

HumanKind
Homes

Construction Process

The following is a high-level overview of how HumanKind Homes provides end-to-end building services. If there are any questions, reach out to schedule a consultation

HumanKind Homes

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With digital twins and Building Information Modeling a custom set of bricks is determined for each home design.

Digital Design & Automated Pre-manufacturing

Custom 'Kit of Bricks'

HumanKind Homes will design the home or work with a design team to come up with a digital twin based on a product tailored to the client needs. Each home design results in a unique 'Kit of Bricks' and Bill-of-Materials which can be pre-manufactured to reduce on-site build time.

Pre-manufacturing

With a Bill-of-Materials in hand, the pre-cast bricks, beams, and panels are manufactured. At the same time, mechanical system sub-assemblies are created to provide a quick-connect install on-site.

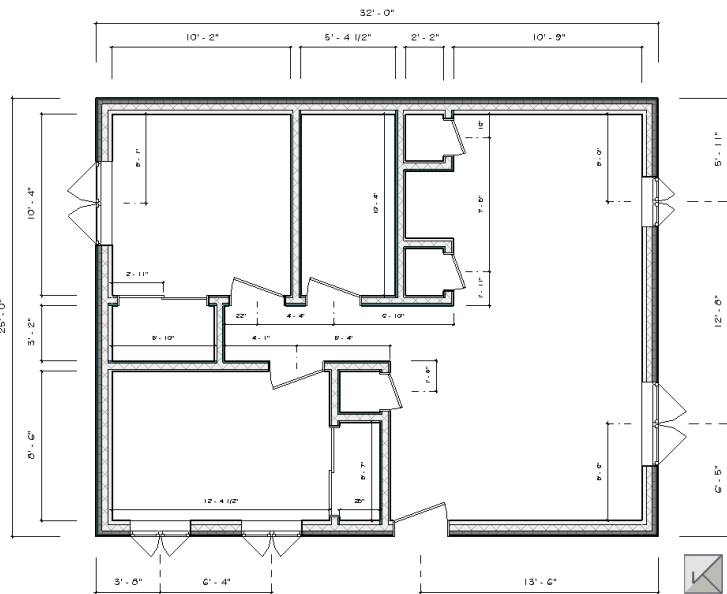


Figure 2 - 800 sq. ft. floor plan

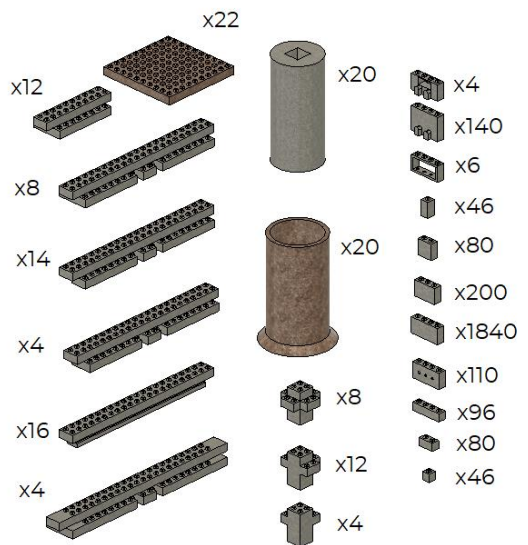


Figure 1 - 'Kit of Bricks' required to build 800 sq. ft. unit

Site Preparation & Delivery

HumanKind Homes has designed a custom construction system tailored to each site for optimal seismic protection, soil condition, and minimal environmental impact.

With an approved permit, site preparation begins. Due to the human-scale design of the construction system, large equipment such as full-size diggers and cranes are not necessary.

With a pier-pad style foundation, grading and clearing is faster and easier to accomplish, with the majority of the work focused on critical areas.

Due to the flexibility of the home designs and modularity of the brick system, homes and development projects can be created with nature in mind. This results in the ability to keep trees and other natural elements on-site if desired with home designed to fit around them and small build teams capable of performing work without disturbance.

What arrives on-site is a kit of bricks, beams, panels, and home components ready to be assembled. Digital assembly instructions optimized for that build are provided to allow the Construction Technicians a fast and easy process to follow, every time.

Foundation

HumanKind Homes includes pre-engineered foundation systems as part of the product.

During site inspection, soil and seismic conditions are determined providing insight into the requirements of that particular build. If necessary, soil treatment can be performed with a geopolymer concrete additive to provide a secure and durable foundation – the bedrock of any quality build.

With a prepared site, the foundation and sub-floor components begin. Using a bell-pier style foundation, each foundation is tailored to the specific site, ensuring that rigorous safety standards are met while reducing material waste and excess emissions.

Pier-pad holes are drilled, and pre-cast foundation forms are installed. These forms are filled with poured geopolymer concrete. During the curing process, foundation feet are installed in the setting concrete. This allows for a level build to take place without requiring a perfectly graded site, reducing build time and site impact.



Figure 3 - Pier pads installed w/ brick pallets waiting

Framing

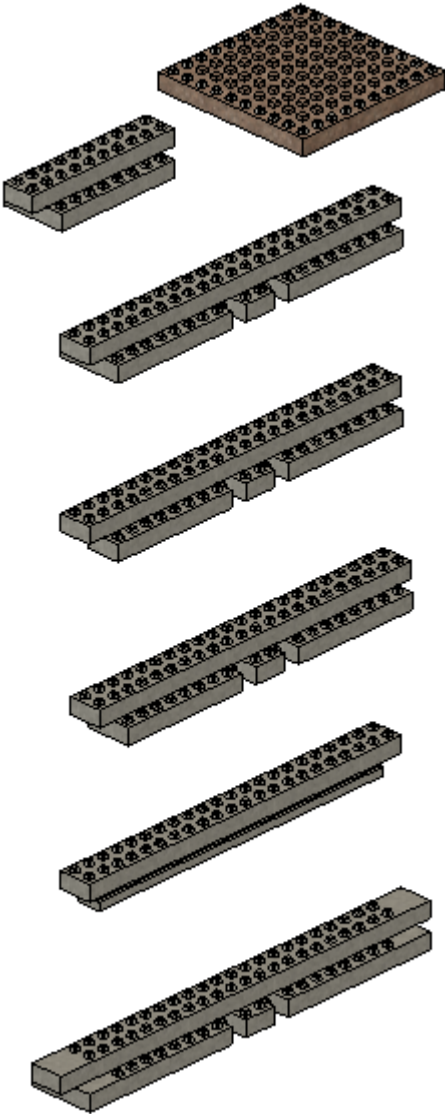
HumanKind Homes uses interlocking bricks, beams, and panels to build the physical structure.

With leveled foundation feet to provide a balanced starting point, floor beams and panels can be installed. These are easily laid down by Construction Technicians without the need for large equipment and provide a solid surface to build upon.

This begins with perimeter beams which include custom built-in forms to provide a bounding box for underfloor insulation to be added. This insulation consists of poured foaming geopolymer concrete providing tailored, high efficiency underfloor insulation. Based on the site requirements, a crawl space can be maintained or filled completely.



Figure 4 - Floor joists and panels stacked on top of foundation pier pads



An underfloor air & vapor barrier is installed before the remaining floor beams are installed, ensuring thermal and moisture protection of every structural element of the building.

Floor panels are placed across the beams and radiant floor heating coils are installed before securing the entire floor assembly in place with a following geopolymer concrete pour. This provides a durable and solid surface for the duration of the construction process until the final flooring is installed at the end.

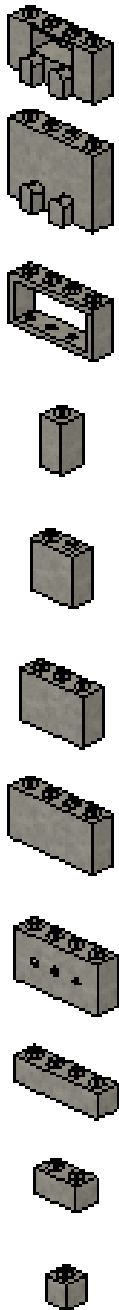
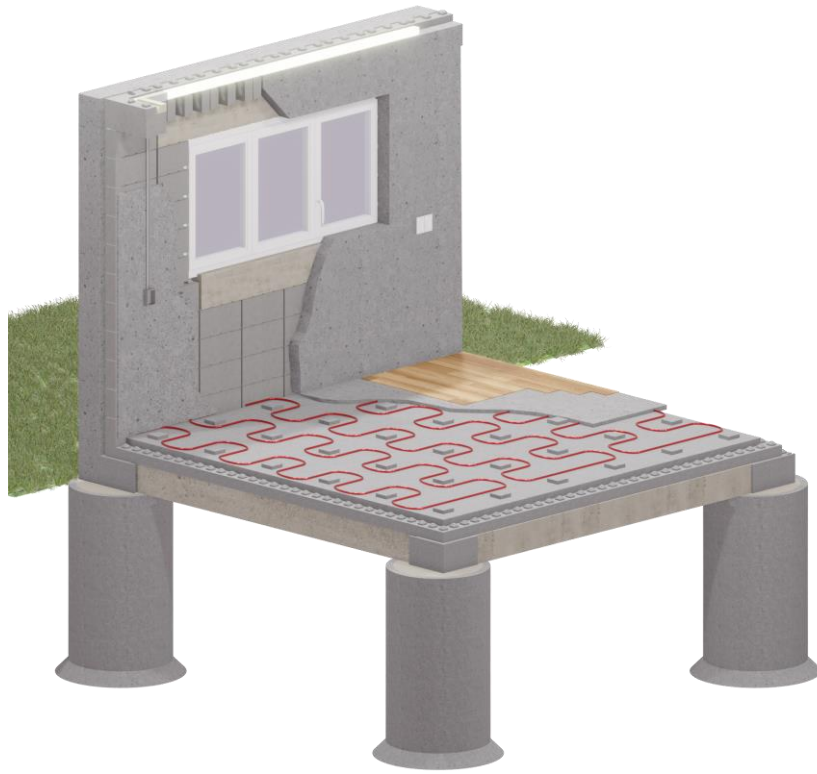


Figure 5 - structural cut-through view

With the floor assembled, wall framing can begin. “Vanilla Bricks” are stacked without mortar, relying on interlocking features to provide inter-brick load carrying. The provided digital instructions dictate where specialty bricks such as mechanical system mounts, ventilation through-holes, and window and door-frame elements are placed.



Figure 7 - Bricks beginning to be stacked for walls

As bricks are stacked, a fiber-reinforced geopolymer concrete is sprayed on one side every few brick layers. This ensures walls that are placed, stay placed and allows the build team to safely interact with the standing brick walls.



Figure 6 - First samples of precast bricks

Window and door headers are installed, followed by a row of crown bricks, and finally roof truss beams and panels. With the structure fully roughed-in a second spray application of fiber-reinforced geopolymer concrete is applied to the other side to create a seamless bond and full structural reinforcement.



Figure 8 - Window and door headers are placed

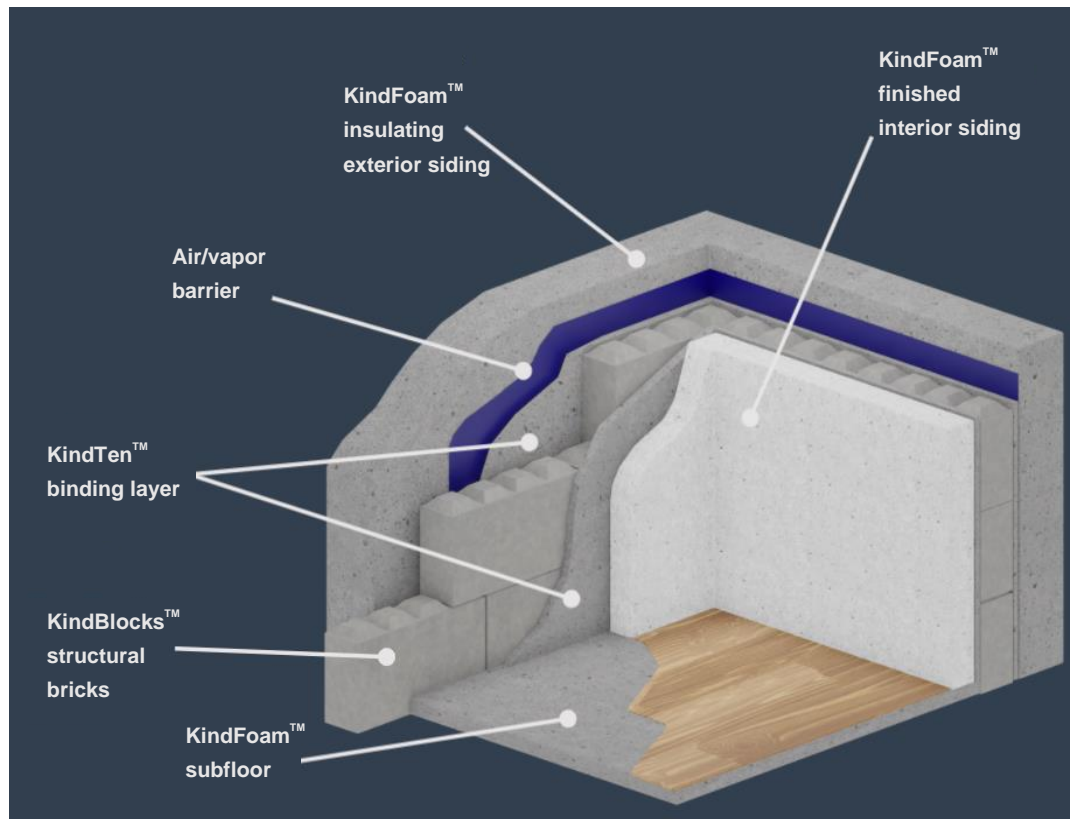


Figure 9 - Weathertight building. Roof, windows, doors, and building wrap all installed

Lastly, the building is made weathertight by the installation of windows and doors, followed by a spray-applied air & vapor barrier layer to ensure a seamless, puncture-free environmental enclosure.



Figure 10 - exterior foaming geopolymer concrete is installed as siding



Mechanical Rough-in

HumanKind Homes creates prefabricated sub-assemblies of mechanical systems that are designed to interface with custom mounting bricks. This provides fast and easy on-site assembly, ready for inspection.

Using a novel mechanical system design, conduit, pipe, junctions, and connections can be pre-assembled in the manufacturing facility ahead of time. With the framing complete, the mechanical systems only need to be attached to precast quick-connect mounts allowing licensed trades to spend less time on-site performing rote work.

Embedded LED lights are connected to the top conduit to provide easy access while creating pleasant general lighting as well as allow for full RGB color control. These, along with the rest of the home are controlled by smart home controls.

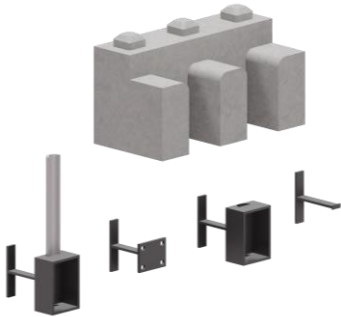




Figure 11 - Electrical conduit being placed

Insulation & Siding

HumanKind Homes uses a proprietary foaming geopolymer concrete to provide insulation, siding, and a drywall replacement.

Following mechanical rough-in, a foaming geopolymer concrete layer is spray-applied on the interior surface. This replaces drywall and protects the mechanical systems. If maintenance, repairs, or modifications are required, the structural system can be left in-tact and only the insulating geopolymer concrete foam needs to be removed to uncover the mechanical systems.

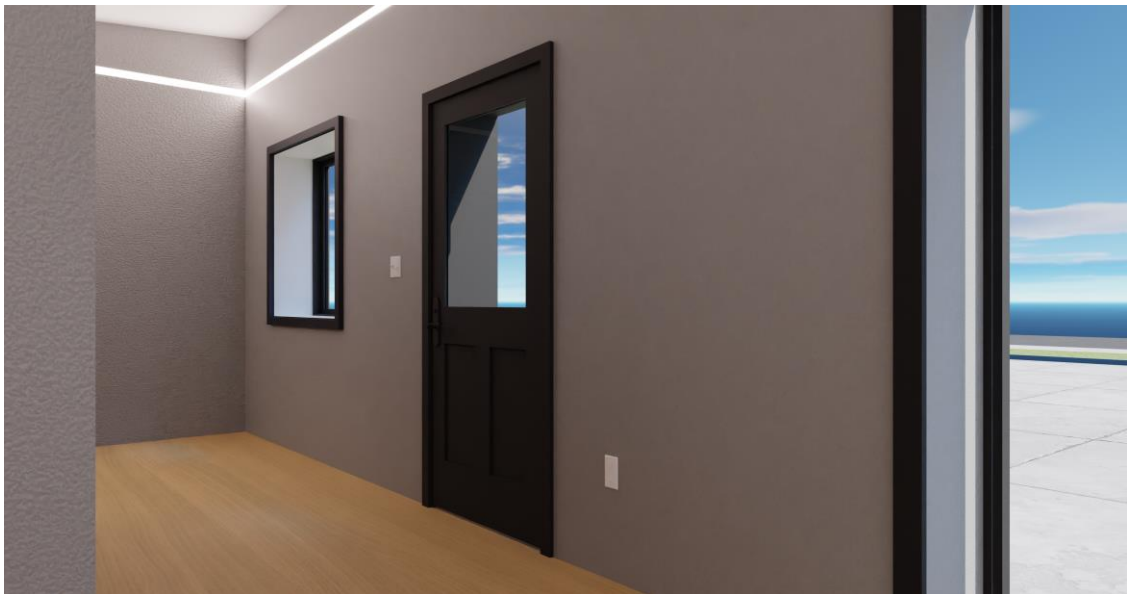


Figure 12 - Sealed mechanical systems for a finished interior surface

This geopolymer concrete foam has an R-value of up to 6/in and can be pigmented, painted, patterned, or left as-in, providing a wide variety of design options.

On the exterior side, a thicker layer of geopolymer concrete foam is applied, resulting in an insulation value tailored to the job to provide Passive House levels. Similar to the interior, the exterior surface can

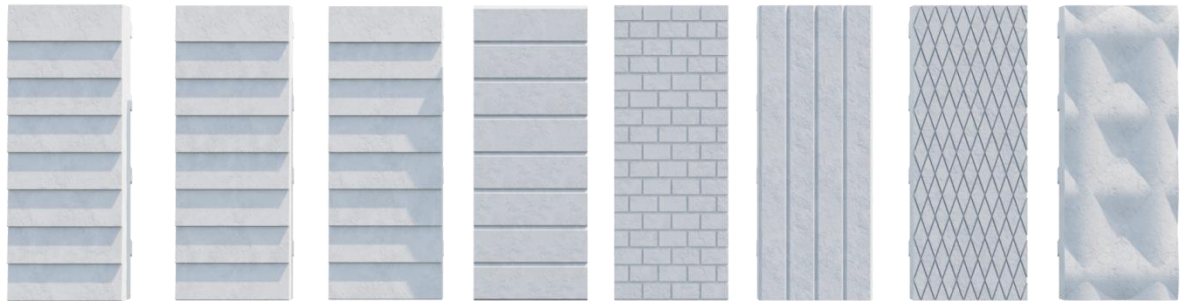


Figure 13 - Siding pattern options

be colored or textured to provide a unique looking home or to fit in seamlessly with surrounding buildings.



Figure 14 - Siding options in-situ

Fixtures & Finishes

HumanKind Homes can provide complete move-in ready homes or perform the structural construction before handing off the project to the client or builder.

With a finished weathertight structure built, all that is left is fixtures, finishes, and appliances. These can be provided and installed by HumanKind Homes, or the project can be turned over to the client or a project partner to finish.

HumanKind Homes has designed their system to work optimally with all-electric, solar ready, and Energy Star appliances providing a high-quality user experience with minimal environmental impact.

Once finished, a final inspection is performed to ensure quality control before providing a tour to the occupants to point out benefits and features unique to living in a HumanKind Homes-built home.

All that's left is to enjoy living in a quality, low-impact home!



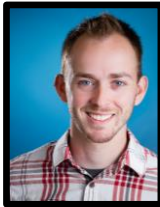
Figure 15 - 800 sq. ft. unit



Figure 16 - Finalized and move-in ready

Contact Information

For questions or to book a consultation, please reach out.



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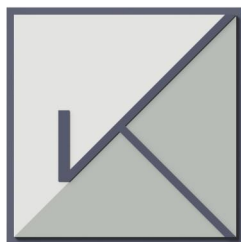
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