

Arch 464
ECS
Spring 2009

Name _____

Quiz #1

"Feng Shui Meets Gallery Lighting"

For this problem you are the daylighting consultant for vacation home owners and architects Pao-Chi Chang and Alfred Swenson. Now that they've settled into their acclaimed upstate Illinois vacation home, they've acquired several large Diego Rivera paintings to hang in the salon and dining rooms (expensive wallpaper—fugeddaboudid!). Your task is to intervene tastefully to assure that the daylighting in the space is appropriate for the artwork.

The owners have asked you to critique the existing conditions and to recommend a scheme for improving the daylighting in the space. The two-story high salon has a shaded window on the south side with a mid-facade double door. The two-story high north-facing dining area has apertures on three sides with doors on the east and west. Both north and south apertures have full-height internal drapes for shading, night insulation, and privacy control.

The Illinois-Wisconsin border is at 42 degrees 30 minutes north latitude and has a humid climate with cold winters and muggy summers.



Photos, illustrations, and text: Architectural Record, January 2009.

Twilight view of Casina's north facade demonstrates its simple, clean, symmetrical composition.

Casina was written up by Josephine Minutillo in the January 2009 issue of *Architectural Record* and photographed by Craig Dugan/Hedrich Blessing. Their text and photos as well as architectural drawings are given below and on the following pages to help you understand the building. Bruce Haglund performed the Lumen Micro studies of the building.

Casina is a Modernist country retreat, with a twist

By Josephine Minutillo

Alfred Swenson and his late wife, Pao-Chi Chang, were drawn to the Illinois Institute of Technology (IIT) for one reason: Mies van der Rohe. Both studied architecture there under Mies during the 1950s. The Modern master's influence would inform their work for decades, first while practicing at larger firms like Skidmore, Owings & Merrill, where Chang worked, and later when the couple started their own studio together. After all those years designing public buildings, the Chicago-based architects finally had an opportunity to design a home for themselves when they purchased a 10-acre plot in northern Illinois, a few miles from the Wisconsin border.

The design for the 1,500-square-foot weekend retreat—which the architects called Casina after the Latin word for a small cabin—emerged slowly over several years. Once built, the steel-and-glass structure was an unexpected sight among the barns and silos that dot the surrounding corn

fields. And while at first glance Casina appears as a temple to Modernism, much stronger influences—both cultural and cosmic—were at play.

Chang, who lived for years in Shanghai before arriving at IIT, brought many Chinese ideas, if not forms, to the design. Following traditional Chinese architecture, the house faces south. Like a Chinese temple, the structure is symmetrical about its north-south axis, and rises from a stepped, earthen terrace. Though it sits within a rolling field, the building purposely does not engage its surroundings, but keeps them at a distance. The architects were inspired to do this by a Yuan Dynasty scroll: In the painting, two scholars contemplate the landscape from an open-fronted pavilion.

Inside, dark, classic Modern furniture—including pieces designed by Mies and Gordon Bunshaft, and inspired by Le Corbusier—contrasts with the stark white interiors, where the only hint of decoration is the ceiling's scattered arrangement of PAR lamps, meant to resemble a star cluster.

"We were taught that ornament is crime," Swenson, who is now semiretired, reminisces. The designers did allow themselves some leeway on the exteriors—most noticeably, the helices that wrap around the steel columns at the north and south facades. Like the star cluster inside, the metallic appliques along the east and west facades, and the spherical wave shape of the raised terrace, these twisting rods are manifestations of the dwelling's astronomical and mathematical inspirations—which also dictated the proportions of cabinets, the pattern on fascias, and the arrangement of mullions. "My architecture friends joke that the house is very intellectual," he says. Though he doesn't disagree, calling the house a "lodging for the mind," Swenson is also able to joke about it. "I might put up pictures at some point, but like Philip Johnson said about his Glass House, we've got very expensive wallpaper." ■

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Project: *Casina, Northern Illinois*
(www.swensonchangcasina.com)

Architect: Alfred Swenson Pao-Chi Chang Architects—Pao-Chi Chang, project designer; Alfred Swenson, project manager

Engineer: B + A Engineers (m/e/p)

SOURCES

Curtain wall: Kawneer

Hardware: Hewi

Resilient flooring: Armstrong

Lighting: Tech Lighting; Lithonia

Paints: Benjamin Moore

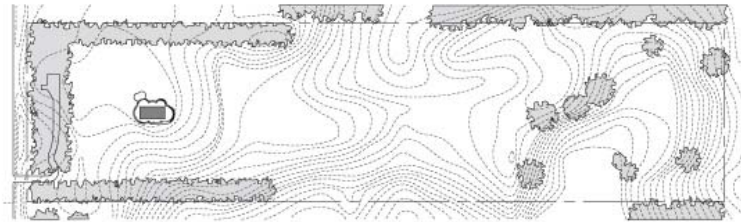
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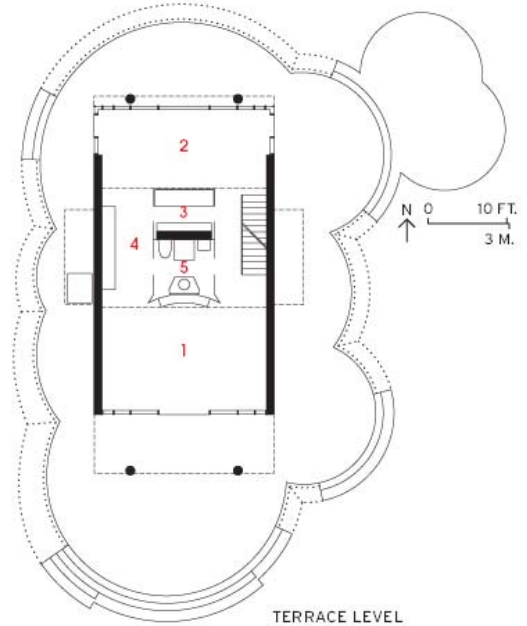
Salon view to the alfalfa field on a sunny fall day at noon (l) and the southwest facade on the same day (r).



- 3 pts 1. Citing the text on pages 1 and 2 and visual evidence in the photos and plans, describe three (3) daylighting and visual comfort strengths or weakness posed by the design of the mini-gallery-to-be in terms of "age old adages" for daylighting.



SITE PLAN N←

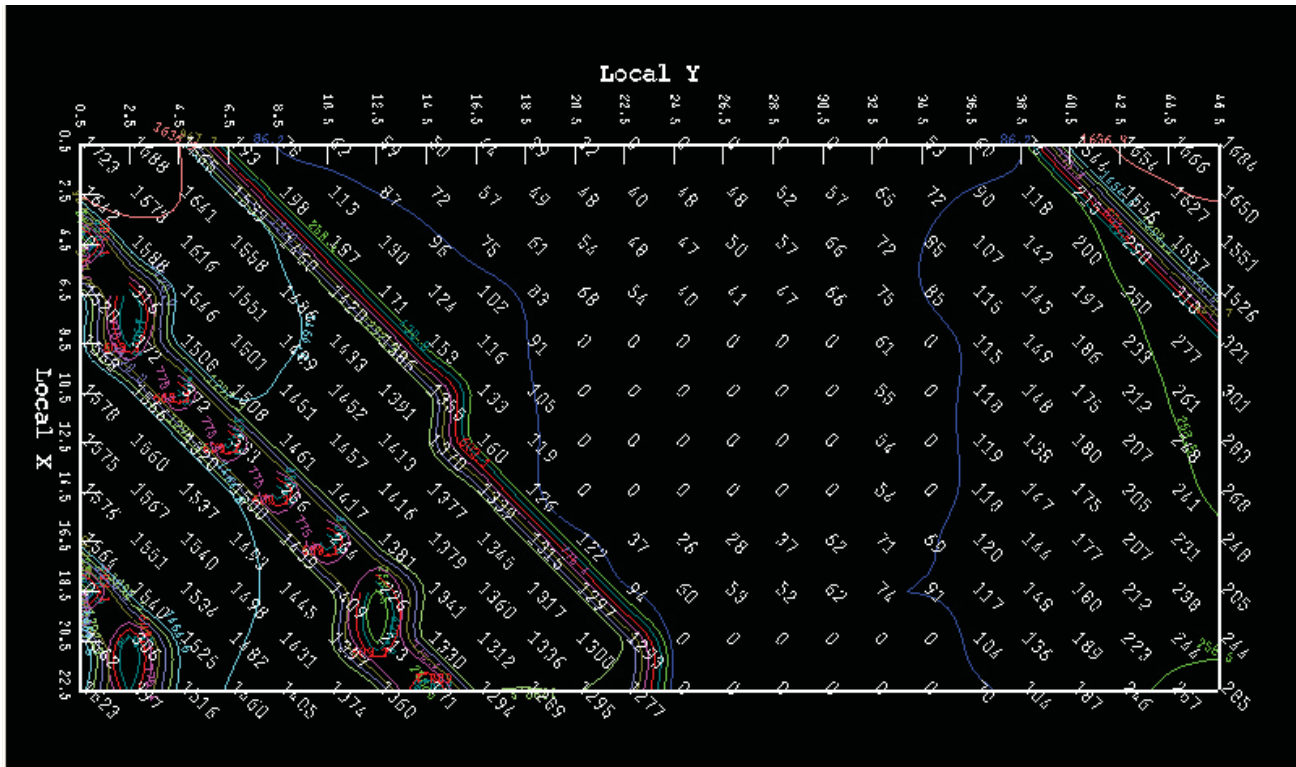


1. Salon
2. Dining
3. Kitchen
4. Library
5. Bath

TERRACE LEVEL

2. Indicate 2 lighting problem areas exposed by this Lumen Micro analysis and suggest remedies that will solve the problems during all winter months.

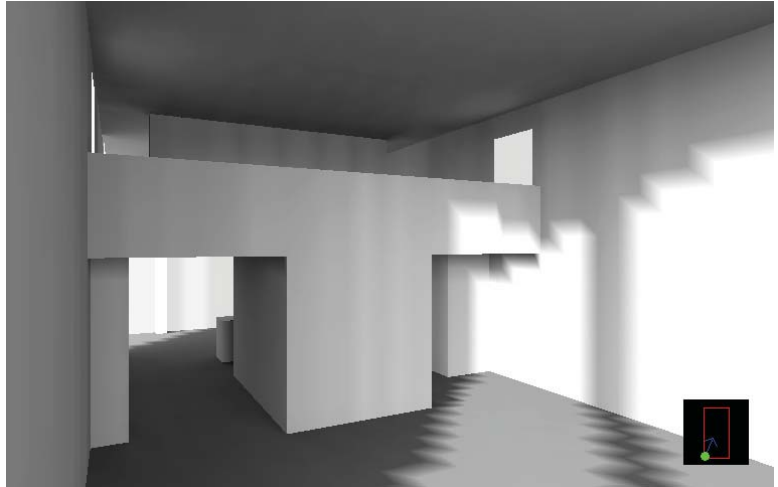
2 pts



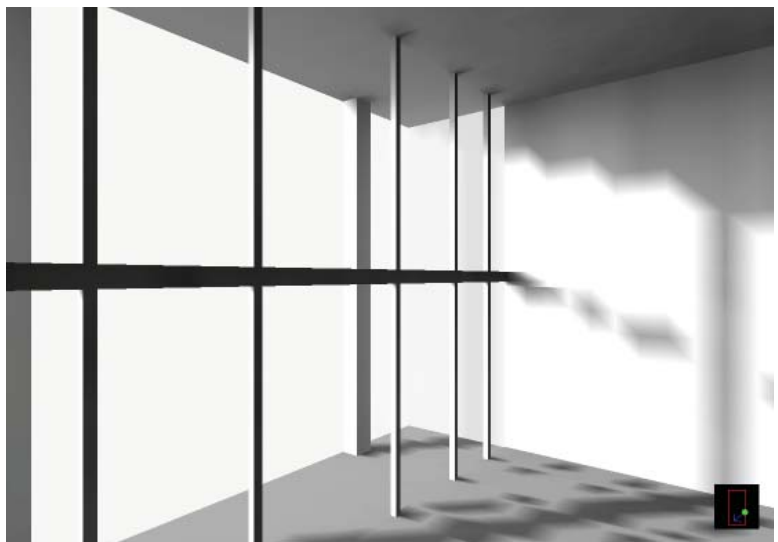
This Lumen Micro first floor plan gives illuminance values in footcandles at two-foot intervals on a 30" high workplane in Casina for 3pm on a sunny early November day. North is to the right (salon on left, dining on right).

3. These Lumen Micro renderings show surface luminance for a sunny November day. Sketch the placement of large (8' wide by 10' tall) or small (8' wide by 4' tall) paintings in each of the scenarios below and explain why your placement is good or bad.

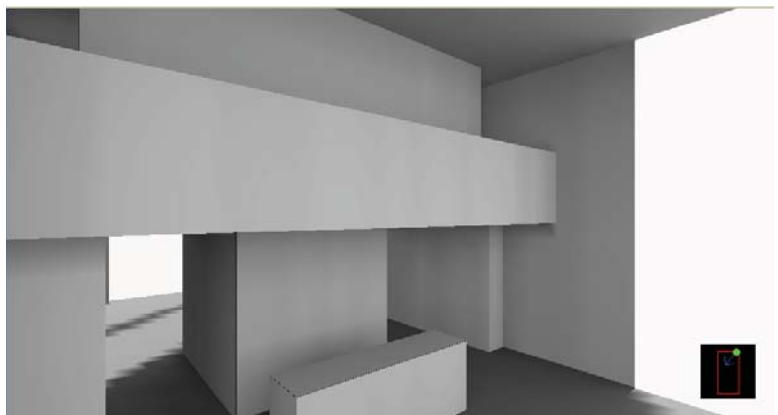
3 pts



Living space looking to the NE at 3pm. Place two **large** paintings in this scenario. The space is 24' wide x 14.5' deep x 17' high.

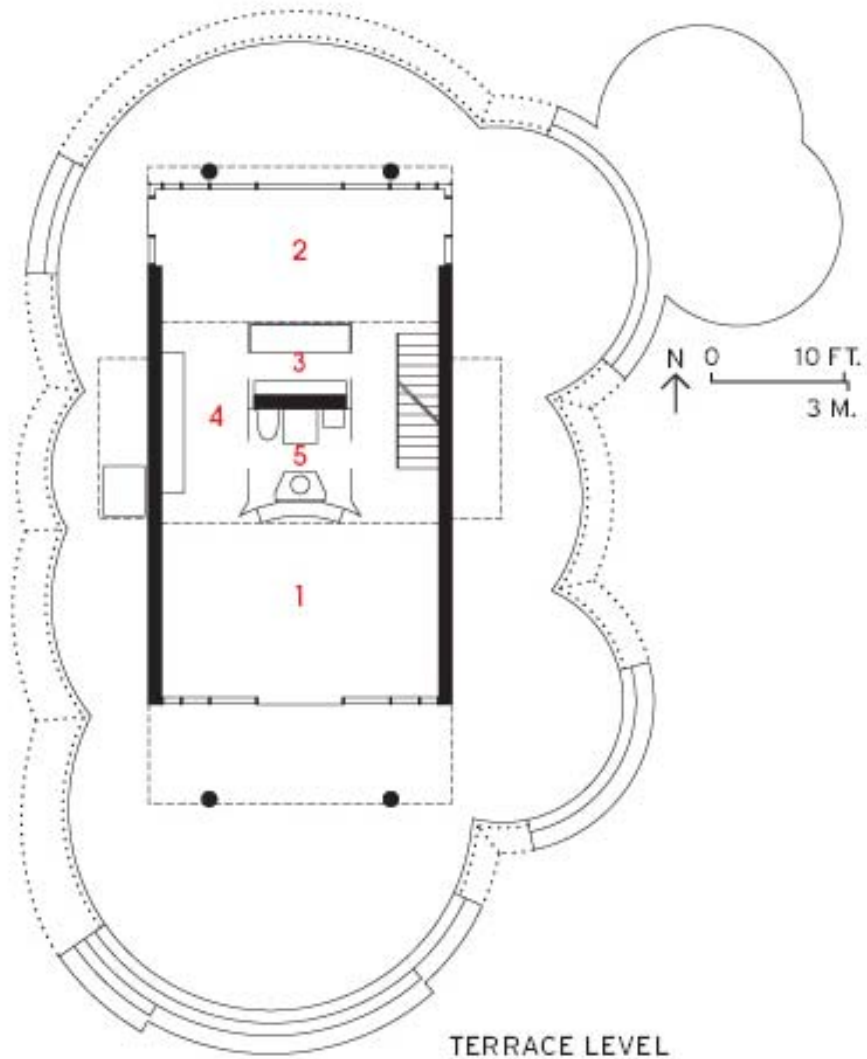


Living space looking to the SW at 9am. Place one **large** painting in this scenario. The space is 24' wide x 14.5' deep x 17' high.



Dining space looking to the SW at 3pm. Place two **small** paintings in this scenario. The space is 24' wide x 10' deep x 17' high.

2 pts 4. In the plan below show (draw to scale) where you'd add one or two apertures in the salon and in the dining area to mitigate the problems cited in question 3. Explain/sketch the design of each aperture and how the daylighting in each room would be improved.



1. *Salon*
2. *Dining*
3. *Kitchen*
4. *Library*
5. *Bath*