

# # 4174109225: MAJOR BUILDING TECHNOLOGY

KEY WORD: DAYLIGHTING / DAYLIGHT FACTOR / DAYLIGHTING FOR MUSEUM

KULLASRI SURIYADETSAKUL: DAYLIGHTING TECHNIQUES FOR THE MUSEUM OF ART IN HOT-HUMID CLIMATE. THESIS ADVISOR: PROF. DR. SOONTORN BOONYATIKARN, 300 pp. ISBN 974-334-758-5

In the past, considering the daylighting techniques for art museums, there were so many problems about the illumination variation control, the amount of light and the glare to eyes. This study, therefore, proposes on designing the alternatives in the daylight utilization for the art museum in 8 directions. The focused variables including viewing angle, viewing position and appropriate angle of the incident light

In this study, the physical model were constructed and examined under the natural sky with interval since 8.00 am –4.00 pm. The dependence variable of this experiment consisted of, firstly, only the indirect daylight was taken into consideration. Secondly, side lighting were located at the top and the bottom of the exhibition wall. Thirdly, the interior diffuse surface was brought to test. Finally, the forth shading devices was assessing to detect direct sunlight the measured results are analyzed based on the illuminance standard of 20 and 10 foot-candle for the horizontal and vertical respectively. The results are then compared as the daylight factor determined at the outside illumination of 1,500 foot-candle.

From the result, case studies can be categorized into 3 groups. By considering the sun orbit influence. They are, group 1(N, NE, NW) has the outside edging since it is not much effected by that of influence. Group 2 (S) is the effected direction all day, since the outside edging reflector is not required. And group 3 (E, W, SE and SW) the outside edging reflector is needed because of the different effects occurring in the morning and afternoon. This difference causes the illumination variation of a day to be as high as 1 percent of the vertical daylight factor. By the sun orbit influence, thus, the least profile angle, The apertures of these 3 groups have different sizes varying from 8 to 25 percent of exhibited paintings. The result show that the pattern obtained for each direction can control the illumination variation, light uniformity, and glare effectively.

The sun orbit has high influence on the illumination and its variation inside the buildings. To apply the results, the designers can adapt the pattern and illumination by adjusting the light transmittance of glass and reflectance of internal reflector. This study could be later employed as a good pattern for the art museum in the hot-humid climate.

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