

25<sup>TH</sup> ANNUAL



25<sup>TH</sup> LCI CONGRESS  
OCTOBER 24-27, 2023

# Re-Purposing Construction Waste to Drive Sustainability

Matthew Boersma, HerreroBoldt

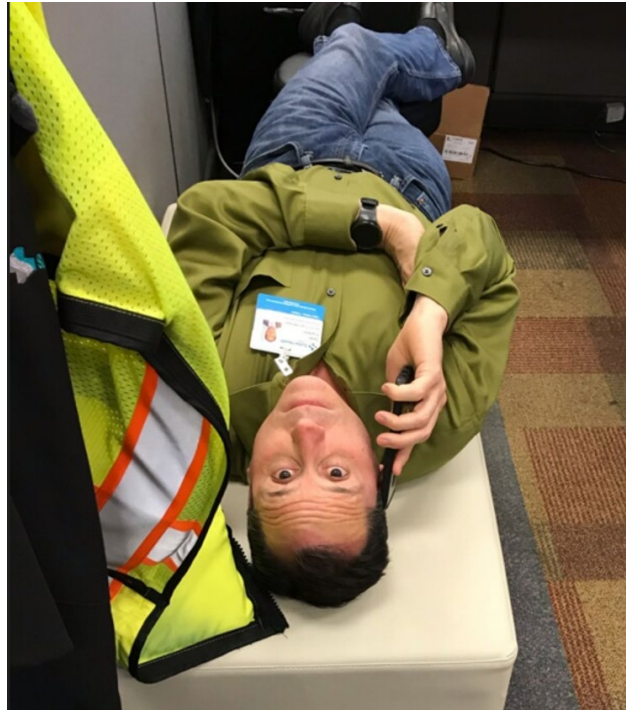
Sean Franklin, Sutter Health

Aron Bartee, HerreroBoldt

Stephanie Osbahr, The Boldt Company

25 YEARS OF LEARNING: SUPERCHARGE YOUR LEAN JOURNEY IN THE MOTOR CITY

Thursday October 26, 2023



MATTHEW BOERSMA - HERREROBOLDT

SEAN FRANKLIN - SUTTER HEALTH

ARON BARTEE - HERREROBOLDT

STEPHANIE OSBAHR- BOLDT

# SSRRH EXPANSION PROJECT

- Integrated Project Delivery
- Sept 2019 - October 2022
- \$108M Construction
- Santa Rosa CA
- Prefab Exterior



# Using the A3 Vehicle to Drive and Document Decision Making



# CONCEPT MODELS

Exterior design started with color mock-ups



And then graduated to full exterior systems





# CRASH TESTING

Before we could hit the assembly line we had to put the system through its paces

Full spray waster testing with negative air being pulled from the back side

Implemented some QA/QC measures and improvements in the assembly and sequencing

# UPGRADING TO THE FULLY LOADED PACKAGE

**CASE STUDY #1**

**CONSTRUCTION TYPE:**  
Light-gauge steel framing

**PROJECT TYPE:**  
Office/Institutional

**LOCATION:**  
Project - 4th & Montgomery,  
Portland, Oregon

**ARCHITECT:**  
SRG Partnership

**CONTRACTOR:**  
Andersen Construction

**CONVERSION BY:**  
Andersen Construction & Anderson  
Foundation

THE STORY BEHIND  
THE BUILD:

As a commercial project in an urban area, this eight-story shared office building brings together Portland State University, Oregon Health and Science University, Portland Community College, and the City of Portland. The building aims to foster collaboration between all partners focused on enhancing sustainable and responsible development in Portland.

This project used Integrated Project Delivery, which allowed close communication and coordination among the full project team. This delivery style benefited both the project and mock-up, supported the team to work through complex details, and it facilitated personal relationships to build which aided the effort to divert the mock-up.

The mock-up had intensive QA/QC review to ensure the mock-up met the visual and performance criteria necessary for the project. The mock-up represents the full height window of the primary building with a metal panel angle that matches the building geometry. The Architect noted that if the mock-up was not intended for donation, the mock-up would have been larger measuring at 16 feet tall, to be an exact representation of the building.



SSRRH Mock-up



Conceptual Buildout



Mock-up Design Guidelines - Sept 2019 / 6

# VEHICLE MANUAL: WHAT IS AN A3?

Project - A3 Report  
Please type title of A3

1 Baseline	Concisely state problem or situation here.	
	a. What is in the current design? b. What is our EMP based on? c. What is our current schedule?	
2 Analysis	The Baseline did not include the ___ because ____. Since then _____ has occurred. If unsolved, ____.	
	a. What happens if unsolved? (Consider constructability, schedule, operations and maintenance, energy and other life cycle cost impacts) b. Root Cause (Ask WHY five times ) c. Must have the following attributes : d. Should have the following attributes : e. List of Supporting Docs (CBA, Analyzed price, Sketches, Schedule)	
3 Advantages	Baseline	Alternative
	<ul style="list-style-type: none"> <li>Add a column for each alternative</li> <li>After listing advantages, enlarge font of the most important advantages</li> </ul>	<ul style="list-style-type: none"> <li>Use appropriate Choosing By Advantages Method (CBA)</li> <li>Cost is a means to achieve advantages, but is not an advantage.</li> <li>This may require preparing a CBA table separately, then summarizing the result here on this A3.</li> <li>Insert a CBA Chart when it improves clarity.</li> </ul>
	Budget	Analyzed price
4 Proposal	Concisely state the change or idea you want approved. Scope of work noted adds/reduces \$___ plus \$___ project requirements totaling \$___.	
	a. Add essential detail, exclusions, and schedule information. b. List Analyzed Price AP# for tracking	
5 Action	The path forward consists of :	
	a. Champion: List name b. State activities required to achieve our scheduled milestone.	

APPROVAL SIGNATURES (Please sign and date)

GC Rep: \_\_\_\_\_ Owner's Rep: \_\_\_\_\_ Trade Partner Rep: \_\_\_\_\_

Arch Rep: \_\_\_\_\_ Affiliate Rep: \_\_\_\_\_

EMP  Change Order

Author: Initial & Last name	Participants: Add individual names	Reviewed: Manager: _____
A3 No.: Use next sequential #	Document Date: _____	File: BIM360/05 Reports/A3/File name

An A3 is a document used to track, organize, and gain buy-in from key team members

It organizes the relevant information in stages to simplify alignment

Serves as a historical document the explain the decision making process

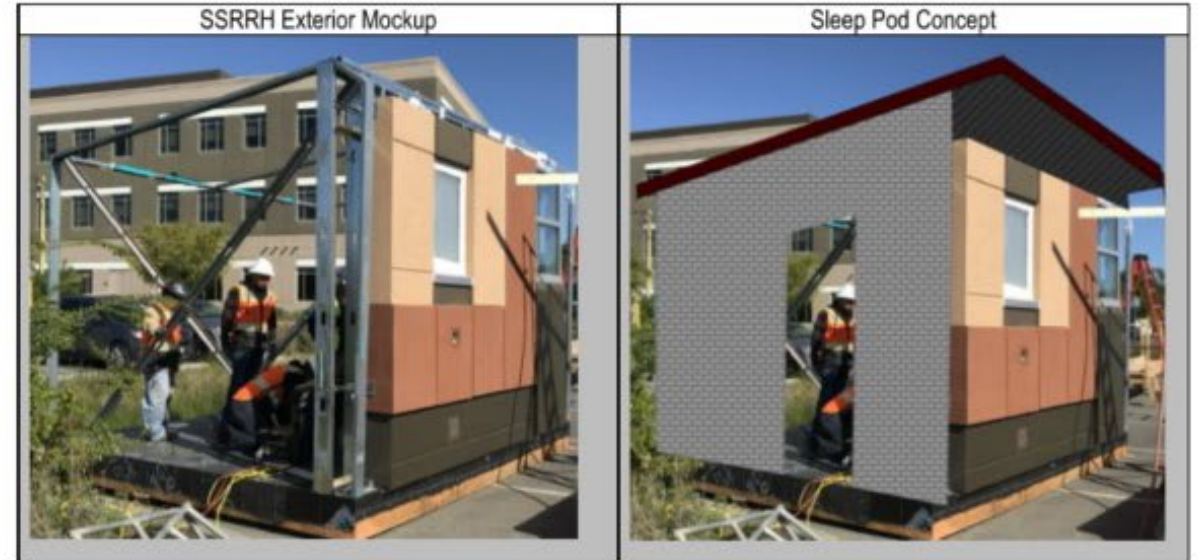


# CREATING AND GETTING BUY-IN ON OUR A3

<b>1 Baseline</b>	Utilize a performance exterior mockup to advance design detailing and test waterproofing
	<ul style="list-style-type: none"> <li>a. PCO 158 pulled \$61,000 from Contingency to pay for our Exterior Mockup</li> <li>b. Exterior Mockups are expensive because they require suppliers to set up for single unit manufacturing.</li> <li>c. The Exterior mockup allows Preconstruction teams to test finishes, transition details and watertight performance of the exterior envelope. This aligns expectations and reduces risk of water intrusion.</li> </ul>

<b>2 Analysis</b>	Should our team throw away our exterior mockup, or repurpose into a sleep pod?
	<ul style="list-style-type: none"> <li>a. During a local LCI presentation we learned of a project in Portland that build a sleep pod out of their exterior mockup</li> <li>b. We got a copy of the sleep pod specifications to guide us on how to convert our mockup into a sleep pod</li> <li>c. Excess materials remnants that are discarded from our construction site can support our sleep pod construction to keep costs low</li> <li>d. There is a shortage of clean safe places for homeless people to sleep</li> <li>e. We have contacted several organizations to find a pod home including Sonoma County Habitat for Humanity, Home Aid, Veterans Associations and City Impact</li> <li>f. City Impact is interested in adding our sleep pod to their 5-acre property located 33551 Little Valley Road, Fort Bragg, Ca. For the last 22 years this property has been an important resource to provide San Francisco homeless temporary housing respite, camps for kids, training, and conferences to break the cycle of chronic homelessness. Their long-term goal is to add sleep pods to the property to increase their outreach capacity.</li> </ul>

<b>3 Advantages</b>	Baseline – Disposal of Mockup	Alt 2 – Convert Mockup to sleep pod
	<ul style="list-style-type: none"> <li>• Less effort to discard the mockup</li> </ul>	<ul style="list-style-type: none"> <li>• Reduced Waste</li> <li>• Improved project to community connection</li> <li>• Improved team building</li> <li>• Increased sleep pod for homeless</li> </ul>
	EMP Budget	NTE \$25,000



<b>4 Proposal</b>	\$25,000 from Contingency to support sleep pod project.
	<ul style="list-style-type: none"> <li>Design \$1,000</li> <li>Construction \$18,000</li> <li>Delivery \$2,000</li> <li>Set up, and trim out \$4,000</li> </ul>

<b>5 Action</b>	Champion: Matthew Boersma
	<ul style="list-style-type: none"> <li>a. -Design/Layout, potentially a rendering or hand sketch</li> <li>b. -Building Materials that would be donated</li> <li>c. -Logistics of moving/delivery</li> </ul>



# LESSON LEARNED

What worked and didn't work

A3 Stories: Success and Failures





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Thank you for attending this presentation. Enjoy the rest of the 25<sup>th</sup> Annual LCI Congress!