

Arch 463
ECS
Fall 97

Name _____

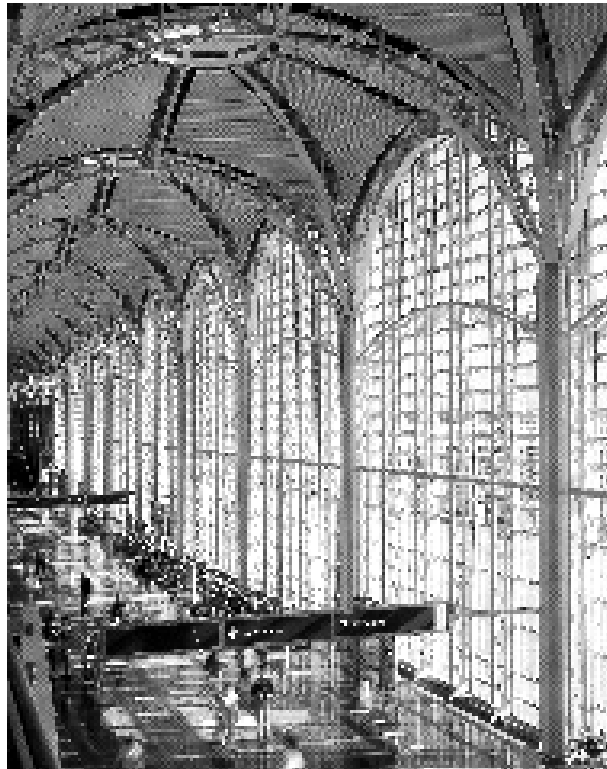
Quiz #4

"Three Half Acres of Glass"

For this problem you are the glazing consultant to Cesar Pelli for the new terminal at Washington National Airport, in Washington, DC. As a consultant it is your duty to help Pelli choose glazing that supports his design philosophy and makes the building aesthetically and thermally comfortable for the users.

The October 1997 issue of *Architectural Record* reports, "The 45 x 45 foot structural vaults and the **one-and-a-half acre glass curtain wall** that encloses the east side of the concourse are the primary elements of Pelli's attempt to establish a sense of scale and orientation for the passengers. There is no mistaking where the planes are: they are beyond the glass. 'I was trying in my design to answer questions that I have had about many airports. For example, why must there be disorientation of the passengers? In many airports when you leave the plane, you go left, right, left again. After a short while you don't know where you are. That adds to anxiety and unpleasant feelings.'

Pelli has also attempted to raise traveler's spirits by using bright yellow paint on the structural system, brushed stainless steel on the roof and trim, and extensive daylighting throughout the building. . . . 'I find most airports are painted gray,' Pelli says. 'They may be nicely composed shades of gray, but they are all gray. Even though they may be airy, they lack warmth.'"



View of terminal interior and east wall.



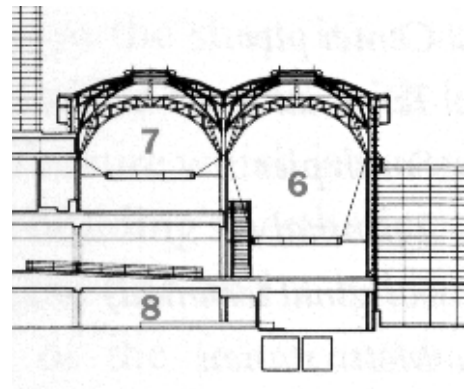
View of terminal from southwest.

1. Explain the problems posed by the vast east-facing curtain wall and its shading strategy.



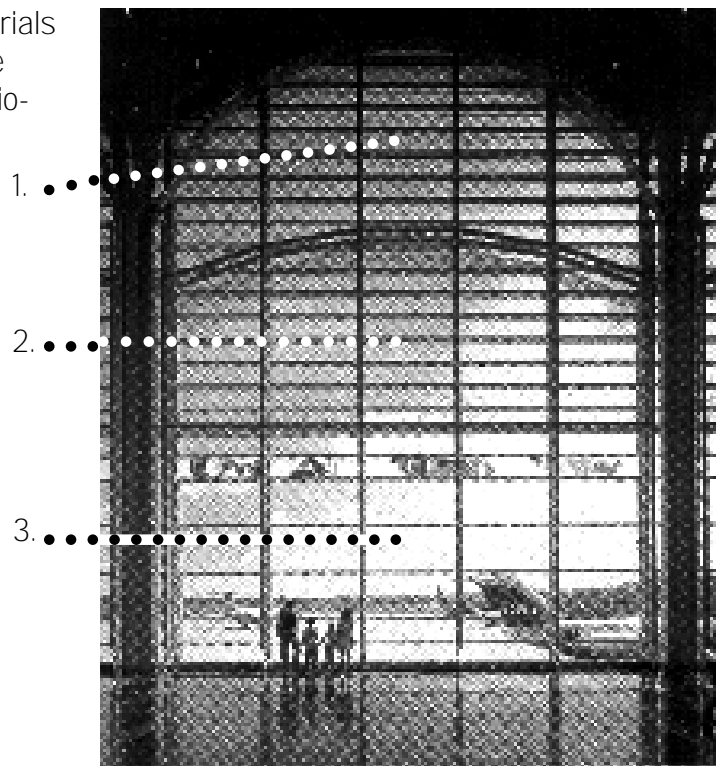
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Shading devices for east facade.



West to east section of terminal.

2. Suggest three different glazing materials for the curtain wall, one for each of the three zones shown in the elevation. Explain the rationale for your choices.



Interior elevation of east facade. Note scale figures. Area 1 is high glazing between shading devices; area 2 is middle glazing below lower shading device; area 3 is low glazing near floor.

Your palette of possible glazing materials and their transmittance properties is:

Clear, double-paned	visual 0.79; solar 0.62
Blue-green, double-paned	visual 0.70; solar 0.43
Gray, double-paned	visual 0.45; solar 0.42
Dark Bronze, single-paned	visual 0.06; solar 0.14
Commercial low-e, double-paned	visual 0.57; solar 0.36
Silica aerogel, double-paned	visual 0.85; solar 0.65
80% ceramic fritted, double-paned	visual 0.15; solar 0.12
Kalwall insulated, white, double-paned	visual 0.10; solar 0.09
Photovoltaic, blue, double-paned	visual 0.04; solar 0.02

3. Explain how your proposal improves the room thermally and visually (over clear double-paned glass) and how it complies with the architect's intentions.