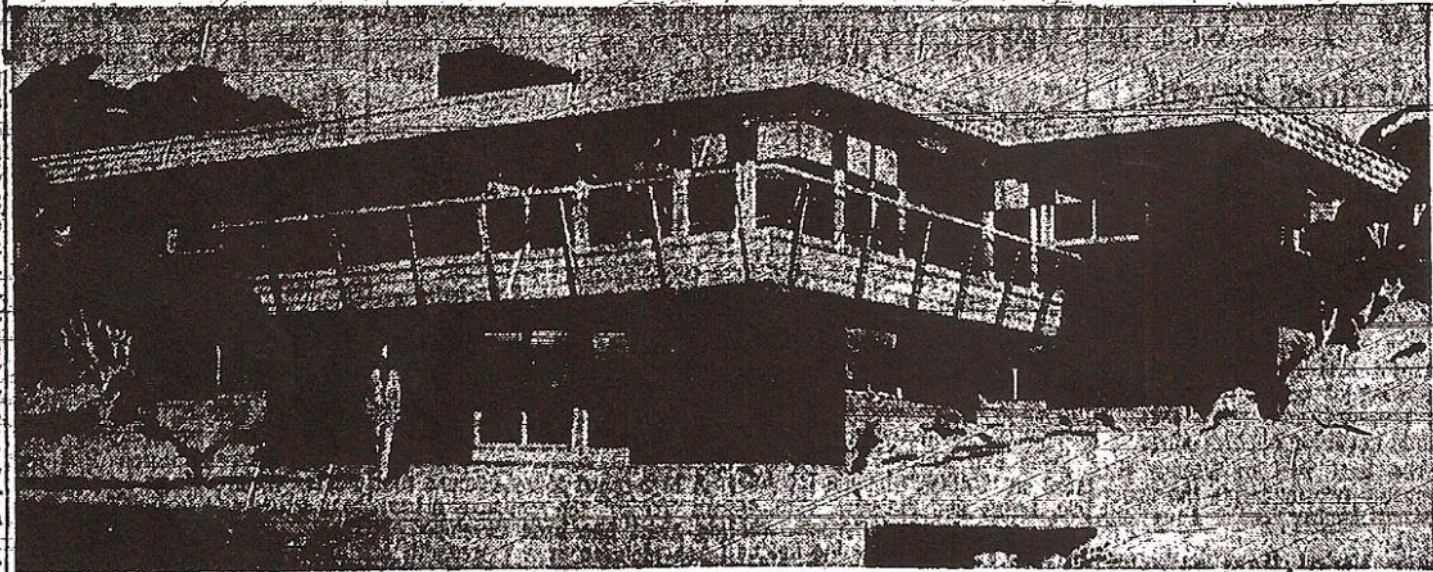


From the 50's to 5 Star Plus



Architect Benjamin C. Stein of Burlington designed this home for Mr. and Mrs. William R. Rogers. It is being constructed on Chipman Hill in Middlebury. This architect's drawing shows the downhill side. Entrance to the home is on the upper side.

Flat-Roofed, Modern Design House Being Built in Middlebury for William Rogers

Burlington Free Press

October 8, 1955

Exterior Existing Conditions



The “Wrightian Style” house,
used concrete block and brick
cavity wall construction.



- Windows were twist turn sliders with fixed corner windows.
- Good condition brick exterior.

The Flat Roof



10 yr old replacement rubber membrane roof was leaky

Perimeter of roof was raised forcing water to drain through two scuppers.



Skylight wall housed bath fan.

Interior Existing Conditions



Interior partitions
were cinder block



Foundation cracked
and settled

Existing Windows & Doors.

Double masonry walls,
window & door locations
limited changes to
fenestration.

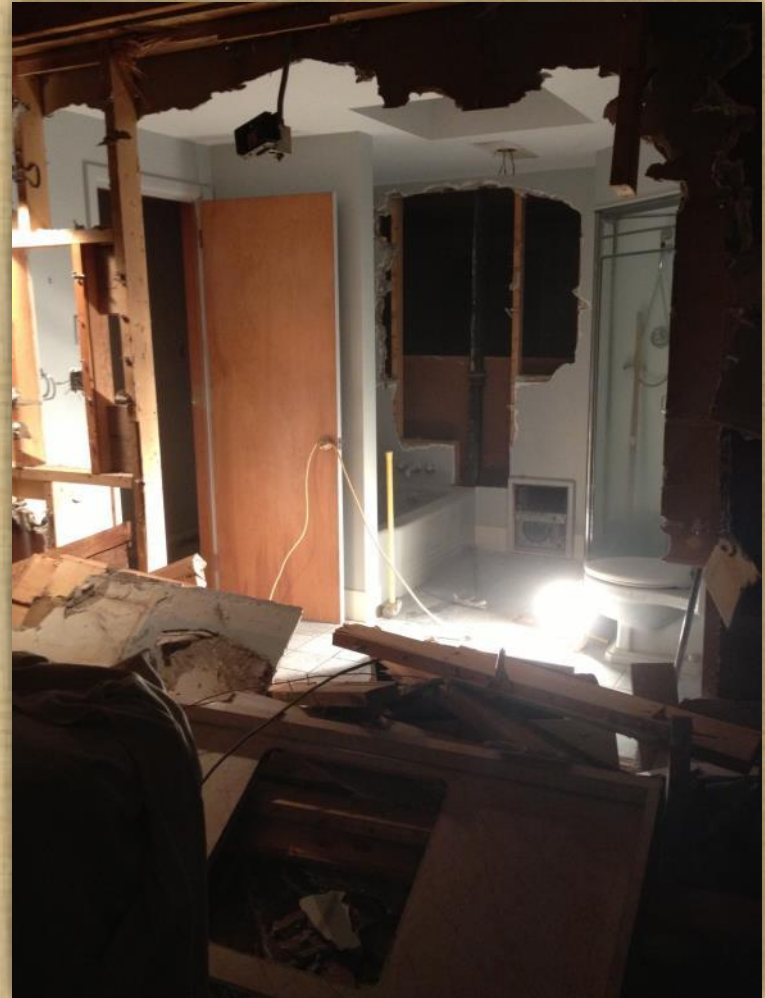


Air Barrier Strategy

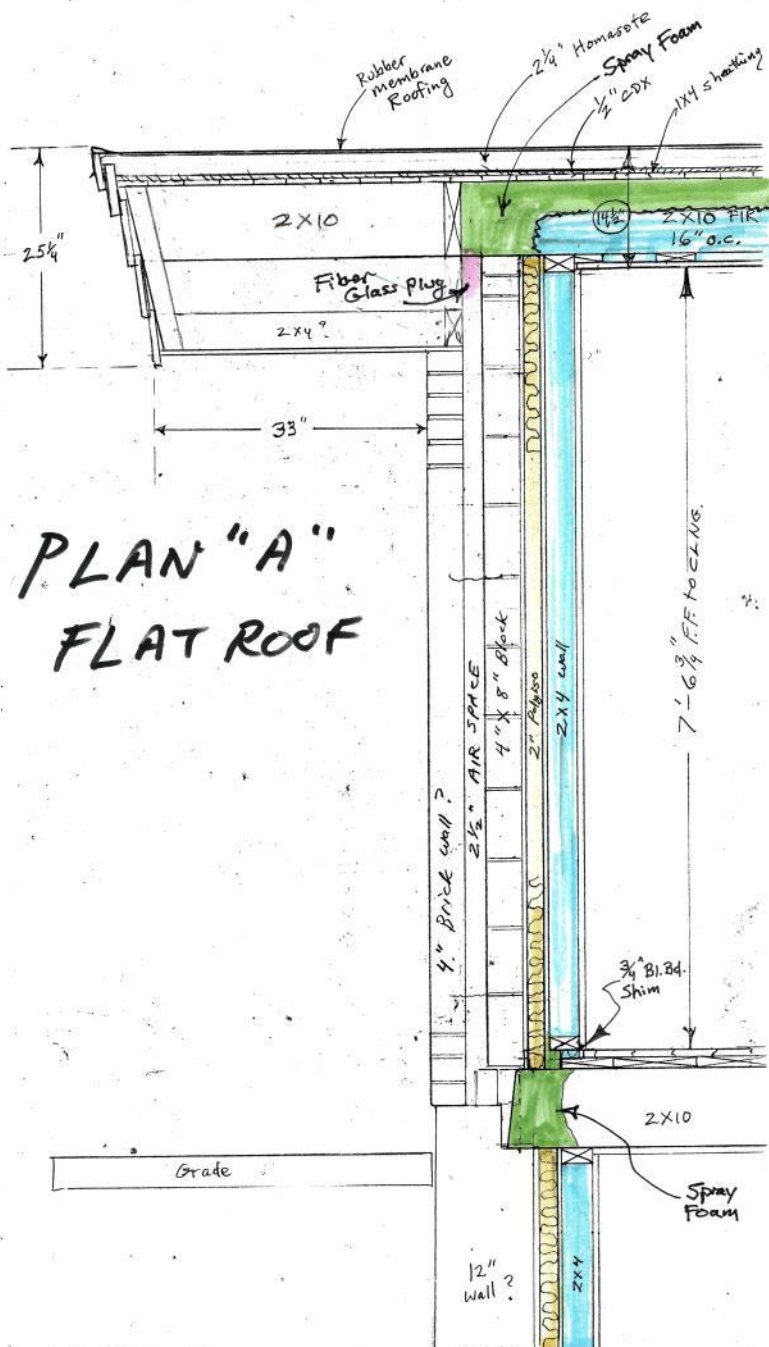


Careful attention to air sealing details

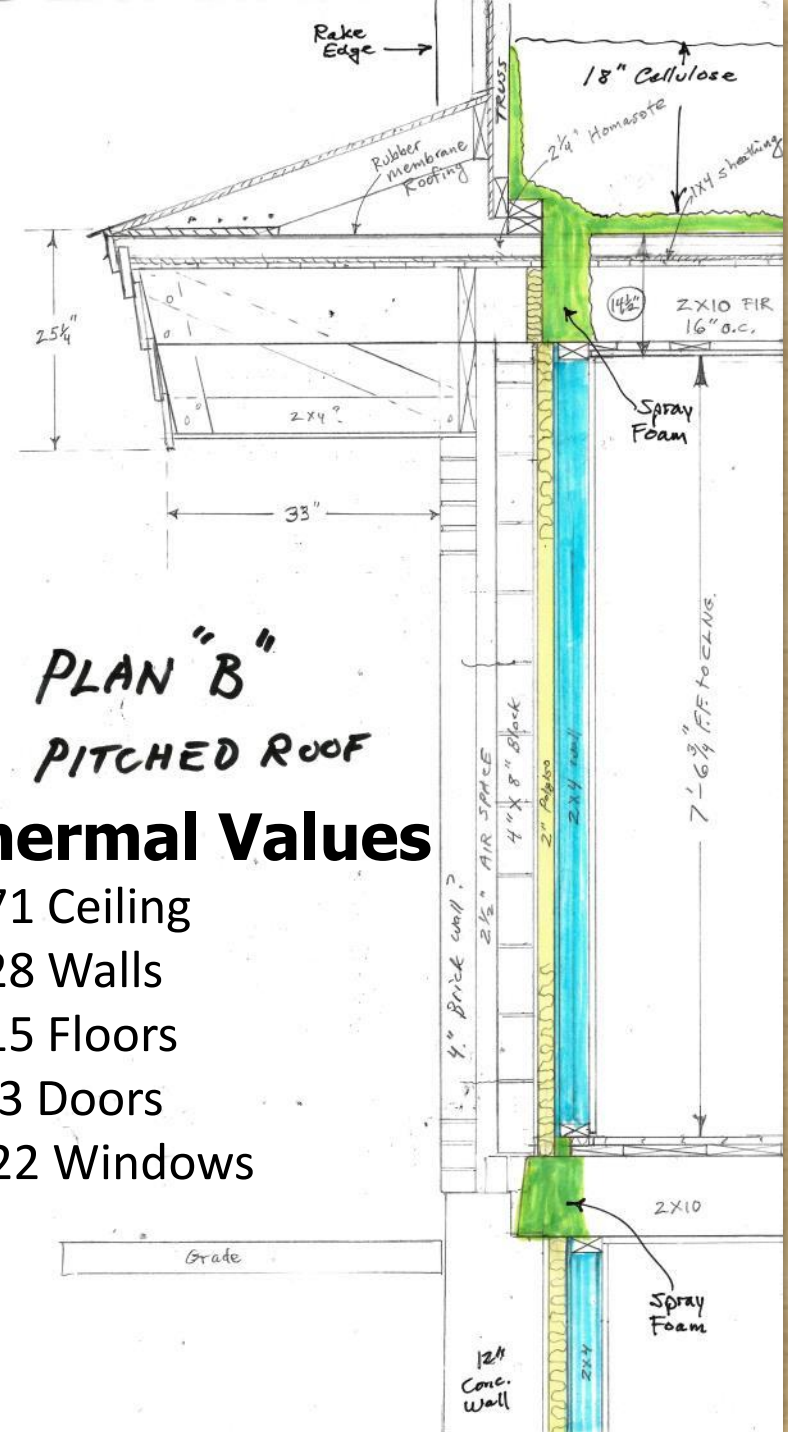
Thermal Bridging Addressed!



Scale: 1" = 1'-0"



PLAN "A"
FLAT ROOF



PLAN "B"
PITCHED ROOF

Thermal Values

- R-71 Ceiling
- R-28 Walls
- R-15 Floors
- U23 Doors
- U-22 Windows



Basement interior block partitions



Framed and foamed







- $\frac{3}{4}$ " Advantech window bucks
- Connected interior framing to exterior masonry shell



Basement slab treatment





Truss prep & air sealing



Truss Day!



Truss overhang connection













Systems

- Existing System 2000 boiler heat & hot water
- 18 Seer air source Heat Pump for AC upstairs
- Panasonic Bath Fan
- Haiku ceiling fan master



New HRV



Lights & Appliances

- TCR Velux Sun Tunnel windowless master bath
- 85.7% qualifying interior lighting
- 100% garage lighting
- 440 kwh/yr refrigerator
- .77 Dishwasher Energy Factor
- Range propane
- Electric Clothes Dryer
- EF washer



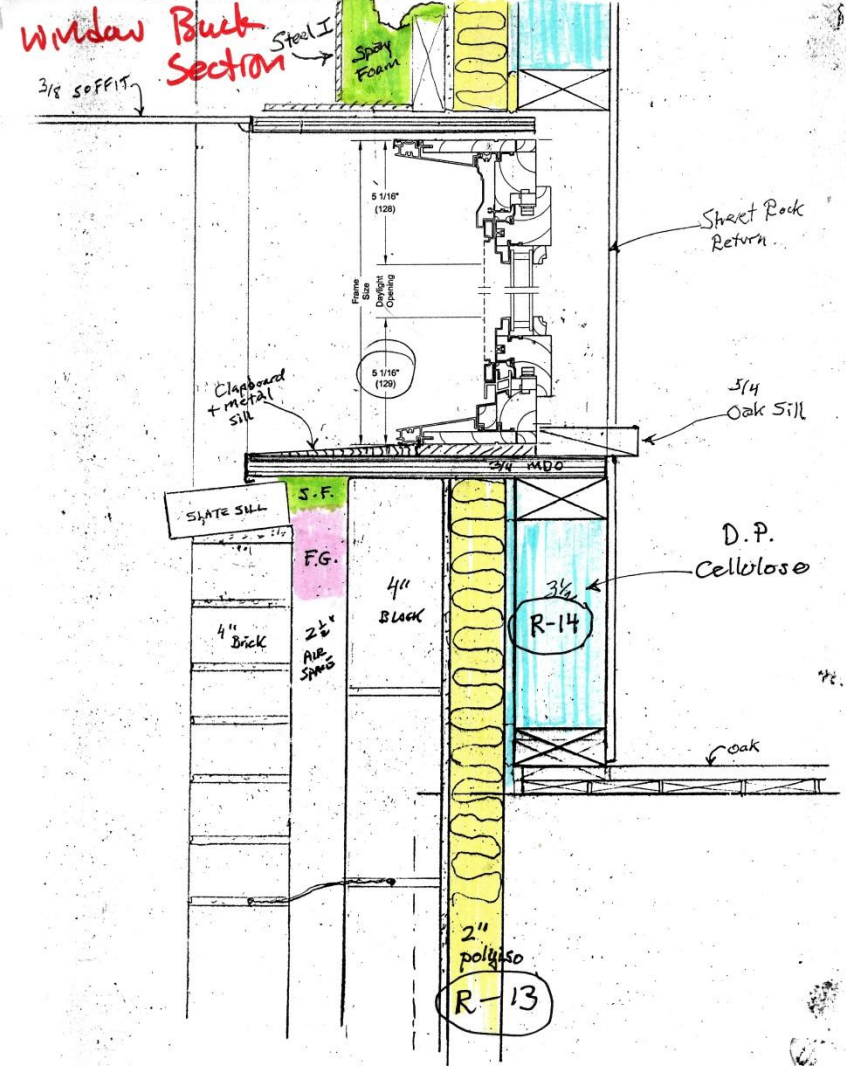
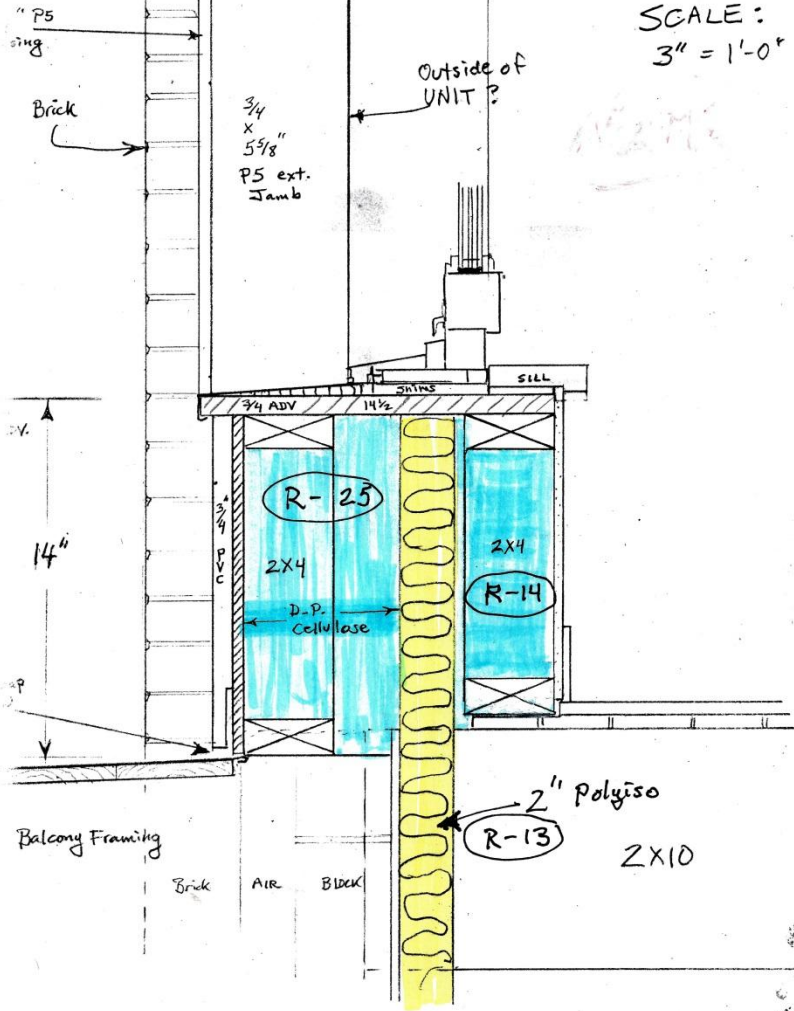




Costs, High Performance vs. Std

- Cost of doing nothing
- What does standard mean?
- Standard is broke!





Be flexible adapt to your building

Happy Home Owners

**“We are thermal envelope believers!”
Thank You!**



Barb & Tim

**Something is wrong
with our house?**

**It's zero outside, the
heat is off and its 73 in
here? Are we
doing something
wrong?**

Lessons Learned

- I would have used Platon instead of Homeslicker for subfloor drainage plane.
- I would have used a smaller dia. Sun tube

Home Energy Rating Certificate

17 Chipman Heights
Middlebury, VT 05753



**5 Stars Plus
Confirmed**

Efficiency Vermont

Uniform Energy Rating System

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

Energy Efficient

HERS Index: **40**

General Information

Conditioned Area: 2483 sq. ft. House Type: Single-family detached
 Conditioned Volume: 20504 cubic ft. Foundation: Conditioned basement
 Bedrooms: 2

Mechanical Systems Features

Heating: Fuel-fired hydronic distribution, Fuel oil, 87.7 AFUE.
 Heating: Air-source heat pump, Electric, 8.9 HSPF.
 Water Heating: Integrated, Fuel oil, 0.80 EF, 40.0 Gal.
 Duct Leakage to Outside: NA
 Ventilation System: Balanced: HRV, 114 cfm, 52.0 watts.
 Programmable Thermostat: Heating: Yes Cooling: Yes

Building Shell Features

Ceiling Flat: R-71 Slab: R-15.0 Edge, R-15.0 Under
 Sealed Attic: NA Exposed Floor: NA
 Vaulted Ceiling: NA Window Type: U0.220-SHGC0.310*
 Above Grade Walls: R-28, R-26 Infiltration Rate: Htg: 395 Clg: 395 CFM50
 Foundation Walls: R-36.0 Method: Blower door test

Lights and Appliance Features

Percent Interior Lighting: 85.70 Range/Oven Fuel: Propane
 Percent Garage Lighting: 100.00 Clothes Dryer Fuel: Electric
 Refrigerator (kWh/yr): 440.00 Clothes Dryer EF: 1.00
 Dishwasher Energy Factor: 0.77 Ceiling Fan (cfm/Watt): 0.00

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

REM/Rate - Residential Energy Analysis and Rating Software v14.3 Vermont

This information does not constitute any warranty of energy cost or savings.
 © 1985-2013 Architectural Energy Corporation, Boulder, Colorado.

Registry ID: 575580102
 Rating Number: 6038M387
 Export Build Run No: 18577
 Certified Energy Rater: Matt Sargent
 Rating Date: 6/28/2013
 Rating Ordered For: Chris Stackhouse

Estimated Annual Energy Cost

Use	Confirmed		
	MMBtu	Cost	Percent
Heating	28.6	\$633	30%
Cooling	1.4	\$63	3%
Hot Water	15.0	\$326	15%
Lights/Appliances	22.1	\$979	46%
Photovoltaics	-0.0	\$-0	-0%
Service Charges		\$135	6%
Total	67.1	\$2136	100%

**This home meets or exceeds the minimum
 criteria for all of the following:**
 2011 VT Residential Building Energy Standards*
 Energy Code Plus*
 Federal Energy Policy Act, 2005*

* Compliance with criteria for this program is
 determined by the rater.

Vermont Energy Investment Corp
 128 Lakeside Ave
 Burlington, VT 05473
 888-921-5990
 802-6581643

