

Building Element Laboratory

● Outline

The Building Element Laboratory is designed so that the performance tests for small sized building materials to full scale building components can be conducted. The characteristics of the building materials can be clarified and the performance of the building components can be obtained under various conditions in consideration of the way to use. So the relationship between the building components and the composing building materials can be discussed by analyzing the data produced by the tests conducted in this laboratory.

1. The laboratory has two testing laboratories, the performance testing laboratory for building materials and the performance testing laboratory for the full-scale building components. As both testing laboratories can be conditioned to the constant climate of 20°C and 60% R.H., the performance of building components or materials can be compared with the others under the same condition.

The deterioration and the strength reduction of the building materials and components exposed for a certain time at the adjoining Outdoor Exposure Site can be also evaluated at this laboratory.

■ **Material performance test**

At the performance testing laboratory for building materials, the mechanical properties of concrete, mortar, plaster, plastic, steel, wood and composite materials under various temperature and humidity can be examined.



■ Full scale element performance test

At the performance testing laboratory for full-scale building components, the performance of full scale building components or joints under standard condition against high speed loading, impact load, partial load, uniform load and shear force can be examined. The performance of full scale building components exposed to heat, water and humidity that represent the actual climate condition in service can be examined as well.



■ Perspectives

In these days, as the quality of buildings and houses is claimed to be improved and the user's needs are getting higher and diversified, it is important to correspond those requests through developing research about the required performances.

Furthermore, a research about "Life Cycle Management" for the purpose of the sustainable building is carried out from the viewpoint of global environment improvement.

In consideration with the whole life cycle of materials; production to demolition, the research and development about materials with high durability and engineering of material recycling are conducted.

We will keep producing useful research output by proceeding researches that are based on the needs of the public. And the effective use of the facility and the cooperative research works with other institutes will also help our research activities.

○ Performance against dwelling ability

- Resistance against condensation
- Heat retentiveness
- Moisture penetration
- Permeability
- Water penetration
- Air penetration
- Waterproof, etc.



○ Performance against load

- Flexural property
- Tension property
- Compression property
- Resistance against buckling
- Shear resistance
- Partial load resistance
- Impact load resistance

