

# Maintenance and management of wooden public housing

(Research period: FY 2017–2018)

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*Keywords: Wooden public housing, longer service life, repair of outer walls*

## 1. The stock of wooden public housing units and the difficulty of maintaining them

There are more than two million public housing units in total in Japan. Among them, however, there are only about 83,000 wooden public housing units (3.8%). Yet, the ratio of wooden public housing units is more than half of all public housing units at 236 local public organizations, and some areas are operating many wooden public housing units.

A general technological development project titled the Development of Strategic Stock Management Technology of Regional Safe Residential Functions (FY 2015–2017) examined methods to elongate the service life of public housing units made with reinforced concrete for fireproof structures. Yet, not enough reference is available for the stock of wooden public housing units. Wooden public housings are often built with unique materials and structural methods, and the level of deterioration varies depending on management and utilization methods. Thus, it is difficult to present the standard style of maintenance and management.

## 2. How the uniqueness of wooden public housing units should be perceived

Wooden public housing units are unique. How the uniqueness should be perceived is important when exploring ways to elongate their service lives. The following is an approach focusing on the specification of the outer walls and construction methods (figure 1). For the specification of the outer walls, the main material of the outer wall is categorized into three types, including wood, non-wood (dry), and non-wood (wet), and the component pattern is assumed to be one type on the entire surface and a mixture of two types. For the construction method, many wooden public housing units are the two-in-one type (two dwellings in one building), which is distinguished from a townhouse-style housing unit consisting of three or more dwellings in one building. In addition, some housing complexes are mid-to-large-scale wooden housing complexes, such as three-story wooden housing complexes built with unique frameworks and joint technologies.

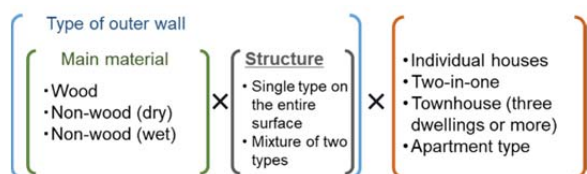


Figure 1. Category focusing on types of outer walls and construction type

## 3. Method to repair outer walls to elongate service life

The following section introduces methods to elongate the service life using the repair of the outer walls as an example.

### 3.1 Regular application of protective coating on wooden parts

The cycle of the application of protective coatings on wooden parts is usually five to ten years. The bases of columns start to decay before the tenth year after construction, and costly repairs become necessary in some cases. Thus, the regular application of protective coatings is preferred. The cost of re-application is about 300,000 to 600,000 yen per unit as the direct cost. Actually, however, not many local public organizations regularly re-applied coatings.

### 3.2 The renewal of outer walls with covering method

The regular application of the outer layer seems difficult as the budget is tight in many local public organizations. Under such circumstances, the renewal of the outer walls using a covering method is useful in public housing. The base material is applied on top of the deteriorated outer walls, and the base material is covered with new siding materials. The cost per unit exceeds one million yen, but this method does not require maintenance afterward and is advantageous in reducing the long-term management cost. The construction period is shorter than the replacement of the outer wall materials, and the work can be done while residents are in the house. Meanwhile, there are many uncertainties in regard to the compatibility with the original outer walls, and many issues need to be examined later.



Figure 2. Re-application of protective coating (left) and covering method (right)

## 4. To plan methods to elongate service lives

This paper introduced methods to elongate the service lives of wooden public housing focusing on the repair of the outer walls. Today, local public organizations are independently managing and repairing wooden public housing. A future plan is to prepare references to systematically elongate the service lives of wooden public housing units based on the knowledge gained through experience.