Research Trends and Results

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

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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 harsh

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) Sunlight: 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.

According to this, more than 50% are “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 opening.

(2) Daylight: 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.

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 opening.

(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. 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”.

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.

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seikatsu/hyodai.html


5) “Development of a system of support when making harmonious rules for rebuilding in densely built-up areas” (Urban Development Division website) http://www.nilim.go.jp/lab/jeg/index.htm

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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