
100X

# Architect Packet

Climate-friendly architecture made easy.



Thank you for considering Croft prefabricated panels in your build.

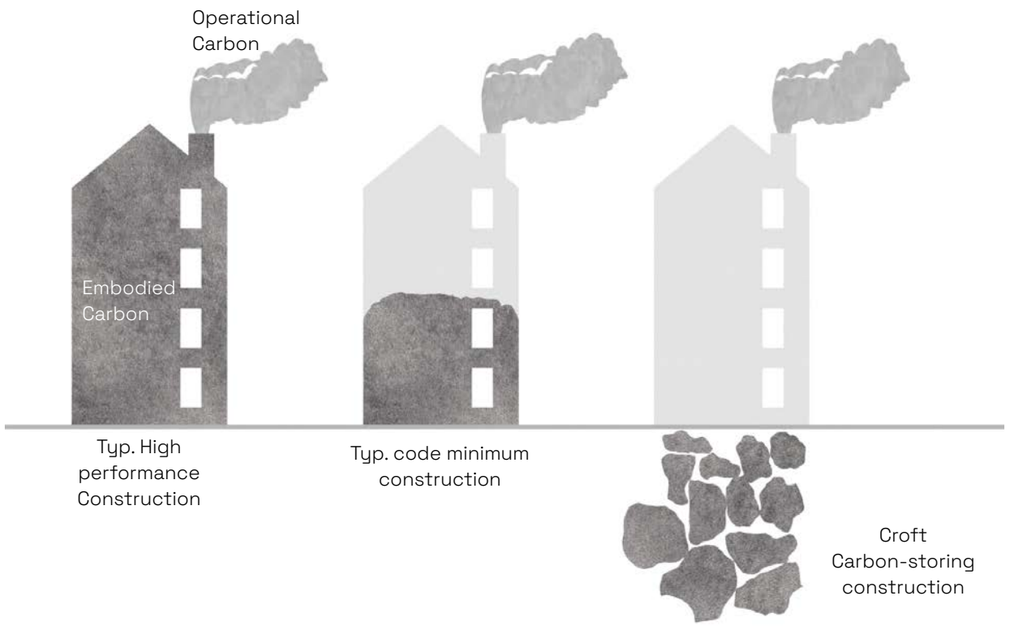
Our panels create a superinsulated, vapor-open, airtight assembly that clicks together on site in a fraction of the time of conventional construction. The resulting building envelope captures and stores ≈12.5 lbs of atmospheric CO2 for every square foot of Croft panel, for the lifetime of the building.

The following pages contain critical information for the architect, developer, or builder seeking familiarity with our approach to panelized, offsite construction.

**Familiar Standards, Friendlier Materials**
Our ingredients are primarily locally-sourced, plant-based, and as close to their native state as possible. We consider **supply chain**, **energy consumption of production**, and **worker & inhabitant health** as equally important to the final product, and are happy to offer this system for other's use on their builds. Croft's holistic approach to construction synthesizes high efficiency and economy with durable, sound building science, and aligns these principles with the environmental benefits and remarkable durability of natural materials.

We go beyond "environmentally friendly" construction:

Croft's practices focus on carbon reduction in the built environment. By utilizing climate-friendly, fast-growing, plant-based materials, we can take construction - an industry with a longstanding history of pollution and waste- and transform our buildings to a carbon-storage medium.




# Embodied Carbon

**Materials matter.**
**It's why we do what we do.**

Building materials- their extraction from the natural environment, manufacture, and eventually disposal- can have vastly different impacts to the climate. This impact is usually aggregated and expressed as **embodied carbon.** And because of embodied carbon:

**Most of humanity's most ambitious "green" buildings are worse for the climate than simple, code-minimum ones.**

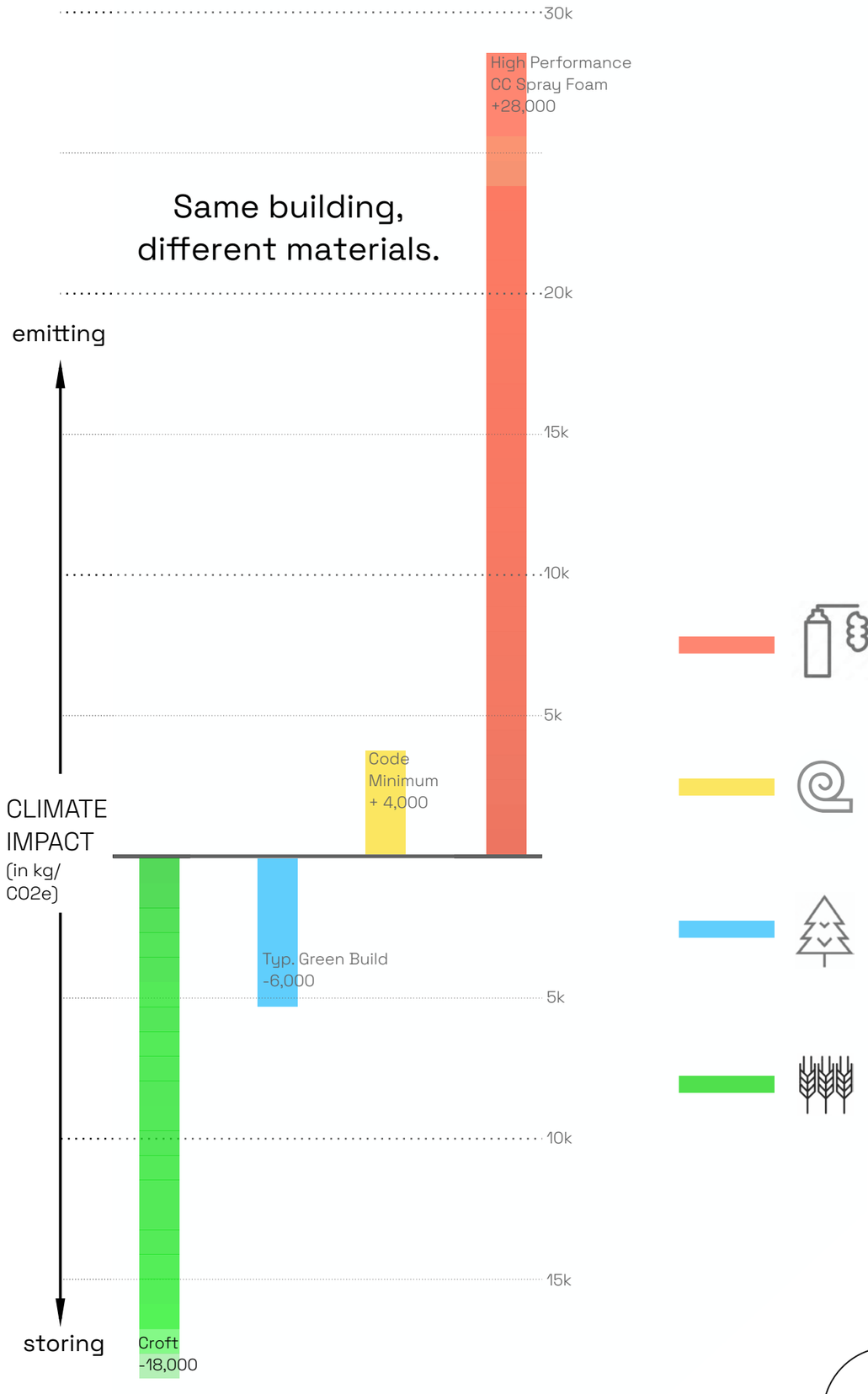
The solution is simple, however, and easily accomplished: use plant-based materials and make a durable, long-lasting building that will store their naturally-bioaccumulated carbon for generations to come. **Fast growing, annually harvested** materials like straw provide triple the carbon storage of even the next best "green" material options like cellulose.

While our buildings achieve exceptionally high levels of insulation and efficiency, we get there through the goal of **Carbon Capture and Storage.** It makes for a beautiful symbiosis- more carbon stored means more insulation, which in turn means more efficiency and building performance. Our approach flips the environmental impact problem on its head; by putting up a Croft building, we are **actively benefitting the climate.**

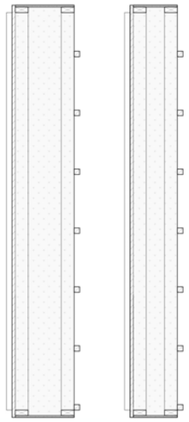
Croft's goal is to make it **simple, cost-effective, and easy** for every new build to convert to a carbon-negative build.

We prioritize healthy natural materials and sound building science:

- Much of our supply chain is a single link; we purchase from local & organic farms
- Our building membranes are Living Building Challenge Red-List Free
- Energy consumption at our manufacturing facility is kept as low as possible
- A standard assembly free of thermal bridging and fussy detailing
- Panels are airtight on two sides and super insulated

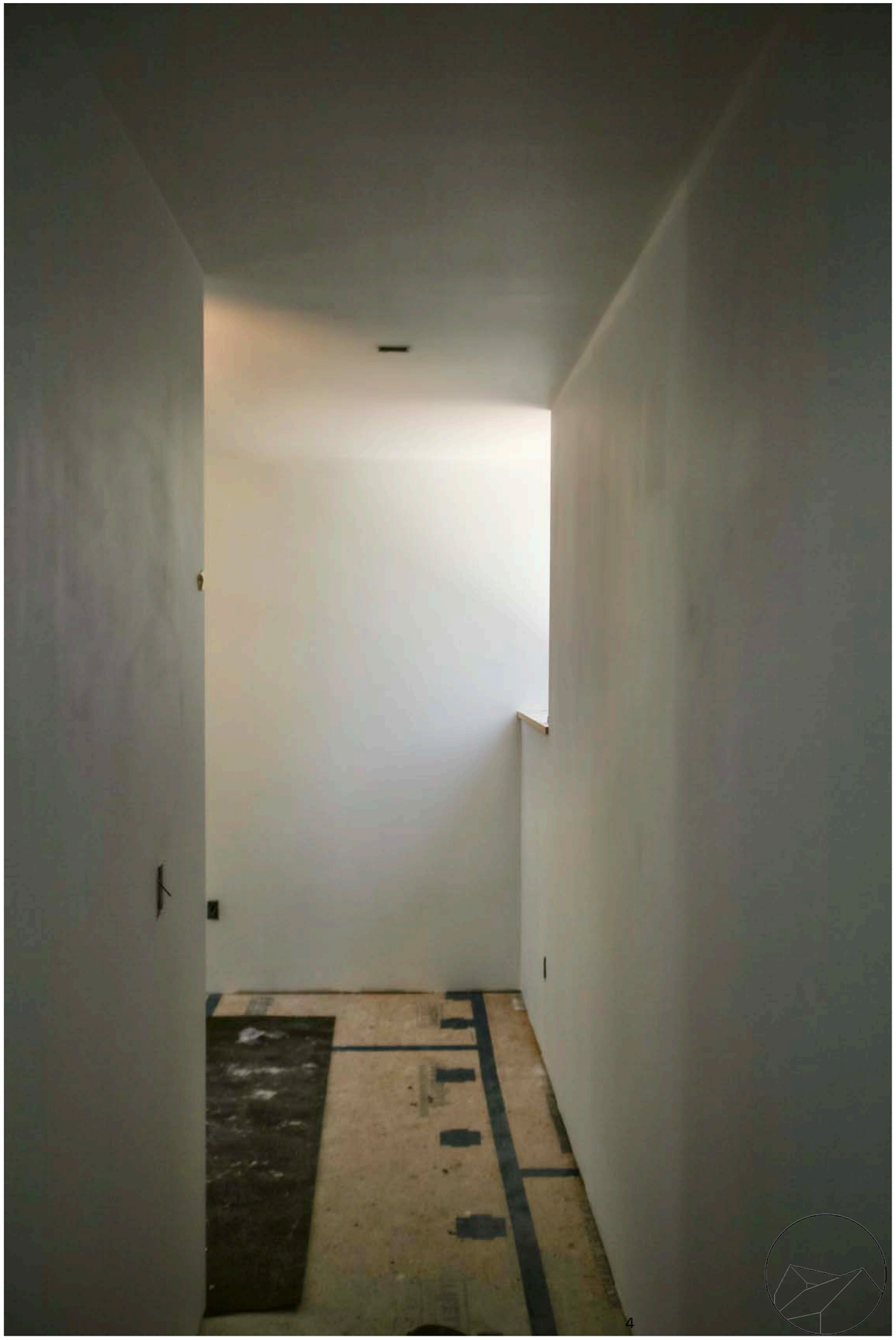


# Croft Comparison



| | Unit of Measure | Croft | Typical “Green” High Performance Build | Code Minimum | CCSF (Foam) High Performance |
|---|---|---|---|---|---|
| Performance | R Value | R60 or R45 | R35 | R25 | R38.5 |
| Cost | $ per square foot - envelope area | $30-34 | $40-70 | $22-28 | $44-52 |
| Production Speed | time to frame 3,000 ft² envelope | ≈3 weeks | | | |
| Install Speed | on-site time to weathertight | ≈3-5 days | 10-18 weeks exposed to weather | 8-12 weeks exposed to weather | 10-18 weeks exposed to weather + offgassing/cure time |
| Quality Control | site delays or weather damage | ≈1 week reschedule for weather window | | | |
| Waste Produced | tonnage & tipping fees | .07 ton/ $18 | 5.75 tons @ $735 | 4 tons @ $511 | 5.75 tons @ $735 + potential hazardous materials tipping fee |
| Subcontractor Efficiency | % savings on running utilities, exterior wall | ≈12% labor hours eliminated | 0% | 0% | 0% |
| Toxicity | high to low (toxins in framing and insulation) | none | medium (borates, polyaramide fibers, flame retardants) | high | horrifying |
| Material Sourcing | extractive vs regenerative | regenerative (organic agricultural resource, high efficiency) | extractive (industrialized, land use change) | extractive (industrial, petroleum derived) | extractive (industrial, petroleum based) |

# Technical Data



# The Panel Families

The following comprise our panelized building system, making a carbon-negative building not only possible, but efficient, simple, and fast.

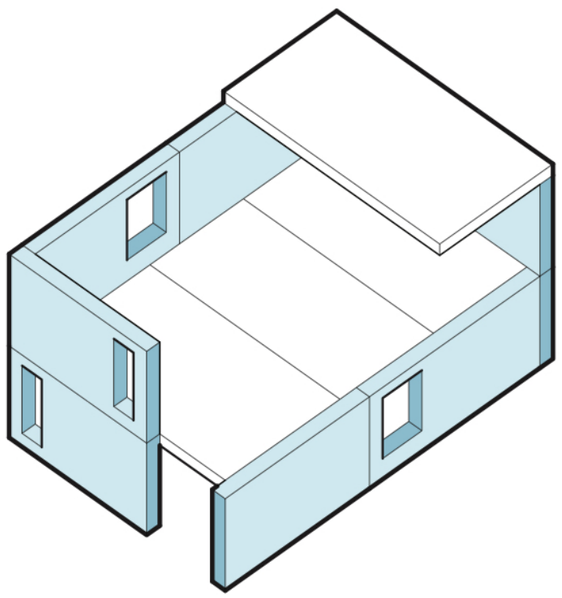
All solid-sawn timber is grown, harvested, and milled in Maine. Our panels feature Croft's region-specific, plant-based insulation blend. Exact mix may vary based on season and crop availability, as nature provides.

A highly thermal and acoustically insulative material, it also captures and stores 60X to 100X the amount of atmospheric C02 it takes to produce.

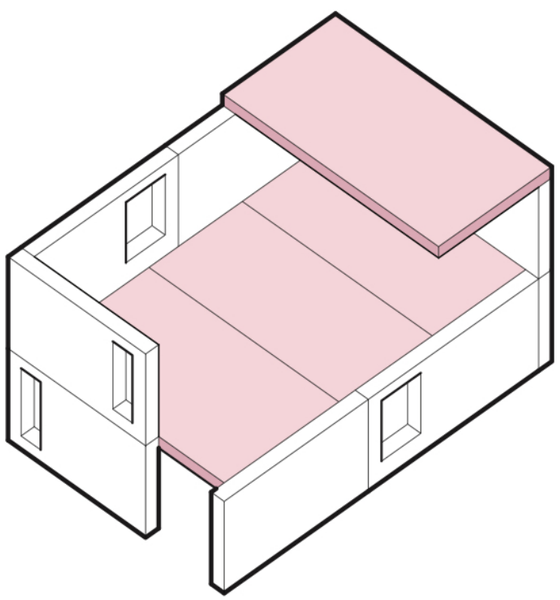
**R-Value** of 3.8/inch
**Class A** Flame and Smoke spread (ASTM E84)
**Vapor Open** hygrothermal behavior
**Naturally Bioaccumulated Silica** content for durability against mold, mildew and decay
**Familiar Structural Assembly** plays nicely with carpenters, GC's, tradespeople, and future renovations/additions
**Free of additives**, solvents, binders or toxic flame retardants

Panels are divided into three categories: Wall (available in R45 and R60 insulation levels), Floor/Ceiling panels, and customized Roof panels.
Please see each panel family's page for more information.

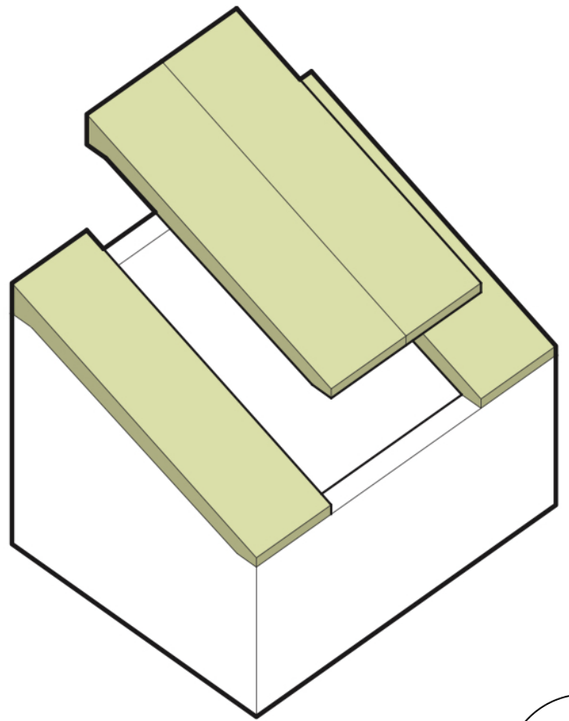
## Walls



## Floor/ Ceiling



## Roof



# The Wall Panel

The wall is the core of our product offering. The structural components of the wall panel are designed to IRC R602 specifications unless otherwise specified or engineered.

For ease of transport, we suggest a maximum panel height of 10’ and recommended maximum panel weight of 3,200 lbs. (Factor ≈15 psf for wall panel weight.)

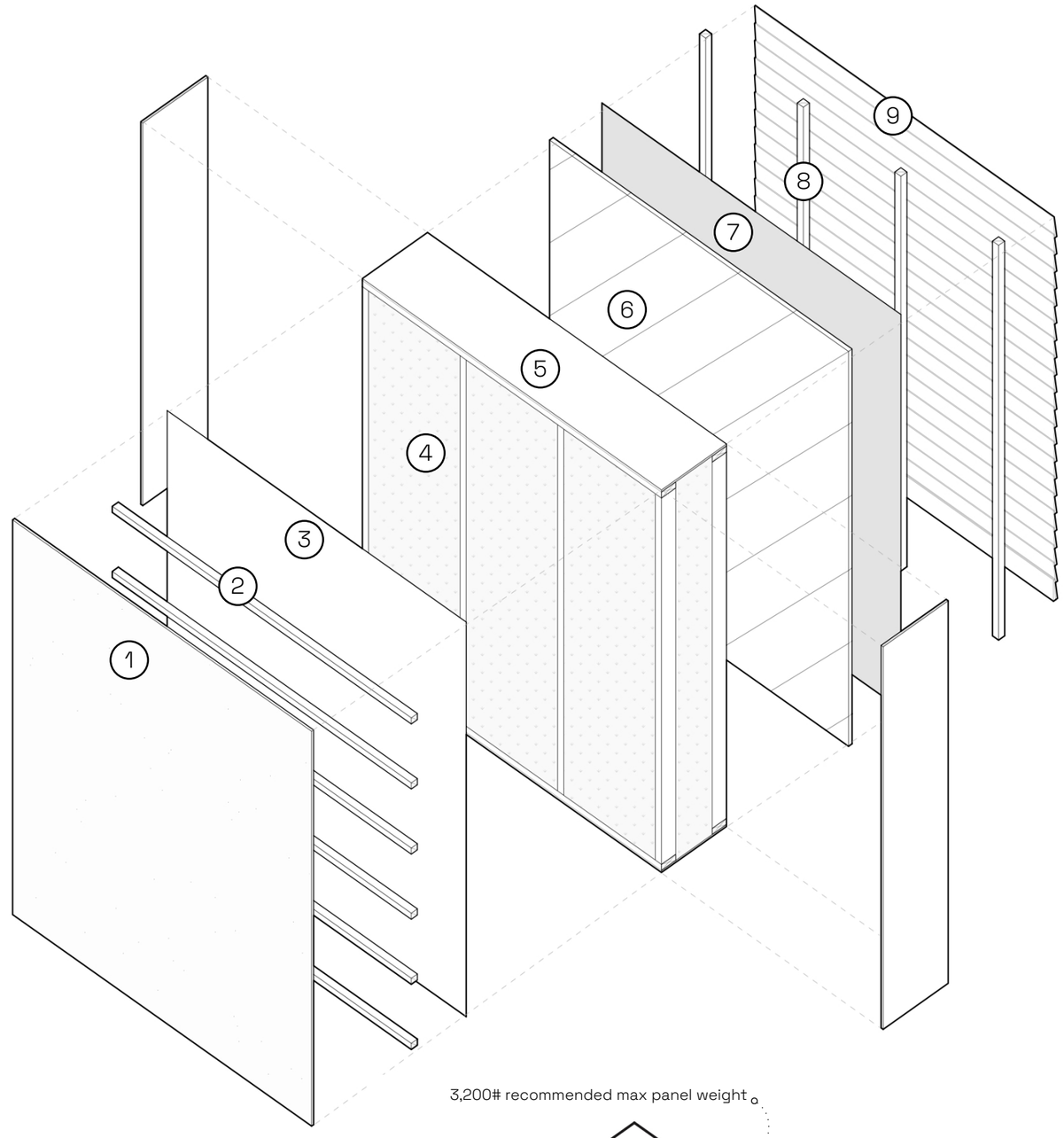
**R-Value** of 45 or 60 depending on spec

**Service chase** speeds install of utilities and services, can be customized for project goals.

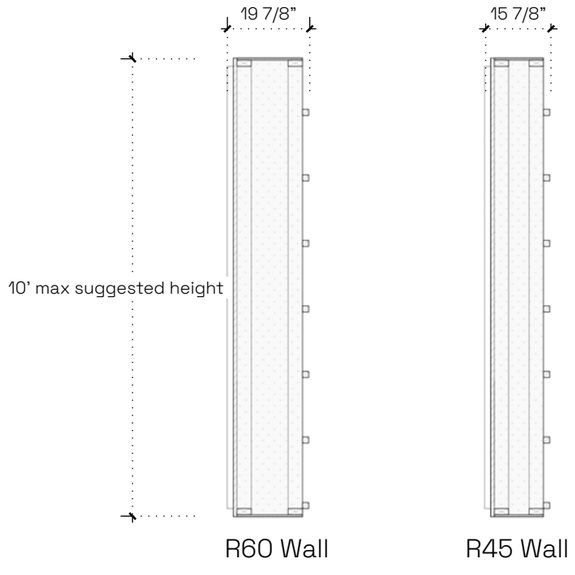
**Precision Tolerances** install quickly and easily. Field-adjustable packouts are available for complex assemblies.

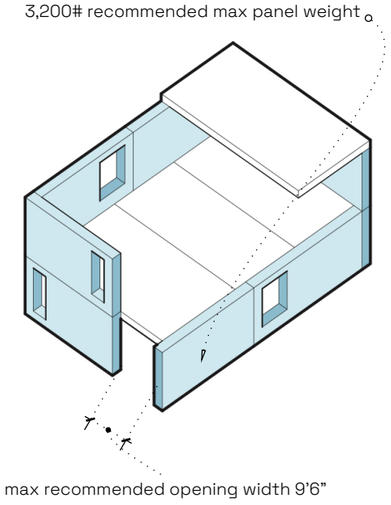
**Futureproof,** durable buildings, with no end-of-life toxicity concerns

**Any typology, any finishes.** An open, agnostic system for your unique project.




| | |
|---|---|
| 1. Interior Finish | (by others) |
| 2. Service Chase | (1.5” X 1.5” typ.) |
| 3. Smart Vapor Retarder/Air Seal | |
| 4. Insulated Double-Stud Wall | (R45 or R60) |
| 5. 1/2” Plywood Surround | |
| 6. Diagonal Board Sheathing | |
| 7. Airtight WRB | |
| 8. Vertical Rainscreen | (1.5” X 1.5” typ.) |
| 9. Exterior Cladding | (by others) |



# Floor/Ceiling

The Floor/Ceiling panel can be utilized in several ways: as a superinsulated floor deck over raised foundation, as a standard platform-frame or ledger-hung floor assembly, and as a superinsulated ceiling for a cold-roof assembly when utilizing roof trusses by others.

Custom panels are available upon request; consult a local design professional for loads and conditions specific to your project!

**Open Web** provides chaseway for bulky ductwork & services

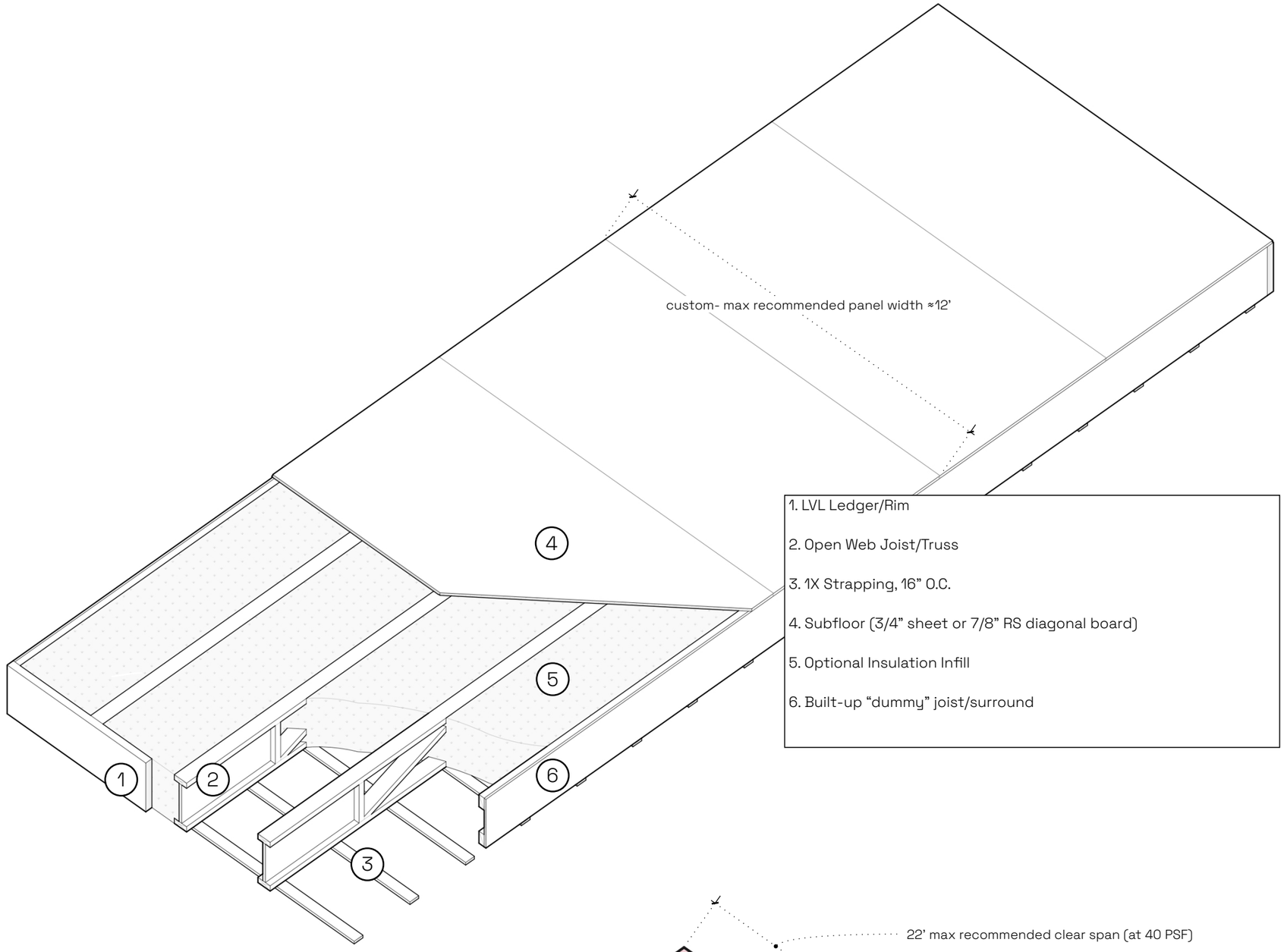
**Continuous 16" O.C. Strapping** for easy install of ceiling finish

**Adaptable -** can be platform framed or ledger hung with superior thermal break

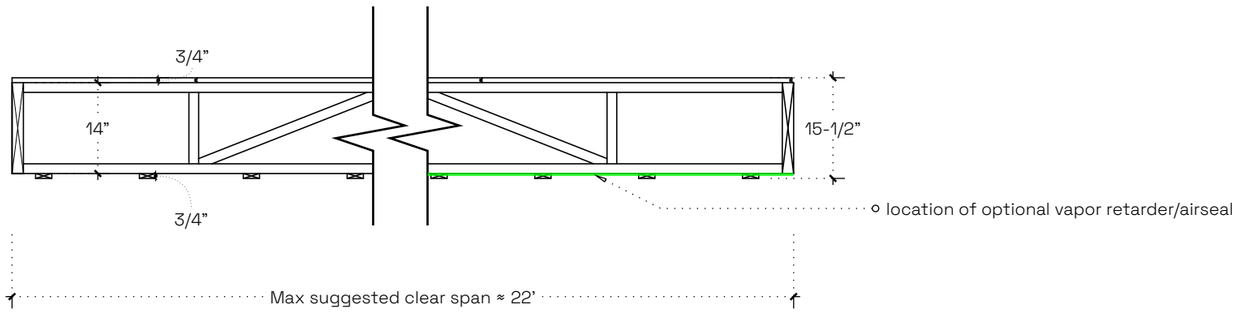
**Clear Spans** up to 25' (with typical 40 PSF floor loads) allow for flexible, open floor plans. However, we recommend designing with a 22' maximum span in mind!

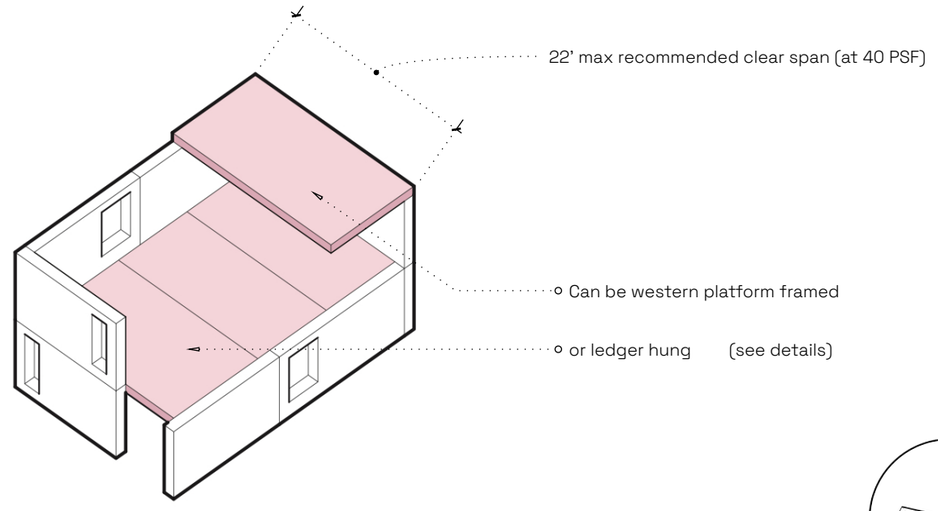
**Available as an R52 Insulated Panel** or empty, uninsulated floor deck

**Custom panels** for **high-load conditions** are available upon request




1. LVL Ledger/Rim
2. Open Web Joist/Truss
3. 1X Strapping, 16" O.C.
4. Subfloor (3/4" sheet or 7/8" RS diagonal board)
5. Optional Insulation Infill
6. Built-up "dummy" joist/surround



# Roof Panels

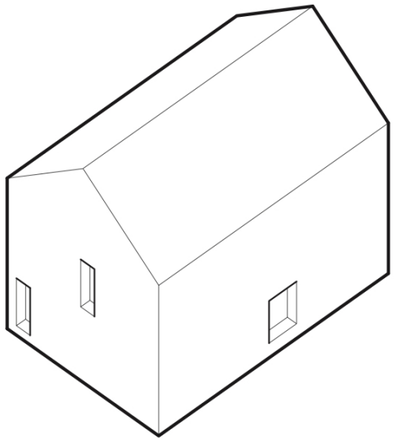
Croft fabricates roof panels of all types.

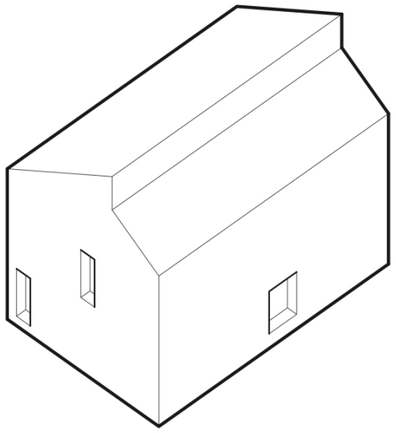
We find that the wide range of roof designs, pitches, snow loads, and aesthetic considerations make for a unique approach on each project, and therefore we work with each design to address the nature of the particular conditions, client, and site.

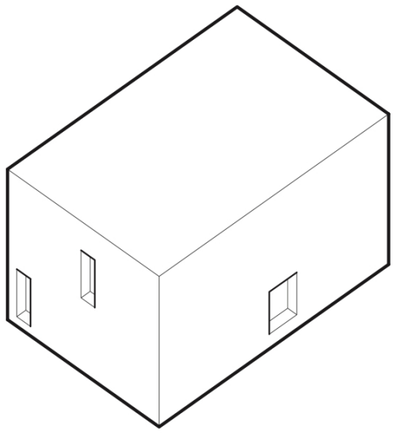
Reach out to our design team for roof panels for your project; we're happy to advise on how to reach roof panel nirvana.

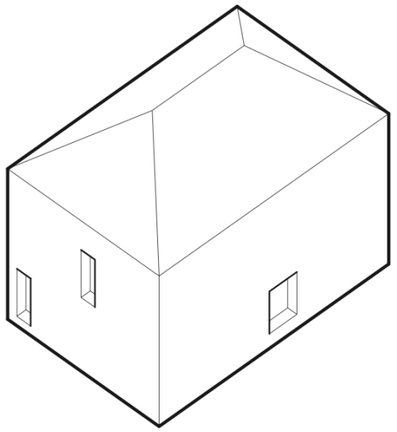
**Take note**: panelized, prefab construction plays nicely with simple volumes. In the case of complex roof assemblies, long, low pitched slopes, or significant cantilevers a site-built and/or truss roof may make for more economical build.

Natural, fibrous insulation materials favor simple roof shapes that encourage passive ventilation air flow through stack effect. We at Croft strongly encourage pragmatic, thoughtful designs that realize long-term durability without resorting to climate-damaging materials or active interventions. Contact us with your project goals; we're happy to help!

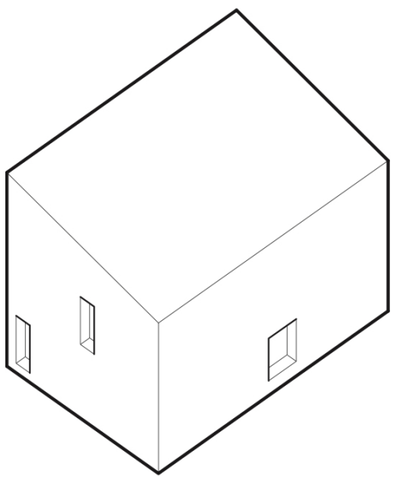


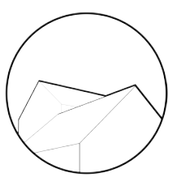










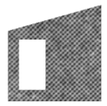


# Working With Croft

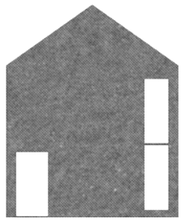
# Typologies

Croft is a component supplier - one delivering panelized building blocks that can be freely adapted and utilized across a wide range of building typologies.

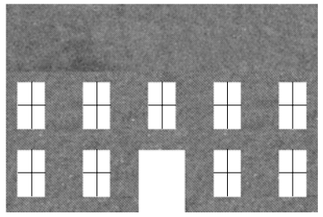
The system is broadly suited to low- to mid-rise typologies with modest clear-spans, though with proper detailing,  designers can utilize our panelized envelopes for Type V and Type IV-HT up to 6 stories in height and 324,000 ft² in area.



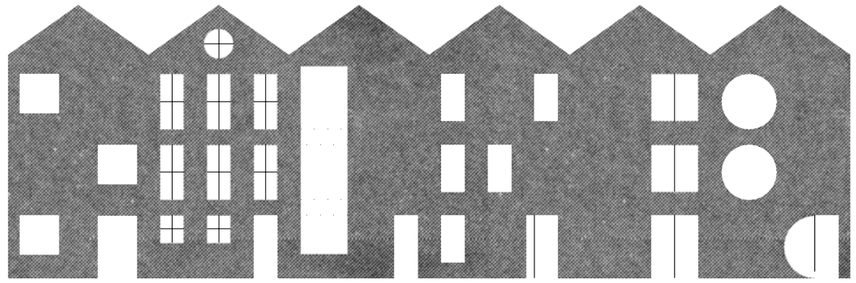
ADU



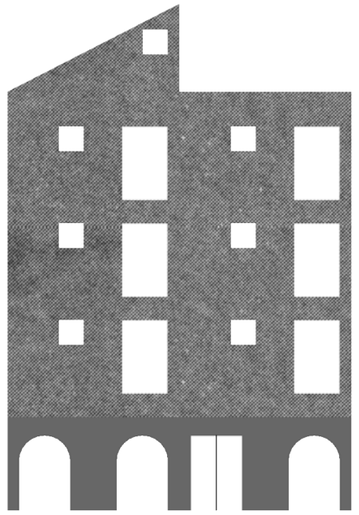
Croft Predesigns



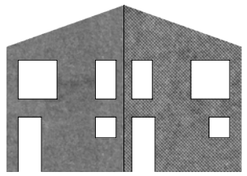
Multi-Generational



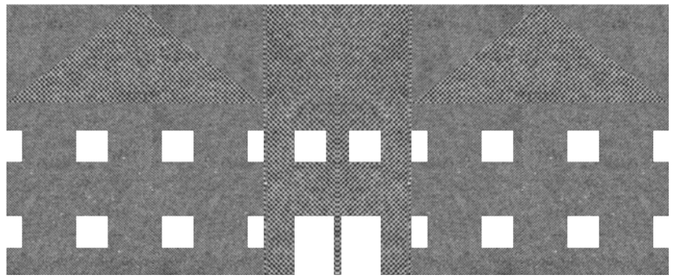
Rowhouse



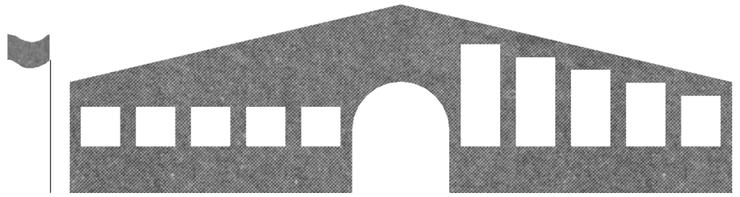
Podium/Mixed Use



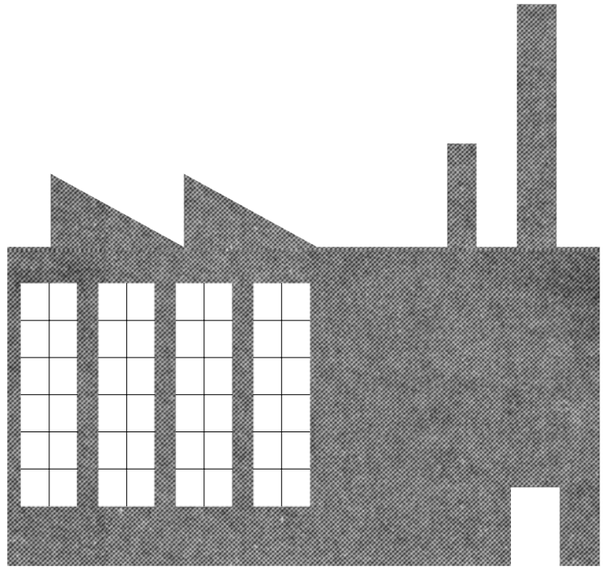
Duplex



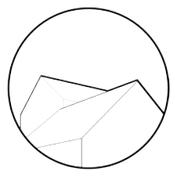
Multiplex



Educational



Industrial



# Planning & Ordering

You may engage with our team at any stage from SD to eleventh-hour design adaptations to panelized prefab. Think of working with us as akin to ordering a window package: in the simplest form of collaboration, we will accept your designs - whether a comprehensive plan set or a napkin sketch- and issue a set of shop drawings for your approval that incorporate our insights into— and efficiencies for— successful offsite construction.

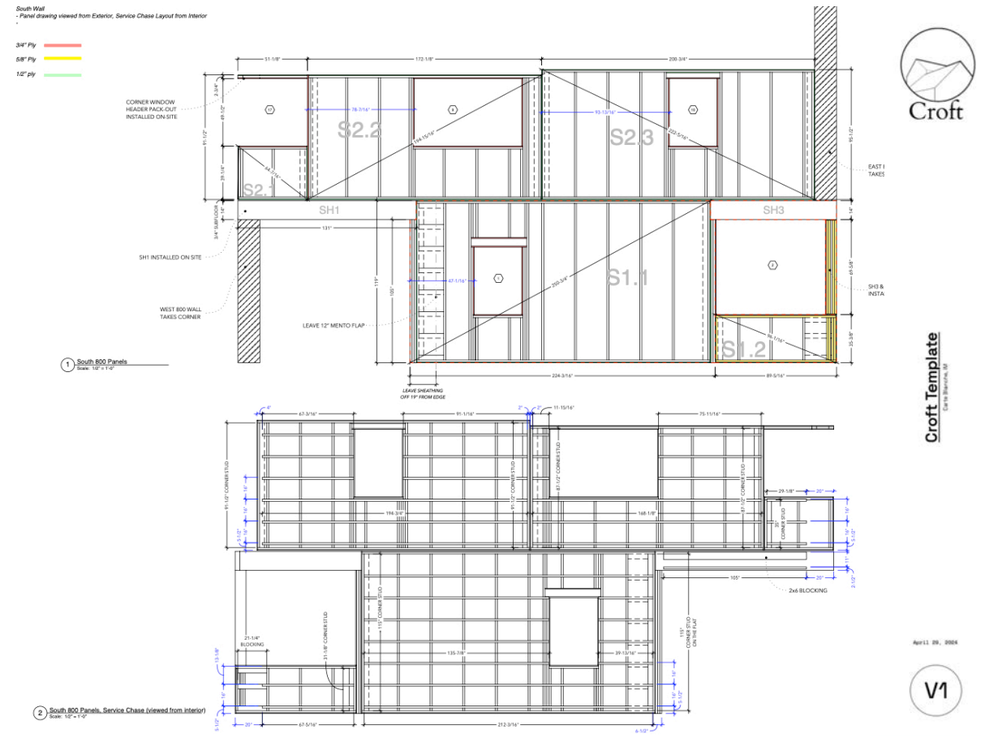
While all projects have different needs, we've found the following protocol useful to set expectations for collaboration.

**Project Overview - 25 min.**
Schedule an **Intro Meeting**. In this 25 minute conversation, we'll cover the basics: project location, program, site, budget, schedule and performance goals. We'll gather information and provide feedback, address any questions, and offer broad-strokes insight about whether your project is suitable for offsite construction.

**Quote - 3-5 days**
If and when design is reasonably established, Croft can issue preliminary pricing for review and incorporation into your budget.

**Design Review & Assist - typ. 4-8 weeks**
This phase will provide a more in-depth opportunity to go over structural requirements, continuity of control layers, detailing for windows/doors and wall penetrations, interaction with and support criteria for interior & exterior finishes, and project-specific criteria for offsite construction. During the design review phase we may schedule a site visit (in-person or virtual), establish MEP pathways that may interact with the building envelope, issue window quotes if requested, and await updated design drawings for conversion to Croft shop drawings.

Depending on complexity, this phase may be as limited as one or two meetings, or several months of revisions between Croft, the design team, and the engineering team. When necessary, Croft may issue documentation for **scope split** and **inventory of responsibilities** with the design and engineering team to help reduce redundancy and keep all teams on track.

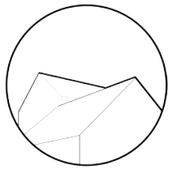



**Shop Drawing First Submittal - typ. 1-2 weeks**
During shop drawing, our team will issue any questions over email (we'll be concise!) to clarify design intent, followed by the submittal of a complete set which allows your team to review, revise, and issue any desired redlines for changes.

**Shop Drawing Resubmit/Final Issue**
After review and revision (typically 2-3 rounds on most projects) we will issue a final shop drawing set for sign-off. This is the point at which our team begins manufacture of your panels, and where the shop drawings become the template for all Croft's work to come.

**Production- typ. ≈2,000 ft² per week**
This is where the magic happens, and your shop drawings are converted from digital model to real-world panelized envelope.

**Transport & Install - typ. 1,000 ft² panel per day**
Croft's system is optimized for rapid on-site assembly, getting your building weathertight in a fraction of the time of site built construction. Whether your site carpenters, a selected partner GC, or Croft oversees panel assembly, the results are fast, clean, and intentionally simple.



# Scope Split

As an envelope supplier, Croft occupies a unique position in collaboration with the designer and GC; on projects with sufficient complexity, we will review project goals with your team, and issue Scope Split documentation to clarify where each party's work begins and ends; this streamlines the handoff from Croft to the trades and finish carpentry teams and reduces costly RFI's.

Scope Split

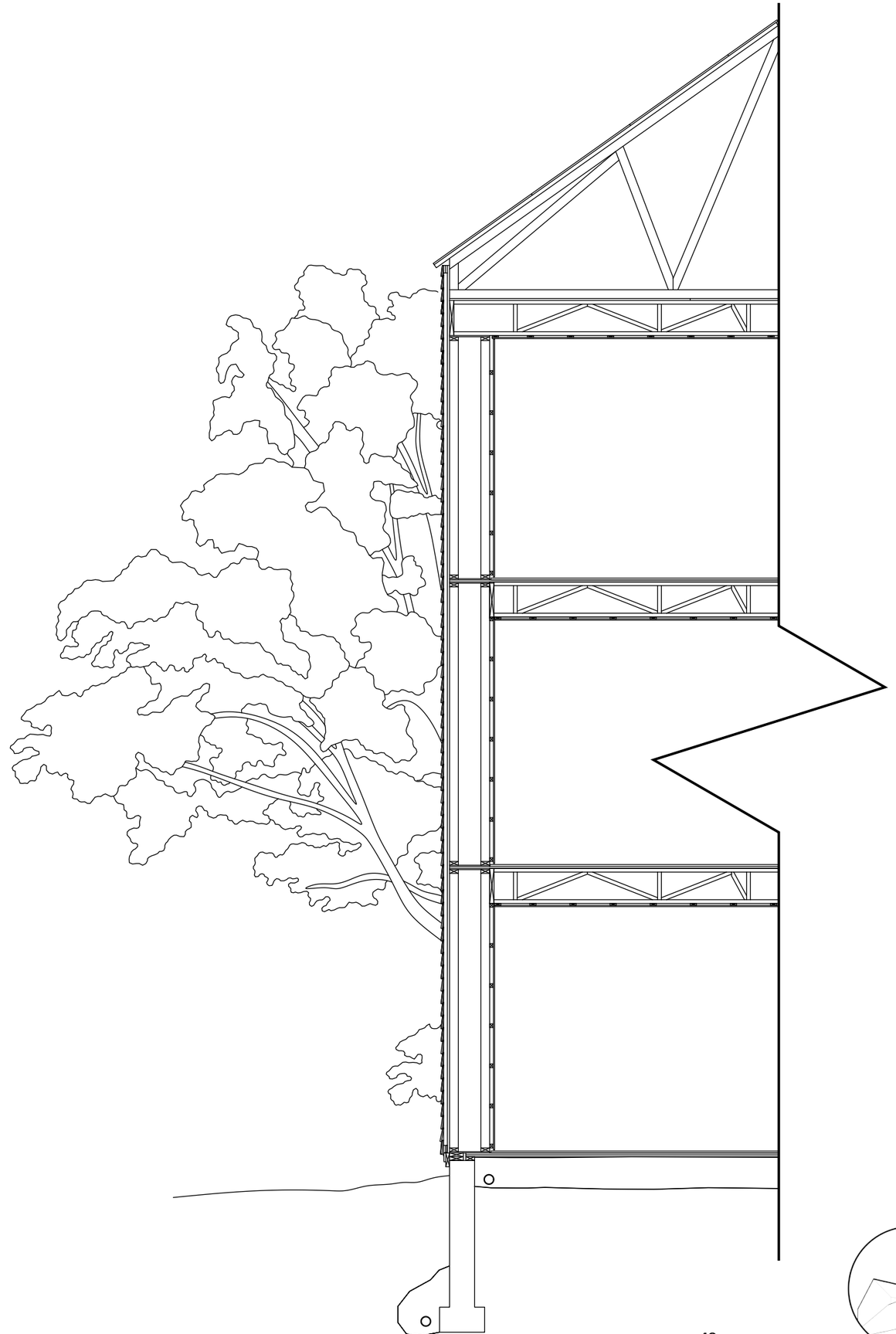
Project Name Carte Blanche Client

Project # 2551 Date Friday, April 26, 2024

Description: This scope matrix is intended to help clarify the scope division between the various parties. Scope may be negotiated on a per-project basis; this is intended to clarify typical roles when Croft acts solely as component/panel supplier.

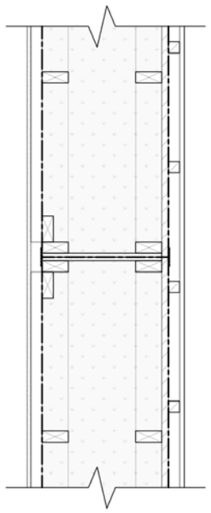
| | Croft | General Contractor | Others |
|---|---|---|---|
| **Site Work** | | | - Rough grading<br>- Tree clearing<br>- Driveway grading<br>- Excavation<br>- Septic<br>- Well<br>- Backfilling |
| **Foundations** | | - Footings & stem walls<br>- Concrete-Free Slab<br>- Damp-proofing | |
| **Deck & Exterior Stairs** | | - Footings<br>- Posts<br>- Joists<br>- Decking<br>- Railings<br>- Screened Porch: Framing, Screens, Doors, Roofing | |
| **Interior Walls & Doors** | -Framing | - Finishes & Paint<br>- Base & Trim<br>- Interior Doors | |
| **Interior Stairs** | | - Framing<br>- Finishes<br>- Railings | |
| **Millwork** | | - Cabinetry Install<br>- Countertop Procurement & Install<br>- Mezzanine Nook Millwork | - Kitchen & Bathroom Cabinetry: Owner-Procured |
| **MEP** | - Provide Penetrations specified for Openings Larger Than 4" in Diameter | - Heat Pumps<br>- ERV<br>- Plumbing: Hot Water, Domestic Tie-In, Runs<br>- Electrical Scope: Lighting, Outlets<br>- Kitchen, Bath & Laundry Appliance & Fixture Install | - Kitchen, Bath & Laundry Appliance and Fixture Procurement |

| | Croft | General Contractor | Others |
|---|---|---|---|
| **Panelized Exterior Wall** | - Exterior Strapping (rainscreen)<br>- Weather Resistant Barrier<br>- Sheathing<br>- Double-stud wall with natural insulation<br>- Vapor barrier<br>- Interior Furring | - Exterior Siding<br>- Interior Finishes<br>- Wall Trim<br>- Non-structural blocking | |
| **Panelized Roof** | - Underlayment<br>- Sheathing<br>- Exterior Strapping<br>- Weather Resistant Barrier<br>- Rafter assemblies<br>- insulation<br>- Smart Vapor Barrier<br>- Interior 1X Furring | - Roof trim<br>- Roofing<br>- Interior Finishes | |
| **First Floor (if pier or other elevated foundation)** | - Subfloor<br>- Vapor Barrier<br>- Joists<br>- Sheathing<br>- Weather Resistant Barrier | - Finish Flooring | |
| **Second Floor (if applicable)** | - Subfloor<br>- Joists | - Finish Flooring<br>- Interior Strapping (for ceiling finish)<br>- Finish Ceiling | |
| **Openings** | - Window Package<br>- Exterior Door Package<br>- Air & weather Sealing at Openings | - Drywall surrounds (on interior)<br>- Interior sill (at doors)<br>- Exterior Trim<br>- Sill Pans (if euro-style windows) | |

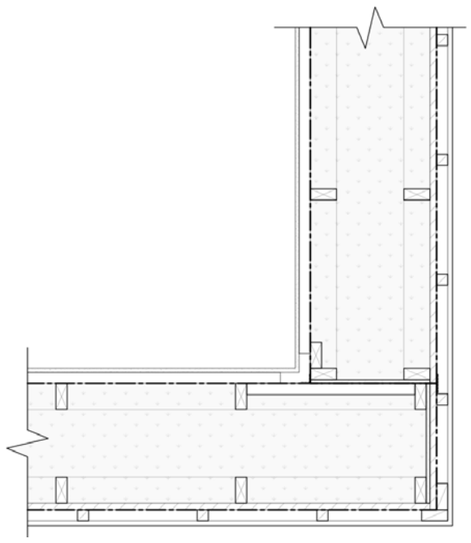


# Appendix

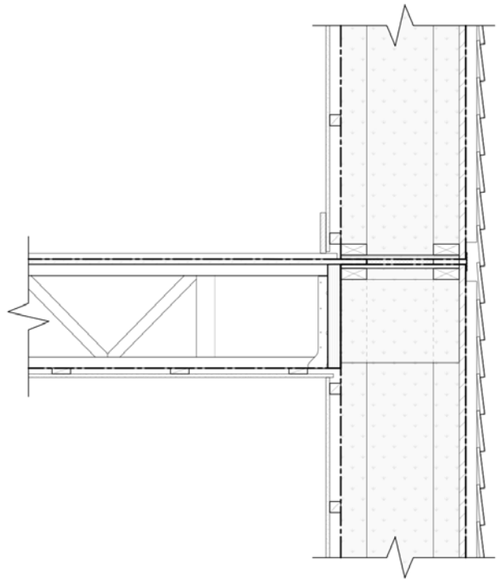
# Junction Details



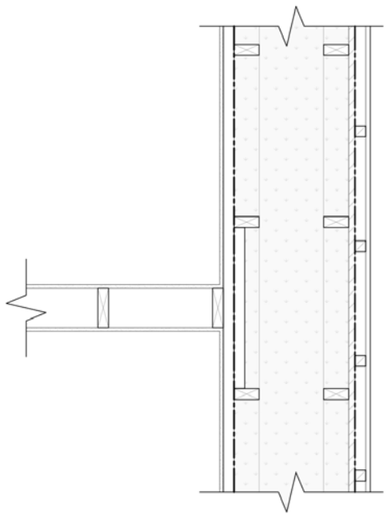
Wall to Wall - Coplanar - Plan



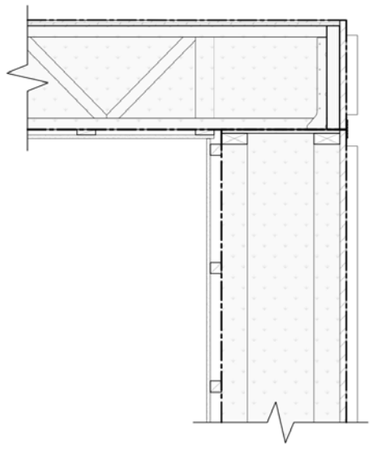
Wall to Wall - Corner - Plan



Floor to Wall - Section



Wall to Wall - Interior Wall Juncture



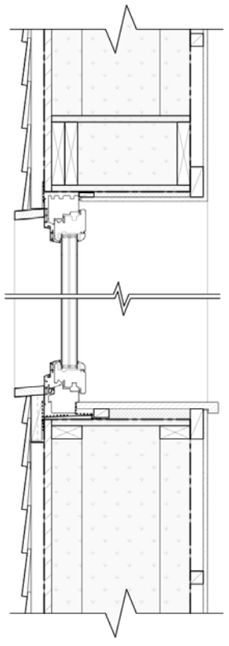
Wall to Ceiling - Section

~Typical details are for reference only~
Please consult local design professional for engineering and requirements specific to your project.

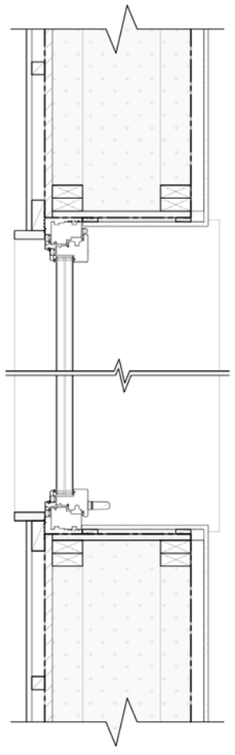
# Window - Details

While there are myriad approaches to trimming windows over a rainscreened siding, we prefer a simple “picture frame” which provides a minimal presentation, radically simple fabrication and install, and easy future replacement.

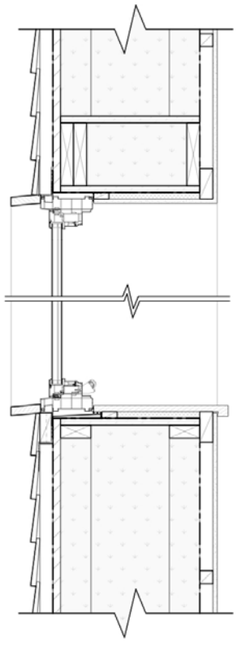
Windows can be centered within the wall or set to the sheathing plane. We prefer the latter, opting to trade the marginal performance gains of inset windows for the simplicity of drainage plane, ease & speed of installation, and deep interior sills offered by windows set to the exterior.



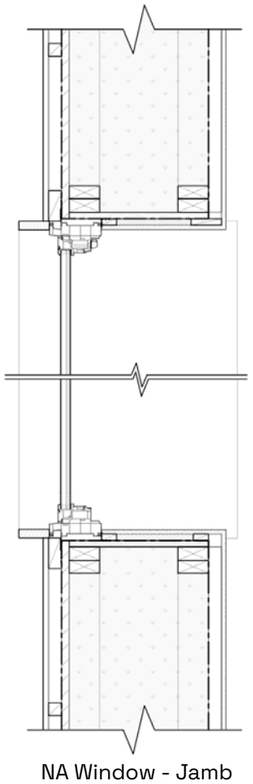
Euro Window - Head & Sill



Euro Window - Jamb



NA Window - Head & Sill



NA Window - Jamb

~Typical details are for reference only~
Please consult local design professional for engineering and requirements specific to your project.

# Additional Considerations

**PRICING**

**What is the per SF cost of walls / roof / floor?** As with most aspects of the construction industry, our pricing can fluctuate with material supply and project complexity! We typically price projects on a per-square foot basis, by measuring the external surface area of the building we'll be supplying. Pricing for our predesign buildings is usually in the $30-$35/sq ft of envelope area being supplied.

**DESIGN**

**Does Croft offer design services?** Croft offers design services for select projects with aspirational climate & environmental goals. Our designs incorporate a holistic systems approach that consider each facet of the project and we intentionally limit the number of in-house design projects per calendar year. If you believe yours is a perfect fit, please say so!

**What foundations can I use?** Our system is able to accommodate most conventional (and some very unconventional) foundation systems; details for exceptionally low-carbon foundation systems that may be suited to your build can be furnished upon request.

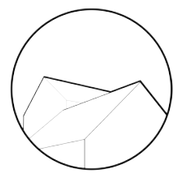
**Can I integrate non-structural panels with a timber frame/mass timber/curtain wall approach?** You sure can.

**SYSTEMS**

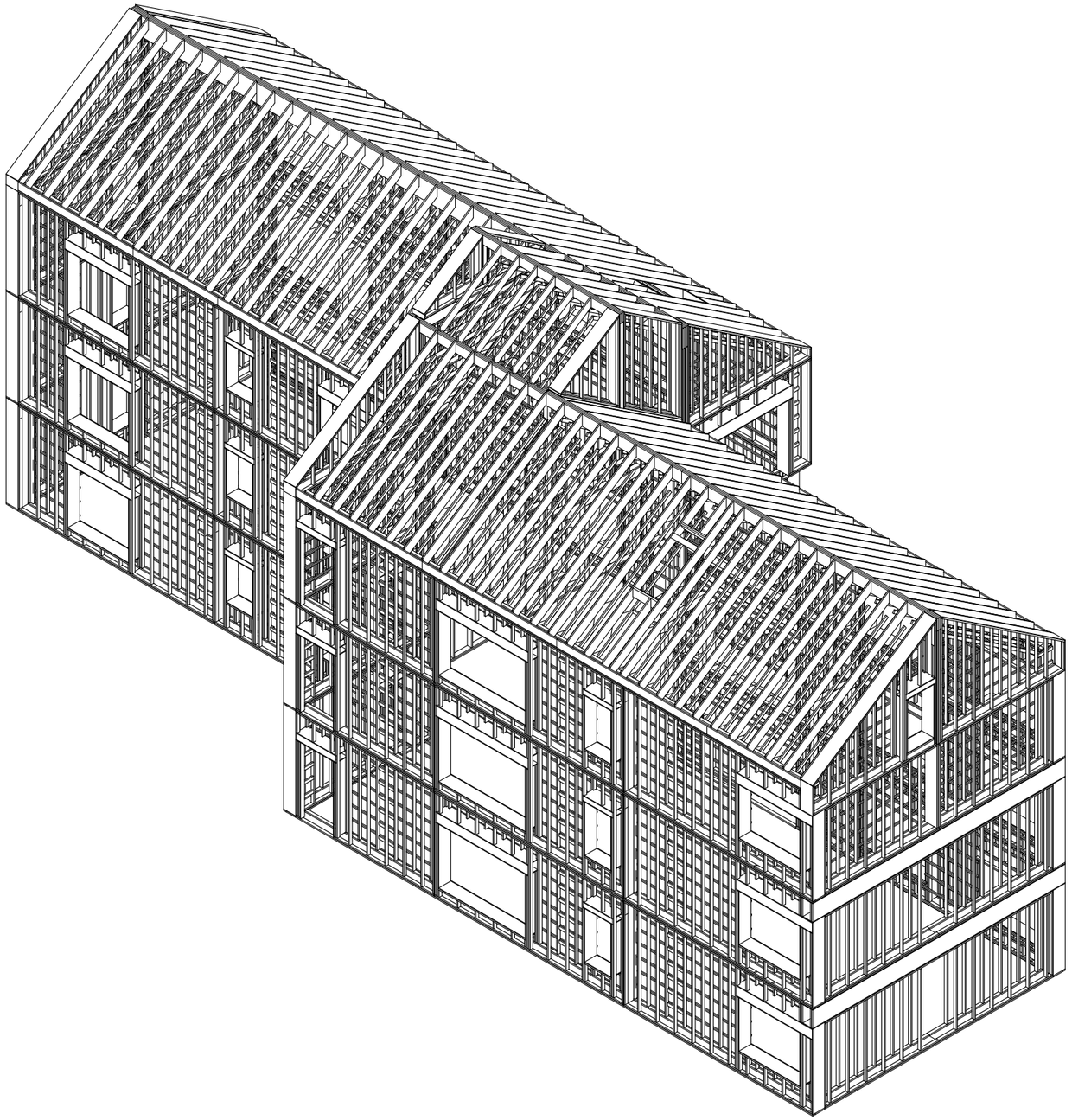
**Can I specify a different depth service chase?** Of course! Structural specifications and requirements of utilities may also require adjustments to the standard panels. We can help!

**Is ventilation necessary on these airtight buildings?** Absolutely. Makeup air and ventilation should be provided in all new construction; we can provide gasketed chaseways for all duct penetrations if the MEP plan is in place at time of panel fabrication.

**Is it possible to include a woodstove?** Yes! A woodstove in an airtight build requires special considerations. We do wood-burning stoves frequently, and have contacts with ultra-high-efficiency stove makers that produce little more than water vapor.



# Disclaimer



**Disclaimer:**

Croft is a panel manufacturer; not a structural engineering or licensed design firm.

It is the responsibility of the designer seeking Croft's services to review structural & connection details with structural engineer or design professional to assess the specific design requirements of their work within the specific jurisdiction of the project.  Any and all details, junctures, connections, or loading schematics indicated in these documents are for diagrammatic and illustrative purposes only and should not be utilized or employed on your projects without proper and thorough review and approval by the AHJ for your project.

Any warranty or guarantee implied extends without addition to only the weathertightness, durability of insulation,  and fit & finish of the work completed by Croft. We stand behind our panels as the most cohesive, efficient, durable solution for climate-friendly construction, but responsibility for compliance with local jurisdictions, municipalities, engineering requirements, and code restrictions lies solely with the design professional or assigned engineer.

Take care of it.
Love, Croft.