

Block Performance Levels and Resident Awareness in Densely Built-up Areas

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(Keywords) *Densely built-up areas, Zoning Code, block performance, sunlight, daylight, ventilation, resident awareness*

1. Introduction

The “special method of harmonious rebuilding” promotes rebuilding case-by-case in land plots in a given area in accordance with local rules, when the usual building rules are replaced by performance equality standards through permits and approval by Designated Administrative Agencies. This method is seen as an effective way of improving disaster prevention performance and living environments inside “*anko*” zones of densely built-up areas where building restrictions based on the Zoning Code of the Building Standard Law (road connectivity obligation, road slant plane restrictions, allowable building coverage ratio restrictions, etc.) are particularly harsh¹⁾. This method has also been specified as a basic measure for promoting the improvement of densely built-up areas in the Basic Plan for Housing (National Plan)²⁾, which defines the national government’s policy for improving densely built-up areas.

Thus, in order to study levels of “minimum performance required at block level” that should be secured in densely built-up areas when drawing up local rules, we measured block performance levels achieved in densely built-up areas and surveyed residents’ awareness. In this paper, we introduce some of the results.

2. Survey results

(1) Sunlight³⁾: Fig. 1 shows the relationship between the hours of sunlight at the main opening to the living room in winter and the level of residents’ satisfaction with sunlight exposure⁽¹⁾. According to this, more than 50% are “Satisfied + More or less satisfied” with about 6.5 hours, this decreasing to about 3.5 hours when “Neither” is added.

(2) Daylight³⁾: Fig. 2 shows the relationship between vertical plane illuminance at the main opening to the living room during cloudy weather in winter daytime and the level of residents’ satisfaction with brightness

⁽¹⁾. Here, more than 50% were “Satisfied + More or less satisfied” with about 2000Lx, or about 1500Lx when “Neither” is added. 1500Lx is the level at which minor visual work is possible indoors for a very short time using only natural illuminance coming in through the opening⁴⁾.

(3) Ventilation: Fig. 3 shows the relationship between average wind speed near the main opening to the living room in summer and the level of residents’ satisfaction with ventilation⁽¹⁾. Here, “Satisfied + More or less satisfied” failed to reach 40% in any sample day or night, but if “Neither” is added, the total is more than 50% at around 0.3m/s during the day and around 0.4m/s at night.

3. Future challenges

In future, we plan to study proposals for block performance standards that should be achieved in densely built-up areas, based on the results of this survey. At the same time, we will attempt to develop a “System for simple evaluation of block performance in densely built-up areas”⁵⁾.

Note

(1) We asked residents to evaluate their satisfaction in five stages, namely (1) Satisfied, (2) More or less satisfied, (3) Neither, (4) Somewhat dissatisfied, and (5) Dissatisfied.

[Reference]

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- 2) MLIT (2011) “Basic Plan for Housing (National Plan)”
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seikatsu/hyodai.html

- 3) Wataru Katsumata, Yasuhiro Miki, Tatsuya Iwami and Shigeki Nishizawa (2011) "Research on the evaluation of block performance in densely built-up areas (Part 1) Performance of sunlight and daylight and feelings of residents in typical densely built-up areas" "AIJ FY2011 Annual Meeting (Kanto) Summaries of Papers at Annual Meeting" F-1, pp.507-508
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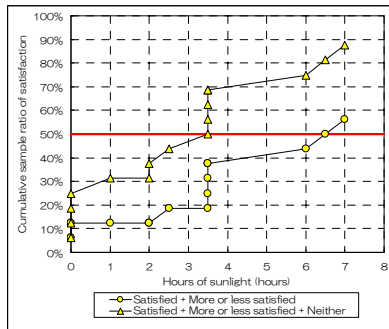


Figure 1. Relationship between hours of sunlight at main opening to living room in winter and level of residents' satisfaction with sunlight exposure

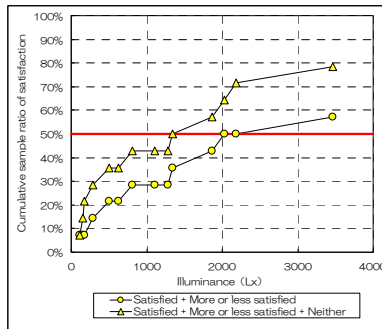


Figure 2. Relationship between vertical plane illuminance at main opening to living room during cloudy weather in winter daytime and level of residents' satisfaction with brightness

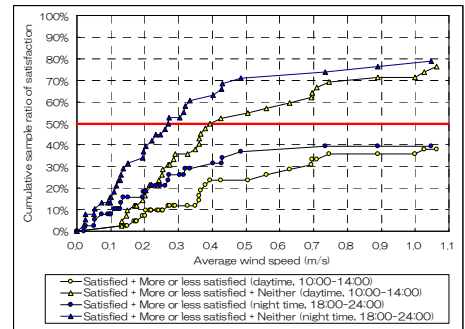


Figure 3. Relationship between average wind speed near main opening to living room in summer and level of residents' satisfaction with ventilation