CALIFORNIA STRUCTURAL ENGINEERS URGE COMMERCIAL BUILDING OWNERS TO PREPARE NOW TO AVERT PROBLEMS IN FUTURE EARTHQUAKES

JUNE 16, 2010--SACRAMENTO, CA – The Structural Engineers Association of California (www.seaoc.org), the premier professional organization of practicing structural engineers in the State, has developed guidelines that encourage commercial building owners to take preventive steps to avert possible damage to their structures from a major earthquake in their area. SEAOC developed these guidelines following the recent earthquakes in Haiti, Baja California and Chile.

According to SEAOC's president, Bill Warren, "By following some simple steps in these guidelines California commercial building owners will help minimize damage to their buildings -- and economic losses to tenants' businesses -- when a significant quake occurs in their region."

Here are steps that SEAOC recommends building owners follow before an earthquake:

1. **Organize and safeguard important documents,** such as building construction drawings (architectural, structural, mechanical, electrical, plumbing); emergency contact information; evacuation and contingency plans; and other essential documents. Create a list of the location of utilities systems' shut-off valves and place appropriate tools in each location for shut-off in the event of an earthquake.

2. **Assess the current condition of your building**. Building owners are encouraged to inspect and document their buildings for cracks and other existing damage before an earthquake so they will not be falsely alarmed by cracks observed after an earthquake.

    A. If a building was built before 1980, consider having an engineer do an assessment of the structure and an evaluation against current building practices. This is important as the seismic codes and standards have changed radically in the past 30 years.

    B. If a building was constructed after 1980, the owner may still benefit from a seismic evaluation of the building's potential risk exposure and to learn how the building is expected to behave during an earthquake.

3. **Take preventive measures and retrofit** those areas at risk for earthquake damage. This can be done in phases, doing the most critically identified items first. SEAOC reminds owners that preventive repairs are ultimately cheaper than repairing a building after an earthquake. For example, the Department of Building Safety of San Francisco recently estimated that it would cost $260 million to seismically update buildings on the San Andreas fault – an investment that would eventually prevent about $1.5 billion worth of damage if a major earthquake hit.

4. **Reduce potential falling hazards** within the building by anchoring tall and narrow furniture to floors and walls. This should be completed in both common areas as well as in tenant spaces.

5. **Plan post-earthquake procedures.** Here are some basic steps to take:

    A. Develop Earthquake Procedures including when and how to evacuate tenants from your building. Inform your tenants and building staff of these steps. Do

some trial runs of your plan.

B. Encourage tenants to maintain "Post-EQ Safety Kits" containing bottled water, small tools, radio, flashlight, important phone numbers, etc.
C. Prepare a "Post-EQ First-Pass" plan, including information for building staff regarding gas lines, water lines, exits, structural items, etc. A structural engineer can help point out "hot spots" that will need to be checked in your building following an earthquake.

6. **Consider placing a contractor and/or structural engineer on retainer** so that you will be certain to be prepared for immediate response after an earthquake.

"The good news is that basic earthquake problems in most buildings, both structural and nonstructural, can be remedied in a majority of cases through easy and inexpensive means," said Warren.

In the event of an earthquake, SEAOC recommends that building owners follow these important steps:

1. **Enforce a "Do not enter the building" policy.** This is particularly important if a building owner has any concerns regarding the structural stability of the building, especially considering the potential for earthquake aftershocks.

2. **Look for signs of exterior damage** prior to entering the building. Wherever structural items are exposed, look for the following signs:

- Cracks in members and at welds.
- Sheared off bolts, dislodged beam bearing, paint flaking off members, deformation of members, and for nails or screws pulled out, for example.
- Cracks in parapets or other hanging objects.

- Signs of movement at seismic joints.
- Fallen objects.

3. **Enter the building only if you feel safe to do so.** If in doubt, do not enter the building and call in an expert to do a more thorough assessment. When you do enter the building, check the building interior for the same type of damage as noted for exterior damage. In addition, be on the alert for potential falling objects such as ceilings, light fixtures, bookcases, etc. that could occur in aftershocks.

4. **Determine whom, if anyone, should be allowed to occupy the building.** After an earthquake, tenants may be apprehensive about entering a building because of liability and safety concerns. Conversely, they may wish to reoccupy the building as soon as possible to minimize business losses. If damage is evident, contact professionals for evaluation and repairs.

5. **Create plan for re-occupancy.** Immediately following an earthquake, a process for inspecting the structure should be scheduled, including reviews by building inspectors, structural engineers, architects, and/or other qualified experts. In sum, each building must be inspected for its potential threat to public safety and tagged to signify its access potential for re-occupancy.

SEAOC reminds building owners that cracks in finishes, such as plaster, ceilings or drywall, do not necessarily indicate structural damage has occurred. On the other hand, such signs could be indications of more significant hidden damage. Therefore, it's recommended to have this type of damage evaluated by a professional, especially for the taller multi-story buildings where hidden structural damage has been found in past earthquakes.

The Structural Engineers Association of California (www.seaoc.org) is a nonprofit organization of nearly 4000 members dedicated to advancing the structural engineering profession, protecting public safety in the built environment and serving the business and professional needs of the membership.

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