Structural Testing Laboratory

●Outline

Structural Testing Laboratory is designed to examine the strength, deformation, vibration, and fatigue properties of a building structure and its elements and materials. The outcome of these experiments is used to verify structural design concepts and techniques to meet high level and/or multi-purpose performance requirements to building structures.

●Laboratory Equipment

① **Medium size shaking table**

Shaking table is a testing equipment to investigate dynamic properties and/or earthquake response behaviors of buildings using scaled-model specimens of buildings or building components. Dimension and capacities of the shaking table are as follows, dimension: 3m×4m, maximum loading weight: 200kN, maximum acceleration: ±1G, maximum velocity: ±100cm/sec, maximum displacement: ±150mm.

② **Test machine for cyclic lateral loading system under axial force (so-called BRI-type horizontal loading machine)**

A testing machine was invented by BRI to investigate the structural performance of columns and beams under earthquake. The feature of this test machine is the ability to easily perform the cyclic loading under anti-symmetric moment condition with keeping the specimen surfaces at top and bottom horizontal all the time by using pantograph. The maximum loading capacities of axial force in compression and tension and shear force are 2000kN, 1000kN and 2000kN, respectively.

③ **General-purpose test machine for multi-degree-of-freedom loading system**

This machine is used to investigate the structural performance of building components and elements under earthquake. It consists of unit such as reaction wall, reaction floor, reaction frame and actuators. It can be used for multi-purpose, such as experiments on columns, beams, walls, beam-column joints and frames. The maximum loading capacities of the actuators is 3000kN.

④ **Test machine for 3-D loading of beam-column joints**

Building receives horizontal force from every direction under earthquake. This test machine is equipped to investigate the elasto-plastic behavior of three dimensional beam-column joint by loading force from various directions. The maximum loading capacities of axial force and shear force are 2000kN and 400kN, respectively.