



ECOLOGICAL DESIGN

EcoVillage town homes built with green features

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[Building Science case study on the Cleveland EcoVillage construction process and green features](#)

The first major development of the Cleveland EcoVillage project consists of 20 town homes on W. 58th Street just north of Lorain Avenue. The developer is the Detroit Shoreway Community Development Organization. EcoCity Cleveland is providing design assistance with the support of grants from the Cleveland Foundation and the George Gund Foundation.

As of June 2004, construction of all 20 units was complete and all had been sold. The town homes average 1,600 square feet and feature the latest green building features, including energy efficiency, controlled ventilation, non-toxic building materials, and proximity to transit. The architect is Betsy Pettit of [Building Science Corporation](#), a national leader in the design of high-performance buildings.

EcoCity Cleveland has documented the building process and continues to offer workshops so that the lessons of green building can be spread throughout the design and construction industries of Northeast Ohio.

The following building characteristics for the Cleveland EcoVillage Town homes were developed by the development's architects, Boston-based Building Science Corp. The following features of the town homes' green building system, developed by the [Building America program](#), are compared and contrasted to standard construction materials and energy performance.

Building America

Standard comparison

Building Envelope

Ceiling:

R-38

R-30 (loose fill)

Walls:

R-19: 24 oc+ R-5 XPS ext.

@brick & siding

R-19: 24 oc + R-8 2" EPS

R-13 2x4 10 oc with OSB sheathing

exterior @stucco

Band joists:

R-19: 24 oc + R-5 XPS/R-8 2"
EPS exterior

R-13

Foundation:

R-10: 2" XPS on basement walls
With GWB. 2x3 framing, assume
no cavity insulation. R-4 3/4"
XPS on basement to slab wall

Uninsulated basement
walls

Slab:

R-8: 2" EPS under entire slab

R-5: 1" XPS

Depressed patios:

R-10: 2" XPS 4' wide frost
protection

Windows:

Double-glazed low emissivity
wood frame
(vinyl clad) U=.36, SHGC=.45

Double-glazed clear
glass wood frame
(vinyl clad) U=.46,
SHGC=.57

Infiltration:

2.5 sq in leakage area
per 100 sf envelope

8.0 ACH 50

Mechanical systems

Heat:

90%+ AFUE sealed combustion
furnace in conditioned space

80% AFUE conventional
furnace in cond. space

Cooling:

12 SEER air conditioner split
system

10 SEER air conditioner
split system

DHW:

.59 EF power-direct vent
water heater (40 gallon)

.56 EF natural draft
water heater (40 gal.)

Ducts:

In conditioned space; insulated
(as per code)

In conditioned space

Duct leakage:

None to outside (5% or less)

10% to outside

Ventilation:

AirCycler supply-only system
integrated with AHU (return side)

None

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