OFFSITE BUILDER

Compact, but Complete

By**Andrew Holmes**

Rear elevation rendering of Blockhouse Residential's Potens Design

Blockhouse Residential worked to create a home that buyers of moderate means can not only afford, but that also includes the amenities they want. Good design and modular construction made it possible.

- ***This modular builder saw a market among buyers who have been priced out of the standard suburban home, and wanted to offer something they could finance without subsidies.***
- ***The three-bedroom design is more compact than the typical home, but it includes all the must-have features that small families say they can't live without.***
- ***Modular construction was how this builder reduced construction costs. In fact, they say the home could not have been affordably stick built.***

I work for a custom-building company in Pittsburgh, Pa., where it costs around $500,000 to build a typical 1,700 to 2,000 square foot house. Unfortunately, many of the potential buyers I speak with only qualify for a mortgage in the low $300s. They include couples with children who have given up on finding an appropriate home in that price range.

These people are a large potential market, so a few years ago we began thinking about how to serve them. We knew that we would have to move away from custom work to a more standardized product, but we wanted to offer options that would help buyers personalize the home, at least somewhat.

Some builders, developers and government officials seem to assume that you can only provide good homes to people of moderate means with subsidies or tax breaks, which of course means that someone else is paying part of the bill. We wanted to develop a product that would serve these buyers without the need for assistance.

The result is our Potens model (Latin for "mighty", as in "small and mighty"). It's a full modular home that can be sold at the $300,000 price point that average families can afford. It has just 1,270 square feet of floor space but includes all the needed amenities. The road to this result included two hurdles. One was how to squeeze the needed features into a small floor plan. The other was how to minimize construction costs. Our solution was a blend of thoughtful design and modular construction.

Front elevation rendering of Blockhouse Residential's Potens design. The home includes high-efficiency windows and good air sealing. The monoslope shed roof can be oriented in either direction, for homeowners who want solar panels.

Focus On the Important

Although a small home is inherently less costly to build, it can pose design challenges. Fortunately, there are plenty of examples of well-designed small homes. For the Potens, we took inspiration from the compact, space-efficient homes built during the mid-20th century. With 1,100 to 1,300 square feet of floor space, they offered clever use of space, practical layouts and undeniable charm.

Families today have different requirements than those in the 50s and 60s, but our design ticks all their boxes. Our approach was to focus on providing what people wanted, while eliminating some common features they could live without.

The home has three bedrooms and 2 1/2 baths, including a master suite with its own bath.

The bedrooms are smaller than those in a typical suburban home, but in our conversations with potential buyers we heard fewer concerns about room size than about bath count.

The Potens also lacks a formal dining room, but we haven't heard any objections to that, either. People seldom if ever use that space. At the same time, we've kept two spaces that are on everyone's wish list: a mudroom and an eat-in kitchen with an island.

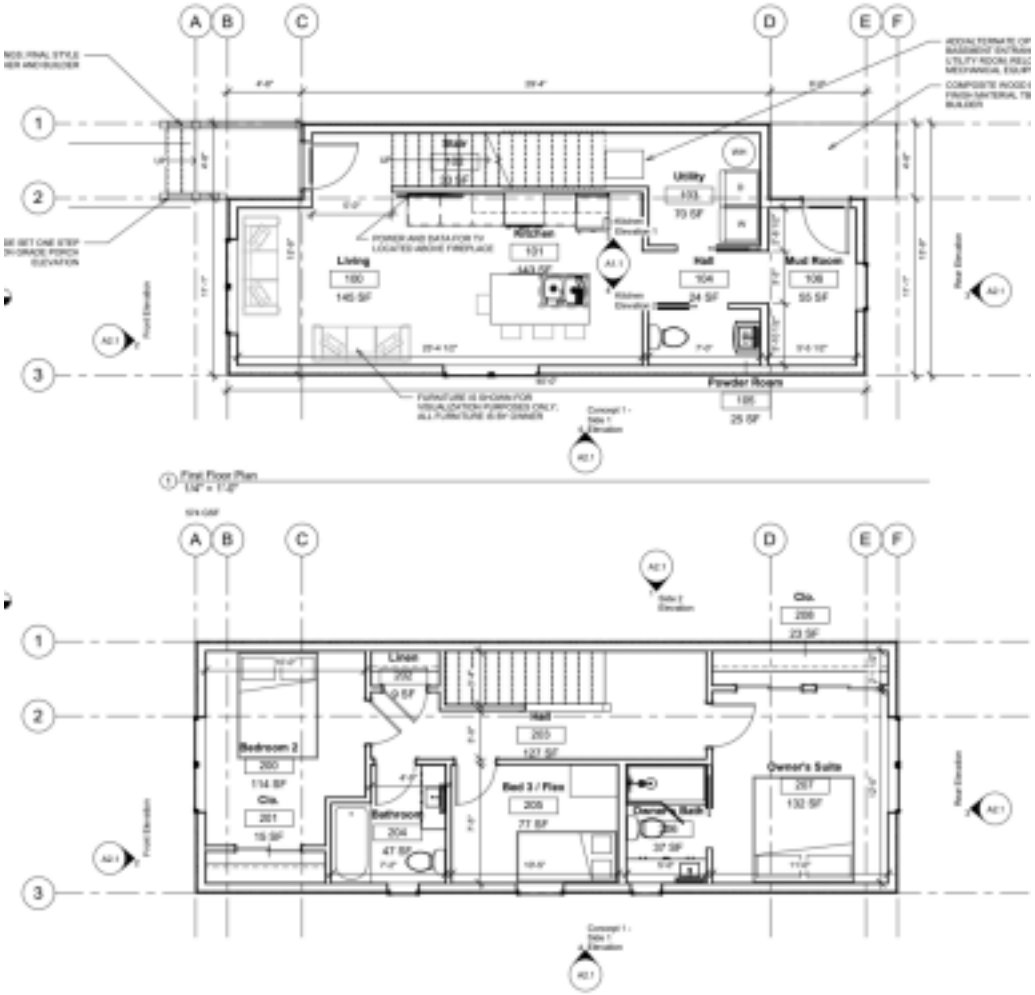
We didn't try to skimp on kitchen space. In addition to young families, our target market includes older people and those with physical limitations, so we wanted the home to have as many universal design touches as possible. The kitchen is big enough that someone in a wheelchair can easily navigate around the island.

We developed a floor plan that can be manufactured easily and cost effectively. Although it's a standard plan, we do allow some personalization. Buyers can choose different finishes, and the bedrooms can be used as children's rooms or (as was the case with one client) an office. The home is meant to be placed on a crawlspace and includes a small utility and laundry room under the second-floor stairs, but if placed on a full foundation, the mechanicals can be moved to the basement and that room converted to a stairwell.

The floor plan can be flipped and manufactured as the mirror image of itself, depending on what the homeowners want. The monoslope shed roof can be flipped as well, so that people who want solar panels can choose the best orientation for their site. Another benefit to the mirrored plans and monoslope roof is that we can create a duplex without changing the standard specs and without altering rooflines.
When designing the home, we also knew that we would have to satisfy lenders' needs. Most 1,200 square foot homes built today only have two bedrooms and, at least in my area, don't appraise for the needed $300,000.

Eliminating the dining room and opting for smaller bedrooms solved the problem. We found that lenders don't actually care about design; they just look at what other 3-bedroom

homes in the area are selling for. With three bedrooms and 2 1/2 baths, Potens earns the comps we need.



The 1270-square-foot home includes three small bedrooms on the second floor. The plan can be flipped and manufactured as the mirror image of itself.

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Potens can be constructed as an optional duplex allowing for more efficiency and attainability. The monoslope roof means that the duplex option doesn't require a roof redesign.

The Potens living room

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Optimizing for Modular

"This is not our first modular home; we've been using this method of construction for several years and are completely sold on it. I am absolutely in love with the idea of modular construction because of the advantages it offers.

Our portfolio already includes 18 modular homes in Pittsburgh, including the Black Street Development, which consisted of three structures in the city's Garfield neighborhood: an up-down duplex, and two single-family homes, one of which was sold at market rate and one that was subsidized by the Urban Redevelopment Authority. Black Street was featured in several national publications.

As a result of this experience, we have learned to design around modular parameters such as the 16-foot module width. We've applied all knowledge gained from our experience to Potens.

Some builders say that modular costs as much to build as stick framing, but we don't find

that to be so. Although we haven't actually site-built a Potens, our estimates are that it would cost $50,000 to $75,000 more to build it that way, making it too expensive for the customers we want to serve.

We realized that savings, in part, by designing the home to be easily manufacturable. In fact, my advice to builders who are new to modular and who want to optimize cost savings is to work with the factory when developing floor plans. I've spent a lot of time talking with modular salespeople, as well as with workers on the factory floor, asking questions and listening to their answers.

These conversations helped my company realize efficiencies, such as learning how to design so that mate walls line up in ways that minimize the amount of on-site seaming. Understanding the manufacturing process also led us to choose the tiltable monoscope roof, which is easier to manufacture and less costly than a gable.

When calculating modular costs, it's important to factor in the value of time savings. A lot of our savings was thanks to less time on-site, particularly when it came to inspections. This can vary by municipality; Pittsburgh is hyper-strict, and we might have to stop a site-built project a dozen times while waiting for various inspectors to show up. With modular, we don't have to worry about plumbing, electrical, and the screw pattern on the drywall. (Yes, they check that here.) Those and a lot of other inspections are done in the factory.

Reducing days on-site also reduces a lot of soft costs — from porta-johns to portable power, to site safety costs, to the time spent protecting a half-finished house from the weather. You need to factor these into the final project cost to understand the true savings that modular offers.

The mudroom includes a built-in coat tree as a standard feature. Touches like this help a small space feel luxurious.

The bottom line is that we ended up with factory costs of $115,000 and site costs of about $135,000, for a total of $250,000. With a $300,000 sale price we're able to earn a decent profit while delivering a product that the average family can afford, with the specs needed by them and by the lenders. Everyone wins.

Our hope is that Potens will serve as a model for a new generation of compact homes. It's a great example of what can be achieved by combining good design with the efficiencies of modular construction.

The master bedroom is relatively small, but the author found that buyers were happy to sacrifice some floor space if it created room for more. The Potens master

bathroom

Blockhouse Residential also built the modular Black Street Development in the Garfield neighborhood of Pittsburgh. The lessons it learned on this, and other modular projects, were applied to the Potens model.Factory production of a Blockhouse-designed home at SMI in Strattanville, Pa. In order to realize the highest possible savings from modular, the author recommends seeking feedback from the manufacturer on the design.

Andrew Holmes is VP of Construction at Blockhouse Residential in Pittsburgh, Pennsylvania. Images provided by the author.

Blockhouse Residential — Potens

Submitted to: Rhode Island Executive Office of Housing (EOH)
Program: Housing 2030: Your Way Home
Contact: Andrew Holmes, Blockhouse Residential (AZA Builders)

Introduction to Blockhouse Residential

Blockhouse Residential designs and delivers right-sized, factory-built homes that combine disciplined manufacturing with thoughtful architecture. Our work focuses on attainable ownership without sacrificing comfort, durability, or neighborhood fit. Recent projects include compact, space-efficient single-family homes and duplexes that prioritize universal design touches (clear circulation, accessible kitchens) and performance (tight air sealing, efficient envelopes). The Potens model is our “small-but-mighty” entry-level home intended specifically for first-time buyers.

Lauren Holmes - President

Lauren Holmes has been immersed in the Contracting field since 2006. She has dedicated her professional career to the education and well being of others. It is the combination of her professional and personal interests that have led to the identification of a need in the Home improvement / Construction industry. Thus she created Blockhouse Residential with the intention of providing a means of giving clients High Quality projects singularly centered on sustainability.

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Product: Potens Plan Overview

Program: 3 bedrooms, 2.5 baths, mudroom, large eat-in kitchen with island; compact second-floor bedroom stack; optional full basement; monoslope (tiltable) roof for optimal solar orientation; mirrored plan available. The home is also engineered as a **duplex / townhome** without changing the standard roofline.

Reference drawings (submitted with this proposal):

- **Single-family** Potens floor plans, elevations, and 3D views (Sheets A1.1, A2.1, A9.1). The plans illustrate the open first-floor living/kitchen core, service stack, and compact second-floor bedroom/bath arrangement; the 3D sheets visualize massing appropriate to New England streets.

- **Duplex** Potens variant (Sheets A1.1, A2.1, A9.1): mirrored plans under a single ridgeline demonstrate the attachable two-family configuration.

Target size (single-family): ~1,270 sf.

Potens is a small home with big-house dignity—a calm, light-filled layout that feels welcoming from the first step inside. The kitchen is the heart on day one: a place to cook, gather, and linger, with a natural flow to living and entry so daily life is easy, not improvised. Upstairs, bedrooms are quiet and collected, giving everyone a corner of their own without pushing the footprint or the budget.

It looks right on a New England street—simple lines, honest proportions, and a roof that nods to the sun—so it sits gently in a neighborhood and grows gracefully over time. As a single, it's a complete first home; paired as a duplex or townhome, it becomes a thoughtful fabric for a block, repeating what works without repeating the same house. Potens is modern living without the fuss: purposeful, comfortable, and built to make everyday moments feel a little more effortless.

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Why Modular for RI: quality, value, sustainability, scalability

- **Quality:** Factory QA/QC delivers tighter envelopes, repeatable assemblies, and verified systems prior to shipment (reduced weather exposure; cleaner close-out). Article context notes factory inspections replacing multiple on-site sequences.

- **Value:** The Potens was expressly designed to give first-time buyers a complete 3-bed / 2.5-bath home at an attainable price point by omitting low-value spaces (e.g., formal dining) while preserving must-haves (mudroom, big kitchen). Because modular delivers premium structural quality and consistency at production pricing, buyers capture “expensive-home” performance without custom-home markups. Lower utility bills, fewer repairs, and reduced schedule/carry costs translate into a lower monthly outlay and a stronger total cost of ownership.

- **Sustainability:** Smaller footprints, efficient envelopes, and factory yield reduce waste; the monoslope roof makes PV orientation straightforward. Because fabrication happens in a controlled environment, air, thermal, and water barriers are installed and verified consistently, yielding tighter shells, cleaner duct runs, and less thermal bridging. These inherent performance gains translate to lower energy use and more stable comfort, driving measurably lower operating costs over the life of the home.

- **Scalability:** The same plan can be mirrored and paired to form **duplex/townhome** buildings, improving site economics and absorption without re-engineering. The efficient design allows for workforce training and comfort levels, increasing execution success and reducing site costs as the volume scales.

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EOH Requested Items

(1) Prototype Examples

(a) Exterior elevations and floor plans
Submitted: Potens Single (Sheets A1.1, A2.1) and Potens Duplex (Sheets A1.1, A2.1).

(b) Potential future additions
The base plan supports an optional full basement with mechanical relocation below; this frees the first-floor utility area for stair access or storage reconfiguration.

(2) Cost Estimates

EOH requested: (a) **square-foot cost excluding delivery**, (b) **delivery costs to RI**, (c) **site work estimates** broken out for electrical, plumbing, and general carpentry/finish.

Assumptions used:

- **Production (factory) cost: $145/sf** applied to the **~1,270 sf** Potens.
  → **Factory subtotal: $184,150**.

- **Site cost: $90/sf** applied to the **~1,270 sf** Potens.
  → **Site subtotal: $115,000**.

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Resulting planning allowances (single-family):

- **Factory (ex-delivery):** $145/sf × 1,270 sf = **$184,150**
- **Site (allowance @ ~$90/sf): $115,000**
- **Total before delivery/set: $299,150**
- **Planning total (single-family): $299,150 + $14,000–$20,000 = $313,150–$319,150**

(b) Estimated delivery to Rhode Island (per home)

- **Line-haul trucking (factory to RI), crane + set window, escort fees: $14,000–$20,000** per single-family Potens (distance, route permits, and crane size drive variation).
- **Duplex/townhome:** per-door delivery efficiencies typically reduce average **per home** delivery by **~10–15%** (shared mobilization and crane time).

(c) Site work detail (single-family Potens, planning allowances ~$115,000 total. Midpoint of below)

- **Excavation / Foundation (crawlspace): $25,000–$35,000**.
- **Site Plumbing & Storm Drainage connections: $18,000–$26,000** (Tap-ins, Under Slab, Foundation drains)
- **Site Mechanicals (HVAC, Electric, Plumbing): $24,000–$30,000** (tie-ins, pressure tests, fixture set/verification)
- **Post Set finish / Integration: $28,000–$44,000** (marriage-line closure, interior finish, siding/soffits, porch)
- **Subtotal: ≈ $115,000** (aligns to ~$90/sf).

Duplex / townhome planning note: shared foundations and mobilizations commonly reduce **site** costs **8–12% per door** (carried as a programmatic planning factor; final bids will reflect parcel design, utilities, and soils).

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(3) Payment Schedule

- **Order / Configuration Lock: $4,000** per home to open the order and release permit/engineering packets.
- **Production Start: 30%** of Purchase Order to initiate factory slotting and procurement.
- **Delivery:** Balance of production + **50% of delivery** due on arrival at site.
- **Set & Connections:** Remaining delivery/set due at completion of set; punch-list close-out within a defined window.
  (Milestones align with our standard modular cadence and the inspection steps outlined in your outreach letter.)

(4) Production Requirements

- **Minimum order to initiate production: 8 individual units**
- **Guaranteed minimum order pricing:** A guaranteed block of **≥ 16 homes** scheduled as a batch typically supports **2–4%** savings across logistics and site mobilizations (RI routing and crane windows permitting).
- **Bulk Order Pricing:** Any order of a magnitude greater than **24 homes** will be reevaluated for batch pricing to provide order specific production and delivery costs.

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Code Compliance (Rhode Island & Coastal)

- **RI Building Code & Energy:** Potens submittals include stamped modular shop drawings and factory QA documentation; the compact envelope is detailed for air-sealing and insulation continuity. Factory inspections cover MEP rough-ins prior to shipment; local inspectors verify tie-ins, foundations, and life-safety on site.

- **Coastal & High-Exposure Adaptations:** Where flood elevations and wind exposure categories require, we coordinate foundations, anchorage, corrosion-resistant connectors, and cladding/fenestration specifications specific to parcel conditions (without changing the manufactured modules).

- **Accessibility / Universal Design:** First-floor circulation and kitchen clearances are planned with universal use in mind; mirrored plans assist with site-specific entries and service runs.

Delivery Models

- **Single-family scattered sites** (600–1,200+ sf target band): Potens at ~1,270 sf fits the program brief directly and can be value-engineered toward the lower bound of the band by finish selections.

- **Duplex / townhome clusters:** Mirrored Potens plans assemble cleanly into duplexes for higher site efficiency while maintaining a calm streetscape (see Duplex A1.1 and elevations).

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Summary of Costs (single-family Potens, planning)

Component	Basis	Allowance
Factory (ex-delivery)	$145/sf × 1,270 sf	**$184,150**
Site work (reverse-calc.)	~$90/sf	**$115,000**
Delivery + crane + set	RI routing, permits, crane	**$14,000–$20,000**
Planning total (excl. land/soft fees)		**$313,150–$319,150**

Attachments & References (included in submission)

- **Potens Single — Plans (A1.1 / A2.1 / A9.1)** — floor plans, elevations, 3D views.
- **Potens Duplex — Plans (A1.1 / A2.1 / A9.1)** — mirrored duplex/townhome variant.
- **Offsite Builder — "Compact, but Complete" (Andrew Holmes)** — Magazine Article (2 yrs old but historically supportive)

Closing

The **Potens** delivers exactly what Housing 2030 seeks: a complete, code-compliant, factory-built home in the 600–1,200+ sf range that first-time buyers can actually finance—without design shortcuts or construction theater. The same DNA scales into duplex/townhome sites, enabling EOH to hit volume targets with predictable schedules and honest costs. We're ready to coordinate RI-specific foundations, wind/flood requirements, and municipality workflows so homes can set, connect, and close out quickly.

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Acceptance (for EOH/Owner use)
Name: _____
Title: _____
Date: _____
Signature: _____

Renderings

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Housing 2030: Your Way Home - The CORE System Proposal

Date: November 4, 2025
Prepared for: Rhode Island Executive Office of Housing (EOH)
Prepared by: QUOINCORE inc

The CORE System

Personalized Design Today. Greener Living Tomorrow—and Forever.

Prices keep rising, delivery keeps slipping, and the average buyer is asked to trade quality and individuality for a floor plan that fits a spreadsheet. Most tract homes are tuned for profit first and experience second, while true custom builds drift out of reach for anyone without deep pockets and extraordinary patience. **CORE**, short for **Configured Orientation Restructurable Engineering** steps in with a different premise: treat a home like a serious product with a stable platform, clear interfaces, and software-grade discipline. The **CORE** unit is a fully finished, factory-built home. The **MULTI-COREs** or **Accessory Expansion Units (AEUs)** are pre-engineered companions that attach to the CORE **without changing how the CORE is fabricated**. That one rule unlocks genuine choice without the chaos that usually follows customization. QUOIN proposes a standardized, upgradeable industrialized-housing platform tailored to **Housing 2030: Your Way Home**—delivering attainable, high-quality homes between **~600–1,200 sf**, with clear pathways for future additions.

A CORE unit leaves the factory as a complete home. Structure, envelope, windows and doors, kitchen and baths, HVAC, plumbing, electrical, and finishes are installed, tested, and documented under one roof before the home ever meets weather. Every step is inspected and recorded so the home ships with a **"digital passport"** (factory inspection and warranty documents) that proves what was built and how it performs. When the modules arrive on site, the sequence is straightforward: **set, connect, verify**. Because the heavy work is done in a controlled environment, occupancy happens in days, not months. The plan changes; the platform does not. That is the difference between real product thinking and traditional construction masked with technology.

That is the promise. The question is what it means in the messy daylight of budgets, lenders, site conditions, and customer expectations. This introduction presents the CORE platform, shows how it behaves financially on real projects, and follows archetypal customers to see how a "House-as-a-Product" unlocks not just delivery speed but an ongoing partnership of upgrades, care plans, referrals, a resale market for AEUs and sustainability you can measure well.

Platform, Not Project

CORE treats the dwelling like a stable product platform—much closer to automotive and electronics than to “custom one-off” construction. The platform consists of two parts:

- **The CORE unit**: a fully finished, factory-built home with invariant connection points for structure and building systems. Think of it as the motherboard—tested, serialized, and shipped with a digital passport.
- **MULTI-COREs (AEUs)**: pre-engineered add-ons such as Expanded Living, Dining, Master Suite, Bedrooms, Common Baths, Pantry, Foyer, Mudroom, Wellness, and more that **attach without changing how the CORE is fabricated**. That’s the key feature: the factory doesn’t have to reengineer and retool each time the plan changes.

Because the interfaces are fixed and disciplined, everything around the product gets easier—permitting, inspections, financing, insurance, installation, and after-sale service. It’s standardization without sameness: the platform stays stable while layouts evolve within a safe catalog.

About the drawings in this proposal: The accompanying set includes exterior elevations and floor plans for CORE Standard (≈852 sf) and CORE XL (≈1,007 sf), plus **AEU expansion diagrams** (Expanded Living, Dining, Bedroom, Common Bath, Den, and Master Suite) illustrating how space can be added over time **without modifying CORE fabrication**.

Prototype Examples

Exterior elevations and floor plans

The attached concept set includes floor plans and 3D views for representative CORE offerings:

- **CORE — 2-Bedroom Base Model** (Plan sheet A1.1, top plan).
  Plan shows open Living/Dining/Kitchen at one end, central service spine (Bathroom, Laundry, Mech), and two bedrooms at the opposite end. Overall base geometry aligns to a 15′-6″ width with modular interior dimension shown by the dimension strings.

- **CORE XL — 2-Bedroom + Den and CORE XL — 3-Bedroom Base** (Plan sheet A1.1, middle and bottom plans).
  XL versions extend the base geometry to accommodate either a Den or a third bedroom while maintaining the fixed service-interface corridor.

- 3D views and massing (Sheet A2.3) show simple gabled forms and porch options consistent with New England neighborhoods.

Area references used in this proposal:

- CORE Standard: ~852 sf (derived from 15′-6″ × 55′ concept length)
- CORE XL: ~1,007 sf (derived from 15′-6″ × 65′ concept length)

Plans that illustrate potential future additions

MULTI-CORE (AEUs) are shown on Sheet A1.2 with dimensional callouts: examples include Living Room AEUs, Mudroom/Foyer/Porch, Common Bath + Bedroom, and Den + Master Suite compositions. Dimensions such as 25′-0″ x 12′-0″, and specific internal widths, illustrate standardized module sizes and interior clearances. Example combinations on Sheet A2.1 depict how AEUs attach to CORE and CORE XL to form larger programs (e.g., 3-bed + AEU Living Room; 3-bed + AEU Den + Master Suite)

Additional CORE floorplans that adapt to varying site conditions

In addition to the primary plan shared in this proposal, the prototype set includes the following additional plans:

- **Center-entry CORE** in which the common living space is centered and bedrooms flank the common living room and kitchen, offering clear circulation and strong separation of private and public zones.
- **1-bedroom efficiency CORE** that can be expanded vertically to a **two-story, 3-bed, 2.5-bath** configuration through the addition of a **Stairwell MULTI-CORE**. This variant preserves factory interfaces while enabling a compact footprint to serve higher-capacity programs when lots or zoning favor vertical solutions. The **Stairwell MULTI-CORE** can also be implemented to create stacked apartment style configurations of the **CORE system.**

The Cost Logic (and Why It Scales)

To keep the math transparent, here are the core assumptions used for planning:

CORE production cost: $125/sf
Standard 15′6″ × 55′ = 852 sf → $106,500 per unit
XL 15′6″ × 65′ = 1,007 sf → $125,875 per unit

MULTI-CORE production cost: $225/sf

Site-cost methodology:

- Convert each **midpoint** site allowance to a **$/sf** figure and **round to the nearest $5**.
- Apply site costs **per home** using that $/sf.
- **Decay: 5% per additional CORE unit** (apply to the per-unit **CORE** site cost).

CORE site costs (midpoints → $/sf):

- Excavation & foundation **$27,500**, Site mechanicals **$12,500**, Delivery & set (CORE) **$13,500**, Post-set finishing **$13,750** → **Subtotal $67,250**
- **Standard CORE:** $67,250 ÷ **852 sf** → **$80/sf** (rounded)
- **CORE XL:** $67,250 ÷ **1,007 sf** → **$65/sf** (rounded)

MULTI-CORE site costs (midpoints → $/sf calculated off 300 sf):

- Excavation & foundation **$7,500**, Site mechanicals **$3,000**, Delivery & set (AEU) **$3,500**, Post-set finishing **$4,750** → **Subtotal $18,750**
- $18,750 ÷ **300 sf** → **$65/sf** (rounded)

Scenario	CORE size (SF)	AEU size (SF)	CORE fabrication	AEU fabrication	Appliances	CORE site (see notes)	AEU site (no decay)	Project Total	Per-unit Total	Per-home SF	$ / SF
Single CORE Standard	852	—	$106,500	—	$4,000	$68,200	—	$178,700	$178,700	852	$210
6 CORE Standards	852 each	—	$639,000	—	$24,000	$316,200	—	$979,200	$163,200	852	$192
8 CORE XLs	1,007 each	—	$1,007,000	—	$32,000	$365,600	—	$1,404,600	$175,575	1,007	$174
8 CORE XLs + 1 AEU / home	1,007 each	300 each	$1,007,000	$540,000	$32,000	$365,600	$156,000	$2,100,600	$262,575	1,307	$201

Configured Example #1: Three-Bedroom, Two-Bath Single Family Home

An illustrative example for the purpose of demonstrating the expansive capabilities of CORE configuration with MULTI-CORE units:

Start with a **CORE (852 sf)** configured as the 2-bed base, and configure to **3 bed / 2 bath** using these AEUs which preserve factory rhythm:

- **Living & Mudroom - 300 sf**
- **Office & Master Suite 360 sf** (adds office, 1 bedroom + 1 bath suite)

AEU subtotal: 300 + 360 = 660 sf
Resulting home size: 852 + 660 = 1,512 sf

Costs:

- CORE fabrication: **$106,500**
- Appliances: **$4,000**
- CORE site (N=1): **$80/sf × 852 = $68,160 → $68,200** (nearest $100)
- **AEUs production: 660 sf × $225 = $148,500**
- **AEU site : $65/sf × 660 = $42,900**
- **Project total: $370,100**
- **Per-home $/sf: $370,100 ÷ 1,512 ≈ $245/sf**

Configured Example #2 : Five-Bedroom, Four-Bath Multi-Generational Family Home

An illustrative example for the purpose of demonstrating the expansive capabilities of CORE configuration with MULTI-CORE units - This configuration shows how larger homes can house 2 families. Effectively splitting the cost of construction in half. Start with a **CORE XL (1,007 sf)** configured as the 3-bed base, and configure to **5 bed / 4 bath** using these AEUs:

- **Living 300 sf**
- **Bed & Common Bath 240 sf** (adds 1 bedroom + 1 bath)
- **Master Suite 300 sf** (adds 1 bedroom + 1 bath suite)
- **Master Bath 180 sf** (adds 1 bath)

AEU subtotal: 300 + 240 + 300 + 180 = 1,020 sf
Resulting home size: 1,007 + 1,020 = 2,027 sf

Costs:

- CORE fabrication: **$125,875**
- Appliances: **$4,000**
- CORE site (N=1): **$65/sf × 1,007 = $65,455** → **$65,500** (nearest $100)
- **AEUs production: 1,020 sf × $225 = $229,500**
- **AEU site : $65/sf × 1,020 = $66,300**
- **Project total: $491,175**
- **Per-home $/sf: $491,175 ÷ 2,027 ≈ $242/sf or $121/sf per family**

Four Customers, Four Lived Realities

The Infill Developer: “Maximize Volume and Control”

On a 70-lot infill program, use **CORE Standard** on interior lots and, on corners, add **MULTI-CORE** Expanded Living and Dining modules to animate the street while keeping factory rhythm intact. Providence, Pawtucket, Central Falls, and Warwick offer tight parcels with predictable utility corridors and crane windows. Invariant interfaces and repeated details mean cleaner permit packets, steadier inspections, and fewer field improvisations. The calm massing, porches, and New England-appropriate elevations from the drawings help projects blend into existing neighborhoods. Options become SKUs with reliable dates, so sales teams can pre-sell mixes without change-order churn, maximizing volume while retaining control over schedule and outcome.

The Community Organization: “Affordable, Unique, Adaptable”

Assemble 40 homes across several parcels serving mixed household sizes. Start with **CORE Standard** and use **MULTI-CORE** where needed—e.g., **Additional Bedroom** modules to right-size for larger families and place a shared **Wellness** module on a community parcel for telehealth and counseling. Municipal partners and nonprofits get dignity by default and documentation that stands up to funders: the **digital passport** brings commissioning logs, pressure tests, and photo records to every close-out. Because the product is standardized but configurable, neighborhoods read as coherent—not copy-paste—and programs can adapt over time with known, catalogued modules. The net effect is affordability with personality: homes that meet grant constraints without flattening variety or long-term livability.

First-Time Buyers: “Right-Sized Now, Growth Later”

Select a **CORE Standard** with practical **MULTI-CORE** choices like **Pantry** and **Foyer** for immediate daily impact. On a single-home site using midpoint allowances, the all-in pencils around **~$209/sf** for the base CORE Standard—useful for underwriting and down-payment planning in Rhode Island’s starter-home market. Speed matters when you’re juggling rent and a new mortgage. Set-and-connect happens in days, so overlap compresses and surprise change orders don’t ambush the budget. When life expands, a **Bedroom** or **Common Bath** module can be added in a planned weekend crane window with predictable pricing and no redraw of the CORE—building equity through a product that grows on purpose instead of through chaotic renovation.

The Downsizing Customer: “Single-Level, Personal, Forever”

Begin with a **single-level CORE** personally configured for efficient living—no stairs, clear circulation, and rooms that actually serve the next 20 years. Choose an **additional suite** for visiting family or a caregiver, and include a **Wellness** accessory—quiet space for stretching, light cardio, and telehealth—so the home supports health every day. Many towns need age-friendly homes that feel tailored, not clinical. The CORE’s disciplined interfaces let you set the plan to your routines—wider passages, low-threshold entries, organized storage—and keep it serene in use: stable temperatures, quieter ducts, better air sealing, all verified before delivery. Exterior options drawn for New England streets keep character intact; interior selections focus on tactile durability and easy maintenance. This is a right-sized, single-floor **forever home**—personally configured once, comfortable always, without compromising on materials, comfort, or dignity.

Rhode Island building - Energy Efficiency through Systems Built Construction

QUOIN CORE is engineered as a finished dwelling with invariant structural, MEP, and envelope interfaces. Factory travelers, QA/QC, pressure tests, and commissioning logs are documented in a **digital passport** that accompanies each home. This package streamlines local review and inspection by presenting repeatable assemblies, tested systems, and serialized components. **RI-specific requirements** (insulation, energy, egress, accessibility clearances, smoke/CO, and wind/seismic parameters) are met through standardized details and permit submittals drawn from the same controlled set used in production. Floor plans on **A1.1** show code-relevant adjacencies (egress doors and bedroom egress windows in exterior walls), while **A1.2** AEU plans demonstrate compliant bath and bedroom clearances within standardized module footprints.

The CORE building envelope maintains air and thermal barriers with minimized thermal bridging at every joint, yielding tighter airtightness and markedly lower energy use than typical site-built assemblies. Service corridors keep ducts and plumbing within conditioned space, shortening runs and improving airflow balance, comfort, and system longevity. Gasketed connections, pressure-managed wall sections, and acoustically damped layers at room and module interfaces deliver quieter interiors, better moisture control, and durable performance over decades.

Coastal adaptations. For coastal and high-exposure conditions, QUOIN details foundations and attachments to meet site-specific design criteria (e.g., wind exposure categories, flood elevations, corrosion-resistant connectors). Because CORE interfaces are fixed, these adaptations occur in the foundation, anchorage, and cladding layers without re-engineering the CORE fabrication—preserving schedule and quality control. (Project teams coordinate local floodplain and hurricane-resistance requirements during site design and permit.)

Configure Once, Evolve with AEUs—Less Waste, Lower Carbon, Higher Comfort

Sustainable by design. Factory precision reduces waste and boosts performance. Repeatable jigs, fixed interfaces, and serialized QA/QC drive high material yield and low rework compared with site-built norms. The CORE's continuous thermal and air barriers are installed in controlled conditions, so performance is supported by factory systems and checks before shipment.

Repurpose, don't demolish. The platform's long-term sustainability advantage comes from **repurposing AEUs**. Because AEUs are serialized, skinnable, and compatible across model years, they can be **removed, refurbished, and redeployed** as needs change—growing families, empty-nesting, aging-in-place—avoiding carbon-heavy tear-outs.

Upgrades without disruption. AEUs attach at invariant interfaces, so households can expand or reconfigure without carving into the CORE shell. Fewer dumpsters, fewer trips, quieter neighborhoods.

Circular AEU marketplace. A certified refurbishment workflow gives life to traded-in AEUs; compatibility rules in the configurator ensure only valid rematches are listed. This avoids the carbon and cost of fabricating new modules for every life event.

30-Year Refurbishment Forecast (Square-Foot Basis)
Assumptions: refurbishment rate **20%** of lifecycle AEU sf; average AEU **160 sf**; churn over 30 years—Conservative **1.0 AEU-equivalent/home**, Moderate **1.5**, High **2.0**.
Formulas: Lifecycle AEU sf = Homes × Churn × 160; Refurbished sf = 0.20 × Lifecycle AEU sf.
Per **100 homes** → **3,200–6,400 sf** refurbished/avoided; per **1,000 homes** → **32,000–64,000 sf** refurbished/avoided.

Ordering, Payment & Production

To keep the path from drawings to occupancy simple and predictable, ordering and payment are straightforward and tied to clear milestones:

- **$4,000.00 per unit SKU** to create an order. This locks the configuration, reserves production capacity, and triggers permit/engineering packets.
- **30% of the Purchase Order (PO)** is due to **initiate production**.
- **Balance of production costs and 50% of delivery** are due **on arrival** of the modules on site.
- **Balance of delivery and set** is due **upon completion** of set and connection.

Production requirements: There is **no minimum order**. Orders of **fewer than 30 CORE units** may require **additional travel expense** to be considered, based on distance, crane time, and crew mobilization.

Notes on site work & finishing (integrated with the cost logic below):

- **Electrical hook-ups & internal connections** (service tie-ins, panel terminations, device verification) are planned within the **site mechanicals** allowance.
- **Plumbing hook-ups & internal connections** (manifold tie-ins, pressure tests, fixture verification) are likewise covered in **site mechanicals**; test results appear in the commissioning packet.
- **General carpentry for unit integration & finish** (marriage-line closure, weather-barrier continuity, trim/soffits) is captured in the **post-set finishing** allowance.

The CORE Potential

CORE turns housing from a one-time transaction into a **platform relationship**—a stable, upgradeable product with a long tail of services, referrals, trade-ins, and environmental dividends. The math backs it up: per-unit costs fall sharply with each additional CORE on a site; MULTI-COREs add livable, valuable square footage without sabotaging schedule; and documented performance compounds trust over time.

- **Developers**: Separate platform planning from product mix. Standardize set sequences, pre-sell AEU bundles, publish crane windows.
- **Municipal partners**: Expect faster reviews when details repeat; request the digital passport at closeout.
- **Lenders & insurers**: Underwrite the platform repeatability.
- **Homeowners**: Treat the home like a living product—schedule care, bank AEU credits, and track performance.

Assumptions & Exclusions

- **Exclusions:** Land acquisition; legal/financing fees; off-site improvements beyond parcel; unusual soils remediation; major utility extensions beyond standard laterals; jurisdiction-specific impact/connection fees; specialty owner upgrades not listed (custom millwork, premium cladding systems beyond the standard palette, photovoltaic systems unless included separately).
- **Allowances:** Site costs shown are planning allowances and will be validated by competitive trade bids during Phase 1.
- **Escalation:** Pricing is based on current market conditions and factory slot availability; a proposal validity window will be stated at contract.

Closing

QUOIN’s CORE System brings manufacturing discipline to neighborhood-scale housing: fewer surprises, faster delivery, and homes that can evolve gracefully. We look forward to partnering with Rhode Island to make the Housing 2030 vision real, one predictable, beautiful home at a time.

Founding Team - Professional Bios

Andrew Holmes — Chief Executive Officer & Creative Director

Role Focus: Product vision, partnerships, commercialization, certification strategy, and brand architecture.
Background Highlights: Over two decades across residential and commercial construction; leadership at AZA Builders' brands with deep modular execution exposure (factory collaboration, crane/set operations, schedule and QA). Led development efforts recognized in regional press and industry outlets.
Value to CORE: Originator of the CORE System; unifies design, factory, and field learnings into a repeatable kit-of-parts and certification program; proven spokesperson and partner-builder integrator.

Geoff Zawacki — Chief Technical Officer (B.S. Mechanical Engineering, Penn State)

Role Focus: Technical owner of CORE's connection standards, structural/MEP interfaces, and performance testing across thermal/air/water/acoustics; factory integration and DFM/A.
Background Highlights: Mechanical engineering foundation from PSU; practical systems integration across modular assemblies; field-proven solutions to transport and set-day tolerances; reliability-driven change control.
Value to CORE: Ensures that CORE's standardized details remain manufacturable, safe, code-compliant, and high-performance across partner factories and climates.

Matt Brind'Amour, AIA — Chief Design Officer (B.Arch, Penn State; MBA, University of Pittsburgh; Registered Architect)

Role Focus: Code compliance and stamped documents; governance of CORE's BIM libraries; façade systems and floor-plan families; AHJ engagement and approvals.
Background Highlights: Practicing architect since 2006; licensed across multiple states; portfolio spans single-family, multifamily, hospitality, retail, commercial, and healthcare. Leadership of a practice covering Western PA and beyond with registrations in PA, OH, NY, VA, WV, NC, and FL.
Value to CORE: Converts IP into permit-ready, stamped documents and scalable BIM assets, accelerating time-to-permit and reducing RFIs.

Prepared By

QUOINCORE inc, dba QUOIN

Pittsburgh, PA 15202

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Matt Brind'Amour - Matt@Brindamourdesign.com

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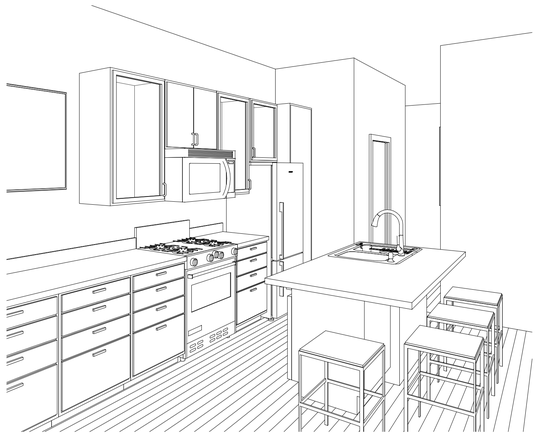
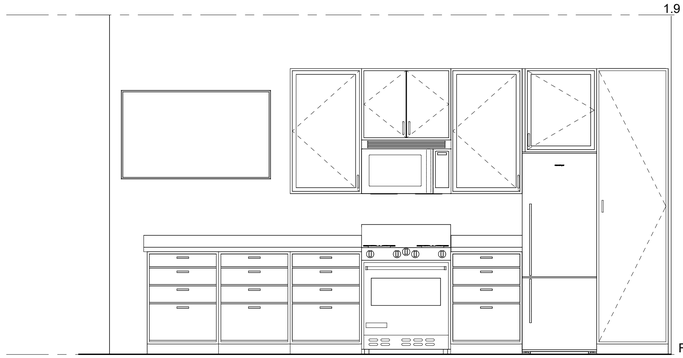
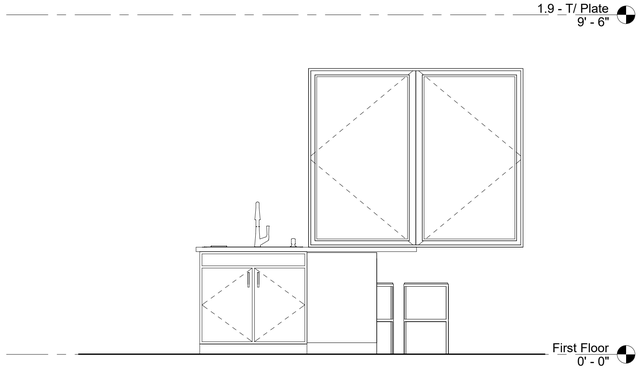


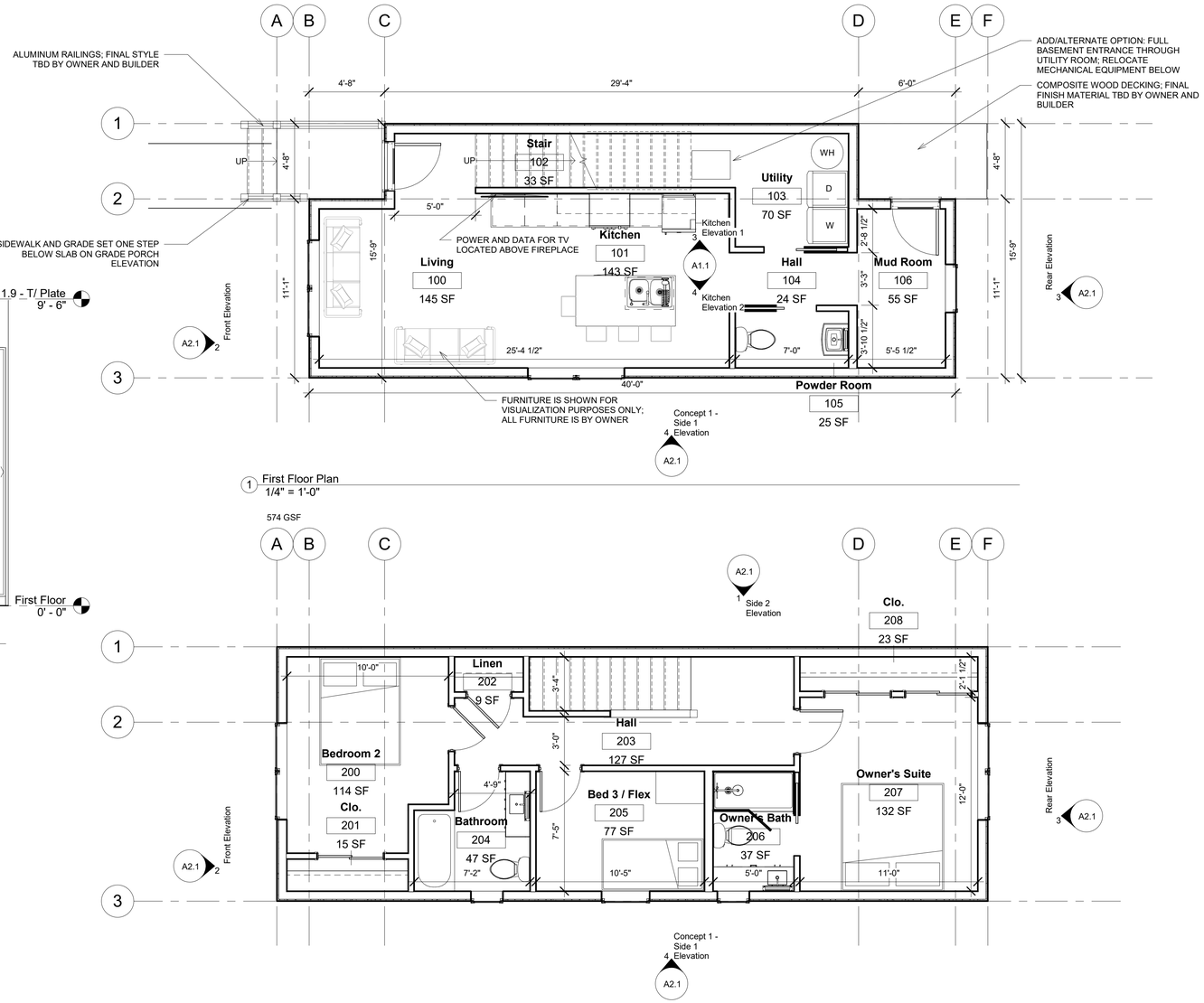
5 Kitchen 3d View



3 Kitchen Elevation 1
1/2" = 1'-0"



4 Kitchen Elevation 2
1/2" = 1'-0"



1 First Floor Plan
1/4" = 1'-0"

574 GSF

2 Second Floor Plan
1/4" = 1'-0"

686 SF

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INITIAL CONCEPT

5.12.2024

AFFORDABLE MODULAR CONCEPT

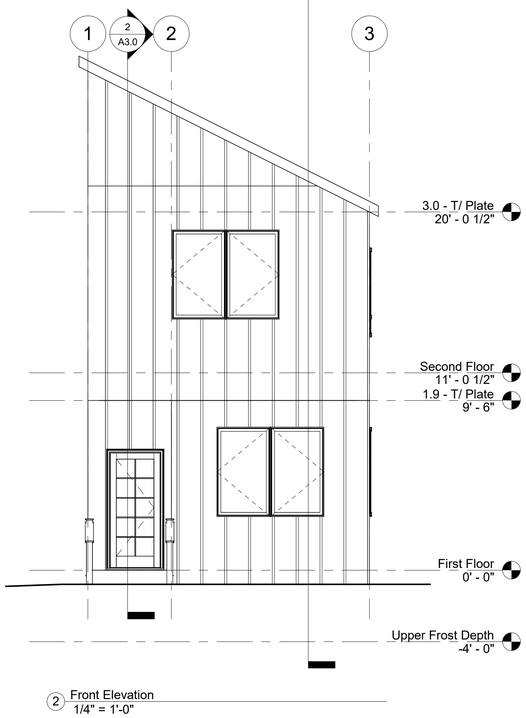
TBD
TBD

24-011

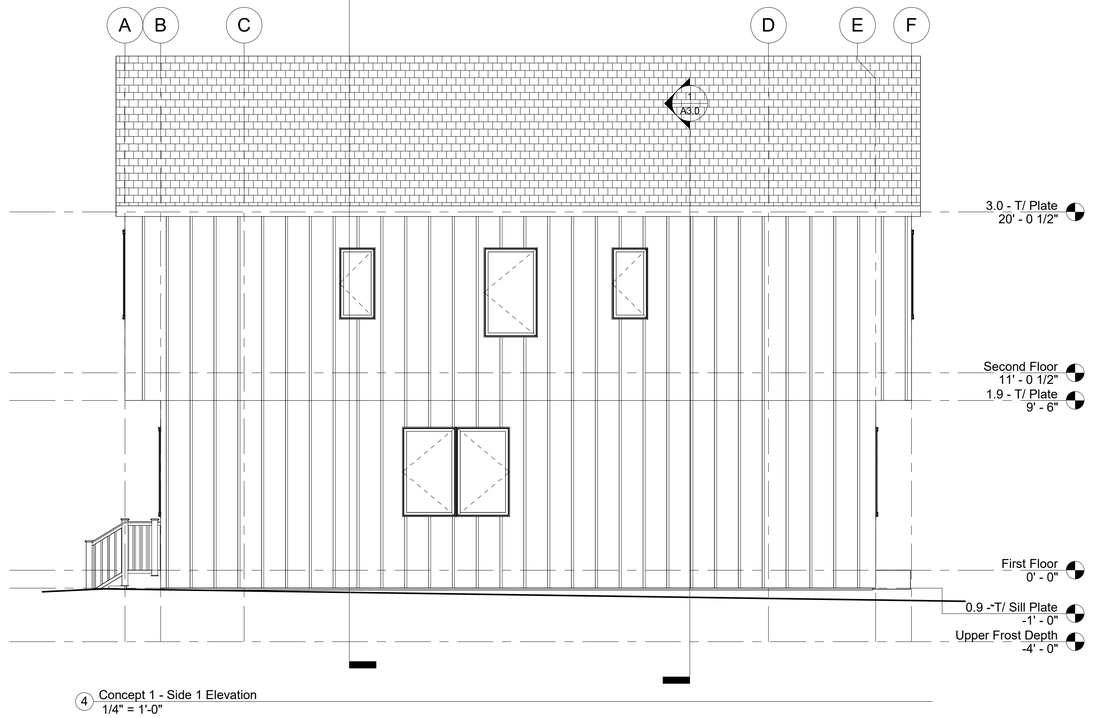
Floor Plans and Interior Elevations

As indicated

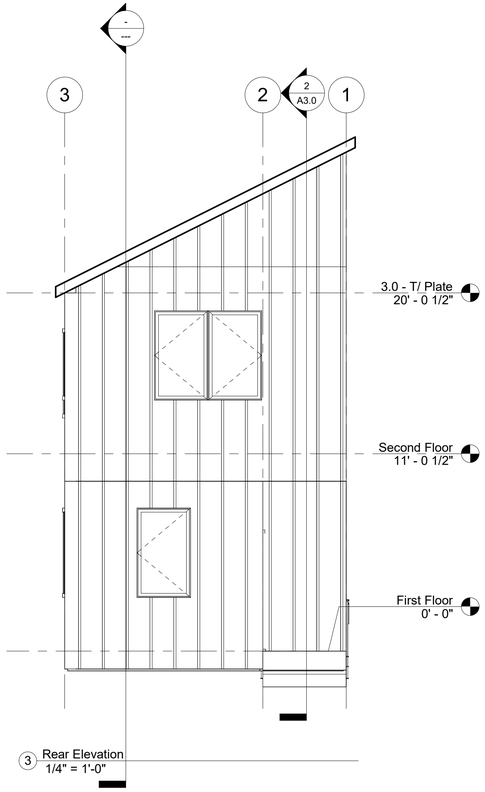
A1.1



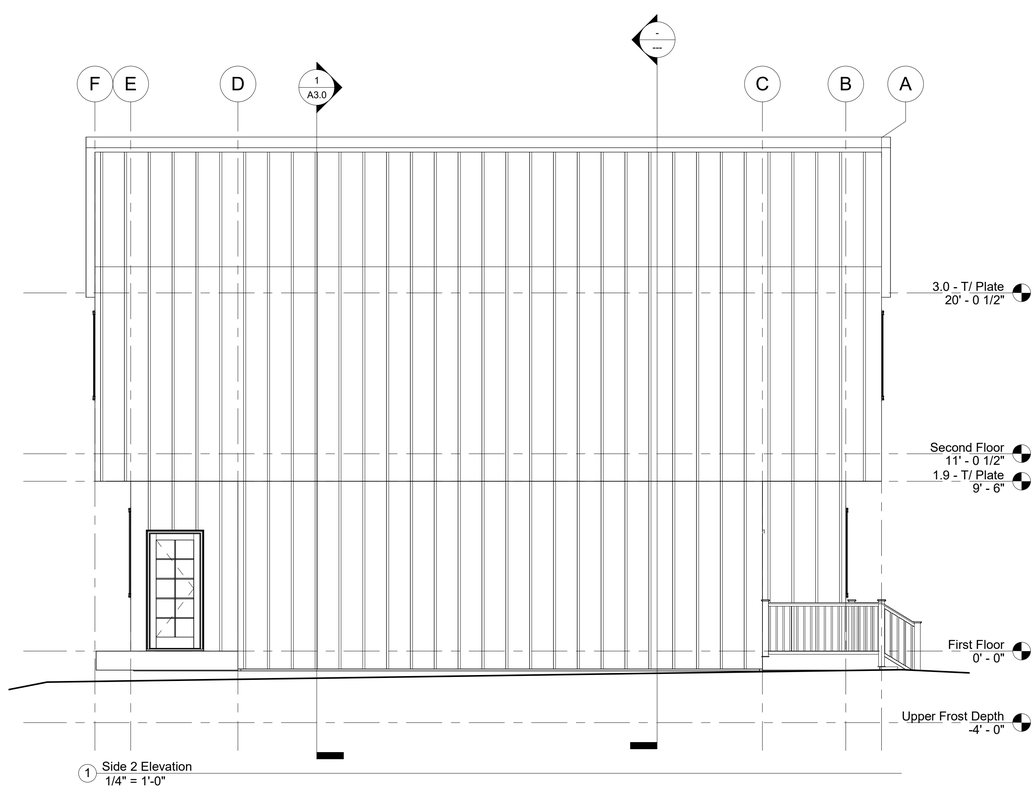
2 Front Elevation
1/4" = 1'-0"



4 Concept 1 - Side 1 Elevation
1/4" = 1'-0"



3 Rear Elevation
1/4" = 1'-0"



1 Side 2 Elevation
1/4" = 1'-0"

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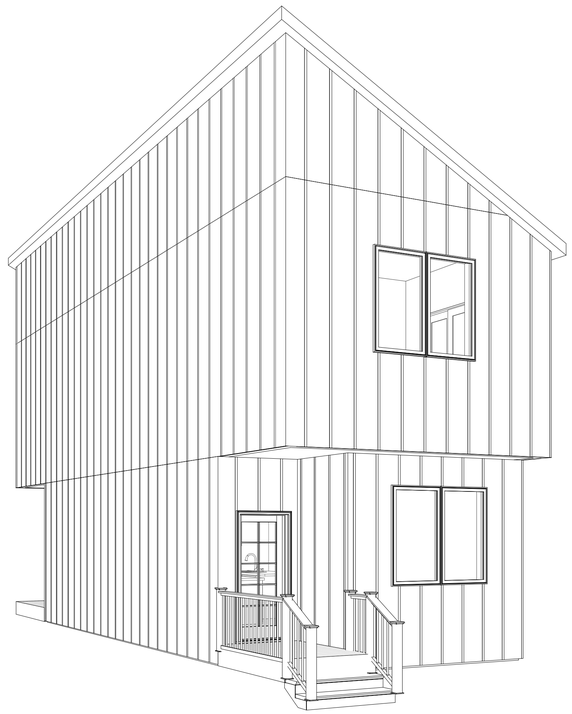
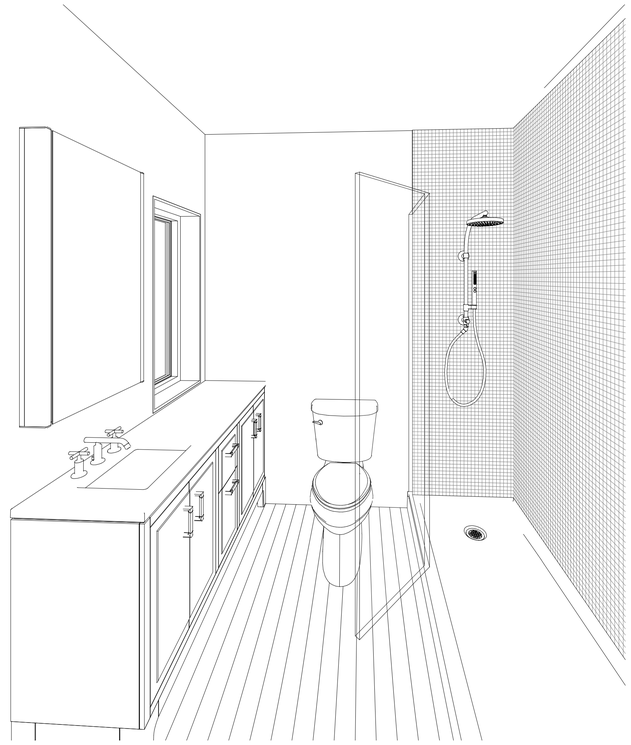
Building Elevations

1/4" = 1'-0"

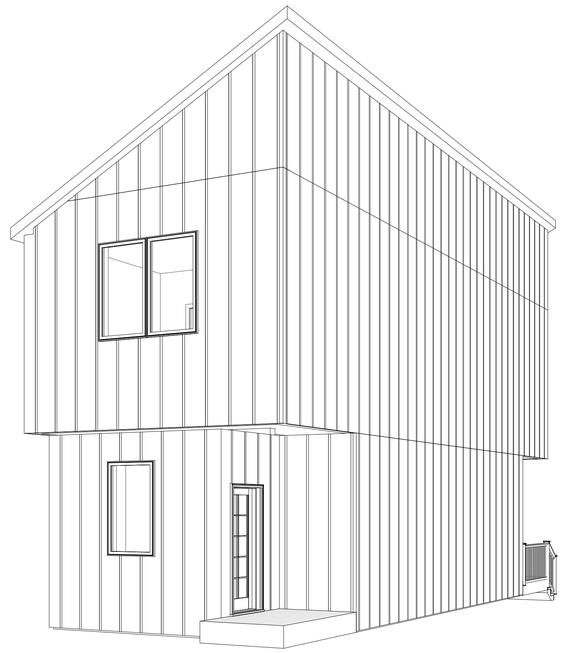
A2.1



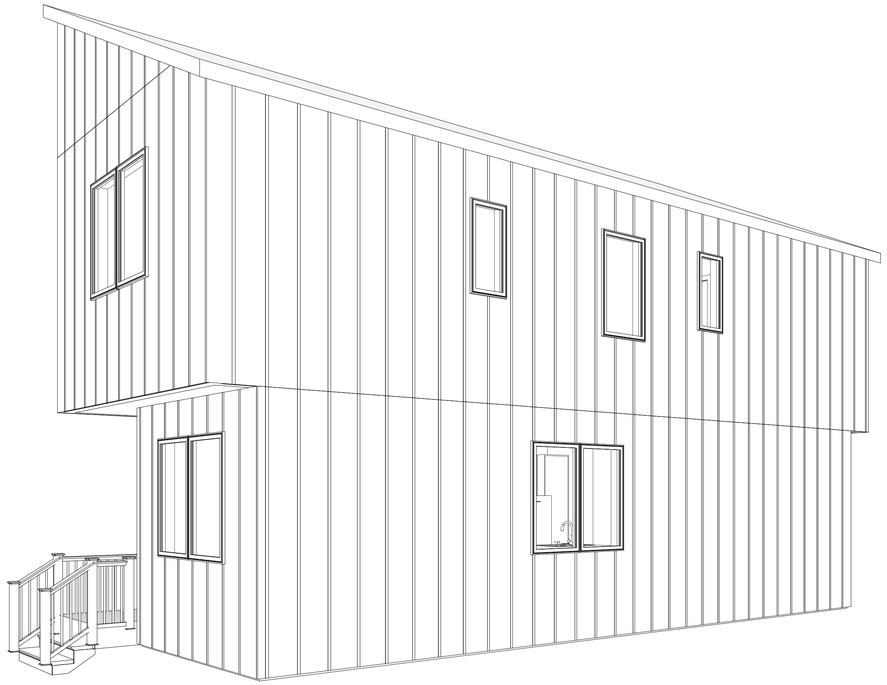
1 3D View 2



5 3D View 6



2 3D View 3



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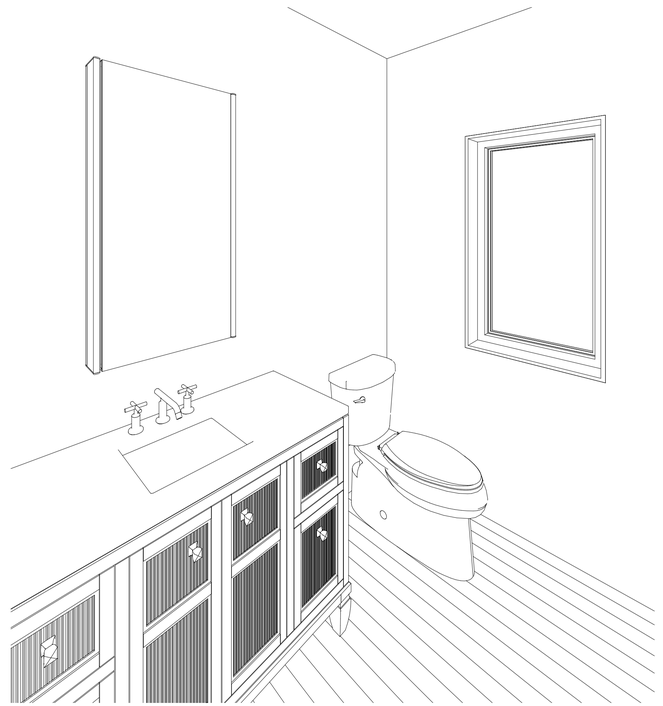

4 3D View 5

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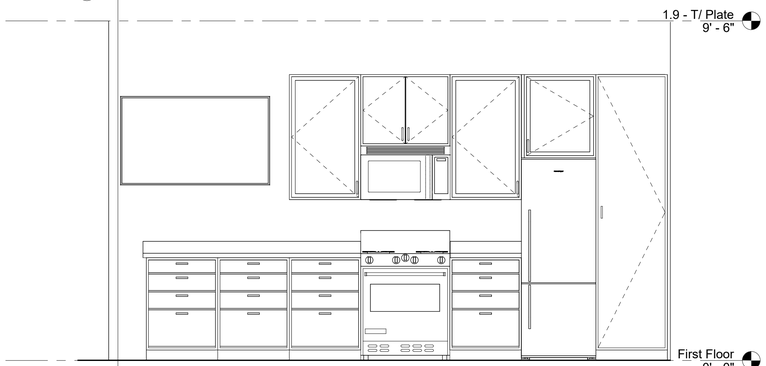
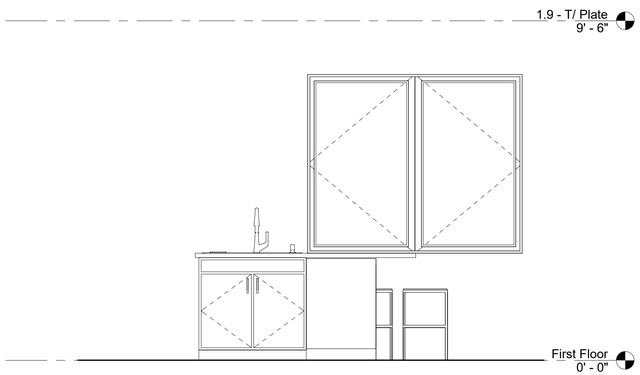
3d Views

A9.1

5 Kitchen 3d View



3 Kitchen Elevation 1
1/2" = 1'-0"



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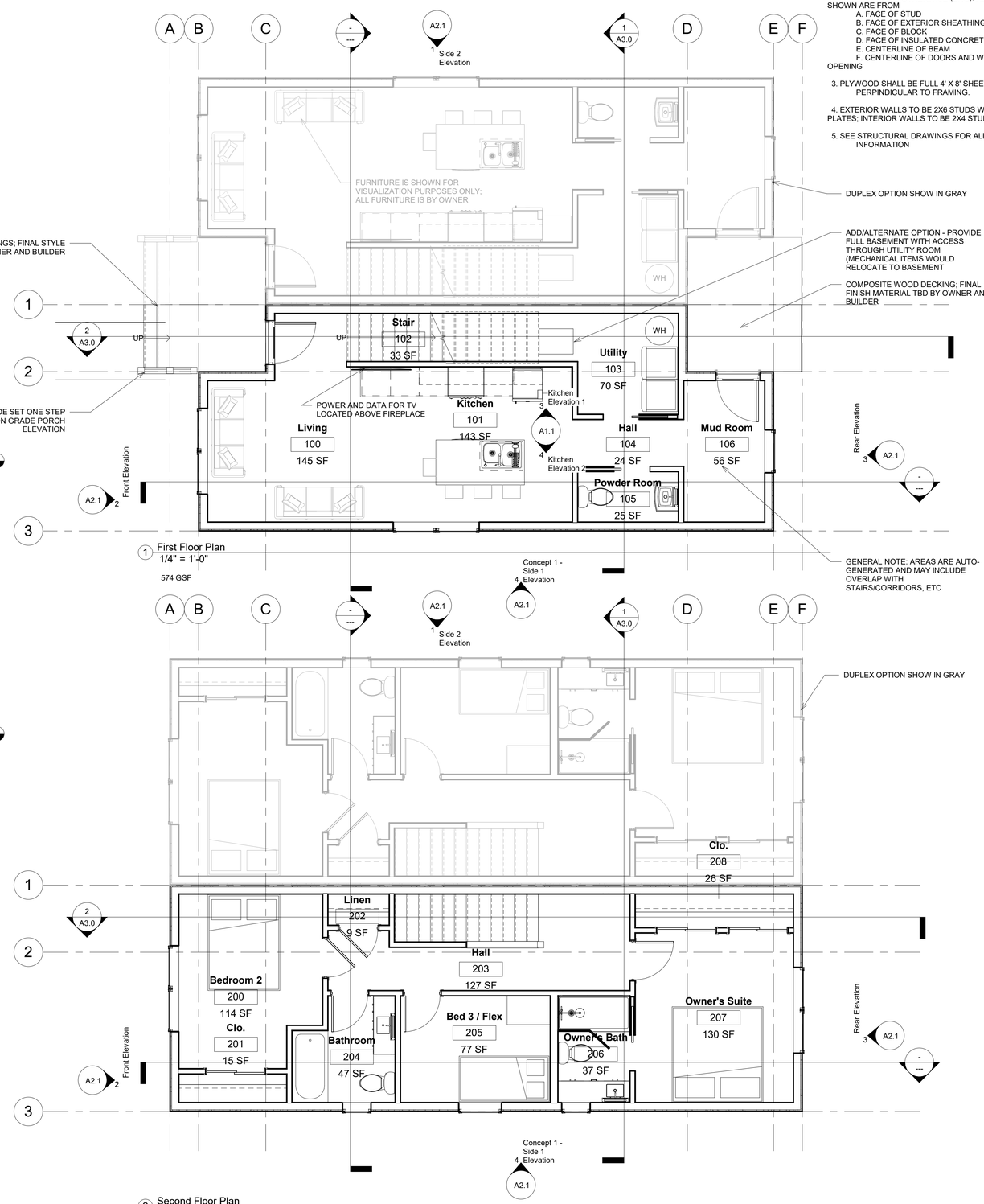
1/2" = 1'-0"



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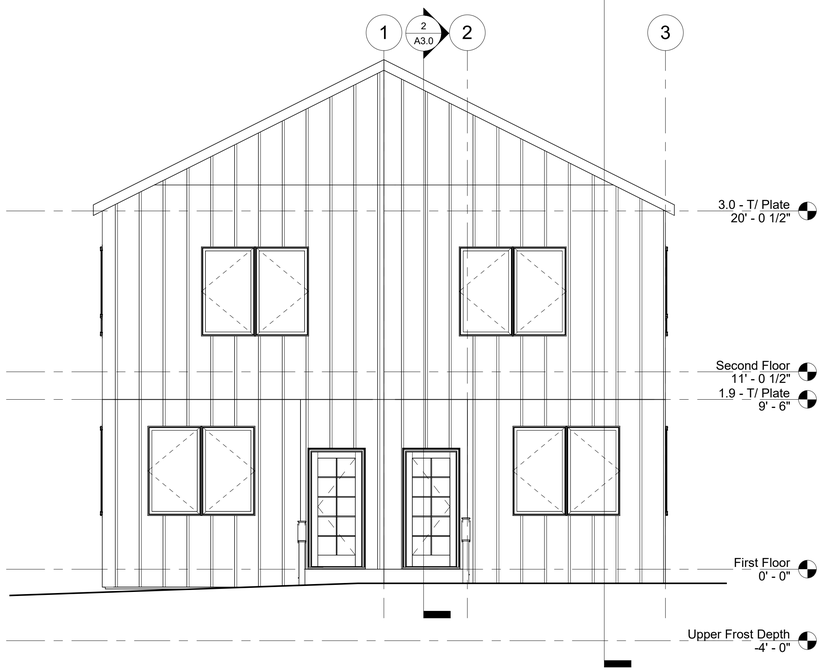
Floor Plans and Interior Elevations

As indicated

A1.1



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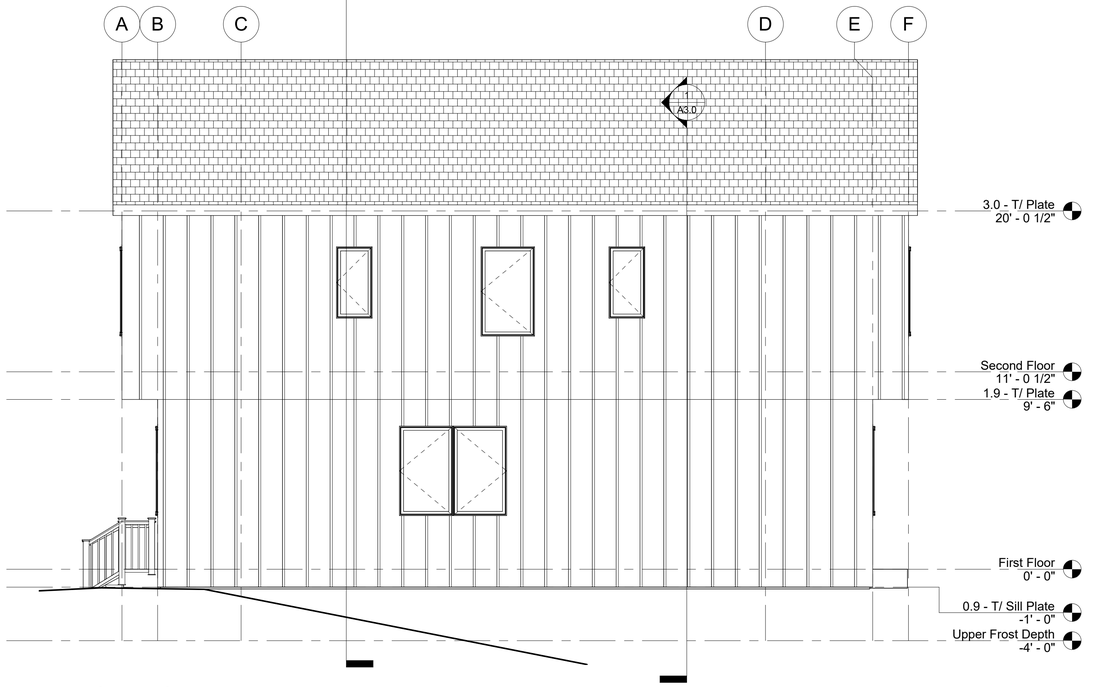

4 Concept 1 - Side 1 Elevation
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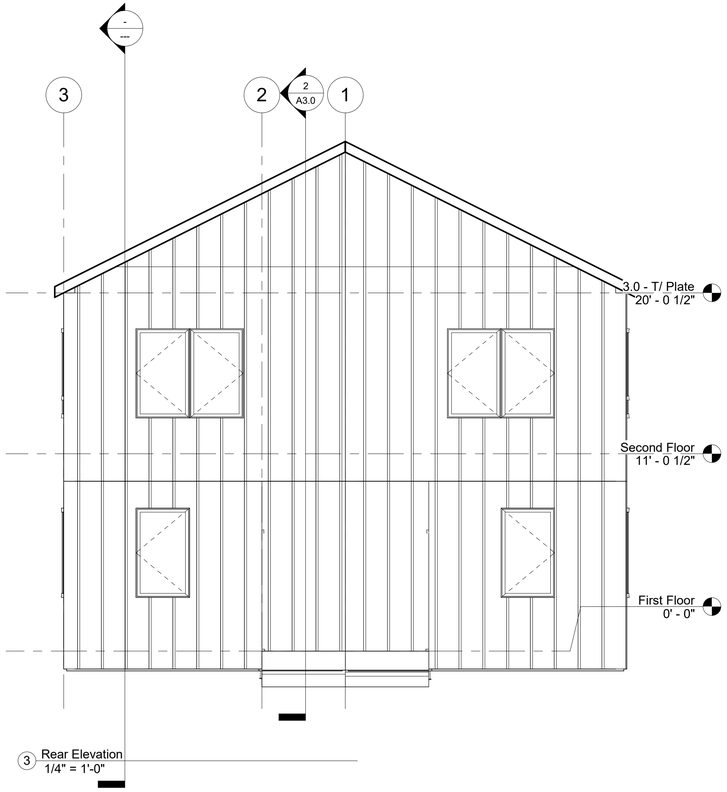

3 Rear Elevation
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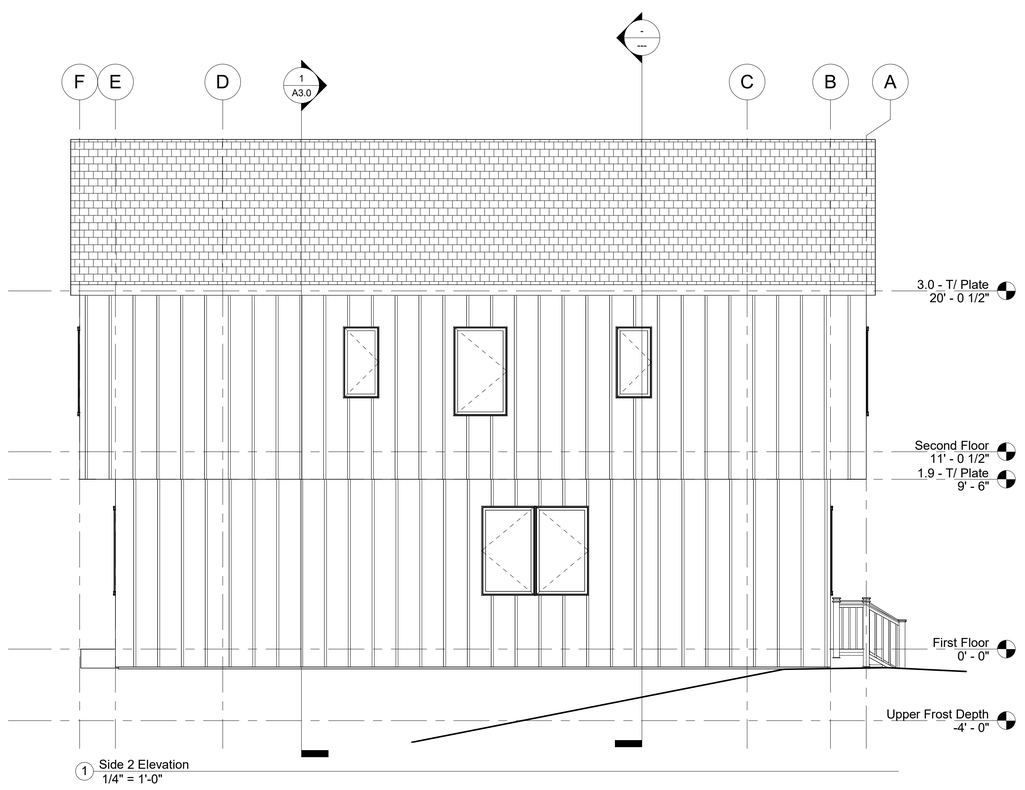

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Building Elevations

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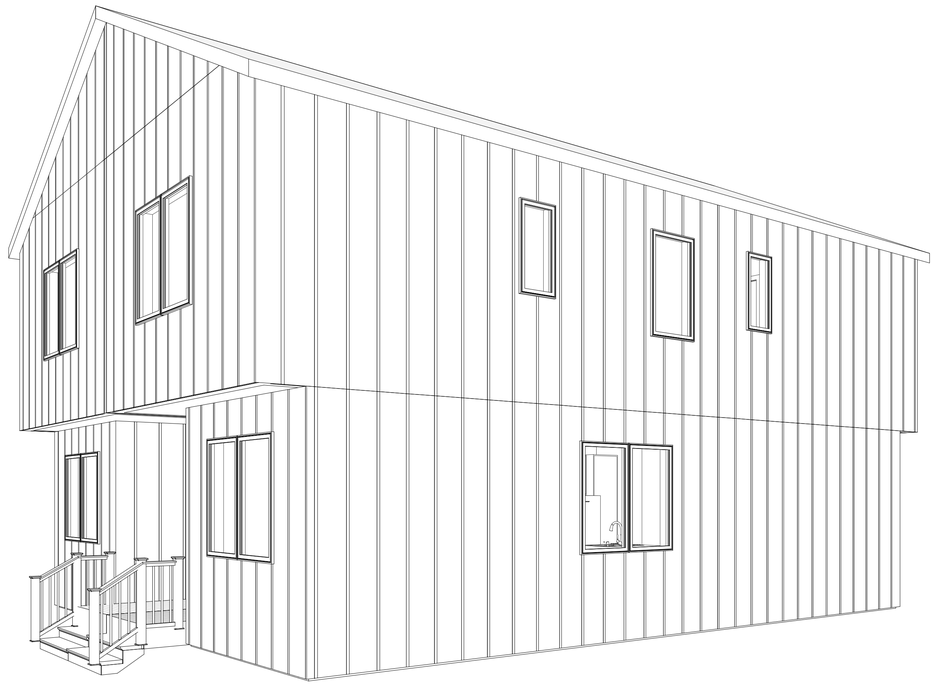
A2.1

1 3D View 2

5 3D View 6

2 3D View 3



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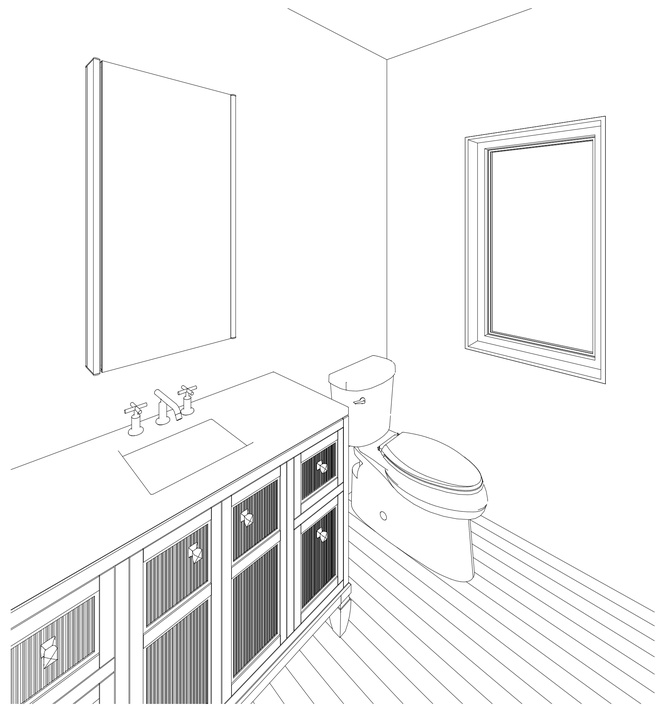

4 3D View 5

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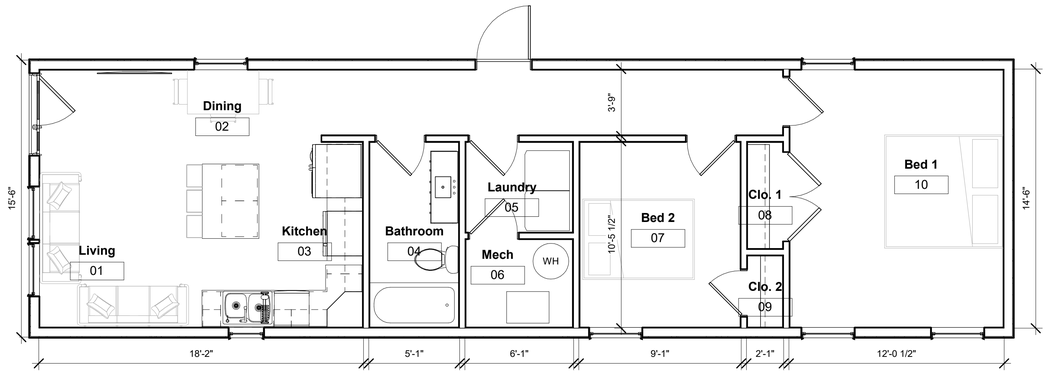
3d Views

A9.1



1 CORE - 2 Bed Base Model
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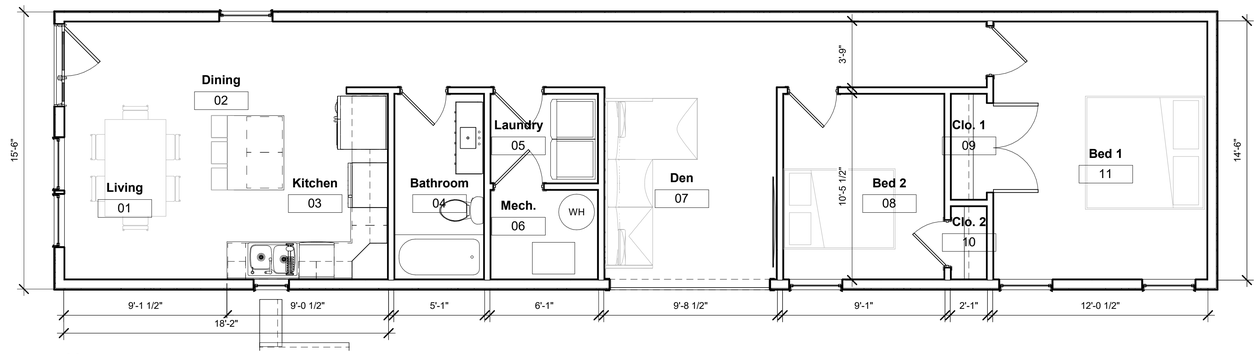
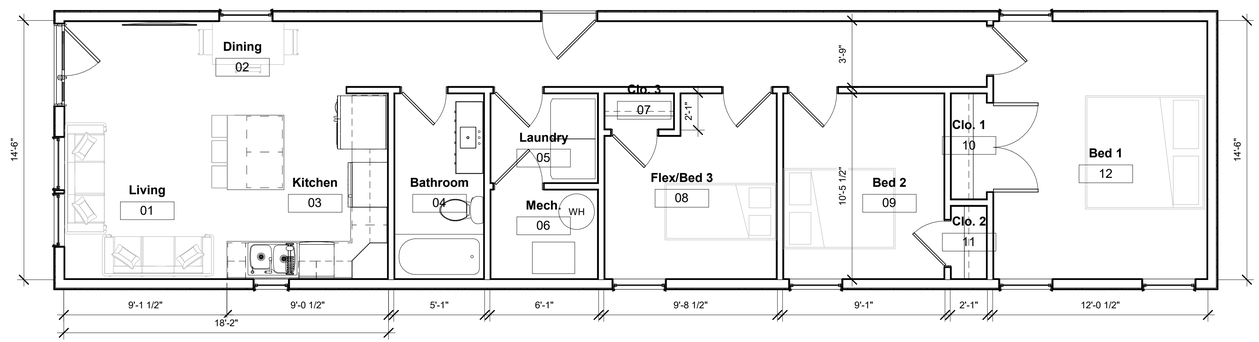


2 CORE XL - 2 Bed Den Model
1/4" = 1'-0"



3 CORE XL - 3 Bed Base Model
1/4" = 1'-0"

CORE
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QuoinCore, Inc.
46 Sheridan Ave
Pittsburgh, PA 15202

Brind'Amour Design
Matthew Brind'Amour
AIA | LEED AP

128 Maclaine Drive
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INITIAL CONCEPTS

11.3.2025

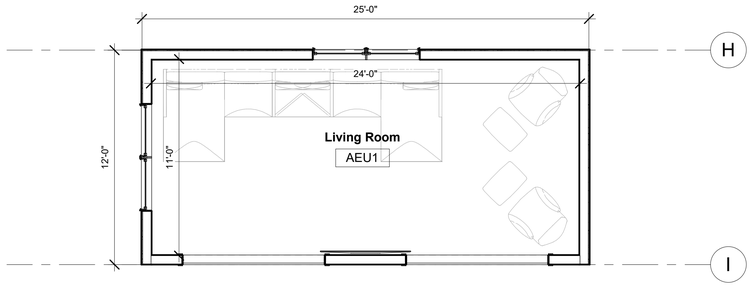
CORE MODULES

25-040

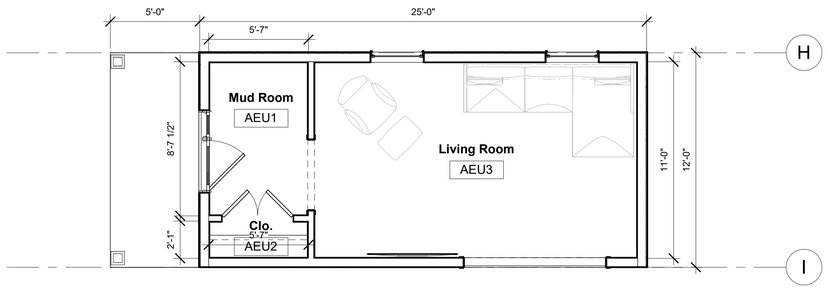
CORE Models

1/4" = 1'-0"

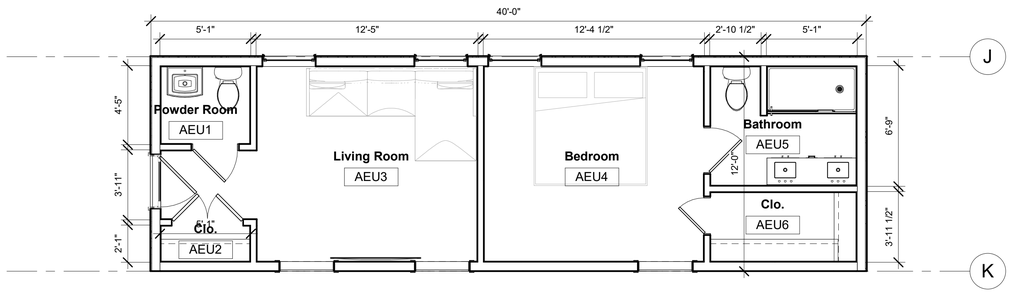
A1.1



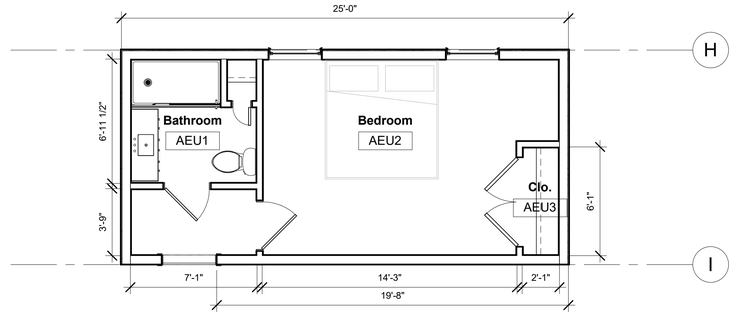
1 AEU - Living Room
1/4" = 1'-0"



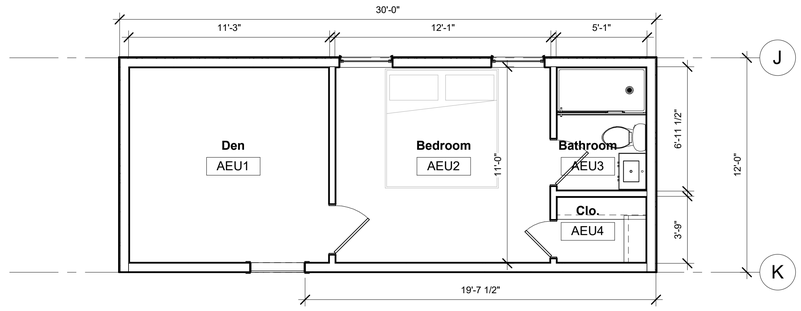
2 AEU - Living Room, Foyer, Porch
1/4" = 1'-0"



3 AEU - Entry, Living, Master Suite
1/4" = 1'-0"



4 AEU - Common Bath and Bedroom
1/4" = 1'-0"



5 AEU - Den and Master Suite
1/4" = 1'-0"

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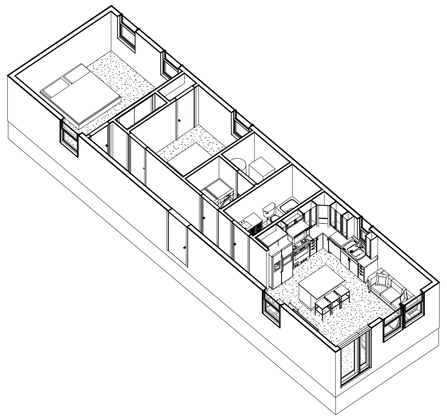
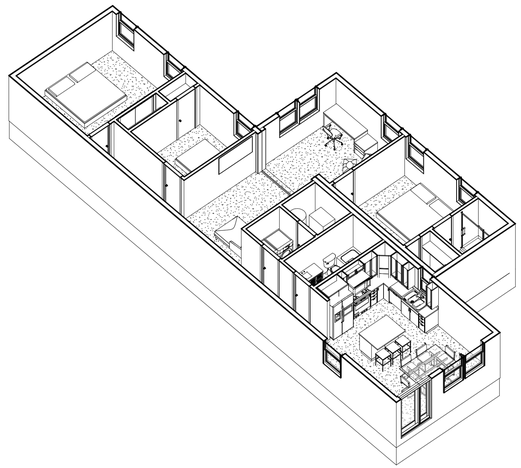
AEU Models

1/4" = 1'-0"

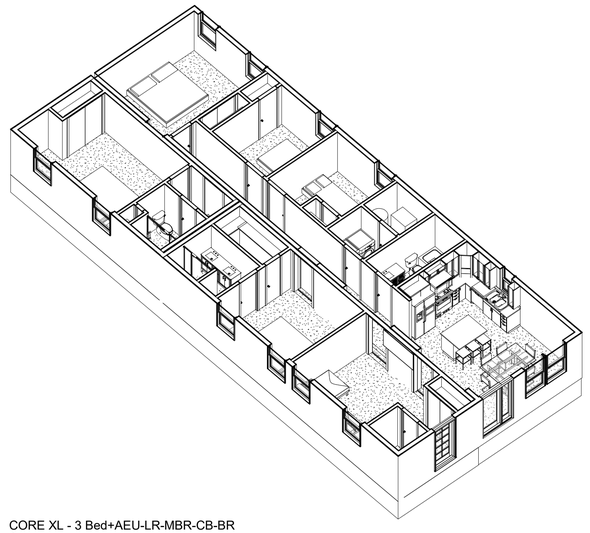
A1.2



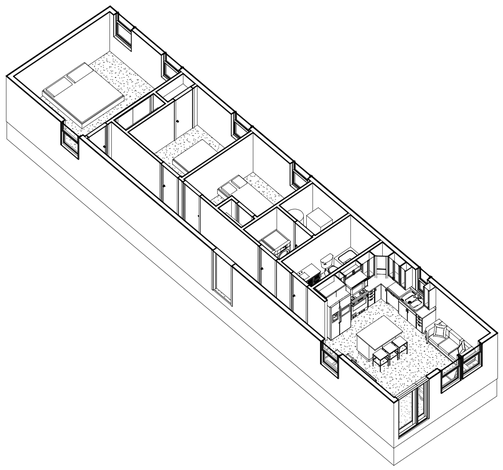
1 CORE - 2 Bed Base Axo



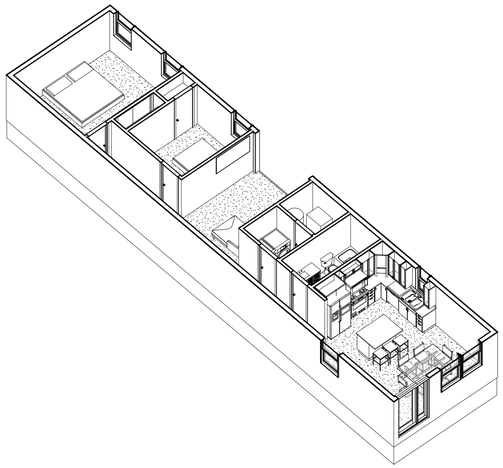
4 CORE XL - 3 Bed Den+AEU-Den-MBR Axo



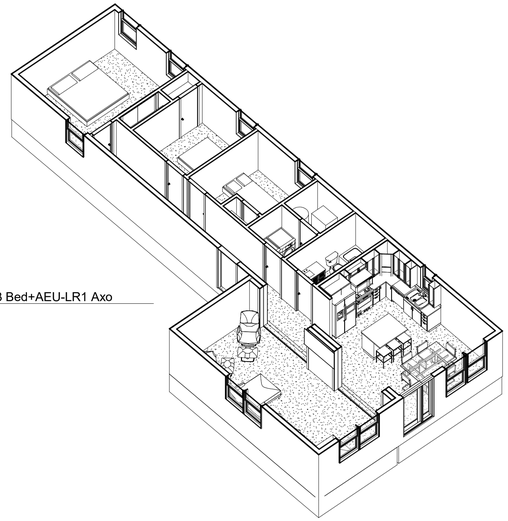
7 CORE XL - 3 Bed+AEU-LR-MBR-CB-BR Axo



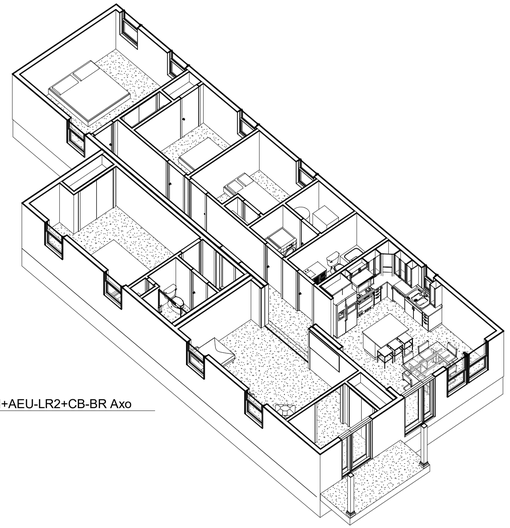
2 CORE XL - 3 Bed Base Axo



3 CORE XL - 2 Bed Den Axo



5 CORE XL - 3 Bed+AEU-LR1 Axo



6 CORE XL - 3 Bed+AEU-LR2+CB-BR Axo

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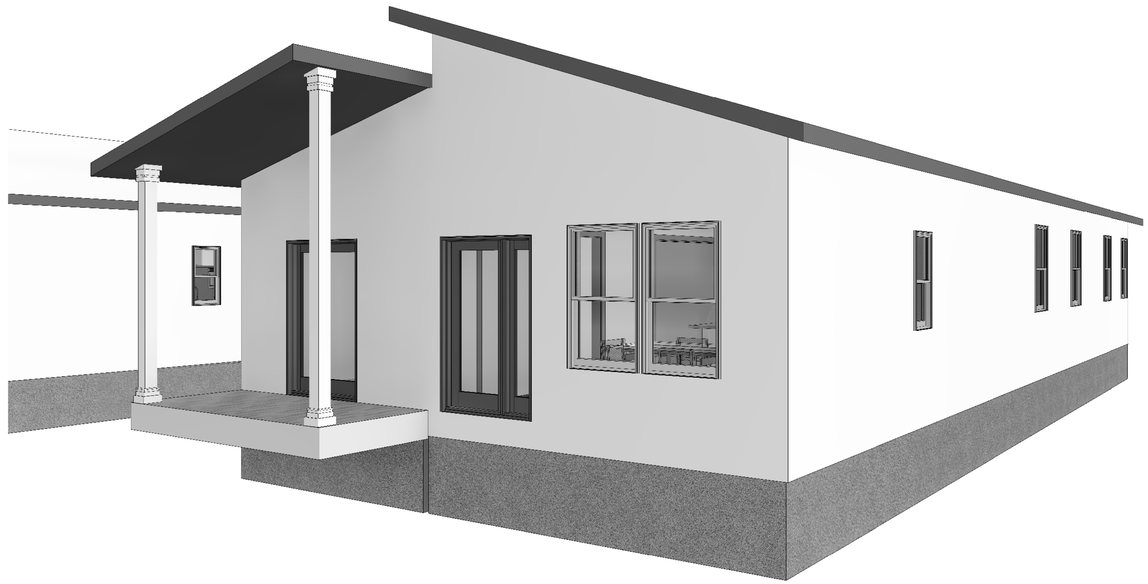
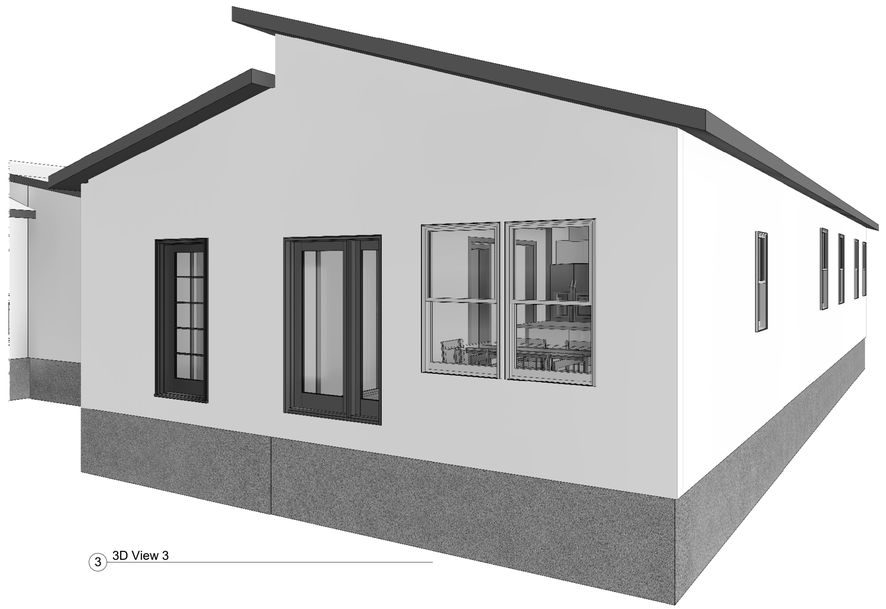
Example Combinations

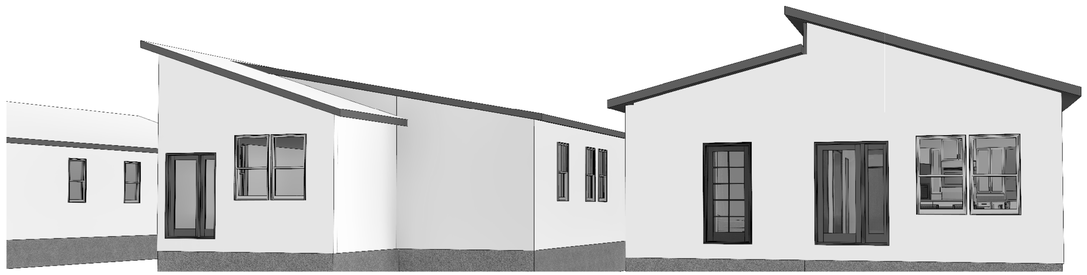
A2.1



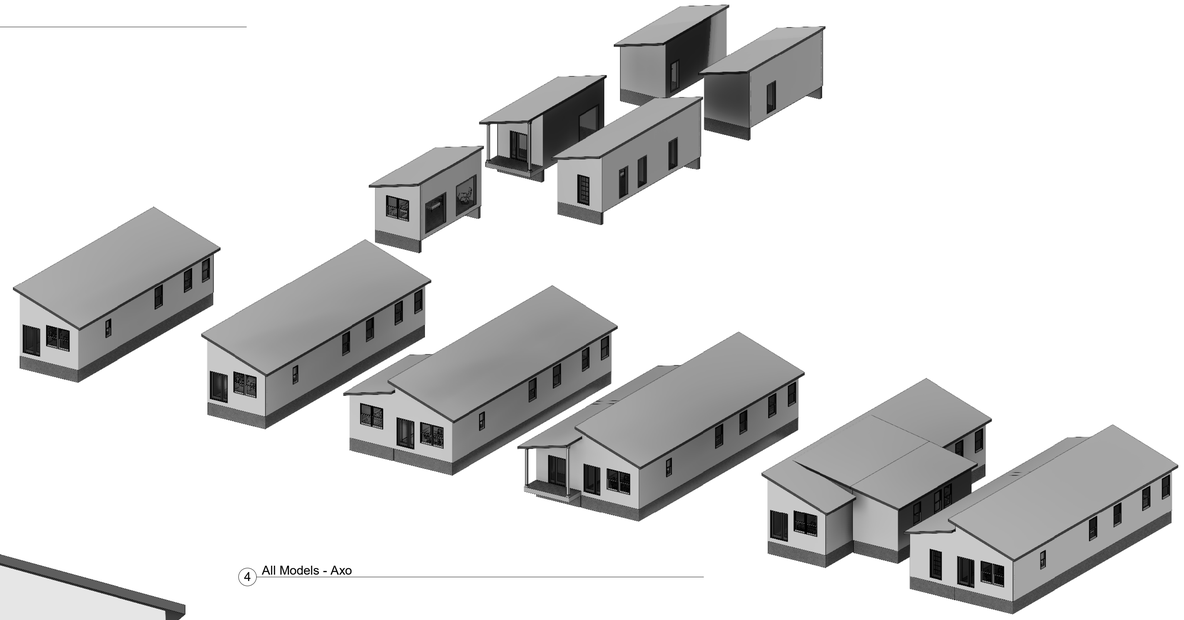
1 3D View 1



3 3D View 3



2 3D View 2



4 All Models - Axo

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3d Views

A2.3