

# Cost Dialogues: The Contractor Perspective on Mass Timber Buildings

Shawn Brannon



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Questions related to specific materials, methods, and services will be addressed at the conclusion of this presentation.



# Course Description

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Innovation isn't necessarily new, but it should always be better—and that's certainly been the case for mass timber. Environmental performance, lighter weight, speed of construction and aesthetics are all cited as reasons for its use over traditional materials. However, one of the hurdles left before mass timber can become mainstream is cost. Cost of materials, manufacturer capabilities and efficiencies, erection processes, pre-planning and the level of prefabrication all play a role in the final cost of a mass timber project, and yet there is little widespread knowledge of these topics. This panel of three experienced installers and contractors will provide insight on the cost of real mass timber buildings in the US. Preconstruction planning, construction phasing, erection techniques and lessons learned will all be covered to help building designers assess the viability of their own mass timber projects.

# Learning Objectives

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1. Discuss the role of the contractor and installer in optimizing mass timber cost efficiency while meeting local code and occupational safety requirements.
2. Highlight how an understanding of manufacturer capabilities can improve the cost-effectiveness of mass timber designs.
3. Review recently completed mass timber projects in Colorado, emphasizing lessons learned related to code and building department approval and project budget.
4. Explore methods of efficient communication unique to the designer-contractor interface on mass timber projects and discuss how this communication during construction translates to code-compliant buildings that are resilient and energy efficient.

# Platte Fifteen

Office / Retail

Type III-B Construction over Podium

2 floor concrete below grade

1 floor concrete above grade

4 floors + roof in mass timber

Concrete cores

Design: Oz Architecture

Engineering: KL&A

Owner: Crescent Real Estate





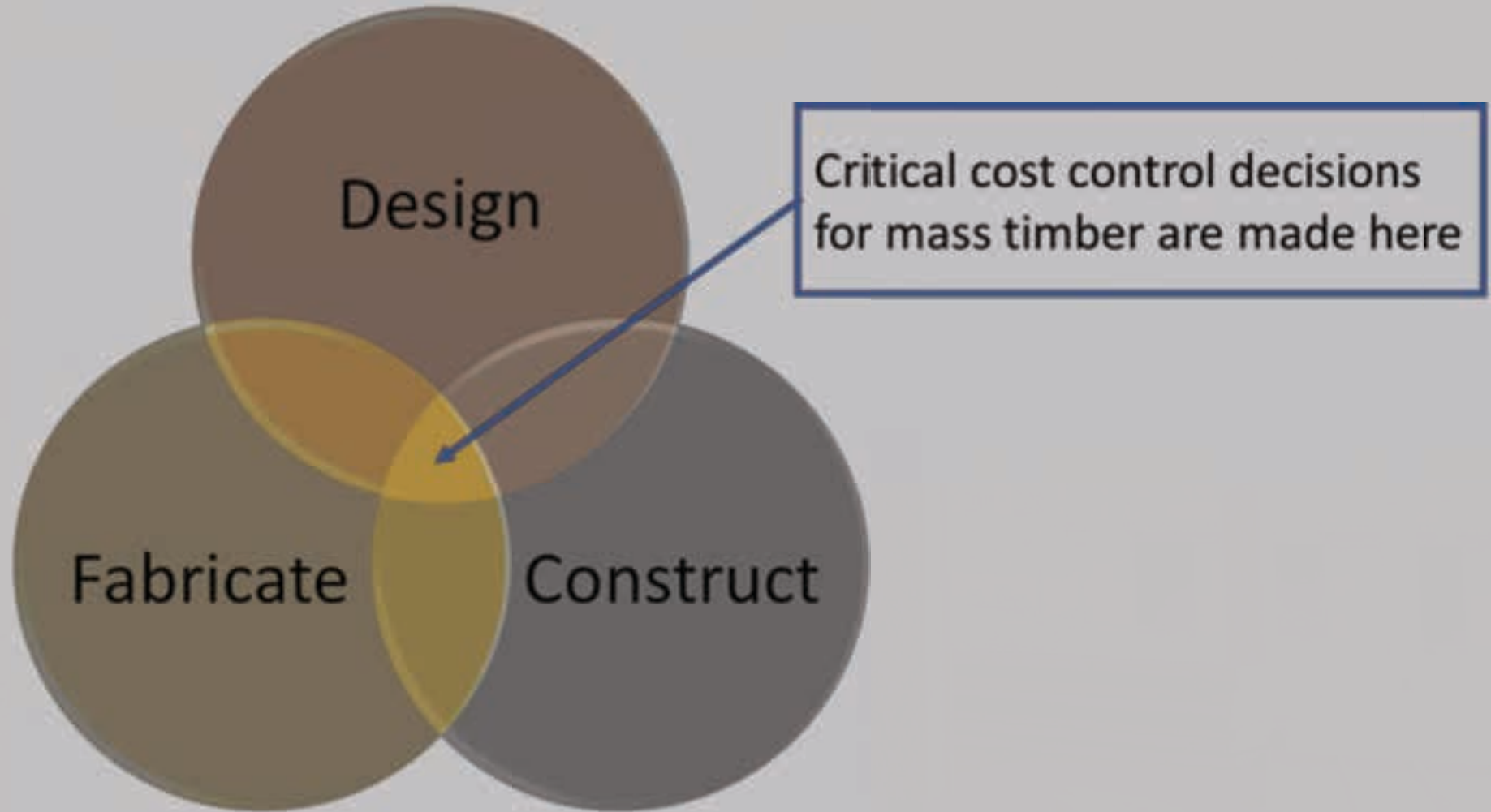
# Chung Tai Zen Center

Buddhist Monastery and Education Center  
Hybrid Mass Timber and Steel Structure  
20,000sf Meditation/Education Center  
5,000sf Residence

Design: Sopher Sparn Architecture  
Engineering: JVA Engineering  
Owner:  
Chung Tai Chan Monastery



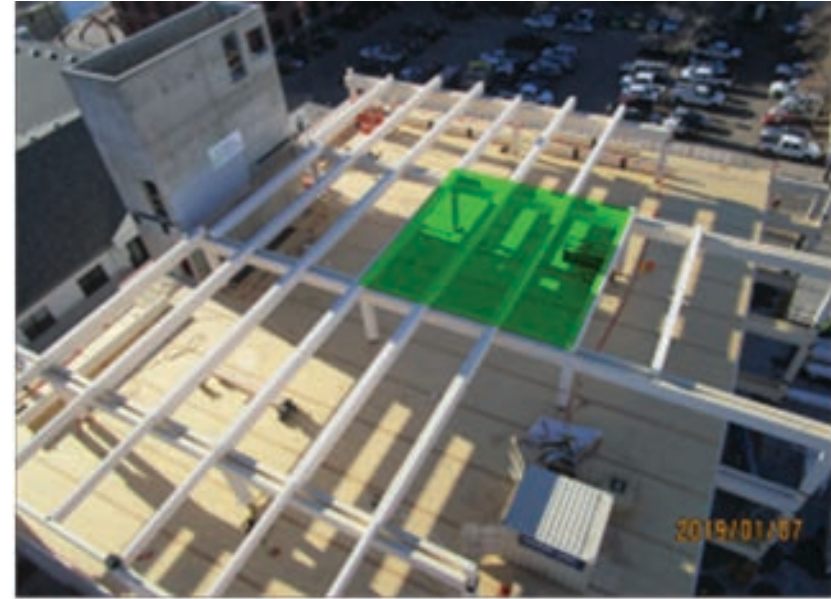
# Getting Started





# Early Design Decisions

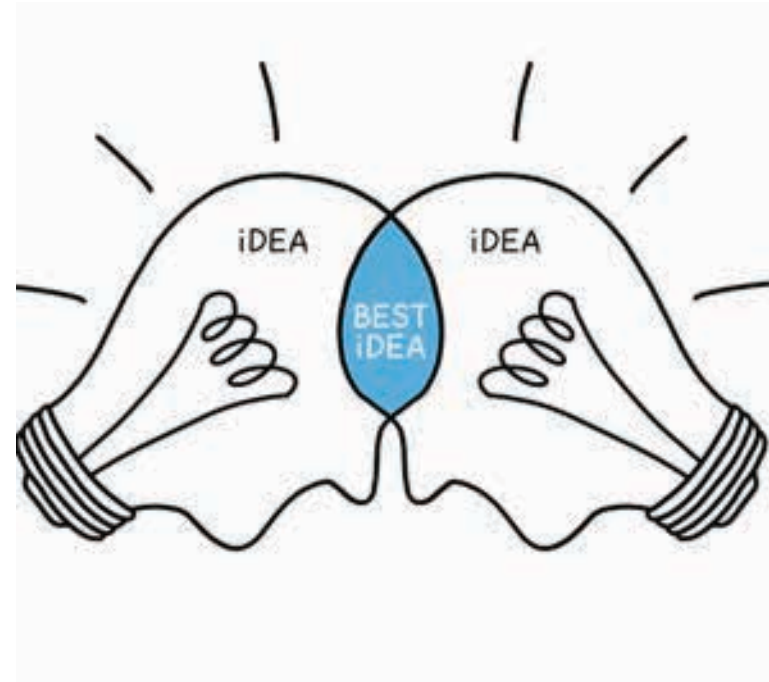
- Bay sizes
- Material selection
- Beam and column sizes
- Connection methodology
- Exposed vs concealed





# Pre-Construction

- Design optimization for Mass Timber buildings is best achieved with a collaborative team.
- Bring on the fabricator and structure influencers early for design assist



# Selecting a CLT / Glulam Manufacturer

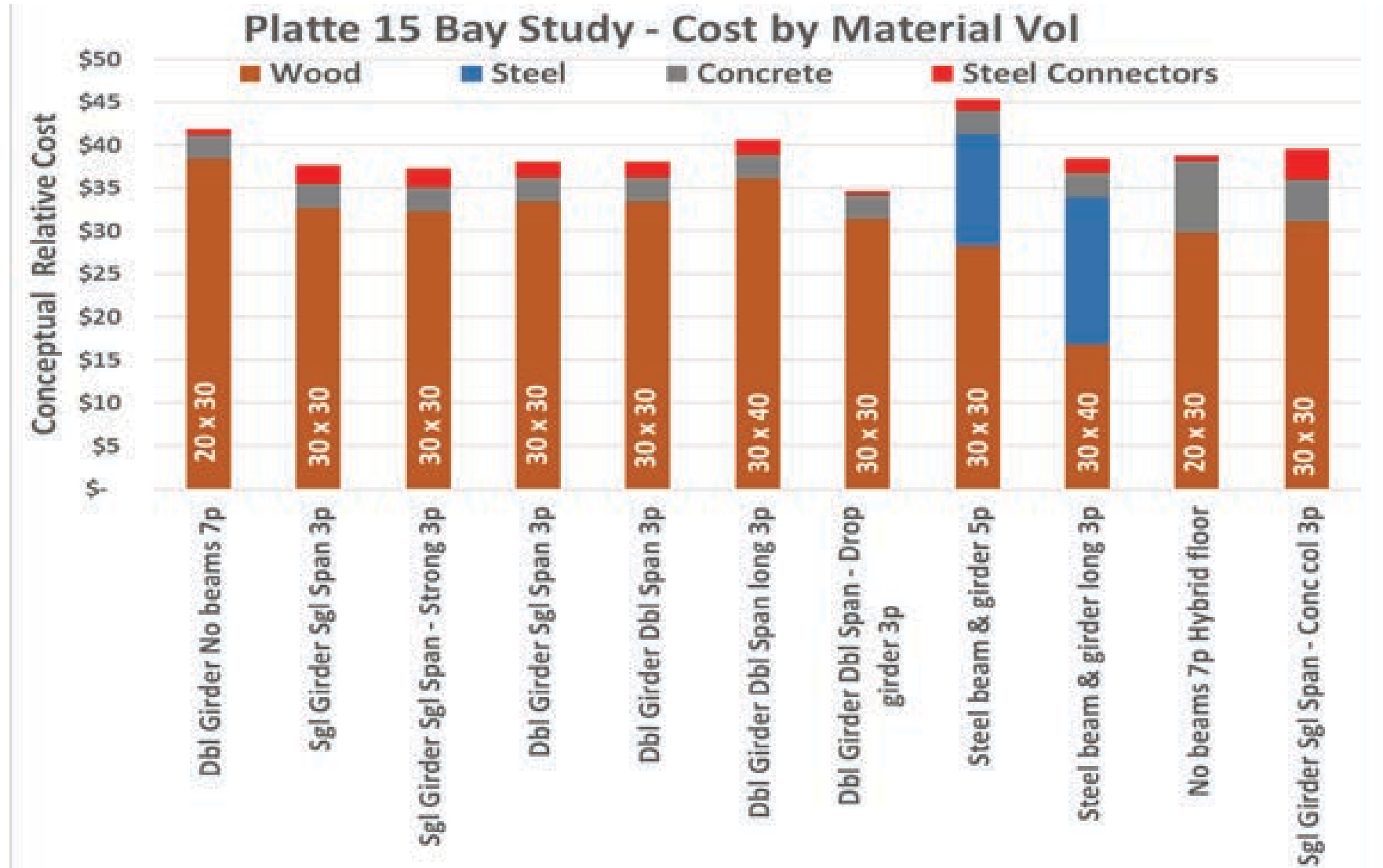
- Wood species are like paint colors
- Listen closely to manufactures individual efficiencies
- North American vs. Overseas
- Strength of coordination team
- Project history
- Visit the facility



# Choosing By Advantage

FACTORS	ALTERNATIVES					
	CLT PRODUCER #1		CLT PRODUCER #2		CLT PRODUCER #3	
Material Aesthetics						
Owner preference for lighter color	<u>SPF</u>		Spruce		European Spruce	
Advantage:		0		85		100
Servicing Zero Lot Line						
Can delivery be sequenced or "hot loaded"	Yes		Yes		<u>Container</u>	
Advantage:		60		60		0
Replacement Flexibility						
Distance from project	1300 miles		2100 miles		<u>5400 miles</u>	
Advantage:		40		25		0
Local Crew for Installation						
Installed by Colorado Crews	Yes		<u>No</u>		Yes	
Advantage:		20		0		20
<b>Total Importance:</b>	<b>120</b>		<b>170</b>		<b>120</b>	
<b>Total Cost:</b>	<b>\$4.6M</b>		<b>\$4.7M</b>		<b>\$4.7M</b>	

# Bay Studies for Platte Fifteen





# Final Structure Selections on Platte Fifteen

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- 30' x 30' Bay
- Double Girder with Intermediate Purlins
- 3 Ply CLT
- Primarily Screw Connections



# Major Challenges

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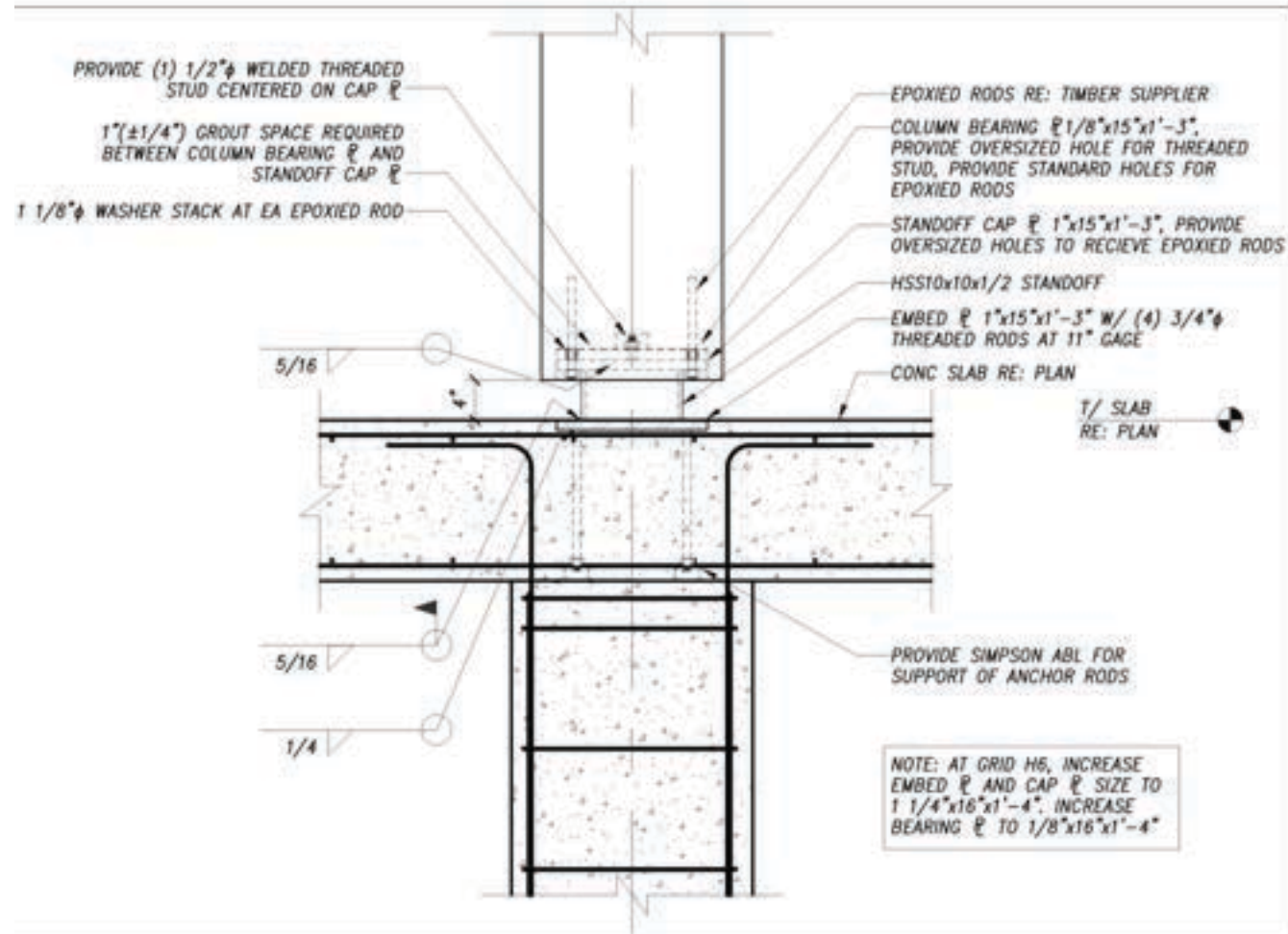
Overcoming Tight Tolerances

Trade Partner Comfort Level

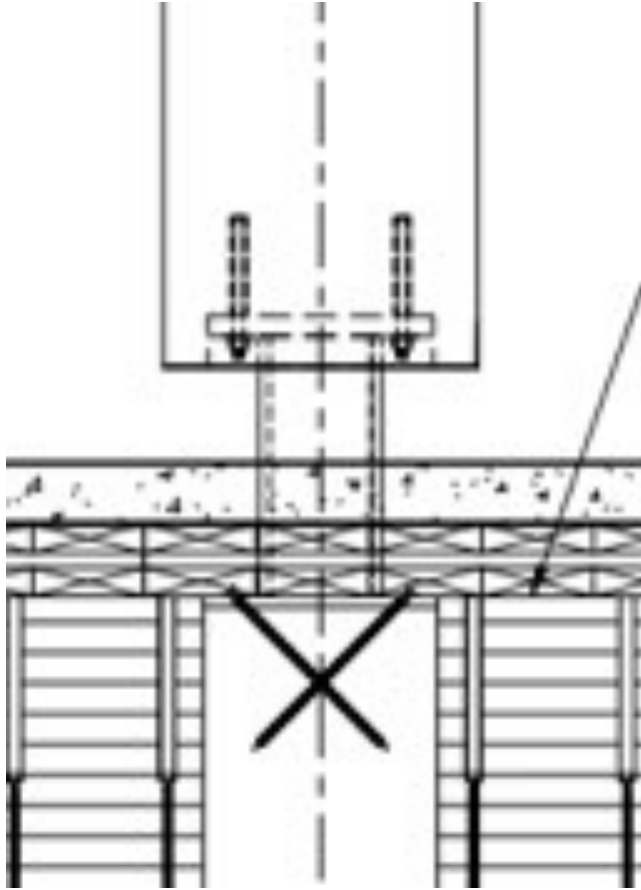


Protecting Your Investment

# Develop Enabling Details



# Develop Enabling Details





# Getting Trades Comfortable

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- Set realistic expectations early – this will be new
- A mockup is a great place to test ideas
- Explain the plan

# Prefab = Heavy Early Coordination

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- 2mm wood tolerance vs. the rest
- Running MEP in the open means it is part of the finish
- Tight tolerance allows coordination down to small penetrations
- Early focus allows for better project predictability
- Prefab does not stop at the structure



# Protecting Your Investment

- Top risks: UV, Moisture and Trade Damage
- True sealer coatings are a must
- Leave it wrapped? Tarp it? Tent it?



# > QUESTIONS?

This concludes The American Institute  
of Architects Continuing Education  
Systems Course

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**Shawn Brannon**

Adolfson & Peterson Construction

sbrannon@a-p.com