

Arch 463
ECS
Fall 2020

Name _____

Quiz #2

"Humanizing Johnson's Glass House"

For this problem you are the glazing and shading guru for a post-professional architectural research group that wants to demonstrate that Philip Johnson's Glass House in New Canaan, CT can be an exemplar for green building using today's technology and passive principles. They intend to build an exact replica (except for the new technologies and shading devices that you specify) on a site on the MIT campus in Boston. Your role is to analyze the house and to suggest appropriate changes to improve its passive performance in its new, but similar climate.

MIT Context. A flat, barren site between playing fields at Briggs Field on the MIT Campus, where the house will be oriented on a true E-W long axis. It's right across the street from Steven Holl's Simmons Hall dorm.



READ EVERYTHING FIRST!

The Setup

Rules:

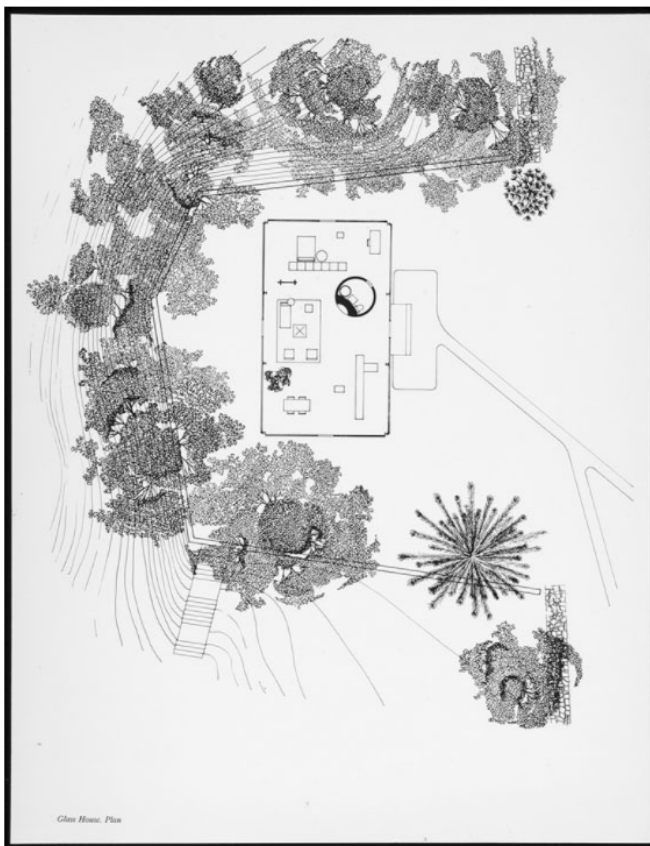
1. Each side of the house will use a different glazing material, only one glazing type per façade.

Your choices are a) Triple pane super glazing, b) Evacuated glass, c) Nano Wall with silica aerogel R-20 insulation, d) Kalwall with R-20 insulation, e) Pilkington Profilit with silica aerogel, f) ETFE glazing, g) Sage electrochromatic glazing, h) Blue-Green commercial low-E glazing, i) Traditional single pane glazing, j) Bronze reflective glass.

2. Each side of the house will use a different shading strategy, only one strategy per façade.

Your choices are a) A Corbu-esque (like Chandigarh) brise soleil, b) Movable perforated metal louvers, c) A simple egg-crate, d) Vertical fritted glass fins, e) Fixed horizontal louver overhang, f) Photovoltaic glazing panels as horizontal shading, g) Double wall with movable vertical louvers, h) No shading device

The floor plan (The original house has a long north-south axis. The MIT site has no trees and a long east-west axis.):

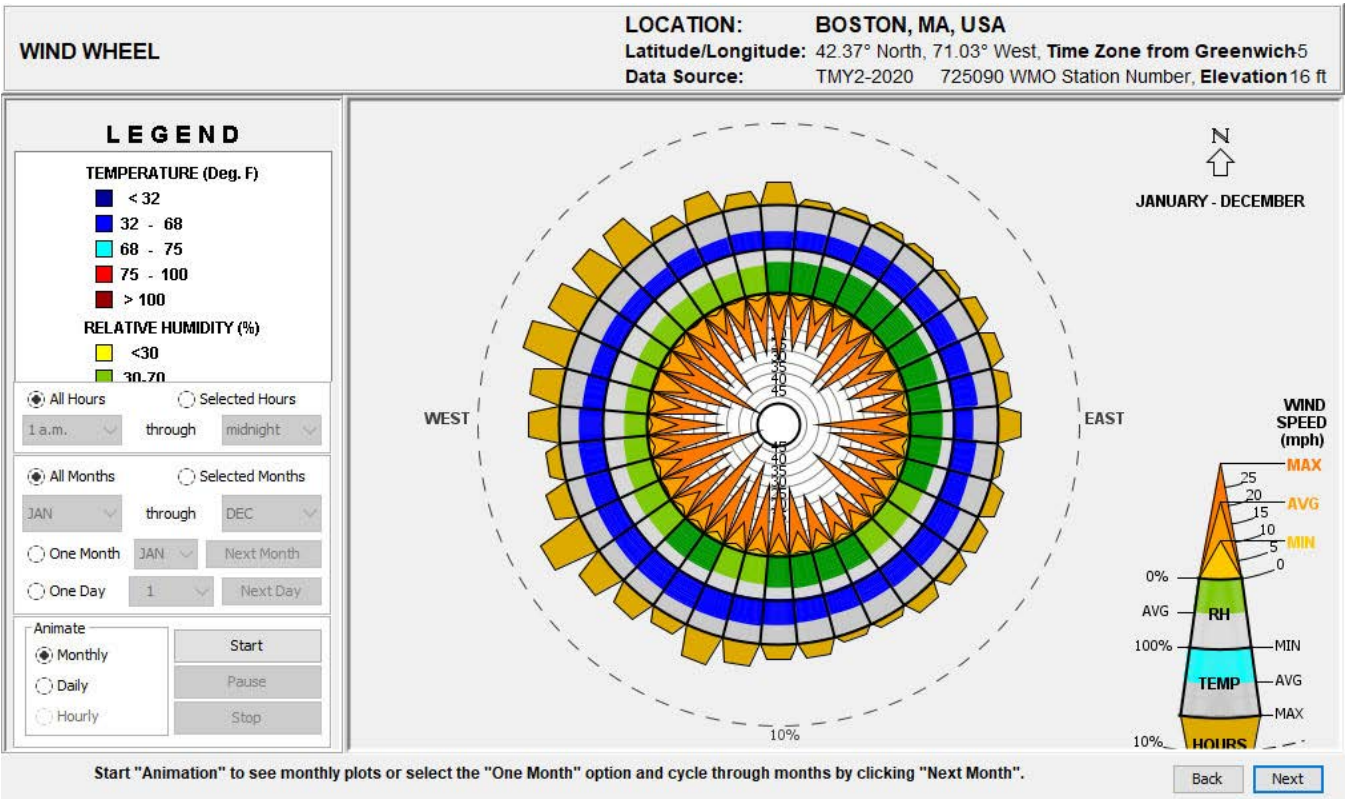
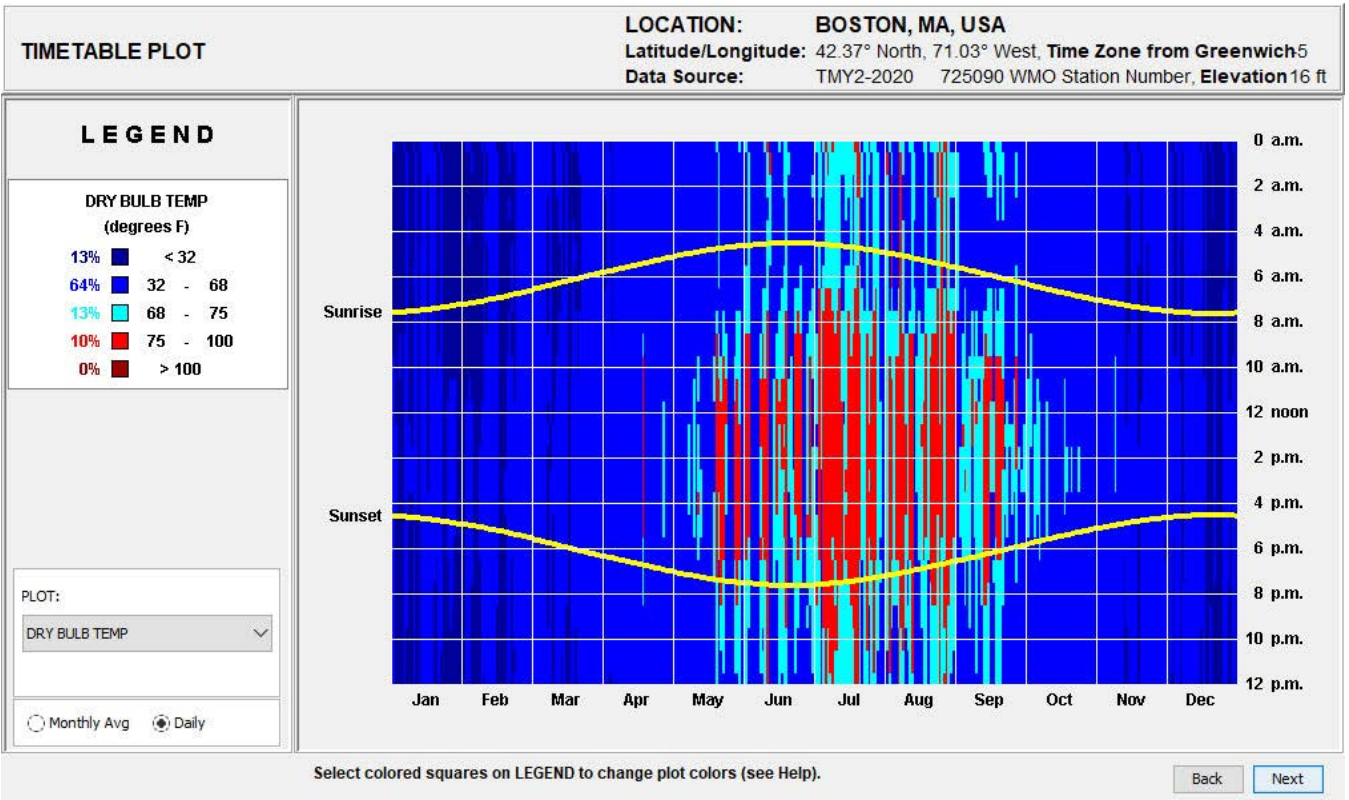


View from the southeast.



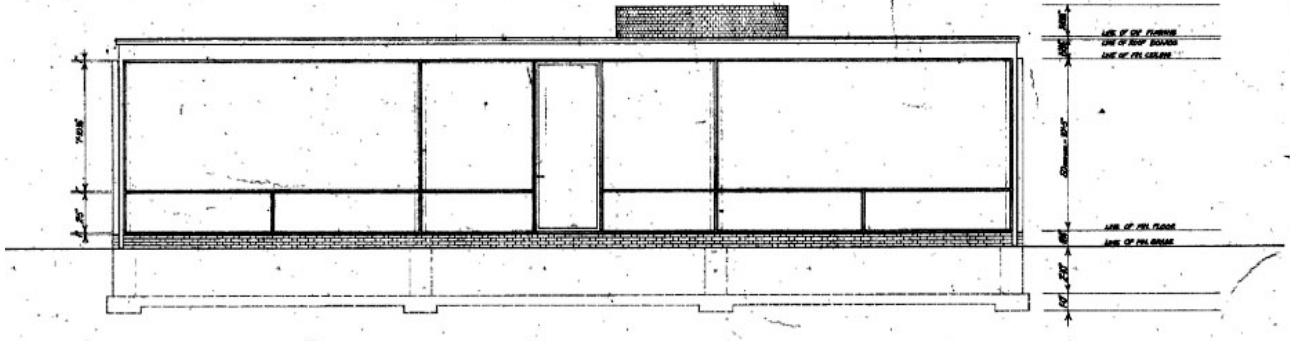
Inside looking south.

Philip Johnson claimed you sit in the living room and watch the sunset and the full moon rise at the same time. [My comment: on the equinox]



South Façade

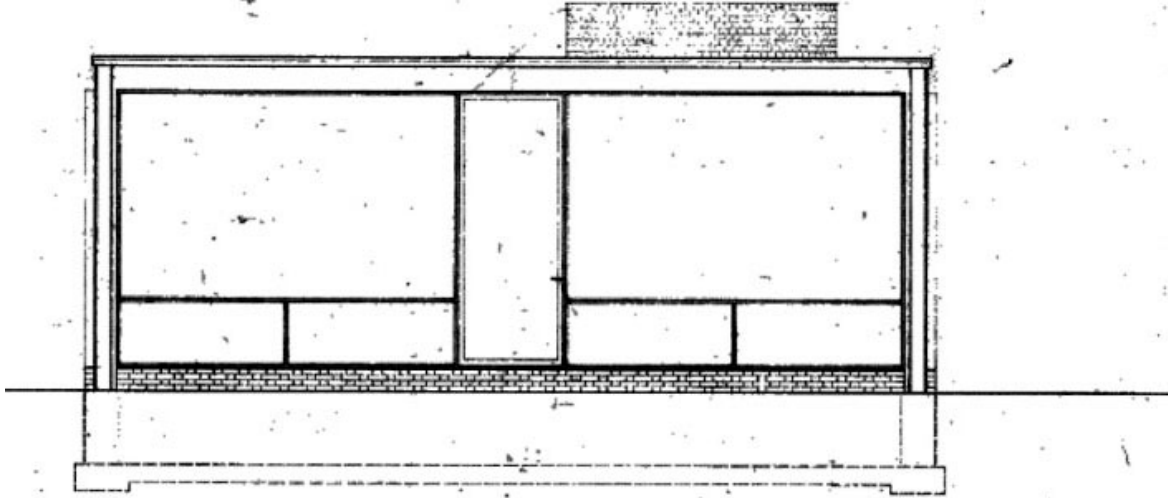
- 2.5 points
1. Here's the south elevation. Indicate your glazing selection on the elevation and label, sketch your shading device selection in plan and section (or in axo). Most importantly, explain why your selections are appropriate for your site at MIT and for the unadorned international style of the house.



West Façade

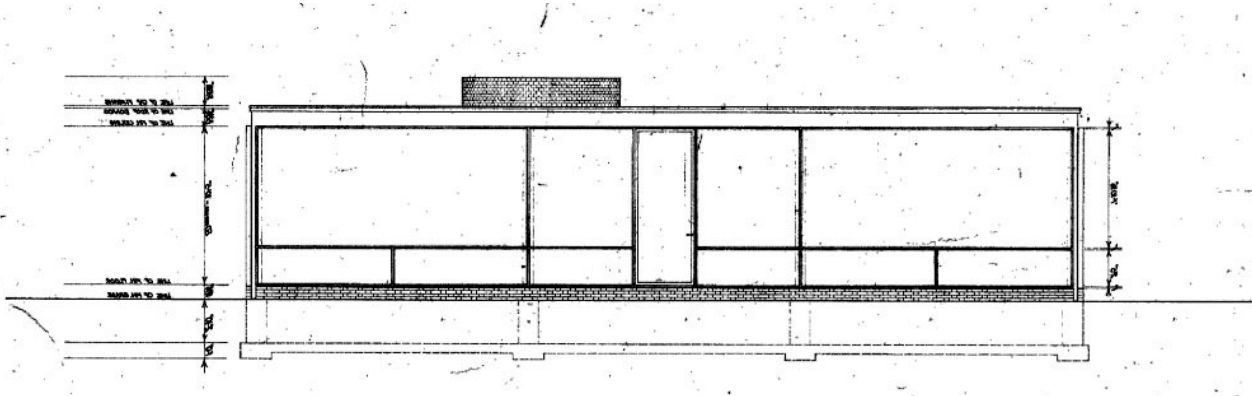
2.5 points

2. Here's the west elevation. Indicate your glazing selection on the elevation and label, sketch your shading device selection in plan and section (or in axo). Most importantly, explain why your selections are appropriate for your site at MIT and for the unadorned international style of the house.



North Elevation

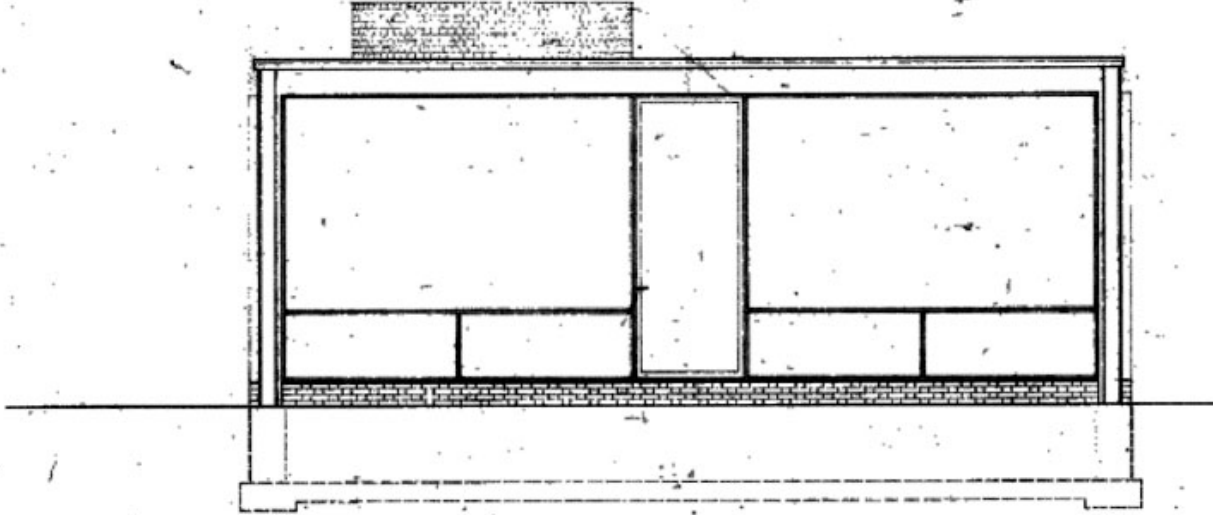
- 2.5 points*
1. Here's the north elevation. Indicate your glazing selection on the elevation and label, sketch your shading device selection in plan and section (or in axo). Most importantly, explain why your selections are appropriate for your site at MIT and for the unadorned international style of the house.



East Elevation

2.5 points

1. Here's the east elevation. Indicate your glazing selection on the elevation and label, sketch your shading device selection in plan and section (or in axo). Most importantly, explain why your selections are appropriate for your site at MIT and for the unadorned international style of the house.



1 point

Extra Credit: If you could replace the lower glass panels with a single glazing selection on all four elevations, what would it be and why?