



## Performance of Steel Energy Dissipators Connected to Cross-Laminated Timber Wall Panels Subjected to Tension and Cyclic Loading

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Summary:

This paper presents a new alternative energy dissipation solution to be used with cross-laminated timber (CLT) self-centering walls. CLT is a relatively new building product in North America and could potentially be used for high-rise construction. The development of high-performance seismic design solutions is necessary to encourage innovative structures and the design of these structures to new heights. The objective of this paper is to propose a wall-to-floor connection system that is easy to install and replace (structural fuse) after the occurrence of a large damaging event. The proposed energy dissipators are fabricated following concepts used in developing steel buckling restrained steel braces (BRB), having a milled portion, which is designed to yield and is enclosed within a grouted steel pipe. The connection system is investigated experimentally through a test sequence of displacement-controlled cycles based on a modified version of the test method developed by the American Concrete Institute (ACI) to facilitate development of special precast systems (ACI T1.1-01 Acceptance Criteria for Moment Frames Based on Structural Testing). Digital Image Correlation (DIC) was used to analyze strain behavior of the milled portion, as well as track movement of the panels during quasi-static uniaxial and cyclic testing. The results show the yield behavior and energy dissipation properties of the connection system. Damage was focused primarily in the energy dissipators, with negligible deformation and damage to the CLT panels and connections.

Online Access: Free

## Resource Link

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[https://www.researchgate.net/profile/Andre\\_Barbosa7/publication/287405873\\_Performance\\_of\\_Steel\\_Energy\\_Dissipators\\_Connected\\_to\\_Cross-Laminated\\_Timber\\_Wall\\_Panels\\_Subjected\\_to\\_Tension\\_and\\_Cyclic>Loading/links/5c83f2c492851c695067e78c/Performance-of-Steel-Energy-Dissipators-Connected-to-Cross-Laminated-Timber-Wall-Panels-Subjected-to-Tension-and-Cyclic-Loading.pdf](https://www.researchgate.net/profile/Andre_Barbosa7/publication/287405873_Performance_of_Steel_Energy_Dissipators_Connected_to_Cross-Laminated_Timber_Wall_Panels_Subjected_to_Tension_and_Cyclic>Loading/links/5c83f2c492851c695067e78c/Performance-of-Steel-Energy-Dissipators-Connected-to-Cross-Laminated-Timber-Wall-Panels-Subjected-to-Tension-and-Cyclic-Loading.pdf)