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Using Daily Light Integral Concept to Construct the Ecological Plant Design Strategy of Urban Landscape

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Abstract : It is an indispensible strategy to adopt greenery approach on architectural bases so as to improve ecological habitats, decrease heat-island effect, purify air quality, and relieve surface runoff as well as noise pollution, all of which are done in an attempt to achieve sustainable environment. How we can do with plant design to attain the best visual quality and ideal carbon dioxide fixation depends on whether or not we can appropriately make use of greenery according to the nature of architectural bases. To achieve the goal, it is a need that architects and landscape architects should be provided with sufficient local references. Current greenery studies focus mainly on the heat-island effect of urban with large scale. Most of the architects still rely on people with years of expertise regarding the adoption and disposition of plantation in connection with microclimate scale. Therefore, environmental design, which integrates science and aesthetics, requires fundamental research on landscape environment technology divided from building environment technology. By doing so, we can create mutual benefits between green building and the environment. This issue is extremely important for the greening design of the bases of green buildings in cities and various open spaces. The purpose of this study is to establish plant selection and allocation strategies under different building sunshade levels. Initially, with the shading of sunshine on the greening bases as the starting point, the effects of the shades produced by different building types on the greening strategies were analyzed. Then, by measuring the PAR(photosynthetic active radiation), the relative DLI(daily light integral) was calculated, while the DLI Map was established in order to evaluate the effects of the building shading on the established environmental greening, thereby serving as a reference for plant selection and allocation. The discussion results were to be applied in the evaluation of environment greening of greening buildings and establish the “right plant, right place” design strategy of multi-level ecological greening for application in urban design and landscape design development, as well as the greening criteria to feedback to the eco-city greening buildings.

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