

Quality *AND* Quantity

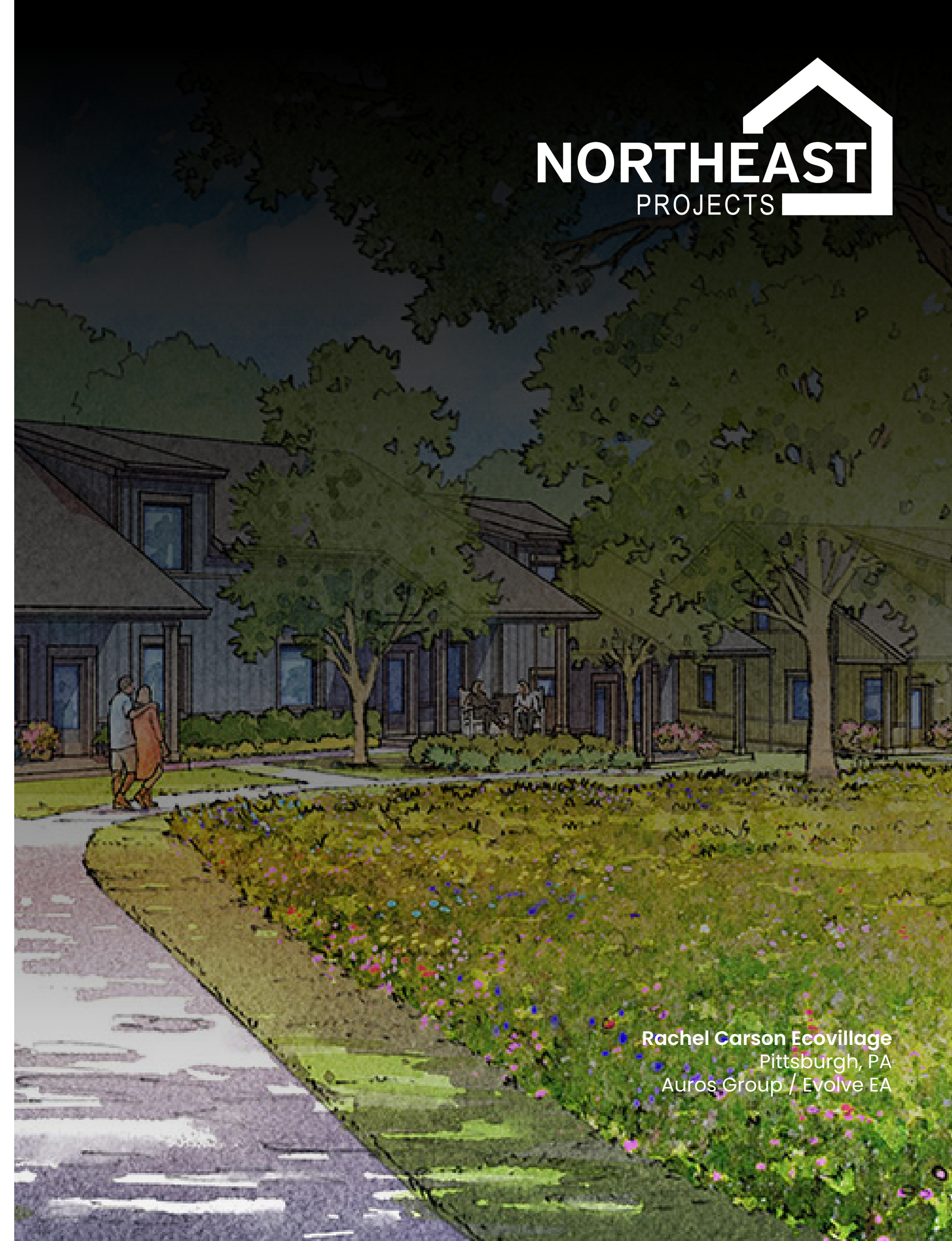
Case studies in advancing the single-family passive house market

Moderated Session (120 mins)

- 1- Introduction Presentation, John Loercher (20 mins)
- 2-Case 1: Eagle Rock, Passive to Positive – Michael Hindle (25 mins)
- 3-Case 2: Rachel Carson Ecovillage, Auros Group – Craig Stevenson (25 mins)
- 4-Case 3: Flex House, North River Architecture & Planning – Stephanie Bassler (25 mins)
- 5-Discussion + Q&A, Moderated by John Loercher (25 mins)

Learning Outcomes:

1. Expedite the process of certifying multiple single-family units within a development
2. Reduce the total cost/sq. foot of single-family homes to that seen in the multifamily market
3. Successfully prefabricate and construct entire communities of Phius certified buildings



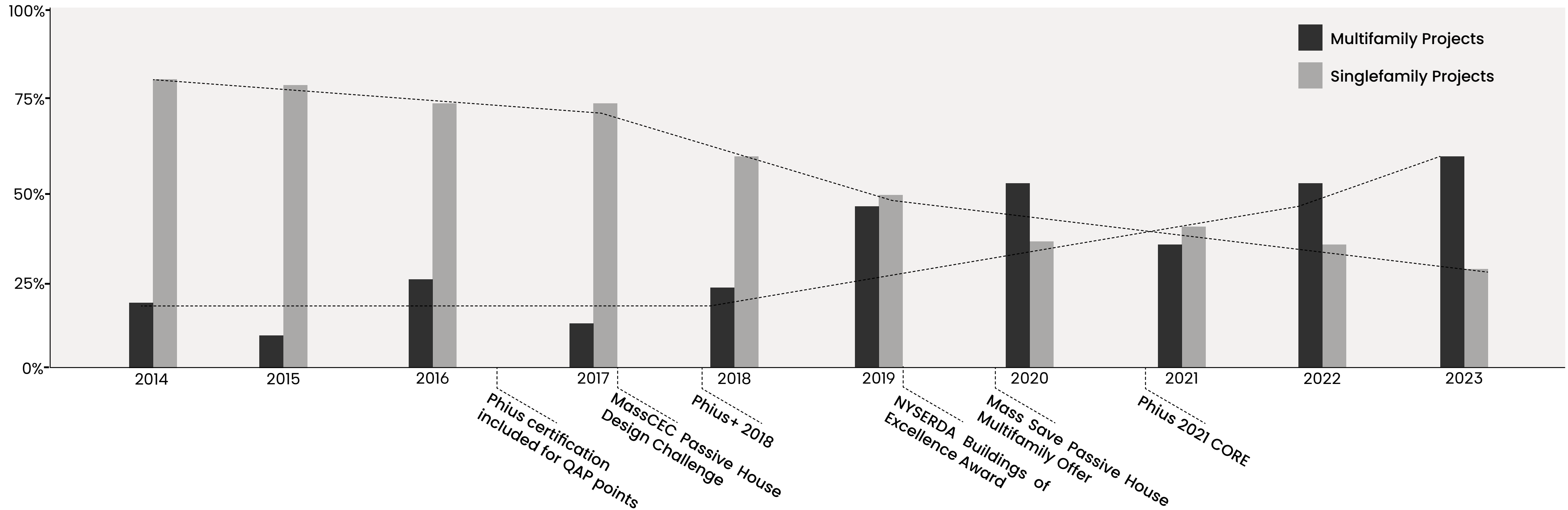
Rachel Carson Ecovillage
Pittsburgh, PA
Auros Group / Evolve EA

Certification Growth

Factors contributing to Multifamily adoption

- Better form factor - favorable building energy balance
- Proven to be only 2-5% above conventional costs
- Passive House included in QAPs across the country for LMI housing
- Updated buildings codes, stretch codes and local legislation (bottom-up approach)
- Incentives favor standardized, verifiable certifications

MULTIFAMILY AND SINGLEFAMILY PROJECTS
By percentage of certification, 2014 - 2023



Let's make some waves

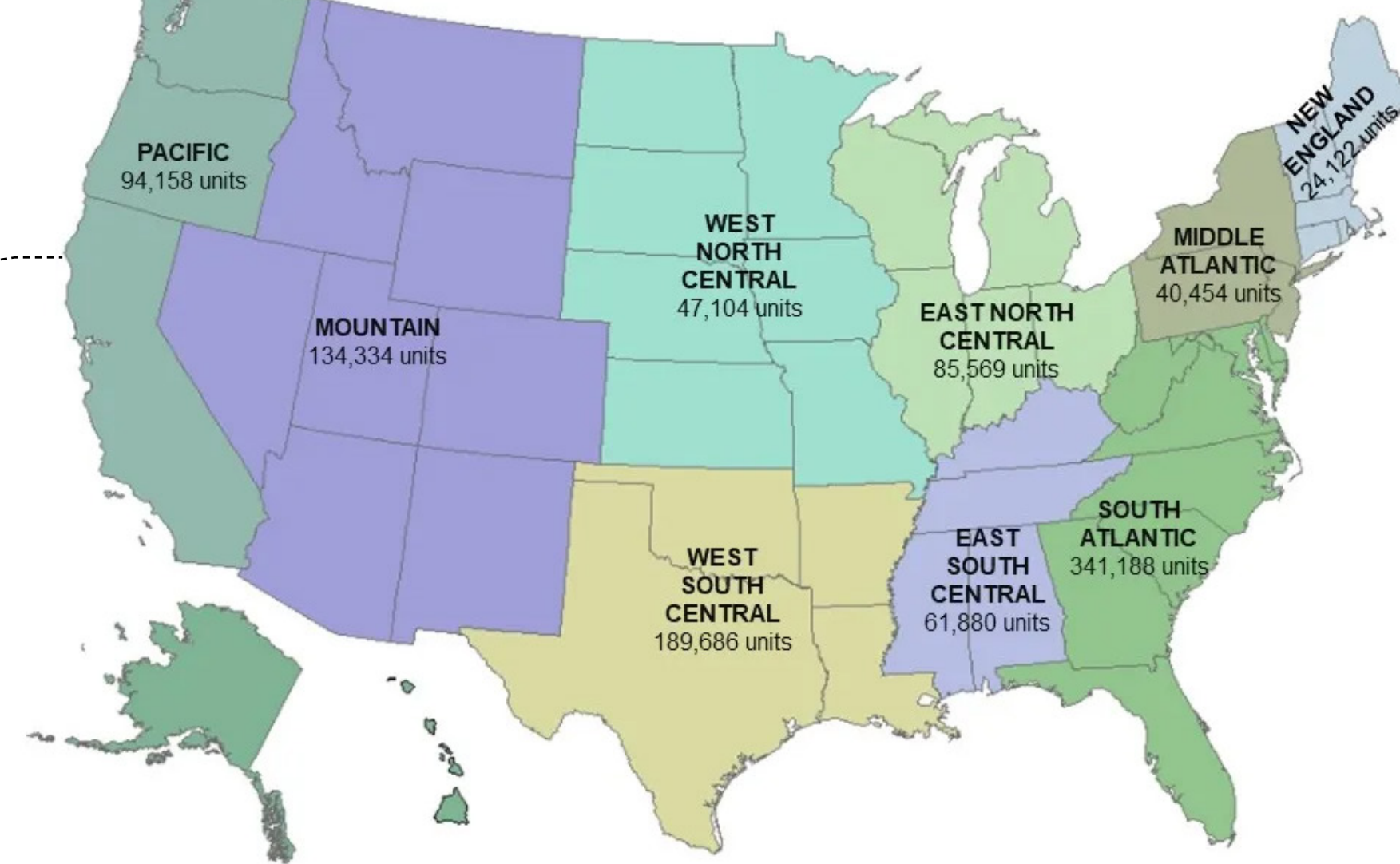
- Phius-certified single family homes make up about .02% of new construction in the US
- Custom, 'one-off' buildings have always been the focus, but not the way forward
- Retrofits are critical (new Revive program)
- We need some accelerants in the single family market



230 Single Family Projects
(as of 2023)



1,019,495 New Single Family Projects
(2022 Census - Survey of Construction)



Accelerants

Adoptable
Prescriptive
Customizable



Alternative Construction Methods

- Prefabricated options - Modular and Panelized
- CNC fabrication
- Exciting new materials and products

Alternative Project Delivery Methods

- Integrated design development
- Design-build / Integrated Project Delivery
- Onsite training and certified professionals

Phius Protocols for Developments

- Phius offers ways to make certification for multiple buildings easier by offering:
 1. A site-source energy protocol
 2. A cumulative project review process

Phius 2021 CORE Prescriptive Path

- Significantly reduced review timeline
- Prescriptive requirements for all building components
- Not as site-dependent as the performance path



Architect: RODE Architects
 CPHC: Passive to Positive
 Builder: TBD

17 Individual residences integrated with complete site design and targeting Phius ZERO certification

Eagle Rock
 Stoughton, MA



Architect: Evolve EA
 CPHC: Auros Group / Northeast Projects
 Builder: Blueprint Robotics

35 Phius 2021 CORE certified housing units across 16 buildings in a walkable ecovillage.

Rachel Carson Ecovillage
 Pittsburgh, PA



Architect: North River Architecture + planning
 CPHC: Northeast Projects
 Builder: North River Design + Build

An adaptive design tied to the Phius prescriptive path, executed in a design-build-develop method

Flex House
 Various sites, NY

Case Studies

**Phius Certified
 Integrated Design
 Economy of Scale**



Michael Hindle, CPHC
Owner, Principle



Andy Allwine, AIA CPHC
Project Manager

Passive to **POSITIVE**
PASSIVE HOUSE AND LOW IMPACT DESIGN

EAGLE ROCK

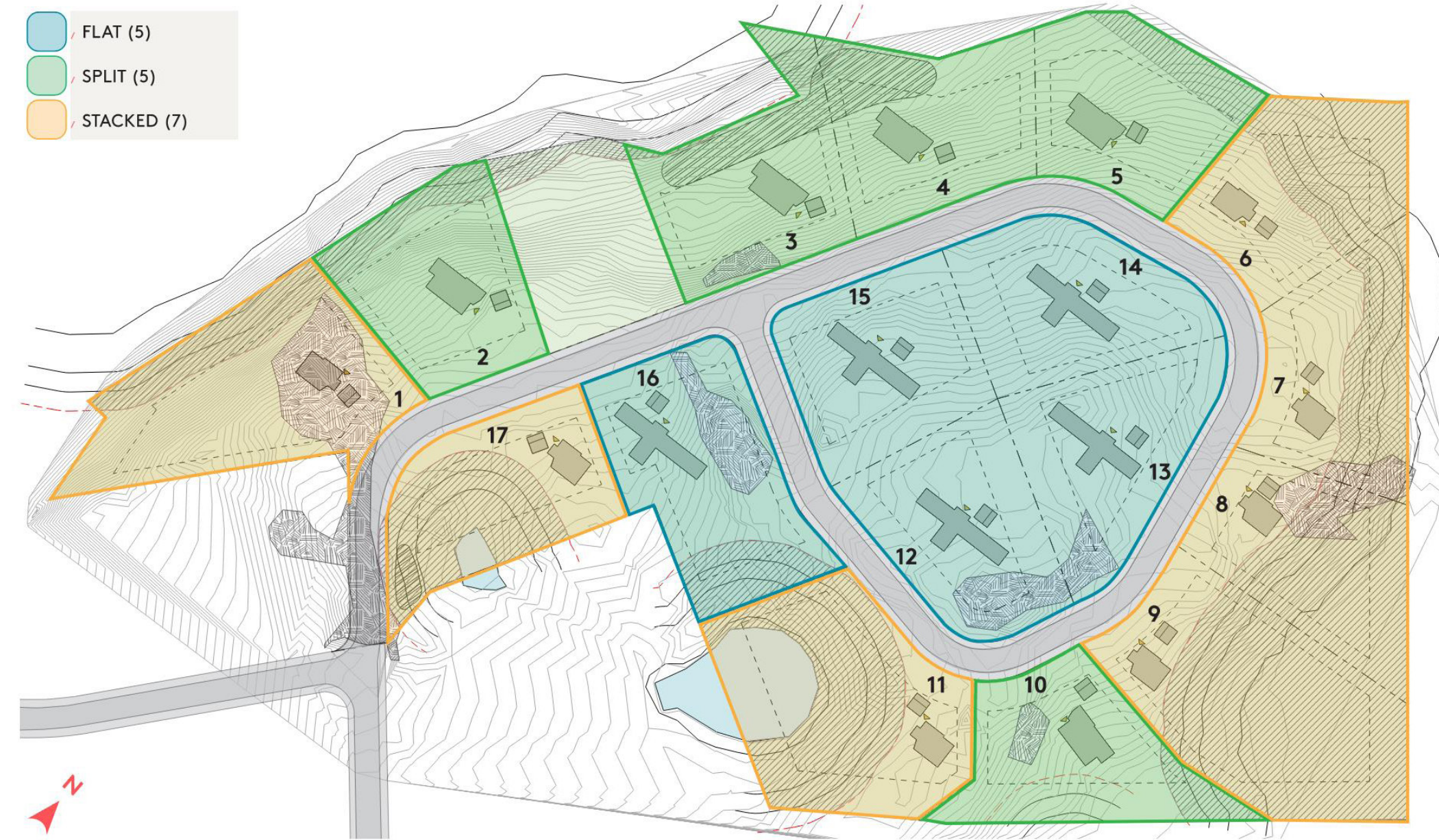
Stoughton, MA

Certification: Phius 2021 CORE (Pending)

SITE PLAN

EAGLE ROCK / STOUGHTON, MA / FEB 2, 2023 / PAGE 27

- FLAT (5)
- SPLIT (5)
- STACKED (7)



Highlights

- 3 Building types, 17 buildings, 17 units
- Integrated development model
- Phius 2021 CORE certification targetted
- MassCEC Embodied Carbon Reduction challenge participant
- In design



Stefani Danes, AIA, LEED AP
RCE Project Manager



Craig Stevenson, MSMIS, MBA, CPHC
Co-founder



RACHEL CARSON ECOVILLAGE

Gibsonia, PA

Certification: Phius 2021 CORE, design certified

- 3 Building types, 16 buildings total, 35 SF units, 1 common house
- Integrated development model
- Phius 2021 CORE certification
- Prefabricated offsite by Blueprint Robotics
- In construction



Stephanie Bassler, RA CPHC
Architect, North River Design Build



FLEX HOUSE

(Various Sites) NY

Certification: Phius 2021 CORE prescriptive, final certification

- 3 fully certified, 1 design certified, more in development
- Design / Build / Develop Model
- Phius 2021 CORE Prescriptive certification
- Site-built construction with semi-untrained subs
- Ongoing development



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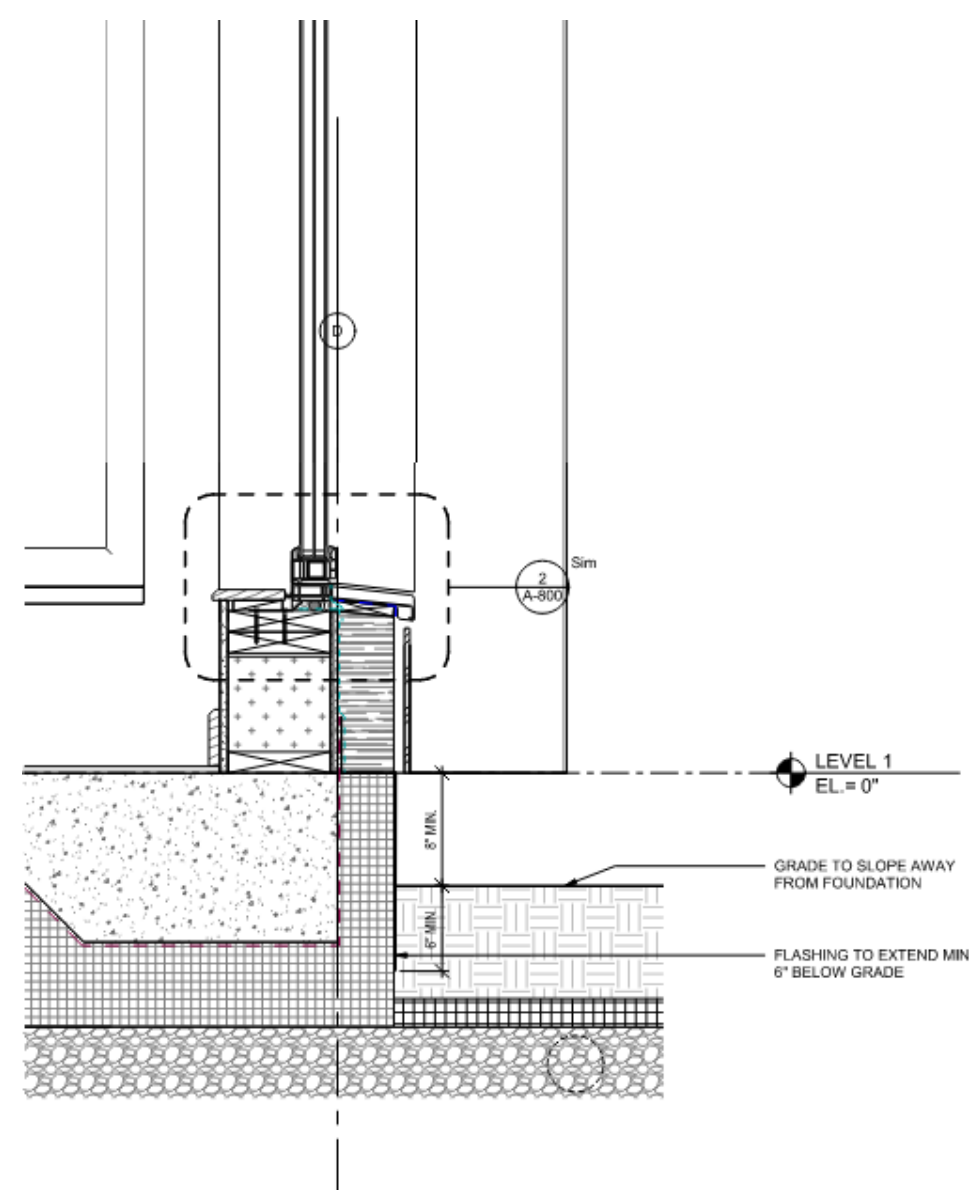
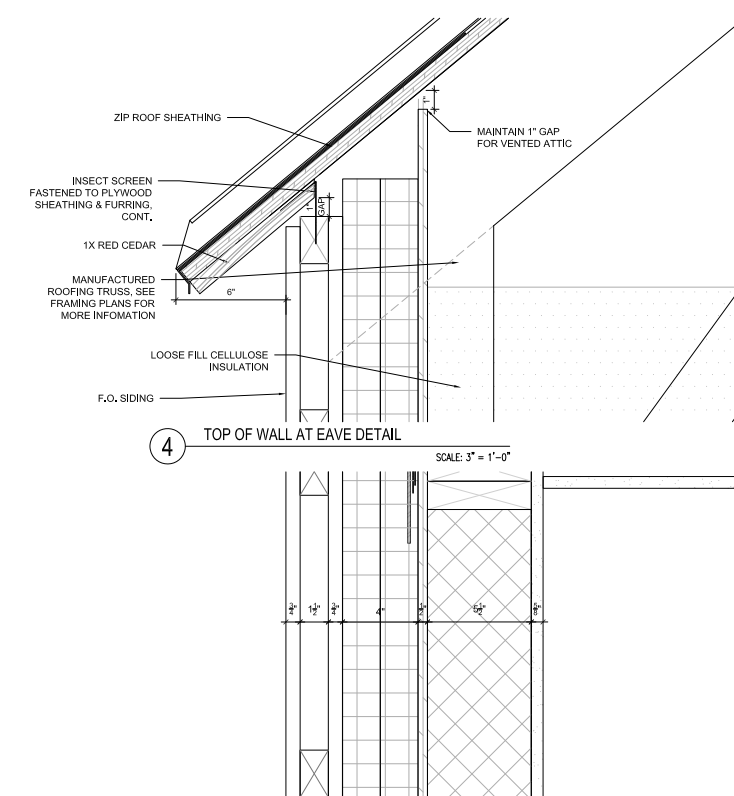
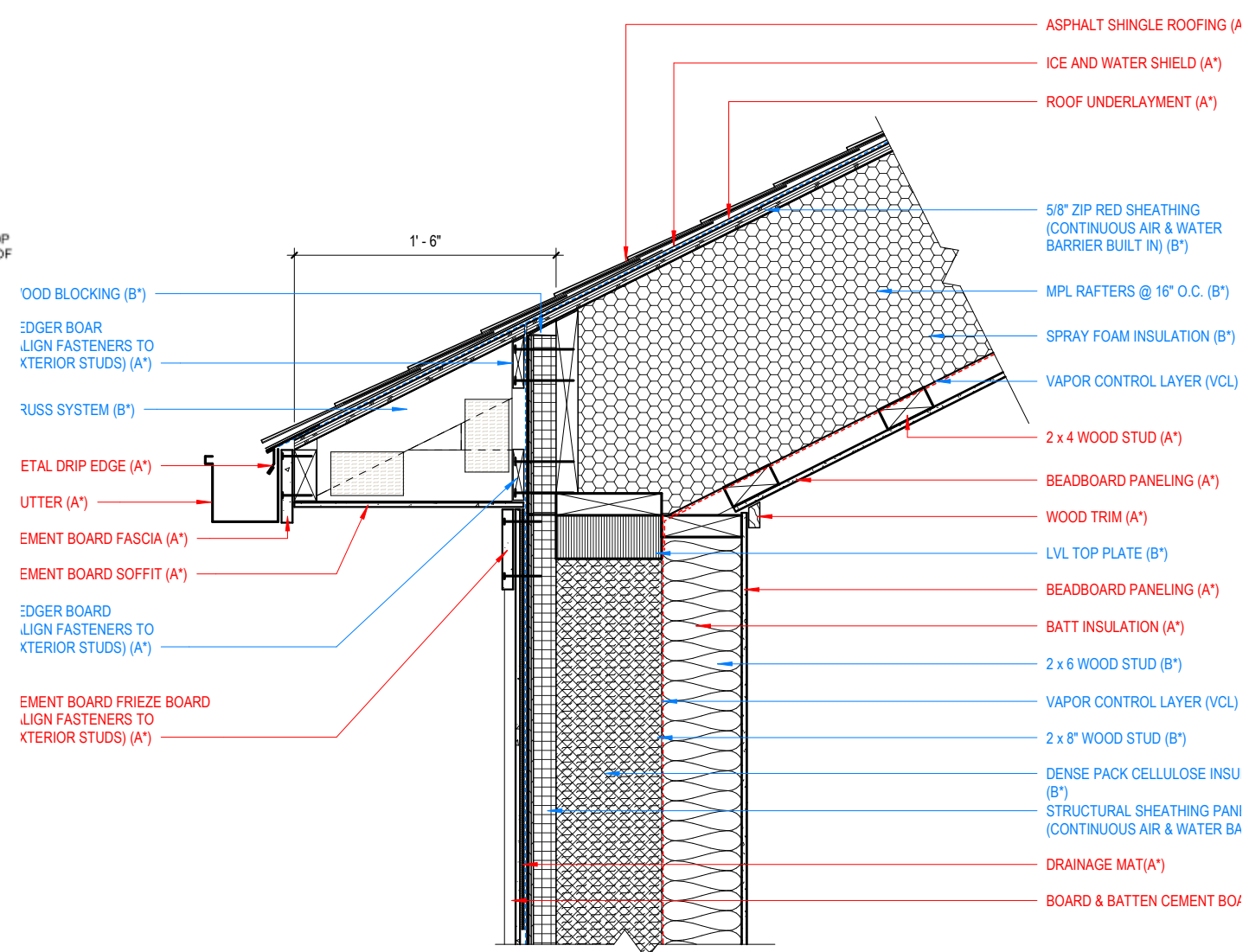
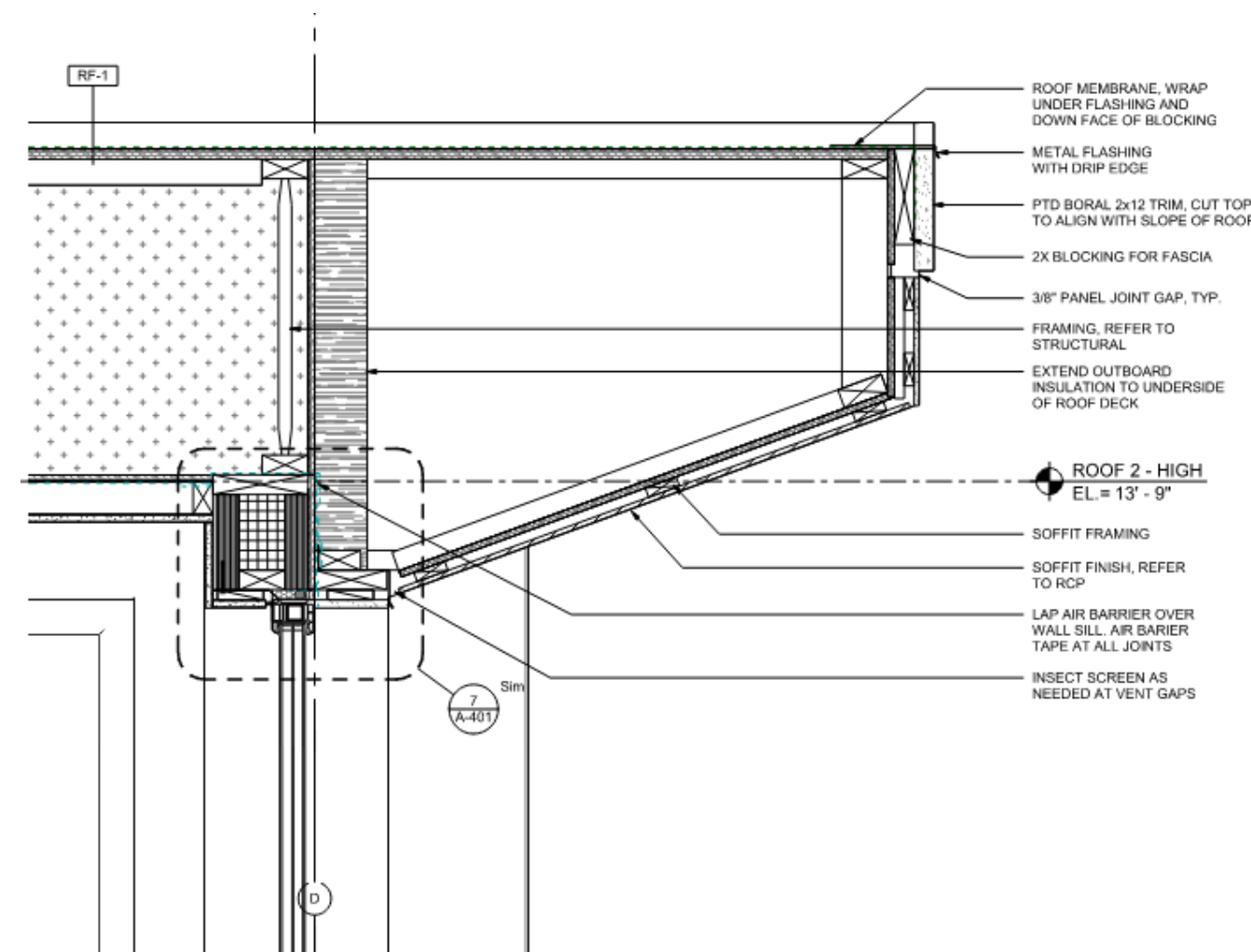
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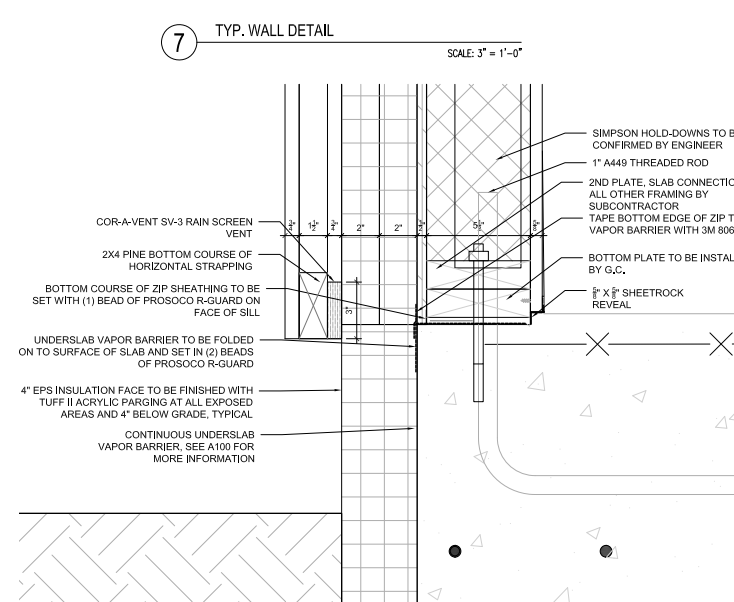
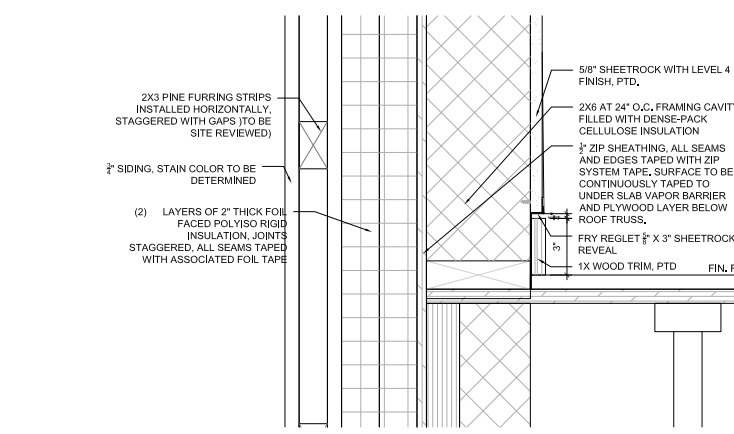
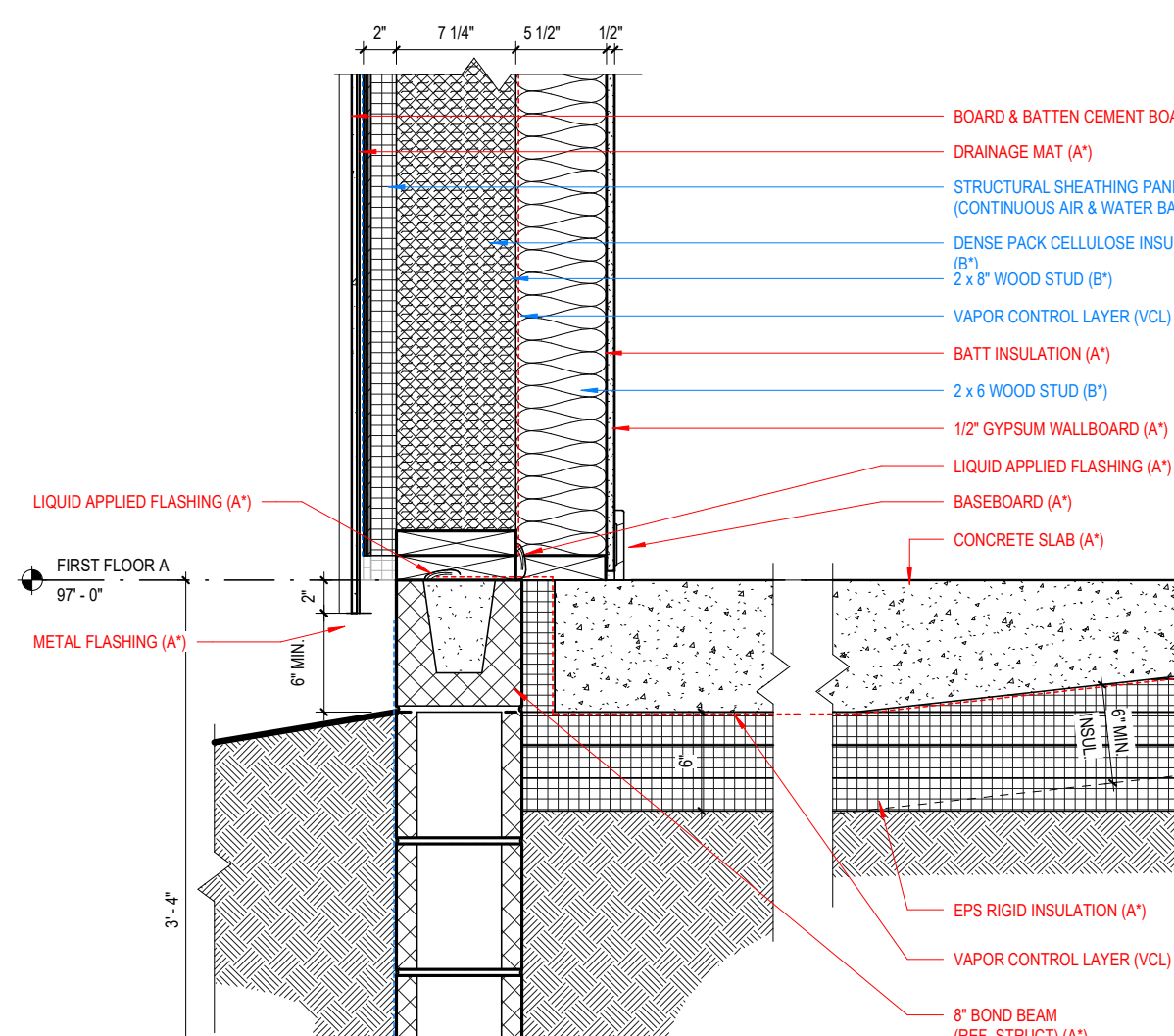
Flex House
 Various sites, NY

Case Studies

**Phius Certified
 Integrated Design
 Economy of Scale**



1 EAVE OVERHANG - OPTION 2
1 1/2" = 1'-0"



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