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Architectural Woodwork Institute

# design solutions

Winter 2025 | \$6.25



A modern living room with a grey sofa, two brown leather chairs, and a kitchen in the background. The room features wood-paneled walls and a white ceiling. The text 'Sustainable Housing.' is overlaid on the image.

# Sustainable Housing.

Woodworking Firm Begins Building  
Unique Green, Affordable Homes.



**L**ange Urban Sustainable Homes, Milwaukee, Wisconsin, also known as “LUSH”, is a company that is rethinking how to build homes. The company has developed a new innovative construction technique that allows building homes entirely out of 3/4-inch plywood that’s snapped together using a rubber mallet. This new approach on how to process a home allows homes to be built faster, quicker, greener, and more energy efficient than a traditional home.



According to LUSH's founder R.J. Lange, the company is challenging the status quo and providing higher quality products in its homes, including 6x12 framing, 18-foot-high vaulted peak ceilings, hardwood engineered floors, custom architectural woodwork cabinets, and European style wardrobes. "Our first

fully constructed home built in Milwaukee is the largest structure using this technique in the world and we are in the process of building an even bigger structure," he explains. "We are looking to build attainable housing to help solve the housing crisis. Specifically, around entry-level homes but we have the capacity to also build higher end custom homes as well."

## at a glance

AWI MANUFACTURING MEMBER:

**Lange Bros. Woodwork Co.**

LOCATION:

**Milwaukee, Wisconsin**

ESTABLISHED:

**1930**

**Licensed QCP Manufacturer**

The goal, he continues, was to achieve what is categorized in a lot of cities across the United States as "affordable" housing and wanted to provide a higher quality product that was achievable through better processing. "Coming from a woodwork manufacturing business, Lange Bros. Woodwork Co., Inc. we wanted to incorporate it into our business model."



## Company Objectives

Some of the primary considerations are that wood helps LUSH build on our brands, says Lange, and gives a green aspect to construction and a more welcoming quality feel in a home that you don't see in typical entry level housing.

"LUSH took processing techniques learned through cabinetry building at Lange Bros. Woodwork Co., Inc. and applied it to home building. This can be seen in our homes that essentially snap together using 3/4-inch plywood to build the structure and thermal fuse panels to finish interior walls. Once you have the structure up using wood, we then applied the additional woodwork as well as European style wardrobes to replace closets to save space."

Daniel Pedro, LUSH's architect, notes that the typical home is 3,340 square feet and costs \$400,000. It uses plywood cut on CNC machines which are easy to assemble and fit different families.



## The Woodwork

Structure, paneling, walls, windowsills, trim, cabinets, countertops, chairs, essentially all wood products for the project were fabricated and installed by Lange Bros. Woodwork Co., Inc., notes Randy Lange. "For the project, we used CDX plywood for the structure. All other materials were sourced from industry excess, including hardware, thermo-fused wall panels, solid surface, plastic laminates, and wood trim," he says.

"Our model doesn't necessarily allow for the buyer to pick the exact type of wood or color," explains R.J. Lange. "The reason for this is LUSH looks to take premium wood products that are used at high end traditional construction sites and reuse the leftover material at discounted prices. One could simply purchase the same material at a much higher cost, however, to become more efficient we use the excess material. So, if a customer is looking for white for their thermal fuse panels, we might not have the exact shade of white they want but can get one almost the same."

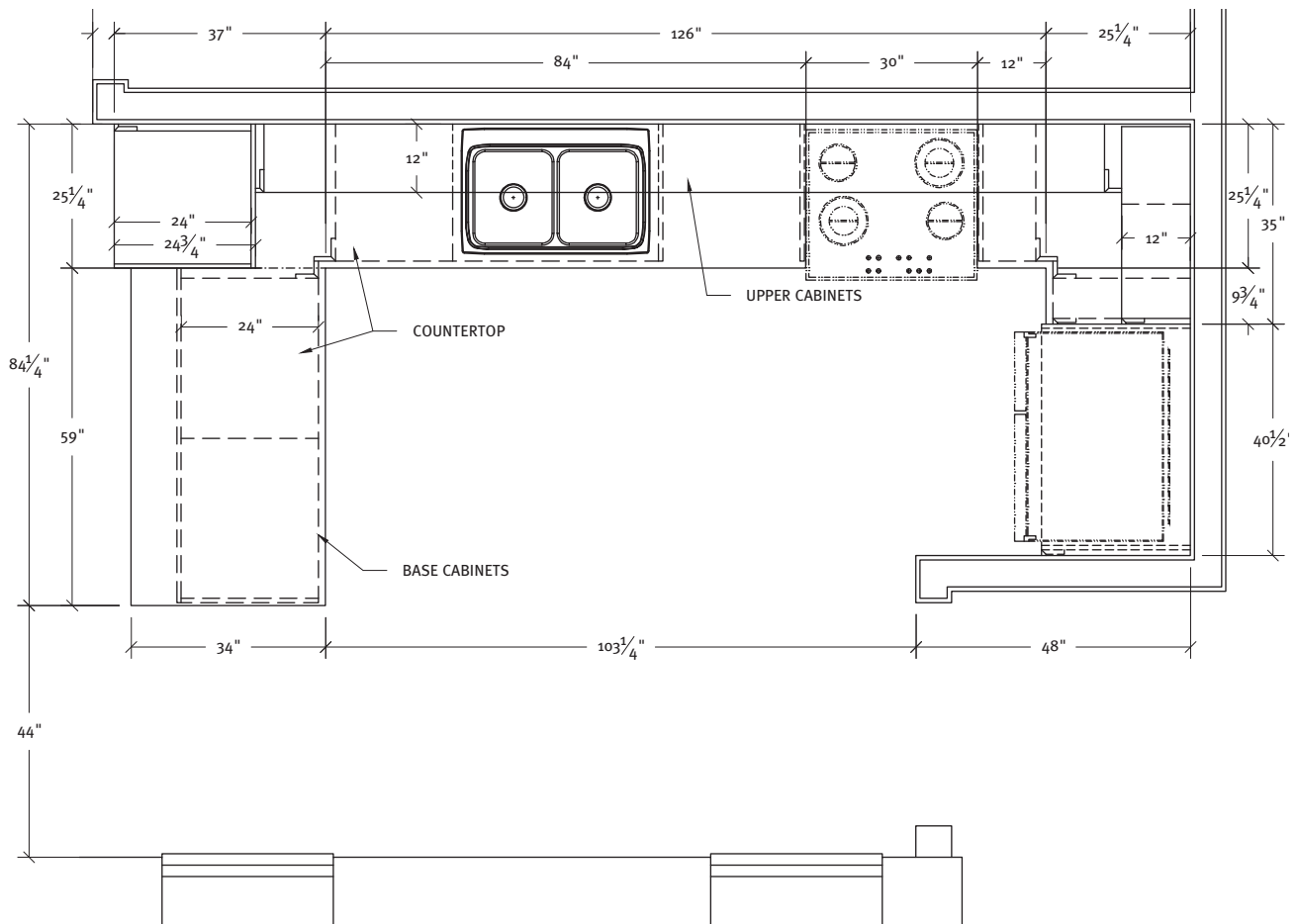


The most intricate and noteworthy woodwork item in this project is that it is the first and largest structure of its kind globally, Randy Lange continues. "It snaps together seamlessly with a rubber mallet and is constructed entirely from repurposed scraps, aligning with a zero-waste manufacturing process. Remarkably, the construction site required no garbage removal due to the minimal waste produced.

This innovative structure is designed to be net-zero-ready, promoting enhanced safety, speed, affordability, and strength compared to traditional 2x4 construction. Impressively, the entire house can be assembled in just four days without the need for nails—all components are skillfully crafted to interlock using wood assembly techniques."

“We are your partner, and from concept to completion, Lange Bros. collaborates with architects and contractors to ensure each detail is captured, translated into the design, the wood, and the finish, and finally the installation to create an inspirational interior.”

– Randy Lange, Co-Owner,  
Lange Bros. Woodwork Company



○ PLAN  
@ 1ST FLR KITCHEN



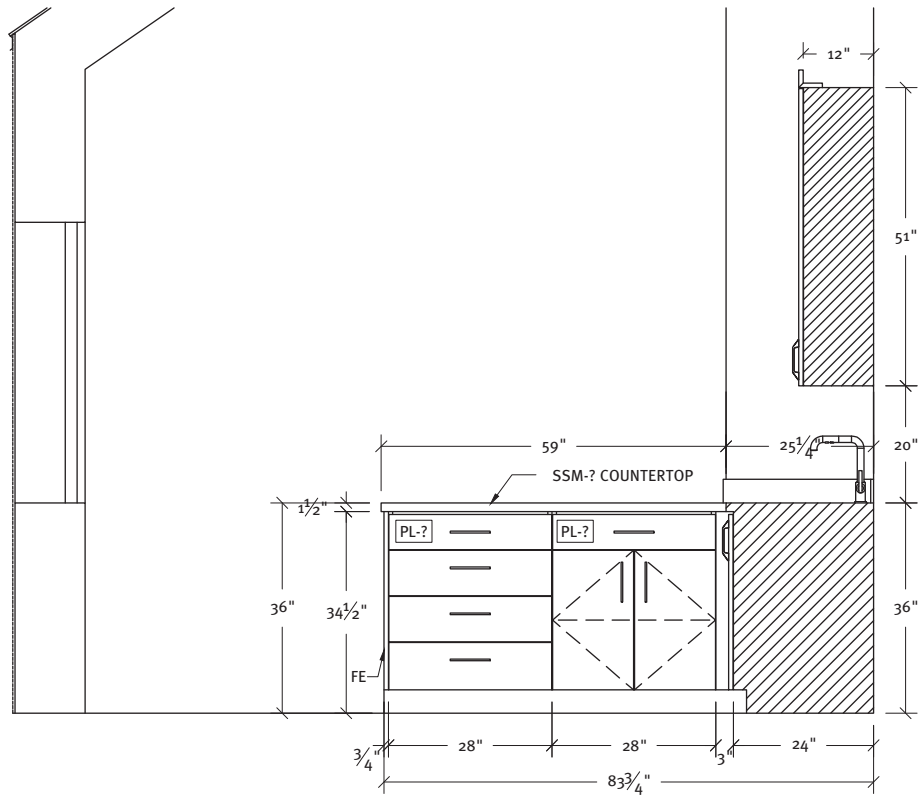
Adds R.J. Lange, “Over the years I have seen Lange Bros. Woodwork Co., Inc. produce a lot of high-quality items that have gone to numerous jobs, however for LUSH the most difficult and noteworthy to me are the beams and thermal fuse panels. This is simply because of the exciting innovation and the precision that is required to make sure the pieces snapped together are not too tight or too loose.”



Pedro points out that obtaining the necessary building permits on a new type of structure was a challenge since it was never done before and difficult for the inspectors to understand the system.

### Collaboration

Lange Bros. Woodwork Co. provided extensive support in project design, prototyping, and training various trades to enhance efficiency in project phases, says Randy Lange. “Additionally, we assisted with engineering and energy reports, conducted testing, and facilitated structured reviews to ensure project success. We analyzed home-building processes and encouraged the team to find ways to work faster and more efficiently. By fostering this approach, we achieved a 20-30% increase in productivity compared to when individuals were working based solely on personal preferences.”



**ELEVATION**  
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He continues, “our architect played a valuable role in the design process, achieving a balanced design that harmonized form and function effectively.”

**PROJECT:**  
39th St. LUSH Home  
Milwaukee, WI

**PROJECT OWNER:**  
LUSH Homes  
Milwaukee, WI

**WOODWORKER:**  
Lange Bros.  
Woodwork Co., Inc.  
Milwaukee, WI

**ARCHITECT:**  
Lange Bros.  
Woodwork Co., Inc.  
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