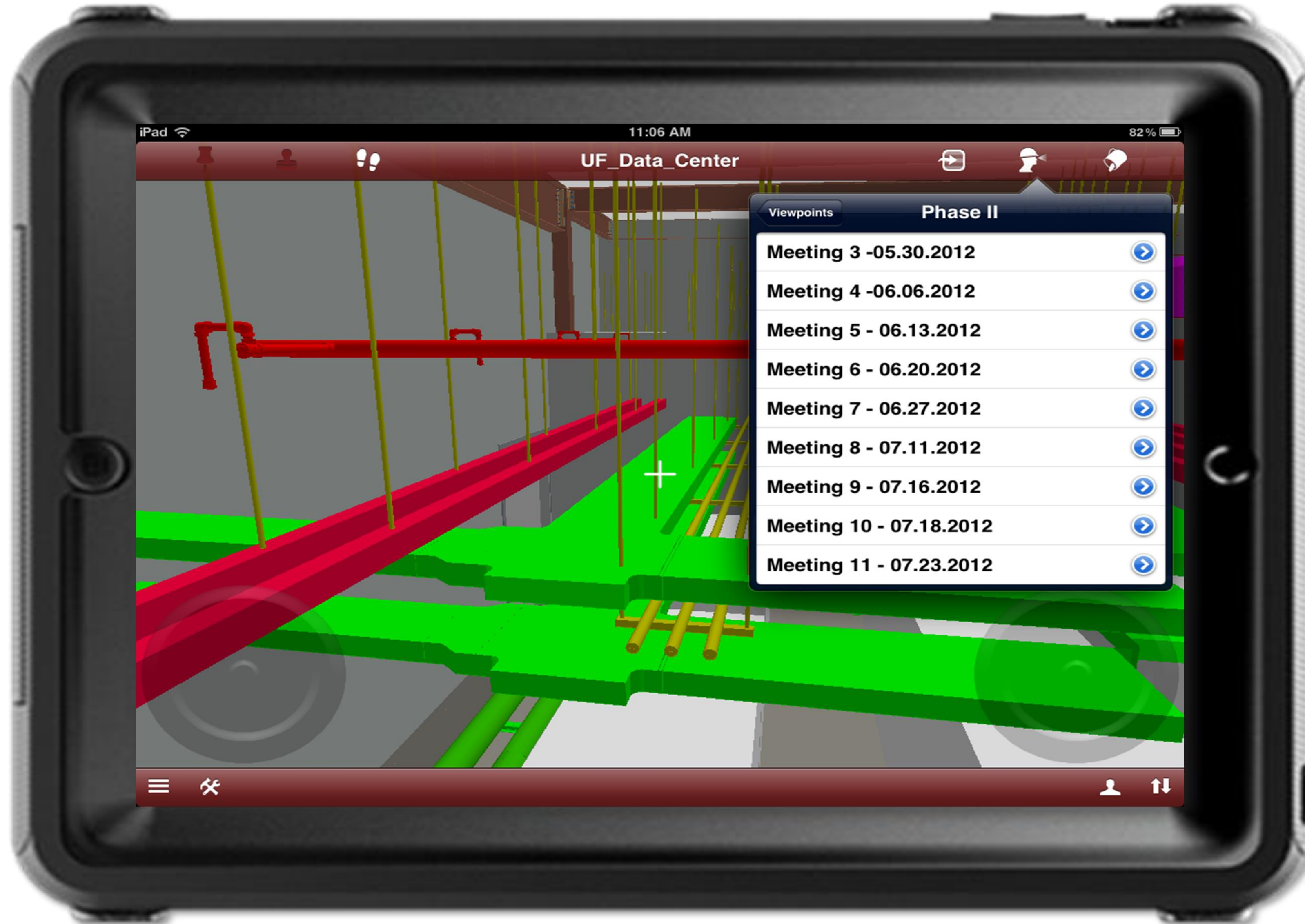


# BIM360 Field :: Field BIM





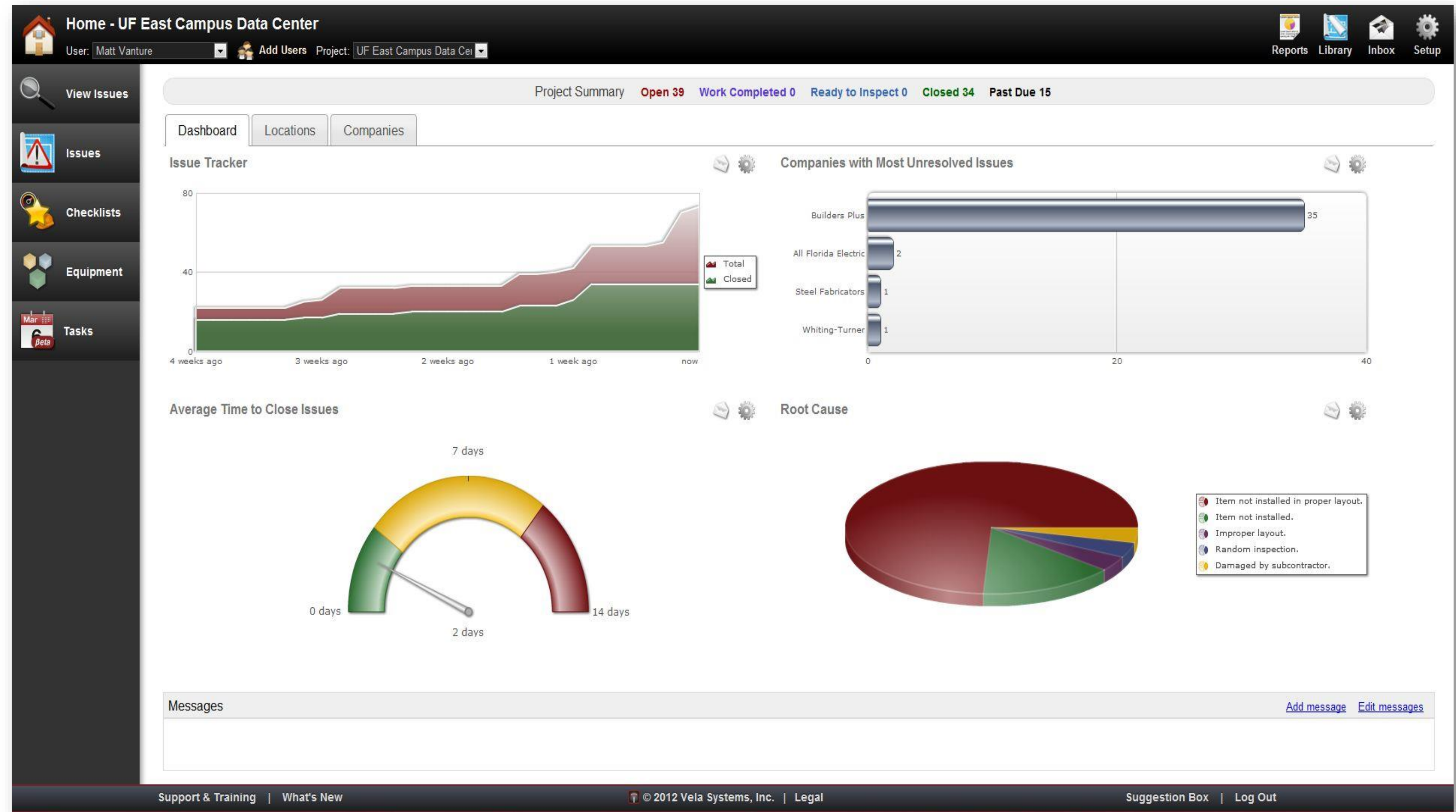
# BIM360 Field :: Field BIM





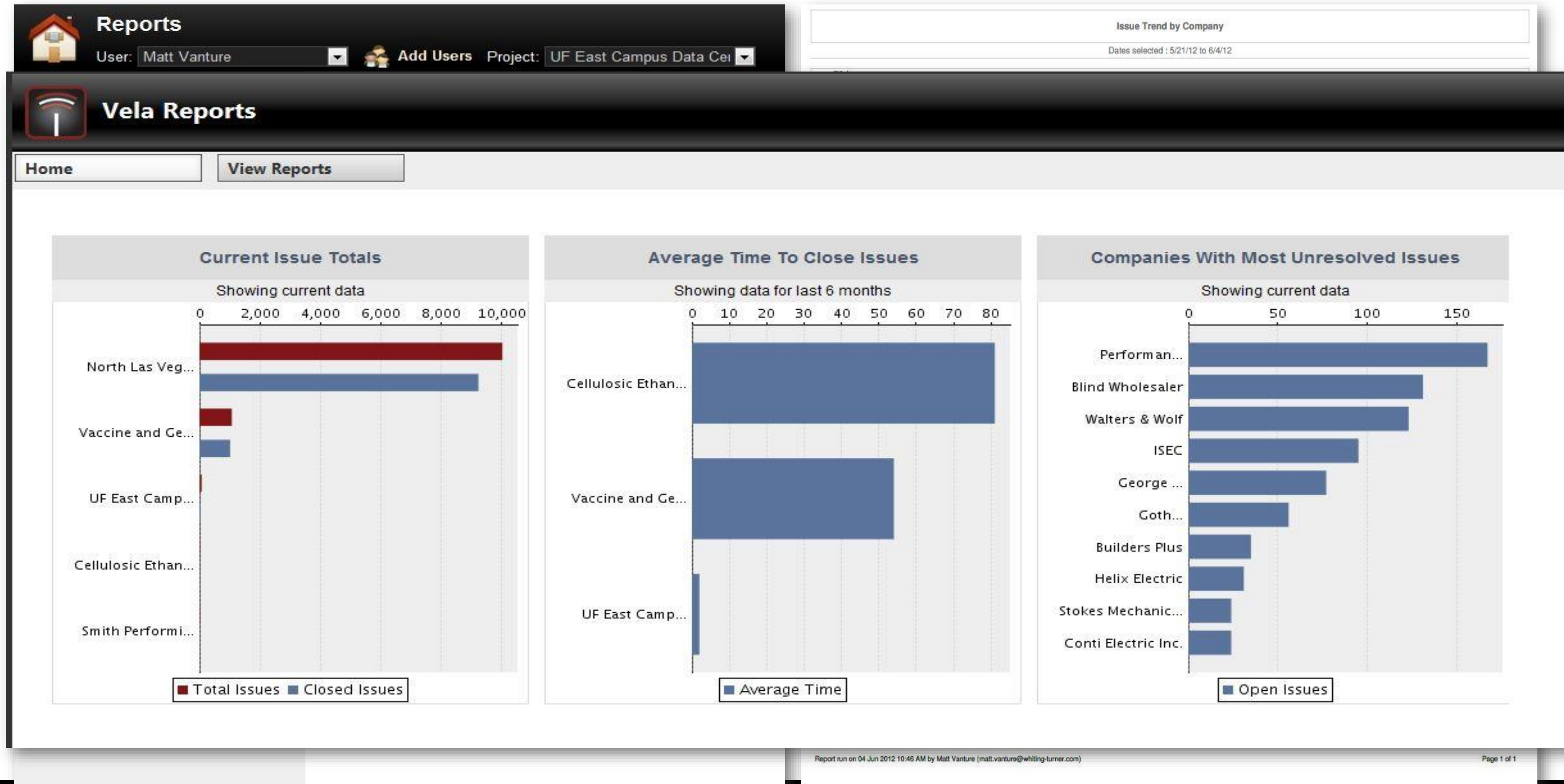
# BIM360 Field Web Overview

- Home Page
- Dashboard
- Issues
- QA/QC
- Equipment
- Reports





# BIM360 Field Web Overview



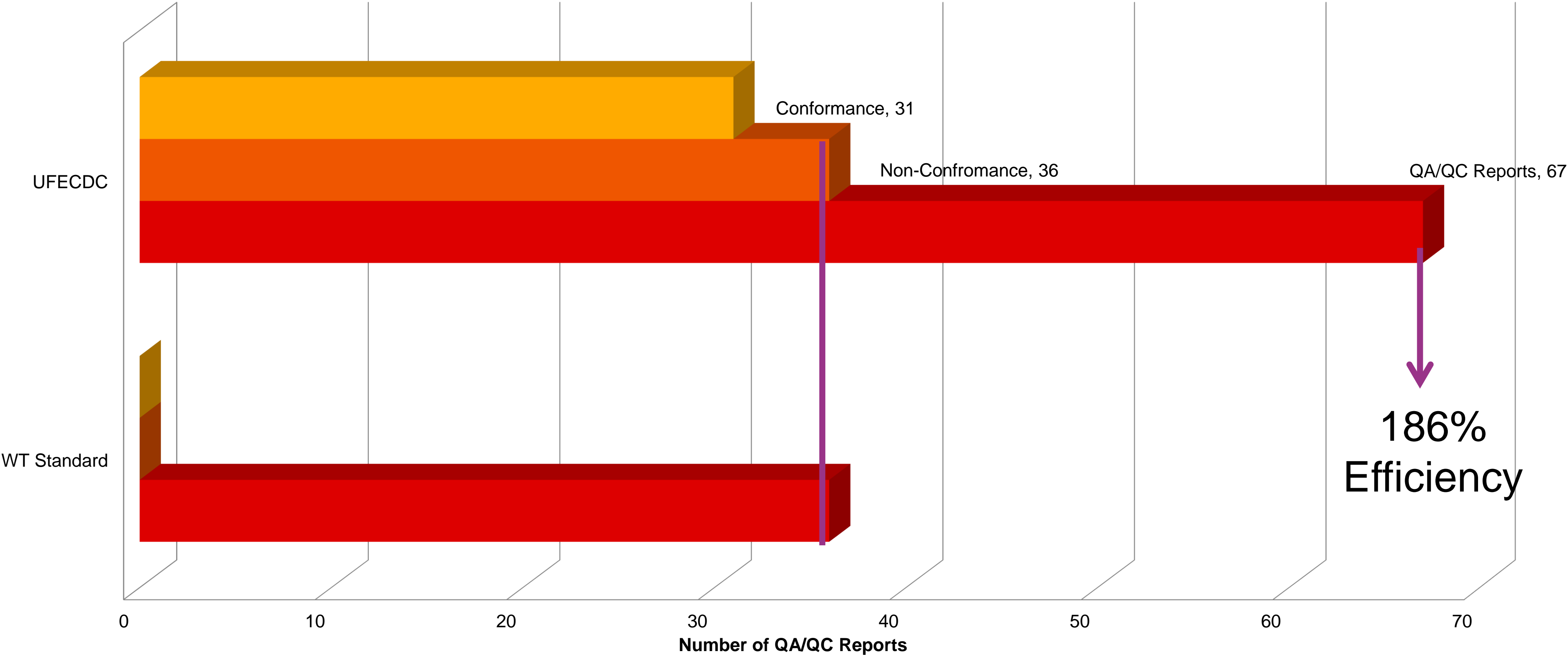


# UF East Campus Data Center





# UF East Campus Data Center

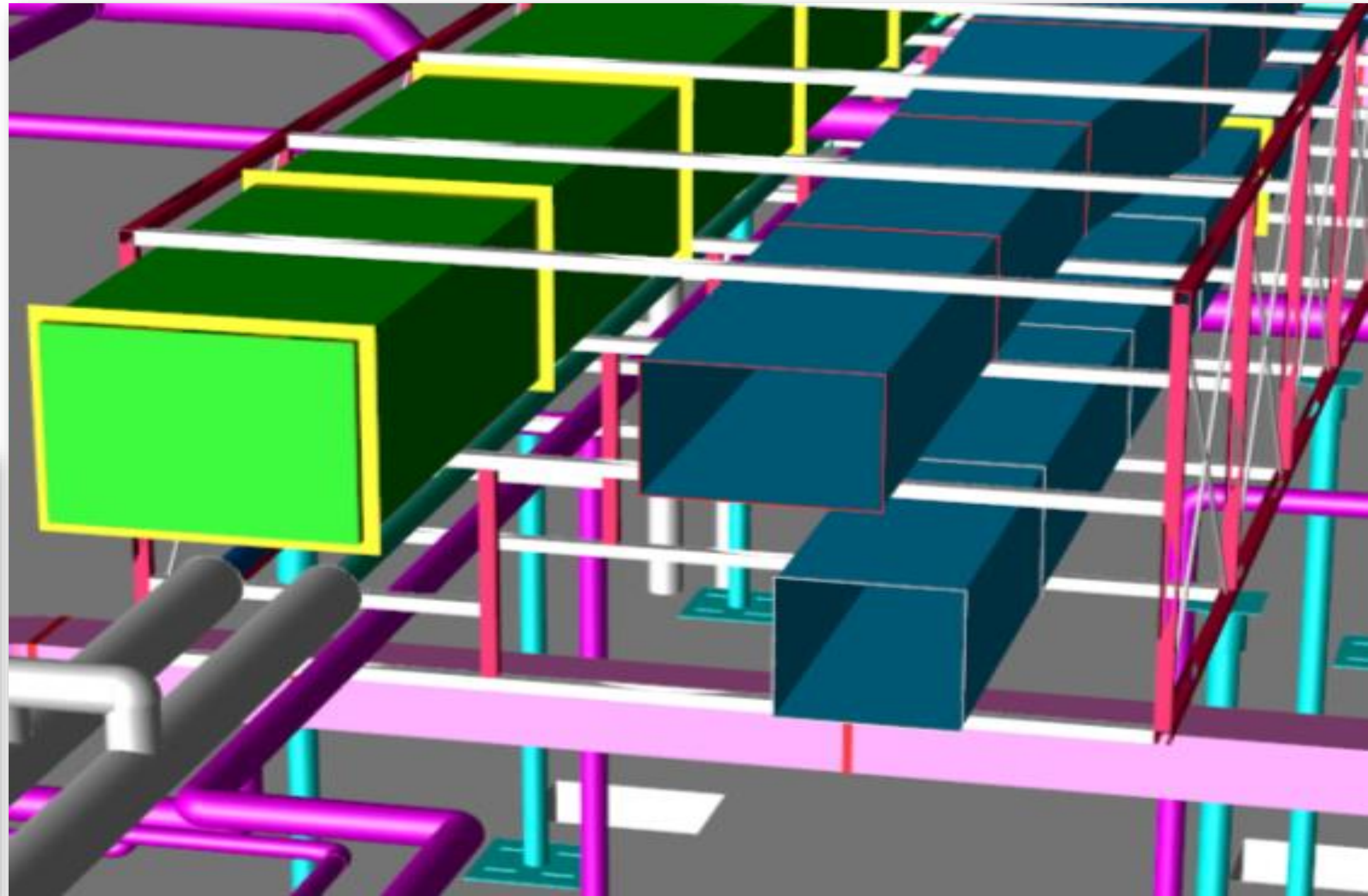
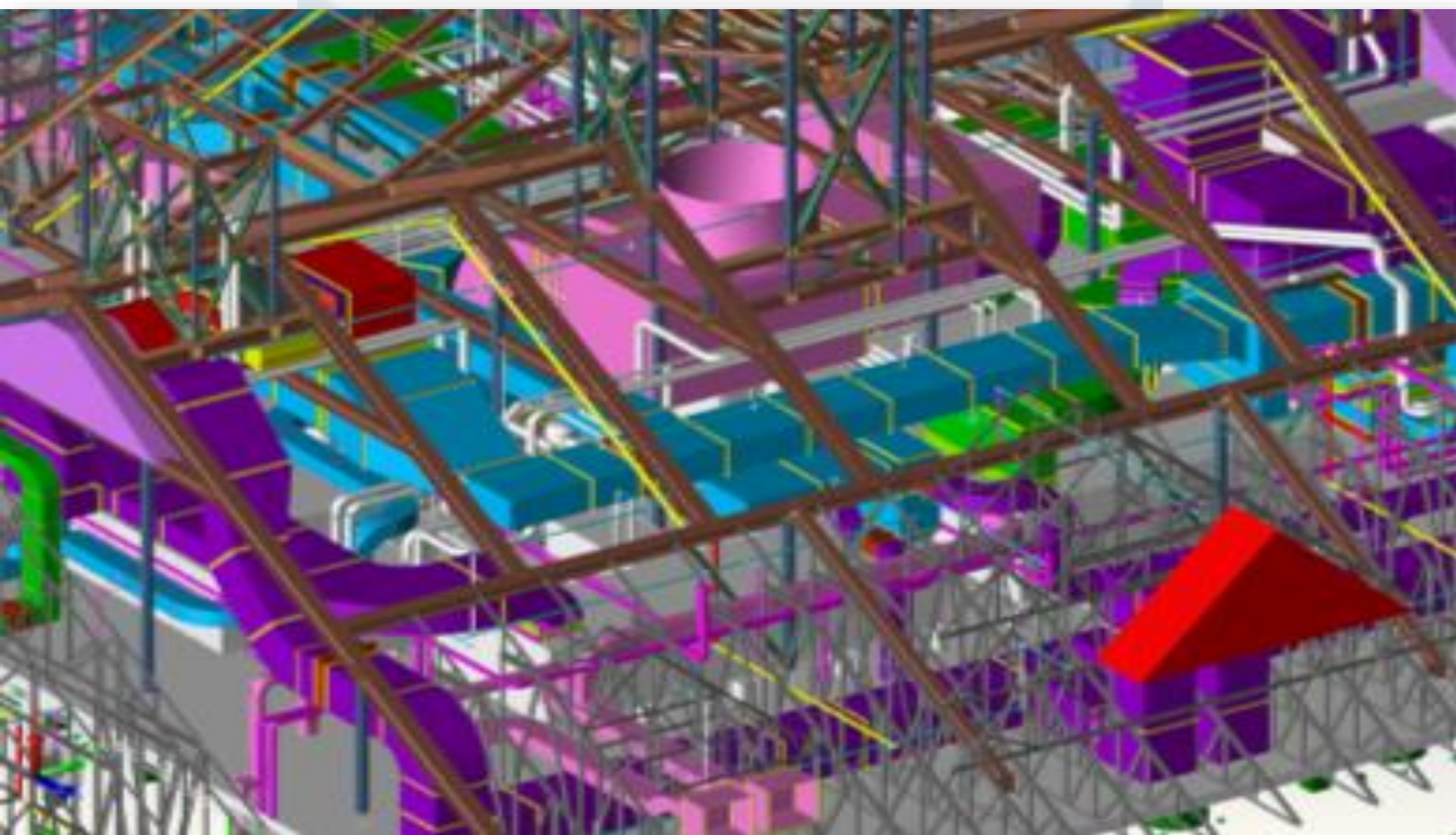




# Autodesk BIM 360 Glue

Autodesk BIM 360  
The next generation of BIM

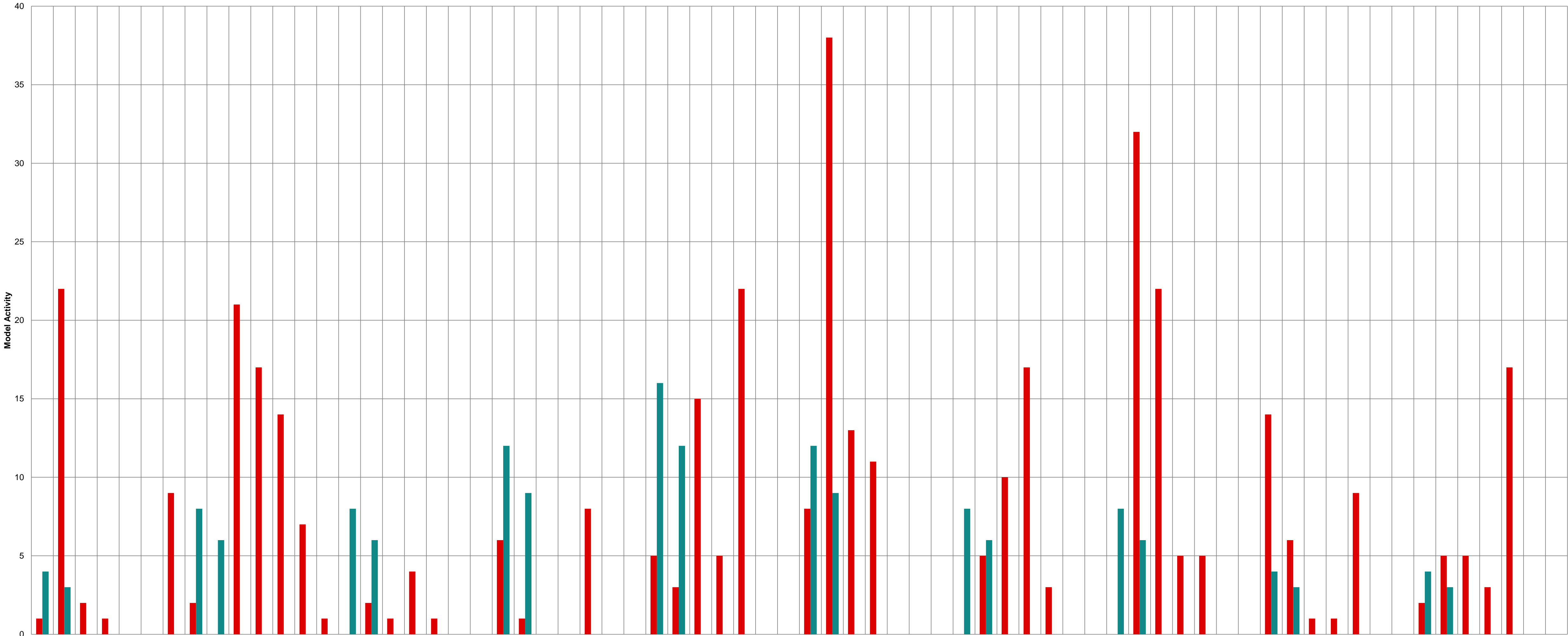
BIM





# Daily Model Activity

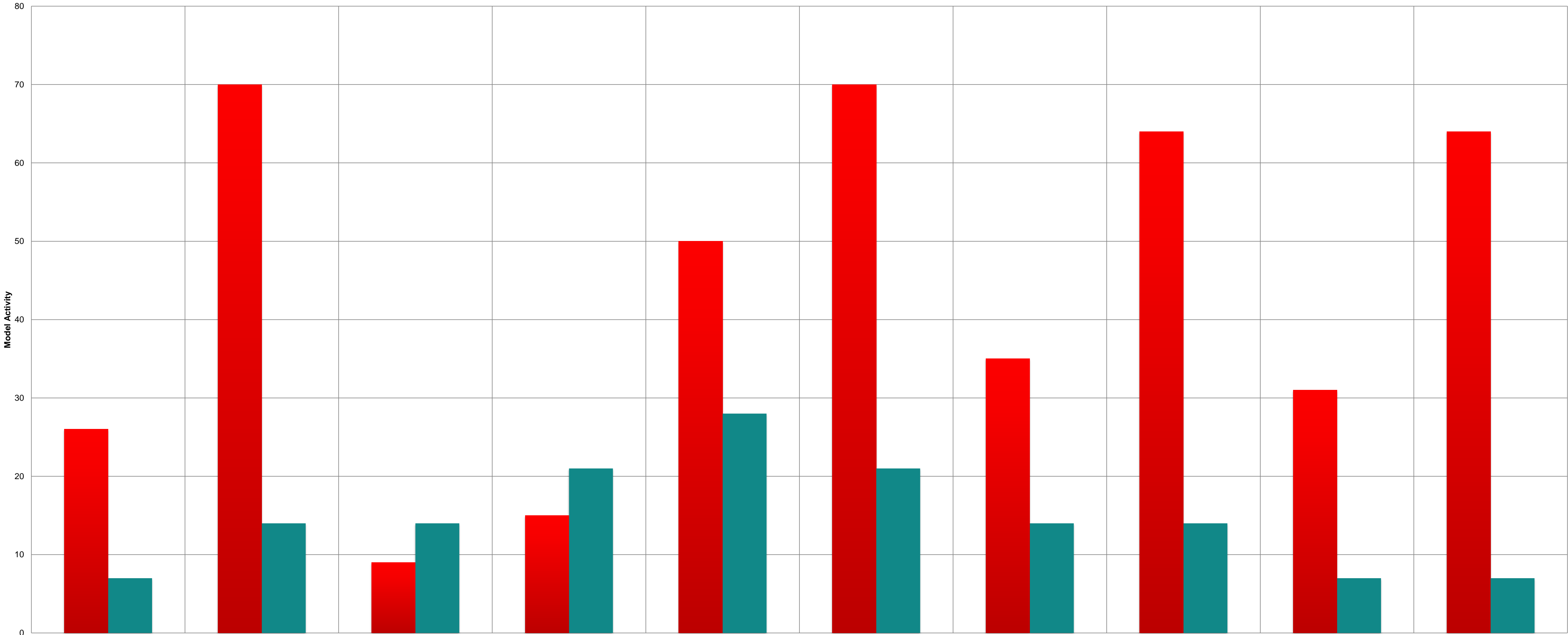
AutoDesk 360 Glue - Model Activity (Daily) :: PFTH





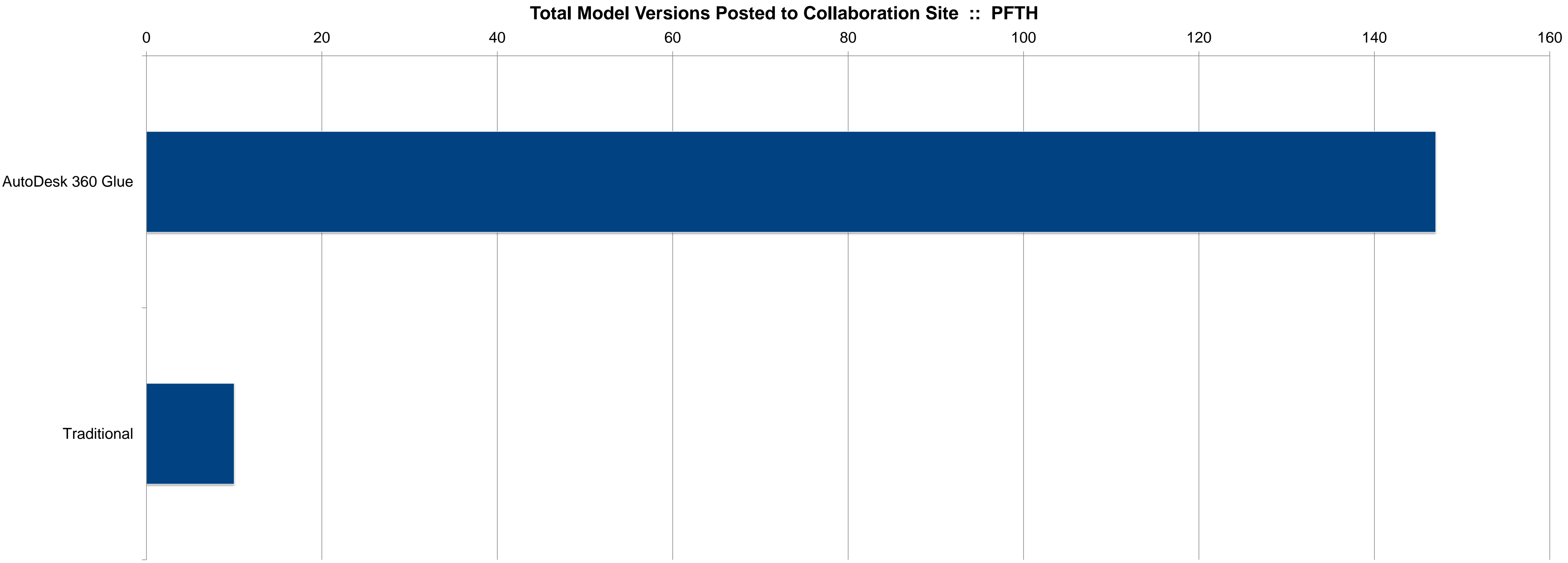
# Weekly Model Activity

AutoDesk 360 Glue - Model Activity (Weekly) :: PFTH





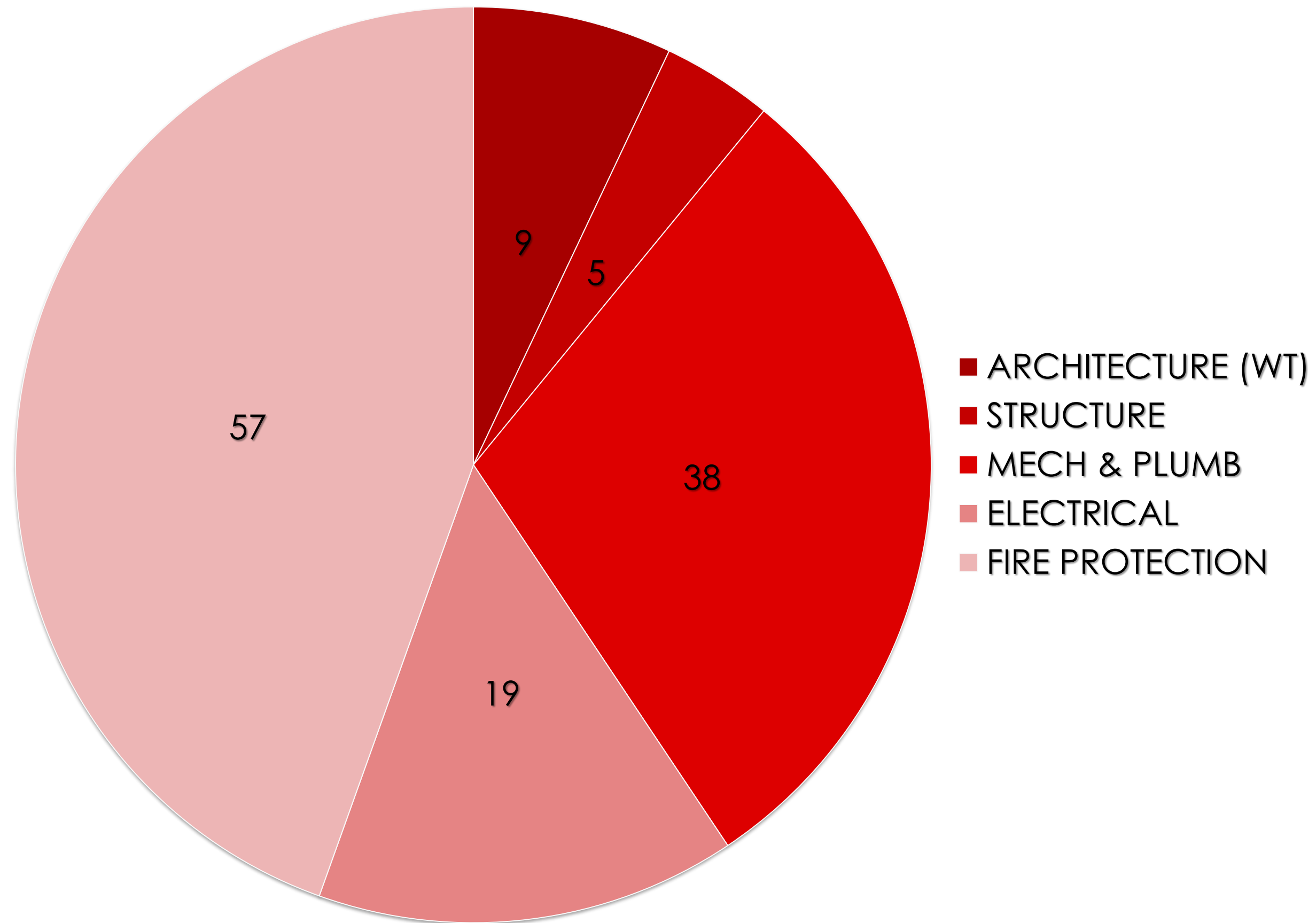
# Model Versions



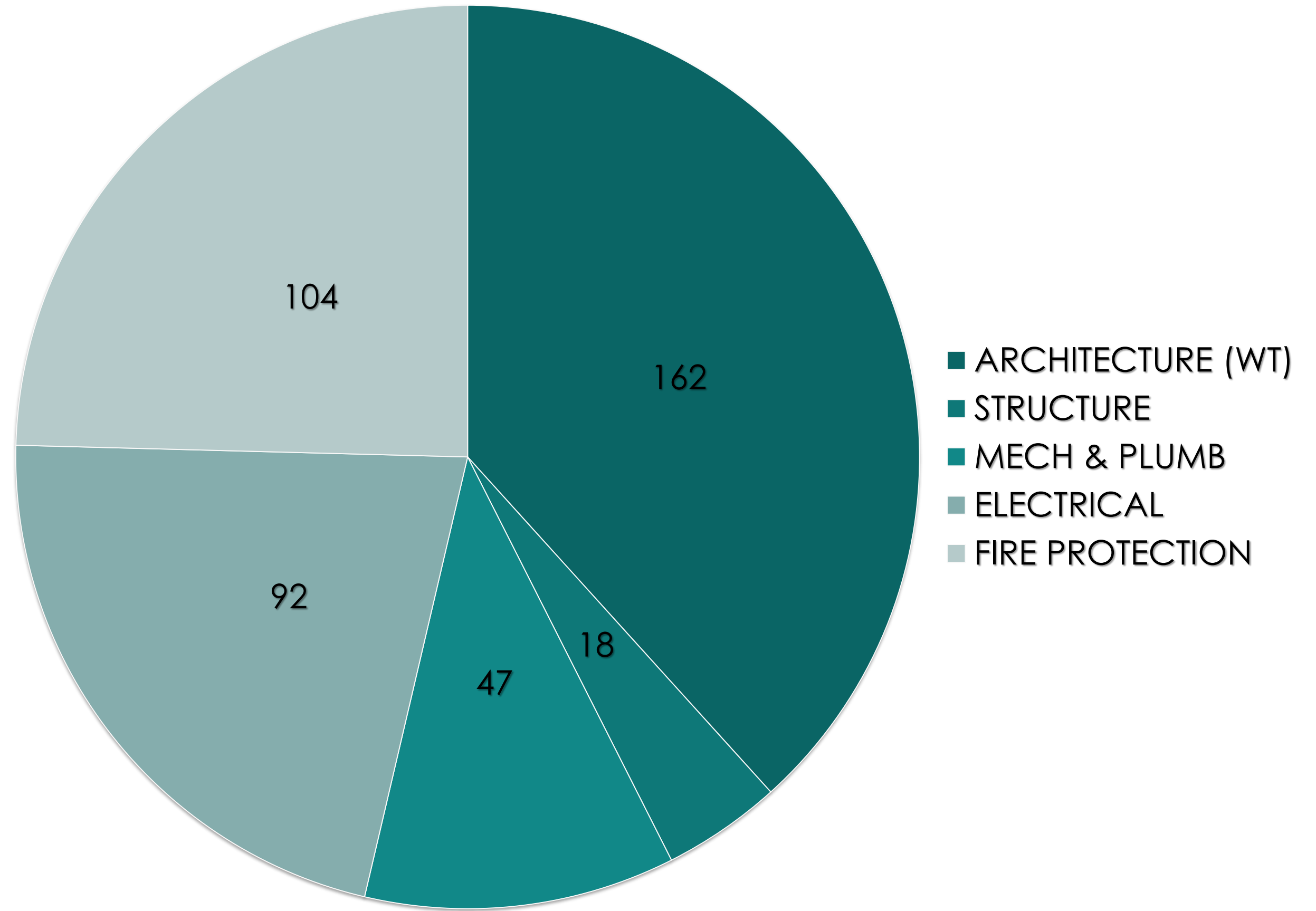


# Total Activity

Autodesk 360 Glue - Model Updates :: PFTH



AutoDesk 360 Glue - Total Activity :: PFTH





# CONCLUSION



# Conclusion

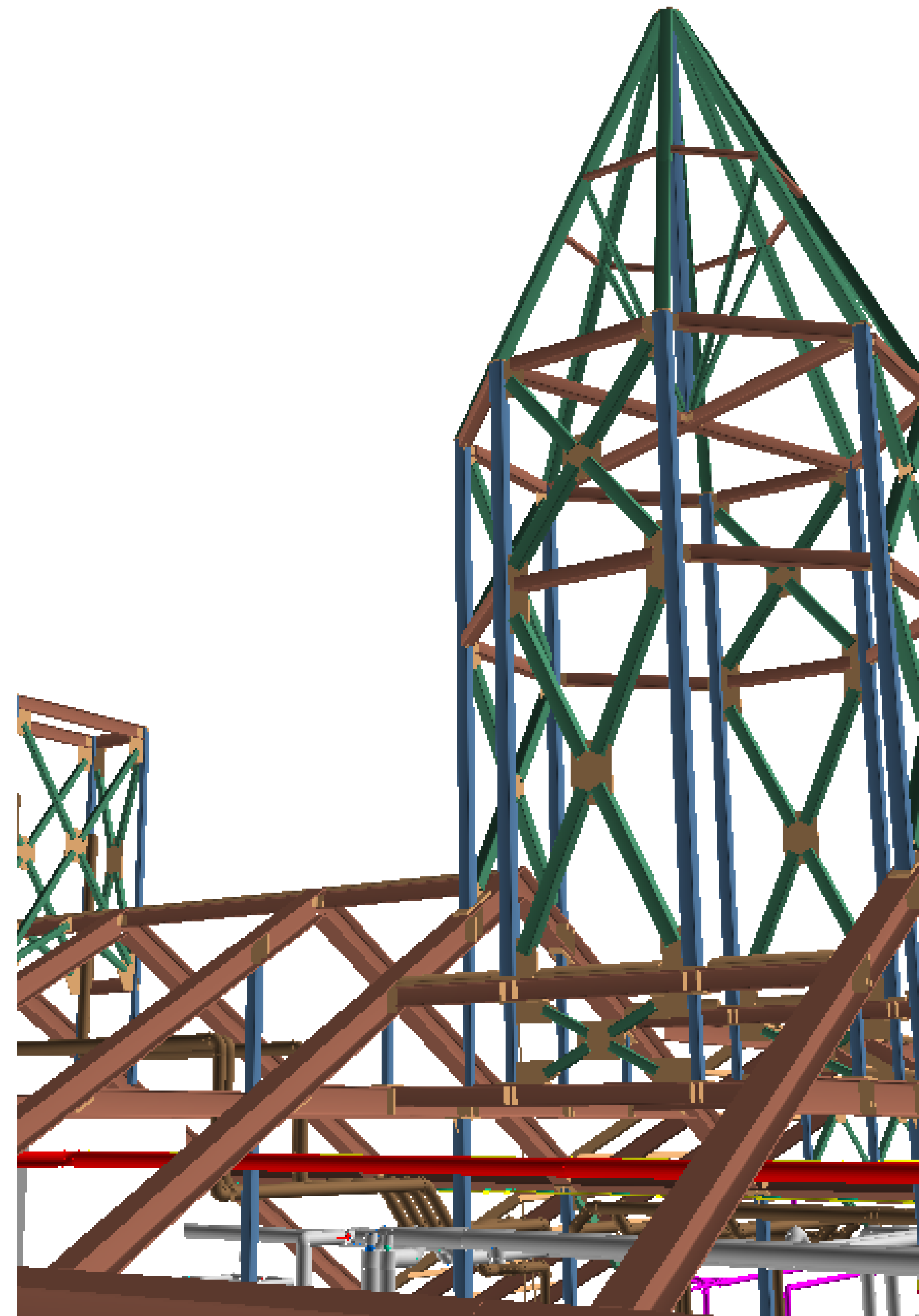
**Better, Faster, Less Expensive**

**TOOLS** in the toolbox to help solve certain problems & Deliver projects more effeciently

The **BIM Tools** allow for greater analysis and execution of prefab opportunities.

## Push the envelope

Don't accept the ways things have always been done as the metric for what is possible.





# Questions & Answers

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Matt Vanture

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The Whiting-Turner Contracting Company

4300 West Cypress Street, Suite 1045

Tampa, FL 33607

(813) 287-9700





# THANK YOU



## Let's get a Drink!

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