

Arch 463
ECS
Fall 2003

Name _____

Quiz #3

"Let the Glass Do It!!!!"

For this problem you are the glazing consultant for a researcher at the University of Idaho who wants to demonstrate the viability of seasonal glass houses on the Palouse. The site is located on the campus in Moscow, Idaho. It's a dead-level 30' x 50' travertine plinth with sites designated for two 10' x 10' cubes named the summer house (north-most) and the winter house (south-most).

The Buildings. The researcher was inspired by the Amazing Glazing Technology lecture in his ECS course to ask the question, "Can all glass buildings be designed for comfort in summer and winter conditions in a climate like ours?"

Kit-of-Parts. Ten regional manufacturers proved to be receptive to his research initiative and agreed to donate one 10' x 10' panel each. The panels can be ordered as either fixed 10' x 10' panels or 10' x 10' sliding glass door assemblies. The list closely resembles the technologies discussed in the inspirational lecture:

Single-pane clear glass with tilt-up reflective insulating panel (think Steve Baer's 55-gallon drum water wall house)

Evacuated glass

Kalwall, 12" thick insulating glazing

Thermopane w/blue-green exterior & clear interior panes

Bronze reflective glass, single pane

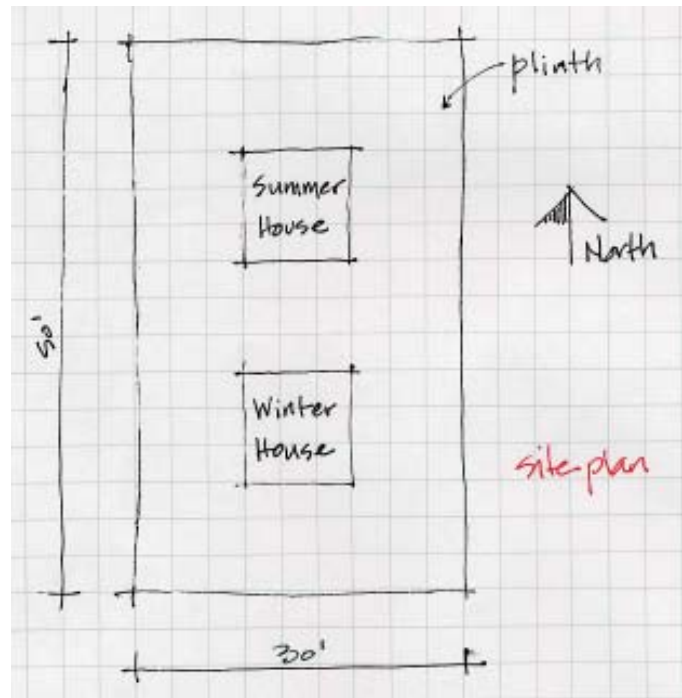
Commercial Low-E glass

Electro-chromatic glass

Thermopane fritted glass

Photovoltaic glass

Advanced double skin glazing system



Since the 1930s technology has been employed to improve glass performance...

1. Thermopane glass
2. Evacuated glass
3. Insulating glass
4. Tinted glass
5. Reflective glass
6. Low emissivity glass
7. Electro-chromatic glass
8. Fritted glass
9. Photovoltaic glass
10. Holographic diffractive structure glass (HDS)

The Climate Context. Moscow is located at 47° NL and has cool humid winters and hot arid summers. Prevailing winds are from the SW.

2 points 1. **Summarize** your design choices in the matrix below. (Do the design in questions 2 and 3 before you finalize the matrix.) **Remember** the panels can be ordered as either fixed 10' x 10' panels or 10' x 10' sliding glass door assemblies. **Designate** your **best** choice and your **worst** choice and **explain why**.

	Summer House	Winter House
South		
North		
West		
East		
Roof		

each entry is a different glazing product

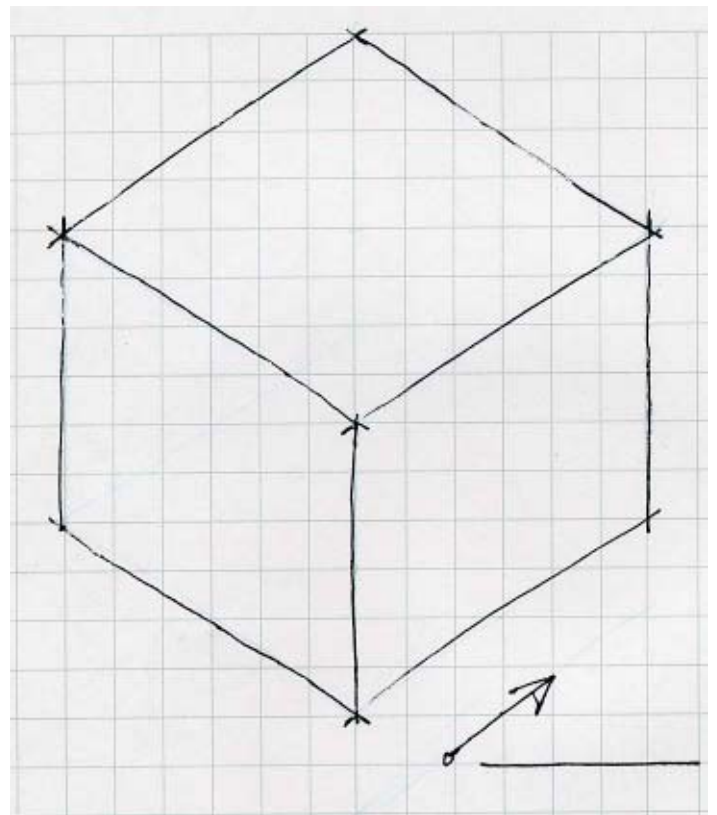
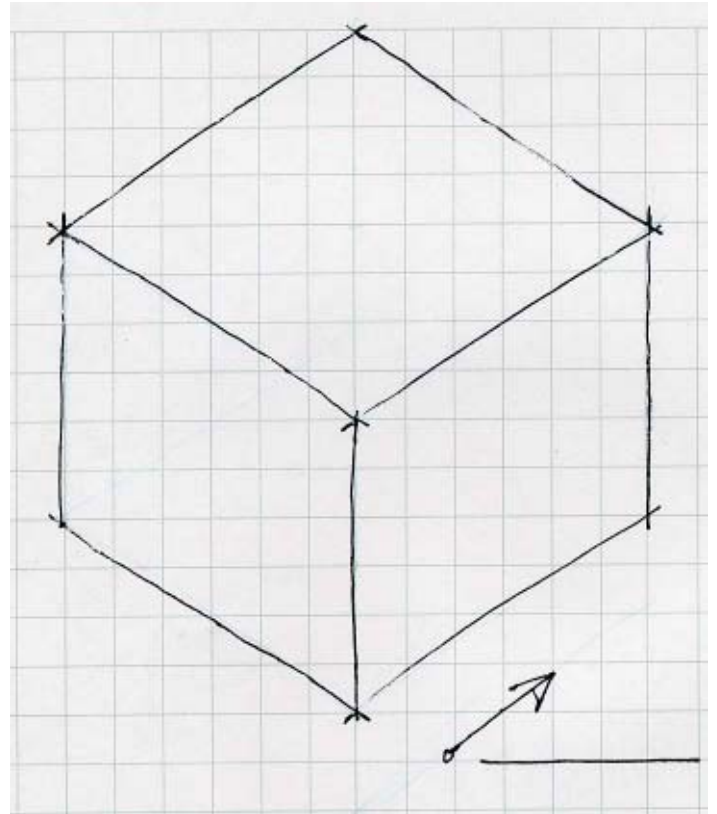
Glazing Summary Matrix

KEY

1. Single-pane clear glass with tilt-up reflective insulating panel
2. Evacuated glass
3. Kalwall, 12" thick insulating glazing
4. Thermopane w/blue-green exterior and clear interior panes
5. Bronze reflective glass, single pane
6. Commercial Low-E glass
7. Electro-chromatic glass
8. Thermopane fritted glass
9. Photovoltaic glass
10. Advanced double skin glazing system

4 points

2. **Show** the design of the Summer House by indicating which glazing units (fixed or sliding) are used on each wall in the axonometrics below, indicating the direction of the arrows in the sketches. **Explain** your glazing choice for each wall in terms of how it interacts with the environment in August to provide comfort to occupants of the cube.



4 points 3. **Show** the design of the Winter House by indicating which glazing units (fixed or sliding) are used on each wall in the axonometrics below, indicating the direction of the arrows in the sketches. **Explain** your glazing choice for each wall in terms of how it interacts with the environment in December to provide comfort to occupants of the cube.

