

## SSDA Seismic Retrofit Design Methodology for Pre-Northridge Connections

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The SSDA recommended seismic connection retrofit methodology for pre-Northridge moment frame connections uses the SlottedWeb (SW) Seismic Moment Frame Connection Technology as follows:

1. Lighten the load on the beam by removing the live loads
2. Weld the beam web to the column flange with a groove weld
3. Fillet weld the shear plate to the beam web
4. Drill the stress relief holes in the beam web
5. Thermal cut the beam web slots
6. Fillet weld the top backup bar to the column flange
7. Remove the bottom flange backup bar, back gauge and use a 5/16 fillet weld to replace the gauged out backup plate weld.

### Commentary

By separating the beam flanges with slots and welding the beam web to the column flange, the force distributions are changed in the pre-Northridge connection: (1) the beam shear in the flanges is eliminated, (2) the large stress and strain gradients across and through the beam flanges are eliminated, and (3) the beam web connection to the column and shear plate resist all of the beam shear. The SW technology applied to the pre-Northridge connection results in a **kinematic connection** so that when the refitted connection is loaded with the live loads and seismic or wind loads, the force distributions in the connection are independent of the force amplitudes.

SSDA has retrofitted 7 multi-story buildings in a timely and economical manner.

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