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ข้อความแห่งการริเริ่ม

1 วิทยานิพนธ์นี้ได้นำเสนอการศึกษาประสิทธิภาพต้านทานแผ่นดินไหวของโครงสร้างคาน-เสา คอนกรีตสำเร็จรูป สำหรับโครงเฟรมต้านทานแรงดัด ในการศึกษาได้ทำการปรับปรุงรูปแบบรายละเอียดจุดต่อคาน-เสา ภายใน จากรูปแบบที่มีใช้อยู่ในปัจจุบันให้มีประสิทธิภาพต้านทานแผ่นดินไหวเพิ่มขึ้น

2 โดยทั่วไปโครงสร้างคอนกรีต คาน-เสา สำเร็จรูปสำหรับอาคารต้านทานแผ่นดินไหว ส่วนที่สำคัญที่สุดของระบบโครงสร้างประเภทนี้คือ จุดต่อระหว่างคาน-เสา ซึ่งจำเป็นต้องมีคุณสมบัติในการถ่ายแรงที่ดี มีเสถียรภาพในด้านกำลังและการเสียรูป ดังนั้นในระหว่างเหตุการณ์แผ่นดินไหวจุดต่อจะต้องมีความแข็งแรงและมั่นคงเพียงพอ เพื่อป้องกันการพังทลายของอาคารระหว่างเหตุการณ์แผ่นดินไหว

3 การวิบัติของจุดต่อคาน-เสา โครงสร้างคอนกรีตสำเร็จรูปส่วนใหญ่เกิดจากการเสียรูปแบบไร้เชิงเส้นเกิดขึ้นบริเวณหน้าเสา-คานหรือภายในจุดต่อ ซึ่งจะทำให้เกิดการวิบัติแบบเปราะได้ หากวิศวกรสามารถเคลื่อนย้ายจุดหมุนแบบพลาสติกให้ออกห่างจากบริเวณหน้าเสา-คาน จะทำให้โครงสร้างมีความเหนียวเพิ่มขึ้น ในการศึกษานี้ใช้วิธีการเพิ่มกำลังต้านทานแรงดัดของหน้าตัดคานบริเวณหน้าเสาเพื่อย้ายจุดหมุนแบบพลาสติกให้ห่างจากหน้าเสา โดยการพัฒนารูปแบบของจุดต่อคาน-เสา ที่ใช้เหล็กสอดหน้าตัดรูปตัวที ซึ่งมีผลทำให้ ค่ากำลัง ความเหนียว และการสลายพลังงาน ดีขึ้นเมื่อเปรียบเทียบกับจุดต่อรูปแบบที่ใช้ในปัจจุบัน

STATEMENTS OF ORIGINALITY

1. This thesis proposes the study of a seismic performance of a precast concrete beam-column connection for a precast moment resisting frame. The study has developed and modified the current detail toward the better seismic performance.
2. In general, the precast connection is the one of the most important components of the precast concrete resisting frame of an earthquake resistant building. It must be capable of shear transferred mechanism and stability of strength and deformation. To prevent the severe damage of the concrete building during an earthquake ground motion, the precast connection must be enough seismic performance.

3. Most failure modes of the precast structural frame are an inelastic deformation appeared at the column face or a beam-column joint care, leading to the dramatic collapse of the precast building during the earthquake ground motion. If a structural engineer is able to relocate the inelastic deformation away from the joint region, a deformation ductility of the precast concrete structure is better. To move the plastic beam hinge far from the joint region, the nominal flexural strength of the precast beam section of the joint region is increased by installing the T-section steel inserts into the precast beam elements. The test result evidently exhibits the better seismic performance (strength capacity, ductility and energy dissipation), compared to the current precast connection.