



ULI San Francisco
Serving the Greater Bay Area

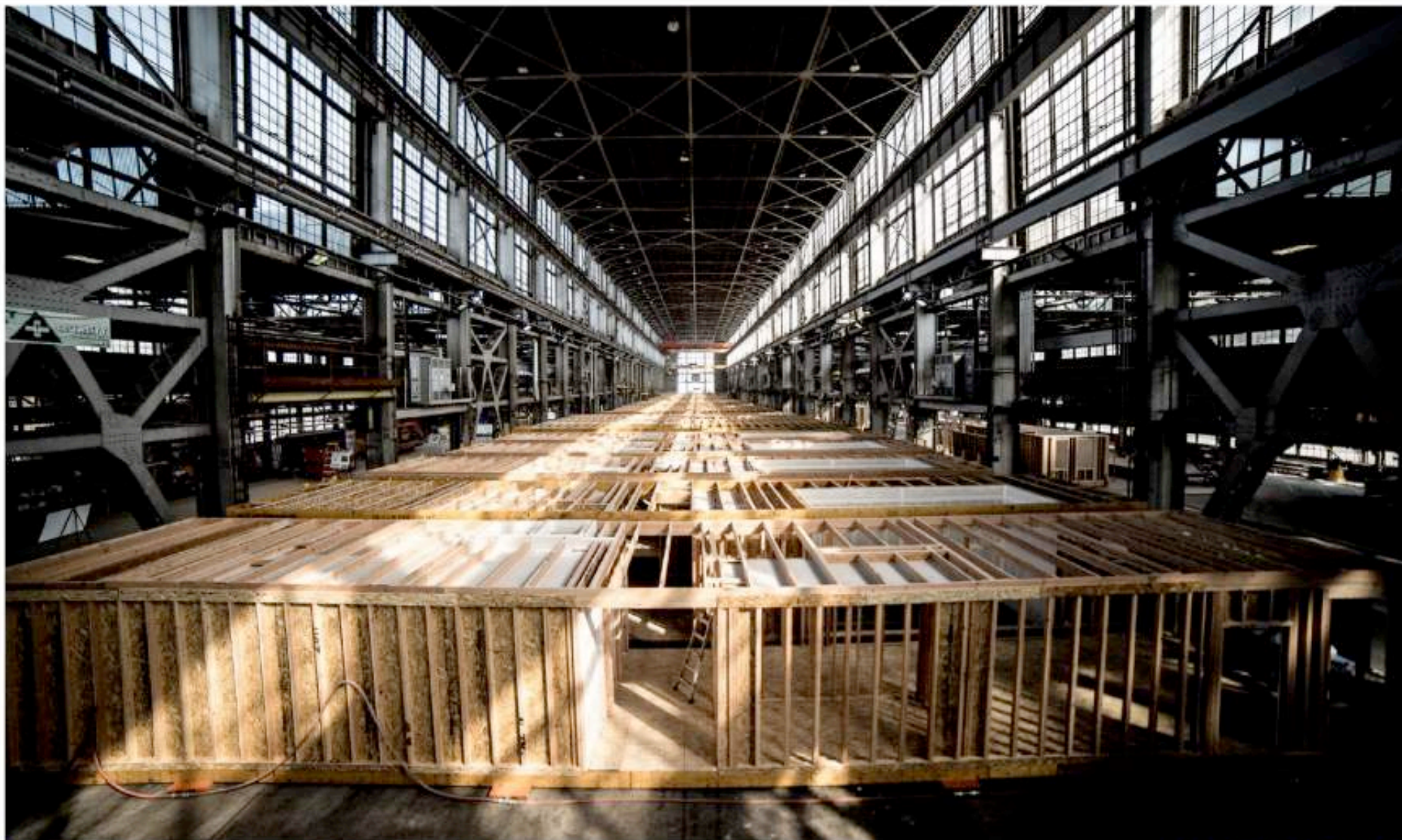
HOUSING THE BAY

@ULISF
#HousingTheBay



New Construction Technologies: Searching for the Magic Bullet

- **Naomi Porat**, Strategic Advisor, Factory_OS (Moderator)
- **V. Fei Tsen**, Founder and Managing Partner, Windflower Properties
- **Jason Laub**, COO, RAD Urban
- **Jeff Morrow**, Program Manager, Timber & Innovations Group, Lendlease
- **Michael Yarne**, Co-Founder, Social Construct





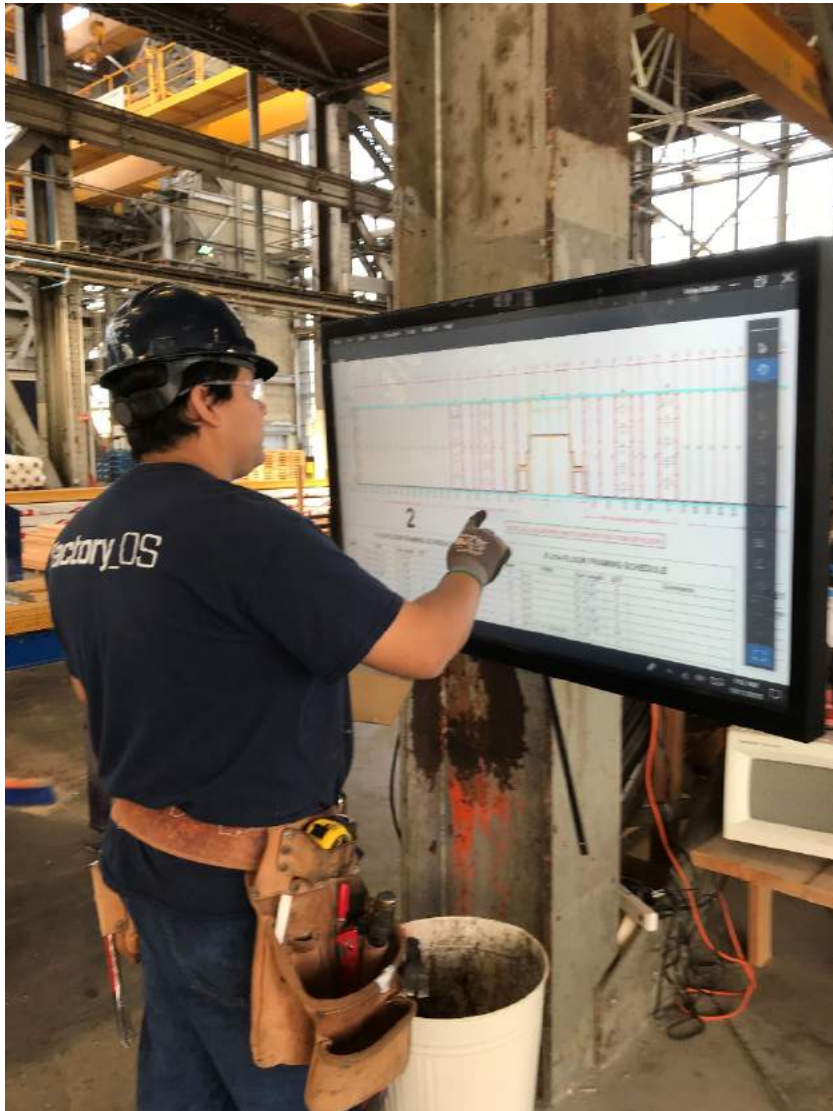
**Urban Land
Institute**

San Francisco
Serving the Greater Bay Area

**HOUSING
THEBAY**

Collaborate • Innovate • Act





RAD
U R B A N

2019 ULI Housing The Bay Summit
San Francisco, CA

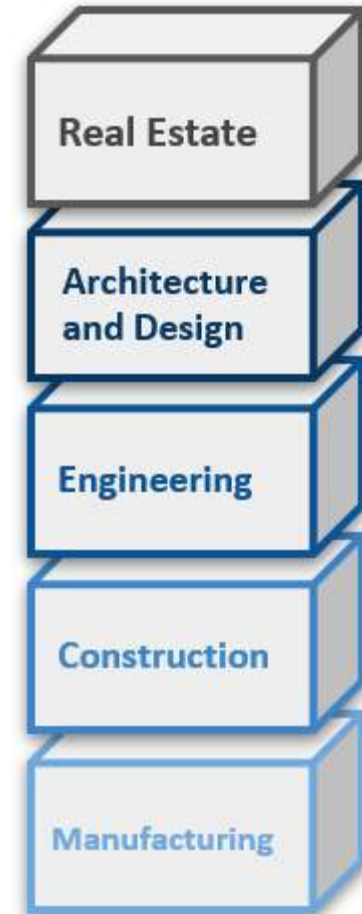
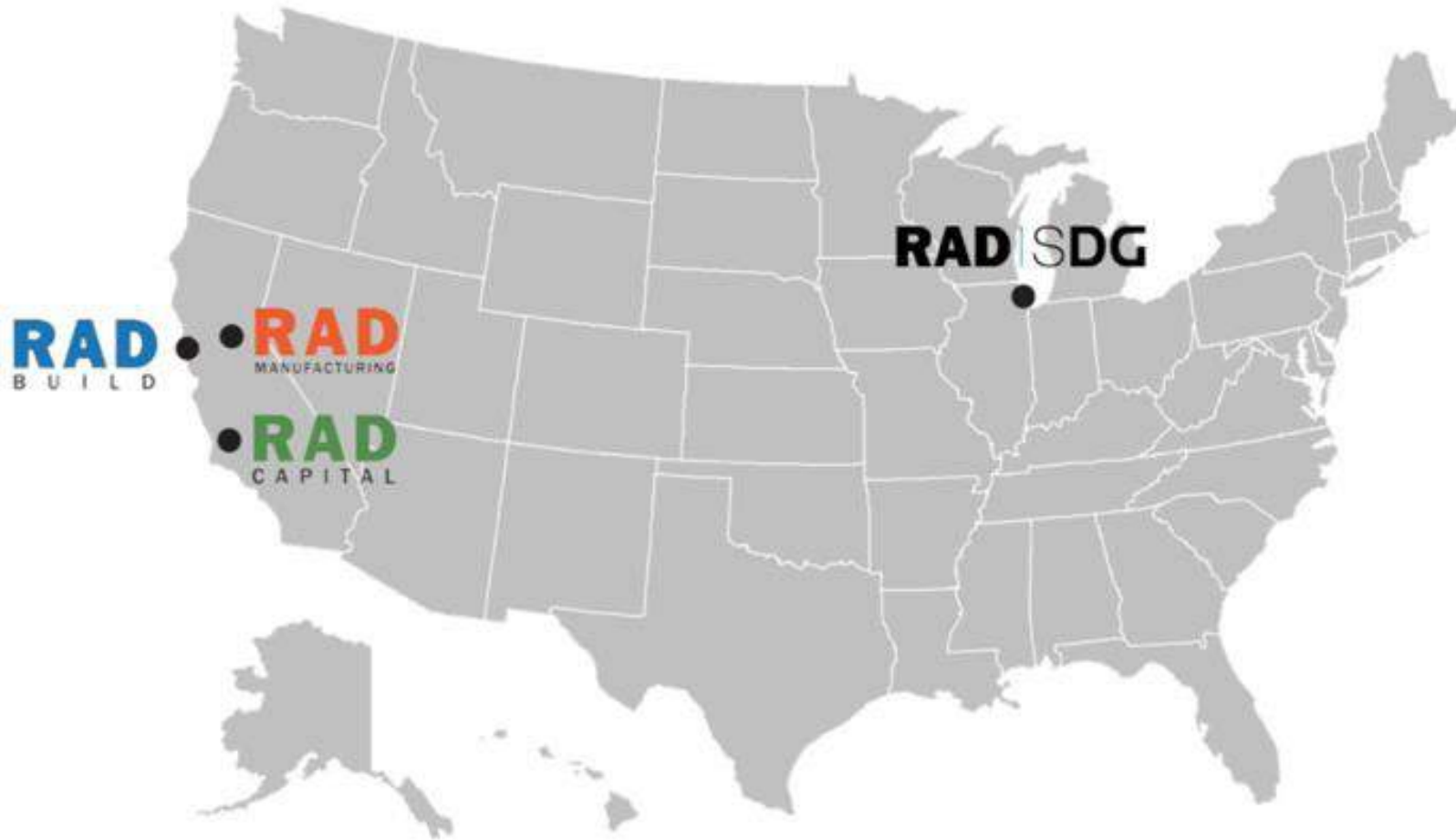
Friday, May 10, 2019
9:45 AM

New Construction Technologies:
Searching for the Magic Bullet



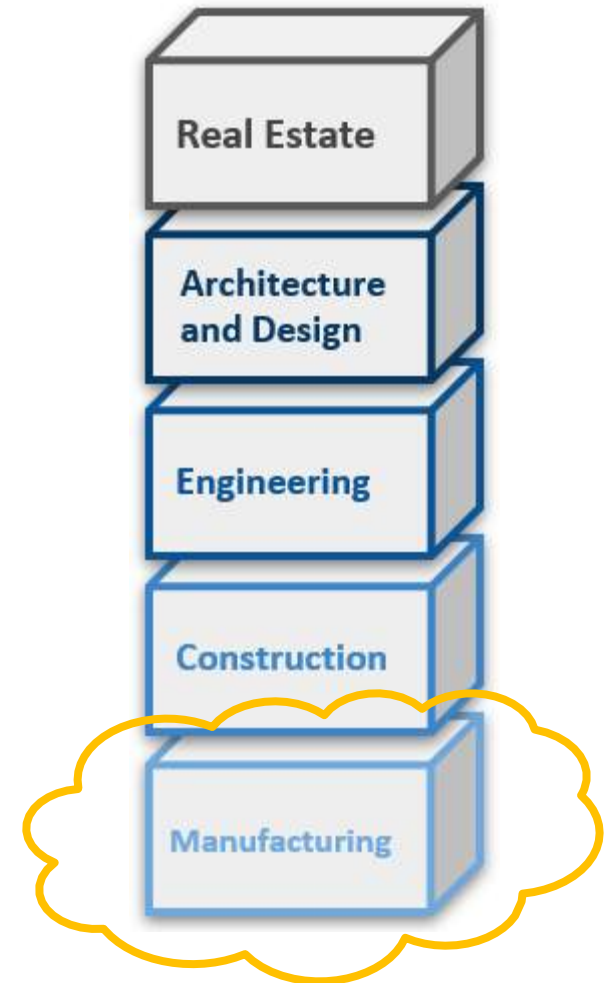
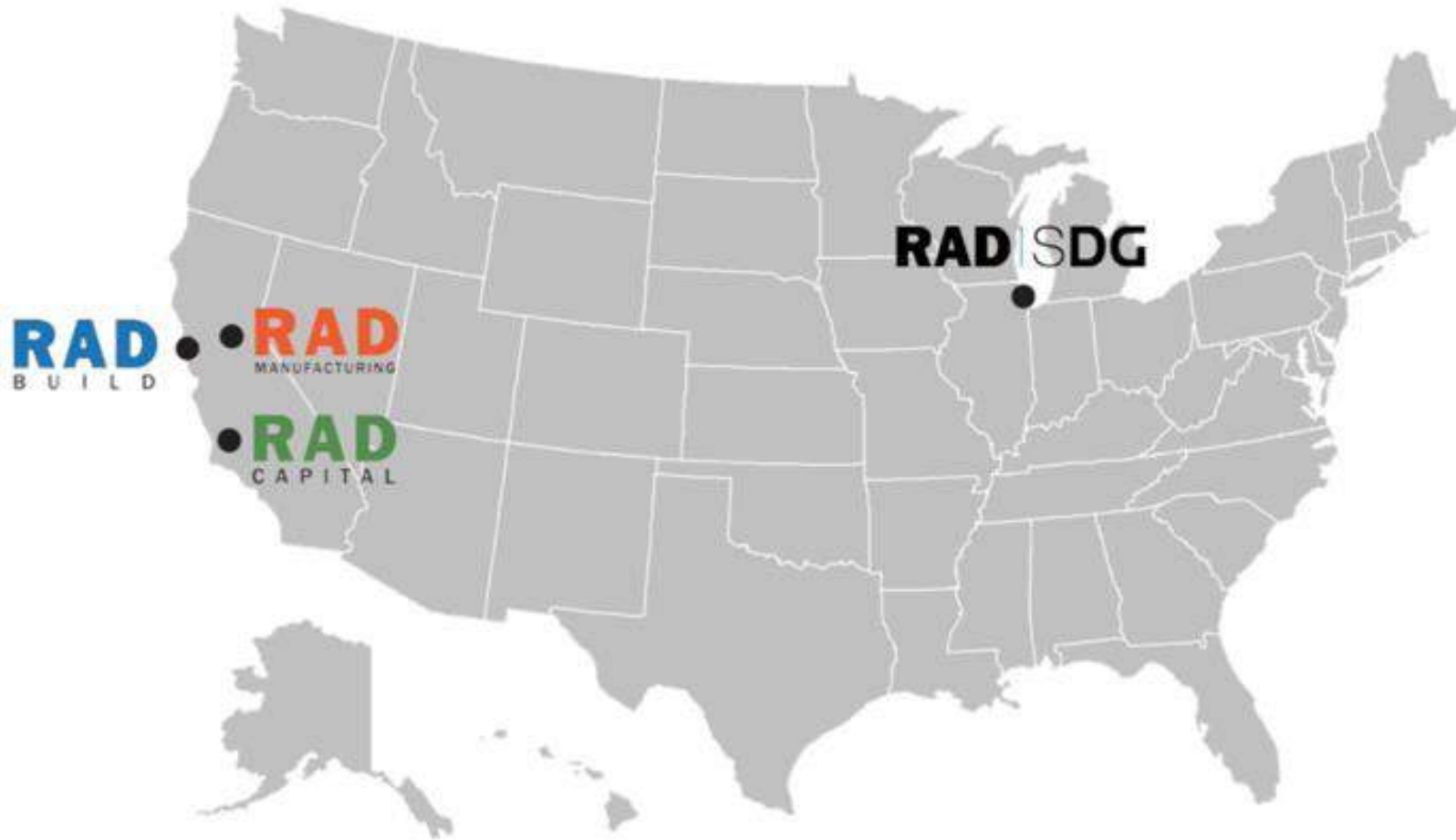
RAD

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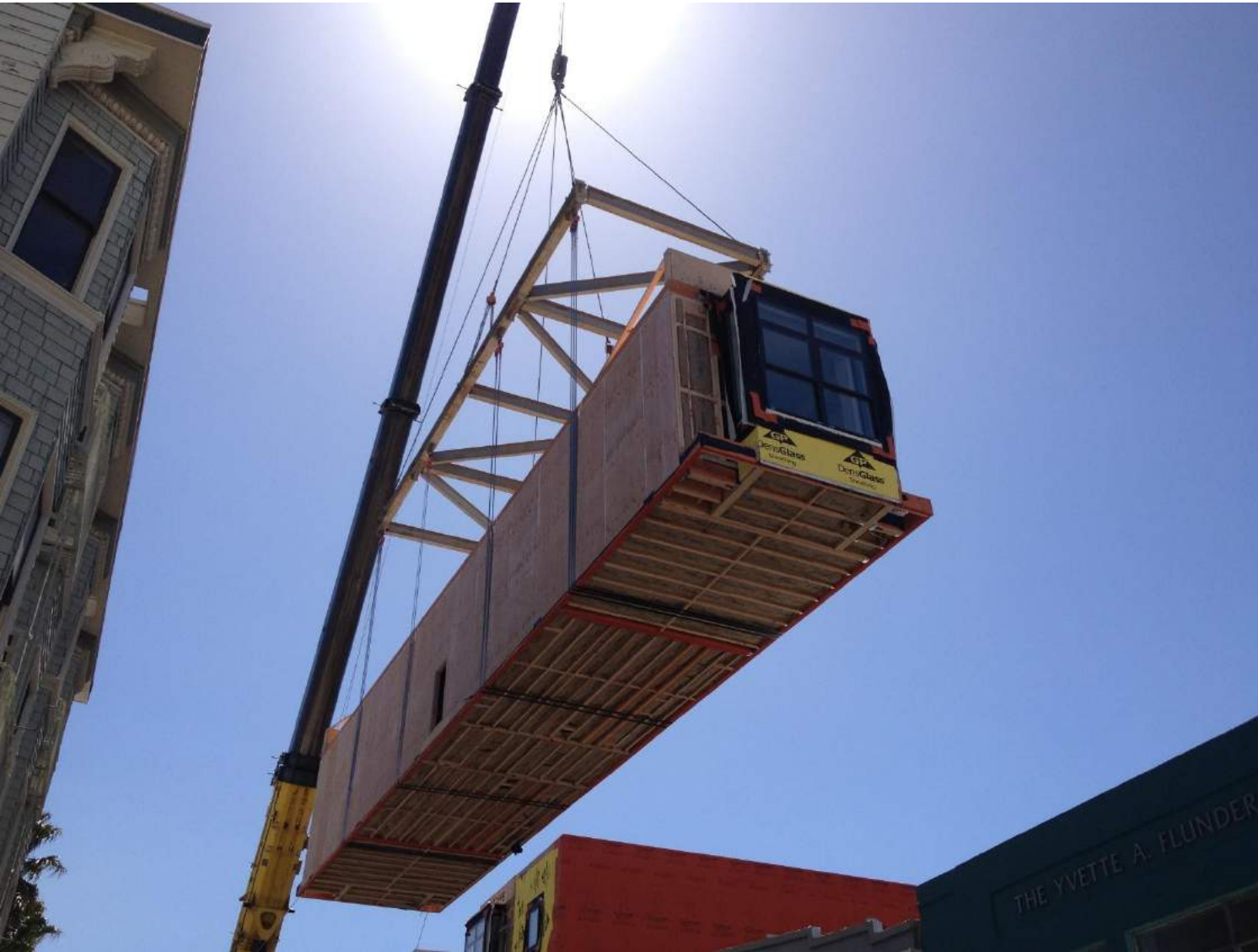




Modular Construction Beginning



Modular Options in 2011

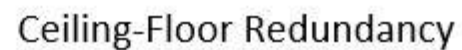


Modular Options in 2011

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URBAN



Modular Options in 2011

- ❌ 30% Structural Redundancy
- ❌ Wood Prone to Mold
- ❌ Wood too Flexible – Cracks in Finish
- ❌ Tolerances sub-par (Fenestration Issues)
- ❌ Interior & Exterior Finishes Not Complete
- ❌ Temporary Waterproofing Not Acceptable
- ❌ No Cost Savings!

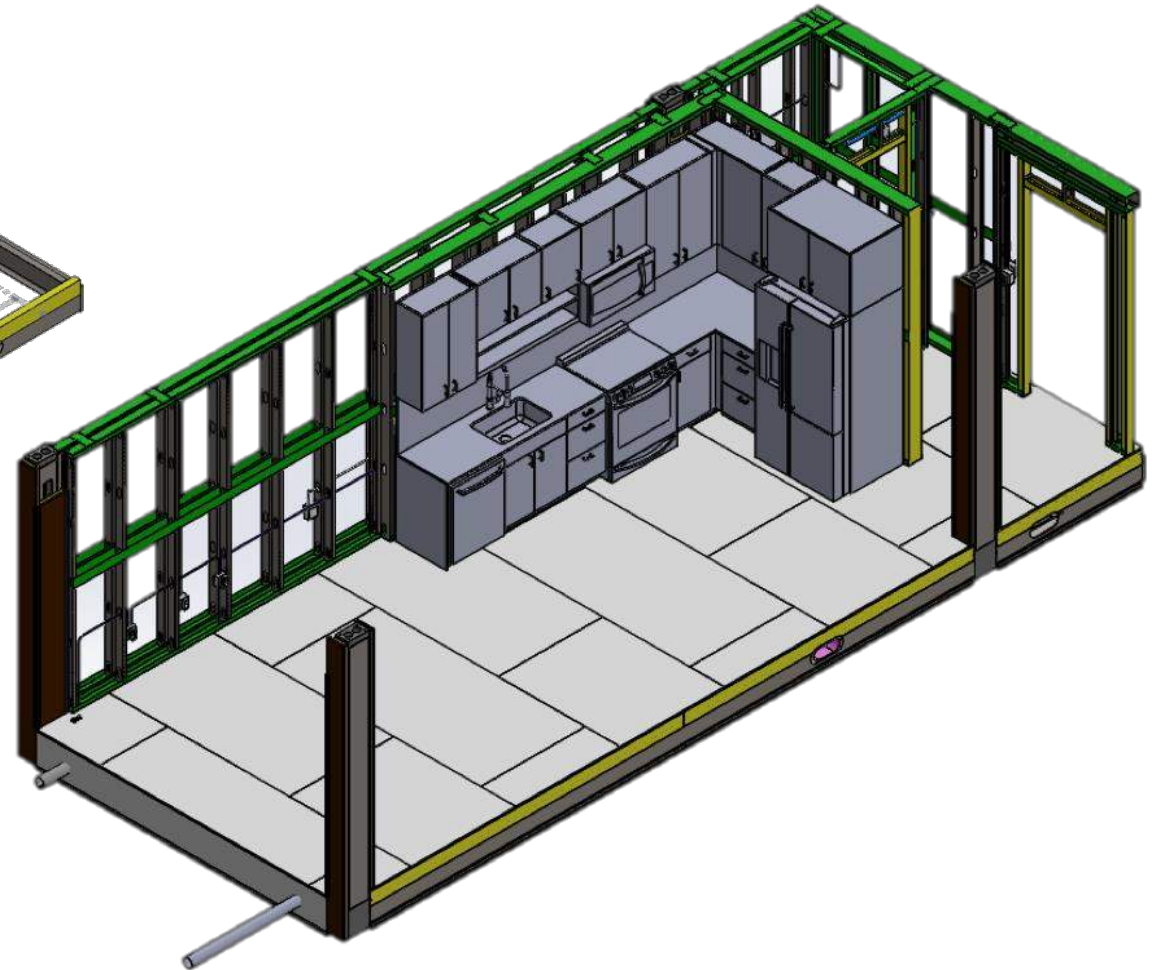
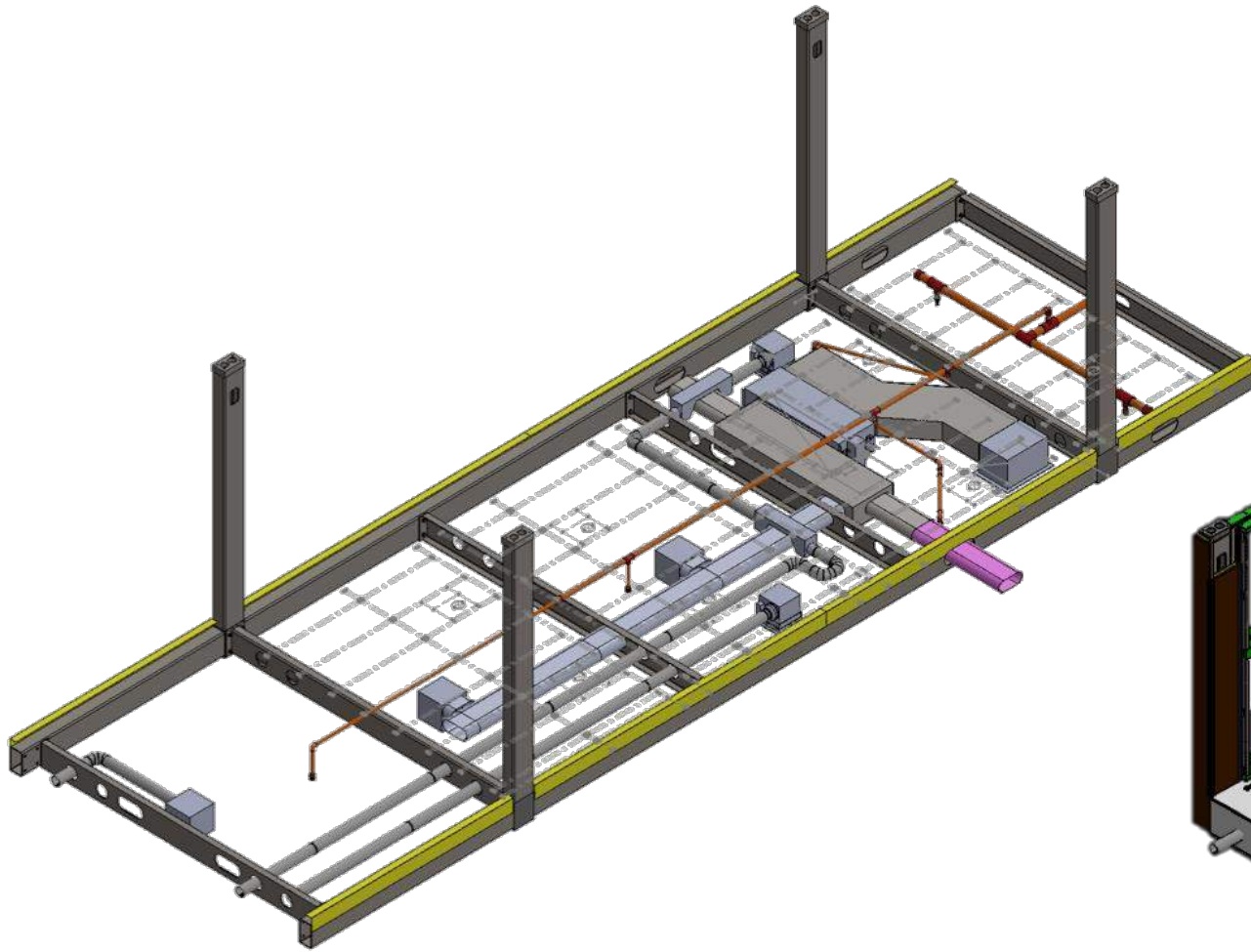
An aerial photograph of a dense urban skyline, likely New York City, taken from a high vantage point. The image shows a multitude of skyscrapers and buildings, with the Hudson River visible on the left and the East River on the right. The lighting is soft, suggesting the "blue hour" of dusk. Overlaid on the center of the image is the text "OUR SOLUTION" and "REINVENT MODULAR" in a clean, white, sans-serif font.

OUR SOLUTION

REINVENT MODULAR

RAD Bloc Modules

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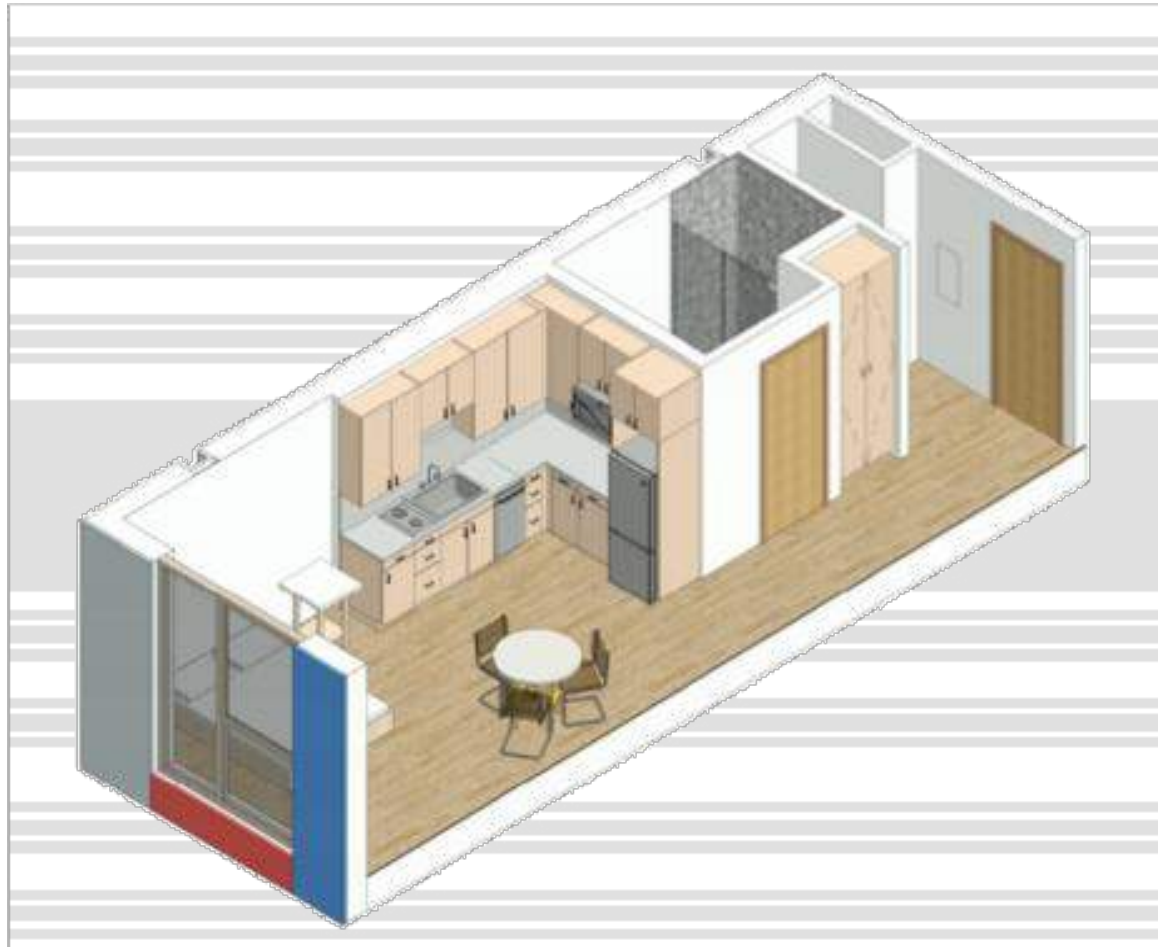
RAD Bloc Modules



4-SIDED MODULES:

30 % MATERIAL SAVINGS

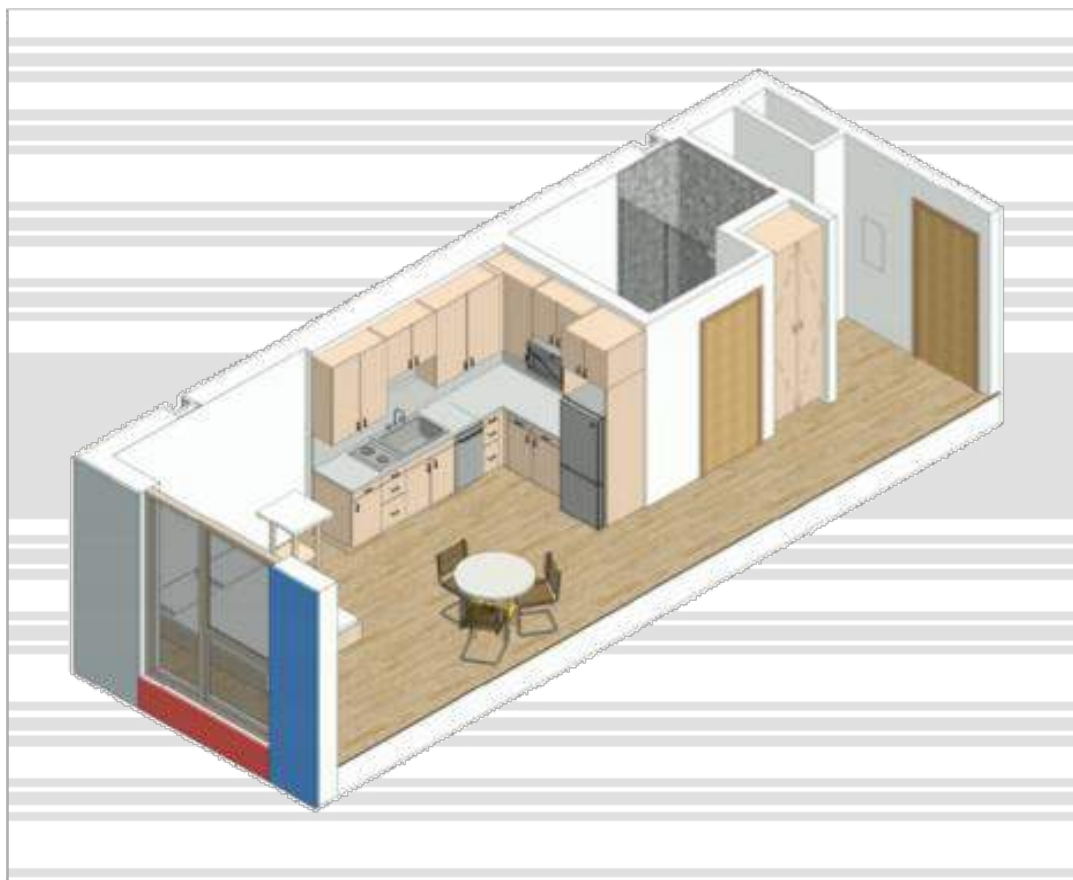
“L” Shaped: Open side and open top eliminate all redundancies



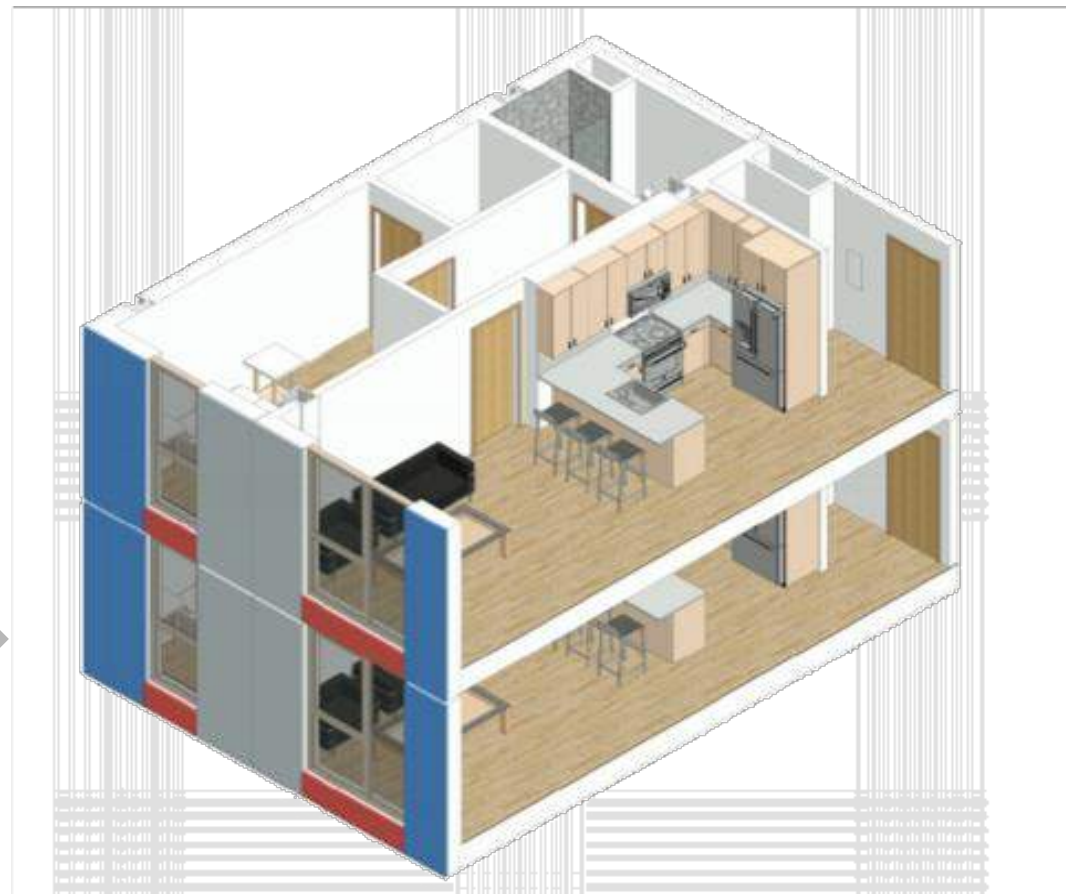
RAD Bloc Modules



4-SIDED MODULES: NO LOSS OF EFFICIENCY

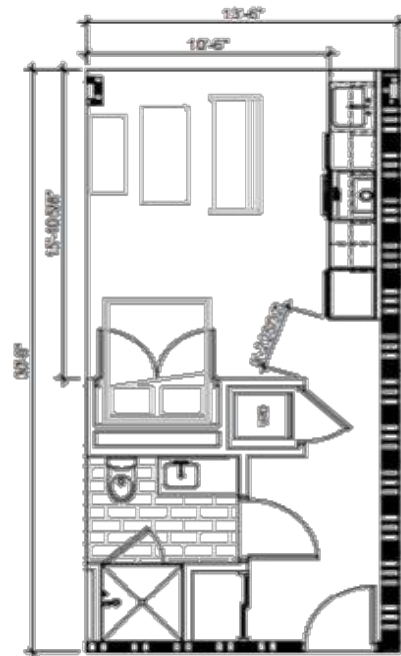


Stacking

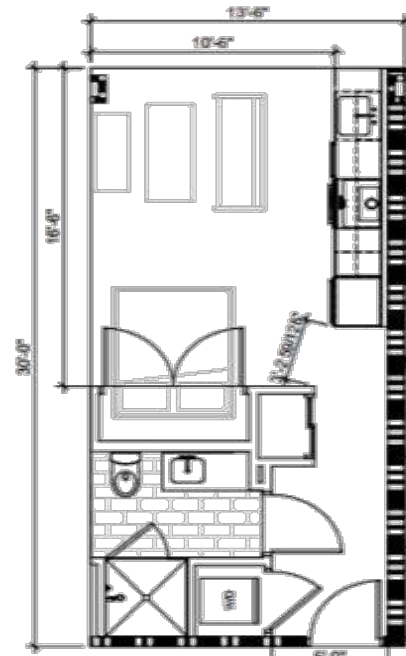


“L” Shaped: Open side and open top eliminate all redundancies

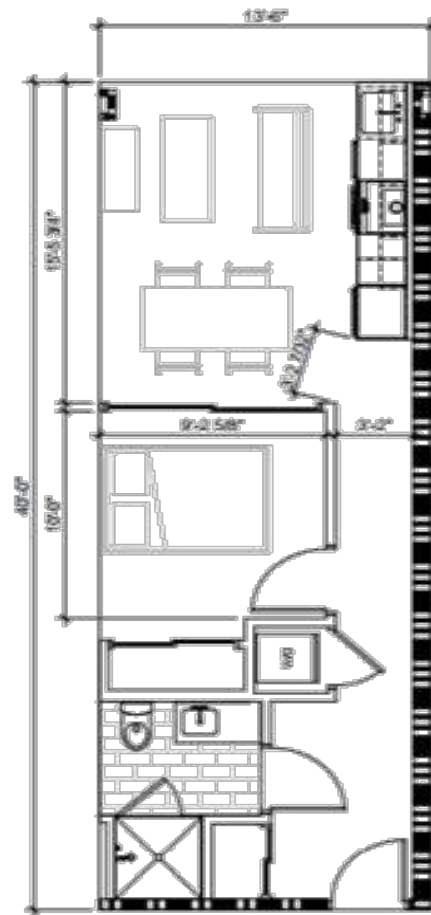
RAD Bloc Module Catalog



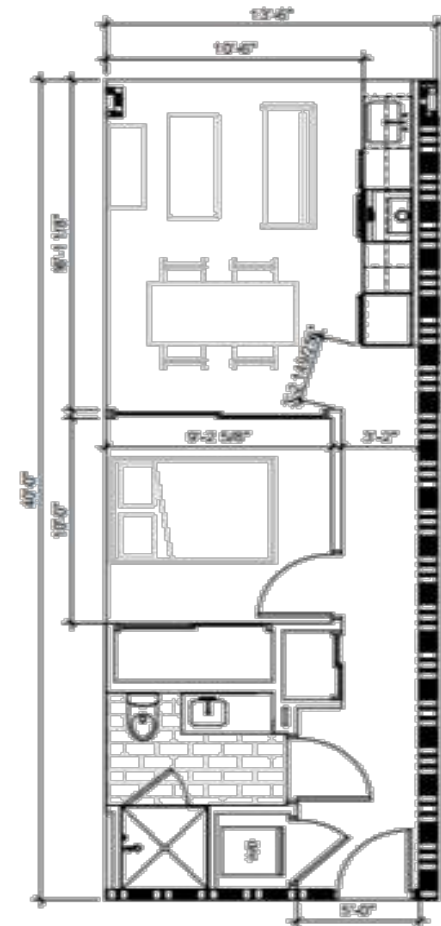
STUDIO UNIT
30' X 13.5'



STUDIO UNIT
ALT
30' X 13.5'

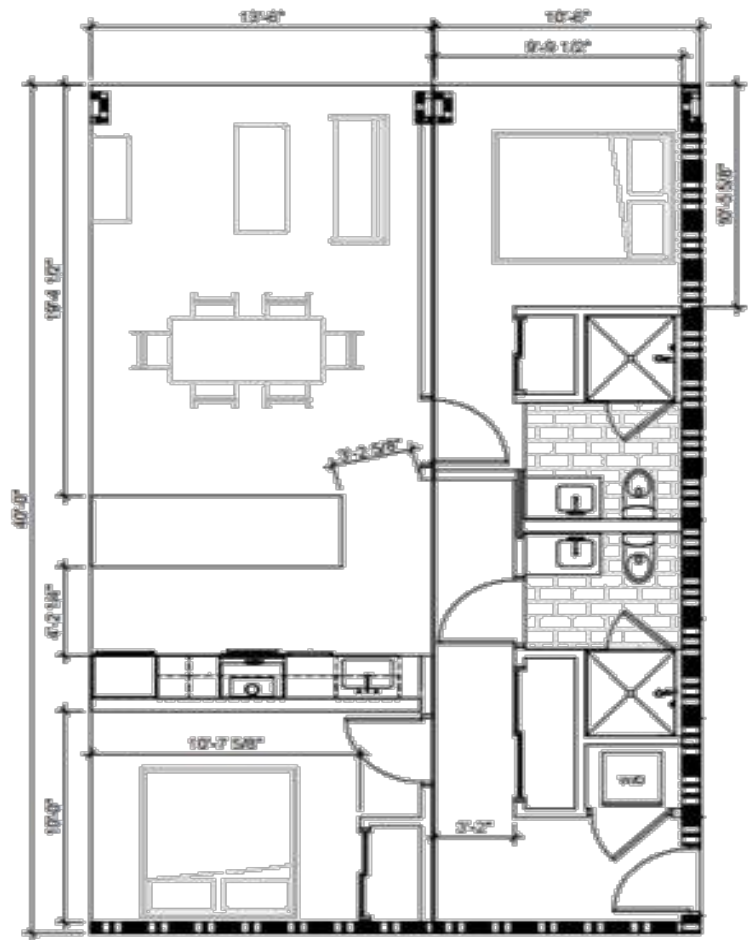


1 BED ROOM UNIT
40' X 13.5'

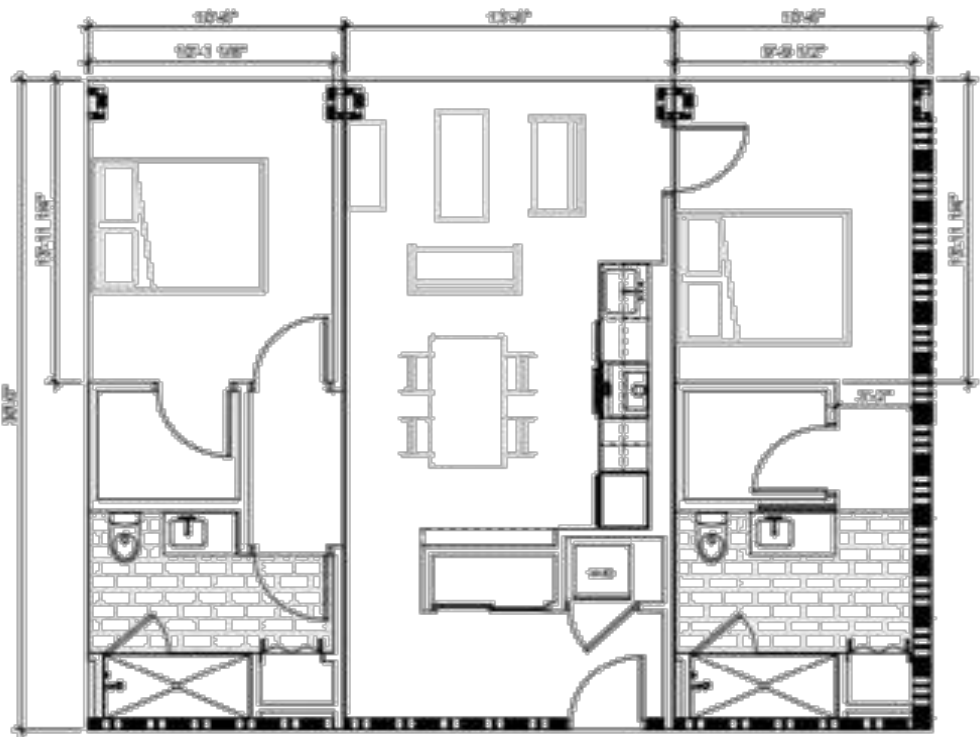


1 BED ROOM UNIT
ALT
40' X 13.5'

RAD Bloc Module Catalog



2 BED ROOM CORNER UNIT
LIVING ROOM AT CORNER
40' X (13.5' + 10.5')



2 BED ROOM UNIT
30' X (10.5' + 13.5' + 10.5')

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Pilot Project - D1

RAD
U R B A N



Pilot Project - D1



Results:



Schedule – Par

Cost: 200%

Berkeley, CA – D2

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 **AIA**: National Citation award for innovation
 **AIA**: California merit award for design



Berkeley, CA – D2

RAD
U R B A N







RAD
U R B A N

Berkeley, CA – D2



Results:

Schedule: 33% Reduction

Cost: 20% Reduction

Oakland, CA – D3

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RAD
U R B A N

Oakland, CA – D3



Results:

Schedule: 28% Reduction

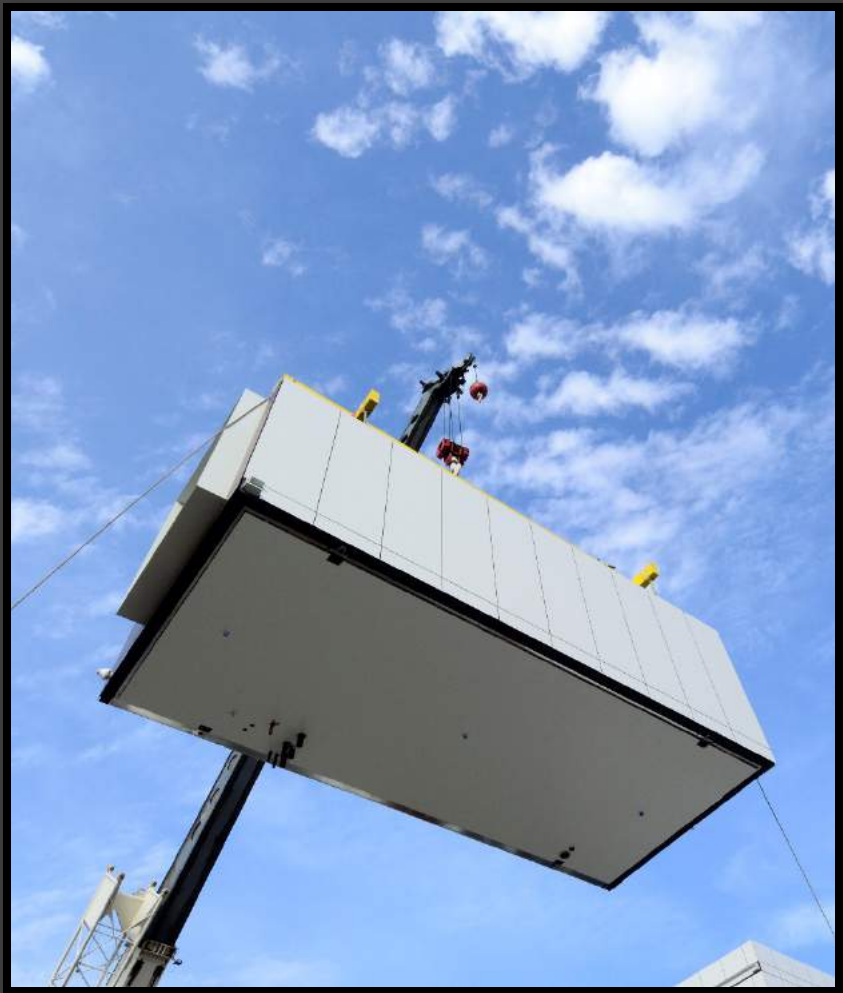
Cost: 24% Reduction

Oakland, CA – D4





Oakland, CA – D4



620 Complete



402 In Production



2,000+ Backlog

D5



1433 Webster Street

Height: 160 feet

Gross Area: 151,125 sq ft

Construction: Type IA



2044 Franklin
Height: 260 feet
Gross Area: 311,696 sq ft
Construction: Type IA

INDUSTRY SUPPORT

Education
&
Collaboration

The Mass Timber Advantage

New Construction Technologies:
Searching for the Magic Bullet

Jeff Morrow

ULI Housing the Bay Summit

May 10, 2019

lendlease





DEVELOPMENT



CONSTRUCTION



COMMUNITIES



INFRASTRUCTURE
DEVELOPMENT
& INVESTMENT

VISION

TO CREATE
THE BEST
PLACES

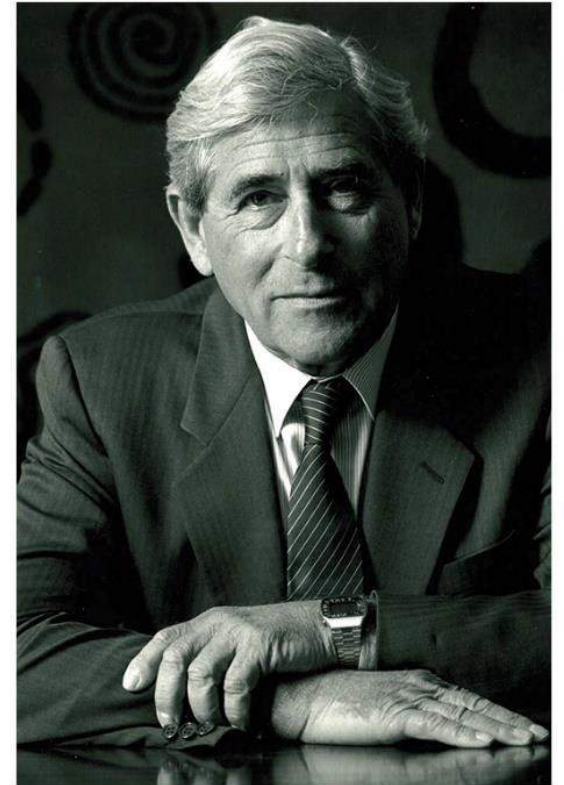
VALUES

RESPECT
COLLABORATION
INTEGRITY

EXCELLENCE
INNOVATION
TRUST

"THE TIME IS NOT FAR
OFF WHEN COMPANIES
WILL HAVE TO JUSTIFY
THEIR WORTH TO SOCIETY,
WITH GREATER EMPHASIS
BEING PLACED ON
ENVIRONMENTAL AND
SOCIAL IMPACT THAN
STRAIGHT ECONOMICS."

Dick Dusseldorp
Lend Lease Founder, 1973







CLT Benefits

- Faster Construction
- Earlier Realized Revenue
- Less Skilled Labor
- DfMA Compatibility
- Increased Quality
- Enhanced Safety during Construction
- Lighter than Concrete
- Solid building performance
- Sustainability
 - Lower Carbon Footprint
 - Renewable Resource



CLT Heavy

PAL PORTFOLIO	TYPICAL NEW PAL HOTEL (ACTUAL*)	REDSTONE ARSENAL (ACTUAL)	DIFFERENCE
Gross SF	54,891	62,688	+14%
Average # of Employees	18 (Peak 26)	10 (Peak 11)	-43%
Structural Duration (Days)	123	78	-37%
Structural Man Hours	14,735	8,203	-44%
Structural Production Rate/Day (SF)	460 SF/day	803 SF/day	+75%
Overall Schedule	15 months	12 months	-20%

CLT Light

PAL PORTFOLIO	TYPICAL NEW PAL HOTEL (ACTUAL*)	FT. DRUM (ACTUAL)	DIFFERENCE
Gross SF	54,891	65,776	+20%
Average # of Employees	18 (Peak 26)	10	-44%
Structural Duration (Days)	123	93	-24%
Structural Man Hours	14,735	9,715	-34%
Structural Production Rate/Day (SF)	460 SF/day	708 SF/day	+54%
Overall Schedule	15 months	13.5 months (assumed completion)	-10%

* PAL New Build Hotel Historical Average
w/ Light Gauge Metal





1
1

Complimentary Componentization Assemblies

MEP Racks

Facades

Bathroom Pods

Mass Timber Structure



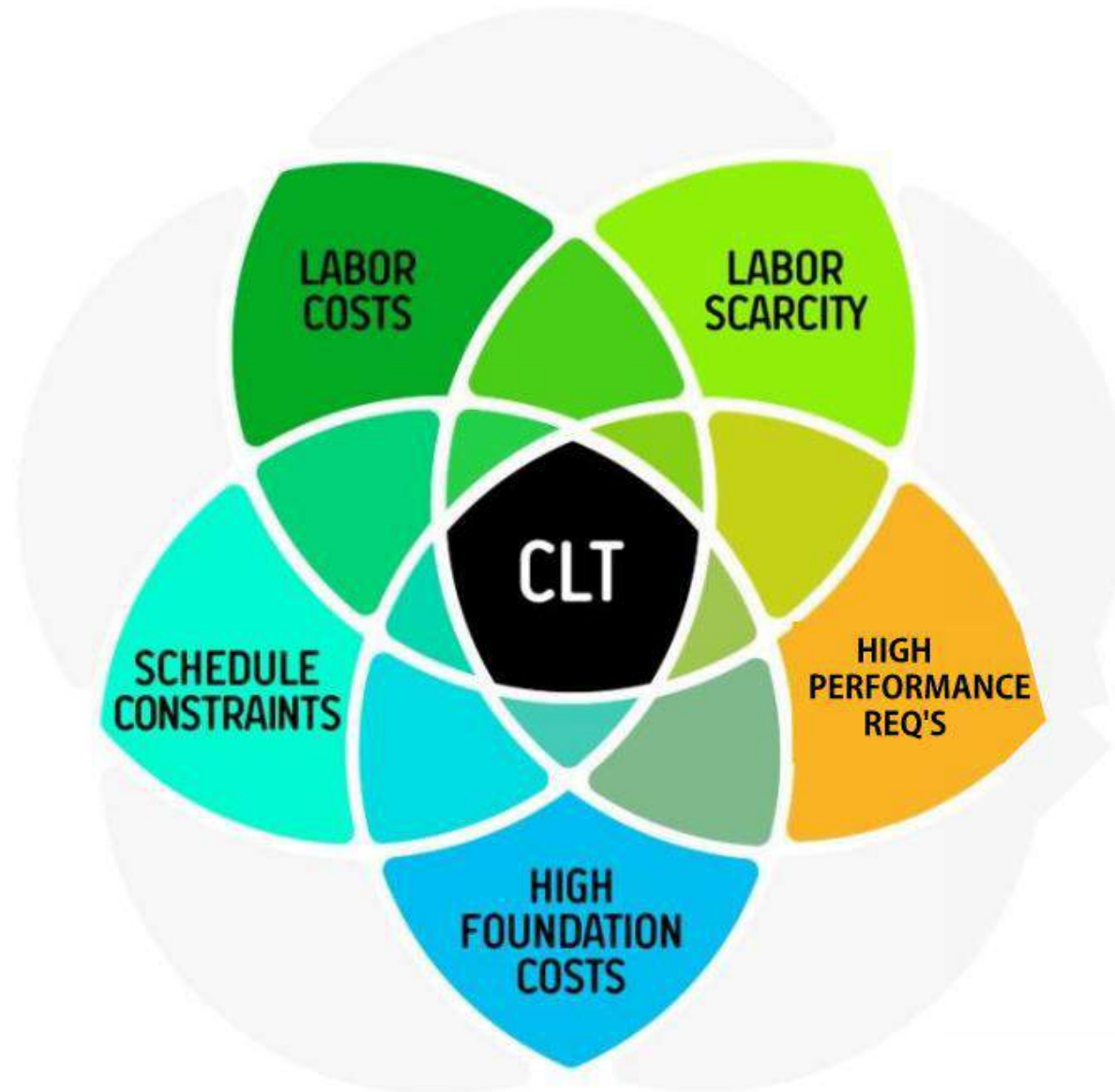






The Sweet Spot

CLT should be strongly considered when a project experiences 3 of these 5 conditions.



The logo for Social Construct, featuring the company name in white, uppercase letters on a solid yellow rectangular background. The word "SOCIAL" is followed by a small white circle, and then the word "CONSTRUCT".

S●CIAL CONSTRUCT

We are an SF-based startup re-designing the multifamily construction process to reduce hard costs up to 30%.

Our system eliminates wasted labor and sequencing time by radically simplifying and “productizing” interior and MEP systems.

Venture-backed & mission-driven, our goal is to enable the market to deliver middle class rental housing in labor-constrained cities.

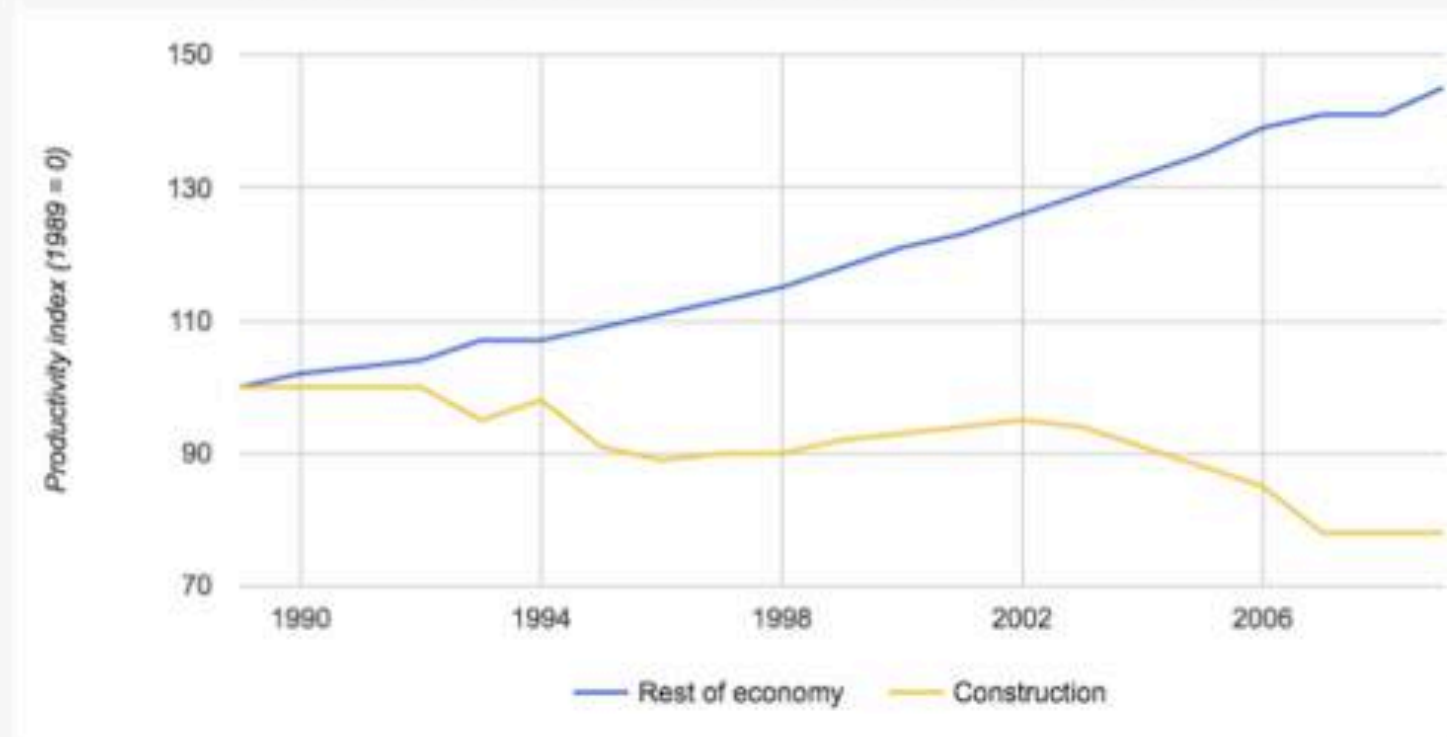
Some hard (cost) facts:

The negative labor-shortage/affordability feedback loop

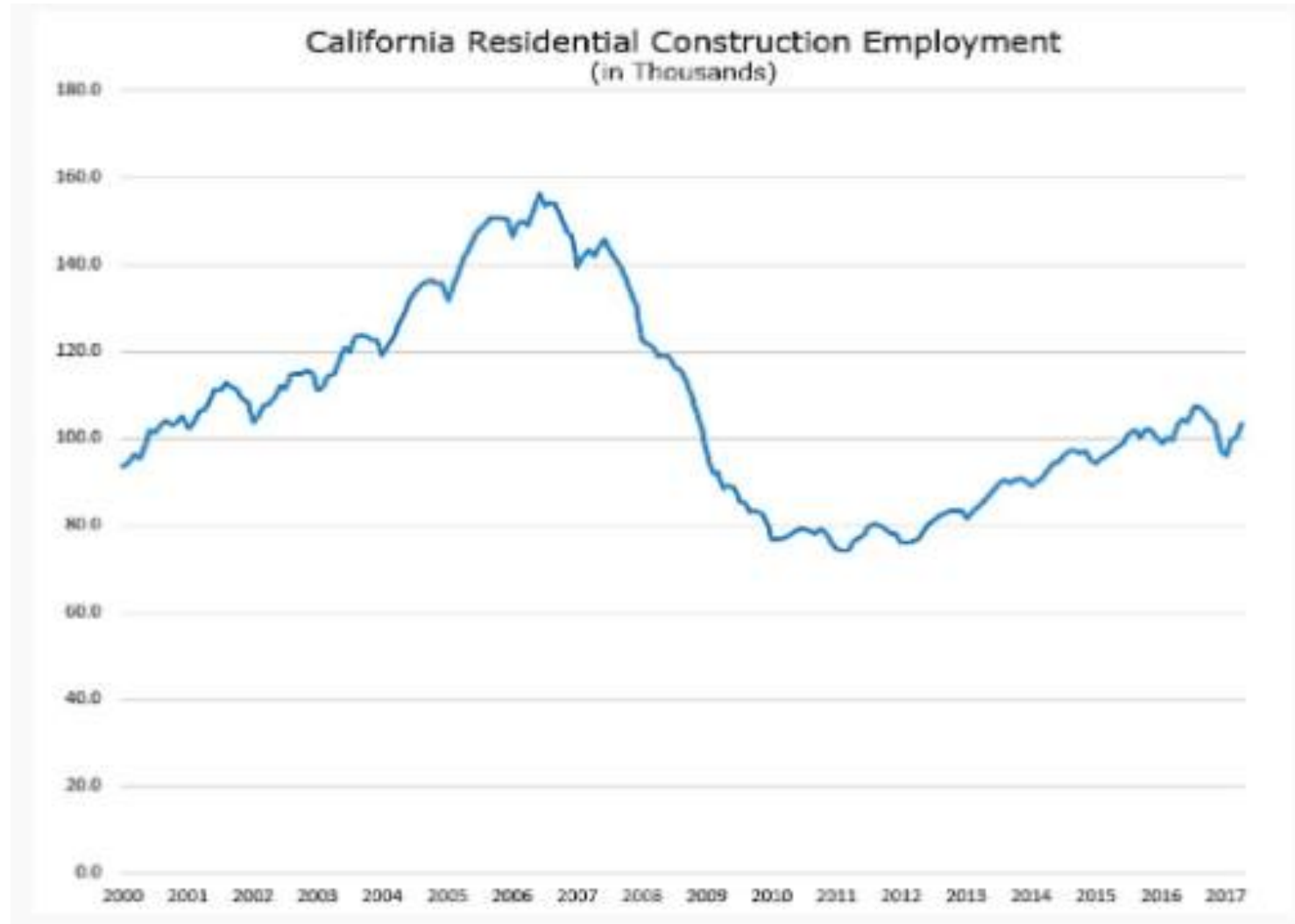
- For mid-rise/podium multifamily development, hard costs comprise ~60% of total project costs.
- Labor & mark-ups comprise ~60-65% of hard costs.
- Rising housing costs (caused by a shortage of new housing) are pushing the construction workforce away from the urban regions where shortages are most acute, compounding the hard cost problem.

Some hard (cost) facts: productivity continues a decades-long decline

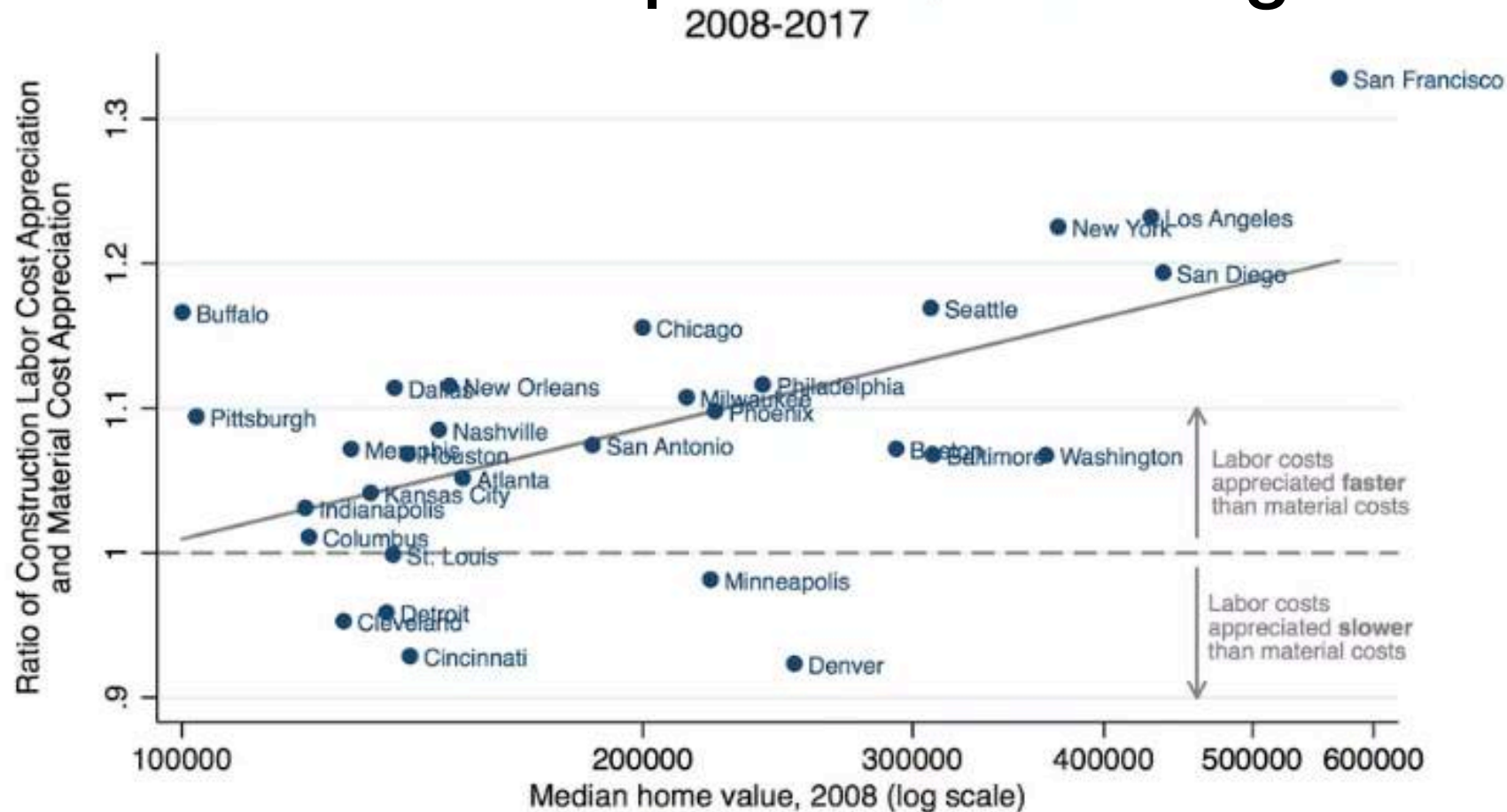
Graph 3: Labor Productivity in U.S. Construction



**Some hard (cost) facts:
construction employment has not recovered
to pre-Great Recession levels**



Some hard (cost) facts: labor costs appreciated more than material costs in most expensive urban regions



Project One

Oakland - Ground Breaking Q3 2019



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