

Arch 463
ECS
Fall 99

Name _____

Quiz #4

"Glass Association Airlock"

For this problem you are the airlock designer for the Architectural Glazing Manufacturers Association (AGMA). Your assignment is to design an airlock for their mid-rise office building in St. Louis, Missouri. The airlock is seen by AGMA as being an opportunity to demonstrate the utility and beauty of advanced glazing products. It also has the pragmatic function to serve as a comfortable transition space that welcomes guests and employees to the association headquarters. Two benches will be installed in the airlock to accommodate people who must wait for rides or transit.

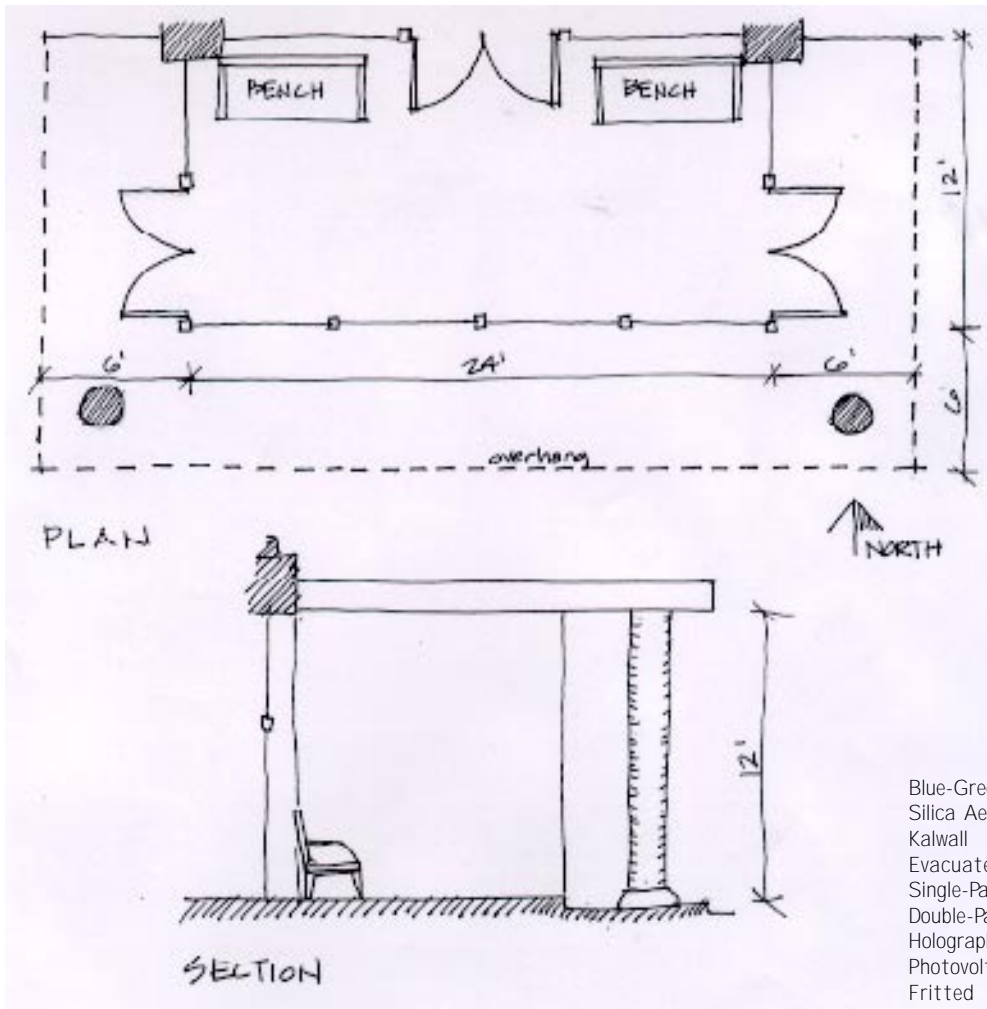
In order to provide a comfortable transition space, the airlock must maintain temperatures cooler than outdoors in summer and warmer than outdoors in winter, while employing no mechanical means of conditioning the air. St. Louis' climate is your basic horror story—hot and humid in the summer and cold and damp in the winter. Prevailing winds are from the southwest yearround.

The airlock will be located on the south facade of the building. It will have five totally glazed surfaces (except for mullions)—exterior walls facing east, south, and west; a relicht between the airlock and the lobby; and a glazed roof. Entry doors will be located in the east and west walls and in the center of the relicht. Four of the glazing panels are operable. The roof, supported by two concrete columns, overhangs the airlock by six feet on each side.

Kit-of-parts—choose one of the following for each of the five glazed surfaces (3 exterior walls, relicht, and roof). You **must** use a different glazing for each surface.

- Blue-Green Low-E
- Silica Aero-Gel
- Kalwall
- Evacuated
- Single-Pane Clear
- Double-Pane Bronze
- Holographic Diffractive Structure-(HDS)
- Photovoltaic
- Fritted





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2 pts @ surface

1. **Specify** a glazing type from the kit-of-parts for each of the five surfaces. **Explain** why it is appropriate for the specific surface for which you have designated it—how does it contribute to the thermal and visual performance of the airlock? **Describe** any special features that must be implemented in the fabrication of the glazing.

1. East-Facing Glazing

2. South-Facing Glazing

3. West-Facing Glazing

4. Relight to Building Interior

5. Roof

1 pt

Extra Credit. Add one element to your scheme to make it better. **Diagram** your improvement and **explain** why it improves your design.