SEISMIC YIELDING CONNECTION

Cross-reference to Related Applications

The present application claims priority to pending U.S. Provisional Patent Application Serial No. 62/567,446 entitled "Seismic Yielding Connection," filed on October 3, 2017, which is specifically incorporated by reference herein for all that it discloses and teaches.

Background

Earthquakes may release sudden and significant forces on the structure of a building. Buildings in areas prone to earthquakes are often built to withstand the forces of an earthquake using shear panels and assemblies, structural tie-downs, and dampening systems. However, these solutions may require extensive structural augmentation and may be costly.

Summary

The described technology addresses one or more of the foregoing problems by providing a seismic yielding connector. The seismic yielding connector includes a U-shaped plate configured to connect a side stud of a panel to another component of a panel and a yielding plate located between the U-shaped plate and the side stud of the panel. A high-strength bolt connects the U-shaped plate, the yielding plate, and the side stud of the panel to a structural column. A bushing is located between the U-shaped plate and the structural column.

According to a first aspect of the present invention, there is provided a seismic yielding connector comprising: a U-shaped plate configured to connect a side stud of a panel to another component of the panel; a yielding plate located between the U-shaped plate and the side stud of the panel; a high-strength bolt connecting the U-shaped plate, the yielding plate, and the side stud of the panel to a structural column; and a bushing, located between the U-shaped plate and the structural column.

According to a second aspect of the present invention, there is provided a seismic yielding panel, the seismic yielding panel comprising: a panel including an upper truss structure and one or more side studs; one or more structural columns; and one or more seismic yielding connectors connecting the one or more side studs of the panel to the one or more structural columns, each of the one or more seismic yielding connectors comprising: a U-shaped plate

configured to connect one of the one or more side studs to another component of the panel; a yielding plate located between the U-shaped plate and the one of the one or more side studs of the panel; a high-strength bolt connecting the U-shaped plate, the yielding plate, and the one of the one or more side studs of the panel; and a bushing, located between the U-shaped plate and one of the one or more structural columns.

According to a third aspect of the present invention, there is provided a method for connecting a seismic yielding panel to a structural column using a seismic yielding connector, the method comprising: inserting a high-strength bolt through an opening in a structural column; fitting an outer bushing onto the high-strength bolt; inserting the high-strength bolt into an opening in a U-shaped plate, an opening in a yielding plate, and an opening in a side stud of a panel; and securing the high-strength bolt with an inner securing mechanism.

Brief Description of Drawings

FIG. 1 illustrates an example of a seismic yielding panel with seismic yielding connectors connecting a panel to structural columns.

FIG. 2 illustrates a perspective view of an example seismic yielding connector connecting a panel to a structural column.