

PHNX  
DEVELOPMENT

# Forever *homes* for Everyone

January 2025

## EXPLAINER:

# The truth about Noncombustible Construction

With communities looking to rebuild from the devastating fires that have ravaged their neighborhoods, there is a lot of misinformation that is circulating, some from predatory builders wanting to capitalize on the disaster. Further, many experts will say that the technology does not yet exist to build noncombustible homes in a cost-effective and timely way. This is simply not true. Below, we lay out some of the facts.

### **Myth #1:** *The technology does not yet exist to feasibly build noncombustible homes*

**Fact #1: Noncombustible Construction is defined by building code, and PHNX Development has the design and know-how to quickly and easily build them**

**1) "Noncombustible"**, as it pertains to construction, has a code-specific definition under California Building Code 2022, Section 202, "Definitions:"

*NONCOMBUSTIBLE. [SFM] Noncombustible as applied to building construction material means a material which, in the form in which it is used, is either one of the following:*

1. *Material of which no part will ignite and burn when subjected to fire. Any material passing ASTM E136 shall be considered noncombustible.*
2. *Material having a structural base of noncombustible material as defined in Item 1 above, with a surfacing material not over 1/8 inch (3.2 mm) thick which has a flame-spread index of 50 or less.*

***In Short: "Noncombustible", as applied to building construction material means [...] a material of which no part will ignite and burn when subjected to fire.***

**2) Construction types:** There are five construction type categories in the building code, ranging from noncombustible (Type I) to combustible (Type V). The types are used to determine what the basic structure of a building needs to be, depending on the use, to ensure adequate life safety of the building's occupants. Buildings that have very high occupancy like movie theaters or sports arenas, buildings that

exceed a certain height, or buildings that house hazardous or flammable materials are required to be noncombustible. Residential buildings, even multi-family residential under seven stories, are not required to be noncombustible. Therefore, nearly all housing in the US is Type V because it's the easiest and least expensive construction type – at least, until now.

**3)** If wood is used in any part of the structure, especially the roof or floors, it will not satisfy the requirements of Type I. The most challenging barrier to removing wood from the structure in residential construction, especially single family, has been eliminating the plywood sheathing in the roof. It provides important lateral stability and there are no feasible noncombustible alternatives. **This is where the patent-pending PHNX Longspan™ System comes in; our proprietary roof and floor framing system addresses the lateral stability problem and solves it, wood-free.**

**4)** Types I & II are the only construction type that requires all structural members, including non-load

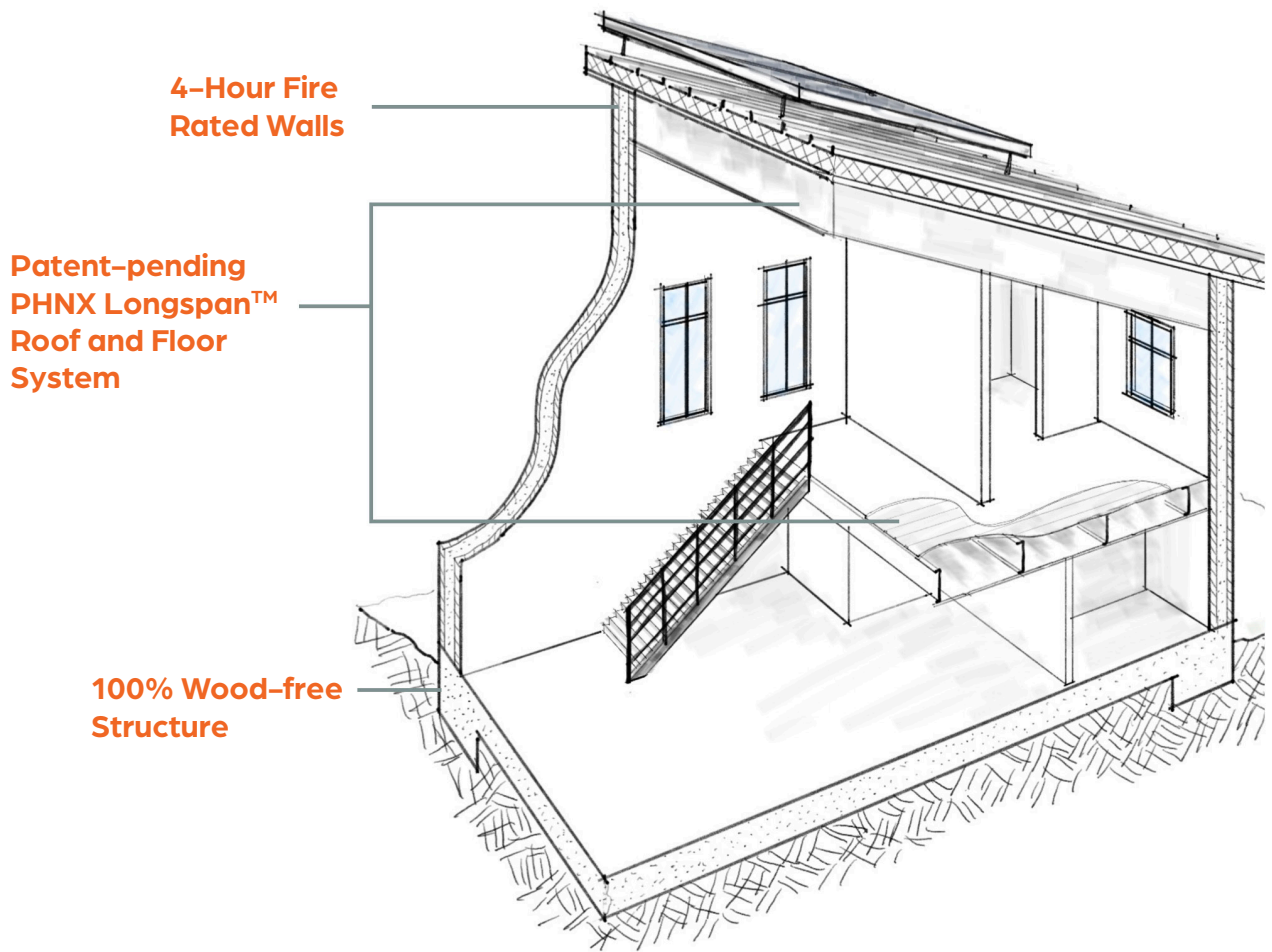
bearing partitions, to be noncombustible. The “A” or “B” refers to the degree of fire rating in hours that is required, “A” being the more stringent standard.

**5) Because PHNX Homes are built to withstand wildfire, we exceed code requirements.** Type IA requires exterior walls to be 3-hour rated; ours have a 4-hour rating. Our windows are noncombustible on the exterior and all homes, regardless of whether or not they are in a Wildland Urban Interface (WUI) zone, have tempered panes. Type IA code still allows vinyl windows with tempered panes; that’s not good enough for a PHNX Home. Our windows are aluminum-clad: wood on the inside, and durable, noncombustible powder coated aluminum on the outside.

**6)** “Wood-free” doesn’t mean you can’t have wood in your home at all! Wood-free simply refers to wood in the structure, such as the roof, flooring and walls. If there’s wood on the interior of the home, in most cases a noncombustible home can have it

## IBC Construction Types by Fire Resistance:

|  |   |  |   |  |   |
|--|---|--|---|--|---|
| (This is the highest level of fire resistance) |   |  |   |  |   |
|  | <b>Fire Resistive</b>   | <b>Non-Combustible</b>   | <b>Ordinary</b>   | <b>Heavy Timber</b>  | <b>Wood Framed</b>                                  |
| Type   | Type I  | Type II  | Type III  | Type IV  | Type V  |
| Resistance (Hours)                             | 3-4   | 1-2  | 0-2   | 0-1  | –   |
| Description                                    | All building elements are noncombustible  |  | Exterior walls are noncombustible (e.g. brick); interior structural elements may be combustible   | Exterior walls are noncombustible; interior is of solid or laminated wood without concealed spaces | All building elements are combustible               |
| Found In                                       | High-rise buildings, commercial, hospitals  | Mid-rise offices, hotels, school buildings   | Warehouses, houses  | Various applications   | Single-family homes                                 |
|  | Type I  | Type II  | Type III / TIV  |  | Type V  |
|  | <b>THIS IS PHNX:</b><br>Made possible for the first time in single-family homes with our patent-pending <b>PHNX Longspan™ roof assembly</b> | This has lower fire resistance. Other contractors still can't build a Type II single-family home structure without the <b>PHNX Longspan™ roof assembly</b> | Many builders claim noncombustible, but traditional wood framing and wood sheathing on the roof is tinder for flying embers...<br><b>THIS IS MISLEADING</b> |  | Traditional construction = <b>FULLY COMBUSTIBLE</b> |



**Myth #2:**  
*Any concrete home is noncombustible, and any contractor can build one*

**Fact #2: Only Type I and Type II homes are structurally wood-free and TRULY noncombustible, and to date, only PHNX has been able to build it feasibly**

**1)** To date, PHNX is the ONLY company that has the capability to build to Type IA, Type IB or Type II standards due to our proprietary wood-free roof and floor framing system, PHNX Longspan™. **PHNX is fast-tracking its PHNX Certified Builder program to get the patent-pending design and technology into the hands of other builders**, to get them trained to build a certified PHNX Home and meet this unprecedented demand from the LA wildfires.

**2)** Beware of builders claiming that their whole building will be noncombustible. With the gaining popularity of Insulated Concrete Form (ICF) construction, people may claim that their building is noncombustible when it's really not. Noncombustible walls mean nothing if there is a wood roof and vinyl windows. Further, just because a wall is built with ICF doesn't mean it's noncombustible per code—the blocks used require adequate testing to satisfy the code requirements for use in noncombustible construction. This is why PHNX uses Fox Blocks exclusively—it's the only ICF block currently on the market that have the testing and approvals that meet Type IA requirements and PHNX's rigorous standards.

**3)** Beware of building material manufacturers who claim their products are noncombustible as well; there are stringent and very specific code requirements that must be satisfied before any proprietary product can be approved for use in a Type IA structure. **Every structural component of a PHNX Home satisfies these requirements, which is then vetted by the Building Official when they approve a permit for a Type IA home.**

### Myth #3:

*Noncombustible homes would take too long to build, and be too expensive*

Fact #3: A PHNX Home can be built in 8–10 months, and is no more expensive than traditional construction

#### PHNX Innovation Delivers Projects More Quickly:

|                                     |               | PHNX Home  | Traditional Methods                                |
|-------------------------------------|---------------|--|--|
| <b>Footings/Slab</b>                |               | 3–4 weeks<br><i>1 inspection</i>                   | 4–6 weeks<br><i>1 inspection</i>                   |
| <b>Level 1</b>                      | <b>Walls</b>  | 4–6 weeks  | 3–5 weeks  |
|                                     | <b>Floor</b>  | 1 week<br><i>2 inspections</i>                     | 2–3 weeks<br><i>2 inspections</i>                  |
| <b>Level 2</b>                      | <b>Walls</b>  | 4–6 weeks  | 3–5 weeks  |
|                                     | <b>Roof</b>   | 1 week*<br><i>2 inspections*</i>                   | 6–8 weeks*<br><i>4 inspections*</i>                |
| <b>Rough (MEP/Sprinklers)</b>       |               | 4–6 weeks*<br><i>1 inspection</i>                  | 10–12 weeks*<br><i>1 inspection</i>                |
| <b>Drywall</b>                      |               | 3–5 weeks<br><i>1 inspection</i>                   | 3–5 weeks<br><i>1 inspection</i>                   |
| <b>Stucco</b>                       |               | 1 week*  | 6–8 weeks*   |
| <b>Finishes/Cabinets/Appliances</b> |               | 6–8 weeks  | 12+ weeks  |
|                                     | <b>Total:</b> | <b>8–10 months</b><br><i>7 Inspections + Final</i> | <b>16+ months</b><br><i>10 inspections + Final</i> |

**1) Fundamentally, we have been persistent in our mission to find a better way to do things,** and that is generally reflected in everything we do.

**Primary PHNX Time Savings:**

- \* PHNX Construction Method Innovations
- \* Roof & Inspections
- \* Rough (MEP)
- \* Stucco

**a) PHNX Construction Method Innovations:** Architect Laurie Fisher has rethought and re-engineered the construction process, breaking down traditional methods and creating efficiencies that shave months off a project schedule; in many cases allowing the homes to be built in roughly half the time compared to builders using traditional methods. Examples like eliminating hold-downs, shear walls, and plywood nailing reduce the need for inspections. There is also less on-site coordination of trades; the PHNX Longspan™ System provides a 16" deep clear plenum, with as much as 8' in between joists. With no batt insulation to work around, all the trades have enough room to do their work. Eliminating a week or two of time in each project phase really adds up!

**b) Roof & Inspections:** PHNX has created best practices for utilizing insulated concrete form (ICF) construction for single-family homes, pushing the technology beyond, "could do," into "will do." This led to development of the patent-pending PHNX Longspan™ Roof and Floor System. Fisher's mission was to design a



The PHNX Longspan™ Roof and Floor system features beams spanning up to 32 feet, with 8-foot spacing.

system that let the concrete do what it was capable of doing... not just as a substitute for wood. By allowing the concrete to bear the weight of the structure, the PHNX Longspan™ beams can span 32 feet, with eight-foot spacing. The roof is simple...it's just steel beams and insulated standing seam roof panels. There is no plywood sheathing. The roof can be installed in less than a week, compared to 6–8 weeks for wood-framed construction. A PHNX roof sees one inspection, vs. three inspections needed for a wood roof. With the structure bearing all of the weight, none of the interior walls are load-bearing so there are no costly delays if the client makes a layout change.

**c) Rough (MEP):** Additional time savings from the roof design is further evidenced during MEP installation. With eight-foot beam spacing, there is no fighting over space for the various trades for elements such as ductwork, pipes and wiring—another big time savings due to less onsite coordination. Also with a PHNX home, every home is built the same way and there are no surprises for the trades. The homes are custom and every design looks different, however the materials, tools and equipment are the same, which greatly reduces project delays.

**d) Stucco:** PHNX uses a synthetic 2-step stucco that requires less cure time between coats. There is no paper or lath. Traditional 3-coat cementitious stucco requires weeks of cure time between coats. Our 2-step stucco shaves weeks off the project schedule!

## **Myth #4:** *Home hardening methods are an adequate solution for wildfire-safe new builds*

**Fact #4:** As discussed under Myth #1, only Type I and Type II homes are built without wood in the structural elements. Our position is—there is no substitute for building to noncombustible code, as wood will always find a way to burn

Architect and PHNX Founder Laurie Fisher first got involved with fire rebuilds after the 2017 Tubbs Fire in Santa Rosa. She was helping five families rebuild their homes and could identify their symptoms of trauma from the experience—having spent nearly a decade



working with victims of violent crime and being certified by the State of CA in Crisis Intervention and Trauma Informed Care. She asked her clients and other wildfire survivors what they wanted most out of the process, and the answer was always a resounding, “we want a home that won’t burn down again.” Yet there was nothing on the market that could fulfill such a promise. **So with PHNX, Fisher set out to do just that—invent a home that was noncombustible, to code, that was feasible to build.**

**1) When considering the alternative of using home hardening strategies with traditional construction—again, we circle back to the building code, which is tested, tried and true. Only Type I and Type II homes meet the building code definition of noncombustible construction. All the home hardening efforts in the world won’t be as safe as using noncombustible materials. There will always be a point of vulnerability, and wood is always going to burn. Why spend time and money finding ways to protect the wood from burning, when you can use materials that won’t burn? Why spend time and money retrofitting roof vents to be safe from ember intrusion when you could eliminate them entirely?**

**2) In the post-fire analysis, home hardening efforts will undoubtedly be credited with saving COUNTLESS lives, and structures—as more families implement such mitigation measures as replacing their roof with wildfire-resistant materials, installing soffits under the eaves, ember-resistant vents, metal doors, defensible space in landscaping, and more.**

**Alternatively, the analysis will also show how many homes lost to these fires were, in fact, already hardened against wildfires—and they still burned.**

We hear plenty of anecdotal stories in the media and through social media accounts. The WUI guidelines have been in place since 2011, so we just need to look at how many homes have been built since then, and how many survived the recent fires. Although care was taken to improve their risk, these wood-framed structures were still vulnerable.

**3) Further, optimizing TRADITIONAL construction using these home hardening strategies will be more expensive than building a PHNX Home. In the 2022 report, “Construction Costs for a Wildfire-Resistant Home, California Edition,” Headwaters Economics and the Insurance Institute for Business & Home Safety (IBHS) found that optimizing traditional construction with wildfire-resistant materials on homes in Southern California led to a \$27,080 increase in building material costs—a whopping 104 percent! According to the**

report, this increased overall construction cost by 13 percent: [https://headwaterseconomics.org/wp-content/uploads/2022\\_HE\\_IBHS\\_WildfireConstruction.pdf](https://headwaterseconomics.org/wp-content/uploads/2022_HE_IBHS_WildfireConstruction.pdf).

**It makes perfect sense to retrofit an existing home with fire-resistant materials, but for new builds—why take on the risk and the added expense?**

**4) PHNX Homes provide homeowners with significant insurance savings over a hardened home, as well. In November, PHNX Development announced an alliance with Mercury Insurance, with the insurer committing to offering special rates for PHNX’s Type IA Homes. The first Mercury policy on a PHNX Home provided a 41 percent savings for the homeowner, over their California Fair Plan policy. The home was a fire rebuild and was located in an area blacklisted by insurance companies due to its high fire risk.**

Under California law, insurance companies must offer discounts to homes that meet criteria under the “Safer From Wildfires” guidelines. United Policyholders, a nonprofit advocacy group, helps consumers navigate the challenging insurance landscape. “Mitigation discounts vary from insurer to insurer, ranging from USAA’s 5% discount to homeowners in communities that have earned the “Firewise” designation, to the 15% the Fair Plan offers for hardened homes with defensible space in Firewise communities,” said Amy Bach, executive director, United Policyholders.

|                            | Southern California |                 |                 |
|----------------------------|---------------------|-----------------|-----------------|
|                            | Baseline            | Enhanced        | Optimum         |
| <b>Assembly</b>            |                     |                 |                 |
| Roof                       | \$7,310             | \$7,310         | \$19,670        |
| Under-Eave Area            | \$1,180             | \$1,180         | \$1,900         |
| Exterior Wall              | \$12,250            | \$12,250        | \$15,760        |
| Attached Deck              | \$4,680             | \$4,880         | \$12,590        |
| Near-Home Landscaping      | \$690               | \$3,270         | \$3,270         |
| <b>Total</b>               | <b>\$26,110</b>     | <b>\$28,890</b> | <b>\$53,190</b> |
| Difference from Baseline   |                     | \$2,780         | \$27,080        |
| % Difference from Baseline |                     | 11%             | 104%            |

*Amended from: Table 5.1: Cost and proportional difference of assemblies in new construction for Baseline, Enhanced, and Optimum homes in northern and southern California, “Construction Costs for a Wildfire-Resistant Home, California Edition,” Headwaters Economics and the Insurance Institute for Business & Home Safety, 2022, p. 39*