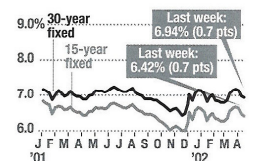


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PHASE  
4

THE HOUSE  
CHRONICLES

HOUSE CONSTRUCTION STARTS WITH DIGGING OUT THE BASEMENT  
AND POURING ITS CONCRETE WALLS



## THE HOLE STORY



WILLIAM ARCHIE/Detroit Free Press

JUDY ROSE |  
FREE PRESS REAL ESTATE WRITER



As tall as a "Jurassic Park" dinosaur on tank treads, the excavator dips its long neck to the ground, taps the dirt gently with its top teeth, then slices straight down, cutting a dirt wall so straight you could panel it.

Next it tucks its head under to hold onto the dirt, unrolls its long neck up over its body, pivots 90 degrees to the side, tips up its head and lets dirt cascade out.

Operator John Wietecha, 41, has been running this single excavator 14 years, and his work has become his art. For 12 years, his digging partner has



DAVID P. GILKEY/Detroit Free Press



WILLIAM ARCHIE/Detroit Free Press

been Mark Sedlarik, 43, down in the hole pointing to a spot that should be an inch lower.

Though the machine seems to be the size of a brontosaurus, in Wietecha's hands it moves like a graceful giraffe.

"He can scratch my back with it," Sedlarik says.

Few home owners are present when their basement is dug or its concrete walls are poured, but those days of construction are two of the most dramatic and important to the ultimate quality of the house.

If digging the hole is like a duet dance, pouring concrete is ensemble work — seven cement-splattered workers each carrying out a pivotal assignment.

Before moving to basement basics — how deep, how thick, how waterproof — here are vignettes from the home being built by RDK Homes in Van Buren Township for the House Chronicles, the Free Press Sunday Real Estate series documenting the building of a new home. For our previous stories, go online to [www.freep.com/realestate/index.htm](http://www.freep.com/realestate/index.htm).

**ABOVE:** Mark Sedlarik of Curvin Excavation uses a laser-guided level to direct the bucket of an excavator. The machine is digging out the basement of the House Chronicles home in Van Buren Township.

**LEFT:** Tom Stobaugh and Nate Mosher prepare the forms to hold the concrete for the basement walls. **FAR LEFT:** Tom Stobaugh smooths the concrete while Richard Brandon pours it into the forms.

### Van Buren vignettes

■ The first thing dug is a trench between the road and house for a gleaming copper 1-inch water line and a 4-inch white PVC sewer line. Curvin Excavation of Howell, which digs most of RDK's basements in the Walden Woods subdivision, must pause while the township inspector OKs the hook-up, then digging continues.

■ The basement is dug in just half a day. When Wietecha and Sedlarik leave, its dirt sides and floor are almost as straight as if they were the real house.

■ Next, at the bottom of the 7-foot hole, concrete footings — 8 inches deep by 18 inches wide — are poured in the outline of the house. These heavy foundations will support the basement walls. They have to cure one to three days depending on weather conditions.

Please see HOLE, Page 13H

### THE PROJECT SO FAR:

In our 12-part series documenting a house as it's built this spring and summer in Van Buren Township, Free Press readers learned how \$21,225 was spent on various building options and then, last Sunday, shared the tough three-bedroom vs. four-bedroom decision as we pored over the house's floor plan. Find those reports online at [www.freep.com/realestate/index.htm](http://www.freep.com/realestate/index.htm). And come back to the Free Press Sunday Real Estate section May 12 when carpenters construct this house's tall wooden frame.

### Phase 4. Today

#### THE FOUNDATION

Digging deep, pouring concrete and other options.

### Phase 5. May 12

#### THE ROUGH FRAME

Outline in the sky, the skeleton emerges.

### Phase 6.

#### THE EXTERIOR SHEATH

The windows, the roof, the brick, the siding.

### Phase 7.

#### BUNDLING UP

Insulation options — what you don't see pays off.

### Phase 8.

#### THE SYSTEMS

Plumbing, electricity — choices you will live with.

### Phase 9.

#### THE INSIDE SKIN

The drywall, the paint, the trim.

### Phase 10.

#### THE INSTALLATIONS

Choosing countertops, floors and fixtures.

### Phase 11.

#### THE SURROUNDINGS

Landscape, hardscape, patios and decks.

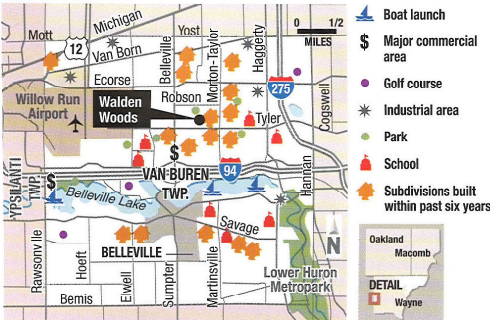
### Phase 12.

#### THE FINALE

The walkthrough, the closing, the warranty, the keys.

### TIPS: It pays to plan ahead

The basement may not feel important when you have a lot of other rooms to plan, but decisions you make here are locked in concrete. Don't blow off questions like extra height, daylight windows and insulation. Group your mechanical systems where they can be walled off later if you decide to finish the basement to create living space.



Source: Belleville Chamber of Commerce

NOVIA KNIGHT/Detroit Free Press

### BRENDEL PATTERSON | WHERE WE LIVE

## Van Buren Twp. has affordable land



Before deciding on whether to purchase a house, a buyer should research the neighborhood and surrounding community.

Although the house may be perfect, if the neighborhood lacks good schools, nearby shopping, recreational facilities and safety, the house may not be worth the price.

Things to be considered are the location of schools, the commute to work, parks and recreational facilities, grocery stores, churches, dry cleaners, movie theaters, res-

taurants and public transportation.

A look at Van Buren Township — the community where the Free Press is watching a house be built — shows a mix of accelerated development and rural charm.

### The community

Several new subdivisions are under construction or in the planning stages, says Bryce Kelley, planning and economic development director for the township. Nearly 2,000 residential building permits have been issued in the past six years, according to Housing Consultants in Clarkston.

Much of the new housing would be considered more upscale than what's typically found in the township, with many priced at more than \$250,000. Van Buren Township also has subdivisions that were built in the 1950s and '60s, fine lakefront apartments, older manufactured home parks, condominiums and houses on large lots in rural-like settings. Unique luxury homes are located along Belleville Lake, Wayne County's largest inland lake, which is about 6 miles long, covering 1,220 acres.

Please see NEIGHBORHOOD, Page 2H

■ YIKES! WE ALMOST MISSED OUR CHANCE TO UPGRADE THE CABINETS. 2H

■ NEW PRODUCTS MAKE BASEMENTS WARMER. 13H



# New materials, methods slow escape of heat from basement walls

By JUDY ROSE  
FREE PRESS REAL ESTATE WRITER

At least 95 percent of all basement walls in Michigan are built with poured concrete or concrete block.

But a new generation of basement construction is available. Consumers should not be surprised if they're offered a basement of pre-built concrete, wood, even Styrofoam.

Often the appeal is a more efficient house, using materials that don't lose heat as fast as concrete, with its low insulation value of R1.

Sometimes the appeal is ease of construction; for example, a basement easier to build in very cold

weather when it's tricky to pour concrete. Or a basement you can put in a tight spot, where a concrete truck can't get access.

At Wake-Pratt Construction, based in Auburn Hills, vice president Chris Pratt follows a wide range of new product choices for the energy-efficient homes his company builds.

He notes three categories worth watching:

## Pre-cast concrete walls

These walls arrive in panels that are assembled on-site. Each panel has a 2½-inch concrete wall, supported by a stiff frame that's also concrete — 2-by-6-inch concrete studs and a 10-inch concrete beam at the top and bottom.

That leaves room for the home owner to insulate between studs up to R30.

One maker is Thermal-Krete, carried in Michigan by Superior Development Group in Flint. That company's Web site, [www.thermalkrete-mich.com](http://www.thermalkrete-mich.com), says an average-size basement can be built in 5½ hours.

## Wood foundations

It sounds unlikely, but wood foundations have a good foothold in Michigan.

They're more common in the far north, where home builders may be too far from a source to use poured concrete.

They're also more common in houses built to be especially ener-

gy efficient, because the insulated wood walls hold heat.

"My dad's actual house has a wood foundation," says Pratt. "It's much lighter to bring into the site."

Wicks Lumber is one source for such wood foundations, Pratt says. Obviously this isn't ordinary wood. It has been pressure treated with a high concentration of wood preservatives.

## Insulated concrete foundations

ICFs are pouring into the market from many makers. They combine the high insulation quality of foam plastic with the muscle of concrete.

With some brands, the foamed plastic forms snap together like

Legos to form the walls. Concrete is poured through the honey-combed empty space inside.

Other brands ship the foam plastic as whole wall panels, again with space for pouring concrete inside. The foam plastic walls hold

heat at R20.

If a regular, poured-concrete basement costs \$8,000, Pratt estimates, the cost with cast concrete might be \$9,000-\$9,500, with wood \$7,000, with ICFs \$12,000-\$15,000.

## HOLE Excavation followed by pouring of concrete

From Page 1H

■ Outside these footings is a ring of 4-inch plastic drain tile or pipe, which gathers water from the dirt above and shunts it into the sump drain. Small holes in the bottom let water seep in; a fine mesh screens out silt. Above the tube, porous gravel lets water drain away from the basement walls fast.

■ When the footings have cured, the concrete crew from Dependant Foundations Inc. in Brighton comes back and assembles aluminum forms into a mold for the basement walls. Forms are reused on different jobs. For a custom house in an unique shape, home owners might have to pay extra for special forms.

■ It takes seven men to pour the walls. One runs the large pump truck that shoots wet concrete from a holding tank up through a tall swinging boom and back down through a 6-inch hose into the forms.

■ One man walks the top of the wall, hugging the hose to keep the tube pointed into the forms and cement coursing in evenly. As the concrete fills the walls, its pressure is 22,000 pounds per square foot, says Terry Coleman, vice president of design and engineering at Dependant.

■ Five more workers follow behind, each with a job — poking for air pockets, restraining forms stressed by the weight of concrete, inserting iron reinforcement bars, leveling the top and inserting metal brackets to hold the first course of the wooden frame. They are elbows deep in wet concrete and splashing it everywhere. You wonder who does their laundry.

■ Timing is everything to concrete. Once pouring starts, it must be completed, or the walls will be flawed. What's more, concrete can mix in the truck only 45 minutes. So back at the supplier, trucks are filled and released on a choreographed schedule so each can arrive at the right time. This house needed 50 cubic yards of wet concrete. At nine yards to the truck, that's six loads.

■ The basement walls cure for one to three days, then the forms are taken away. Next come the rough framers to build the wooden structure on top, which will be shown in Phase 5 of the House Chronicles on May 12 when we examine framing.

Pouring a basement costs about 8 percent of the total cost of the house, says RDK designer Brian Kime. In this one, base priced at about \$268,000, that's about \$21,000. Here are some of the basement issues you will want to know about if you are building a new house:

**POURED CONCRETE OR CONCRETE BLOCKS:** Poured concrete is most common in metropolitan areas and is usually preferred, because it lacks the mortar joints that connect concrete blocks.

But blocks may be your only choice if your building location is rural. Once ingredients for concrete go into the mixing truck, they have to be poured into forms within 45 minutes. If you live two hours from the nearest concrete source, it can't get to you in time.

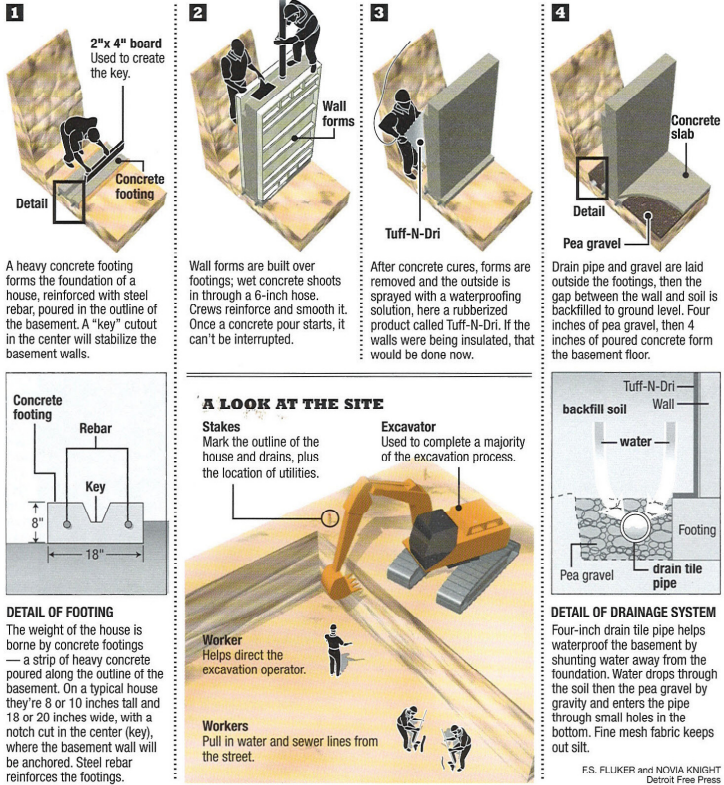
**BASEMENT HEIGHT:** A standard basement today is 8 feet tall, sometimes 7 feet, 10 inches. But many builders now make it higher — often as an option, sometimes as an included extra.

You might want a taller ceiling if you'd like to finish the basement into living space someday. With a 9-foot height, you can hang a second ceiling to cover floor joists and duct work and still have a pleasant height.

If you're offered a taller ceiling, it may be an 8-foot poured wall with a row of 8-inch concrete block on top. Or the company may use taller forms and offer a 9-foot,

## DIGGING THE BASEMENT, BUILDING THE WALLS

The house starts when an excavator digs out the hole (bottom middle), then crews pour concrete walls and waterproof them. Next will come framers to add the wood skeleton.



## DETAIL OF FOOTING

The weight of the house is borne by concrete footings — a strip of heavy concrete poured along the outline of the basement. On a typical house they're 8 or 10 inches tall and 18 or 20 inches wide, with a notch cut in the center (key), where the basement wall will be anchored. Steel rebar reinforces the footings.

## EXTERIOR SEALANT:

This is a must, and some new products are said to be stronger than the traditional coatings. The old standard was called damp-proofing — an asphalt spray that became very brittle over time, says Kime. "If and when the concrete cracks, the membrane will crack with it."

RDK uses Tuff-N-Dri, a newer product making fast inroads with Michigan builders. This has a high rubber content and will stretch, not crack, as your concrete shifts. It has an excellent 10-year warranty.

**BASEMENT INSULATION:** In Michigan's weather, wrapping the outside walls with insulating foam board is desirable, and it was part of the Model Energy Code for this area, developed by the U.S. Department of Energy.

But under pressure from builders, Michigan lawmakers rolled back this requirement, so it's not done here much.

Still, many good products have come into the marketplace, and some builders offer them. One you'll see often is insulating board made of fiberglass by Tuff-N-Dri. Dow has a foamboard product called Perma-bond.

You might see insulation values of R3, R5, even R10.

Why would you want it? Concrete has a very low insulation value of R1. In winter, concrete transfers indoor heat into the cooler soil, and even more so into the cold air where the top of the basement walls are exposed.

A few builders include this basement insulation on their homes. Some offer it as an option. Earlier in the House Chronicles it was a \$2,000 option we passed up, and we're regretting that decision. But the basement is done now, and it's too late to change.

We would always give a special

look at a builder who included this insulation or even offered it at a reasonable price, if only as an example that the builder stays up with current developments.

## QUALITY CONTROL:

This should not be your worry; it's up to your contractor and the building inspector, but here is the list they'll follow:

Your concrete walls should be at least 8 inches thick. The footers that support them should be from 8 by 18 inches to 10 by 20 inches, depending on the load they bear. They're probably reinforced with rebar.

At the bottom of the hole, your basement floor should start with 4 inches of the gravel called pea stone. On top of that is poured 4 inches of concrete — your finished floor. This concrete floor has to come after the basement walls are poured, but not necessarily right away. Once the pea stone covers the soil, workers have a dry base to walk on.

After your concrete cures, you will see shallow cracks. This is normal.

**THE TEMPERATURE QUESTION:** Concrete doesn't dry, it cures. Curing is a chemical reaction that gives off heat. In cold weather, concrete's water component can freeze, so it doesn't cure well.

Some builders will not pour concrete in very cold weather, but more builders do, adding chemicals — often calcium chloride — to adjust for the weather.

If the footers are poured on a cold day, the contractor will cover them with straw to hold heat. But for the tall basement walls there's no practical way to do this. Some contractors will build a plastic tent over concrete work and leave a heater inside.

If timing is no problem for you, the perfect concrete curing weather is 46-66 degrees, says Coleman.

**ADDED PLUMBING:** This is the only time you can put in plumbing and drains for a future basement bathroom without jackhammering out the concrete floor. If your

builder doesn't include it, it's probably worth buying as an option. Here we paid \$750.

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