

Protection of Buildings from Earthquakes (Bozzo-Gerb-Dissipator)

For a proposal to protect your building with Dissipators please contact:

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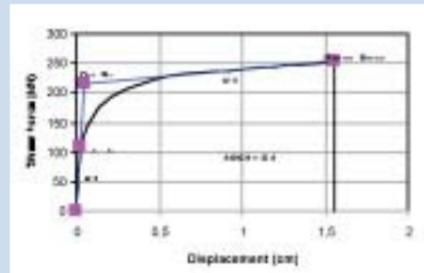
www.gerb.com

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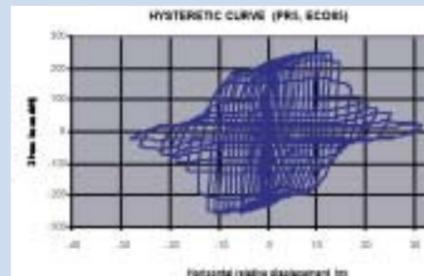
BOZZO-GERB Dissipator

The BOZZO-GERB Dissipator is a general non-linear steel connection that can be used for enhancing the horizontal seismic strength of existing building structures or for providing ductility for new buildings. The former application suggests an innovative structural system where a designer may localize ductility demands at specific points. Consequently, it is a step forward in actual conventional design practice based on ductile flexible frames or stiff walls since this connection may provide a stiff but ductile structural system. The devices horizontal yielding force varies between 25 kN and 750 kN. The yielding displacement is very small, around 0,25 mm for all devices.

The following figure shows typical experimental hysteretic responses



Parameters of BOZZO-GERB Dissipators



Typical Hysteretic Curves of a Dissipator

Experimental results indicate that fatigue due to frequent load such as wind is not significant, providing a minimum gap between the device and their plate supports. In the other hand, this gap is always required just for installing the devices after completing the construction of the vertical load structural system.

Regarding the overall seismic reduction forces that the system provides, nonlinear spectra indicates values up to 10. It is recommended, however, that this reduction should be similar to the reductions applied for conventional design practice. In that sense for practical purposes it is recommended to adopt high force reduction coefficients, adopting minimum ductility details for the remaining structural elements.

Dimensions:

The total width of the Dissipator varies between 5 and 50 cm, the height is 31 cm and the thickness is 2 cm.

Technical Data:

Dissipators are available with the following characteristics:

- Yield Forces F_y :** 25 to 760 kN
- Max. Forces F_{max} :** 45 to 800 kN
- Dissipated Energy E_d :** 50 to 1,150 kNcm.



BOZZO-GERB Dissipator

Casino Building in Lima

The first building using this system is a Casino in Lima, Perú. This reinforced concrete building has 7 stories and an L shape in plan. The dissipators are located on two orthogonal uncoupled shear walls. The shear walls are close to the interior corner of the L shape in order to provide stiffness symmetry (the original building has a strong irregularity in plan). Two dissipators were installed in each uncoupled shear wall so the total number of connections is 28 for the 7 stories. The use of the Dissipators allowed to consider the building as a high ductility one instead of a medium ductility one. This consideration reduced seismic forced and construction reinforcement details since ductility is concentrated on the devices. The total reduction in reinforced steel was about 3kg/m².

The Bozzo-GERB Dissipator can easily be replaced after a strong earthquake since it is bolted to the building structure.



Casino building in Lima, Peru with BOZZO-GERB Dissipators



Casino building in Lima, Peru