PROJECT PROFILE

# Glass Dome Building

Evaluation of UV and Light Transmission | Chicago, IL

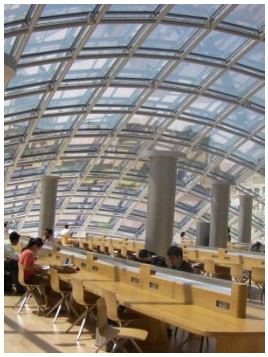
**CLIENT**

Building Owner

**BACKGROUND**

This distinctive building features a 120-foot by 240-foot glass dome enclosing a spacious oval reading room, administrative offices, and document preservation workrooms. The dome, reaching a height of 36 feet at its apex, is comprised of glazed glass panels in a rectilinear grid of mullions. The band of glass in the dome adjacent to the perimeter of the first floor is clear, and the glass in the remainder of the dome is fritted.

Shortly after opening, building occupants reported “high” light transmission through the glass dome into the first floor. Additional concerns were raised regarding the possible fading of the wood furniture in the reading room as well as the potentially harmful effects of high light levels on preservation materials. In response, the building owner retained WJE to determine the existing levels of UV and visible light transmission as compared to the specified transmission levels of the glass.



**SOLUTION**

To prepare for the investigation, WJE conducted a document review of the architectural drawings, glazing shop drawings, and product submittals. The approved glass design called for panels to be 6-foot by 6-foot in size and 1 1/2-inches thick. Each panel was designed to have a UV light transmission level of less than 1 percent and a visible light transmission level of 49 percent.

In teams of two people, WJE performed in-situ testing of the as-built glass on twenty-six individual panels located around the dome. Corresponding measurements of UV and visible light levels were simultaneously taken at identical interior and exterior locations, using identical equipment, at times and locations of the most direct sunlight.

The results of the testing revealed that the transmission of UV and visible light through the as-built glass conformed to the specified levels. In addition, WJE did not detect any locations of UV or visible light concentration under the dome. Thus, WJE concluded that the glass panels performed in accordance with the approved design.

WJE ENGINEERS ARCHITECTS MATERIALS SCIENTISTS