

**DURABILITY AND AFFORDABILITY** 

Perforated

vinyl soffit

**GO HAND IN HAND WITH THE RIGHT DETAILS** 

grille

fiberglas

batts

Rigid foam is

taped at seam

A/C unit

available

Rim joists don't have to be leaky

Spray

Rigid foam on the outside can seal the air leaks but doesn't provide enough Rvalue. With open-web trusses, spray foam is the most effective way to guarantee continuity. DIY Handi-foam packs are available from www.sheltersupply.com; prices start at \$23. Studs are directly above the floor joists and directly below the roof trusses. This "stacked" approach transfers the load to the foundation, eliminating the need for two top plates.

> Plywood at corners for

foam

plywood

for insulation.

ou have to take the house apart to appreciate how well it's put together.

A simple shape is the first step toward affordable construction and operating costs. This two-story design uses space efficiently and fits nicely on the average city lot.

Insulation plays a critical role.

Foam sheathing augments the Rvalue of fiberglass batts and also reduces air infiltration. Smart insulation strategies are also important in the attic, along rim joists, and even in the basement.

**High-efficiency HVAC** keeps costs down and eliminates the need for a chimney.

Off-the-shelf materials can be affordable, durable, and attractive. They just need to be installed correctly and used creatively.

Open to

**Roof ventilation** thwarts trouble in cold climates

Coupled with more insulation at the top plate (gained by raising the truss's heel height) and a tight building shell, a ventilated roof is less likely to form ice dams.

## Safe, smart mechanical layout improves comfort and efficiency Sealed combustion appliances

insulation

(high-efficiency furnace and water heater) directly vent combustion gases outside through a doublewalled vent pipe that also supplies dedicated combustion air. Because ductwork is placed inside the insulation, there's less heat loss, so the furnace can run more efficiently. There are enough bends in the ductwork to diminish sound transmission, but not enough to cut efficiency. Outside air is brought into the system to keep inside air fresh.

2x3 studs Paint-on Foam insulation

pipe in gravel

Sealed electrical

outlet stops air

leaks.

A dry basement is a healthy basement

Gravel backfill and paint-on dampproofing stop groundwater from pushing its way in, and perforated drainpipe carts water away from the foundation. Capillary breaks between the footing and foundation wall along with foam insulation under the floor and inside the walls will keep the basement warm and dry, so floor coverings can be installed with little mold risk. An uninsulated stud wall makes wiring easier.

Two-stud corners make room for insulation and also reduce drywall cracks (use drywall clips or float the corners). Placing studs 2 ft. apart, rather than 16 in., makes even more room

Insulation isn't

1-in. rigid

Single

top plate

performance

windows

inherently back-vented.

Vinyl siding is

LVL rim

Loft **▲** North Doen to Living

**SPECS** Bedrooms: 3+

Bathrooms: 2½

Size: 2880 sq. ft. (1824 + 1056 partially finished, and conditioned,

Cost: \$144,000; \$50 per sq. ft.

Completed: 2000

Location: Cleveland. Ohio

**Architect:** Building Science Corp. **Builder:** Tesco Builders

0 2 4 8 ft.

FINE HOMEBUILDING

Drawings: Don Mannes

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Smart

cold spots

framing cuts