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NOISE CONTROL FOR A BETTER ENVIRONMENT

Improving Policy for Apartment Noise of Residential Facilities in South Korea

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ABSTRACT

Concerning the issue about apartment noise, Korean government unveiled its effort to “relieve elimination disturbances of apartment noise” as one of the 100 Policy Tasks. The Ministry of the Environment in Korea reflected strengthening of apartment noise management as part of the "Strengthening life-friendly management about noise and vibration". Therefore, it is imperative to conduct research for mitigating the apartment noise disturbances in order to support the policy issues. Therefore, this study, with the purpose of improving current apartment noise-related policy in Korea, proposes improving measures in structural regulation focused on the residential facilities so as to prevent apartment noise, and the post-management scheme that enables local government to play pivotal role.

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1. INTRODUCTION

Comfortable and pleasant indoor living environment is inevitable for indoor life quality. However, remarkably increased residential apartments and the number of self-interested people resulted in serious social problems including neighbourhood disputes and conflict in Korea. Thus, neighbour-hood disputes due to apartment noise exposure are not diminishing and continue to be a serious social problem. Up till now from 2014, apartment noise related policies and scheme have remained unchanged, and relevant policy is followed by post-management such as calling for improving community consciousness. The purpose of this study is to suggest ways to improve the structural regulation and the post-management scheme when the construction of housing in order to mitigate the apartment noise dispute in Korea.

2. IMPROVING MEASURES IN STRUCTURAL REGULATION

2.1 Improve construction structure

Change of construction type from existing 'Wall structure' to 'Frame structure'

- Reducing floor impact noise by distributing the load of the structure to the substructure through beams and columns.
- As a result of the existing experiment in Korea, the frame-type structure reduced floor impact noise more than 5dB compared to the wall-type structure.

In Korea, when building apartment, the wall-type structure, which is responsible for the load of the ceiling, is applied as shown in Figure 1 (Jonathan Ochshorn, 2018, Lee., 2011, Hwang., 2009) mostly. This structure is vulnerable to apartment noise because the vibration applied from the ceiling is transmitted to the interior space through the wall and the noise is heard loudly in the adjacent household. On the other hand, the frame-type structure has a structure in which beams are horizontally installed on the ceiling and columns are installed vertically to distribute the load of the ceiling, thereby effectively reducing the apartment noise relatively.

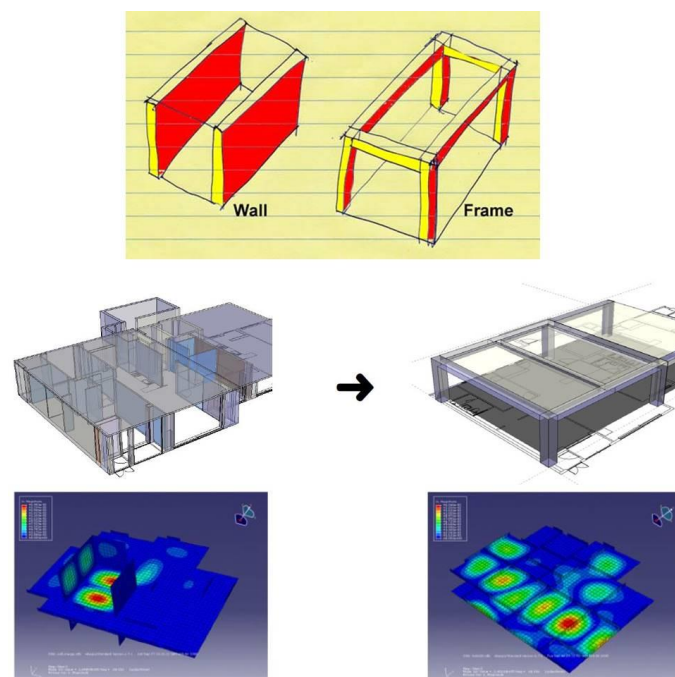


Figure 1 – Characteristics for Floor Impact Noise of Wall and Frame Structure

2.2 Improvement of inspection system about floor impact noise insulation

Strengthened post-evaluation system centered on construction site

- Improvement of realization through induction test of floor impact noise insulation performance in the construction site.
 - Establishment of measures according to the result of post-evaluation.
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In Korea, the floor impact noise insulation performance test is required to be carried out at the apartment building construction site or the standard testing laboratory. For the convenience of test, most of them are performed in the standard laboratory as shown in Figure 2(LH, 2017). However, in actual construction site, there is concern about quality deterioration such as failure to meet the floor impact noise insulation performance approved by standard testing laboratory due to different from site conditions or finishing ability according to workers.



Figure 2 – Standard Testing Laboratory for Floor Impact Noise in Korea

Therefore, it is necessary to carry out from in the current "design performance centered standard laboratory" to the post-evaluation based on the "performance evaluation centered on the construction site". In addition, quality control should be carried out by establishing the following measures in accordance with the results of the post-evaluation.

[Follow-up according to post-evaluation result]

- (1) Expand potential housing residents' choice through make open about floor impact noise insulation performance degree. (Case of post-construction sales system)
- (2) If the floor impact noise standard is not met, the apartment builder must fulfill the "The defects liability".

3. IMPROVEMENT OF POST-MANAGEMENT SCHEME

We propose the following improvement of post-management scheme for the apartment noise after completion construction.

1) Intensive management of vulnerable social groups

- Strengthening care of small-scale housing that is vulnerable to apartment noise
- Intensive management of rental housing with many socially vulnerable classes

2) Maintenance of old, deteriorated small scale houses

· Supporting the maintenance of old and deteriorated small scale houses that do not meet the apartment noise standards

- Housing improvement (remodeling) recommendation for tenant protection
- exceptional permits of reconstruction

4. CONCLUSIONS

This study is aimed to suggest a policy alternative to mitigate apartment noise dispute, one of the pending problems of the Korean government. In the future, we plan to expand the scope of research with noise among neighbors.

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