

Is Wood-Frame Modular the Future of Multi-family Construction?

Architectural Detailing:
Detailing Strategies & Case Studies

Presented by Matthew Laase, AIA, NCARB



Disclaimer: This presentation was developed by a third party and is not funded by WoodWorks or the Softwood Lumber Board.

A photograph of a construction site with a blue overlay. In the foreground, a worker in a white hard hat and high-visibility vest is working on a wooden frame. In the background, other workers are visible. A white rectangular box is superimposed over the center of the image, containing the text 'Modular Design: It's in the Details'.

Modular Design: It's in the Details

Design Concept: Structural

Drag Struts – Collectors – Saw Boxes

Boxes can be individually built, cross corridor or internal mateline

Vertical shear is transferred at box party walls

Vertical tie rods should be accessible during set or designed without

Simple exterior sheathing connections recommended

Smaller boxes can simplify or eliminate site-built parts when turning 90-degree corners

Typical modular boxes can be stacked 4 to 6 stories depending on jurisdiction



Design Concept: Architectural

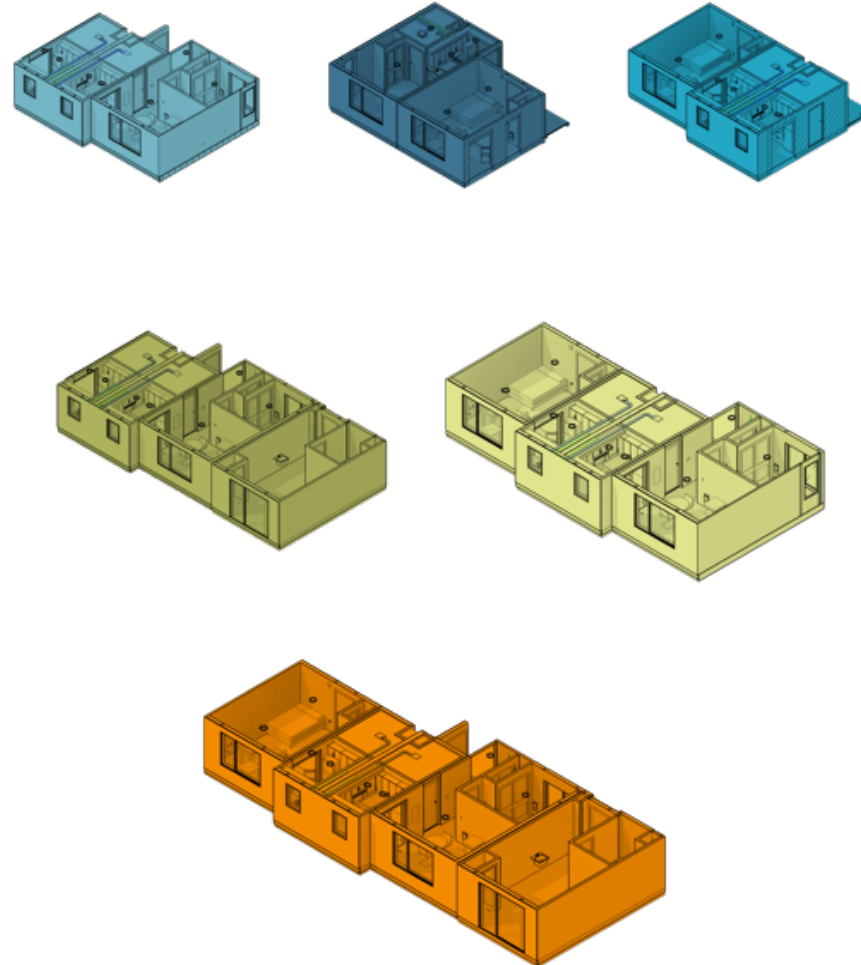
Flexible Unit Configurations

Assembling the kit of parts

Mixing unit configurations

Flexibility in design

Consistency during the set



Design Concept: MEP

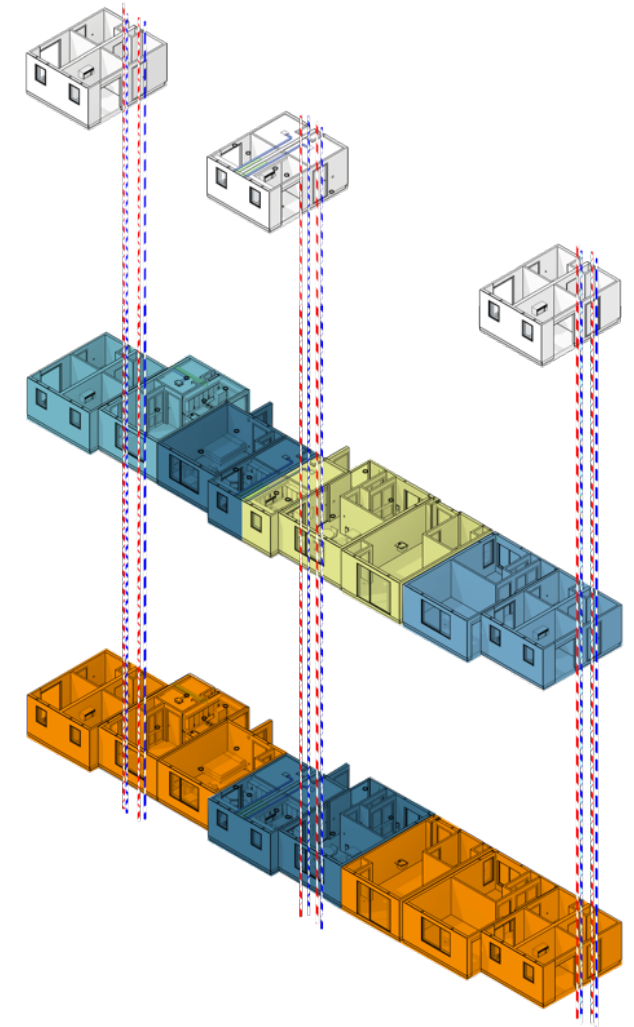
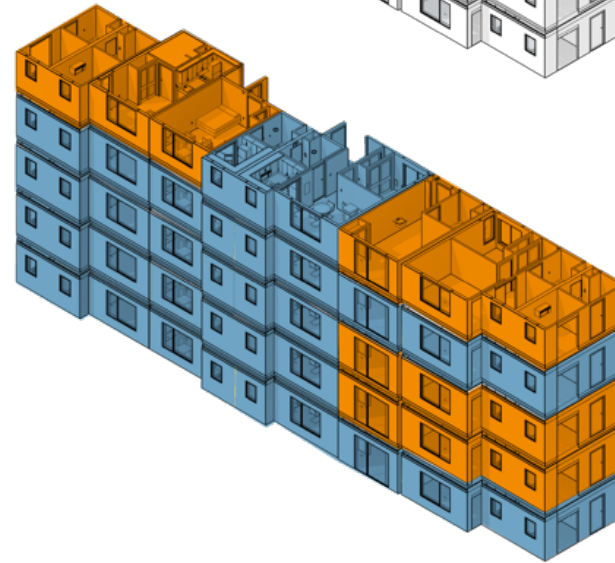
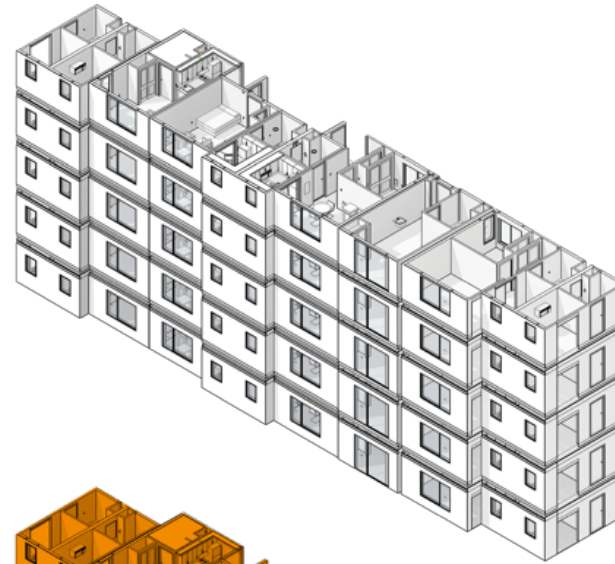
Unstacking the Units

Chases no shafts along hallways

A unit mix that is free from vertical stacking requirements

Align MEP services vertically

And horizontally



How do the site trades coordinate and interact during the set?

Draft stop planning

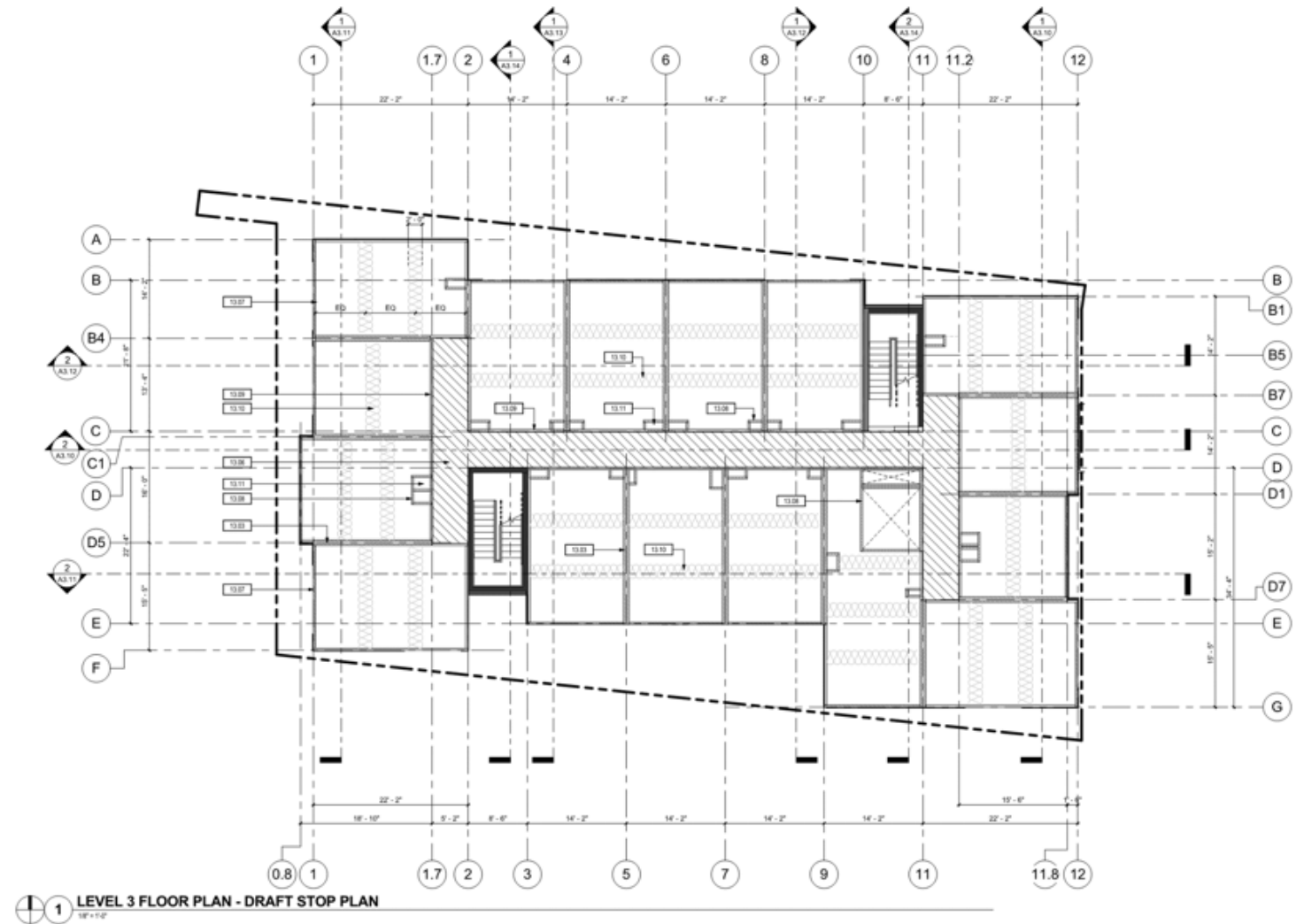
Inspections and AHJ coordination

Detailed set coordination planning

Staging site location

How many crane picks?

Stacking order, boom lock?



Modular Design:

It's in the Details

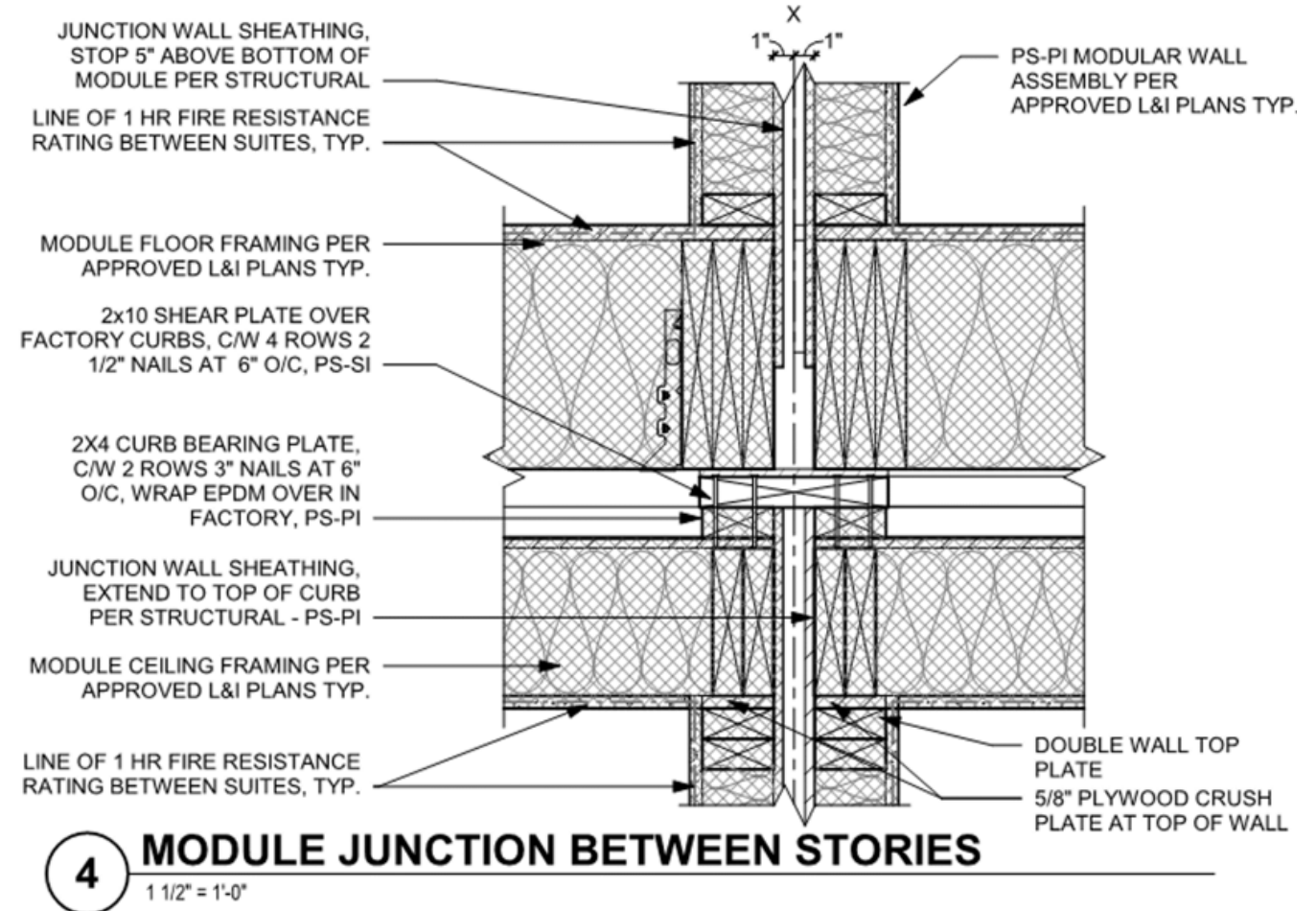
Adding the element of time to your details

Defining the scope of work for each component

Any inspections required, by who and when?

PS-PI	PLANT SUPPLIED - PLANT INSTALLED
PS-SI	PLANT SUPPLIED - SITE INSTALLED
SS-PI	SITE SUPPLIED - PLANT INSTALLED
SS-SI	SITE SUPPLIED - SITE INSTALLED
CS-SI	CLIENT SUPPLIED - SITE INSTALLED
CS-PI	CLIENT SUPPLIED - PLANT INSTALLED
CS-CI	CLIENT SUPPLIED - CLIENT INSTALLED

PLANT =	METRIC MODULAR
SITE =	GENERAL CONTRACTOR
CLIENT =	NEXGEN HOUSING



Modular Design:

It's in the Details

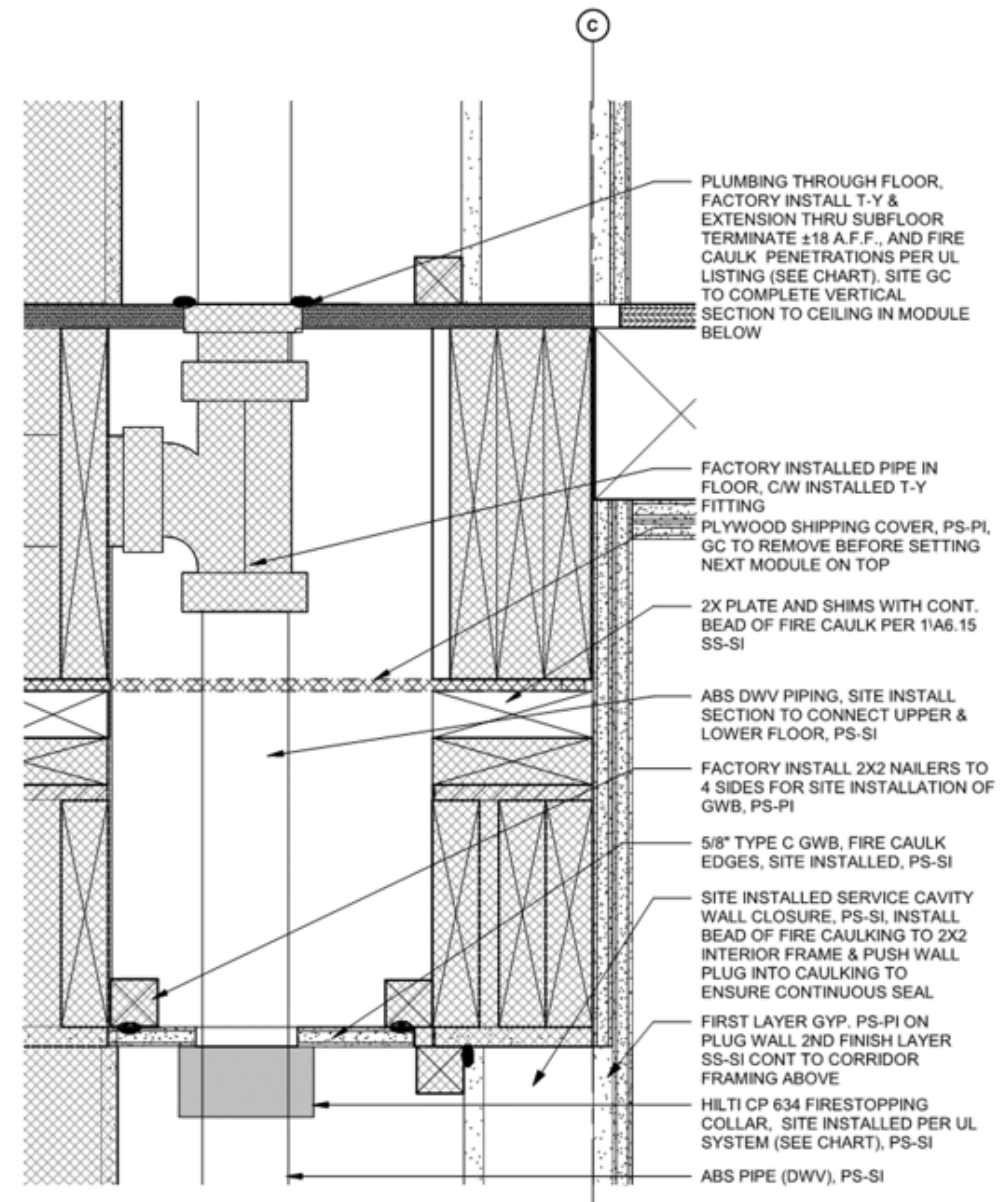
Adding the element of time to your details

Defining the scope of work for each component

Any inspections required, by who and when?

PS-PI	PLANT SUPPLIED - PLANT INSTALLED
PS-SI	PLANT SUPPLIED - SITE INSTALLED
SS-PI	SITE SUPPLIED - PLANT INSTALLED
SS-SI	SITE SUPPLIED - SITE INSTALLED
CS-SI	CLIENT SUPPLIED - SITE INSTALLED
CS-PI	CLIENT SUPPLIED - PLANT INSTALLED
CS-CI	CLIENT SUPPLIED - CLIENT INSTALLED

PLANT =	METRIC MODULAR
SITE =	GENERAL CONTRACTOR
CLIENT =	NEXGEN HOUSING



Modular Design:

It's in the Details

Corridors do all the hard work

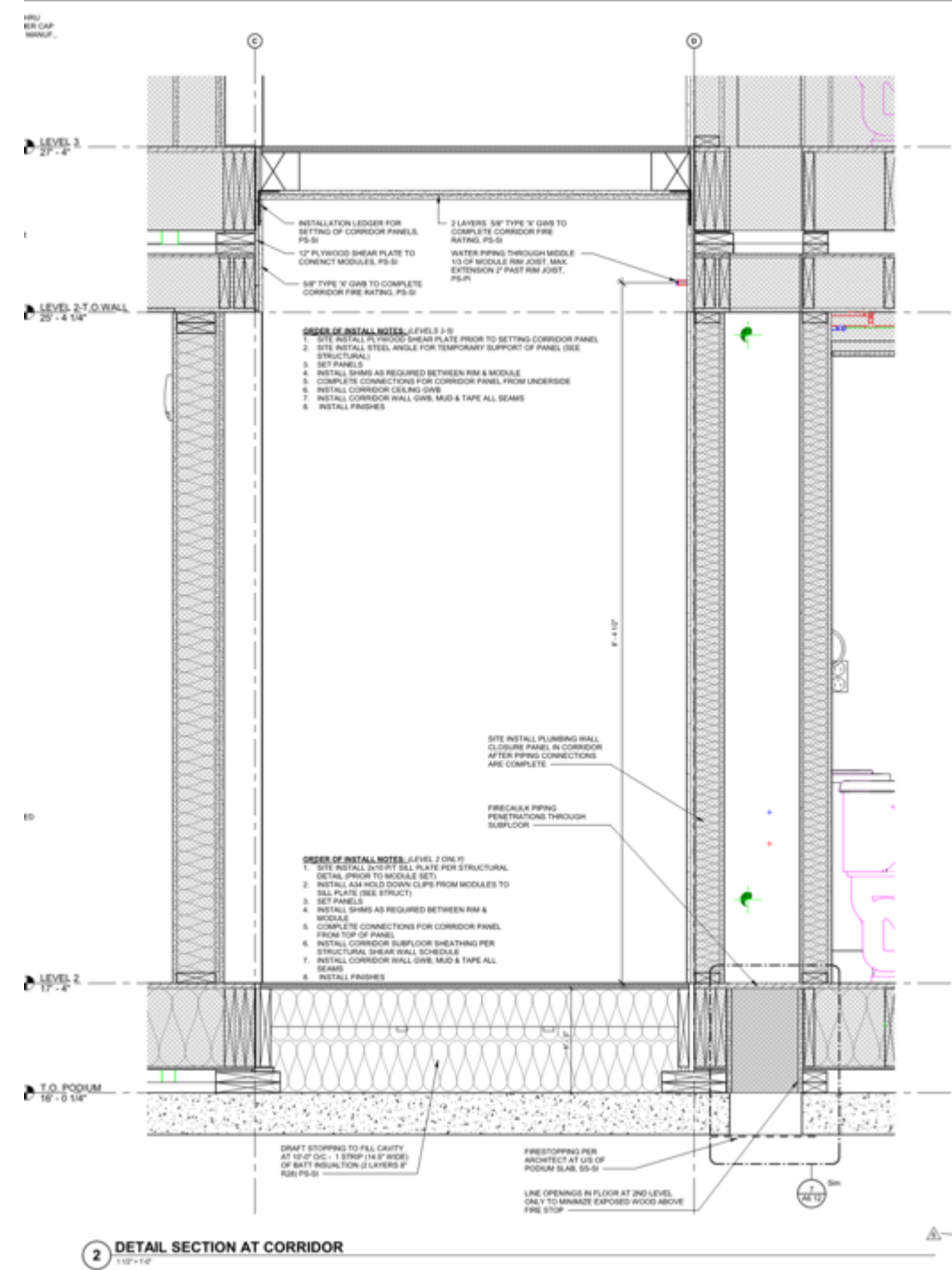
MEP coordination has to be done to BIM
400 level

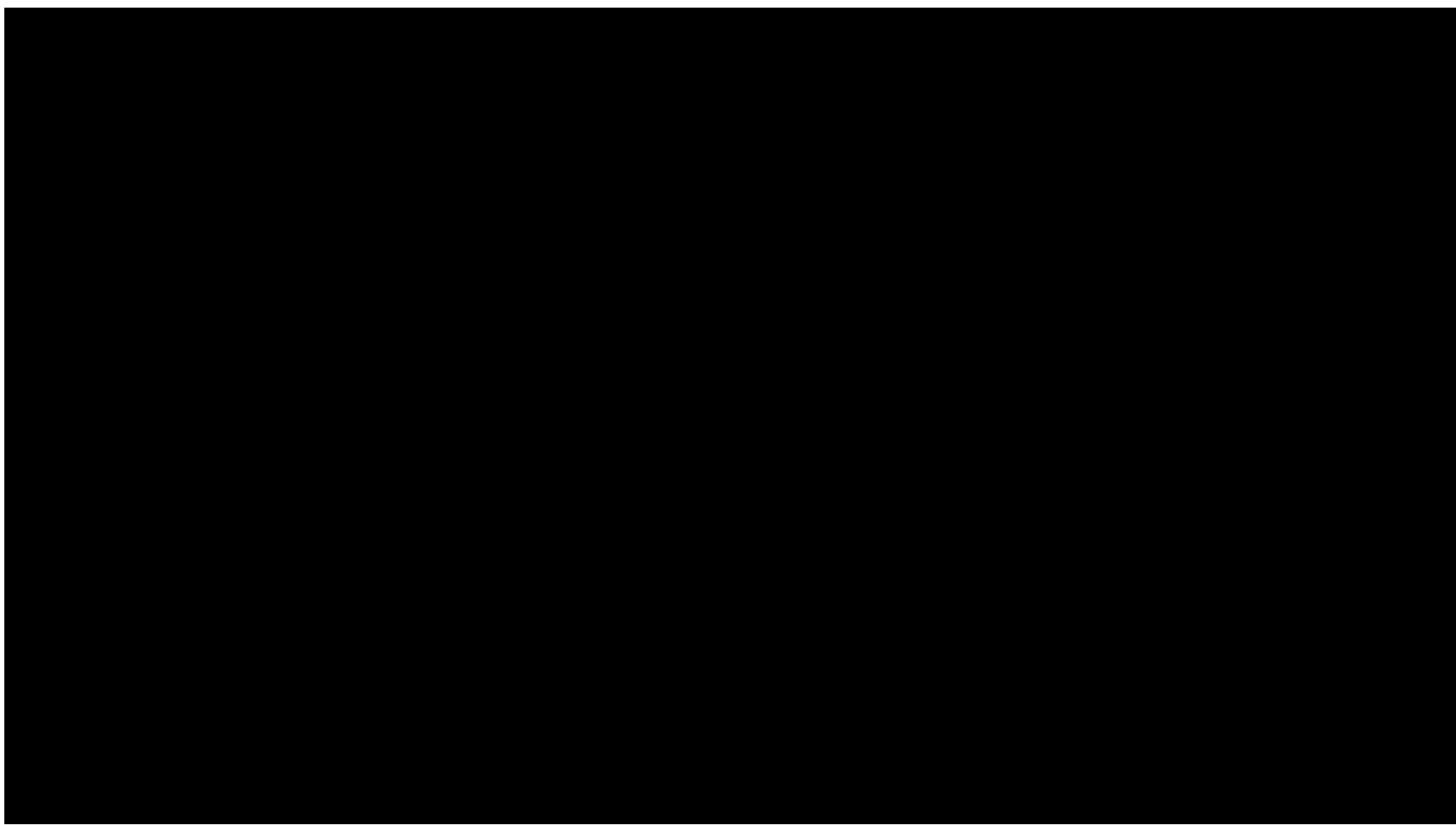
Balance factory work vs. site work

Pay attention to fire membrane
continuity

Make your details inspectable

PS-PI	PLANT SUPPLIED - PLANT INSTALLED
PS-SI	PLANT SUPPLIED - SITE INSTALLED
SS-PI	SITE SUPPLIED - PLANT INSTALLED
SS-SI	SITE SUPPLIED - SITE INSTALLED
CS-SI	CLIENT SUPPLIED - SITE INSTALLED
CS-PI	CLIENT SUPPLIED - PLANT INSTALLED
CS-CI	CLIENT SUPPLIED - CLIENT INSTALLED
PLANT =	METRIC MODULAR
SITE =	GENERAL CONTRACTOR
CLIENT =	NEXGEN HOUSING







A photograph of a construction yard with several white modular units on a blue-tinted background. The units are arranged in rows, and some have handwritten labels like '5-10/5-01' and '604/6-2'. In the background, there are mountains and a large industrial building. The text 'What's Next For Modular Construction?' is overlaid in the center.

What's Next For Modular Construction?

Future Proof

*Climate change will have the largest
Impact on the built environment
In the next decade*

Architecture 2030 Challenge and
Net zero buildings

Municipal coordination and outreach

Building inspector training

Skilled labor training in factory setting

Policy advocacy



Partnering

For the Future

Continued investment into product

Validation of concept through apartment development projects

Iterative improvement through ROI data

Future opportunities via licensing arrangements



Sharing the Knowledge of Investment

Open Source for the Design Community

“It’s not what you know that matters, it’s what you do when you don’t know.” – Unknown

Industry knowledge shared for Architects,
Engineers and Owners

Diagrams, details and instructions for
designing modular

Made available for everyone to help ensure
success

Advocating for the use of modular



> Questions?

This concludes The American Institute of Architects
Continuing Education Systems Course

Presented by Matthew Laase, AIA, NCARB
Jackson | Main Architecture
Matt.Laase@JacksonMain.com