Appendix: Global experimental response of a three-story, full-scale precast concrete shear wall structure with reinforcing bars spliced by grouted couplers

Wenlong Han, Zuozhou Zhao, and Jiaru Qian

This appendix contains additional figures for "Global Experimental Response of a Three-Story, Full-Scale Precast Concrete Shear Wall Structure with Reinforcing Bars Spliced by Grouted Couplers," by Wenlong Han, Zuozhou Zhao, and Jiaru Qian, which appears on pages 65–80 in the January–February 2019 issue of *PCI Journal*.

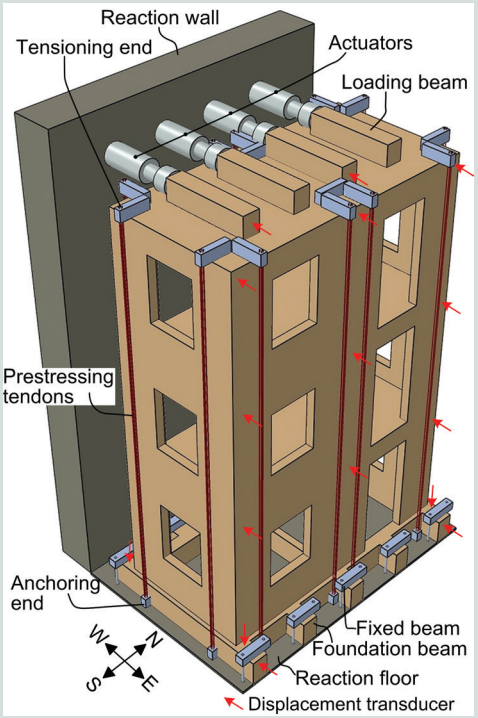

Figure A1. Test setup.

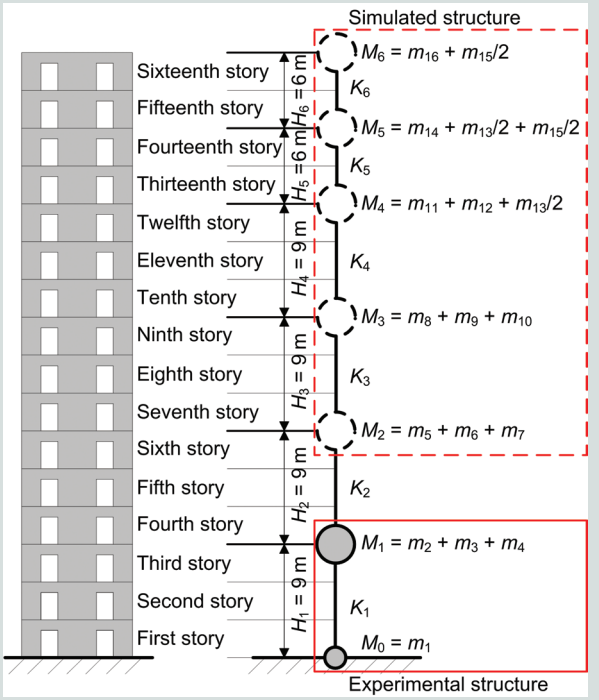

Figure A2. Schematic diagram of the simplified model of the prototype. Note: H_1 = height of stories 1-3; H_2 = height of stories 4–6; H_3 = height of stories 7–9; H_4 = height of stories 10–12; H_5 = height of stories 13–14; H_6 = height of stories 15–16; K_1 = stiffness of stories 1–3; K_2 = stiffness of stories 4–6; K_3 = stiffness of stories 7–9; K_4 = stiffness of stories 10–12; K_5 = stiffness of stories 13–14; K_6 = stiffness of stories 15–16; m_1 = mass of story 1; m_2 = mass of story 2; m_3 = mass of story 3; m_4 = mass of story 4; m_5 = mass of story 5; m_6 = mass of story 6; m_7 = mass of story 7; m_8 = mass of story 8; m_9 = mass of story 9; m_{10} = mass of story 10; m_{11} = mass of story 11; m_{12} = mass of story 12; m_{13} = mass of story 13; m_{14} = mass of story 14; m_{15} = mass of story 15; m_{16} = mass of story 16. 1 m = 3.2808 ft.

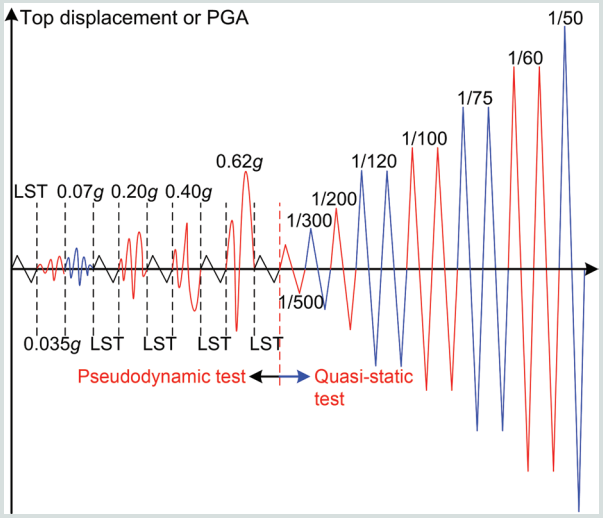

Figure A3. Loading protocol. Note: g = acceleration due to gravity; LST = lateral stiffness test with a top lateral displacement amplitude of 2 mm; PGA = peak ground acceleration. 1 mm = 0.0394 in.

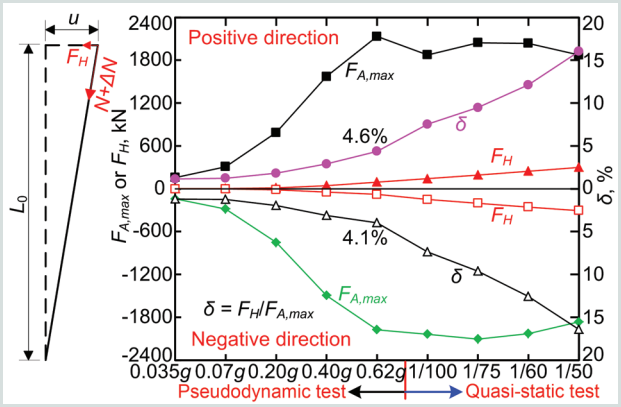

Figure A4. Influence of prestress on lateral force. Note: $F_{A,max}$ = maximum lateral force applied by actuators; F_H = horizontal component of inclined prestress; g = acceleration due to gravity; L_0 = initial length of prestressing tendons; LST = lateral stiffness test with a top lateral displacement amplitude of 2 mm; N = applied axial load; PGA = peak ground acceleration; u = lateral displacement of the third-story slab; δ = relative force; ΔN = increment of applied axial load. 1 kN = 0.225 kip.

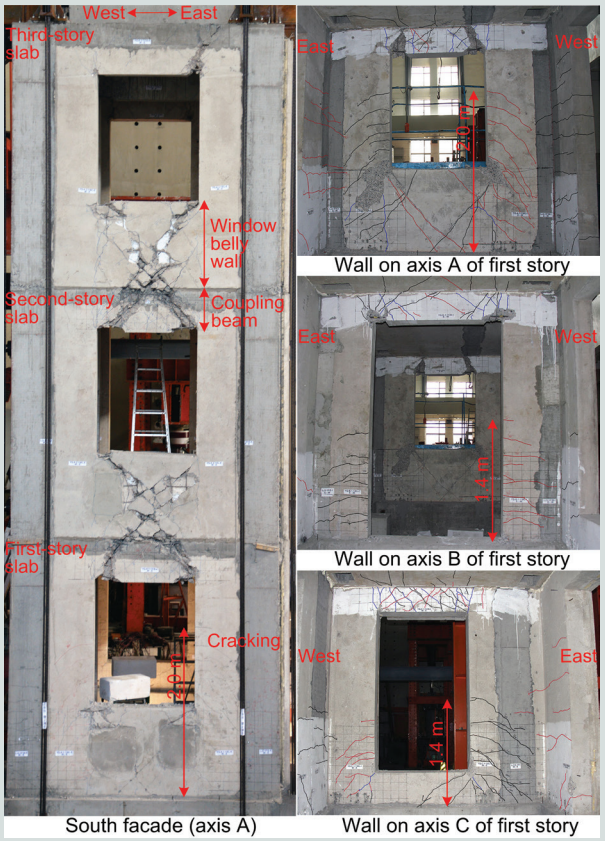

Figure A5. Failure mode of the test model after quasi-static test. Note: 1 m = 3.2808 ft.

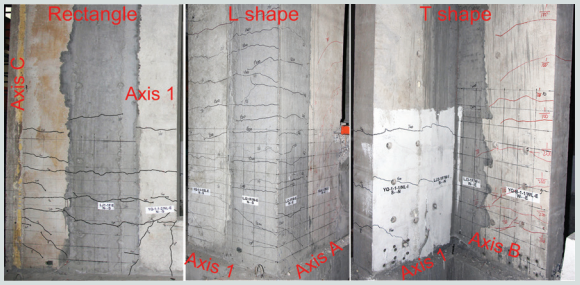

Figure A6. Cracks around vertical wall-to-wall joints.

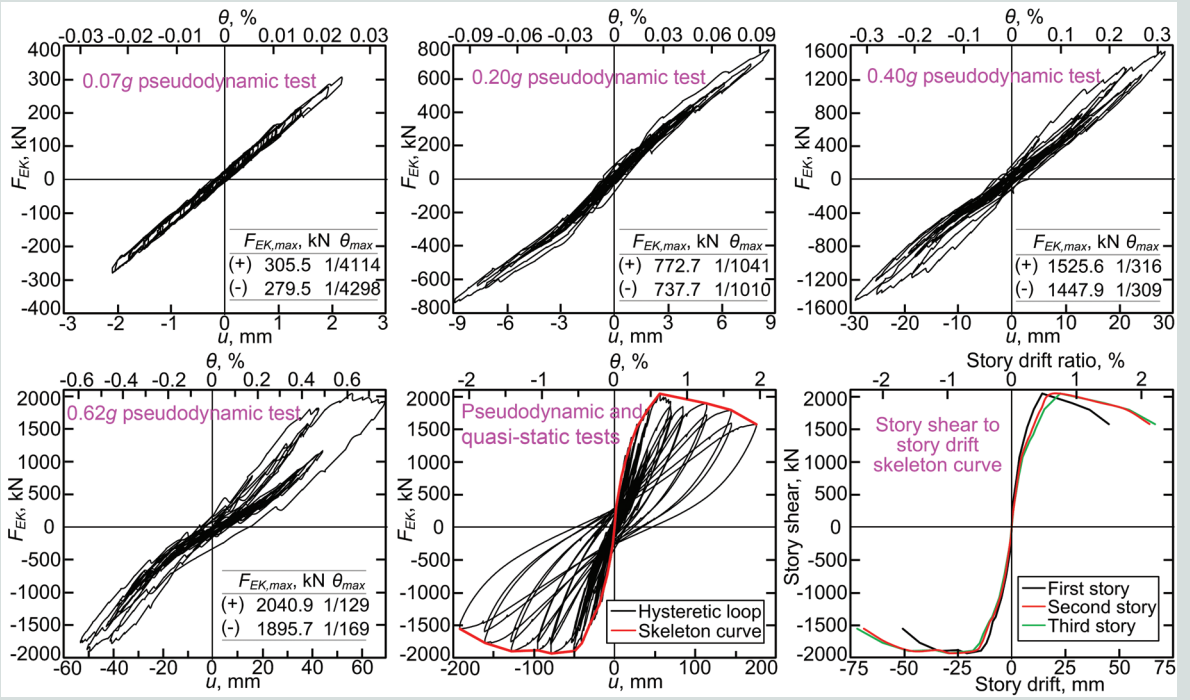

Figure A7. Hysteretic loops or skeleton curves under different load conditions. Note: F_{EK} = base shear force; $F_{EK,max}$ = maximum base shear force; g = acceleration due to gravity; u = lateral displacement of the third-story slab; θ = top drift ratio; θ_{max} = maximum top drift ratio. 1 mm = 0.0394 in.; 1 kN = 0.225 kip.

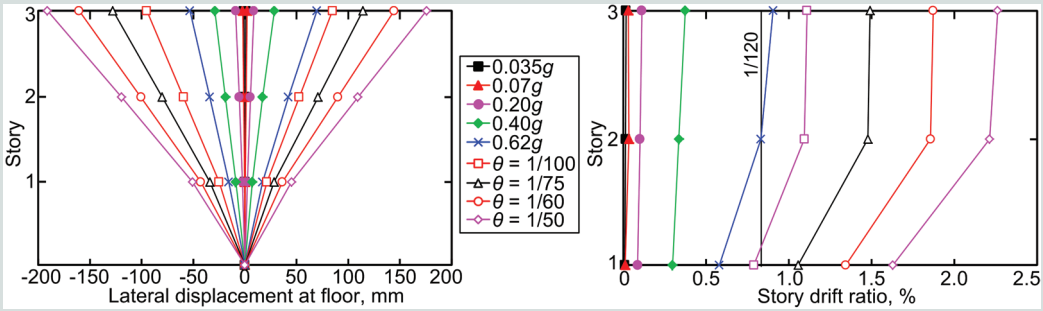

Figure A8. Lateral deformation distribution along the height. Note: g = acceleration due to gravity. 1 mm = 0.0394 in.