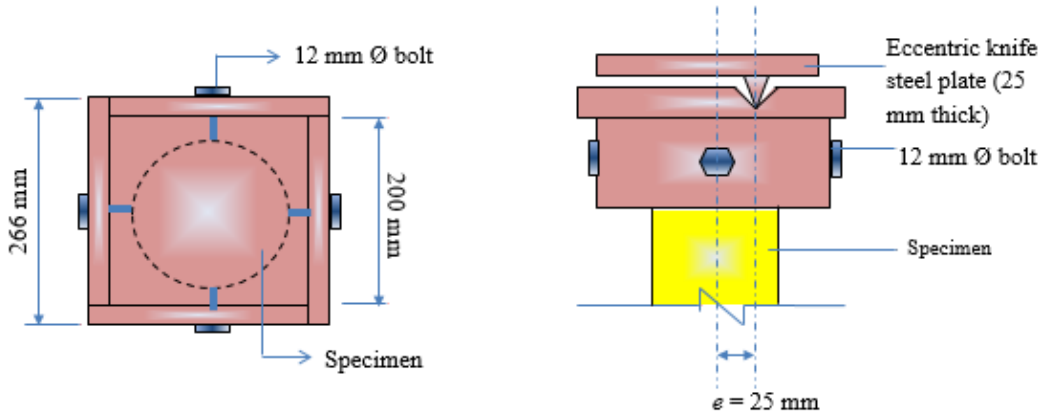
It should be noted that in the eccentrically load tests, axle vertical load was difficult to achieve since the eccentric head would push the load actuator away at high level of loading. In order to ensure axle vertical load transfer during testing, the load actuator was pulled evenly by 4 numbers of 20 mm diameter tensile bars which connected to temporary steel columns at 4 sides. As the failure of HSC columns was expected to be sudden and explosive, hoarding frame was also erected around the specimen for safety purposes.

The column specimens were hinged at the both ends with eccentric heads. The load was applied with an initial eccentricity of 25 mm at bottom end. Each hinged end was formed by a steel knife-edged bearing plate that was contacted to a 40 mm thick steel plate fixed with the column end. The eccentric loading mechanism is illustrated in Figure 4.11. All columns were instrumented with strain gauges of 6 mm in the hoop direction at mid-height. Lateral deflection was monitored using 3 linear variable differential transformers (LVDTs), with one at the mid-height of the specimens and the other two at 1/4 of the total length of the specimens at both ends. Two Pi-gauges were attached at compressive and tension sides of the specimens to measure the evolution of concrete strain during testing. A Dartec 1,200 kN compression testing machine was used in all loading tests.



(a) Plan view (b) Section A-A

Figure 4.11 Developed eccentric loading mechanism

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