When Ratings Are Not Enough

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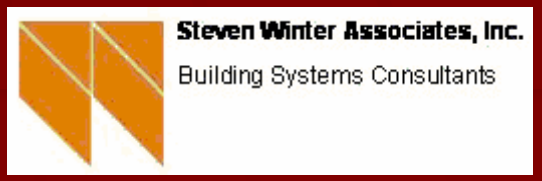


Introductions

- Who is here?
- Why are you here?

Rating Procedures

- How many field inspections?
- What kind of diagnostics?
- Whose fault is it when failures occur?

Purpose of HERS

- State building energy code compliance tool
- Qualification for programs designed to meet specific energy saving goals
- Provide the housing market the ability to differentiate residences based on energy efficiency

Scope of a HERS Rating

The energy rating identifies the energy features and estimates the energy performance of a home.

It **does not** identify structural or health and safety related problems of a home.

What HERS Ratings Do…

- Provide a benchmark for the energy performance of buildings
- Compare the predicted energy consumption of a specific building compared to a minimum standard

What HERS Ratings Don’t Do…

- Ensure building durability
- Ensure occupant comfort
- Ensure good indoor air quality
- Ensure a healthy living environment
- Prevent freezing pipes, mold, radon, or even high energy bills!
- Eliminate liability for the Rater

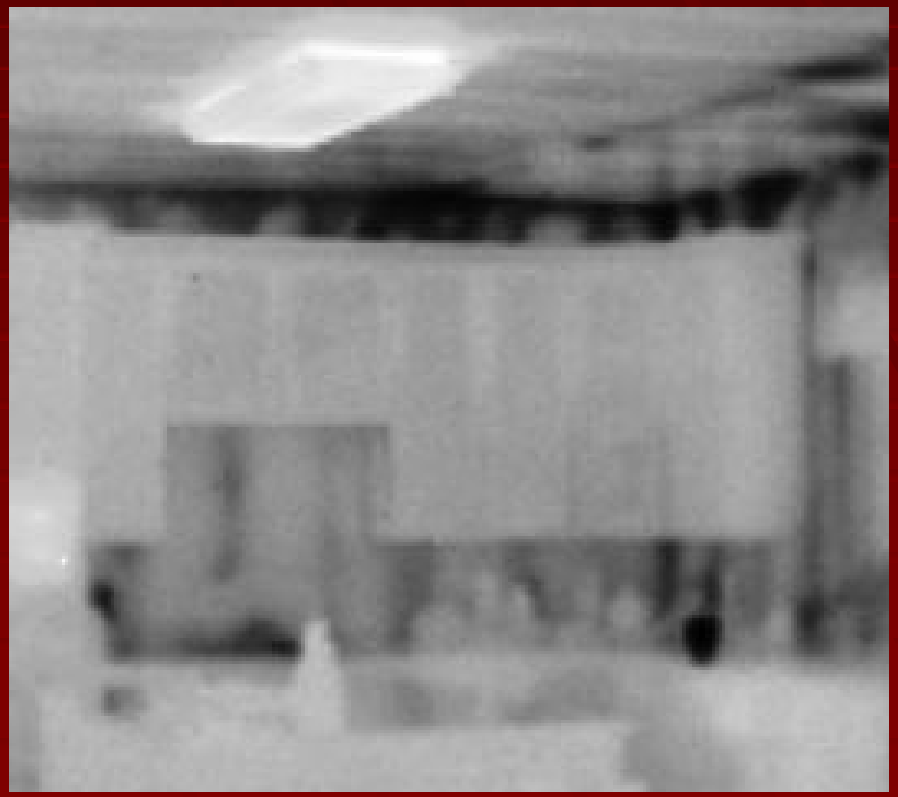
Professional Liability

- What is it?
- Why should you care?

Example 1
The Too Cold Kitchen

The Too Cold Kitchen

The Too Cold Kitchen



Another Too Cold House

- 10,000 sqft
- Located in coastal Massachusetts
- Insulated concrete forms
- Homeowner spent $4 Million building the house and was offered $10 Million to buy it from him when it was completed
- He should have taken the money.

ENERGY STAR Qualified Homes
Thermal Bypass Inspection Checklist

Home Address:_____City:_____State:_____

	Thermal Bypass	Inspection Guidelines	Corrections Needed	Builder Verified	Rater Verified	N/A
1.	Air Barrier and Thermal Barrier Alignment	Insulation is installed in full contact with the air barrier to provide continuous alignment of the insulation with the air barrier	☐	☐	☐	☐
2.	Shower / Tub at Exterior Wall	Exterior walls have been enclosed on all six sides	☐	☐	☐	☐
		Exterior walls have been fully insulated	☐	☐	☐	☐
3.	Insulated Floor Above Garage	Air barrier is installed at any exposed edges of insulation	☐	☐	☐	☐
		Insulation is installed to maintain permanent contact with the underside of the sub-floor decking	☐	☐	☐	☐
4.	Walls Adjoining Unconditioned Spaces	Continuous top and bottom plates are installed with an air barrier on the unconditioned side of insulated walls, including exposed edges of insulation at joists and rafters	☐	☐	☐	☐
		Insulation is completely aligned with interior wall finish and the air barrier on the unconditioned side	☐	☐	☐	☐
5.	Attic Access Panel / Drop-Down Stair	Attic access panel or stair is fully gasketed for an air-tight fit	☐	☐	☐	☐
		Attic access panel or stair is covered with insulation that is attached and fits snugly in the framed opening	☐	☐	☐	☐
6.	Cantilevered Floor	Air barrier spans cantilever and any exposed edges of insulation	☐	☐	☐	☐
		Floor framing is completely filled with insulation or insulation is installed to maintain permanent contact with the sub-floor decking	☐	☐	☐	☐
7.	Duct Shaft / Piping Shaft and Penetrations	Openings to unconditioned space are sealed with solid blocking and any remaining gaps are sealed with caulk or foam	☐	☐	☐	☐
8.	Flue Shaft	Opening around flue is fully sealed with flashing and any remaining gaps are sealed with fire-rated caulk or sealant	☐	☐	☐	☐
		Combustion clearance between flue and combustible materials (e.g., OSB) are properly closed with UL-approved metal collars	☐	☐	☐	☐
9.	Attic Eaves	Solid baffles are provided at framing bays to avoid wind washing of attic insulation	☐	☐	☐	☐

Example 2
The Ventilation System That Doesn't Work

Example 3
Condensing Boilers

- Condensing boilers don’t condense if the return water temperature is too high
- So, installing a high efficiency boiler with the wrong distribution system or controls will result in a 92% boiler running constantly at 80% (for example)

Example 4
Air Conditioners that Don’t Perform

- System airflow
- Refrigerant charge
- Delivery airflows

Example 5
Combustion Safety

- Backdrafting
- Gas leaks
- Carbon monoxide

Carbon Monoxide and Gas Ovens

Example 6
Water Usage

- In some municipalities, water and sewer bills rival heating and cooling bills
- This is a big deal

Example 7
Mold Problems

What We Need Beyond Ratings to Make Sure Things Work

- Thermal Bypass Checklist, and help from the GC and subs
- Ventilation system commissioning
- Heating and cooling system commissioning
- Combustion safety testing
- Infrared inspections?
- Water/sewer audits?