UBC Timber Engineering & Applied Mechanics Lab
2900 – 2424 Main Mall, Vancouver, BC, Canada V6T 1Z4
Tel: 604-822-8201 Fax: 604-822-9159

Summary of TEAM Report 2017-02

Lateral Resistance Tests of Shear Walls Equipped with Joto-Vent Foundation Vent System

Note: This document is a brief summary of TEAM Report 2017-02 *Lateral Resistance Tests of Shear Walls Equipped with Joto-Vent Foundation Vent System*, dated May 16, 2017. This document shall not be considered or used as an official test report.

The effect of Joto-Vent Foundation Vent System (Joto-Vent) on the lateral resistance of light wood frame shear wall system was evaluated by comparing the performance of shear wall systems installed with Joto-Vent and without Joto-Vent. The size of the walls was 2.44 by 2.44 m. The stud material was No. 2, 38 mm × 140 m (nominal 2" × 6") Spruce-Pine-Fir (S-P-F). The sheathing was 11 mm thick Oriented Strand Board. Ten walls were tested under three loading protocols: monotonic loading (2 specimens), CUREE basic loading protocol (4 specimens), and CUREE near fault protocol (4 specimens). Under each protocol, half of the walls were installed with Joto-Vent (KP-L150U). The vent was placed between the sill plate and the test base. Anchor bolts went through the openings on the vent. Transducers were mounted at different locations to measure the movement of the wall and the vent. The test setup is shown in Figure 1.

The walls with Joto-Vent had similar load bearing capacity compared to the walls without Joto-Vent, as shown in Table 1 and Figure 2. On average, the difference between the two groups was 2% in peak load and 4% in deformation capacity. There was no significant difference in the vertical movement of the wall. The primary effect of Joto-Vent was on the horizontal movement of the wall at the bottom. The average displacement was increased from 0.22 mm to 0.41 mm. When compared to the displacement of the wall (around 40 mm at the peak), this increment was not significant (from 0.5% to 1.0%). The compression of Joto-Vent at the peak load was 0.24-0.31 mm, which was 1.2% to 1.5% of the vent thickness. The relative movement between the vent and the sill plate was in the range of 0.04-0.09 mm at the peak load.

Table 1 Peak load for each specimen (kN)

	Monotonic	CUREE basic			CUREE near-fault		
Specimens	#1	#1	#2	Mean	#1	#2	Mean
With Joto-Vent	13.57	13.28	14.21	13.75	13.70	14.04	13.87
No Joto-Vent	13.41	13.89	14.00	13.95	13.43	12.66	13.05
Difference*	+1.2%	-	-	-1.4%	-	-	+6.3%

*: compared to No Joto-Vent

The failure mode was consistent in all ten walls. The connection between the sheathing and framing failed when the fasteners were withdrawn from the framing or pulled through the sheathing. No damage to the holdowns, sill plates, anchor bolts, or Joto-Vent was observed during the test.

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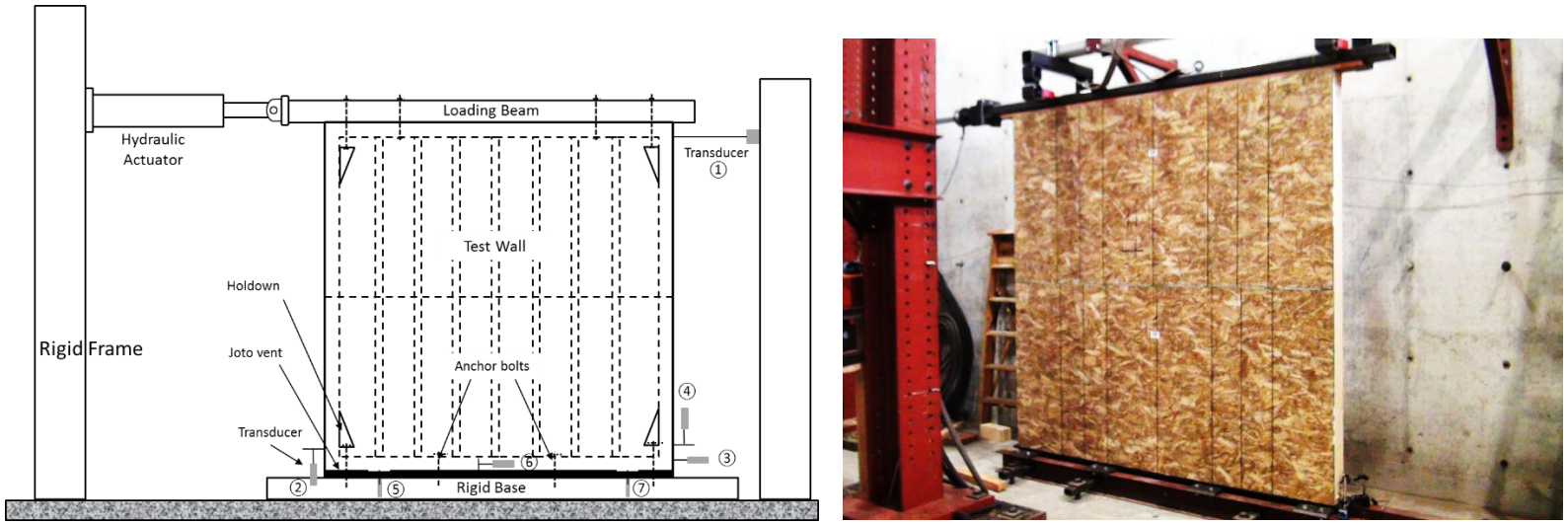

Figure 1 Test setup for walls with Joto-Vent

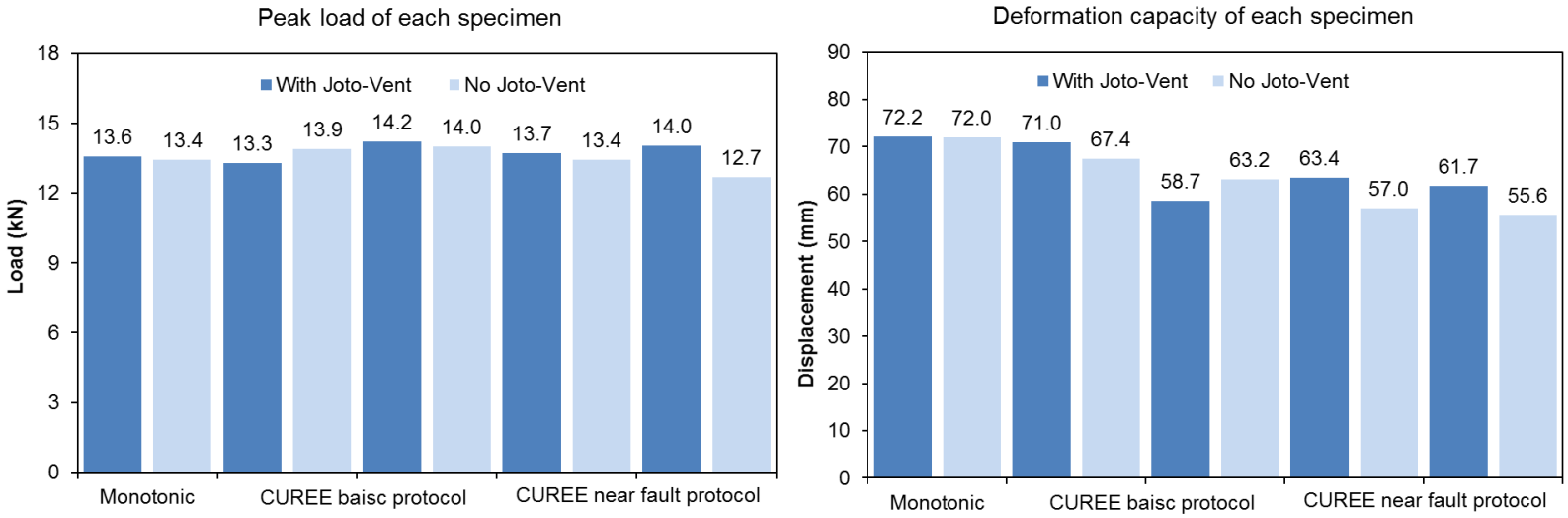

Figure 2 Peak load and deformation capacity for each specimen