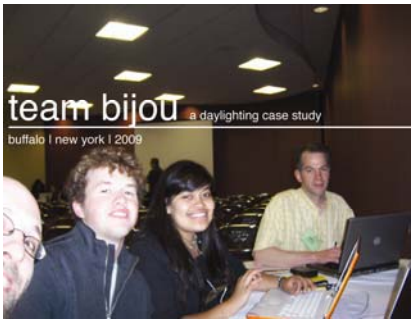
Done Right the First Time – Daylighting works well 100 years later

A study of daylighting at the Market Arcade
Buffalo, NY
Presented at Tool Days – 5/16/2009
Courtesy of team bijou



Hypothesis

The Market Arcade provides effective[1] daylighting under overcast[2] conditions.

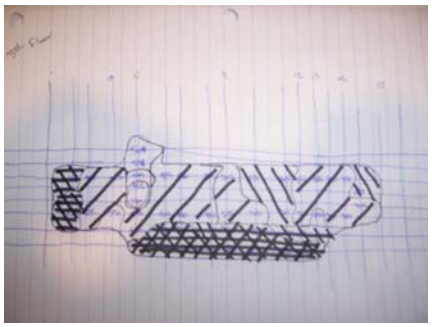
1. Effective based on a comparison to IES standards
2. Overcast conditions on 05/16/2009

Methodology

1. The floor level daylight values were measured in the accessible spaces in the Market Arcade.
2. The values were then compared to IES illuminance values (found on the back of the light meter!)

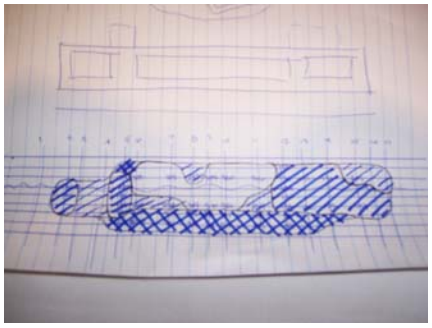
First Floor Data Analysis

- First floor daylight values in public spaces allowed for visual tasks of “low contrast” or “very small size” except directly under the cross walk
  - Even under the crosswalk the daylight allowed for medium contrast visual tasks.
- Daylight factor 5-12% (above 4%) except under the crosswalk



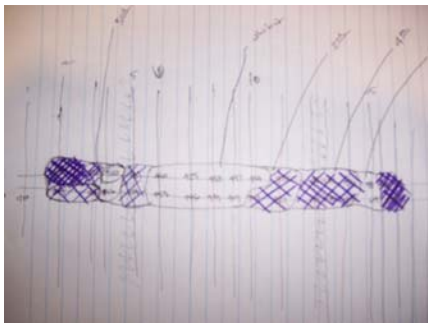
Second Floor Data Analysis

- Corridor illuminance levels allow for visual tasks of “very small size”.
- Gallery illuminance levels allow for visual tasks of “small size”.



Third Floor Data Analysis

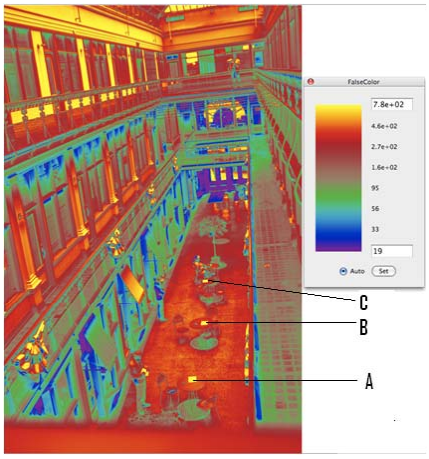
- Corridor illuminance levels provide for “very small size” visual tasks over a “prolonged period of time”.
- Gallery illuminance levels provide for “medium contrast” or “small size” visual tasks.



Conclusions

- Daylighting in the corridor spaces is sufficient for almost all visual tasks.
- Daylighting in the gallery spaces is sufficient for art viewing.
- CO_2 levels 100 PPM above outdoor and stratified by 30 PPM from 1st (low) to 3rd (high)

Troy's Test



- Light meter values
  - A. 575 fc
  - B. 610 fc
  - C. 687 fc