

Prefabricated Housing

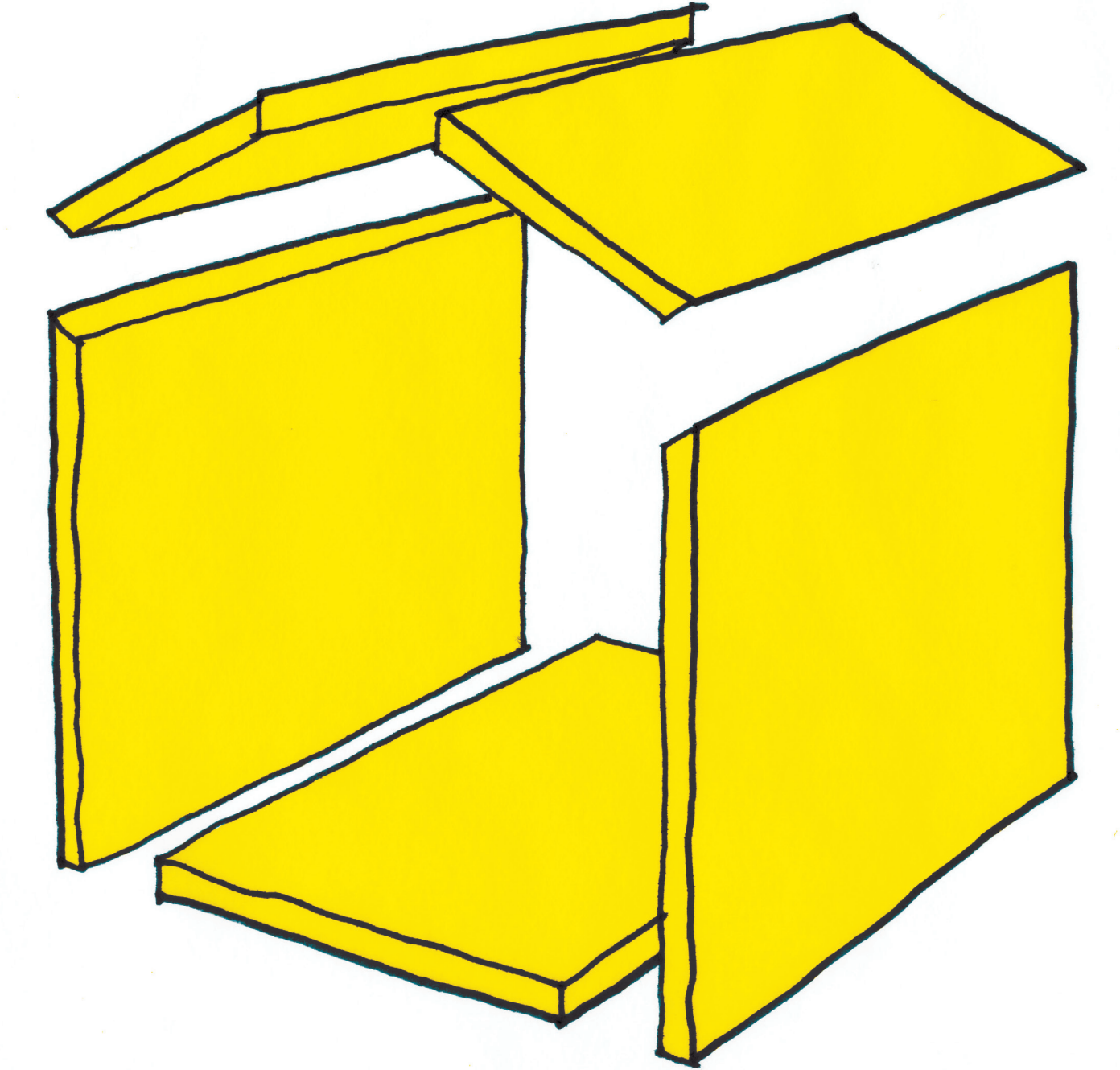
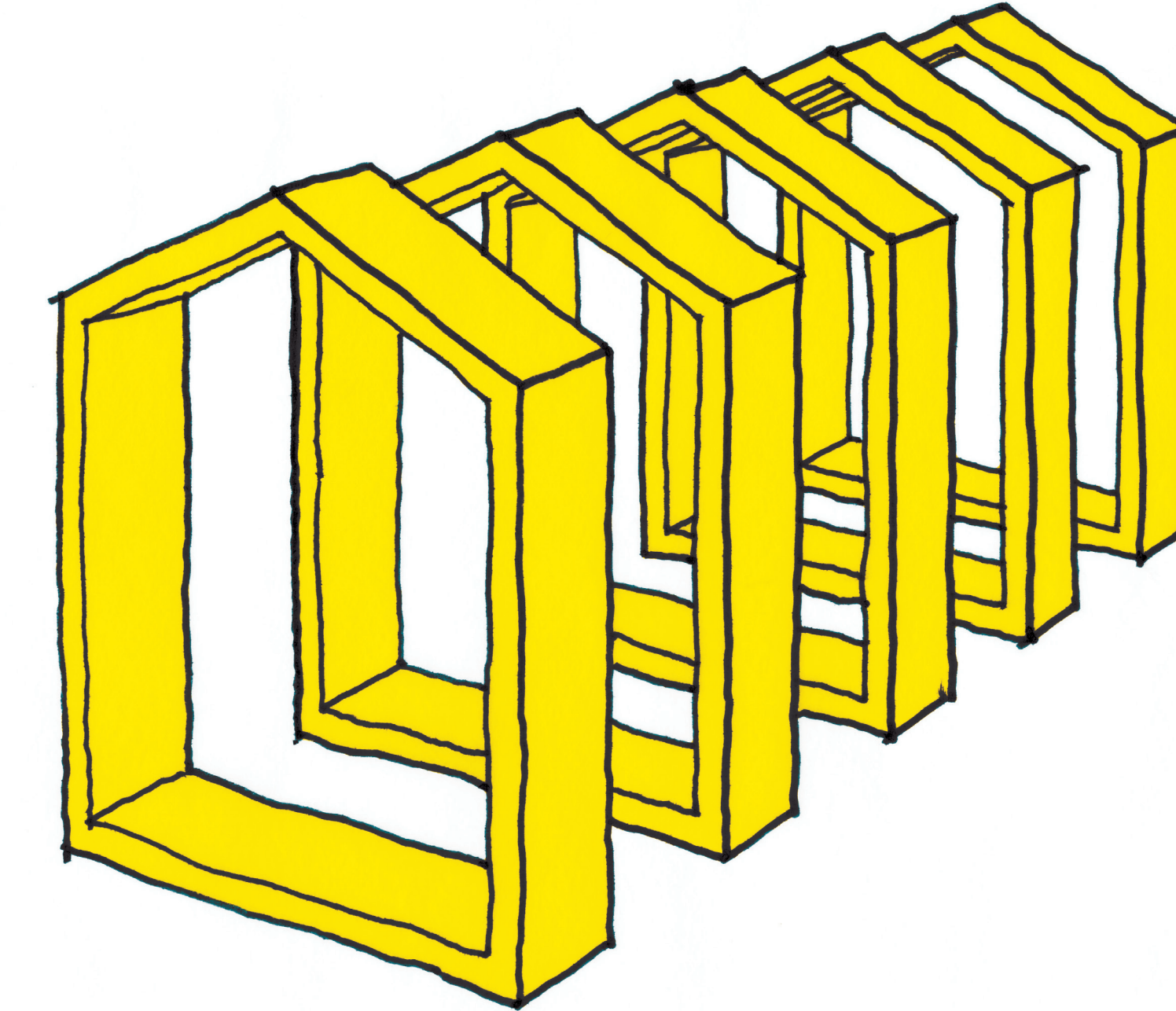
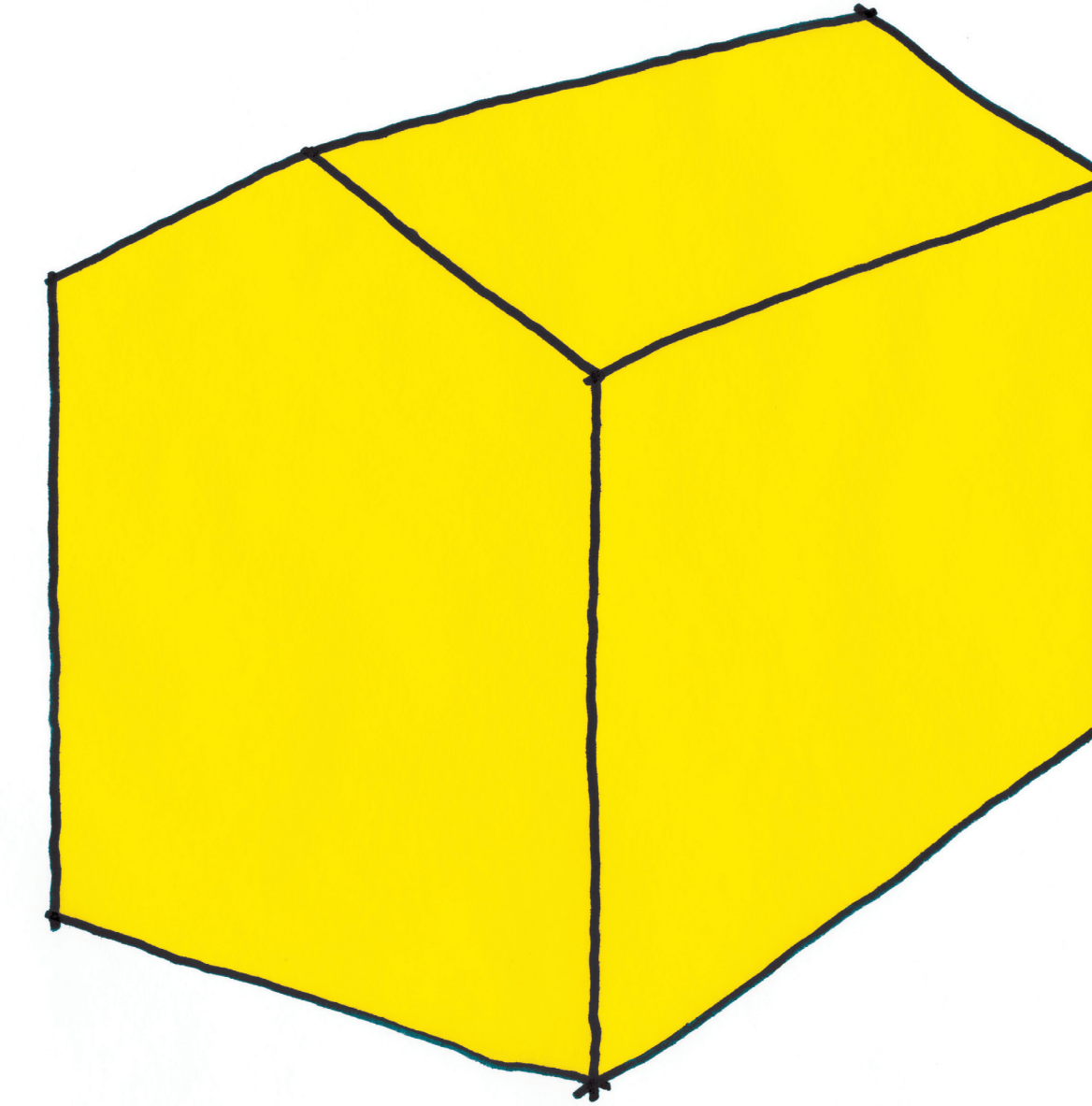
Ross Davidson + Scott Needham

ARC 503

Definition

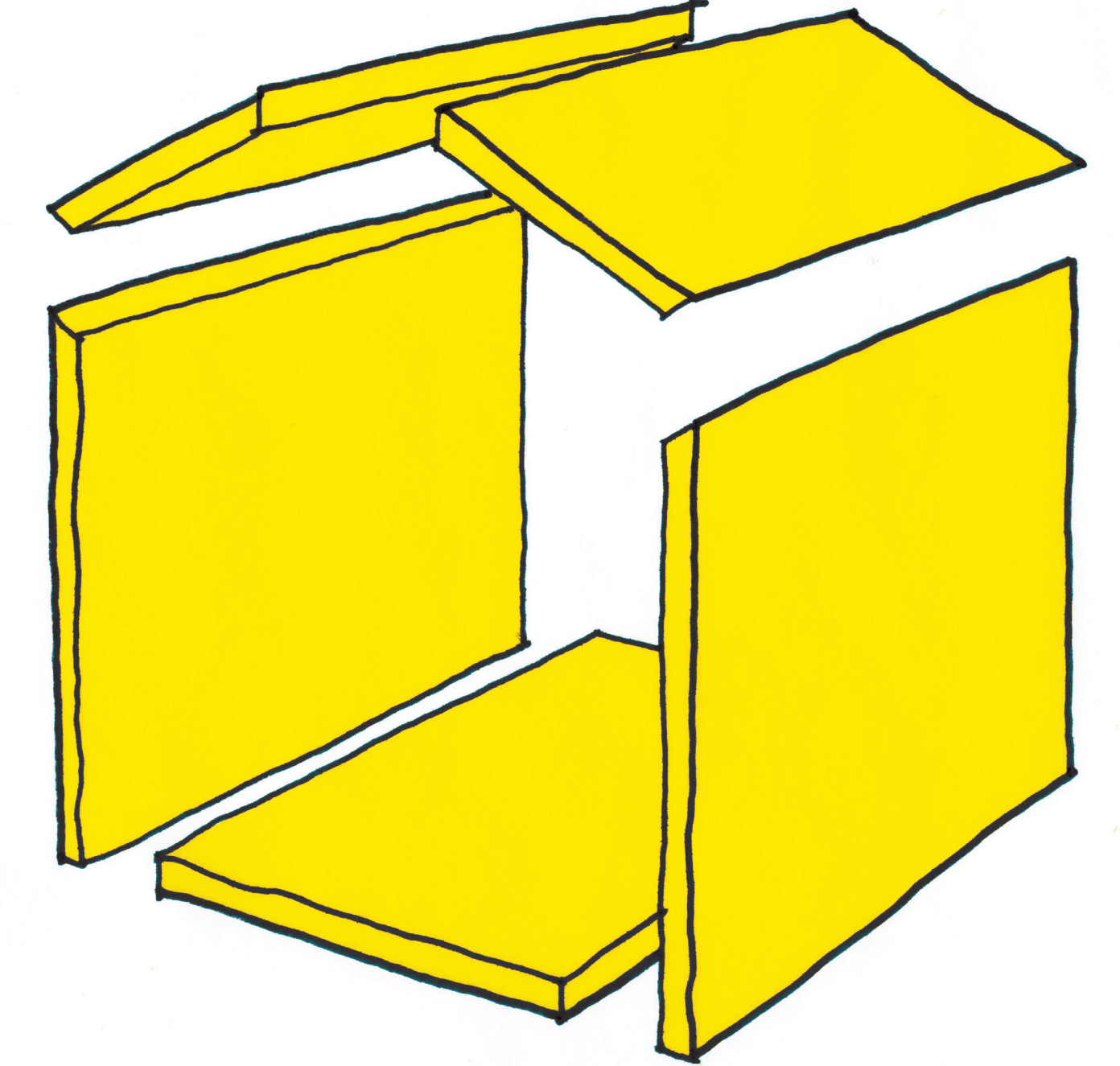
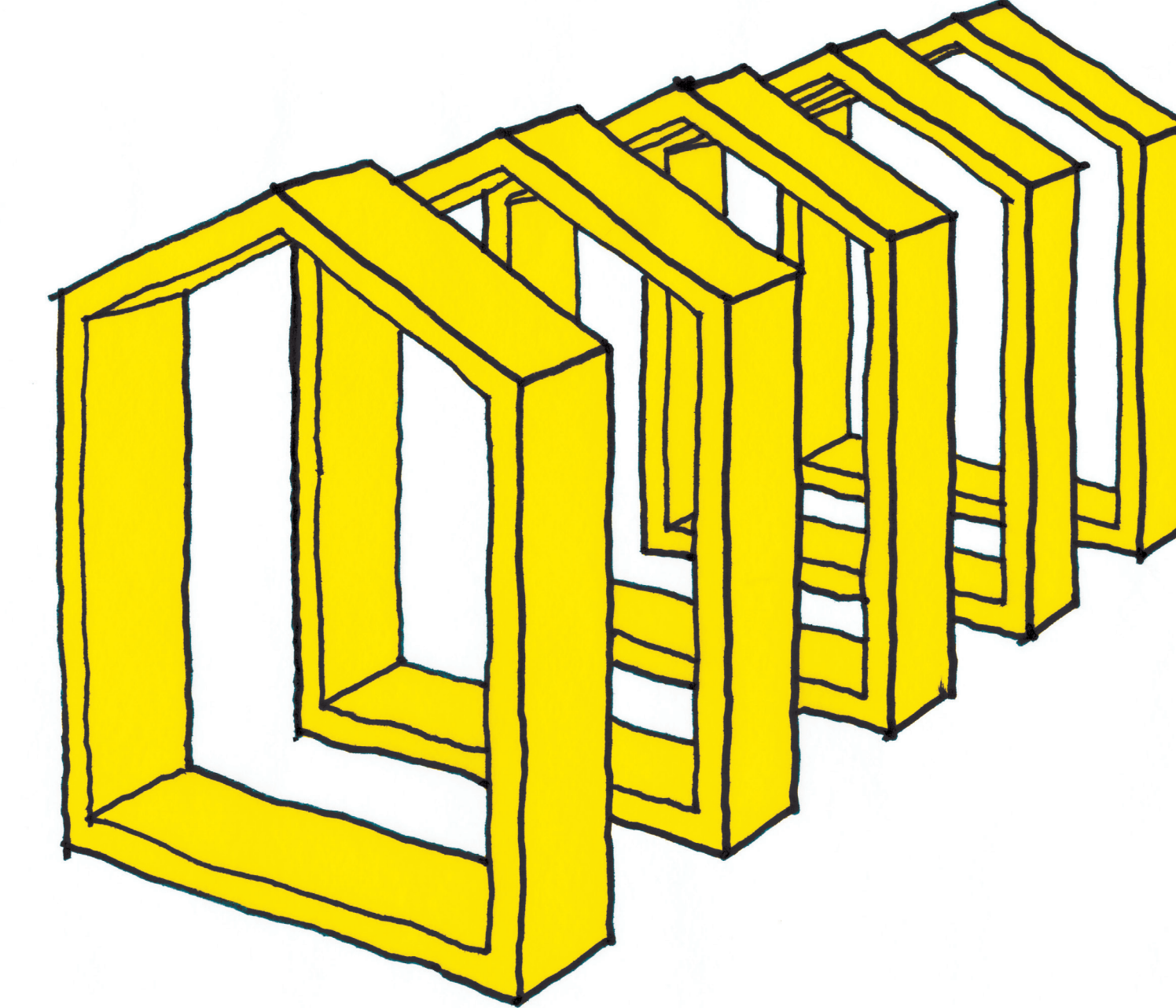
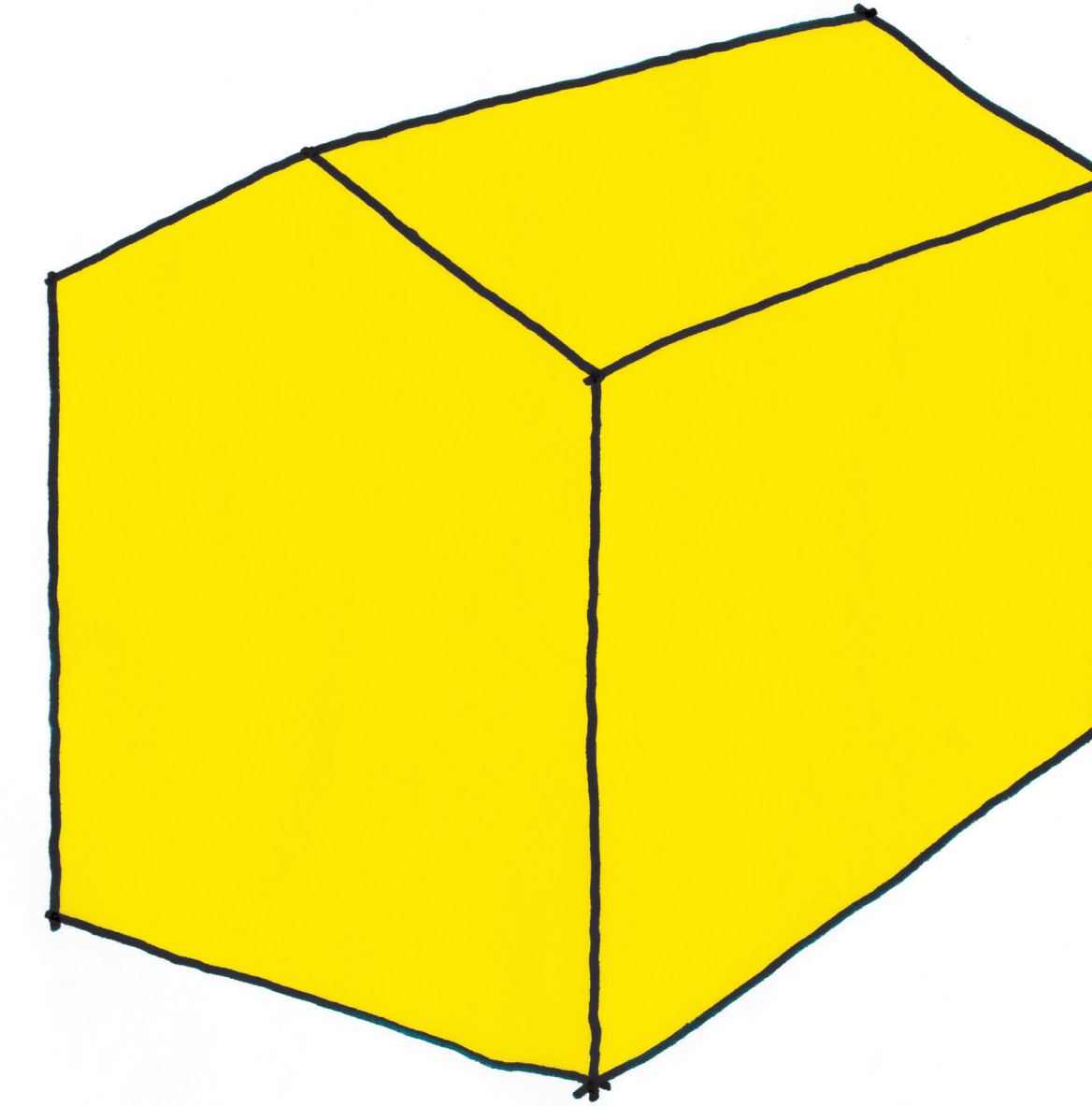
Prefabricated Housing

Any house which is a result of **construction within a factory offsite** rather than solely built on-site.



Prefabricated Housing

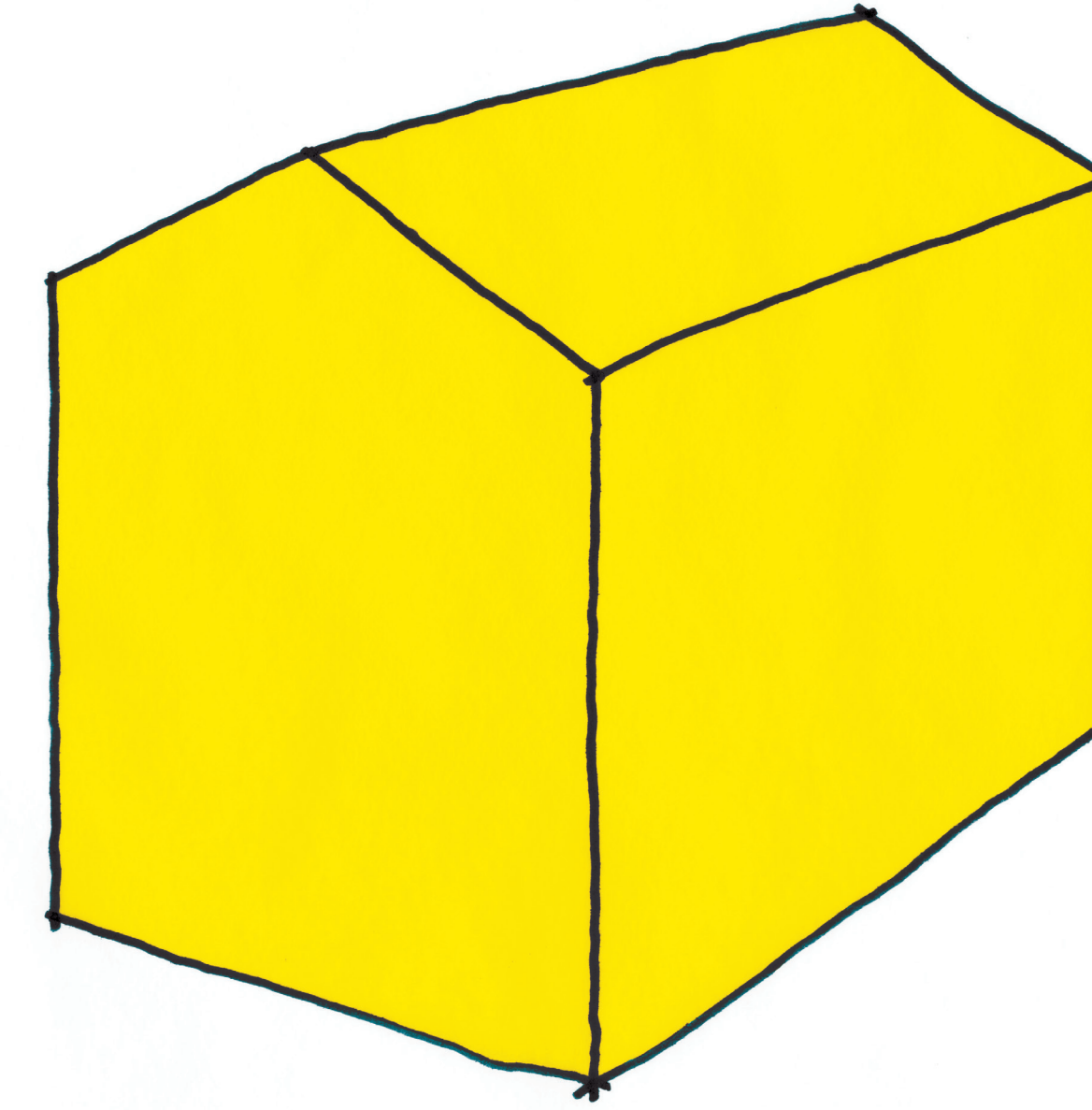
Any house which is a result of **construction within a factory offsite** rather than solely built on-site.



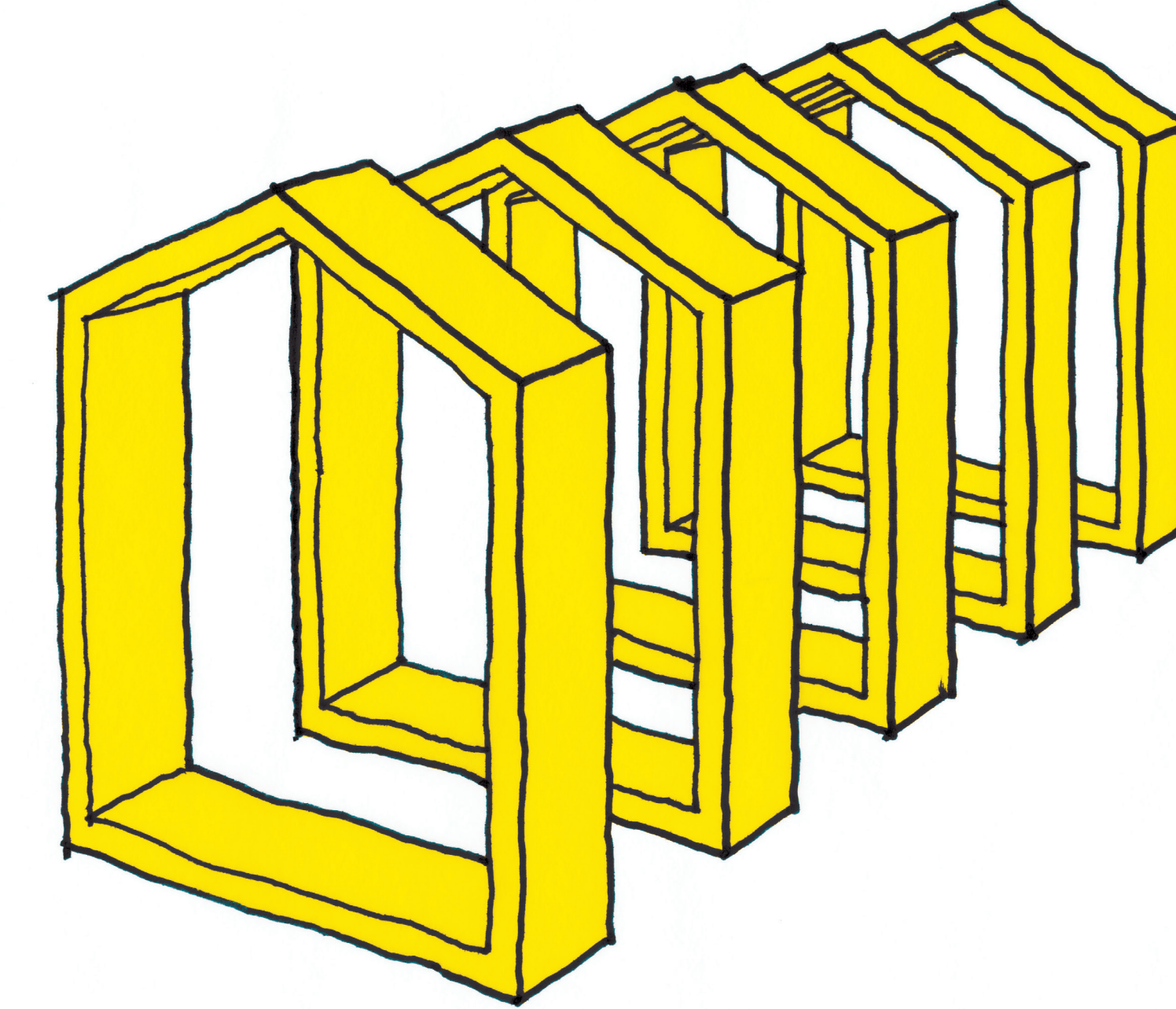
Manufactured

Prefabricated Housing

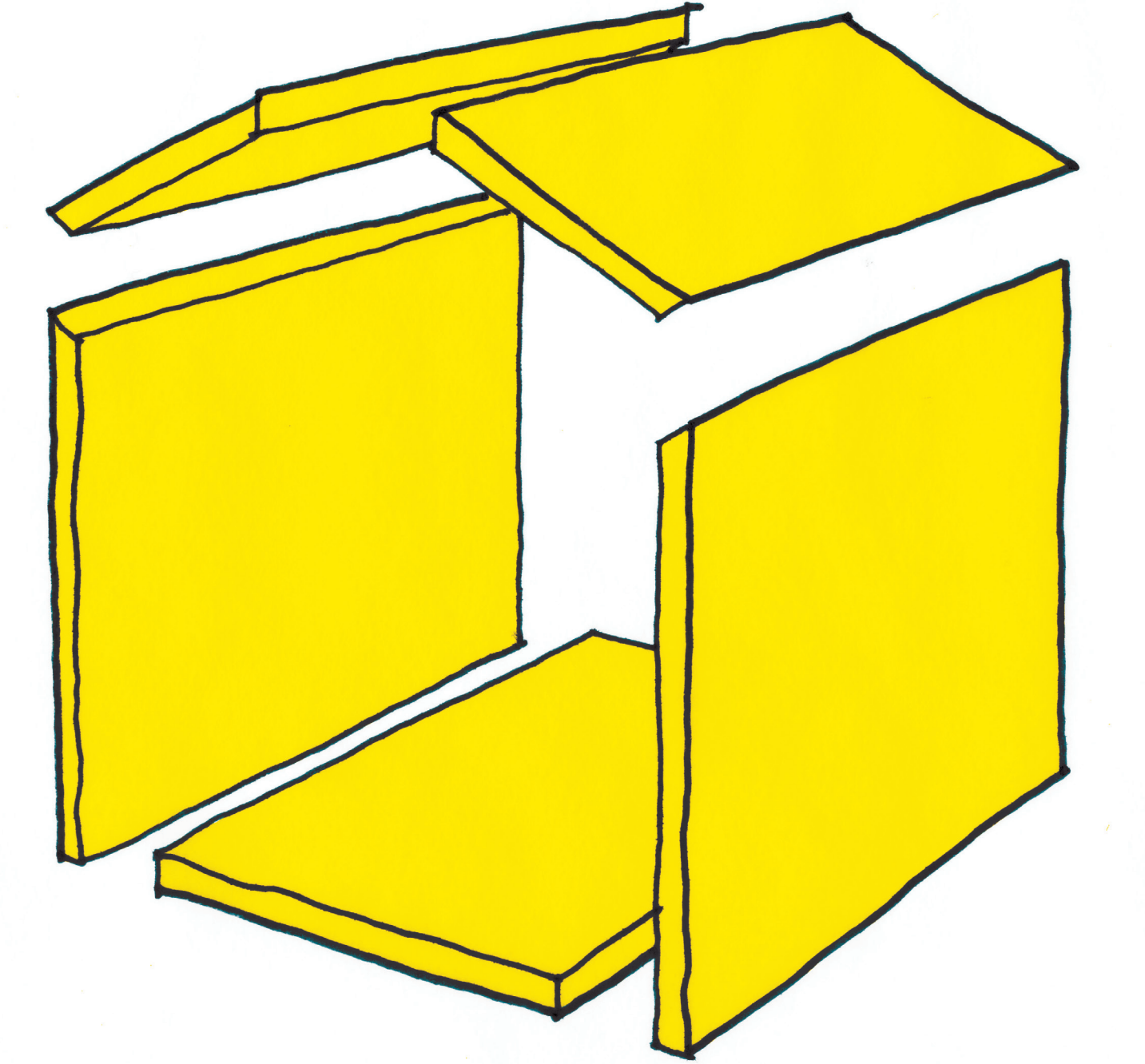
Any house which is a result of **construction within a factory offsite** rather than solely built on-site.



Manufactured

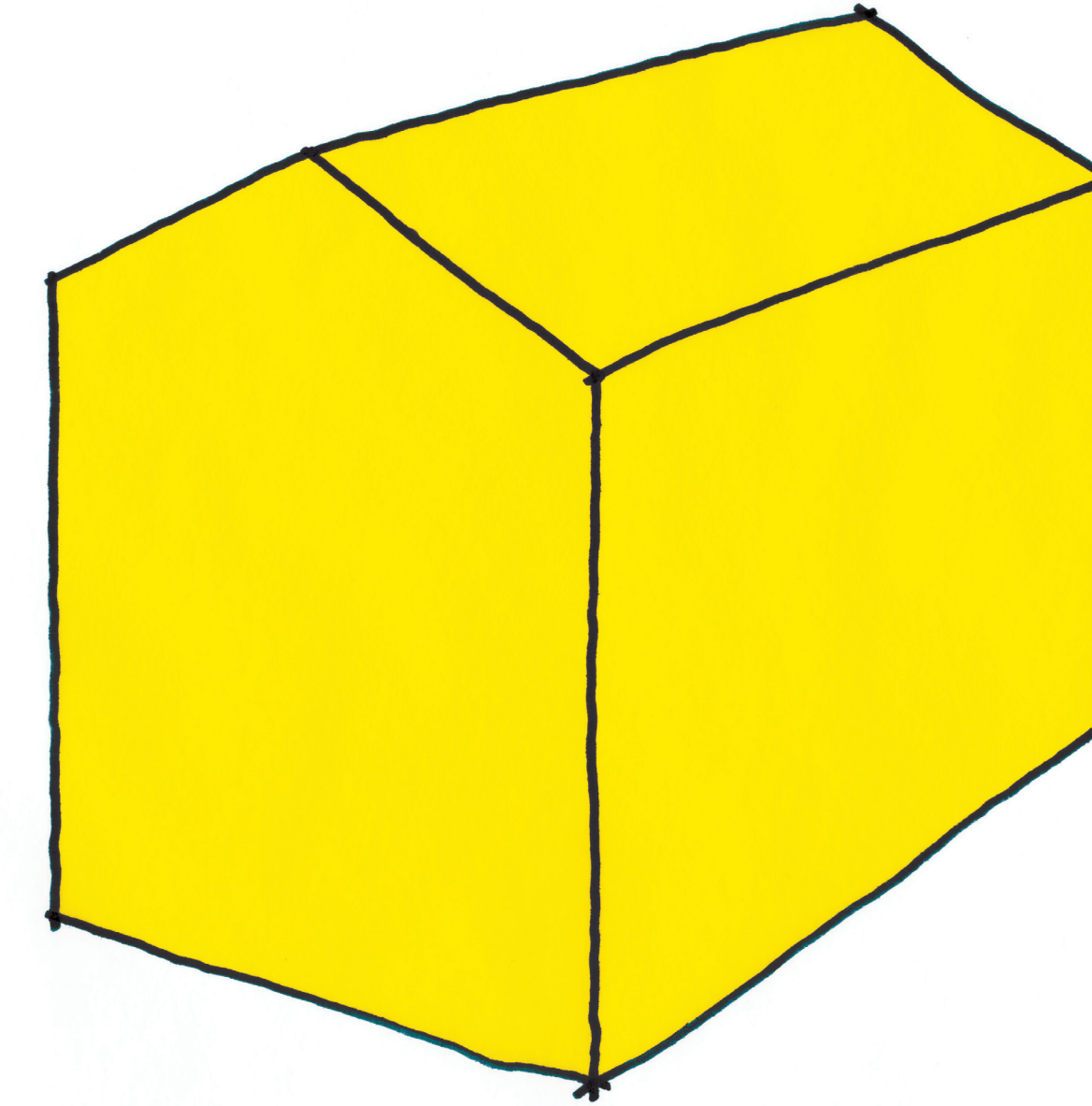


Modular

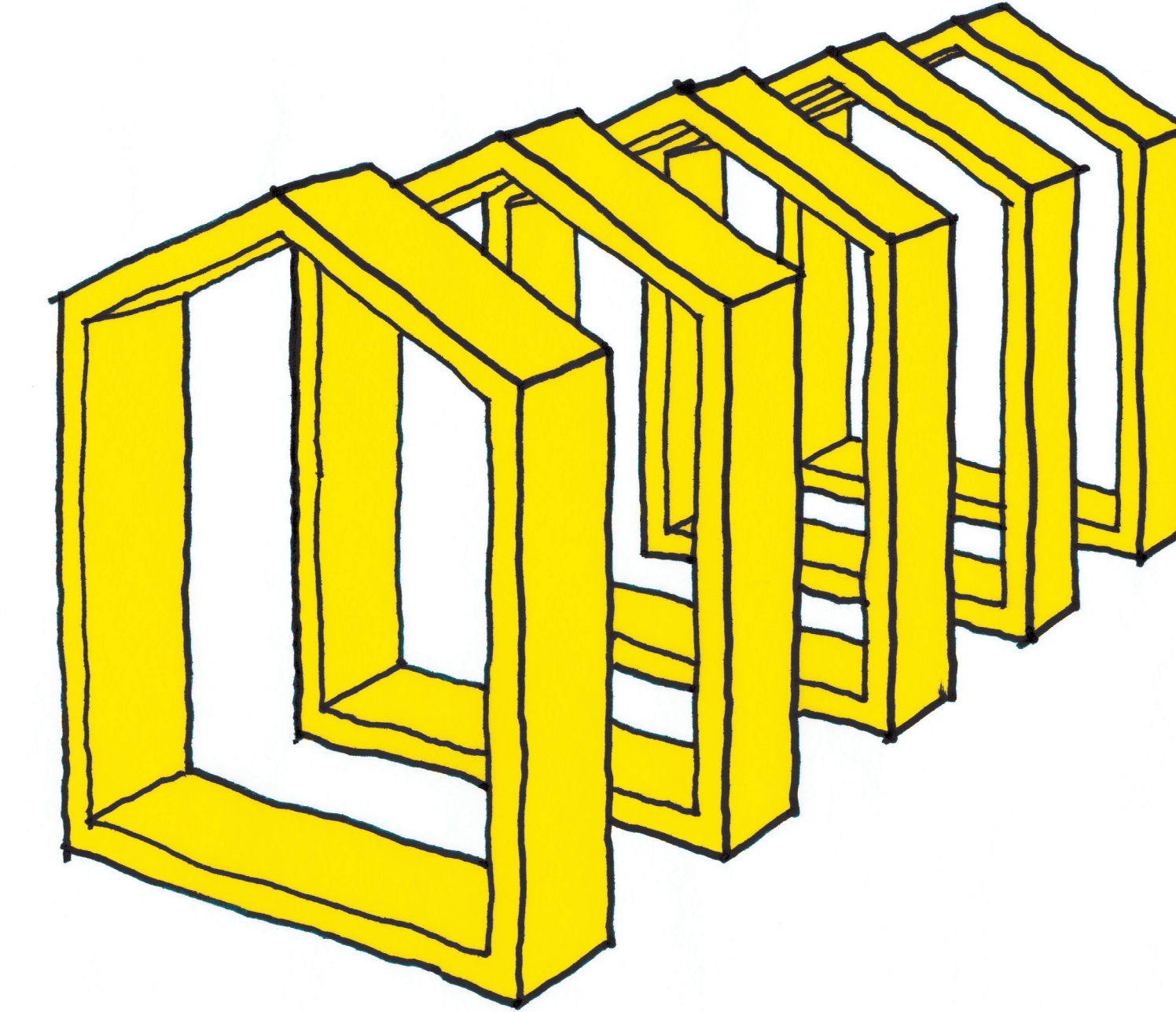


Prefabricated Housing

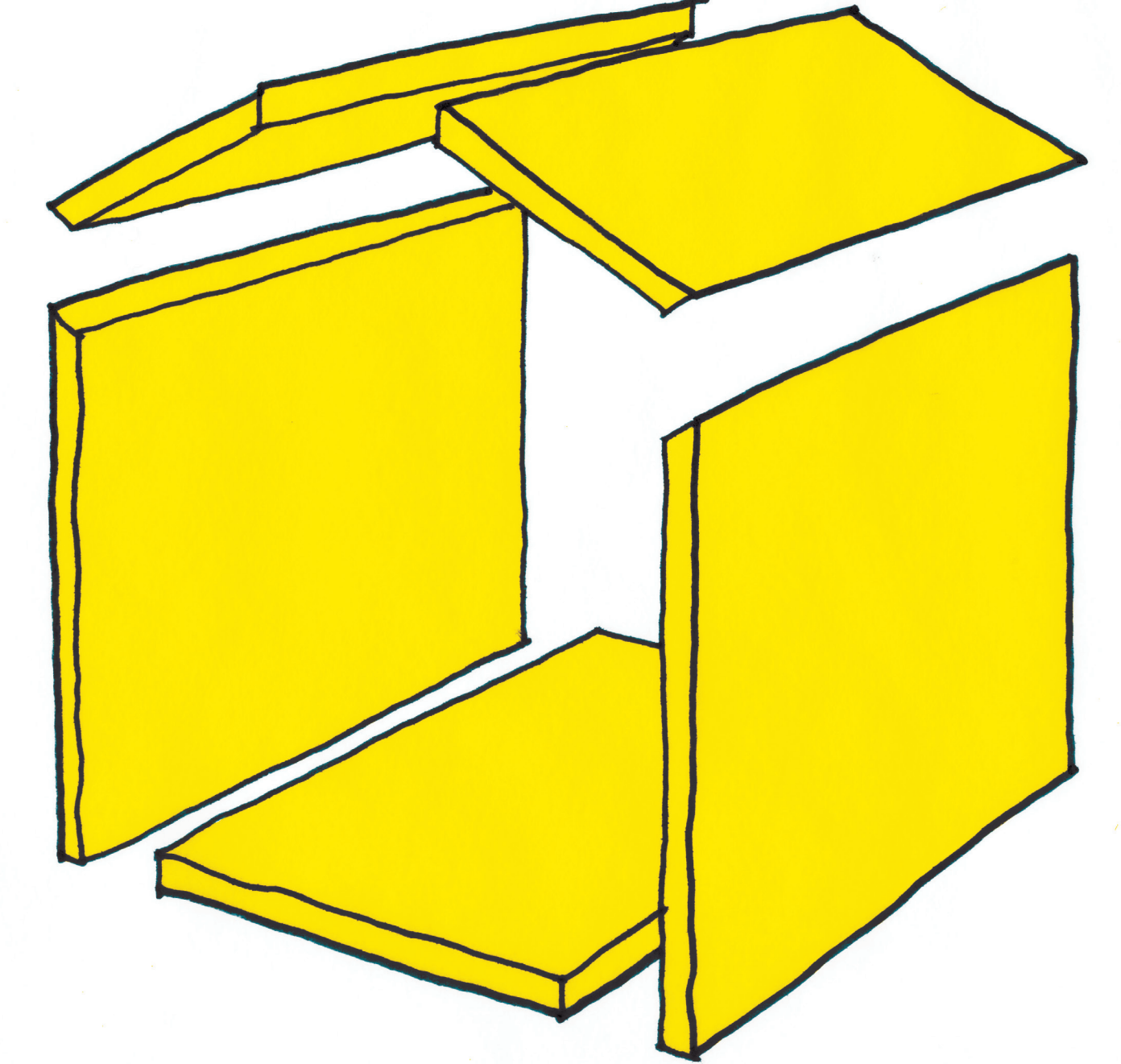
Any house which is a result of **construction within a factory offsite** rather than solely built on-site.



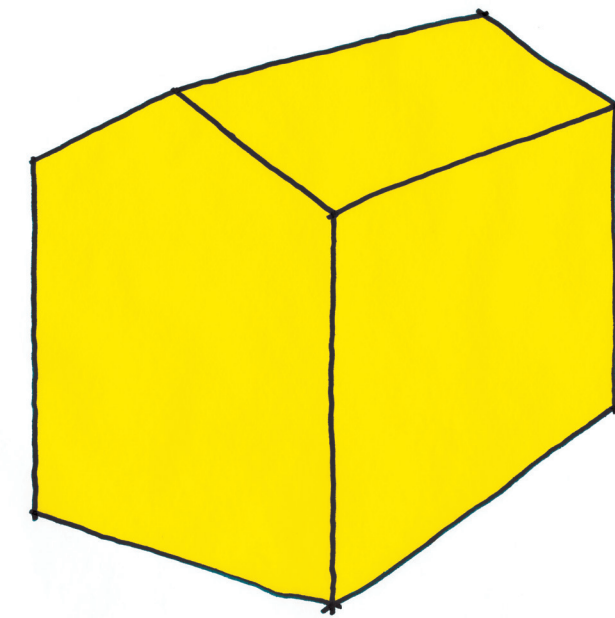
Manufactured



Modular



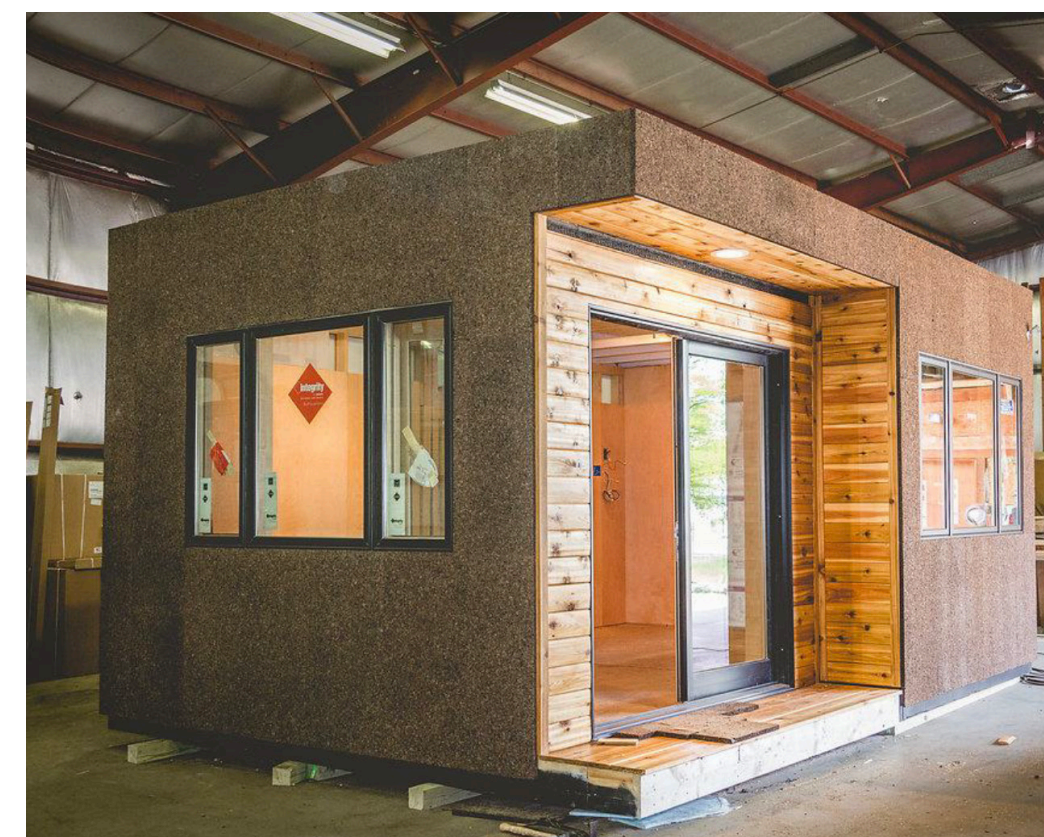
Panelized

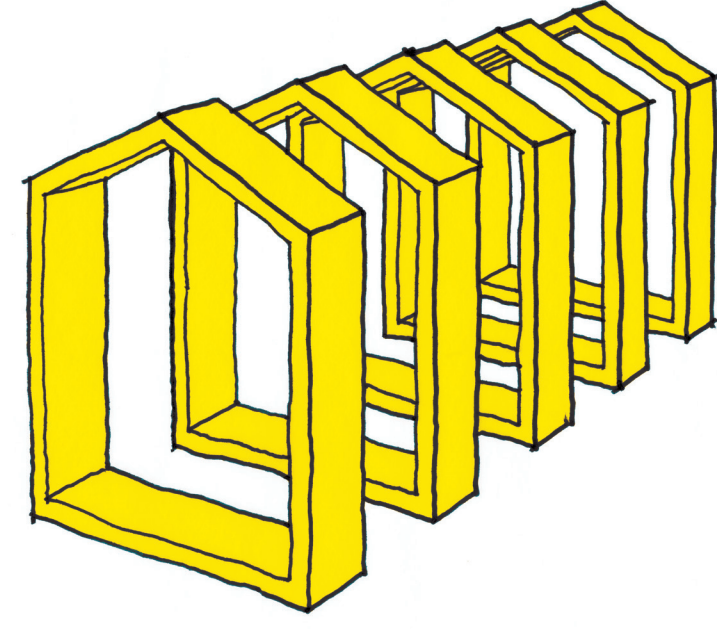


Manufactured

Manufactured housing is built **entirely** in a factory and can have the highest level of quality control with the lowest amount of material waste.

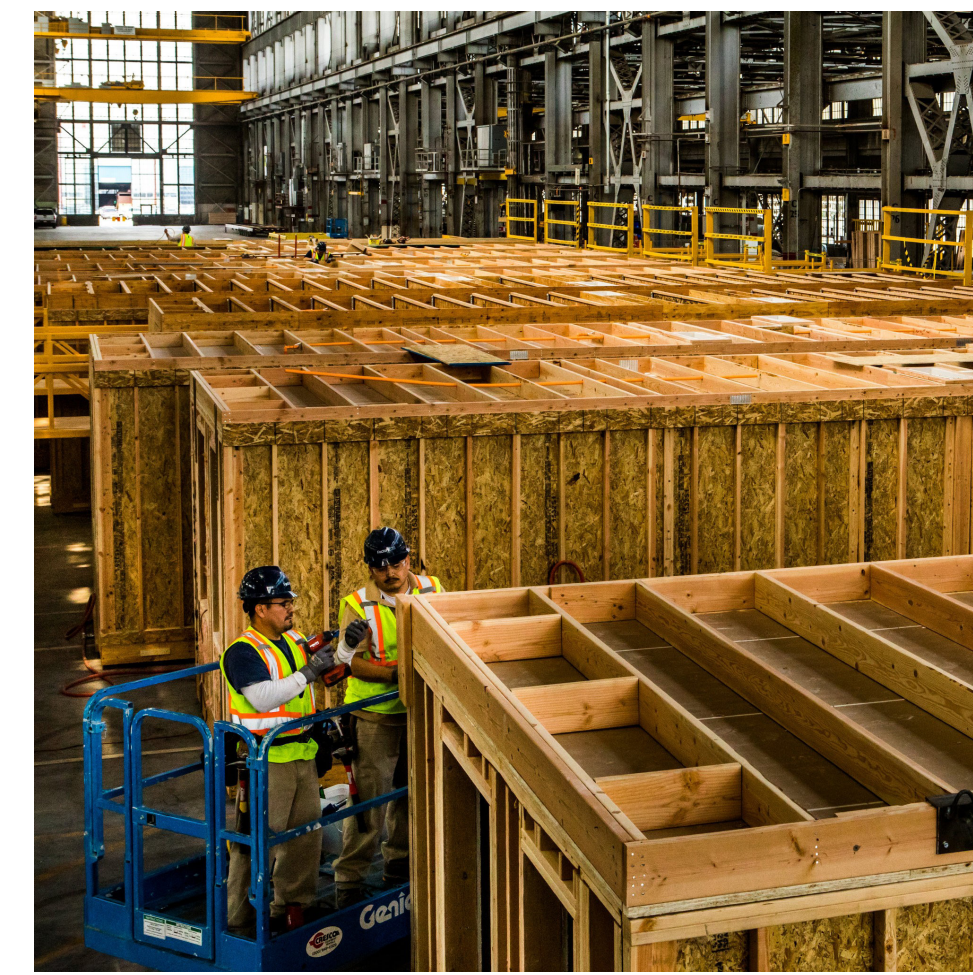
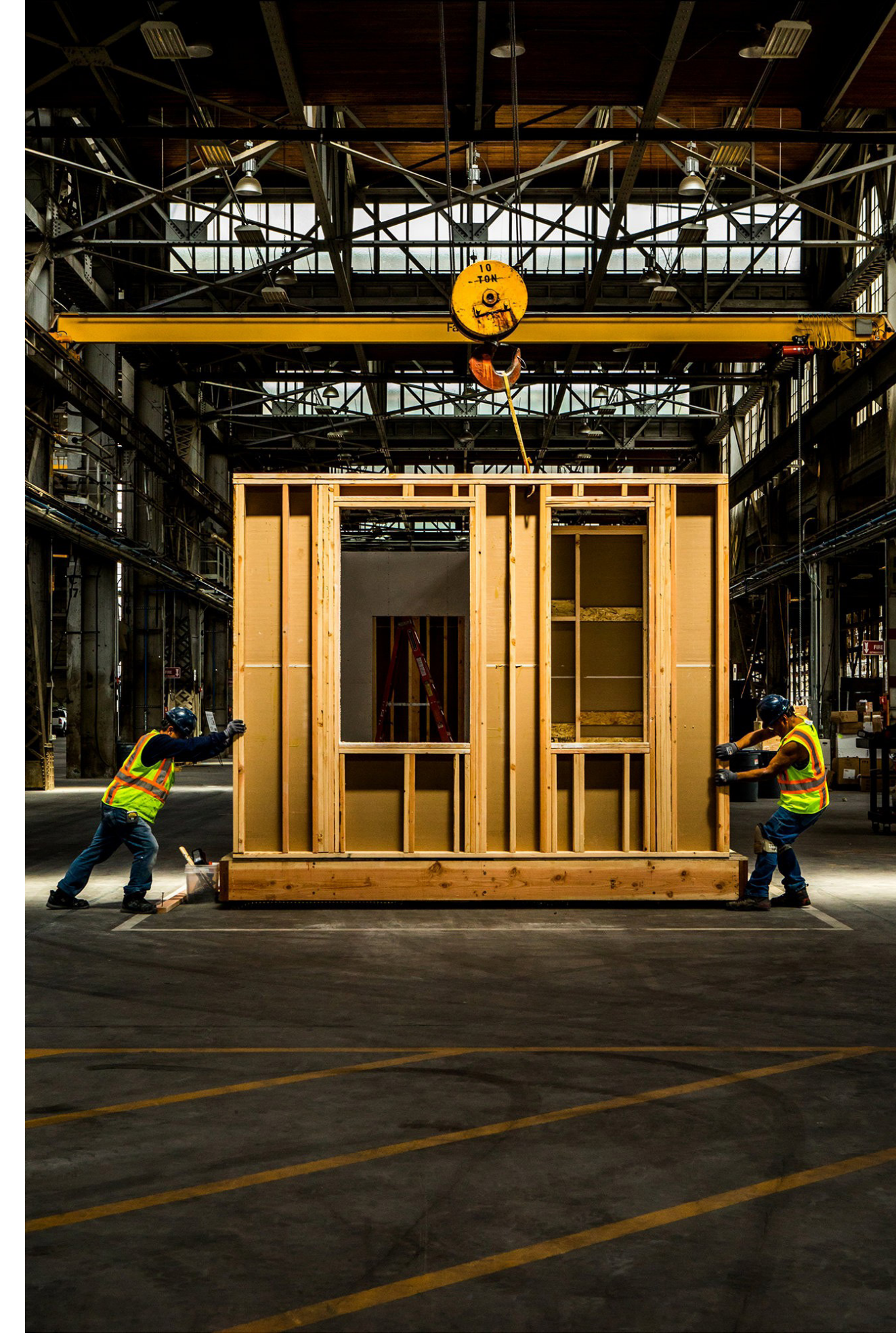
The **completed** structure is delivered to site and requires little to no further construction.

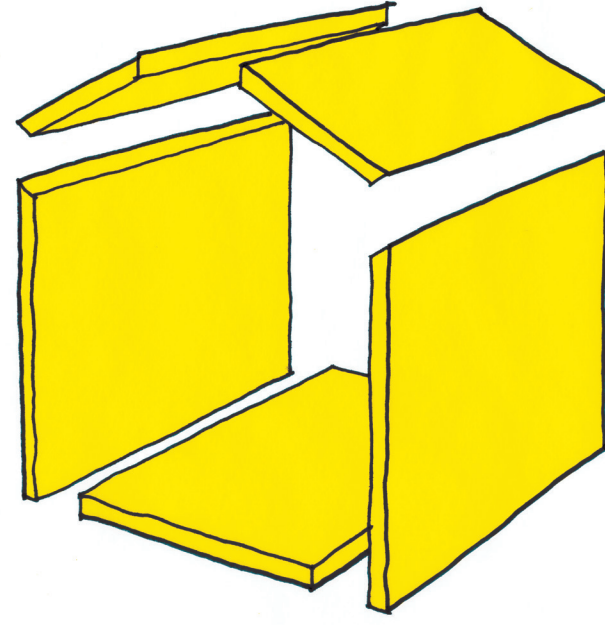




Modular

Portions of a building, **modules**, are assembled in sections in a factory. Once complete, they are shipped to site and installed on a foundation.





Panelized

The house is divided into **Panels**, which are assembled in a factory and shipped to site where they are installed in **sections**.



History

1908-1940

Sears, Roebuck and Co.

100,000 mail order houses sold

1951

Levittown

Land purchase completed

1957

Levittown

Slab layed for last house
~17,000 built

1972

Nakagin Capsule Tower

Kisho Kurokawa

1994

Container House

Wes Jones / Jones Partners:
architecture pursues interest
in shipping container
houses. Related back to the
idea of a primitive hut

2018

**Affordable
Housing Studio**

1937

FLW Usonian houses

Systematized designs to try to bring
infinite variation instead of "cookie
cutter" houses provided by others.

<50 sold

1939 - 1945

WWII

GI's come home from
war to start families.

Factories transition from
weapons to houses +
household goods

1967

Habitat '67

Moshe Safdie Precast
Concrete Housing in
Montreal, Canada

1989

CNC

CNC technology
becomes industry
standard

Sears, Roebuck and Co.

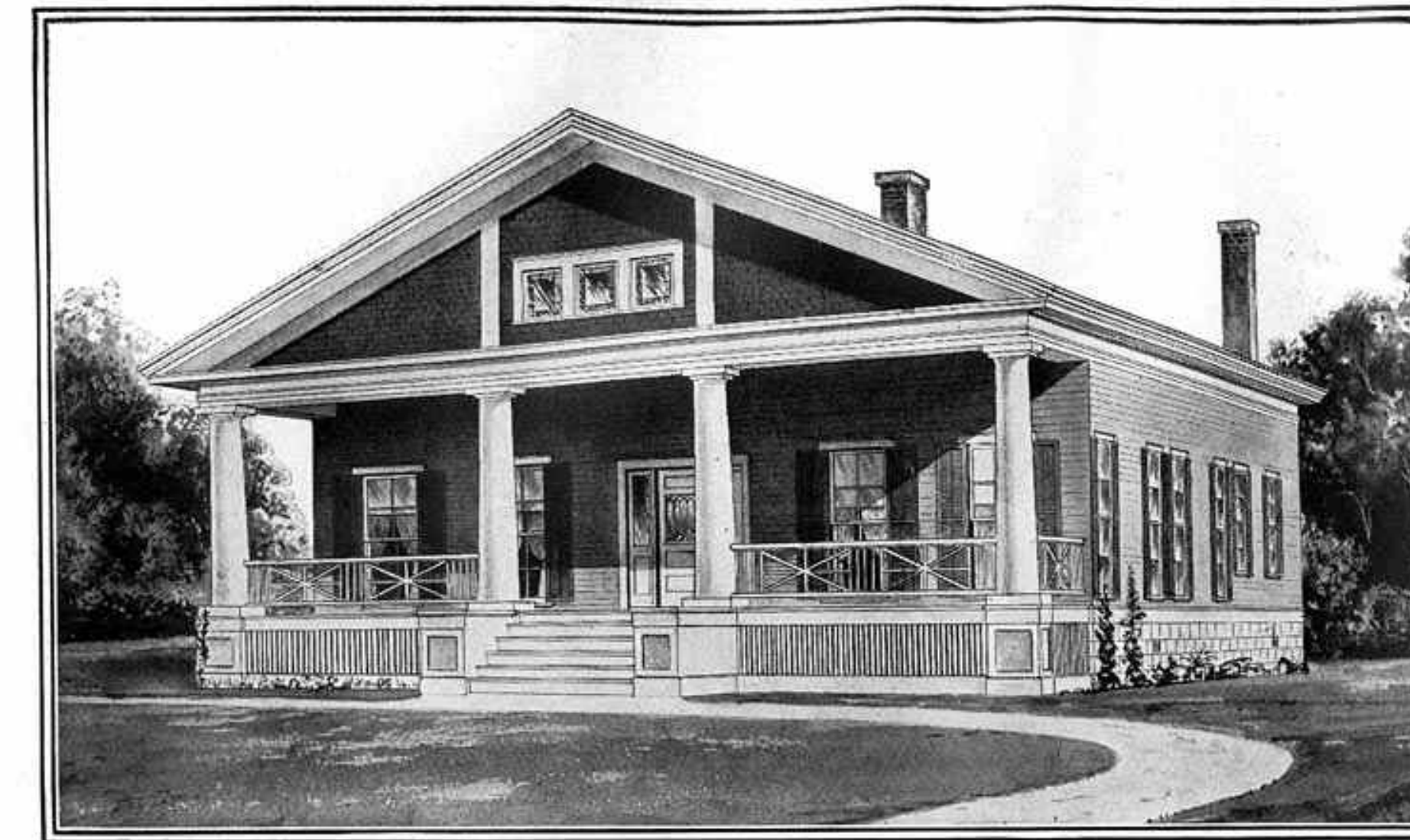
Mail Order Houses

1908-1940

\$452 - \$2702 each - 1913 Dollars

\$11,650 - \$69,520 - 2018 Dollars*

447 Models to choose from with over 100,000 sold.
Delivered in pieces by rail. Pioneered use of drywall and asphalt shingles and introduced central heating.



MODERN HOME No. 165

\$1,248⁰⁰

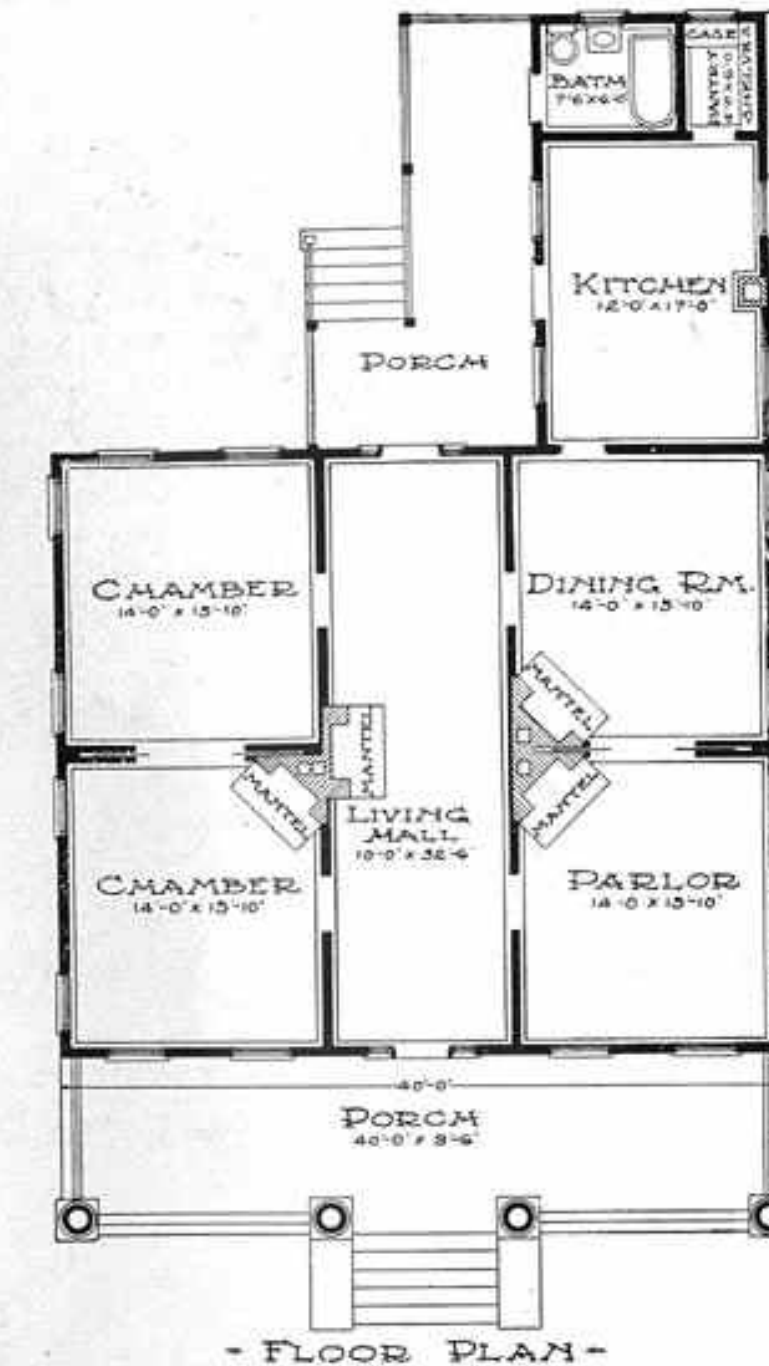
For \$1,248.00 we will furnish all the material to build this Six-Room House, consisting of Mill Work, Ceiling, Siding, Flooring, Finishing Lumber, Building Paper, Pipe, Gutter, Sash Weights, Hardware, Mantels, Painting Material, Lumber, Lath and Shingles.

By allowing a fair price for labor, cement, brick and plaster, which we do not furnish, this house can be built for about \$2,640.00, including all material and labor.

For Our Free Offer of Plans See Page 1.

A COLONIAL one-story house particularly suited and arranged for a warm climate where a great deal of ventilation is desired. Large front porch, 40 feet by 9 feet 6 inches, with massive Colonial columns; also large rear porch. Large center hall, 10 feet by 32 feet 6 inches, with a door at each end. Doors from this hall lead to the two bedrooms, parlor and dining room. Double sliding doors between the two bedrooms and double sliding doors between dining room and parlor. You will notice by this arrangement and the ceilings being 12 feet high that the ventilation is perfect.

Front door and rear door at the opposite end of the hall, 3x7 feet, 1 3/4 inches thick, veneered oak, glazed leaded glass. Interior doors are six-cross panel veneered oak with clear oak casing, base and molding. Clear yellow pine flooring for interior and porches. Mantel in hall, front bedroom, parlor and dining room. Outside blinds for all windows.



Painted two coats outside; your choice of color. Varnish and wood filler for interior finish.

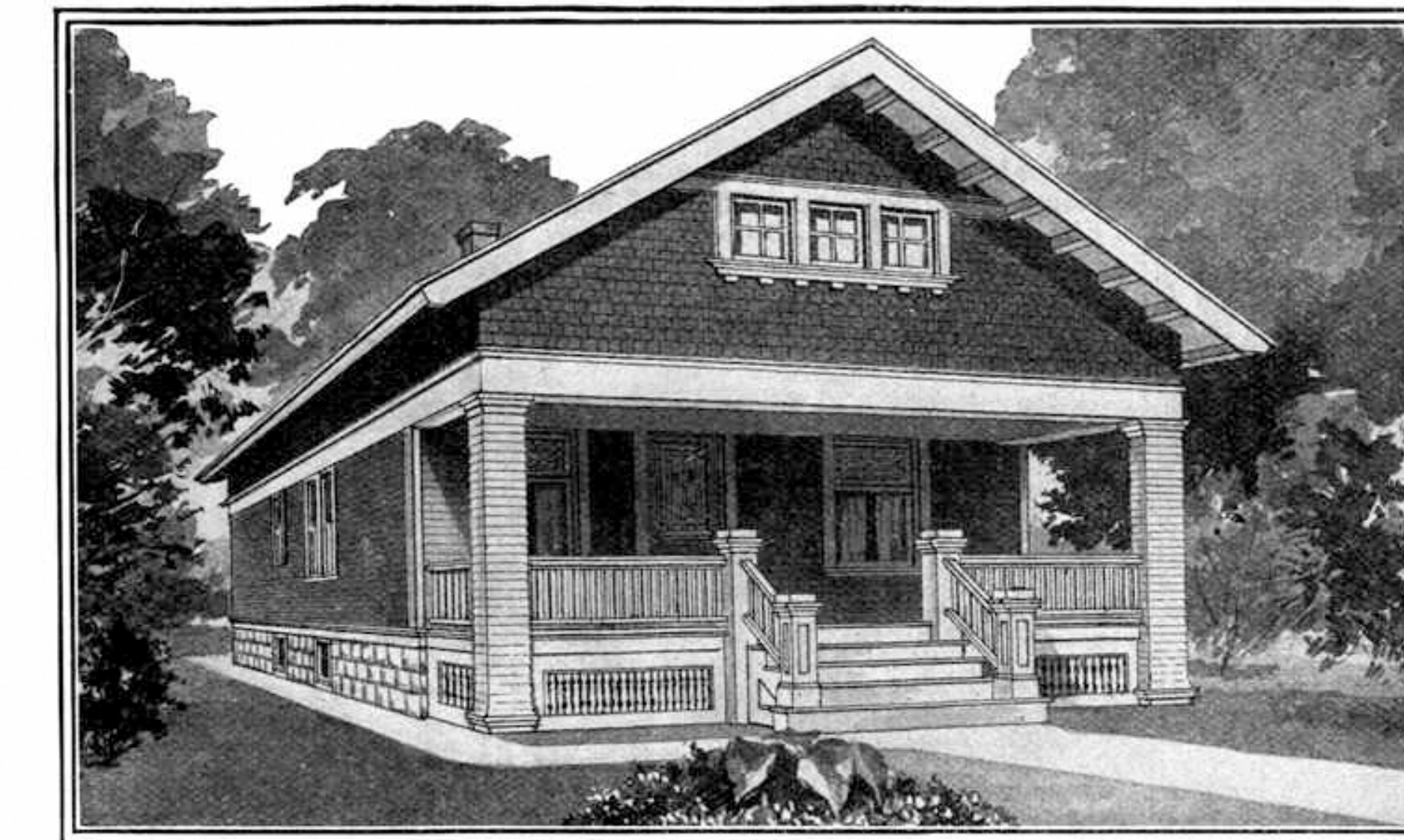
This house is built on a cement block foundation, frame construction, sided with narrow bevel edge cypress siding, gables sided with cedar shingles, and has cedar shingle roof.

Excavated basement under the entire house. Rooms on the main floor are 12 feet from floor to ceiling.

This house can be built on a lot 44 feet wide.

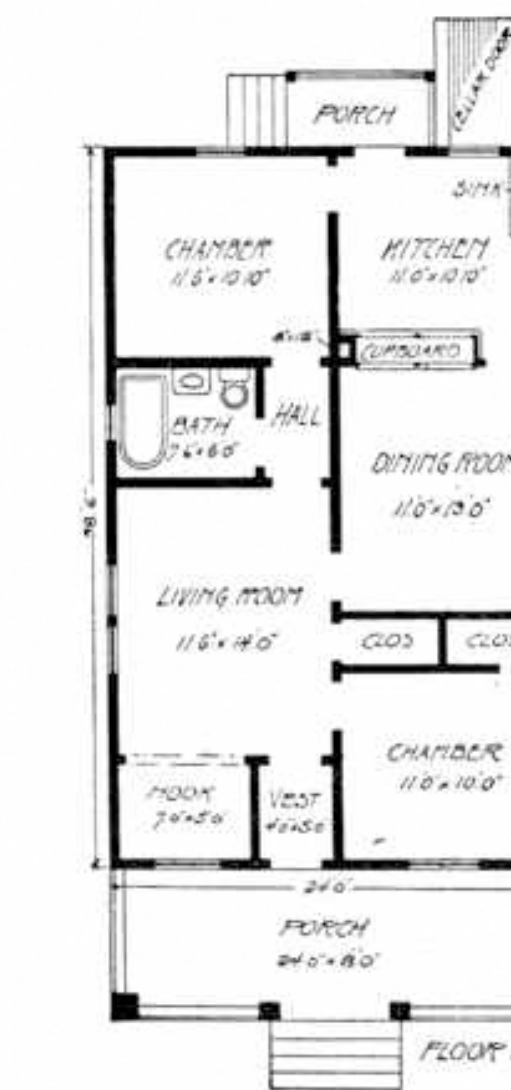
Complete Hot Air Heating Plant, for soft coal, extra.....	\$134.72
Complete Hot Air Heating Plant, for hard coal, extra.....	139.67
Complete Steam Heating Plant, extra.....	228.31
Complete Hot Water Heating Plant, extra.....	267.82
Complete Plumbing Outfit, extra.....	100.48

SEARS, ROEBUCK AND CO. CHICAGO, ILLINOIS



MODERN HOME No. 147

This house has been built at Kankakee, Ill., Great Bend, Kan., St. Louis, Mo., Mandan, N. Dak., and East Falls Church, Va.



COULD NOT WISH BETTER MATERIAL.

Mandan, N. Dak.

Sears, Roebuck and Co., Chicago, Ill.

Gentlemen:—The material furnished for Modern Home No. 147 was fine and I could not wish better. I saved about \$225.00 after paying freight. Very truly yours,

ARTHUR WITHEROW.

\$872⁰⁰

For \$872.00 we will furnish all the material to build this Six-Room Bungalow, consisting of Mill Work, Siding, Flooring, Ceiling, Finishing Lumber, Building Paper, Pipe, Gutter, Sash Weights, Hardware, Painting Material, Lumber, Lath and Shingles. NO EXTRAS, as we guarantee enough material at the above price to build this house according to our plans.

By allowing a fair price for labor, cement, brick and plaster, which we do not furnish, this house can be built for about \$1,530.00, including all material and labor.

For Our Offer of Free Plans See Page 3.

AN ATTRACTIVE cottage of frame construction and a popular design. The front elevation suggests the bungalow type of architecture. It has a large porch, 8 feet wide, extending across the front of the house which is sheltered by the projection of the upper story and supported with massive built-up square columns. Unique triple window in the attic and fancy leaded art glass windows add much to this pleasing design.

Main Floor.

From the front vestibule, which is 4x5 feet, you enter a large living room, 11 feet 6 inches by 14 feet. This room has a nook, 7x5 feet, with cased opening which can be used as a reading room or library. Living room leads directly into the dining room, back of which is a good size kitchen, 11 feet by 10 feet 10 inches, with combination cupboard which opens from both dining room and kitchen, a very convenient arrangement. This cupboard has four china closet doors glazed with leaded crystal glass facing the dining room. The kitchen side of the cupboard has six paneled cupboard doors and four small doors above. A double swinging door leads from the dining room to the kitchen. We furnish plate rail for the dining room. Note the arrangement of the two bedrooms, one in the front and one in the rear, the idea being to provide as much light and ventilation as possible. The front door is made of veneered birch, 1 3/4 inches thick, glazed with leaded art glass. All inside doors two-panel birch, with clear birch trim such as casing, baseboards, molding, etc., to match. All floors are made of clear yellow pine flooring laid on sub floor. Framing timbers are all No. 1 yellow pine. All rooms are 9 feet from floor to ceiling.

Basement.

The basement under the entire house has a cement floor and is 7 feet from floor to joists. Built on a concrete block foundation.

All outside walls covered with 1-inch dressed and matched sheathing boards lined with heavy building paper and sided with clear cypress bevel siding to the first story and "A" cedar shingles above first story line and on to the roof.

Paint for two coats best paint on the outside. Varnish and wood filler for two coats for interior finish.

This house can be built on a lot 27 feet wide.

Complete Warm Air Heating Plant, for soft coal, extra.....	\$ 55.30
Complete Warm Air Heating Plant, for hard coal, extra.....	58.56
Complete Steam Heating Plant, extra.....	118.40
Complete Hot Water Heating Plant, extra.....	152.13
Complete Plumbing Outfit, extra.....	116.93
Acetylene Lighting Plant, extra.....	47.93

SEARS, ROEBUCK AND CO. CHICAGO, ILLINOIS

Usonian Houses

Systematized Design

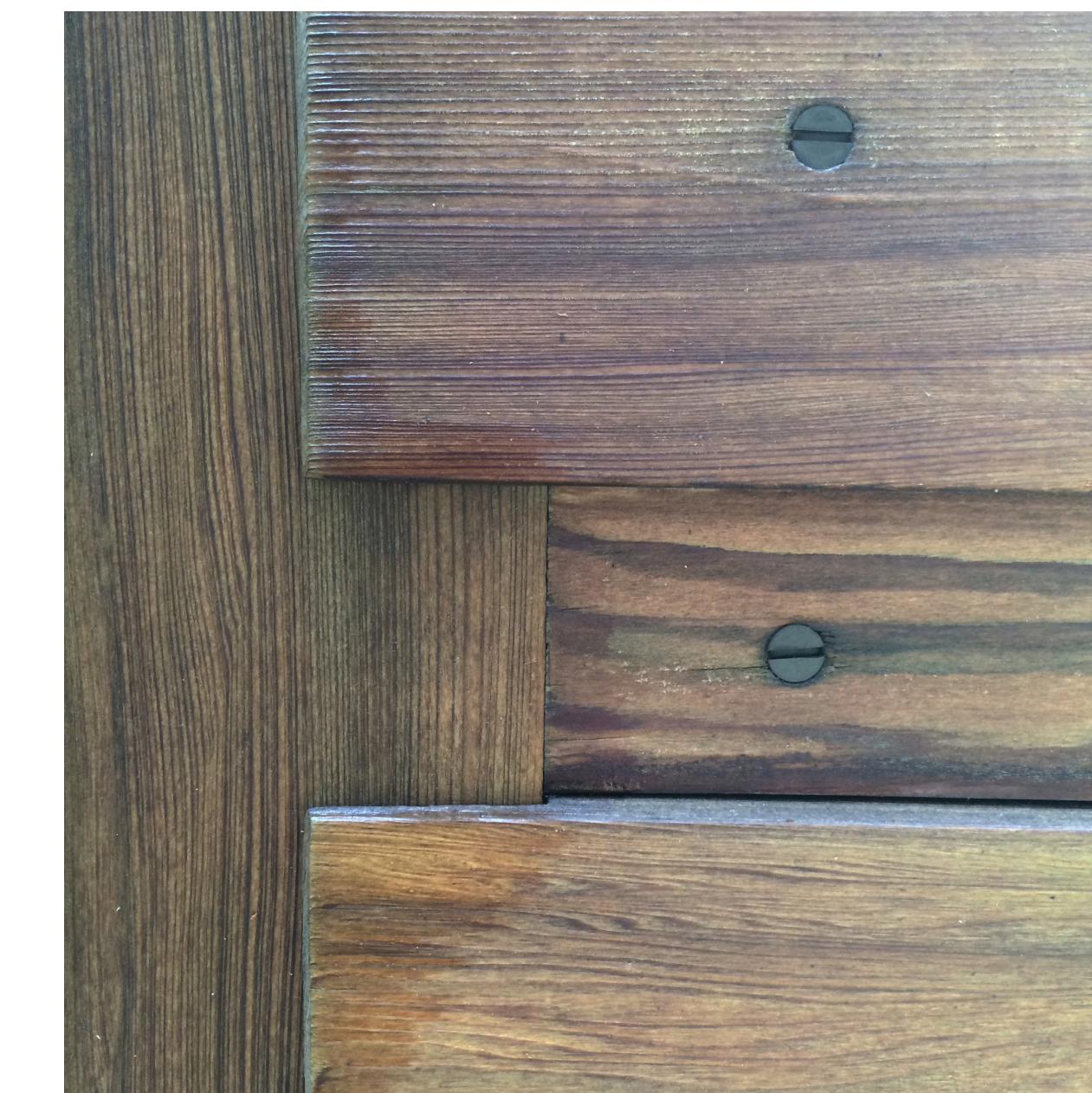
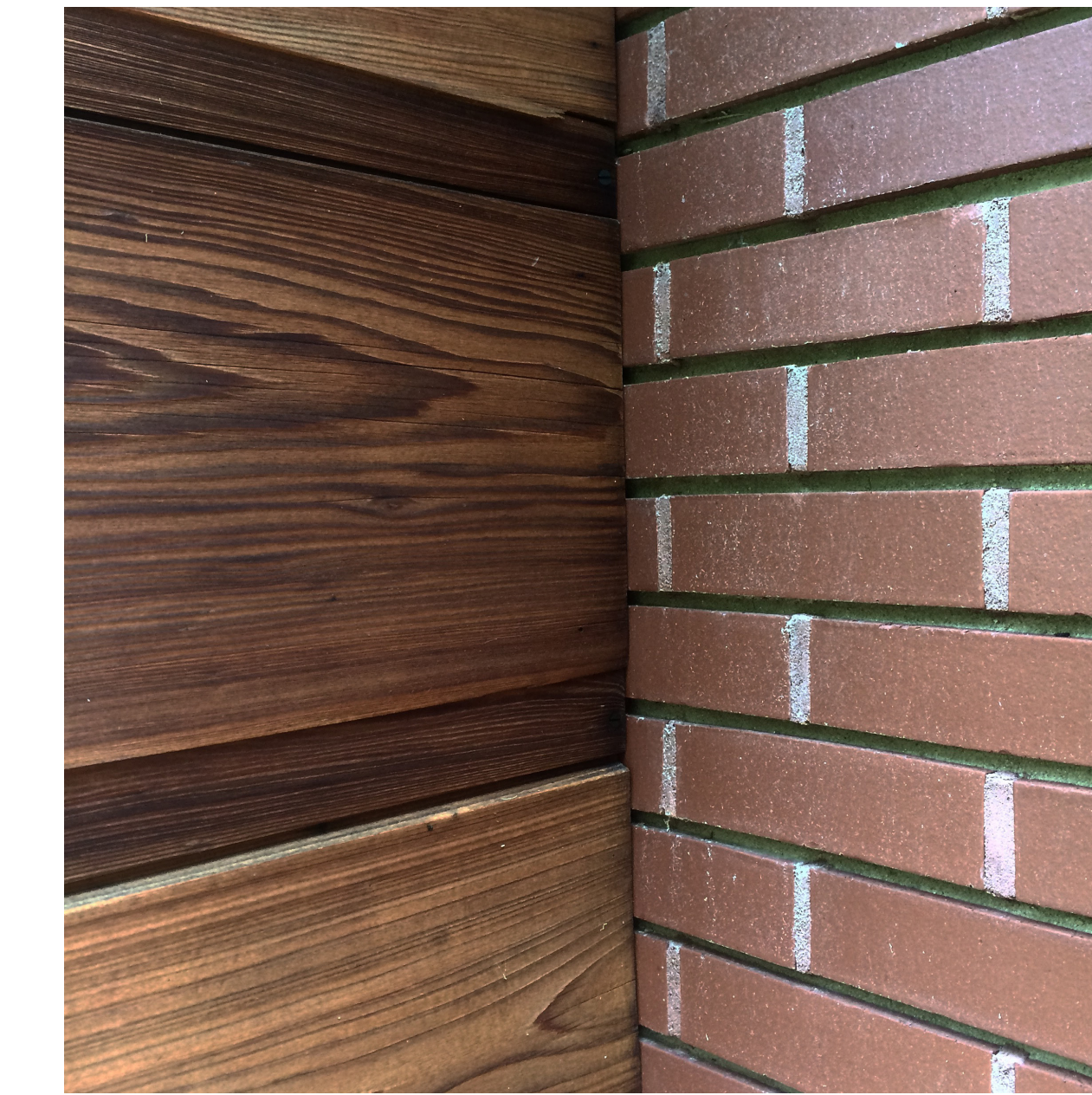
Frank Lloyd Wright
1937

Affordable single family home with “infinite variation” as the goal.

FLW developed the idea of the Usonian house in response to companies like Sears. He wanted architecturally beautiful houses at an affordable price. In order to accomplish this, he created a more efficient system for design, using set details and less construction waste.



Pope-Leighey House



Levittown

Assembly Line Houses

Long Island, NY
1951-1957

"We are not builders. We are manufacturers."

Bill Levitt

Levittown was developed just after WWII as a solution to the housing shortage. Levitt applied the assembly line mentality to housing and had workers move from plot to plot erecting up to 40 houses per day.

The Levittowner

PRICE: \$10,990 \$67 A MONTH

NO CASH REQUIRED FROM VETERANS

Times

Vol. I—No. 44 LEVITTOWN, PENNSYLVANIA, THURSDAY, APRIL 16, 1953 Price 5c

Levitt Plans Low-priced Homes 'Suitable for Any Wage Earner'

Local Churchmen Disclose Future Construction Plans

A number of Levittown's churchmen met the press Tuesday to tell of their church building plans for the community.

Represented at the meeting were the Lutheran, Reformed, Presbyterian and Episcopal denominations, all of which have already selected sites for their churches in Levittown and expect to begin construction in the near future.

A spokesman for Levitt and Sons, Inc., disclosed plans being made by the Catholic parish for the Rev. Joseph M. Collins, pastor of St. Michael, the Archangel's Church.

Lutherans, Missouri Synod First to state their plans were the Rev. William A. Drew, executive secretary of the eastern district of the Lutheran Church, Missouri Synod, and the Rev. Louis Kaufmann, pastor of Levittown's Hope Lutheran Church.

Their intentions are to erect first an "all purpose" unit on the six-acre tract purchased by the church at the corner of Mill Creek rd. and Holmes rd.

This initial structure will house an auditorium able to seat 250 persons, a full basement and of.

'I Know Nothing' Says Wm. Levitt About Authority

The Middletown-Bucks County Authority, which last week received the green light from Middletown township to operate and maintain the municipality's sewer, was referred to by William J. Levitt, president of Levitt and Sons, Inc., as a "paper organization" about which he knows

STOOD-UP, BUT HAPPY!

A house priced lower than the Levittowner will be built here in the near future, William Levitt, president of Levitt and Sons, Inc., personally announced Tuesday.

He would not reveal the selling price of planned low-cost dwelling, but said it would be "suitable for any wage-earner in the area."

The head of the building firm stated that the plans were prompted by a "market for low priced housing in this area."

Sets Salary Qualification

"I've got a hunch that people will go wild about it as soon as the price is announced," he said. "Anyone making \$82 a week will be qualified to buy it."

The new type house, which will come in four different models, is now being constructed for exhibition at the Levittown Exhibit Center, and is expected to be opened to the public the week-end of April 25.

The builder would not disclose any of the specifications of the houses.

Levittown

Assembly Line Houses

Long Island, NY

"We are not builders. We are manufacturers."

Bill Levitt





Habitat '67

Modular Precast Concrete Housing

Moshe Safdie

Built for Expo '67 as a temporary Exhibit. Safdie explored ideas of the metabolist movement in this, his thesis project. It was selected to remain after the event and became middle-income housing.



1908-1940

Sears, Roebuck and Co.

100,000 mail order houses sold

1951

Levittown

Land purchase completed

1957

Levittown

Slab layed for last house ~17,000 built

1972

Nakagin Capsule Tower

Kisho Kurokawa

1994

Container House

Wes Jones / Jones Partners: architecture pursues interest in shipping container houses. Related back to the idea of a primitive hut

2018

Affordable Housing Studio

1937

FLW Usonian houses

Systematized designs to try to bring infinite variation instead of "cookie cutter" houses provided by others.

<50 sold

1939 - 1945

WWII

GI's come home from war to start families.

Factories transition from weapons to houses + household goods

1967

Habitat '67

Moshe Safdie Precast Concrete Housing in Montreal, Canada

1989

CNC

CNC technology becomes industry standard

Prefabricated Housing

Examples

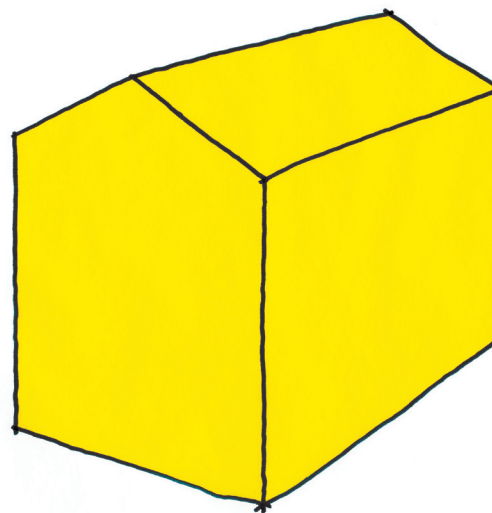
Manufactured Housing

Mobile Homes



Manufactured Housing

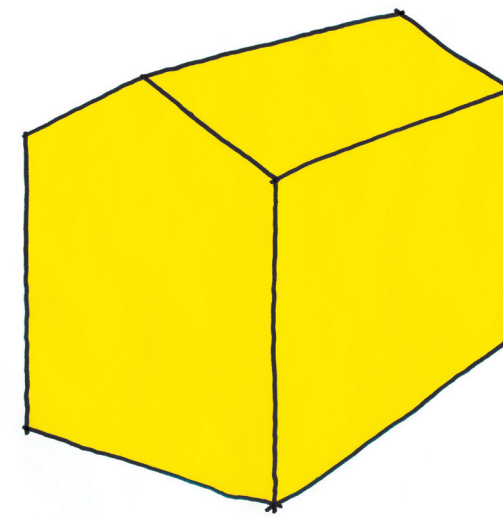
Vipp House



Vipp Shelter

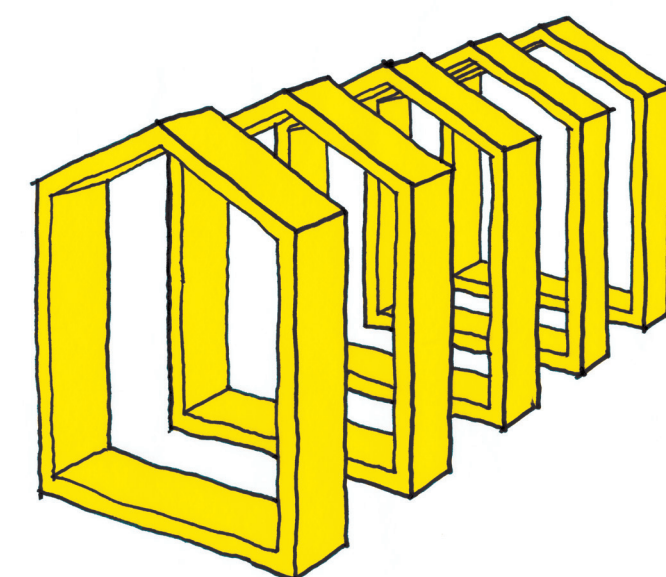
Manufactured Housing

Drop Structures



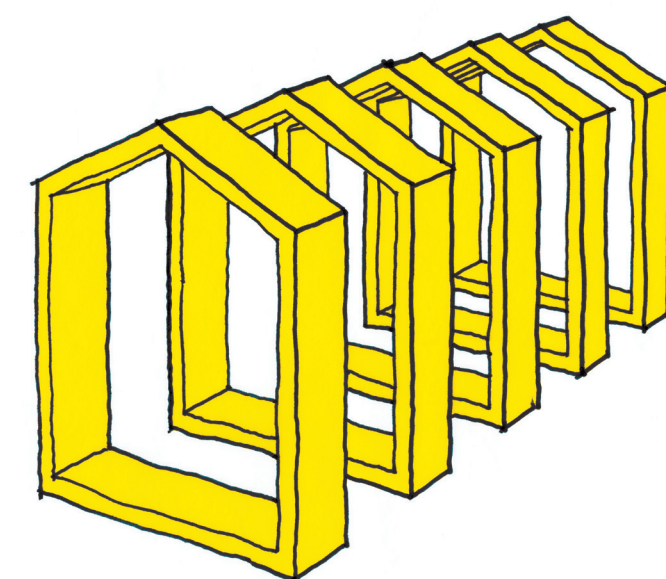
Modular Housing

Wikkelhouse



Modular Housing

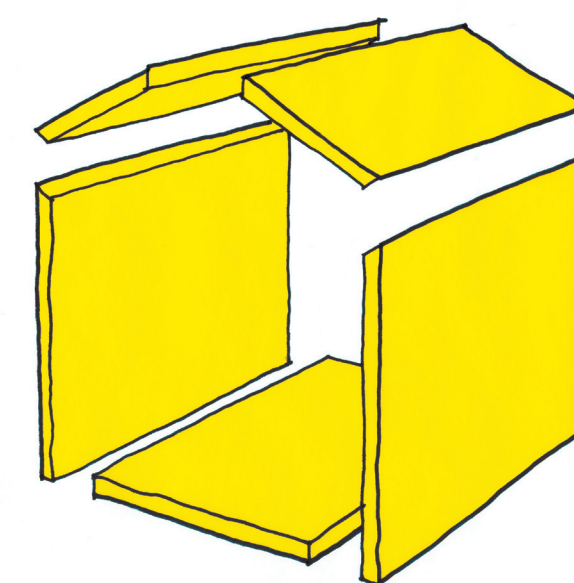
Module



Prototype Unit

Panelized Housing

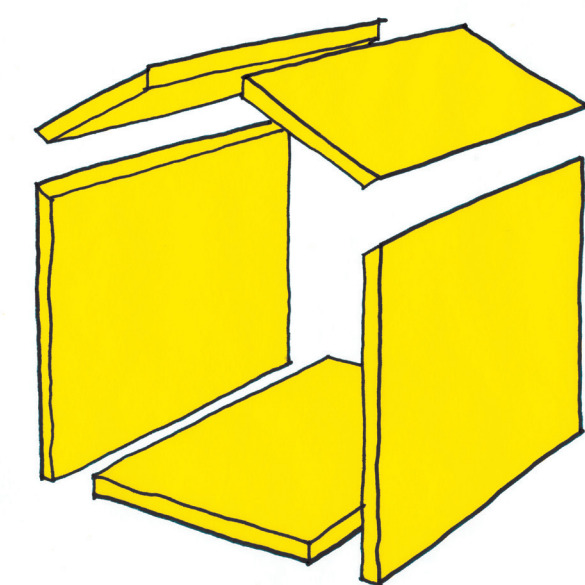
RES4 Architecture



Lake losco House

Panelized Housing

Alchemy Architects



BarnHouse

Transportation Limitations

Unpermitted

Width | 8' 6"

Height | 13' 6"

Length | 60'

Single Trip Permit

Width | 8'6" - 16'

Height | Determined by Route

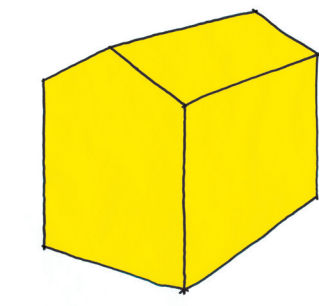
Length | 105' Long

Super Load Permit

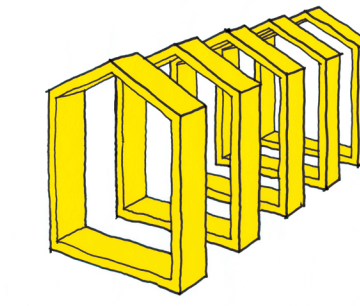
Width | 16' +

Height | Determined by Route

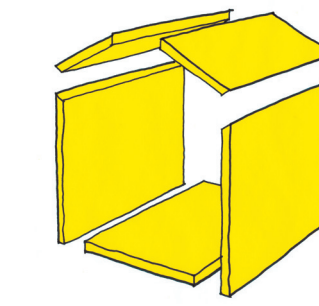
Length | Unlimited



Manufactured



Modular



Panelized

Conventional

Completion in Factory

90-100%

60-80%

30-50%

0%

Transportation Restrictions

Highly restrictive

Somewhat restrictive

Restrictive

Not restrictive

Design Restrictions

Highly restrictive

Somewhat restrictive

Restrictive

Not restrictive

Cost

\$

\$\$

\$\$\$

\$\$

Waste

Optimized

Optimized

Optimized

Not optimized

Questions?

Thank You

