

A SIMULATION STUDY OF THE PERFORMANCE OF LIGHT -WELL IN AN OFFICE BUILDING TO IMPROVE THE LUMINOUS ENVIRONMENT BY INCLUSION OF USEFUL DAYLIGHT

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ABSTRACT

Now-a-days most of the office buildings are high-rise in dense urban cities, such as Dhaka, where there is a scarcity of land. The depths of the commercial buildings are usually large and the employees suffer lack of sufficient daylight. Daylight penetrates 1.5 times of the lintel height of a window located at the floor. Therefore, maximum daylight penetration is restricted to 14'-15' from the window opening when a floor to floor full height (10') window is placed. So, it is hard to get daylight in a deep high rise office building. Light –well, which permits daylight to penetrate from above in urban office buildings could improve the luminous environment considering the climatic context of Dhaka. The aim of this research is to study the effectiveness of light-well in a high-rise office building to improve the lighting condition of the work space as well as the performance of the employees. At the beginning, daylight simulation is done using the software ECOTECT. Finally, the office building is redesigned introducing light-well(s) following trial and error method to ensure sufficient daylight in typical floors. It is expected that the outcome of this research will help architects and designers to introduce light-wells to improve the daylight performance of deep multi-storeyed office buildings.

KEYWORDS: *Daylight, office building, simulation, light-well, daylight performance*

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