

Comfort in Green: Thermal Performance and Comfort Analysis of Sky Garden, SM City, North EDSA, Philippines

Authors : Raul Chavez Jr.

Abstract : Green roof's body of knowledge appears to be in its infancy stage in the Philippines. To contribute to its development, this study intends to answer the question: Does the existing green roof in Metro Manila perform well in providing thermal comfort and satisfaction to users? Relatively, this study focuses on thermal sensation and satisfaction of users, surface temperature comparison, weather data comparison of the site (Sky Garden) and local weather station (PAG-ASA), and its thermal resistance capacity. Initially, the researcher conducted a point-in-time survey in parallel with weather data gathering from PAG-ASA and Sky Garden. In line with these, ambient and surface temperature are conducted through the use of a digital anemometer, with humidity and temperature, and non-contact infrared thermometer respectively. Furthermore, to determine the Sky Garden's overall thermal resistance, materials found on site were identified and tabulated based on specified locations. It revealed that the Sky Garden can be considered comfortable based from PMV-PPD Model of ASHRAE Standard 55 having similar results from thermal comfort and thermal satisfaction survey, which is contrary to the actual condition of the Sky Garden by means of a psychrometric chart which falls beyond the contextualized comfort zone. In addition, ground floor benefited the most in terms of lower average ambient temperature and humidity compared to the Sky Garden. Lastly, surface temperature data indicates that the green roof portion obtained the highest average temperature yet performed well in terms of heat resistance compared to other locations. These results provided the researcher valuable baseline information of the actual performance of a certain green roof in Metro Manila that could be vital in locally enhancing the system even further and for future studies.

Keywords : Green Roof, Thermal Analysis, Thermal Comfort, Thermal Performance

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