

1-1-2007

Friction Pendulum™ - Seismic Isolation Bearings

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DOI: 10.5703/1288284315802

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Recommended Citation

ECT Team, Purdue, "Friction Pendulum™ - Seismic Isolation Bearings" (2007). *ECT Fact Sheets*. Paper 93.
<http://dx.doi.org/10.5703/1288284315802>

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FRICION PENDULUM™ - SEISMIC ISOLATION BEARINGS

THE NEED

Recent large earthquakes in Turkey, Taiwan, and Japan have wreaked terrible destruction in highly urbanized areas. Preventing such tragic loss of life and damage to society's infrastructure is the aim of Friction Pendulum™ seismic isolation bearings, a technology developed with the support of the National Science Foundation's (NSF) Small Business Innovation Research (SBIR) program. Friction Pendulum™ bearings provide an effective, practical and economical means of protecting structures from the devastating effects of earthquakes.

THE TECHNOLOGY

Friction Pendulum™ bearings are seismic isolators that are installed between a structure and its foundation to protect the supported structure from earthquake damage. With the use of Friction Pendulum™ bearings, it is possible to construct buildings, bridges and industrial facilities to elastically resist the strongest earthquake ground motions without damage at a lower construction cost than is possible with any other approach. When installed at the foundation, Friction Pendulum™ bearings support the loads of the structure and, during an earthquake, allow the structure to move with gentle pendulum motion. Since earthquake induced displacements occur primarily in the bearings, lateral loads and shaking movements transmitted to the structure are greatly reduced.

THE BENEFITS

- Friction Pendulum™ bearings provide strength and stability that exceed those of traditional elastomeric bearings.
- They are less expensive to install than elastomeric bearings.
- Their versatile properties make them effective for a wide range of structures and earthquakes.
- They have reliable and consistent properties, which are not affected by changes in temperature or aging.
- The bearing's low profile and unique property of eliminating eccentric gravity load moments on the supported structure, can greatly reduce construction costs.



- The bearings eliminate the need to add shear supports to walls, columns, and connections, which, in many cases, are costly, difficult, and undesirable.

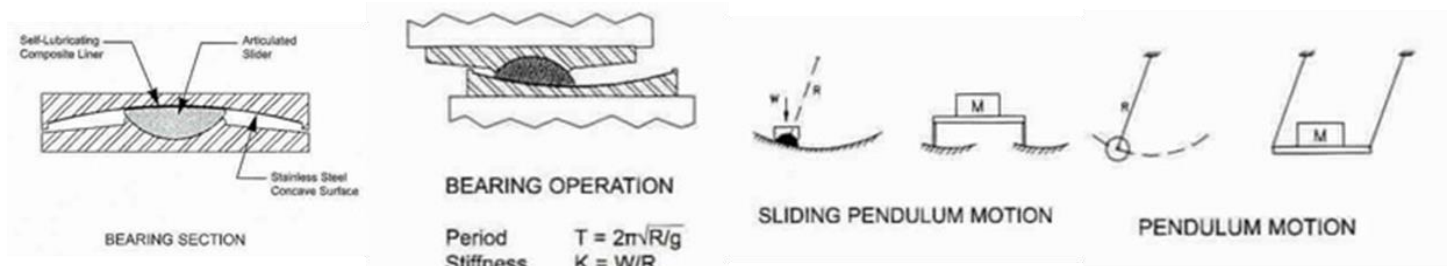


FIGURE 1 FRICTION PENDULUM™ - SEISMIC ISOLATION BEARINGS

STATUS

Friction Pendulum™ bearings provide seismic protection for some of the world's largest and most critical buildings, bridges, and industrial facilities, comprising more than \$3 billion worth of construction. The bearings have saved over \$200 million in construction costs compared to conventional strength designs to achieve equivalent seismic performance.

BARRIERS

- Implementing new structural systems for seismic design requires a co-operative effort between the owner, engineer, architect, building official and contractor from the beginning of a project.
- If the horizontal range of vibration by the force of earthquake exceeds the limited radius of bearing section, the structure cannot resist properly.

POINTS OF CONTACT

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< <http://www.earthquakeprotection.com> >

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REVIEWERS

Peer reviewed as an emerging construction technology

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PUBLISHER

Emerging Construction Technologies, Division of Construction Engineering and Management, Purdue University, West Lafayette, Indiana