

Structural Composite Test Laboratory (Wooden Structure Laboratory)

●Outline

This laboratory is designed to carry out structural experiments on wooden buildings and experiments on composite problems between structural characteristics and the others. Since the buildings damaged on the earthquake could suffer from fires, it is necessary to research the fire resistance performance on earthquake damaged buildings.

The laboratory features a movable shed structure which, by opening it, enables composite experiments, and can carry out the following three kinds of experiments.

- (1) The regular structure test is carried out with the shed structure closed. It is capable of performing structural tests by loading horizontal force to the test specimen set on the reaction slab.
- (2) As another usage of this facility, it is capable to perform the experiment on test specimen set outside of the reaction wall. This experiment makes it possible to perform integrate research on the performance of ground, foundation, and building.
- (3) The other usage of the facility is to research the fire resistance performance of the test specimen that had been gone through structural tests by opening the shed structure.

For these reasons, this laboratory can easily move the test specimens which were conventionally difficult. Moreover, this laboratory can carry in and carry out the materials efficiently, and carry out the public large-scale experiments.

The reaction wall equipped in the facility has dimensions of 9m-long and 10m-high which are large enough to test full-scale three story structure, and the reaction slab is 9m-long and 12m-wide.

The loading unit consists of three computer control hydraulic actuators with 250kN capacity and $\pm 500\text{mm}$ stroke, capable of applying large deformation such as on three-story wooden building.

There is a loading jack with 1000kN capacity and $\pm 500\text{mm}$ stroke, it enable

larger scale experiments.

<LABORATORY>

Building area: 605m²

Total area: 623m²

Floor space (2 F): 63m²

Floor space(1F): 560m²

Structure: steel structure

Story: two story



<The exterior of the lab>

<REACTION WALL>

Height: 10m

Width: 9m

Allowable bending moment: 10,000kN·m

Allowable shear force: 3000kN

<REACTION SLAB>

Dimension: 12×9m

Strength: 500kN/ point



<Reaction wall and slab>



<Example of the test>