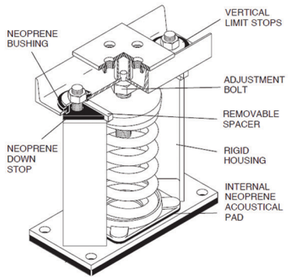
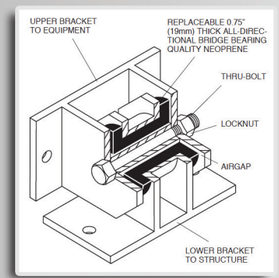
EQUIPMENT

Floor or stand mounted equipment are subject to high G forces during a seismic event. The amount of force the unit will see relates to how it is installed, where in the building it is installed, and project location factors, such as Site Soil Class and Building Importance. Since all major equipment on a project should be reviewed for seismic, Tecoustics will provide you with detailed installation drawings and anchorage calculations in accordance with your project's Seismic Specification.

Seismic Isolators

If your equipment is mounted with Vibration Isolation, it is subject to more G forces than a rigid connection. Your Vibration Isolation needs to be Seismically Rated to be able to handle these high G forces in all directions. Mason Seismic Isolators have all-directional restraint with a variety of Resilient Materials for Vibration Control, such as Neoprene, Springs and Air Bags. An SLRSO is shown on the right.





Seismic Snubbers

The most effective method of vibration and seismic control is an open spring and seismic snubber combination. Snubbers stay out of contact with the equipment in normal operation, and therefore do not interfere with the vibration controls. The Mason Z-1011 snubber is the ideal solution for Post-Disaster projects, where equipment must remain functional after a seismic event. The large cushion bushing of the Z-1011 ensures the force transfer into the equipment remains low and within the equipment's fragility index. A Z-1011 is shown on the left.

Anchorage

All equipment anchorage must be ICC certified for use in cracked and un-cracked concrete on a seismic project. In addition, anchorage engineering must take into account the calculations from ACI 318, Appendix D. Mason Anchors carry ICC certification, have high allowable loads, and come in carbon and stainless steel.

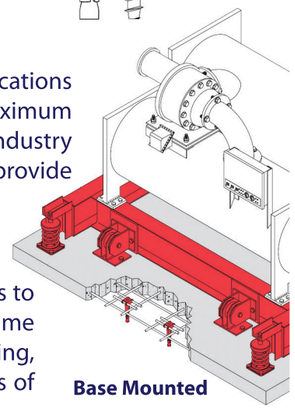
Mason SAS
Mason SAST

Equipment Fragility Certification

Most major equipment manufacturers should provide Equipment Fragility Certifications with their equipment for use on a seismic project. This document reviews the maximum expected force levels which could impact the equipment, and compares this to industry wide accepted fragility levels for given equipment types. Tecoustics can provide manufacturers with this engineering service in a timely and cost-effective manner.

Project Management and Consultation

Tecoustics has built a reputation offering Seismic Design and Consultation services to Contractors, Engineers, Manufacturers and Consultants with quick turn-around time for submittals and top tier customer service. On-site coordination and training, installation reviews and specification interpretation for quotation are all examples of the services we offer to our customers.



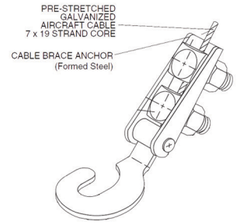
Base Mounted Chiller

SUSPENDED SYSTEMS

The most difficult and labour intensive aspect of any seismic job is restraining the suspended services which can include Suspended Equipment, Piping, Gas, Duct, Cable Tray and Conduit. Tecoustics carries a wide range of labour saving Seismic Restraint Systems which install fast and easily using common site tools.

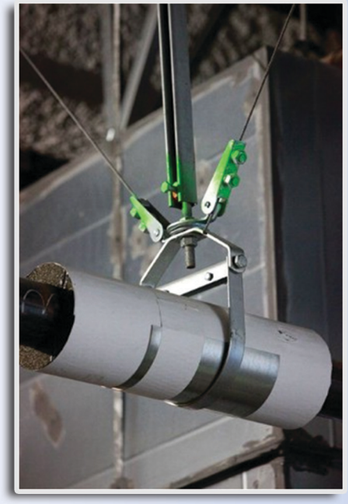
Cable Restraint

The common on-site difficulty installing restraints on suspended services is headroom interference with the other trades. Cable restraints are the ideal product for this application. Mason SCBH is shown below.



Mason SCB & SCB-H

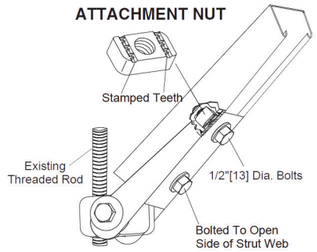
- High strength pre-stretched cable
- Hook style connection for fast attachment
- Fast cable locking - no swages, clamps or thimbles to lose
- Bolt or welded options to structure
- No special tools needed



Mason SCBH Restraining Mechanical Piping with Mason UC Stiffeners

Solid Brace Restraint

Save time and material by switching to solid brace restraints. Ideal end connections save time for the contractor, and since solid bracing resists in both compression and tension, half the number of braces are required at each restraint point as compared with cable bracing. Mason SSRF is shown below.



Mason SSRF & SSBS

- Quick fit end connections
- Utilize common on-site materials for the brace itself, such as strut channel or angle iron
- No special tools needed
- Works in both tension and compression
- Labour savings compared to cable

Suspended Equipment

All major suspended equipment, including all equipment with water or gas connections should be restrained. Flex connectors should be placed on the gas, ductwork, or plumbing connections to prevent failure. Cable restraints are required for use in conjunction with vibration isolation. Vibration isolation should be complete with Seismic Rebound Washers. Shown on the right -- suspended fan using Mason RW30N seismic spring hangers, with a Mason SCBH/SCB Seismic Restraint System complete with Mason SRC (Seismic Rod Clamps) and Mason Thrust Restraints.