

"ژورنال های منتخب الزویر در حیطه مهندسی عمران و سازه"

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1. Most Downloaded

Healing environment: A review of the impact of physical environmental factors on users

Abstract

In recent years, the effects of the physical environment on the healing process and well-being have proved to be increasingly relevant for patients and their families (PF) as well as for healthcare staff. The discussions focus on traditional and institutionally designed healthcare facilities (HCF) relative to the actual well-being of patients as an indicator of their health and recovery. This review investigates and structures the scientific research on an evidence-based healthcare design for PF and staff outcomes. Evidence-based design has become the theoretical concept for what are called healing environments. The results show the effects on PF and staff from the perspective of various aspects and dimensions of the physical environmental factors of HFC. A total of 798 papers were identified that fitted the inclusion criteria for this study. Of these, 65 articles were selected for review: fewer than 50% of these papers were classified with a high level of evidence, and 86% were included in the group of PF outcomes. This study demonstrates that evidence of staff outcomes is scarce and insufficiently substantiated. With the development of a more customer-oriented management approach to HCF, the implications of this review are relevant to the design and construction of HCF. Some design features to consider in future design and construction of HCF are single-

patient rooms, identical rooms, and lighting. For future research, the main challenge will be to explore and specify staff needs and to integrate those needs into the built environment of HCF.

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2. Recent Article

A review of simulation-based urban form generation and optimization for energy-driven urban design

Abstract

This paper first defines the concept of energy-driven urban design. It aims to reveal synergies and trade-offs that may arise while designing urban areas for better energy performance. To facilitate urban planners and designers tackle these problems at the early stage of their work, this paper proposes the idea of simulation-based urban form generation and optimization modeling. It connects parametric models of urban form generation to an optimization engine coupled with a widely available program of energy systems.

To build up the model of simulation-based urban form generation and optimization modeling, this paper reviews the state-of-the-art of simulation-based design generation and optimization modeling and discusses its application on energy-driven urban design at the district scale. The paper compares the main generative methods and presents their limitations and advantages to aid energy-driven urban design. For the urban form generation modeling, the paper also reviews the most relevant approaches to urban morphology. These approaches help to define the urban elements for the urban form generation.

Most of the existing design generation and optimization models are observed to consist of a workflow, a generative method, and a series of generation constraints. Based on this, the paper proposes a model of simulation-based urban form generation and optimization modeling for energy-driven urban design. The model consists of a workflow with three steps, a collection step, the generation step, and the optimization step. The constraints yet need to be defined. At the district scale, the model also has to work at an appropriate resolution and precision.

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3. Most Cited

A study on the cooling effects of greening in a high-density city: An experience from Hong Kong

Abstract

Greening is a useful mitigation strategy for planners mainly from a visual perspective. For high-density urban living environment such as Hong Kong, urban greening helps cooling the air and providing shade; it also helps lowering building energy consumption by providing a better outdoor boundary condition. Many researchers have also suggested that greening may be employed as a strategy for combating the ill effects of urban Heat Island (UHI). Working towards a set of better greening guidelines for urban planners, the current paper first provides a comprehensive review of planning with urban greening. It then describes parametric studies that have been conducted to investigate the preferred location, amount, and types of vegetation for urban planning. The parametric studies employed the numerical model ENVI-met, verified using field measurements, to simulate 33 cases with different combinations of factors. For benefiting urban activities, ambient air temperatures at the pedestrian level are compared among different greening strategies and building heights. For a city such as Hong Kong, which has a high building-height-to-street-width (H/W) ratio, the present study reveals that roof greening is ineffective for human thermal comfort near the ground. Trees are also suggested to be more effective than grass surfaces in cooling pedestrian areas. The amount of tree planting needed to lower pedestrians level air temperature by around 1 °C is approximately 33% of the urban area. The present study allows urban planners to identify more precisely the greening principles, amount and policies necessary for better urban living environment in high-density cities.

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4. Open Access Article

مقاله ی زیر بصورت کامل قابل دریافت و در صورت تمایل قابل ترجمه می باشد

Effectiveness of indoor plants for passive removal of indoor ozone

Abstract

Indoor vegetation is often proposed as a passive approach for improving indoor air quality. While studies of outdoor environments indicate that vegetation can be an important sink of outdoor ozone, there is scant data in the literature concerning the dynamics of ozone uptake by indoor plants. This study determined ozone deposition velocities (vd) for five common indoor plants (Peace Lily, Ficus, Calathia, Dieffenbachia, Golden Pothos). The transient vd was calculated, using measured leaf areas for each plant, for exposures mimicking three diurnal cycles where ozone concentrations in chamber tests were elevated for 8 h followed by 16 h in the absence of ozone. Estimates of vd at the end of the first exposures ranged from 5.6 m h^{-1} for Golden Pothos to 0.9 m h^{-1} for Peace Lily. Values of vd were approximately 50% and 66% lower at the end of a second exposure and third exposure, respectively. Estimates of vd were also made for a range of photosynthetic active radiation (PAR) levels typically observed indoors. An increase in PAR from 0.6 to $41.2 \mu\text{mol m}^{-2} \text{ sec}^{-1}$ resulted in increases in vd ranging from a factor of 1.7 (Dieffenbachia) to 4.7 (Peace Lily). For deposition velocities measured in this study, the ozone removal effectiveness ranges from 0.9% to 9% for leaf surface area to room volume ratio of 0.06 m^{-1} (approximately one plant for every 1.8 m^2 of floor area) when accounting for values of air exchange and background loss typical of a residential environment.

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