

Arch 464  
ECS  
Spring 2002

Name \_\_\_\_\_

Quiz #2

## "Ando's Forgotten Skylight"

For this problem you are the daylighting retrofit consultant for the Pulitzer Foundation in St. Louis. The foundation is extremely pleased with its new Pulitzer Foundation for the Arts building, designed by Pritzger Prize winner Tadao Ando—except they regret the omission of a skylight in the large gallery. As built, this gallery is illuminated by a row of eight sidelights at mid-height on the west wall that use a narrow walkway as a sort of lightshelf. The courtyard between the gallery wing and the office wing is dominated by a reflecting pool at sill height. The gallery also has standard track-mounted electric lights for highlighting art-work.



*The Pulitzer Foundation from the northeast. The gallery wing is to the left.*

**Context.** "Into this setting, a half block off Grand Street, Ando has dropped the closed concrete mass of the Pulitzer Foundation, like a *machina ex deo* on which he has bestowed strange powers of aesthetic redemption. 'A place of possibility,' the architect has named his first public work in the United States, presumably not only for its own doubtless merits, but for the superb modern art collection that it contains: the personal property of foundation president Emily Rauh Pulitzer and her late husband, Joseph Pulitzer Jr. (a member of the newspaper-publishing family that owns the St. Louis Post-Dispatch). ... Ando's signature concrete walls, polished to the point of near (specular) reflectivity, rise continually from a basement that becomes a plinth as the site slopes down to the south. ... The gallery wing is largely devoted to a single, plaster-faced room, 170 feet long, with a broad stair at the far end that leads down to a lower floor level and a small square basement gallery beyond. A balcony walkway on one side of the stair leads to a second small gallery above the one in the basement." [*Architecture*, Dec. 2001]

**Climate.** St. Louis is located about at about 38° North Latitude. The sun ascends to 76° above the horizon at solar noon on the summer solstice. The summer climate is primarily hot and humid. Winter days are short with low sun angles and summer days are long and bright.

READ THE ENTIRE QUIZ BEFORE YOU BEGIN!



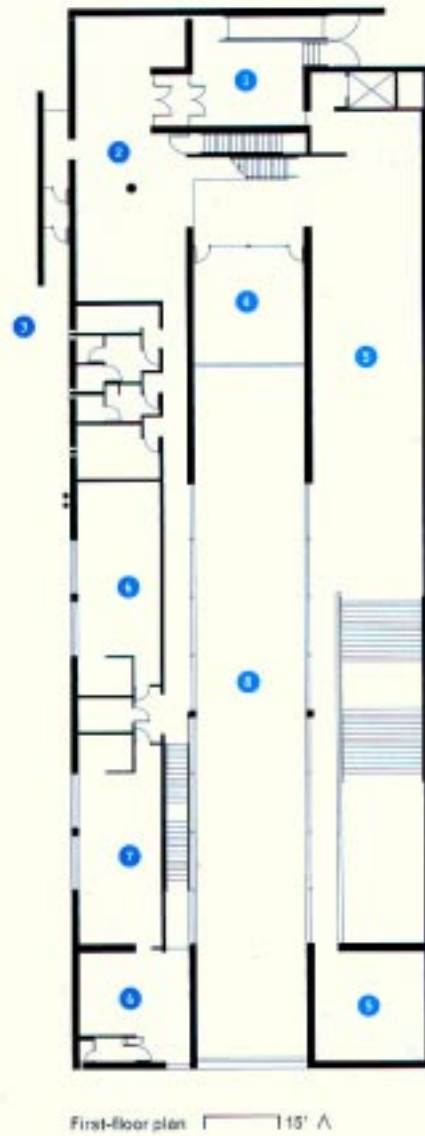
*The office wing has a green roof.*

- 1 gallery
- 2 office
- 3 courtyard
- 4 terrace
- 5 mechanical



*Pool in courtyard between wings. Gallery wing is to left. Reflection makes windows appear to be twice their actual height.*

- 1 entrance court
- 2 lobby
- 3 sculpture garden
- 4 terrace
- 5 gallery
- 6 office
- 7 library
- 8 pool



2 pts.

1. During daylight hours, the gallery appears to be well-daylighted. **Explain** why. **Propose** two changes that would improve the daylighting.



*Gallery space looking south from top of stairs.*

4 pts.

2. Retrofit the large gallery with a single skylight. In the plan and section drawings on page 2, **show** where you would place the missing skylight. **Draw** an annotated schematic design of the skylight below. **Explain** how it will enhance lighting in the space.

4 pts. 3. The Specifications section of *Architecture* highlights an exterior lighting fixture for the Pulitzer Foundation. Assume that the fixture uses a compact fluorescent lamp. **Classify** the fixture strategy. **Render** the photograph at the right to show the fixture's night illumination pattern. On the section below, **draw** your best unscaled guess at the photometric curve for the fixture.

