



THE
ADDAMS FAMILY



STEVENS-KAHN HOUSE DENVER, COLORADO

Updating a 1901 Victorian brick house to modern insulation standards

Pre-Renovation



Pre-Renovation



Pre-Renovation-Discoveries and Challenges

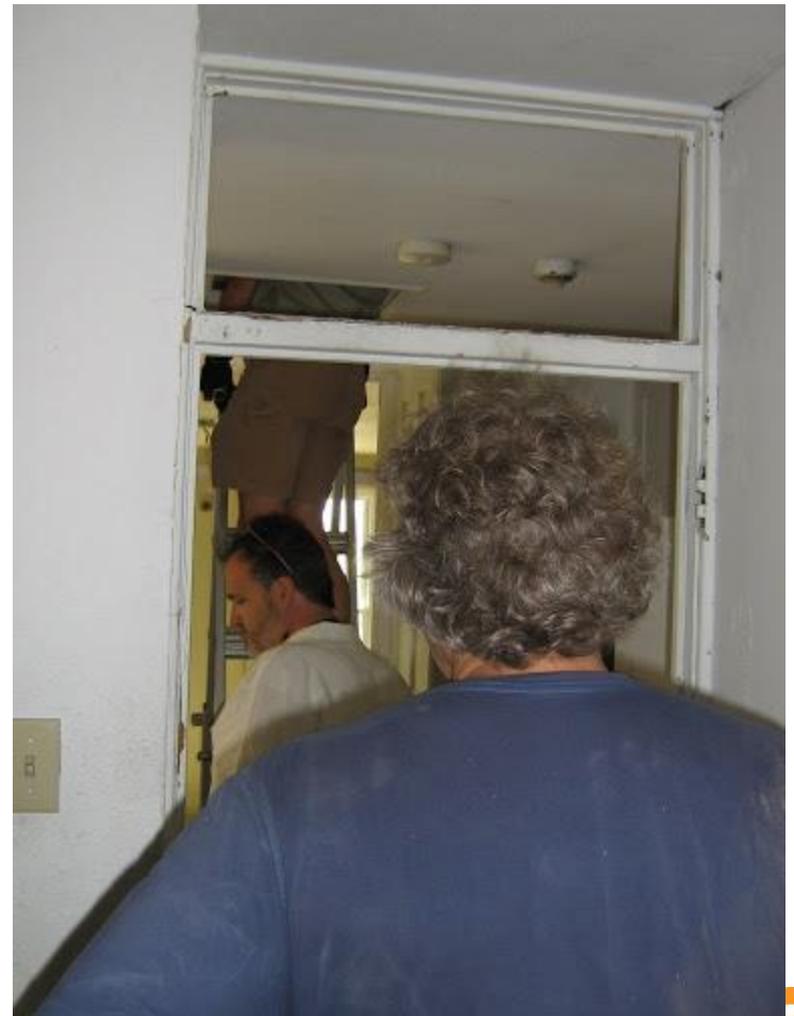


Pre-Renovation



Pre-Renovation

Asbestos tiles on the floor



Pre-Renovation



Pre-Renovation



Booker-T, My Man!



Pre-Renovation



Destruction Phase



Basement mechanical room with 80% Goodman Furnace and basic water heater, both now cut in half for display in our training center.



Destruction Phase

**Weatherization insulation
without air barriers.**



Destruction Phase



Destruction Phase



Destruction Phase

Mixed weatherization insulations and missed cavities



Destruction Phase

Top floor attic with squirrel's nest stuffed into venting



Destruction Phase



Newspaper found under siding on exterior of framed 2nd floor



Thermal Bypasses



Structural



Structural

Tore down chimneys that were not going to be used



Structural

Add beams to re-enforce floor and support 2nd floor bath



Structural

Swamp Cooler



Structural

**6 layers of shingles,
3 cedar shake, and
3 asphalt and some
nice moss growth
on north side**



Structural and Aesthetics

Add height and re-enforce roof to give 6 inches insulation depth on vaults (2x8s with 1 inch gap for cold roof)



Structural



Structural



Structural



There were some interruptions to the schedule.



Windows and Skylights



Insulation Install

- First Floor
- What I wanted
- Interior 2 inches of foam board for r-10 with 2x6 blown cellulose wall for a total of r-30 plus 2 course exterior brick

What I got

1 inch of foam board at r-5 with 2x4 blown cellulose for a total of r-18

Why?

My wife calculated that we would lose 100 sq ft on the first floor with my plan



Insulation Install

- 2nd Floor R-10 Exterior foam board with 2x4 r-13 + blown cellulose for a total of r-23
- Basement 1 inch xps above grade + 2x4 blown fiberglass for a total of r-20
- Below grad 1 inch extruded polystyrene + 2x4 r-15 blown fiberglass r-19 (one wall framer put framing on edge for a 1.5 in + cavity) for a total of r-19



Insulation Install

- 6 Attics plus vaults
- R-50 on 5 of the flat attics
- 6 inches of closed cell foam on vaults
- 7 inches of closed cell foam on roof deck of southwest roof where skylights are installed



Fears

- Old houses in Denver have soft brick and mortar
- This house is painted exterior brick, but if moisture gets trapped will it deteriorate the mortar at an advanced rate?
- Dry climate, but moisture drive on south side.



Electrical and Plumbing



Exterior

2 solar thermal panels



**Discontinued continuous
cement board soffit**



Mechanical



Windows

- Fibertek Fiberglass window U-.31, SHGC .28 with oak interior finish



Sudden Urgency to move in-Stuff happens



Finished Interior

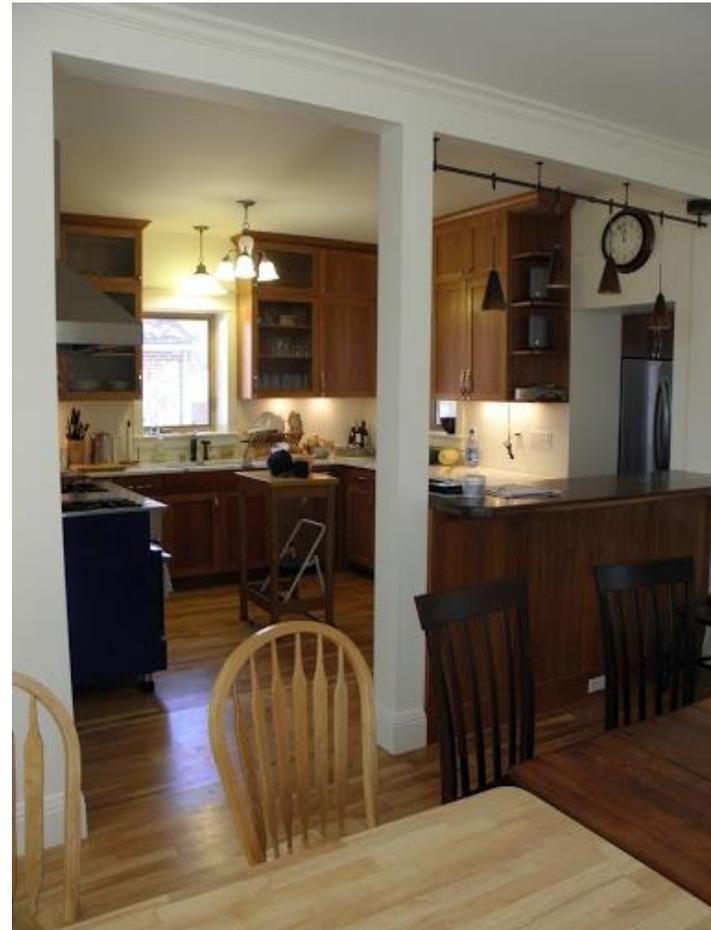
No VOC Paint



Finished Interior



Finished Interior



Finished Interior





Home Energy Rating Certificate

Rebecca Kahn Remodel
3550 Clayton St
Denver, CO 80205



**5 Stars Plus
Confirmed Rating**

Uniform Energy Rating System

					Energy Efficient				
1 Star	1 Star Plus	2 Stars	2 Stars Plus	3 Stars	3 Stars Plus	4 Stars	4 Stars Plus	5 Stars	5 Stars Plus
500-401	400-301	300-251	250-201	200-151	150-101	100-91	90-86	85-71	70 or Less

HERS Index: **48** Efficient Home Comparison: **52% Better**

General Information

Conditioned Area: 2645 sq. ft. House Type: Single-family detached
Conditioned Volume: 22362 cubic ft. Foundation: More than one type
Bedrooms: 3

Mechanical Systems Features

Heating: Fuel-fired hydronic distribution, Natural gas, 95.0 AFUE.
Water Heating: Conventional, Electric, 0.92 EF, 120.0 Gal.

Duct Leakage to Outside: NA
Ventilation System: Exhaust Only: 60 cfm, 15.0 watts.
Programmable Thermostat: Heating: Yes Cooling: Yes

Building Shell Features

Ceiling Flat: R-50 Exposed Floor: NA
Vaulted Ceiling: R-39, R-35 Window Type: Low E 31 / 28
Above Grade Walls: R-18, R-23, R-20 Infiltration:
Foundation Walls: R-20.7, R-11.0 Rate: Htg: 2051 Clg: 2051 CFM50
Slab: R-0.0 Edge, R-0.0 Under Method: Blower door test

Lights and Appliance Features

Percent Fluorescent Pin-Based: 0.00 Clothes Dryer Fuel: Electric
Percent Fluorescent CFL: 100.00 Range/Oven Fuel: Natural gas
Refrigerator (kWh/yr): 416.00 Ceiling Fan (cfm/Watt): 70.40
Dishwasher Energy Factor: 0.70

The Home Energy Rating Standard Disclosure for this home is available from the rating provider.

REM/Rate - Residential Energy Analysis and Rating Software v12.96

This information does not constitute any warranty of energy cost or savings.

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Rating Number: 21560

Certified Energy Rater: Sean Enright

Rating Date: 11/03/2011

Rating Ordered For: Rebecca Kahn

Estimated Annual Energy Cost

Use	Confirmed Rating		
	MMBtu	Cost	Percent
Heating	40.9	\$372	35%
Cooling	0	\$0	0%
Hot Water	0.8	\$18	2%
Lights/Appliances	25.9	\$687	64%
Photovoltaics	-0.0	\$-0	-0%
Service Charges		\$0	0%
Total		\$1077	100%

This home meets or exceeds the minimum criteria for all of the following:

EPA ENERGY STAR Version 2 Home

2003 International Energy Conservation Code

2004 International Energy Conservation Code

2006 International Energy Conservation Code

2009 International Energy Conservation Code

Home Energy Rating Provider

EnergyLogic, Inc.

P.O. Box N/ 525 E County Road 8

Berthoud, CO 80513

Phone # 1-800-315-0459

www.nrglogic.com

Sean Enright

Digitally signed by

client2.xohm

Date: 2011.11.03

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Certified Energy Rater



Actual Performance

- Energy costs around \$110 per month or \$1320 per year
- Comfortable except during lengthy hot weather events



The End





