Summary of Energy Star Site Inspection

July 11, 2007

- While prepared to conduct a blower door test, a blower door test was underway when I arrived, following foam insulation, as per the Architect's specs.
- There are three line items on the checklist which, if installed to architect's drawings, will satisfy ES requirements, but were not visible at the time of inspection and therefore will require builder verification.
- While the building was at -50pa, I checked for air leaks at all wall surfaces on the first and second levels. Very minor air infiltration occurs in between some double studs and wall jacks, though these should be easily blocked by interior, dry wall installation. The most significant leak in the walls came from several wall outlets and through the hardware on the French Doors on the north facing wall. These air leaks in total do not constitute a concern and the spray foamed curtain wall approach as installed will satisfy Energy Star Certification Requirements.
- The only areas of current concern are in the basement –the floor/ceiling and shaft/ flue connections between conditioned basement and living areas and unconditioned garage space.

  The garage/condition space connection is a major concern for both heat loss and indoor air quality.
- With careful attention to detail during the completion of the electrical, plumbing, boiler/flue installation and interior surface finishing, Energy Star Certification should be attainable.

1.1 Air Barrier & Thermal Alignment

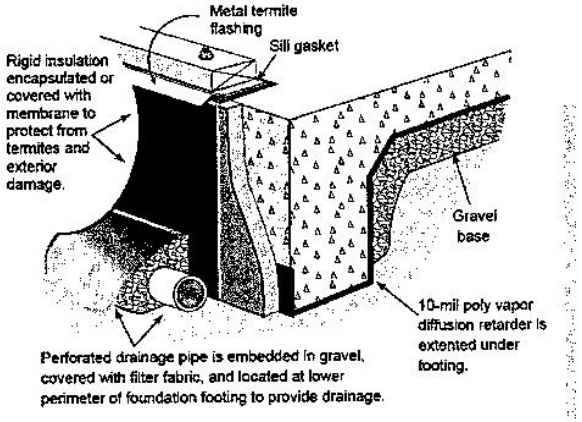
While variations in insulation thickness may impact overall effective R-value, the ES requirement is fulfilled:

“All spray foam acts as both an air barrier and a thermal barrier so it is not critical that the foam be aligned with the interior finish.” TBGp11

Much of the wall surface area has full insulation coverage.

1.4 Slab Edge Insulation

Inspection of the foundation and drawings appear to be in compliance with complete slab edge insulation, however Builder Verification will be required on the checklist. Up to six items are allowed to be verified by builder.



1.5 Air Barrier at all Band Joists

The curtain wall, insulated with closed cell spray foam, and surrounding the timber frame structure, successfully creates a continuous air barrier in direct contact with a thermal barrier. This is considered a best practice in the Energy Star's Thermal Bypass Checklist.

1.6 Minimize Thermal Bridging

Preventing thermal bridging at vertical studs is another recommended best practice but not a requirement for Energy Star Certification.

2. Walls Adjoining Exterior Walls or Unconditioned Spaces

The building design's of both an insulated curtain wall and lack of an attic and any knee walls greatky minimizes areas which commonly create areas of significant thermal bridging and air infiltration and therefore heat loss.

2.2 Wall behind Fireplace

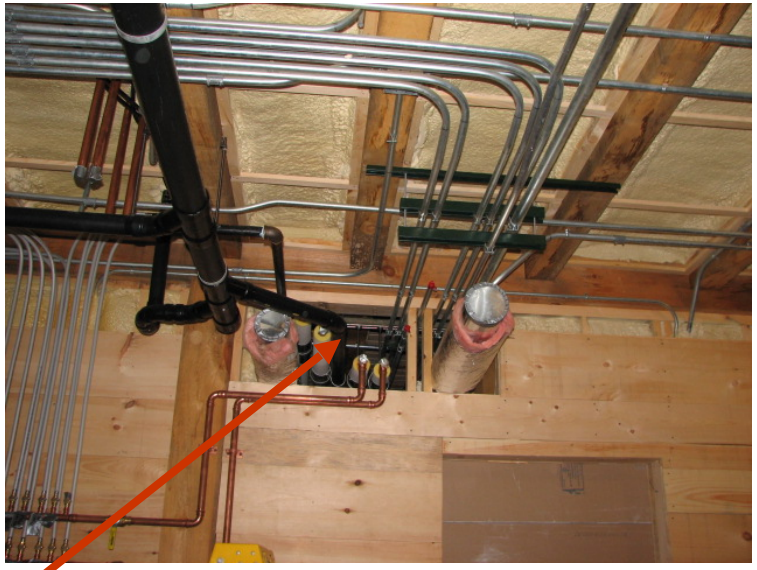
While there is no reason to suggest non compliance, verifying continuous foam insulation (and air barrier) in the wall behind the fireplace will also require Builder Verification. The builder will also be asked to verify 2.3 ‘Insulated Attic slopes’ (roof) – drawing details are in compliance with ES.

3. Floors Between Condition & Unconditioned Spaces

Again, the use of spray foam insulation creates an effective air barrier in garage walls and ceilings.

4.1 Duct and Piping Shafts

Piping in partition walls.



Considerable air leakage through this chase in mechanical room will need to be re-inspected after work is completed to make sure no connection to the garage remains.

4. Shafts and Chases

Several areas relating to the chimney were airways between the garage and the living area. The insulation company was aware of these and working to eliminate as best as possible while I was there. Since there is other work to be completed, a final inspection of these areas is critical.

The crack between the chimney and floor also need to be completely sealed filled (not shown)

During blower door test, air leaked under lip of soap stone bench. A thorough joint sealing is recommended.

Connection between living area and garage

With the house depressurized, fog was created in the garage and quickly filled the living area upstairs. Representatives from the testing company seem completely aware of the importance of severing this connection for thermal performance and air quality concerns!

4.3 Flue Shaft

The final area of concern: It was impossible to detect exactly where air was coming from but there was a considerable amount of air leakage coming through this future flue area.