

ERADIQUAKE

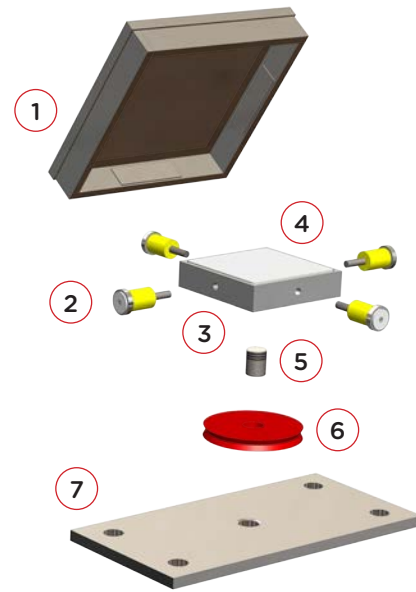
SLIDING ISOLATION BEARINGS




RJ Watson Inc
making bridges better

ISOLATION & FORCE CONTROL BEARING DEVICES

1. SLIDE PLATE
2. MASS ENERGY REGULATOR (MER)
3. UPPER BEARING BLOCK
4. SLIDING MATERIAL
5. SHEAR RESISTING MECHANISM (SRM)
6. POLYTRON DISC
7. LOWER BEARING PLATE



I-57 - Southern Illinois



Heron Road Bridge - Ottawa, Ontario



Honam High Speed Rail - South Korea

The **EradiQuake System (EQS)** is a state of the art Isolation Bearing System designed to minimize forces and displacements experienced by structures during an earthquake. The basic components of the EQS consist of a sliding multirotational bearing assembly with friction damping, and a restoring force and maintenance free device called the mass energy regulator (MER).

This innovative system was developed based on extensive research conducted at the Multidisciplinary Center for Earthquake Engineering Research (MCEER) at the State University of New York at Buffalo. Shake table testing confirmed that the EQS is an extremely effective system for significantly reducing forces and displacements caused by strong ground accelerations.

EQS transfers the energy of a moving mass (kinetic energy), such as a bridge superstructure during an earthquake, into heat and spring (potential) energy. This is done via the sliding material interface and the MER, which connects the superstructure to the substructure. EQS dissipates the energy through friction, and each bearing can be designed to achieve a wide variety of energy dissipation levels. This control over the design gives the engineer the ability to optimize the structure's response to a seismic event.

ERADIQUAKE FEATURES

EASE OF RETROFIT

Because of the compactness of the EQS bearing, existing structures can be retrofitted with these devices to improve their overall seismic performance.

SIMPLE INSTALLATION

The total EradiQuake System can be confined within the sole and masonry plates. This means that during installation of the bearings, no additional component connections are required.

SIMPLIFIES DESIGN

Because the EQS is so effective in reducing forces and displacements, column/footing costs can be reduced, bearing seats can become more compact and joint details can be made simpler and smaller. Secondary systems such as utility lines and drainage systems can be designed for much smaller displacements.

VERSATILE

The EQS can be adjusted to the desired level of stiffness and damping. This means that the system can be fine-tuned for an ideal response to any design excitation.

MULTIDIRECTIONAL PROTECTION

Because the EQS employs the use of multirotational and multidirectional bearings, protection from earthquakes is provided regardless of the direction or orientation of seismic forces.

COST EFFECTIVE

The simplicity of the EQS and the use of readily available engineering materials results in a low cost isolation system. In addition, the use of the EQS in a structure's design can actually reduce the overall cost by reducing forces and displacements.

FIELD PROVEN

The EQS has been used on over 200 structures around the world.

DURABLE

Performance is unaffected by long term cycling. EQS does not need to be replaced after seismic events.

MAINTENANCE FREE

The EQS is designed to restore the structure to its original pre-quake position. No costly jacking of the structure or replacement of fuses is required.

COMPACT IN SIZE - LOW PROFILE

Since the bearing plates, sliding surfaces and MER's are all integral, the EQS is a compact bearing design. EQS will maintain a low profile for all design displacements.

LOW TEMPERATURE PERFORMANCE

Unlike rubber isolators, the EQS is not significantly affected by low temperature extremes.

NO ELEVATION CHANGE

The EQS is a flat sliding isolator so that there is no elevation change during dynamic loading.

ERADIQUAKE BUILDING APPLICATIONS

Although originally designed for bridges, EQS has also been used to mitigate seismic forces on buildings. Custom designed EQS bearings with vertical MER's and dampers were utilized on the UNASUR building.

UNASUR Building - Quito, Ecuador



UNASUR EQS



Massive EQS bearing ready for installation on the Skybridge



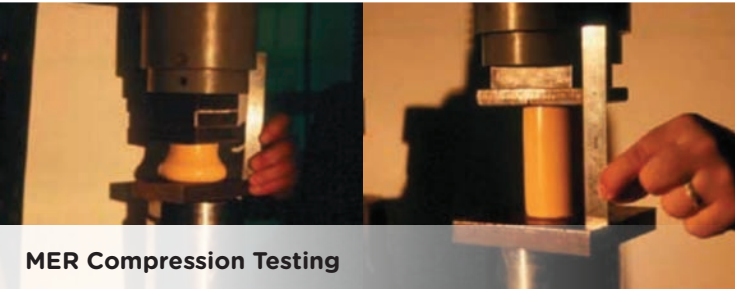
Atmosphere Skybridge - Kolkata, India



NON SEISMIC FORCE CONTROL APPLICATION



EQS used on the Damen Ave. Bridge - Chicago, Illinois



MER Compression Testing



EQS Shake Table Testing

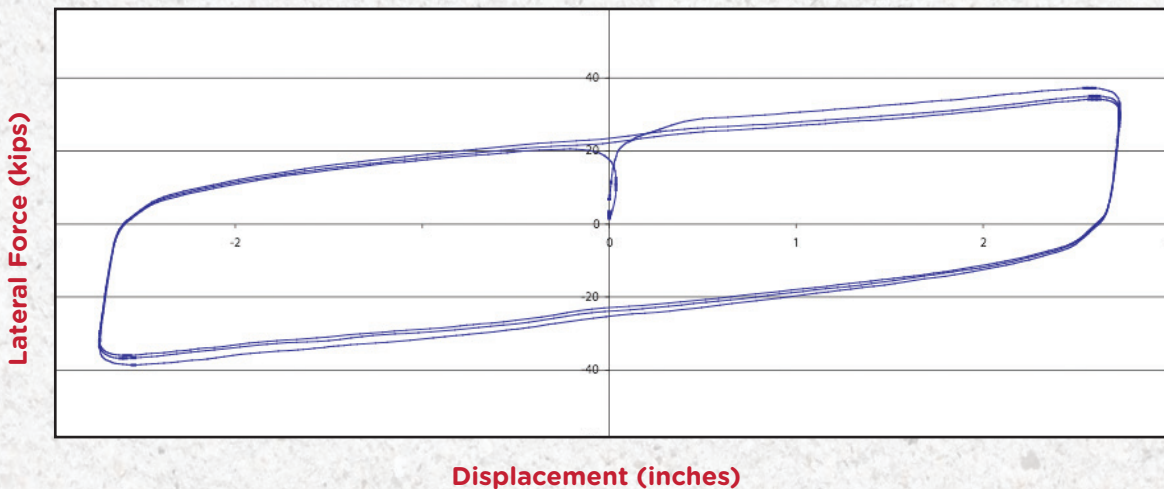


Dynamic Testing Machine

ERADIQUAKE PERFORMANCE AND TESTING

The EradiQuake System (EQS) has undergone extensive prototype and shake table testing at MCEER located at the State University of New York at Buffalo. Tests include individual component testing, as well as full scale cycle testing in accordance with AASHTO Guide Specifications for Seismic Isolation Design. In addition, the EQS has been subjected to the Highway Innovative Technology Evaluation Center (HITEC) Technical Evaluation Testing Program.

EQS Hysteresis Loop



NON SEISMIC APPLICATION



EQS bearings were utilized on the Mike O'Callaghan - Pat Tillman Memorial Bridge (Hoover Dam)

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R.J. Watson offers a no cost or obligation design service for engineers interested in examining the feasibility of the EradiQuake System. Simply complete the questionnaire on our website.



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