



Farmhouse Fusion

Three building systems,
each with its own advantages,
combine to create a traditional-
looking Washington home

BY JILL FUERSTNEAU SOUSA



Craig Aument is a partner in The Cascade Joinery, a timber-frame company in Bellingham, Wash., so it should not have been surprising that the house he asked me to design included massive posts and beams, and beautiful woodworking joinery. What was intriguing was that Craig and his wife, Kelly, also wanted to include other building systems in the house.

A blend of building systems

In the end, the house we designed uses three different structural components. The exterior walls of the first floor are made of Rastra blocks, relatively lightweight stackable concrete forms that when filled with concrete provide a strong, well-insulated wall with minimal air infiltration, while being rot- and insect-resistant.

Heavy timber posts and beams provide beautiful interior support as well as the rafter system (covered with nonstructural stress-skin panels) for the two-story house. Finally, floors and the second-floor walls are conventionally framed with I-joists and 2x stock. Each system has cost, aesthetic, and design advantages (drawing p. 80), and in the end, the integration of the three resulted in an efficient, charming house that didn't break Craig and Kelly's bank account.

Rastra blocks for the first-floor walls

Instead of a conventional timber-frame structure where the timbers provide a skeleton for the outside walls of the house, Craig wanted the posts and beams to support the house's interior. The exterior walls would have to be structural to support the timber roof as well as the floor

It may look like a typical farmhouse. A great house results from combining timber-framing, insulating concrete forms, and standard stick-framing, each leveraged to its maximum aesthetic or cost-saving impact.





Friendly foyer. The Craftsman-style front door beckons visitors into a warm, welcoming foyer. The foyer opens to the large circulation area that joins the living room, the dining room, and the stairway to the second floor.



A tuneful living room. Heavy posts and timbers frame wide openings to the dining room and living room, a perfect spot for musical gatherings.

systems. In keeping with the vernacular shape of local farm buildings, the one-story first-floor living spaces wrap around three sides of a two-story central section (photo p. 76). The exterior walls that define these living spaces are made of Rastra block (877-935-3545; www.rastra.com).

The Rastra block gave us thick, massive masonry walls that were easy to finish both inside and out. The block was easy to work with (sidebar facing page), meaning that we were able to cut in numerous ample windows for light-filled living spaces and to open those spaces to views of the surrounding farmland.

The floors throughout the house are concrete slab with hydronic radiant heat, built atop conventional wood framing. Both inside and out, the concrete floors were grooved while wet with hand trawls, then stained with an acid stain and sealed.

The Rastra-block walls gave us yet another advantage. Because they had to be placed on below-grade footings to meet local codes, even after providing for the crawlspace below the floor framing, we ended up with the floors less than a foot above grade. Outside, the concrete porch floors were poured right up to the block just above grade. Keeping the floors low to the ground enhances the openness and the visual connection to the surrounding landscape.

Timbers provide strength and drama

The exterior Rastra-block walls support timber-frame cathedral ceilings over all the first-floor living spaces. While the timber rafters capped with natural tongue-and-groove boards and stress-skin panels provide an incredibly strong roof system, the wood ceilings combined with the heavy masonry walls provide old-world charm with a dramatic tenor.

A timber-frame system also supports the two-story central part of the house, the location of the main circulation paths through the first

Stick-frame walls for the master bedroom. Conventional framing makes up the walls for the more private spaces of the master-bedroom suite. Strong and easy to build and finish, these walls support a beautiful timber-frame roof system.



Working with Rastra block



A hoist designed for lifting car engines lets one person move and place heavy blocks with ease.

by Craig Aument

Most insulated concrete forms (ICFs) are two layers of foamboard between which you set rebar and pour concrete. Rastra block is different: It is made of foam-impregnated concrete with an internal grid of cells that are filled with rebar and concrete. They are more like giant cinder blocks than mere concrete forms. Rastra block is a great way to build quick, strong walls that are easy to put together and easy to finish.

Rastra block comes in different thicknesses, and we used blocks 10 in. thick, 10 ft. long, and either 15 in. or 30 in. high. We started our walls by hand-setting two 15-in. courses on poured footings (30-in. blocks are too heavy to handle without some help). We built a pony wall next to these first courses to support the floor framing. The first floor served as staging for setting the heavier 30-in. block, which we set with a hand-crank hoist on wheels.

We plumbed each block as it was set and shimmed it where

needed. Between courses and at corners, we used a bead of nonexpanding foam. We cut the block using an electric chainsaw with a base that tilts for angled cutting.

Around each window and door opening, we installed pressure-treated 2x6 bucks. The bucks keep the concrete in place during the pour and provide attachment for the windows and doors.

Once the Rastra wall was stacked, we wet down the blocks inside and out a few hours before the concrete pour to keep them from sucking the moisture from the concrete. We used an overhead

Chainsaw for quick, accurate cuts. A chainsaw fitted with a guide makes quick, accurate cuts through the Rastra block. Here, the saw is set at a 45° angle for a mitered corner.

Like shaping a sand castle. A trowel fitted with an abrasive surface allows the window returns to be shaped before the stucco is applied.

MADE OF RECYCLED POLYSTYRENE AND PORTLAND CEMENT, INSULATING BLOCKS STACK LIKE LEGOS AND ARE FILLED WITH CONCRETE AND REINFORCING STEEL

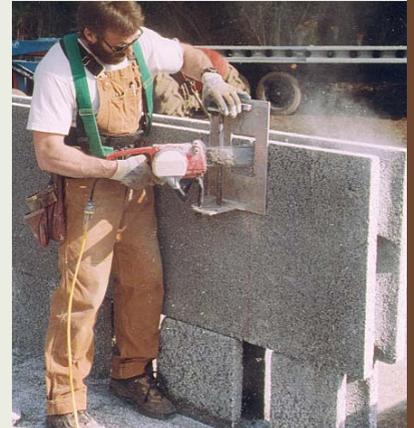
concrete pump to fill the blocks with a six-sack pea-gravel mix at a 6½ to 8 slump—a wet mix that would flow through the cells in the block without damming. We poured all the walls at one time with one person compacting the concrete and checking for voids by running a piece of rebar up and down in the cells. Another person screeded the top and set the anchor bolts.

After the concrete cured for a couple of days, we set the sill plates, headers, and timbers, then started the plumbing and electrical work. There was really no plumbing in these walls other than hose bibs that were drilled through the block between the cells.

We excavated for the electrical boxes and wire runs with a chainsaw, cutting grooves about 2 in. deep, as per our local code. The grooves then were filled with foam that we flattened with a foam rasp before applying the wall finishes. We also used a

rasp to smooth uneven edges at the joints between the blocks and to radius the corners and the edges of the window and door openings. As a finishing touch, we added a band of Rastra to the base of the wall for a water-table detail where it met grade. The stucco, plaster, and Rastra block expand and contract at about the same rate, which should minimize cracking of the finishes. So far, so good.

—Craig Aument is a partner in The Cascade Joinery, a timber-frame company in Bellingham, Wash.



BUILDING SYSTEMS WHERE THEY MAKE THE MOST SENSE

Mixing and matching building systems in a house is sensible only if those systems are used strategically. Here are the three main structural systems in this house and why each system was chosen.

Stick-framing

Advantages: Flexibility (can be used almost anywhere), inexpensive, familiar techniques

Disadvantages: Interior and exterior finishes must be applied over sheathing and drywall, aesthetically unremarkable, requires insulation

Rastra-block walls

Advantages: Easy to work with, one-step insulation and structure, finishes can be applied directly to block, works like wood, can add a heavy masonry aesthetic, eliminates concrete formwork

Disadvantages: Heavy block may be impractical for multistory houses without a crane on site, has a mundane interior finish, the coursing of the blocks can dictate wall heights, concrete costs may be high in your area

Stick-framing allows second-floor walls to be built quickly and easily, and it supports a dramatic timber-frame ceiling over the second floor.

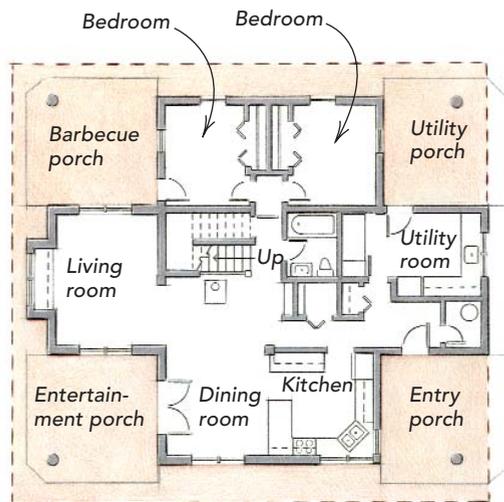
Rastra block provides structural support for the first-floor timber-frame roof system. At the same time, thick masonry walls provide a design contrast with the natural-wood ceilings and interior detailing, structure, and insulation.

Timber posts provide internal support; timber-frame ceilings add a strong, easily built design element.

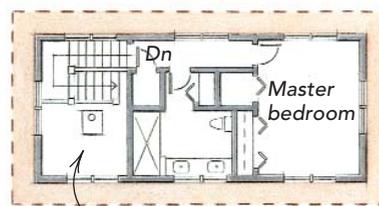
Timber-framing

Advantages: Strong dramatic elements, large beams span wide openings for open floor plans, introduces natural wood as a design element

Disadvantages: Requires labor-intensive specialized techniques and tools, needs to be insulated, requires infill between the posts, careful planning required for systems, usually a more expensive building system



North



0 4 8 16 ft.

SPECS

- Bedrooms:** 3
- Bathrooms:** 2
- Size:** 1800 sq. ft.
- Cost:** N/A
- Completed:** 2000
- Location:** Northwest Washington State
- Architect:** Jill Sousa
- Builder:** Craig Aument

Different porches do different jobs. Each corner of the house has its own porch. At the southwest corner, just off the living room, the entertainment porch gets the evening sun. Each porch also has a dramatic log post meticulously scribed to a stone base, a traditional Japanese detail and real challenge to a woodworker.



Corner porches let light inside

Tucked under the wrap-around first-floor roof are four porches, one at each corner of the house, each porch with a different orientation and a corresponding different function. As an added benefit, cutting out the cor-

ner of the house for porches lets reflected natural light inside, making the modest-size rooms seem larger.

ners of the house for porches lets reflected natural light inside, making the modest-size rooms seem larger. The porch on the southwest corner of the house opens off the dining room and looks over the horse pasture. This porch serves as Craig and Kelly's outdoor living room, and it's the favorite place to hang out on warm summer evenings.

The porch on the southeast corner (photo above), which faces the approaching driveway, is the main entry to the house. A beautiful Craftsman-style door opens into the foyer in the central part of the house. This porch primarily gets morning light. Timber-frame openings and a stained concrete floor set a welcoming tone for what to expect inside. The porch on the southwest corner of the house opens off the dining room and looks over the horse pasture. This porch serves as Craig and Kelly's outdoor living room, and it's the favorite place to hang out on warm summer evenings. The northwest porch, accessed from one of the first-floor bedrooms, is a quieter, more private spot facing the forest. This porch also doubles as the headquarters for barbecuing. Finally, the northeast porch, which opens into the large utility room, is the working entry where soggy dogs and muddy boots can come and go with minimal impact to the inside.

floor, including a warm and welcoming entry foyer. Posts and beams let us frame wide openings from the circulation areas into the main living spaces. The large openings give the interior a much roomier feel.

Stick-framing, quick and cost effective

The second floor of the central section is a more private, secluded master-bedroom suite. For these less public areas, stick-framing was a perfect choice. Timber-frame walls weren't really necessary, especially with the large timber plates and rafters of the cathedral ceiling providing plenty of drama. Stick-frame walls are easy to build and insulate, and they are relatively inexpensive.

Different building systems require different finishes

An added benefit to the Rastra-block walls is that both the inside and outside finishes can be applied directly to the block with minimal surface preparation. Inside, plaster was applied to the surface of the block, and outside, a stucco finish was troweled onto the block. Integral color was added to the finishes.

For the stick-frame second floor, the interior finish is the same veneer-coated plaster as on the block. Outside, we clad the second story with natural cedar shingles. Visually lighter, this siding complements the solid stuccoed walls on the first floor. This effect is especially noticeable on the east side, where the shingled second floor sits directly over the stucco walls below. The corner posts, the roof timbers, and the tongue-and-groove ceiling boards were given a natural finish to complement the masonry look of the stucco walls further. □

Jill Fuerstneau Sousa is an architect in Tacoma, Wash. Photos by Roe A. Osborn, except where noted.