

## IS YOUR HOUSE LEAKING?

### Homework Questions

Have you watched the video yet? Watch [here](#).

1. What are some tools we use to test the air tightness of a home?
2. What is the standard testing pressure for residential tests in pascals? How much pressure is this?
4. How do we find leaks when the blower door is running?
5. What were some of the leakage points in the building that was tested?
6. What are the metrics we use to assess the air tightness of a home?
7. How did this house test in air changes per hour at 50 pascals (ACH50)?
8. What is a good air tightness result? Why?
9. Have you had air tightness testing done with any of your projects? If so, what did you see/learn/observe?
10. Do you see air tightness testing becoming a part of your work?
11. Who conducts air tightness testing in your geographic area?
12. Air tightness metrics example: in the video we are using air changes per hour at 50 pascals (ACH50). To calculate this, we need the following information:

Building volume

CFM at 50 pascals

Here's the formula:

$$\text{ACH50} = (\text{CFM50} \times 60 \text{ minutes/hour}) / \text{building volume}$$

If we have a building with a volume of 23,000 cubic feet and a blower door test result of 1250 CFM50, what is the ACH50 for that building?

## CAN THE SUN POWER YOUR HOME IN A COLD CLIMATE?

### Homework Questions

Have you watched the video yet? Watch [here](#).

1. What is the purpose of site analysis/assessment when considering solar photovoltaic systems with your projects?
2. What are some of the standard tools used to perform solar site analysis/assessment?
3. Name some key elements of a good site for solar photovoltaic systems?
5. How much energy is the Evergreen house projected to use per year?
6. How do the building enclosure and mechanical systems affect the size of a photovoltaic system size?
7. Is reducing building energy consumption important when considering a photovoltaic system? Why? Why not?

## CONTINUOUS INSULATION: A WINTER COAT FOR YOUR HOME

### Homework Questions

Have you watched the video yet? Watch [here](#).

1. What is continuous insulation?
2. What is cavity insulation?
3. Describe a nail base panel.
4. What are some of the challenges with installing nail base panels noted in the video?
5. What are the layers from outside to in of the wall assembly in the evergreen house?
6. What are the benefits of 5/8" OSB vs 1/2" OSB layer on the nail base panel?
7. Which direction(s) does the Evergreen house wall assembly dry?
8. What is the R-value of the Evergreen house wall assembly?
9. What are some challenges associated with using continuous insulation?
10. What are some benefits of continuous insulation?
11. What is a thermal bridge and how does the Evergreen house wall assembly address this?

## ARE YOUR WINDOWS WORKING FOR YOU?

### Homework Questions

Have you watched the video yet? Watch [here](#).

1. What are typically the three biggest sources of heat loss in a home?
2. What is a solar heat gain (SHGC) coefficient?
3. Why do we favor a high solar heat gain (SHGC) coefficient on south facing windows in a cold climate?
4. How does the Evergreen House's design or construction manage heat gain from the sun in the summertime?
5. What is the R-value/U-value of the windows in the Evergreen house?
6. What is different about the window installation process in the Evergreen house?
8. What and where is the drainage plane in the Evergreen house?
9. How is the drainage plane integrated into the window installation? What materials are used to achieve this?
10. Why don't we tape or seal the bottom of the window nailing fin?
11. Why is the framed window sill sloped to the outside?
12. What are some benefits of using a high-performance (triple pane) window in terms of comfort and durability?

## ENERGY EFFICIENT BUILDINGS REQUIRE INTEGRATED DESIGN

### Homework Questions

Have you watched the video yet? Watch [here](#).

1. After viewing the video, what is your definition of integrated design?
2. Name some of the systems in a building.
3. What material is used as the air barrier at the ceiling of the Evergreen House?
4. What is the significance of installing the polyethylene sheeting at the top of the interior partition walls before standing the walls?
5. What other materials could be used as an air barrier at the ceiling plane?
6. What is the impact of a centrally located mechanical room?
7. Where is the ductwork located in the Evergreen house and why is this significant?
8. Why aren't there any roof penetrations on the south side of the roof?

## GREEN CONSTRUCTION NEEDS TO BE REPEATABLE

### Homework Questions

Have you watched the video yet? Watch [here](#).

1. What are standardized assemblies?
2. What are proprietary assemblies?
3. What are some benefits of using the same assemblies from one building to the next?
4. What are the material layers of the Evergreen house wall assembly?
5. What are panelized wall assemblies?
6. What are some benefits of the standardization of assemblies?
7. What is the foundation assembly for the Evergreen house?
8. What type of roof framing is used in the Evergreen house?
9. After viewing the video, name or discuss some of the benefits of repeatable building processes?