

# **EARTHQUAKE PREPAREDNESS GUIDELINES**

**FOR**

**LARGE RETIREMENT COMPLEXES**

**AND**

**LARGE RESIDENTIAL CARE FACILITIES**

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# QUICK REFERENCE: CHECKLISTS AND FORMS

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## **TYPES OF FACILITIES COVERED**

These guidelines have been prepared to assist you, your staff, and your residents to take the steps necessary to ensure everyone's safety and well-being, as well as that of your facility, in the event of a damaging earthquake. The types of facilities covered by these guidelines are those having fifteen or more residents and include the following:

### **Congregate and Senior Housing Apartments**

Providing studio and one or two bedroom apartments for rent as part of a group living arrangement. Facilities may provide at least one hot meal per day as part of the rental agreement.

### **Accessory Apartments**

Providing independent living units with their own outside entrance. The units contain a kitchen or kitchenette and bathroom.

### **Retirement Communities**

Offering apartments for rent or condominiums, cooperatives and single family dwellings for sale. Services vary in each community ranging from only police and fire protection to transportation, home delivered meals, and some in-home services.

### **Life Care Communities**

Residents may buy into the community and pay a monthly fee for services which may include meals, maintenance, chore services, housekeeping, and other personal care services.

### **Residential Care and Community Care Facilities**

Residents pay for a single or shared room. Non-medical care and supervision are provided to the resident who is in need of some personal services, protection, supervision, assistance, guidance or training to sustain the activities of daily living or for protection of the individual in care.

Throughout this document, the terms residential facility and facility will be used interchangeably to designate the aforementioned facilities.

## HOW TO USE THE GUIDELINES

These Guidelines contain three major sections: **Before the Earthquake; During the Earthquake; and After the Earthquake.**

Preparedness is achieved by undertaking a series of activities **Before the Earthquake.** This section of the guidelines is divided into four categories:

- Reducing hazards in your facility
- Planning and organizing your response
- Educating staff and residents about damaging earthquakes
- Planning for recovery needs and services

Review each section. Use the checklists to identify actions and set priorities in each category. Proceed with assistance from staff and, if appropriate, residents to undertake systematic preparedness activities in your facility:

- Assign responsibilities
- Obtain/record supplies and equipment
- Plan and implement training and education efforts
- Review progress with employees and involved residents
- Conduct and evaluate drills

Using the information provided, train residents and staff in what to do **During the Earthquake.**

**After the Earthquake,** follow the Response Procedures Summary and implement your preparedness and recovery plans.

Your plans should be specifically tailored to meet the needs of the residents and staff of your facility.

## INTRODUCTION

Earthquakes are an unfortunate fact of life in California, as we all saw during the Loma Prieta quake of October 17, 1989. Earthquakes have come in cycles throughout history. Currently, the Bay Area is in a period of increased seismic activity. Scientists estimate that there is now at least a 67% probability of another magnitude 7 or larger earthquake striking the Bay Area within the next 30 years. This could be an earthquake on the Hayward, the Peninsula segment of the San Andreas, or the Rodgers Creek fault. In Southern California, there is a 60% probability of a magnitude 7.5 to 8.0 earthquake on the southern San Andreas fault within the next 30 years, and a 50% probability of a magnitude 6.5 to 7.0 on the San Jacinto fault during that 30-year time frame. Earthquakes of the size that hit Whittier in 1987 (M5.9), Morgan Hill in 1984 (M6.2), and Coalinga in 1983 (M6.7) are more frequent and could happen at any time.

Thirty-nine of our fifty states are vulnerable to damaging earthquakes. The New Madrid Fault in the central United States generated two earthquakes in the early 1800s that are estimated to have been greater than magnitude 8.0. More recently, damaging earthquakes have hit in Washington (1949), Nevada (1954), Montana (1959), Alaska (1964), and Idaho (1986). The Quebec Province earthquake in 1988 was widely felt in the Northeastern United States.

Effective preparedness efforts are a responsibility of all sectors of society -- individuals and families, businesses, organizations, and federal, state and local governments. Actions taken *before* an earthquake will reduce injury, loss of life, and property damage, as well as enable people and institutions to return to normal in the shortest possible time following a damaging event.

These guidelines outline the steps to take *before*, *during*, and *after* an earthquake to ensure the safety and well-being of your residents, your staff and your facility.

Wherever possible, checklists are provided. In some areas, residential care and community care facilities will need to undertake greater preparedness and response measures than will those facilities offering independent living arrangements. While this document focuses specifically on earthquake preparedness, natural disasters of one form or another can strike any place, any time. The actions necessary to prepare for your response to and recovery from an earthquake, are applicable to other types of disasters.

**A Facility Director's Checklist** follows. It summarizes the actions you need to take in the areas of hazard mitigation, response planning, education, and recovery planning to prepare for a damaging earthquake. Throughout these guidelines, information will be provided for you on how to address each item listed on the checklist.

## FACILITY DIRECTOR'S CHECKLIST

Reviewing this checklist is the first step toward comprehensive earthquake preparedness. Upon completing the checklist, go through the guidelines and develop preparedness plans for those areas you have not addressed in your facility or those which need to be strengthened.

### BEFORE THE EARTHQUAKE

#### HAZARD MITIGATION

- Has a seismic evaluation of your facility been conducted?
- Have nonstructural hazards in building systems, offices, common areas, and living environments been identified and reduced?
- Have you arranged for a damage assessment immediately following a damaging earthquake?

#### RESPONSE PLANNING

- Have you selected a Command Center location and back-up in case your first choice is not usable?
- Have plans been developed to carry out response functions?
- Do all staff know their responsibilities following a damaging earthquake? Have they received adequate training?
- Do you have an evacuation plan? Have you tested the plan?
- Do you have plans for relocating to another site if necessary? Do you have an arrangement to use that site?
- Have inventories been developed and maintained of critical supplies and equipment?
- Do you have the necessary communications and back-up power equipment?
- Have procedures been established to inform residents and their families about the essential elements of your response plan?
- Are there hazardous materials on-site? Have plans been developed for identifying and containing them?

- Have you included neighborhood residents in your response planning?

### EDUCATION AND PREPAREDNESS

- Does everyone (staff and residents) know what to do *during an earthquake*?
- Have all employees been trained in basic first aid?
- Do you hold drills and exercises to test various aspects of your plan?
- Have you ensured that staff are prepared at home? Do they have a family earthquake plan?
- Have you recommended (required) preparedness steps on the part of your residents?
- Have you considered volunteers (especially neighborhood people) in your education and response planning?

### RECOVERY PLANNING

- Have you minimized potential damage by having a structural evaluation and reducing nonstructural hazards?
- Have you established a system for communicating with your residents? For assisting them to meet immediate needs?
- Have you established a system for relatives of your residents to learn of their status?
- Have you analyzed the impact of a reduced cash flow and established a disaster contingency fund?
- Have you made response expectations clear to staff and clarified recovery responsibilities?
- Have you established agreements with suppliers and contractors to receive services in a timely manner?
- Do you have a back-up (preferably off-site) copy of all important business records and resident and employee information?

- Do you have earthquake insurance? Do you know what it will and will not cover?
- Do you have a plan to maintain security at your facility and for your residents?
- Are you familiar with the information you will need to apply for disaster assistance, undertake repairs/rebuilding, or obtain necessary inspections? Do you know where to find it?

## **DURING THE EARTHQUAKE**

- Do all staff and residents know what to do during an earthquake? (**DUCK, COVER & HOLD**)
- Are people with mobility problems aware of alternatives to **DUCK, COVER & HOLD**? (Remain seated or sit down; cover head with arms)

## **AFTER THE EARTHQUAKE**

- Is all necessary information and equipment in place to quickly activate your Command Center?
- Are communications arrangements adequate (battery-powered radio, cellular phones, walkie-talkies)?
- Do you have a well-tested evacuation plan?
- Is your recovery plan in place so that you can move smoothly from emergency response to recovery activities?
- Have you considered how to handle emergencies such as fires, water leaks, or gas leaks without assistance from usual responders?

\* *Address the language needs of non- or limited-English speaking residents and staff in your preparedness planning, training, and drills. Materials are available in Spanish and several Asian languages from BAREPP and SCEPP. The American Red Cross also has materials in many languages.*

## **BEFORE THE EARTHQUAKE**

The actions you take before an earthquake greatly increase your chance to survive, to continue functioning, and to manage the short and longer-term recovery process effectively. Evaluating your facility for seismic safety, reducing nonstructural hazards, developing a response plan, training staff, educating residents, and planning for recovery are all things that you can do *before* a damaging earthquake. Taking these steps will directly affect how well you come through the event and how quickly you can re-establish normal operations.

In this section, we will address all preparatory steps in terms of **WHAT TO DO** and **HOW TO DO IT**.

## **FACILITIES**

## **A. FACILITIES**

### **1. Seismic Evaluation**

It is important to know the seismic soundness of your facility. Engage an engineering firm experienced in seismic analysis to evaluate your building(s). This analysis should include:

- ◆ Soils testing
- ◆ Age of building(s)
- ◆ Type of construction
- ◆ Identification of potential weak points and recommendations for strengthening them
- ◆ Nonstructural building systems and elements

The facility evaluation will give you a good idea of how you can expect your building(s) to perform in an earthquake and what, if any, specific problem areas exist. The validity of this evaluation over an extended period of time will depend on how well you maintain the building(s). The evaluation should be updated after any adverse impact on the site (i.e. landslide, flooding, excessive settling) and after an earthquake.

### **2. Damage Assessment**

The first few days following a damaging earthquake are a time of confusion and greatly over-taxed services. One of the first, and possibly most difficult, decisions you may have to make is whether or not your facility (or parts of it) is safe for continued occupancy. In most instances, it is *impossible* for an *untrained* person to tell the difference between structural and cosmetic damage.

Therefore, it is important to arrange to have a trained person perform

a damage assessment of your facility as soon after a damaging earthquake as possible. Prior to the earthquake, consider:

- ◆ Contacting your local building department and asking to be included on a priority list for damage assessment following an earthquake, and/or
- ◆ Arranging for a structural engineer to assess your facility for structural damage immediately following an earthquake. Be sure that your facility is *easily* accessible from the engineer's office.

### 3. Nonstructural Hazards

Nonstructural hazards are building systems and elements in the working and living environments that have nothing to do with holding up the building. Nonstructural hazards are responsible for many injuries during an earthquake and collectively account for up to 80% of a building's value. Extensive damage to nonstructural systems can be financially devastating.

In addressing nonstructural hazards in your facility be sure to include:

- ◆ Building systems (heating/cooling, lighting, elevators, equipment)
- ◆ Building exterior and facades
- ◆ Building windows
- ◆ Common areas such as lounges, dining rooms, and reception areas
- ◆ Offices and storage/maintenance areas
- ◆ Resident living areas

Checklists for **Facility Nonstructural Hazards** and **Individual Resident Nonstructural Hazards** are included on the following pages.

# CHECKLIST OF NONSTRUCTURAL EARTHQUAKE HAZARDS

## FACILITY

### HOW TO USE THIS CHECKLIST

This checklist is intended to be used in surveying buildings to determine whether the contents or nonstructural elements pose a danger to building occupants during an earthquake. The list should be used in conjunction with *Reducing the Risks of Nonstructural Earthquake Damage: A Practical Guide*,\* BAREPP's 'how to' guide to reducing nonstructural hazards in the home and workplace.

The check-off box next to each category of nonstructural item may be used for one or more of the following purposes:

- to simply indicate whether any of that particular kind of potential hazard is present;
- to list the quantity of items of that type found;
- to note photo numbers when the nonstructural survey will include photographs.

The checklist can be used with a clipboard to conveniently collect information, and then it can be transferred and organized into the format of Figure 17 from the *Practical Guide*:

Field notes made on this Checklist are then.....



organized on the table of Fig. 17 of *Practical Guide*.

**CHECKLIST OF NONSTRUCTURAL EARTHQUAKE HAZARDS**

**OVERHEAD ELEMENTS**

Are spot lights unable to remain securely attached if they were shaken?

Do sound system speakers in elevated locations lack positive bracing?

Are suspended space heaters, especially gas-fired, unbraced and/or lacking flexible gas connections? (p. 30)

Do hanging plants or displays lack braced supports, or would they hit a window if they swung?

Could chandeliers swing and impact each other or windows?

Are air distribution grids or diffusers only loosely mounted (rather than screwed to adequately supported steel ducts or to the ceiling or wall)? (p. 30)

Are large metal air distribution ducts, especially if they are suspended a few feet, adequately braced?

Do the lay-in fluorescent light fixtures merely rest on the hung ceiling grid, without positive independent support such as at least two hinges, wires, per light fixture? (p. 48)

Are pendant or stem light fixtures free to swing excessively? (p. 48)

Are decorative ceiling panels or lattice-work adequately attached? (p. 48)

**ELECTRICAL EQUIPMENT**

Are emergency battery-powered lights prone to falling off their supports?

Are transformers or wall switches not strongly anchored? (p. 34)

Are radon or other electrical telecommunications equipment well-secured?

Are tall telephone or telecommunication racks well-braced?

Are unsecured large pieces of equipment served by large diameter ducts, without allowance for slippage of the ducts?

Is the emergency power motor/generator adequately secured, especially if mounted on motor vibration isolation springs? (p. 49)

Are the batteries for the emergency power generator unsecured? (p. 49)

Is the fuel tank for the generator unbraced?

**MECHANICAL EQUIPMENT**

Are fans, chillers, pumps, or other heating-cooling or conditioning equipment that is typically found in mechanical rooms unsecured, or mounted on vibration-isolation springs without seismic restraint cables? (p. 50)

Are large diameter pipes unbraced, or do pipes cross expansion joints without accommodation for movement? (p. 51)

Are the fire sprinkler pipes without a valve up to the wall, or are the large diameter speaker pipes without diagonal struts to the structure above? (p. 44 & 5)

Are the water heaters un-anchored?

Are the water heaters un-anchored to the frame or boiler-structure?

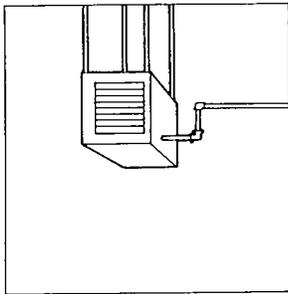


Figure 17  
Summary Chart  
Assumed Intensity

PRIORITY	NONSTRUCTURAL ITEM	LOCATION	QUANTITY	VULNERABILITY	ESTIMATED RETROFIT COST, EACH ITEM	ESTIMATED RETROFIT COST, SUBTOTAL	Notes
TOTAL							
+ LIFE SAFETY HAZARD		\$ % OF REPLACEMENT VALUE DAMAGED		POST-EARTHQUAKE GUIDELINE			

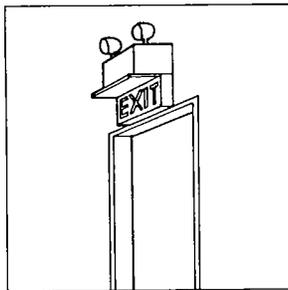
\* *Reducing the Risks of Nonstructural Earthquake Damage: A Practical Guide* is available from BAREPP.

# CHECKLIST OF NONSTRUCTURAL EARTHQUAKE HAZARDS



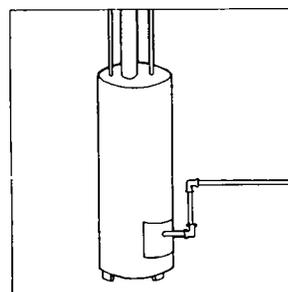
## OVERHEAD ELEMENTS

- Does the suspended ceiling lack diagonal bracing wires? (note 4) (p. 43)
- Are the lay-in fluorescent light fixtures merely resting on the hung ceiling grid, without positive independent support such as at least two hanger wires per light fixture? (p. 48)
- Are pendant or stem light fixtures free to swing excessively? (p. 48)
- Are decorative ceiling panels or latticework insecurely attached? (p. 48)
- Are spot lights unable to remain securely attached if they were shaken?
- Do sound system speakers in elevated locations lack positive anchorages?
- Are suspended space heaters, especially gas-fired, unbraced and/or lacking flexible gas connections? (p. 56)
- Do hanging plants or displays lack closed eye-hooks, or would they hit a window if they swung?
- Could chandeliers swing and impact each other or windows?
- Are air distribution grills or diffusers only loosely mounted (rather than screwed to adequately supported sheet metal ducts or to the ceiling or wall)? (p. 50)
- Are large metal air distribution ducts, especially if they are suspended a few feet, without diagonal bracing?



## ELECTRICAL EQUIPMENT

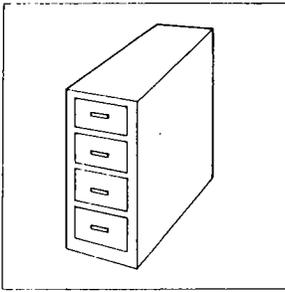
- Is the emergency power motor-generator inadequately secured, especially if mounted on motor vibration isolation springs? (p. 49)
- Are the batteries for the emergency power generator unsecured? (p. 39)
- Is the fuel tank for the generator unbraced?
- Are emergency battery-powered lights prone to falling off shelf supports?
- Are transformers or tall switchgear not strongly anchored? (p. 34)
- Are radios or other essential telecommunications equipment unsecured?
- Are tall telephone or telecommunications racks unbraced?
- Are unsecured large pieces of equipment served by large diameter conduit, without allowance for distortion of the conduit?



## MECHANICAL EQUIPMENT

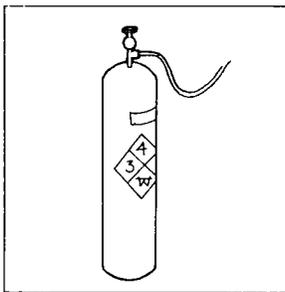
- Are fans, chillers, pumps, or other heating-ventilating-air conditioning equipment that is typically found in mechanical rooms unrestrained, or mounted on vibration-isolation springs without seismic restraint added? (p. 49)
- Are large diameter pipes unbraced, or do pipes cross expansion joints without accommodation for movement? (p. 53)
- Are the fire sprinkler risers without a v-brace to the wall, or are the large diameter sprinkler pipes without diagonal braces to the structure above? (note 6)
- Are the water heaters unrestrained?
- Is the furnace or boiler unrestrained?

# CHECKLIST OF NONSTRUCTURAL EARTHQUAKE HAZARDS



## EQUIPMENT AND FURNISHINGS

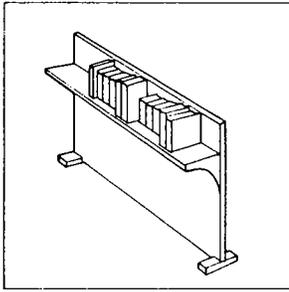
- Do desktop computers have unsecured monitors? (p. 38)
- Are the tops of tall (4- or 5-drawer) file cabinets unsecured at their tops to the wall? (p. 37)
- Do file cabinet drawers lack latches? (p. 37)
- Are large and heavy office machines unrestrained and located where they could slide a few inches and fall off counters to the floor or roll a couple feet on casters and block exits?
- Are computers, tape racks and associated mainframe computer equipment, that are about twice as tall as wide, unbraced? (p. 33)
- Are raised computer floors unbraced, such as is the case when the short posts supporting the floor are not bolted to the concrete slab at their base plates? (p.33)
- Are tall storage cabinets or lockers unattached to the wall or unattached back-to-back to each other? (p. 37)
- Do tall industrial storage racks lack adequate bracing or, for racks significantly taller than wide, are large anchor bolt connections to the concrete slab lacking? (note 1) (p. 44)
- Are heavy or potentially sharp wall decorations insecurely mounted (without closed eye-hooks for example)?
- Do valuable, fragile art objects lack protection against tipping over or sliding off shelves or pedestals? (p. 36)
- Are refrigerators or ranges unrestrained by built-in kitchen cabinetry or attachments to floor or wall?
- Is specialized industrial or other equipment placed on countertops without protection against sliding off and falling? (p. 38)
- Is floor-supported freestanding industrial or other large equipment unsecured against overturning (if about twice as tall as wide) or sliding (if sliding a couple feet would cause a hazard)?
- Are fire extinguishers insecurely mounted? (p. 46)
- Are potted plants or miscellaneous heavy items placed on top of file cabinets or other high locations without restraint? (p. 35)
- Are display cases or aquariums unprotected against overturning or sliding off tables?



## HAZARDOUS MATERIALS (note 5)

- Are compressed gas cylinders unsecured, or secured only with one loose or weak chain, rather than tightly secured with a nylon strap, a strong chain near the top and near the bottom, or a rack designed to restrain cylinders? (p. 64)
- Are laboratory chemicals on shelves unrestrained? (p. 45)
- Do tanks or vats lack earthquake bracing? (p. 45)
- Does hazardous material piping lack accommodation for movement where it connects to equipment which could slide, swing, or tip, or where piping crosses expansion joints structurally separating wings of a building? (p. 53)
- Are automatic gas shut-off devices (excess flow, leak detector actuated, or earthquake triggered) lacking, even though especially hazardous substances are piped through a building?
- Is equipment containing hazardous material unsecured and prone to sliding or overturning, with the potential of causing a spill?
- Are containers of hazardous materials stored on unbraced storage racks or tall pallet stacks? (note 1)

# CHECKLIST OF NONSTRUCTURAL EARTHQUAKE HAZARDS



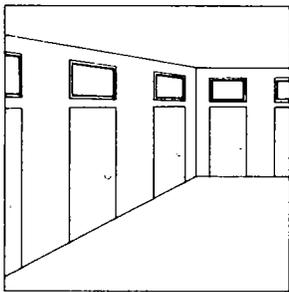
## PARTITIONS

Are freestanding, movable, partial-height partitions (especially if supporting bookshelves) inadequately braced? (p. 40)

Do partitions lack plastic or safety glass panels? (p. 42)

Are masonry partitions unreinforced (usually brick or hollow tile walls in pre-1933 buildings in California)? (note 3)

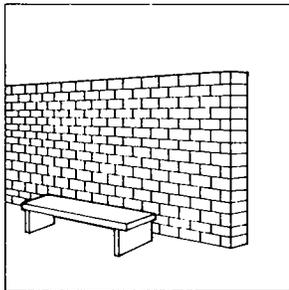
Do lightweight drywall partitions extend only as high as the hung ceiling, without braces or other support by the structure above, and are these partitions used as lateral support for tall shelving or cabinets? (p. 41) (note 2)



## WINDOWS

Are large panes of non-safety glass present, and is it unknown whether the mounting of the panes was designed by architect/engineer to accommodate expected seismic distortion of the surrounding structure? (p. 42)

Are transoms (glass panes over doors) of non-safety glass? (p. 42)



## EXTERIORS

Are decorations or appendages inadequately attached? (note 7) (p. 47,55)

Are statuary or decorative objects unanchored?

Are fences made of concrete, concrete block, stone, or brick, inadequately reinforced to resist earthquakes, or is their earthquake resistance unknown? (note 7)

Are large trees leaning or in poor health?

Is signage inadequately secured, especially if heavy? (p. 47)

Are lights inadequately attached?

Is the natural gas meter large and heavy, yet unsecured against sliding that could cause a pipe to leak?

## NOTES

All parenthetical page numbers are references to Reducing the Risks of Nonstructural Earthquake Damage: A Practical Guide.

1. See Uniform Building Code (UBC) Table 23-J and UBC Standard No. 27-11
2. For partitions over six feet high, see UBC Table 23-J.
3. Unreinforced masonry is now prohibited by the UBC for use in load-bearing or nonstructural partitions throughout California as well as in some lower seismic zones in the United States, but unreinforced masonry was common in older construction.
4. See UBC Table 23-J and UBC Standard No. 47-18.
5. Table 23-J was revised in the 1985 edition of the UBC to specifically include "supports and bracing, equipment racks and piping for hazardous production material."
6. See National Fire Protection Association (NFPA) Standard No.13.
7. See UBC Table 23-J.

# CHECKLIST OF NONSTRUCTURAL EARTHQUAKE HAZARDS: INDIVIDUAL RESIDENT

## FURNITURE

- Is bed and favorite chair a safe distance from windows?
- Are bookcases secured to the wall?
- Are refrigerators and stoves restrained by built-in cabinets or attachments?
- Do cabinets have positive latches?
- Are display cases and aquariums protected against falling over?
- Does desktop computer have its monitor secured?
- Are large cupboards, china cabinets, dressers and wardrobe closets attached to the wall?
- Is large clock secured to wall?
- Are television and stereo secured?
- Is microwave (or any other portable cooking appliance) secured?
- Are fan and electric heater secured?

## DECORATIVE ITEMS

- Are potted plants and miscellaneous heavy objects restrained - or close to floor?
- Are mirrors and pictures securely attached to wall stud?
- Are hanging plants, pots and pans, and other displays hung with closed hook eyes?
- Are hanging items a safe distance from windows, so they will not break windows when swinging?
- Are chandelier-type light fixtures secured so they will not impact each other or windows?
- Are books and other objects on shelves and mantels secured?

## **RESPONSE PLANNING**

## **B. RESPONSE PLANNING**

An emergency response plan is necessary to enhance the safety and well-being of residents and employees during and following a damaging earthquake. There are several actions that must be carried out as soon as the shaking stops. How you organize and assign responsibility for these functions depends on your staffing pattern. Be sure to address and assign responsibility for each function in terms of daytime, evening, and night-time coverage.

### **1. Organization and Functions**

#### **Command Center**

Identify the location in your facility which you and your staff will use as a coordination/command center. At a minimum, ensure that you have:

- ◆ A copy of your Emergency Plan
- ◆ Back-up power (emergency generator, in working order, appropriately secured, with adequate fuel supply)
- ◆ Two-way radios for immediate communication
- ◆ Facility floor plans, showing the turn-off locations for gas, water and, electricity, locations of fire extinguishers and exits and location of emergency generator
- ◆ Employee data sheets
- ◆ Resident information (Identification and Emergency Information Forms)
- ◆ Resident control master list (for anyone leaving the facility site)
- ◆ Extra copies of all relevant forms and lists

## **Response**

The functions to be undertaken by you and your staff as an immediate response to a damaging earthquake are:

- ◆ Site Security
- ◆ Fire Suppression
- ◆ Search and Rescue
- ◆ First Aid

If adequate staff is available, these activities should be undertaken simultaneously, with staff pre-assigned their primary responsibility. In independent living situations, you may wish to establish a preparedness committee of residents and include members of this committee in both preparedness and response planning for the facility. Involving and assigning interested residents responsibilities in planning efforts and organized response functions can greatly enhance your overall capability.

If adequate staff is not available to undertake response functions simultaneously, they should be carried out in the following order:

### **1. Site Security:**

Check and turn-off gas, and/or electricity only if gas can be smelled or if other damage is evident. Make sure emergency generator is functioning, and emergency power is on. Turn-off water if pipes are broken or leaking.

### **2. Fire Suppression:**

Check for and suppress small fires. Attempt to notify fire department.

### **3. Search and Rescue:**

Quickly search the facility for people who may be trapped or injured. Assist if possible. Note and record situation for other responders, including names and location.

#### **4. First Aid**

Administer first aid to injured persons. Note and record injury for assistance from other responders, including names and locations.

### **Evacuation**

It may be necessary to evacuate all or part of your facility following an earthquake. The threat of fire and/or structural damage to the building(s) could make them unsafe either after the initial earthquake or in the event of strong aftershocks. *You may have to decide whether or not to evacuate without benefit of a professional damage assessment evaluation.*

It is very important to have a comprehensive evacuation plan. All facilities are encouraged or required to have a fire evacuation plan. Your earthquake evacuation plan can follow the same basic procedures, but keep in mind the following:

- ◆ You may need to communicate the order to evacuate without use of any power operated signals.
- ◆ There may be debris in hallways and doors may be jammed.
- ◆ Injured or mobility impaired people will need assistance.
- ◆ Staff and residents need special training to deal with the situations mentioned above.

Arrangements should be made to assist or care for residents in the event you cannot re-enter your building.

- ◆ Obtain and list the locations of identified Red Cross shelters nearest your facility. (Always check which shelters near your facility are open and can accommodate your residents before transporting people to any site.)
- ◆ Survey possible temporary shelter options near your facility and discuss the possibility of use as a temporary shelter with

appropriate authorities (i.e. churches, community/senior centers, schools).

- ◆ Identify and plan for necessary transportation.
- ◆ Develop a system for letting authorities, family, and friends know where residents are being sheltered.
- ◆ Explore "mutual aid" agreements with other easily accessible residential facilities.

Planning and carrying out an effective post-earthquake evacuation requires attention to many details in addition to those mentioned above. For residential care, this includes awareness of adaptive physical devices used by the residents, necessary medications, mental ability to grasp what is happening, and equipment available for those residents who have special medical needs for such things as oxygen and intermittent positive pressure machines.

Checklists for **Response Readiness and Developing and Evaluating An Evacuation Plan** follow, along with a **Sample Floor Plan** and a **California Resident I.D. and Emergency Information Form**.

## RESPONSE READINESS CHECKLIST

This checklist highlights activities under each response function that need to be addressed in order to ensure an effective response to a damaging earthquake.

### **Overall Facility: Responsibility of Facility Director and/or Staff/Resident Planning Committee**

- Maintain staff awareness of earthquake threat
- Hold drills and arrange/conduct training
- Inventory the staff for skills that may be useful earthquake planning -- ham radio operator, CPR certified, bilingual
- Make sure that the area to be used as a Command Center contains a floor plan of the facility, a current personnel roster, critical phone numbers and a dependable communications system ham radio, cellular phones or citizens band radio
- Designate a spokesperson for the media
- Develop a release plan for your staff that takes into account family and other responsibilities outside the workplace
- Promote employee family preparedness
- Promote resident preparedness
- Encourage staff and residents to keep an emergency kit (food, water, flashlight, medication and sturdy shoes) in a safe, accessible place
- Place identification on door or outside window of mobility impaired persons to alert helpers that occupants need assistance evacuating

### **Command Center**

- Assemble all necessary information and supplies/material (emergency plan, situation board, maps, markers, radios, walkie-talkies, personnel rosters) at designated Command Center location

- Define and assign functional responsibilities (incoming reports, display, response decisions, communications) to staff members, as specified in your emergency plan
- Identify and train all staff
- Participate in all planned drills and exercises, practice activating Command Center

### **Site Security**

- Work with Planning Committee and the facility director to establish a policy for all employees which addresses both facility and personal needs
- Develop procedures for how release will be handled in view of available damage information -- for the site as well as in the larger community
- Coordinate expectations and responsibilities of staff as defined in plan
- Develop a plan for controlling access to facility and recording people leaving and arriving
- Carry out drills involving gas, water, electricity turn-off and activating emergency generators

### **Fire Suppression**

- Make sure that extinguishers are in working order and that other equipment is complete and in easily accessible places
- See that all staff have received training in equipment use and in how to notify fire department

### **Search and Rescue**

- Make sure needed supplies (crowbars, hard hats, gloves) are on-site and accessible
- Make sure staff members stay current with their training

## **First Aid**

- Make sure that first aid supplies are up-to-date and always complete
- Keep emergency cards (list of medical resources in area) and health cards (for each employee) up-to-date
- Develop method of direct communication from any area of the facility to the Command Center

## **Evacuation**

- Keep plans for designated emergency assembly area current
- Make sure that necessary supplies are accessible
- List those residents who will need assistance in the event of an evacuation and develop a plan to assist and assign staff or other residents to help specific individuals
- Do practice drills

*Because of turnover of residents and staff, orientation, equipment supply checks, and drills should be carried out on a quarterly basis, if not more frequently.*

*\* Address the language needs of non- or limited-English speaking residents and staff in your preparedness planning, training, and drills. Materials are available in Spanish and several Asian languages from BAREPP and SCEPP. The American Red Cross also has materials in many languages.*

## **CHECKLIST FOR DEVELOPING AND EVALUATING AN EVACUATION PLAN**

**Organization -- provision is made, and responsibility assigned, for the following functions:**

- Determining optimum evacuation routes (including alternates)  
-- can be the same as fire route, but need not be
- Everyone in the building should **know** about evacuation routes and outside assembly areas
- Ordering evacuation
- Communicating orders to others
- Assessing the safety of the emergency assembly area
- Clearing the evacuation route or designating another
- Assisting in evacuation
- Helping mobility impaired persons
- Accounting for all employees and residents
- Shutting down utilities and equipment
- Securing the facility
- Announcing facility re-entry or another plan

**Emergency Situation -- during an earthquake, everybody does one thing:**

**DUCK, COVER AND HOLD**

**Evacuation Orders -- consideration must be given to the following:**

- Criteria to help you determine when not to evacuate
- Degrees of evacuation -- when each is called for:  
                  \_\_\_\_\_ Partial  
                  \_\_\_\_\_ Complete
- Procedure for communicating orders
- Procedure for transmitting other messages

**Evacuation Process -- The following must be done:**

- All areas searched and all people accounted for including staff and visitors
- Evacuation route and area checked
- Evacuation instructions developed and communicated
- All able-bodied people evacuated
- All mobility impaired people assigned to be helped by someone

**Assembly and Accountability -- must have a system for:**

- Accounting for everyone
- Reporting roll call results to your facility Command Center
- Communicating rescue needs to internal and external medical and rescue crews

**Securing the facility -- there should be a system for:**

- Closing all but one door of the building
- Checking the safety of the facility
- Reporting all findings to your facility Command Center
- Liaison with outside helping agencies (i.e. Red Cross, fire, police, public health, etc.)

**Conclusion of Evacuation -- you must have a system for deciding to:**

- Terminate the evacuation order
- Coordinate a return to the facility or
- Issue an order to move residents to another site

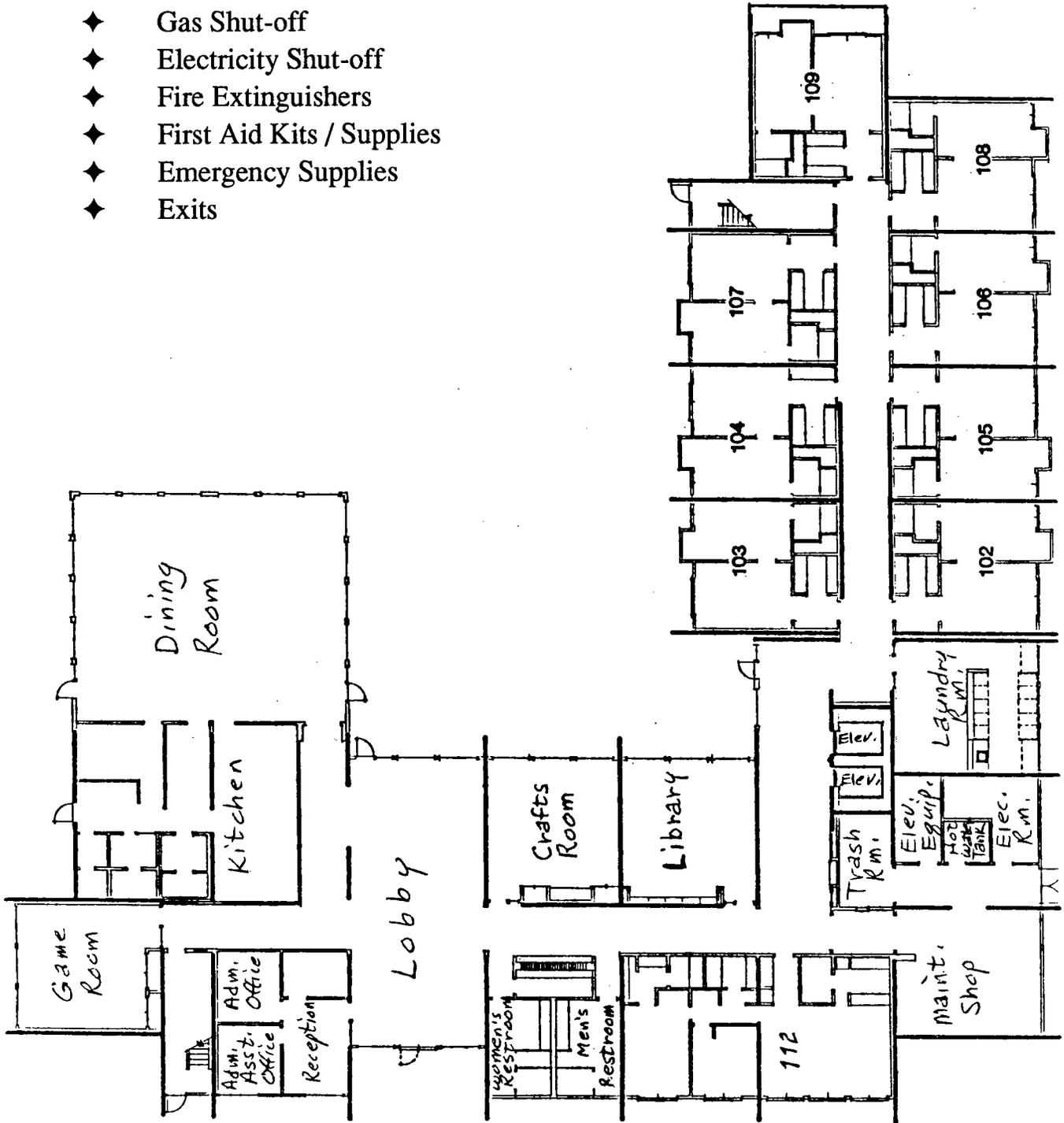
\* *Address the language needs of non- or limited-English speaking residents and staff in your preparedness planning, training, and drills. Materials are available in Spanish and several Asian languages from BAREPP and SCEPP. The American Red Cross also has materials in many languages.*

*Adapted from City of San Jose, Office of Emergency Services, Facility Evacuation for Business and Industry, n.d.*

# SAMPLE FLOOR PLAN

Identify locations of

- ◆ Water Shut-off
- ◆ Gas Shut-off
- ◆ Electricity Shut-off
- ◆ Fire Extinguishers
- ◆ First Aid Kits / Supplies
- ◆ Emergency Supplies
- ◆ Exits



*This information is required under the H & S Code and the regulations of the Department to be maintained on every person admitted to a community care facility, to be readily available to the person in charge, but not accessible to unauthorized persons. All information must be kept current. See other side for additional information required for residential facilities for children.*

# RESIDENT ID FORM

## A. ALL FACILITIES (EXCEPT CHILD CARE FACILITIES; COMPLETE LIC 700)

1. NAME OF CLIENT OR CHILD	SOCIAL SECURITY NUMBER (OPTIONAL)	DATE OF BIRTH	AGE	SEX
2. RESPONSIBLE PERSON OR PLACEMENT AGENCY	ADDRESS		TELEPHONE ( )	
3. NAME OF NEAREST RELATIVE (OPTIONAL)	RELATIONSHIP	ADDRESS	TELEPHONE ( )	
4. DATE ADMITTED TO FACILITY	ADDRESS PRIOR TO ADMISSION			
5. DATE LEFT	FORWARDING ADDRESS			
6. REASONS FOR LEAVING FACILITY				

## 7. PERSON(S) RESPONSIBLE FOR FINANCIAL AFFAIRS, PAYMENT FOR CARE, LEGAL GUARDIAN, IF ANY

NAME	ADDRESS	TELEPHONE
		( )
		( )
		( )

## 8. OTHER PERSONS TO BE NOTIFIED IN EMERGENCY

	NAME	ADDRESS	TELEPHONE
a. PHYSICIAN			( )
b. MENTAL HEALTH PROVIDER, IF ANY			( )
c. DENTIST			( )
d. RELATIVE(S)			( )
e. FRIEND(S)			( )

## 9. EMERGENCY HOSPITALIZATION PLAN

NAME OF HOSPITAL TO BE TAKEN IN AN EMERGENCY	NAME OF HOSPITAL TO BE TAKEN IN AN EMERGENCY
MEDICARE IDENTIFICATION NUMBER	MEDICAL IDENTIFICATION NUMBER
NAME OF DENTAL PLAN (IF ANY)	DENTAL PLAN NUMBER (IF ANY)

## 10. OTHER REQUIRED INFORMATION

a. AMBULATORY STATUS		
b. RELIGIOUS PREFERENCE	NAME AND ADDRESS OF CLERGYMAN OR RELIGIOUS ADVISOR, IF ANY	TELEPHONE ( )
11. COMMENTS		

SIGNATURE OF PERSON COMPLETING FORM	TITLE	DATE
	28	

## 2. Staff Training

In order to respond effectively to a damaging earthquake, staff must be familiar with the facility plan, know what their responsibilities are and know how to carry out these responsibilities.

Ideally, staff members should be involved in developing the facility plan, as they can contribute many ideas to the content. Each will then know his/her own role as well as have an understanding of the overall response. Once the plan is developed, *staff training and practice drills* are two factors that are critical to ensuring that the plan can be implemented effectively.

The following is a suggested list of the training necessary to carry out response functions and where this training and/or assistance is available:

### Facility Director

- ◆ Understanding of emergency situations coordination
- ◆ Familiarity with emergency communications capabilities  
*Assistance and/or training available from American Red Cross, local or county Office of Emergency Services*

### Staff

#### Site Security

- ◆ Familiarity with when and how to turn off utilities
- ◆ Understanding of techniques for storage of food and water and their distribution
- ◆ Knowledge of emergency sanitation provisions
- ◆ Knowledge of communications procedures  
*Training and/or advice available from local Office of Emergency Services, Red Cross, and utilities companies*

#### Fire Suppression

- ◆ Knowledge of operation of different types of fire extinguishers
- ◆ Familiarity with when and how to turn off utilities

- ◆ Understanding of principles of fire safety, including techniques for extinguishing various kinds of fires and how to notify the fire department  
*Training and/or advice available from local fire department and/or local Office of Emergency Services*

#### **Search and Rescue**

- ◆ Knowledge of systematic procedures for sweeping buildings and locating victims
- ◆ Mastery of basic victim extrication techniques  
*Training or information available from the Red Cross, local fire department, and local Office of Emergency Services*

#### **First Aid**

- ◆ Familiarity with principles and techniques of first aid and cardiopulmonary resuscitation
- ◆ Understanding of principles of triage  
*Training available from the Red Cross*

#### **Evacuation**

- ◆ Understanding of techniques for quick damage assessment
- ◆ Familiarity with procedures for crowd control  
*Training and/or advice is available from local Office of Emergency Services*

Because most facilities are fairly large and the number of staff is limited, it is recommended that *all staff members be trained to carry out all emergency response functions and then be assigned specific areas of responsibility as appropriate.*

**A sample Employee Disaster Data Sheet follows.**

FACILITY NAME

ADDRESS:

TELEPHONE:

CONFIDENTIAL

EMPLOYEE DISASTER DATA SHEET

DATE: \_\_\_\_\_

UPDATE: \_\_\_\_\_

NAME: \_\_\_\_\_

HOME ADDRESS \_\_\_\_\_ PHONE: \_\_\_\_\_

If you reside near the agency, do you have space available to temporarily house staff members who cannot reach their homes? yes \_\_\_\_ no \_\_\_\_  
How many people? \_\_\_\_

Emergency Contact:

Name: \_\_\_\_\_ Relationship: \_\_\_\_\_  
Address: \_\_\_\_\_ Phone: (\_\_\_\_) \_\_\_\_\_

Local contact person:  
(if different from above)

Contact outside of Bay Area:  
(preferably more than 100 miles)

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Dependents (children/parents/grandparents)

NAME	AGE	SCHOOL/ADDRESS	PHONE CONTACT (8AM-5PM)
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____

Special Health Considerations: (medications needed, allergies, etc)

Special skills willing to perform in the event of a disaster: (first aid, CPR certified, prepare food for staff on duty, support Command Center staff, etc)

Do you have any form of transportation that could be of assistance in a disaster (car, truck, van, bike, motorcycle, dolly/wagon to move "stuff", trailer, etc.)? Please specify.

Taking into consideration the severity of any given disaster, how soon after a disaster strikes MUST you leave work if you are on duty (to pick up children/dependents, etc.)?

How soon could you return to work (barring any personal/family injury or property damage/loss)?

### 3. Drills and Exercises

Engaging in earthquake drills and exercises is an important part of your preparedness plan. First, these activities teach employees how to respond to the complications of an actual earthquake. Second, they help you evaluate how well various aspects of your response plan work and how effective your staff training has been.

There are many different kinds of drills:

- ◆ Duck, cover, and hold
- ◆ Evacuation
- ◆ Tests of parts of the plan -- for example, "tabletop" or "walk-through" drills, in which employees meet once or twice a year to discuss what their roles will be during and after a quake
- ◆ Full-scale exercises (mock disaster) -- once every two years (more frequently, if you experience significant staff turn-over)

Before you conduct drills, some preliminary actions are necessary:

- ◆ Illustrations of possible damages -- structural and nonstructural (glass, bookcases, ceiling tiles, light fixtures)
- ◆ Demonstrations of ways to:
  - \* protect head and body
  - \* find shelter
  - \* cope with resultant problems (fire, injury to self or others)
  - \* evacuate the building

Tailor your drills to take into account the particular circumstances of your facility and residents.

**A Drill Preparations Checklist for Facility Directors and a Staff Response Checklist for Drill Evaluation follow.**

## **DRILL PREPARATION CHECKLIST FOR FACILITY DIRECTORS**

### **1) Different drills require different preparations and practice schedules:**

#### **a) Duck, Cover and Hold**

- Review drill rationale and procedures
- Practice the duck, cover and hold drill three or four times a year
- Review and practice alternatives with mobility-impaired and frail residents

#### **b) Evacuation**

- Practice post-quake evacuation at least twice a year
- Have groups walk through the normal fire drill route to an open area outdoors
- Ask everyone to make mental notes as they go along of things that might become hazards during and after an earthquake:
  - ◆ power failure (emergency lighting?)
  - ◆ halls and stairways cluttered with debris
  - ◆ smoke in the hallways
  - ◆ exit doors that are blocked or jammed
  - ◆ an aftershock (duck and cover on the spot)
  - ◆ bricks, glass, and other dangerous debris
  - ◆ fallen electrical wires
- When everyone returns, list all hazards and make plans to address them

#### **c) First Aid**

- To determine your first aid capabilities, stage a make-believe earthquake that causes injuries; give some employees messages in envelopes that describe an injury
- Stage a duck and cover drill, and then have the dead and injured people act out their assigned roles
- Employees have to determine what has happened and take actions to deal with all injuries
- Everyone is responsible for her/his own safety first, but all employees should know what to do if someone else is injured

and needs help. This drill should present everyone with "what if" questions:

- ◆ If someone is injured and can't walk?
- ◆ If someone has been cut by shattered glass and is bleeding?
- ◆ If someone has been knocked out by falling light fixtures or ceiling tiles?
- ◆ If someone has become very distressed?
- Practice this at least once a year

**d) Tabletop or walk through**

- Call a staff meeting and have someone read a description of an earthquake and the structural and nonstructural damages that have resulted
- Begin the discussion by asking employees to explain their responsibilities and how they would discharge them after the earthquake in question
- Note areas of overlap and confusion, and modify plan accordingly
- Practice this once a year--more frequently if there has been substantial staff turnover

**e) Full-scale**

- Preparing for full-scale drills requires fairly extensive staff commitment
- Enlist help from community agencies
- Hold a full-scale drill every two years
- Allow 2 or 3 hours for full debriefing within a week of the drill

**2) Before and after the drills, hold meetings with staff and involved residents to discuss each team's respective responsibilities and recommended preparations for an earthquake emergency:**

- ◆ Administrator--coordinate response
- ◆ First Aid
- ◆ Search and Rescue
- ◆ Site Security--direct police, medical, and fire personnel to places within building; close off building if necessary

- ◆ Fire Safety--special fire patrol; gas shutoff; fire department notification
- ◆ Evacuation--arrange evacuation area and organize evacuation to it
- ◆ Maintenance--food and water supplies; sanitation supplies and provisions
- ◆ Other (psychological aid, medications, etc.)

**3) Discuss with all staff the plan's overall goals and purposes:**

- a) Let the purpose of each part of the emergency plan (preparedness, emergency response, recovery) determine what a specific drill's goals should be
- b) Decide which kinds of drills can best test the goals
- c) List main objectives of each drill (reaction time, coordination, communication, training, etc.)
- d) Decide criteria for success and/or revision of plan's parts

**4) Discuss and determine procedures for evacuating building:**

**(See Checklist for Developing and Evaluating an Evacuation Plan)**

- ◆ Power fails
- ◆ Routes are blocked
- ◆ Aftershocks rearrange things
- ◆ Fire
- ◆ Injured people

Using the **Staff Response Checklist**, evaluate each drill and everyone's performance; begin immediately to make any indicated changes in the plan or its implementation and provide additional training as needed.

*\* Address the language needs of non- or limited-English speaking residents and staff in your preparedness planning, training, and drills. Materials are available in Spanish and several Asian languages from BAREPP and SCEPP. The American Red Cross also has materials in many languages.*

## **STAFF RESPONSE CHECKLIST FOR DRILL EVALUATION**

### **Facility Director**

- Were all employees familiar with duck, cover and hold?
- Did everyone remain in the quake-safe position for 60 seconds?
- Were all employees accounted for?
- Were internal and external communications controlled?
- Was a record of events and decisions kept?
- Did staff remain calm and reassure others?
- Were all employees evacuated to a safe outdoor area?
- Did residents remain quiet during evacuation?
- Does the evacuation procedure consider the possibility of strong aftershocks?
- Were resident rosters and response checklists available?
- Did staff demonstrate ability to help each other?

### **First Aid**

- Were first aid supplies up to date and complete?
- Were disaster data sheets for each employee up to date?
- Was staff ready quickly to begin treating the injured?
- Was a record kept of every treatment administered?
- Were needs for further medical assistance determined and reported?
- Were reports immediate and regular to the Command Center?

### **Search and Rescue**

- Were supplies and equipment complete and easily located?
- Was every room in the building checked (visually, vocally and physically)? Look under beds, and tables, behind curtains and in closets.
- Were locations of injured reported for First Aid treatment?
- Were the locations of other problems reported to the Command Center?

## **Fire Suppression**

- Was equipment ready and easily located?
- Was a systematic search for fires undertaken?
- Were fires reported to Command Center and Site Security?
- Was fire department notified?
- Were all fires controlled?
- Were residents at risk rescued?
- Were dangerous areas secured?

## **Site Security**

- Were all equipment and records ready and easily located?
- Were all external gates and doors secured?
- Was someone stationed at the main gate/front door to deal with responders/volunteers/family members?
- Were fire, police, medical, and rescue sent to areas where they were needed?
- Was the Command Center constantly informed about what was going on?
- Were utilities checked immediately and any danger minimized?
- Was sanitation system checked and damages determined?
- Were all findings reported to the Command Center?

## **Evacuation**

- Were plans for designated emergency assembly area current?
- Was the emergency assembly area accessible and determined safe?
- Were findings communicated to the Command Center?
- Were necessary supplies up to date and easily located?
- Was need to evacuate determined?
- Was there assistance in evacuation process?
- Was roll call taken and status of all residents/visitors reported to Command Center?
- Was group in the assembly area supervised for the duration?

#### 4. Supplies and Equipment

After a damaging earthquake, it may not be possible for you, your staff, or your residents to leave or for emergency responders to get to your facility. You may spend *72 hours or longer* on the premises, without any significant help from outsiders.

Stocking supplies such as first aid kits, tools, water, and food in a secure place is therefore an important part of your preparedness plan. Keeping these supplies fresh and up-to-date is essential. It is a good idea to have inventories of supplies as well as written records of where they are kept and when they are rotated.

Identifying and obtaining supplies *that will meet the needs* of staff and residents require decisions and priorities that fit your particular residence or complex. Congregate senior housing facilities may make different decisions from retirement communities and residential care facilities. You do not have to get every earthquake supply on the market, but you need to be sure the basic items listed below are obtained.

- ◆ adequate first aid supplies
- ◆ flashlights and extra batteries
- ◆ extra fire extinguishers
- ◆ search and rescue tools
- ◆ battery - powered radios and extra batteries
- ◆ enough liquids for all the people in the building for 72 hours
- ◆ space blankets or heavy-duty plastic bags
- ◆ sanitation supplies
- ◆ useful non-prescription drugs
- ◆ adequate food for 72 hours

Your priorities in acquiring supplies should correspond to what will be most needed to save lives and deal with injuries immediately after the

earthquake. For example, first aid supplies are more important than food, and fire extinguishers are more important than non-prescription drugs.

The following pages provide fairly exhaustive lists of supplies and equipment necessary to respond effectively, and to care for staff and residents immediately after and for up to three days following a damaging earthquake. Information on storing/using emergency food and water, is included in this section. *Review the lists with your staff. Determine what you already have, what you need and in what quantity. Prioritize obtaining those additional items. For independent living complexes, share appropriate lists with the residents' preparedness committee and with individual residents.* Encourage residents to obtain basic survival supplies for 72 hours and to maintain them in their own living unit.

## SUPPLIES/EQUIPMENT BY RESPONSE FUNCTION

### Director/Command Center:

- Emergency plan
- Roster of employees
- Emergency assignment list
- Map of facility
- Evacuation Plan
- Walkie-talkie
- Bullhorn
- Battery-operated radio and batteries
- Clipboard
- Paper and writing implements
- Supply storage map
- Heavy gloves, hard hats, heavy shoes

### First Aid:

- Health cards on each employee
- Emergency cards
- First aid supplies
- First aid equipment (blankets, stretchers)
- Flashlights
- Evacuation Plan
- Paper and writing implements
- Clipboard
- Non-prescription drugs
- Identification badge or armband
- Water purification tablets

### Search and Rescue:

- Roster of employees/residents

- Map of facility
- Fire extinguishers
- Flashlights
- Axes and crowbars
- Shovels and ropes
- Master keys and bolt cutters
- Walkie-talkies

### Fire Suppression:

- Fire extinguishers (CO<sub>2</sub>, water, and A,B,C type)--check annually
- Shovels and axes
- Gloves
- Walkie-talkies

### Site Security:

- Map of facility, with utility turnoffs and exits
- Evacuation Plan
- Master keys
- Walkie-talkies
- Signs to post and writing implements
- Identification badge or armband
- Tools for utility turnoff

### Evacuation:

- Evacuation Plan
- Map of facility
- Employee roster
- Master keys
- Bullhorns
- Walkie-talkies
- Signs to post and writing implements

## DISASTER MEDICAL SUPPLY KIT

*The supplies below will serve  
approximately 150-200 persons for 72 hours.*

<i>Item</i>	<i>Quantity</i>
<input type="checkbox"/> Kerlix-type, bulky gauze bandages, 3" x 4 yds	30 rolls
<input type="checkbox"/> Gauze pads, 4" x 4"	400 pads
<input type="checkbox"/> Band-aids, 3/4"	100
<input type="checkbox"/> Triangular bandages	10
<input type="checkbox"/> Sterile surgical pads (as in ABD pads), 8" x 10"	40 pads
<input type="checkbox"/> Steri-strips, 1/2" x 4"	50
<input type="checkbox"/> Tincture of Benzoin, 4 oz. bottles	3 btls
<input type="checkbox"/> Silvadene Cream, 400 gram jars*	5 jars
<input type="checkbox"/> Elastic bandages, 6"	40
<input type="checkbox"/> Paper adhesive tape, 1" x 5 yds	12 rolls
<input type="checkbox"/> Sterile eye pads**	50 pads
<input type="checkbox"/> Cotton-tip applicators, 6"	200
<input type="checkbox"/> Cardboard splints, 18"	24
<input type="checkbox"/> Kwik Kold	32
<input type="checkbox"/> Liquid Soap (5 oz.)	6
<input type="checkbox"/> Disposable towels, 13" x 19"	500
<input type="checkbox"/> Facial Tissues	12
<input type="checkbox"/> Scissors (bandage, 5 1/2")	5
<input type="checkbox"/> Tweezers, 4 1/2"	2
<input type="checkbox"/> Tongue depressors (can be used as splints or to apply Silvadene Cream)	500
<input type="checkbox"/> Aspirin, 5 gr.	500 tabs
<input type="checkbox"/> Acetaminophen, 325 mgm.	500 tabs
<input type="checkbox"/> Safety pins, assorted	3 gross
<input type="checkbox"/> Paper cups, 3 oz.	400

**★ ★ Inventory and replace missing items every six months ★ ★**

\* This is a burn dressing which should be used if no medical care is available. It can be put on 2" and 3" burns and lends relief and protection against infection.

\*\* Eye pads are only as good as the irrigation of the injured eye is good. Don't put a sterile eye pad on a dirty wound.

\*\*\* Check expiration dates on topicals.

## **NON-MEDICAL EMERGENCY SUPPLIES AND EQUIPMENT**

(Facility-wide)

- Axes, hatchets
- Space blankets
- Bullhorn (battery operated) and extra batteries
- Can opener, manual
- Coleman lantern and fuel
- Crowbars
- Cups, paper or plastic
- Fire extinguishers
- Flashlights with extra batteries
- Hammers
- Hardhats
- Hoses for fire-fighting and siphoning
- Knives, heavy duty
- Light sticks
- Masking tape
- Matches with wax-protected tips
- Pails
- Picks
- Plastic garbage bags--waterproof (for warmth and sanitation)
- Plastic water containers--number depends on population size
- Rope, nylon
- Saws, hand
- Screwdrivers
- Shovels
- Stretcher
- String
- Tarps, drop cloths
- Toilet paper
- Transistor radio, AM-FM, battery operated, extra batteries
- Walkie-talkies (hand-held) with extra batteries
- Wastebaskets with waterproof plastic liners
- Wire
- Wire cutters
- Wrenches

## STORING WATER AND FOODS

### STORING WATER

Water for drinking is the most important. Bathing and washing will take additional water.

You already have some water stored. The hot water heaters are full of water. Ice cubes can be melted. If there are no chemicals in the holding tanks of the toilets, there are a few gallons of water there that can be used. (Do not flush toilets until you know the state of the sewers and the water availability.)

Water can be safely stored in sturdy plastic jugs. Buy jugs specifically for this purpose or use empty bleach containers. Don't rinse them out since the remaining bleach acts as a purifier. Don't buy flimsy water or milk containers at the grocery store. Change water every six months and date the bottles.

If you have water pressure after a quake, start running some water into additional containers. It can be stored and purified later for drinking. The water from taps after a quake can be contaminated.

#### Water for Three Days (minimum)

Bottled spring water or one-gallon bottles filled to the top with fresh water and one teaspoon of chlorine disinfectant (sold commercially). This should last for one year.

Needs:       5 gallons all-purpose water per person per day  
              1 quart drinking water per person per day

*Note:* Hot water tanks and toilet tanks contain some emergency water.

#### How To Purify Water:

**Boiling:** Boil vigorously for 1 to 3 minutes. To improve taste, pour from one container to another several times.

**Purification Tablets:** Available at any drug store. Follow directions on package.

**Bleach Purification:** Liquid household bleach can be used. It must contain hypochlorite, preferably 5.25%. Add according to table below then stir and mix.

Amount of Water	Clear Water	Cloudy Water
1 quart	2 drops	4 drops
1 gallon	8 drops	16 drops
5 gallons	1/2 tsp.	1 tsp.

## STORING FOODS

### ■ If you do *not* have a cafeteria in your facility:

Have employees bring earthquake kits to work. Each kit should have such foodstuffs as granola bars, cans of juice, packages of dried fruit -- items that have a long storage life and are not easily squished. The amount of food should be sufficient to get them through *at least* 72 hours without severe hunger pains. These kits can be stored in desks or other handy places in offices. Once every six months, the supplies in the kits should be refreshed.

### ■ If you *do* have a cafeteria:

Make sure you date and rotate your food supplies so that they do not get old.

After an earthquake, use the food in the refrigerator and freezer first. Although the quake may not interrupt power, aftershocks or fires may; shortages elsewhere could also result in loss of electric current.

When opening cans of fruits or vegetables, do not throw away the liquid in which they are packed. This is another source of liquid if there is a water shortage.

Do not drink or eat anything from open containers near shattered glass. Strain suspected liquids through a clean handkerchief.

### Food types for use in an emergency:

- A. Suggested canned foods:
  - Luncheon meat, ham, unsalted canned nuts, fruits, fruit juices, vegetables, date-nut rolls, soft drinks
- B. Suggested dry foods:
  - Cereals, peanut butter, crackers, granola or energy bars, instant coffee, tea, milk powder, sugar, candy, freeze-dried foods
- C. Suggested equipment and supplies:
  - Can openers (non-electric)
  - Pots, pans, serving utensils
  - Coffee pots
  - Paper cups, plates, bowls, napkins, towels
  - Plastic utensils, serving trays
  - Matches

**EDUCATION and PREPAREDNESS**

## **C. EDUCATION AND PREPAREDNESS**

### **1. Staff**

#### **Education**

All facility staff should be trained in response functions and evacuation techniques. They should also be familiar with the types of medical problems and mobility impairments of residents in your facility. It is important to recognize that residents living in retirement complexes may have various types of medical problems and mobility impairments. In a disaster such as an earthquake, these residents could need assistance.

#### **Preparedness**

- ◆ Each staff person should have his or her own emergency pack at work. Be sure to have a pair of thick-soled shoes in the pack, extra pair of eyeglasses and sturdy gloves which can be used immediately.
- ◆ Encourage residents to let you know if they use special medical equipment or adaptive equipment and maintain a central list of those individuals who may need assistance in the event of a disaster.
- ◆ Maintain a master file of where all individuals living in the facility are located.
- ◆ Maintain a central record of all residents and medications which they take (including the name of medicine, dosage and frequency) as well as special treatments and adaptive equipment used.

It is only natural that in any emergency or disaster an individual's first concern will be for his or her family and other loved ones. In order for you and your staff to carry out job related responsibilities, your family and

the families of your staff must be prepared to cope with the disaster without outside assistance. You need to take many of the same steps that you have taken to prepare your facility in order to have your staff and their families prepared for an earthquake.

- ◆ ensure structural soundness of home
- ◆ reduce nonstructural hazards
- ◆ store food, water, and other essential supplies
- ◆ make a family plan

## 2. Residents

### Education

In a sense, the residents of your facility are an extended family for which you have varying levels of responsibility. The greater degree of awareness and preparedness on the part of residents, the easier your job will be following an earthquake.

For all independent living situations, residents should take the same actions as any other private household. These include:

- ◆ understand the earthquake threat
- ◆ reduce nonstructural hazards
- ◆ store emergency supplies
- ◆ know what to do when the shaking starts
- ◆ be familiar with the facility earthquake response plan

Develop a simple educational preparedness program that includes frequently practiced "Duck, Cover and Hold" exercises and evacuation drills. Have the residents practice the exercises and drills on a regular basis. Keep the signal used for the evacuation drill simple and use the same signal consistently. With repeated, on-going practice, many seniors will

maintain the physical movement of "Duck, Cover and Hold" and the evacuation routine for many years to come.

A resident education and preparedness program should be developed for every facility as part of on-going activities regardless of the ability of your residents. If they know what to expect and what to do, they can often provide some assistance during a major disaster. Program activities might be scheduled on a monthly or bimonthly basis and could include:

- ◆ discussion of the earthquake threat
- ◆ presentation of preparedness measures
- ◆ orientation to facility earthquake response plan
- ◆ highlight a monthly "preparedness step" (i.e., storing water, getting a flashlight, hazard check, replacing batteries, etc.)
- ◆ practice what to do when the shaking starts
- ◆ plan and carry out drills

Sample materials which can be used for education activities are included as Appendix B. Given the ethnic and cultural diversity of today's society, be sure that your earthquake preparedness planning, education, and training addresses the needs of residents and staff whose ability to speak or understand English is limited. Materials are available in several languages from BAREPP, SCEPP, and the American Red Cross (see Appendix A).

## **Preparedness**

After the resident has moved into your facility, do the **Individual Resident Checklist - Nonstructural Earthquake Hazards**. A sample of this checklist is included under the Facilities section of these Guidelines.

When the checklist has been completed, provide a copy to the resident and review the non-structural hazards noted on the form. Suggest ways that these hazards can be corrected.

For residential care facilities, you and your facility staff will need to assume greater responsibility for reducing non-structural hazards in the living environments, for storing appropriate supplies and equipment, and for providing direct assistance to the residents following an earthquake. After the resident has moved into the residential care facility, do an **Individual Resident Checklist - Nonstructural Earthquake Hazards** and arrange to correct those items which were checked as hazardous.

For items listed below, retirement complexes should work with their residents to carry out these critical preparedness measures. In residential care facilities, it is the responsibility of management and staff to see that these steps are taken.

- ◆ If a resident has a medical problem and/or mobility impairment, such as loss of vision or hearing, he or she should be encouraged to wear a current medi-alert bracelet or tag. Allergies to any medication should also be listed on the plate.
- ◆ If a resident is on self-administered medication, he or she should place a list of the medication(s), dosage, frequency of taking medication, pharmacist's name and phone number, and doctor's name and phone number in a container in the front of the refrigerator and clearly label it **EMERGENCY INSTRUCTIONS**. This is important information which needs to be available if the resident becomes unconscious or confused.
- ◆ If a resident self-administers special treatments, have him or her write out detailed instructions, place them in a container in front of the refrigerator and label the container **EMERGENCY INSTRUCTIONS**.
- ◆ If a resident uses special adaptive equipment, such as an artificial leg, have the person write down a description of how to handle the equipment, place the instructions in a container in front of the refrigerator, and label the container **EMERGENCY INSTRUCTIONS**.
- ◆ If a resident takes a regular medication, encourage him or her to place a seven day supply with their emergency pack and rotate the medication twice a year with spring and fall time changes. Note: This type of storage cannot be done for medication such as insulin which needs to be refrigerated.

However, the resident should be sure to have an extra supply of needles and syringes with their emergency pack for use in the event of a disaster.

- ◆ If the resident uses special equipment requiring electricity, he or she should have a manual system available to use in a disaster. This may need to be a small emergency generator if the facility does not have a back up generator system that can accommodate the electrical needs of the special equipment of the resident. Note: Licensed Residential Care facilities would be responsible to be sure there is a back up electrical system that can handle the special equipment of the resident in the event of a power outage.

A **Preparedness Summary for Residents** is included at the end of this section.

### 3. Volunteers

In the aftermath of any disaster there are many people who wish to be of help. Some are volunteers associated with relief organizations who have pre-determined roles and responsibilities. Others will spontaneously offer their services.

To use volunteers effectively, you must plan. What actions will need to be taken following an earthquake? Of those, what could volunteers assist in, with or without supervision and training? Volunteers to assist you, your staff, and your residents following an earthquake will come from two sources. One will be those people who work with you as volunteers on an ongoing basis. The other source, and much more likely to be on the scene first, is people from your surrounding neighborhood.

Plan to ensure you will have volunteer help and that you can use this help effectively. Get to know your neighbors. Participate in neighborhood events from neighborhood watch meetings to garage sales. Encourage neighbors to visit your facility, participate in special events, and share expertise or experience they have with your residents through presentations or informal gatherings. Your neighbors are an important resource and should not be overlooked.

#### 4. Special Impairment Preparedness

##### **Vision-Impaired**

Many elderly people have some type of visual impairment, but they are not totally blind. Staff need to be aware of the degree of vision impairment. If the person is blind and you need to have them leave the area, let the person hold your arm to follow. Items listed below may be helpful to individuals with visual impairments:

- ◆ Battery-operated talking clock or digital clock
- ◆ White cane
- ◆ Flashlight with strong wide beam
- ◆ Magnifiers or extra glasses
- ◆ Fluorescent tape on emergency supplies
- ◆ Fluorescent tape on back of exit door from room
- ◆ Shrill whistle
- ◆ If resident has a guide dog, be sure emergency water and food have been stored for the dog
- ◆ Develop a "buddy" system so a visually impaired resident can practice with a sighted partner during earthquake drills

##### **Hearing-Impaired**

It is not unusual for some elderly people to have hearing problems which may not be correctable with a hearing aid. It is also not unusual for a hearing aid to be inadequate when the person is under a lot of stress. In a disaster or emergency situation, the hearing aid may pick up and amplify background noises so that the individual does not hear instructions clearly. Staff will need to remember to speak slowly and directly to the person so they can lip read. If all else fails, paper and pencil may be necessary to communicate with the resident.

If the facility has a number of deaf residents, you may wish to install a strobe type lighting system which is tied into the electrical system, including the emergency power system. Another method of communicating is through a running line or crawler on the television screen. Special items that the resident should have in his/her emergency supplies include:

- ◆ Shrill whistle
- ◆ Extra batteries for hearing aids

Prior to a disaster, consider developing a "buddy" system with others who have no hearing impairment.

### **Mobility-Impaired**

Staff needs to be aware of the resident's physical strength and ability to navigate in a disaster without the use of a wheelchair or walker. If a resident cannot navigate without the assistance of a walker or use of a wheelchair, he or she should wait for assistance.

If evacuation is necessary, staff need to be trained in the two person evacuation technique. In a disaster, the staff person may need to wait for volunteers to assist in evacuating individuals with mobility impairments. No staff person should attempt to move wheelchairs on stairways without assistance.

### **Oxygen-Impaired**

Due to various lung conditions, such as severe emphysema, some individuals may use self-administered oxygen. These units are usually small and portable, with the individual having a larger tank at bedside to use while resting and at night. The large tanks should be securely fastened to the wall. Post signs and be sure everyone is aware that no smoking or striking of matches should occur in areas containing an oxygen tank. If the person is relocated to another area, secure the oxygen tank in the new location because of potential shaking from aftershocks. Assure the area is free of open flame devices, sparking wires and petroleum products.

## **Mentally Impaired**

Some individuals who have mental impairments function very well in emergency situations while others may become more confused or respond in ways similar to a young child. Because of these varied potential responses during and following an earthquake, you and your staff will need to remain calm. Give whatever instructions are needed in a decisive and firm manner.

Explain what is happening as calmly as possible. You may need to repeat yourself frequently. Some residents may not be mentally able to understand what is happening. They may be afraid to be left alone and will cling to staff. They also may be afraid of new faces if people come to the facility to provide assistance during the disaster.

You and your staff will need to work within the mental limitations of your residents. As a guide remember:

- ◆ Give firm and clear instructions
- ◆ Speak in simple terms that are easily understood
- ◆ Give one instruction at a time
- ◆ If possible, pair with another resident whom they recognize
- ◆ Do not argue with the resident
- ◆ Do not make promises you cannot keep
- ◆ Be aware of your own limits
- ◆ Do what you can

Prior to an earthquake it is important to hold earthquake drills on a regular basis. Many people with various forms of mental impairment have shown the capacity to learn some expected and repeated routines. With this kind of continuing practice, you and your staff will minimize confusion for these residents during a major disaster.

In addition, consider promoting a "buddy" system so that these residents become used to another person in the facility.

## **Medical Equipment Dependent**

**Suction Machine** - If a person uses a suction machine due to throat paralysis, tracheostomy or other medical condition, encourage the resident to have a hand operated suction device with his or her emergency supplies or a small emergency generator that can be used until electricity is restored.

**Dialysis Machine** - If a resident has a self-dialysis machine, you will need to arrange with the local hospital that has a dialysis unit or an outpatient satellite dialysis center for temporary services until electricity is restored. If equipment itself is damaged, the resident will need to receive ongoing treatment at one of the alternative sites.

**Other Equipment** - Any other equipment used for medical reasons by the residents needs to be evaluated on an individual basis to determine how the equipment can continue to be used in an emergency and what type of back-up system should be arranged. Discuss with the attending physician and determine in an emergency situation, how long the resident can survive without access to equipment listed above.

## **(FACILITY NAME) EARTHQUAKE PREPAREDNESS FOR RESIDENTS**

The safety and well-being of our residents is of utmost concern to the staff at *(facility name)*. With this in mind, we have identified several actions we recommend to safeguard you and your possessions in the event of a damaging earthquake. We will be happy to provide additional information and to assist you taking these earthquake preparedness steps. *(Facility name)* has developed an earthquake plan which we will review with you and will practice on an on-going basis.

### **STEPS YOU CAN TAKE TO HELP**

#### **Reduce Hazards**

- ◆ Install positive catching latches on all cabinet doors
- ◆ Install metal "L" brackets between furniture and wall studs and at top of tall or top-heavy pieces of furniture
- ◆ Move heavy objects to lower shelves
- ◆ Place picture or hanging plant hooks into wall stud or ceiling joist only. Close hooks to prevent objects from falling
- ◆ Install guards across shelves. Secure knick knacks, vases, art objects with bands of heavy velcro-type strips
- ◆ Move your bed and favorite chair *away* from windows

#### **Store Emergency Supplies**

- ◆ Three-day supply of food, water, first aid supplies
- ◆ Flashlight, extra batteries, sturdy shoes
- ◆ One week supply of medicines (rotated regularly) and instructions for use
- ◆ Extra glasses, hearing aid, cane, etc.
- ◆ Battery operated radio
- ◆ Fire extinguisher

#### **Know**

- ◆ What to do when the shaking starts
- ◆ Your facility earthquake response plan
- ◆ Evacuation routes from your area of the building
- ◆ Who to report to

## **RECOVERY PLANNING**

## **D. RECOVERY PLANNING**

The best disaster plan is incomplete if it does not address business recovery -- the process that ensures the return to normal activities following a major disaster. Recovery planning focuses on minimizing economic losses and the timely resumption of normal operations. The recovery plan you develop must be sufficient to meet your needs in the aftermath of any disaster situation, be it minor or major.

### **1. Minimizing Economic Losses**

The first step to minimizing economic losses -- for your facility, your residents and employees--is to address the structural and nonstructural hazard reduction elements previously outlined on pp. 12-16. Recovery from a damaging earthquake is more manageable if you minimize the damage you sustain!

Communications will play a critical role in your recovery efforts. Your residents are your customers. They must be informed, on an ongoing basis, of the current situation and of plans and schedules for a return to normal operations of the facility, be it hours, days or weeks. You will need to keep track of residents' locations, situations, plans, and needs. Be ready to assist residents by pre-assigning staff, if possible, to help with temporary housing, access to the facility, obtaining disaster relief services, and psychological counseling.

Analyze the impact a reduced or interrupted cash flow will have on your business *and* on your efforts to return to full operation. Consider establishing or increasing a disaster contingency fund that would allow you to meet payroll and begin critical recovery activities immediately. *Do not depend on receiving significant federal or state disaster assistance dollars quickly, if at all.*

### **2. Returning to Normal**

Depending on the amount of damage, returning to normal operations could be a long-term process. Following a damaging earthquake you may be

without water, gas, electricity and telephone service. Storm drains and sewer lines may not function and streets may be damaged and clogged with debris. Obviously, dealing with this situation will fall to local jurisdictions, not to you.

However, the severity of the earthquake and the amount of damage will affect how quickly services are restored. This in turn will affect your own recovery efforts. Be familiar with your local jurisdiction's damage assessment process. If your facility sustains structural damage, access may be limited or prohibited and this in turn will impact the clean-up and initial repairs that you and your staff can undertake.

Identify the critical activities which will need to be done and pre-assign staff to these functions. Skilled people, from electricians and plumbers to contractors and construction personnel, will be in short supply following a major earthquake. Develop an agreement with a licensed local general contractor prior to the event to ensure that you will receive the emergency repair services you need in a timely manner. For more extensive repairs, see **Contractor Tips** on page 61.

Information and communication will be very important. You will need to know what assistance is available and where to find it; what emergency ordinances have been enacted; how the permitting process will work; what inspections are necessary; what building codes must be met in undertaking repairs; and many other things in the weeks and months following a damaging earthquake.

Remember, at best, responding to and recovering from a damaging earthquake is a time of confusion and stress for all those impacted - for you, your employees, your residents and for neighbors, businesses and local government. The more you can do for yourself, the more arrangements and agreements you have made beforehand, and the more understanding you have of government processes, the more smoothly your own recovery will go.

**A Recovery Checklist follows.**

## RECOVERY CHECKLIST

### Minimizing Economic Losses

- Have you had a seismic analysis of your facility conducted and addressed any identified problem areas?
- Have you identified and reduced non-structural hazards in building systems, offices, common areas, and resident apartments/rooms?
- Have you established a system for communicating with your residents regarding facility status, access, and repair plans? For assisting them to meet immediate needs? (obtaining medications, temporary housing, obtaining disaster assistance).
- Have you implemented a back-up system to ensure preservation of and access to critical records?
- Have you analyzed the impact of an interrupted cash flow and established a disaster contingency fund?

### Returning to Normal

- Do you know your local jurisdiction's procedure for assessing damage following an earthquake? Have you requested to be placed on their priority list?
- Have you engaged a structural engineer to perform a damage survey immediately following an earthquake?
- Have you reviewed job related expectations with staff and discussed recovery responsibilities? Are provisions made to assist staff and families in their recovery?
- Do you have agreements with local contractors to work with you on a priority basis to return your facility to normal?
- Do you know what types of information you will need and actions you will need to take to proceed with recovery and repair/reconstruction efforts? Are you prepared to deal with long delays?

## CONTRACTOR TIPS

- ◆ Deal only with licensed contractors.
- ◆ Be sure the contractor has Workers' Compensation and Liability Insurance coverage. Also, check the status of the contractor and his/her bond with the California Contractor's State License Board.
- ◆ If three or more types of work are required, the work should be done by a general building contractor.
- ◆ Get three bids and ask for references of work the contractor has completed in the local area.
- ◆ Don't pay cash and don't pay the full cost of the job up-front.
- ◆ Require a written contract with the contractor's license number on it, and don't sign until you fully understand the terms. Include everything you have agreed upon: work to be done; start and finish dates; and financial terms. Specify that the contractor is responsible for obtaining lien releases from all sub-contractors and material suppliers. *Sign only the complete contract and retain a copy for your records.*

## **DURING THE EARTHQUAKE**

### **Duck, Cover and Hold**

At the first indication of ground shaking (sharp jolt, rolling motion or intense shaking), move away from windows and take cover under a sturdy piece of furniture such as a desk or table. Hold on, as the shaking may cause the furniture to move.

### **The Elderly and People Having Impaired Mobility**

For many people it is not possible to move quickly and with agility to get under a piece of heavy furniture. In addition, during severe ground shaking, anyone could encounter difficulty in reaching a desk or table. If it is not possible to Duck, Cover and Hold under a heavy piece of furniture, do the following:

- ◆ If seated, remain seated. Place your arms over your head and neck for protection.
- ◆ If standing, try to move away from large windows and sit down. Place your arms over your head and neck for protection.
- ◆ If outside, try to move away from buildings, overhead wires, and trees. Sit down and place your arms over your head and neck for protection.

Because many elderly persons experience some degree of impaired mobility, it is extremely important that their living environments be as hazard free as possible!

## **AFTER THE EARTHQUAKE**

When the shaking stops, implement your response plan immediately. Activate your Command Center and check to see that all necessary information and equipment is in place. Instruct staff to carry out their pre-assigned responsibilities and make situation reports to you as quickly as possible.

If only evening or nighttime staff are on duty, they should undertake response functions in suggested priority order. It is a good idea to have arranged with staff living near the facility to report to work as soon as possible to assist with response functions. Neighbors could also be of help.

If communications are working, report your situation and needs to the local Office of Emergency Services, Emergency Operations Center. Regardless, be prepared to fend for yourself for up to seventy-two (72) hours.

**An Earthquake Response Procedures Summary**, by function, is included with this section.

## **EARTHQUAKE RESPONSE PROCEDURES SUMMARY**

### **Function: Command Center (Facility Director)**

- Activate Command Center
- Keep record of events, decisions and actions
- Account for all employees, residents, and visitors
- Implement and coordinate emergency operations
- Request situation and damage reports from all emergency response personnel
- Develop and display situation status
- Determine whether evacuation is necessary and communicate that decision to all employees and residents
- If there is the slightest suspicion that the facility has suffered structural damage, make contact with the architect or structural engineer with whom there is a pre-existing agreement for post earthquake inspection
- Continue to update situation information as additional emergency response reports come into the Command Center
- Control internal and external communications

### **Function: Site Security**

- Check utilities and do whatever necessary to minimize any danger while determining which utilities still work and which don't and report findings to the Command Center
- Make a note of structural and nonstructural damage when checking utilities and report any identified damage to the Command Center
- Assist in evacuation, if required
- Set up emergency sanitation system or procedures being sure not to use water or toilets until lines have been checked for breakage
- Monitor use of emergency water supplies (including water from hot water heaters)
- Inventory supplies of food available and begin planning distribution of food, if situation warrants
- Station someone at main gate/front door to deal with the community, and route fire, police, rescue, medical, and

volunteers to area of need keeping the Command Center informed of activities

**Function: Fire Suppression**

- Initiate response
- Check for and confirm existence of fire(s) and report location to Command Center
- Control fire, if possible
- Notify fire department as necessary
- Rescue anyone at risk
- Secure areas

**Function: Search and Rescue**

- Initiate response
- According to pre-established pattern, check (visually, vocally, physically) every room, reporting location of problems to Command Center
- Assist in administering first aid, as appropriate
- Look for obvious structural problems or significant structural damage during sweep through facility, reporting any damage to the Command Center
- Assist residents with wheelchairs and walkers if evacuation is necessary
- Lead residents with dementia out of building if evacuation is necessary

**Function: First Aid**

- Initiate response
- Make situation report immediately to the Command Center
- Administer first aid and record all cases and treatments
- Determine need for further medical assistance, coordinating requests for assistance through the Command Center
- Inventory supplies of food available and begin planning distribution of food, if situation warrants

## Appendix A

### SOURCES OF MORE INFORMATION

- ◆ Look at the "First Aid and Survival Guide" in the introductory pages of most telephone directories.
- ◆ Ask your city or county Office of Emergency Services or local chapter of the American Red Cross for pamphlets on preparedness and survival.

**BAREPP (Bay Area Regional Earthquake Preparedness Project), MetroCenter, 101 8th Street, Suite 152, Oakland, CA 94607, (510) 540-2713.** Publications, videotapes, and scripted slide shows on earthquake preparedness. *Earthquakes: A Survival Guide for Seniors* booklet. Free catalog.

**California Seismic Safety Commission, 1900 K Street, Suite 100, Sacramento, CA 95814-4186, (916) 322-4917.** Primarily concerned with encouraging hazard reduction and emergency planning. Information on legislation, state agency programs and unreinforced masonry building retrofit programs.

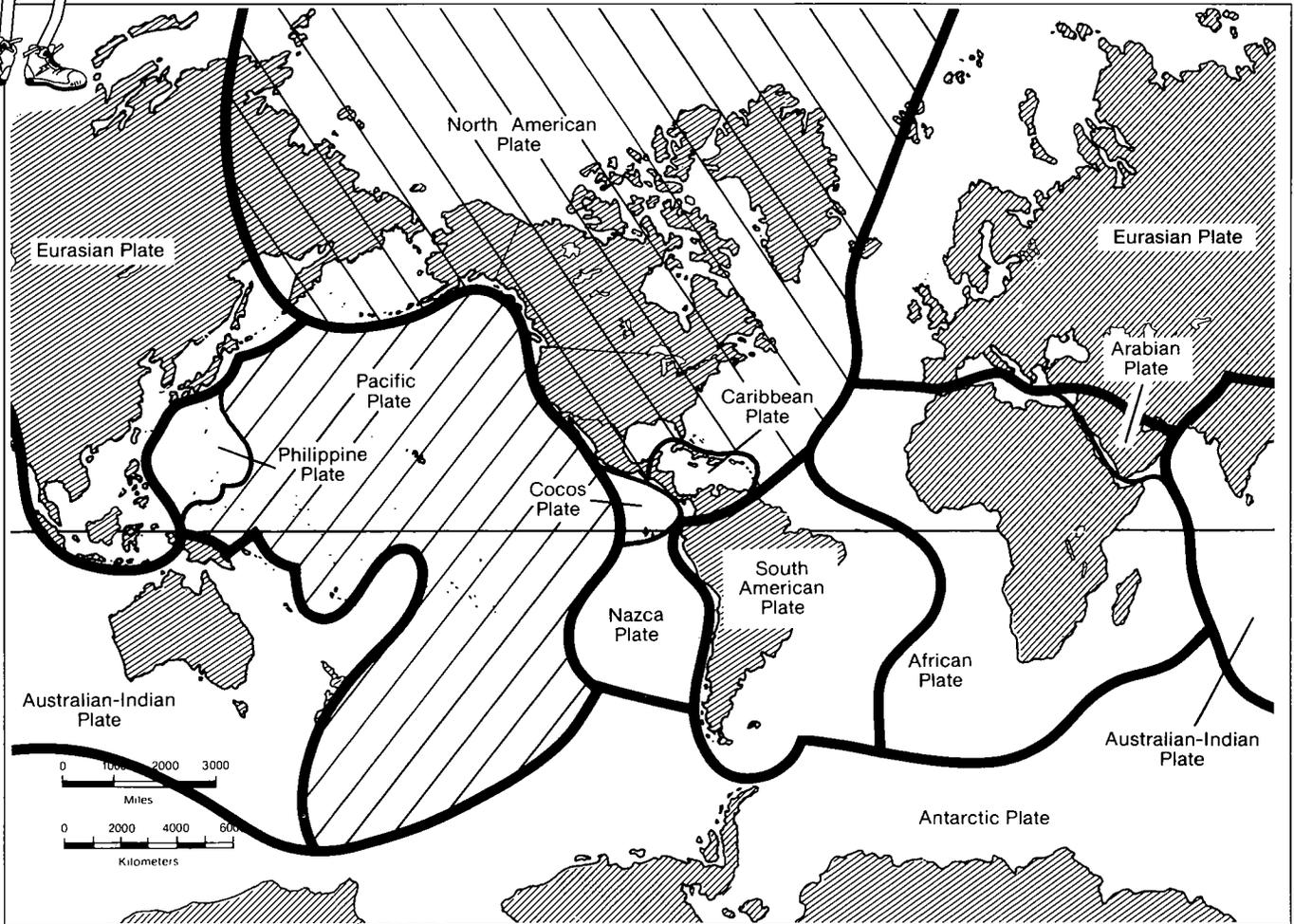
**CMDG (California Department of Conservation, Division of Mines and Geology) P.O. Box 2980, Sacramento, CA 95812-2980, (916) 445-5716.** Publications and maps concerning faults. Scenarios describing the likely effects of future earthquakes.

**FEMA (Federal Emergency Management Agency), Building 105, The Presidio, San Francisco, CA 94129, (415) 923-7100.** Documents must be ordered from FEMA, P.O. Box 70274, Washington, D.C. 20024.

**SCEPP (Southern California Earthquake Preparedness Project), 1110 East Green Street, Pasadena, CA 91106, (818) 795-9055.** Publications, videotapes, and scripted slide shows on earthquake preparedness. *Earthquakes: A Survival Guide for Seniors* booklet. Free catalog.

**USGS (United States Geological Survey), Earth Science Information Centers, 345 Middlefield Rd., Menlo Park, CA 94025, (415) 329-4390; 555 Battery Street, Room 504 Customs House, San Francisco, CA 94111, (415) 705-1010.** Publications and maps concerning earthquake hazards.

**APPENDIX B**  
**Education and Preparedness**  
**Reproducible Masters**



## WHAT CAUSES EARTHQUAKES?

### Earth Plates

Although the earth feels solid as we walk along its surface, it is really only partly so. The earth is divided into three main layers—a hard outer crust, a softer middle layer, and a central core. The crust is broken into massive, irregular pieces called “plates,” which have been moving very slowly over the earth’s surface for billions of years, driven by energy forces deep within the earth. It is this movement which has shaped the physical features of the earth—its mountains, valleys, plains, and plateaus. Earthquakes occur when these moving plates grind and scrape against each other.

In California, two of these plates meet—the Pacific Plate and the North American Plate. The Pacific Plate consists of most of the Pacific Ocean floor and the California coastline. The North American Plate comprises the North American continent and parts of the Atlantic Ocean floor. The primary boundary between them is the San Andreas fault, which is more than 650 miles long and extends to depths of at least 10 miles. Many smaller faults—like the Hayward fault in the north and the San Jacinto fault in the south—branch from and join the San Andreas fault zone.

The Pacific Plate grinds northwestward past the North American Plate at a rate of about 2 inches per year. Parts of the San Andreas fault system adapt to this movement by constant “creep,” resulting in relatively frequent, but moderate, earth tremors. In other areas, movement is not constant, and strain can build up for hundreds of years, producing great earthquakes when it is finally released.

Scientists estimate that over the next 30 years the probability of a major earthquake occurring in the San Francisco Bay area is 67 percent; in Southern California the probability is 60 percent.

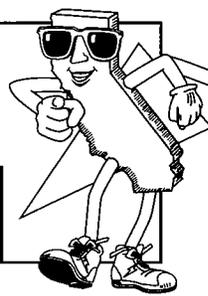
The earthquake threat is by no means just a big city problem. A damaging quake can occur virtually anywhere in the state. Earthquakes cannot be prevented; however, damage, destruction, and loss of life can be significantly reduced if all Californians sufficiently prepare themselves, their homes, workplaces, and communities for a major earthquake.



# Beat The Quake!

California Earthquake Preparedness Month

## Planning Guides



# Planning Guide for Seniors

## Plan

Major earthquakes can kill and injure thousands of people. Even moderate earthquakes can cause death, injury, and property damage. They also can seriously disrupt all of those things we have come to take for granted and to depend on for our well-being. Developing individual, family, and neighborhood earthquake plans can help you improve your chances of surviving an earthquake without injury or serious damage.

Plan for family, friends, and neighbors to check on each other after an earthquake. (Telephones may not be working, so this should be arranged between people who live near to one another.)

Maintain a list of your medications, allergies, and special equipment. Include the name, address, and telephone number of your doctor, pharmacist, a family member, clergyman, or special friend. Take this list with you if you must leave your home after an earthquake.

## Prepare

Falling objects pose one of the greatest hazards in an earthquake. Older people may not be as agile or as mobile as they once were, making it difficult or impossible to quickly get under a piece of heavy furniture such as a table or desk for protection. Therefore, it is very important to eliminate hazards in the home that could fall and cause injury. If you cannot do these things yourself, ask a friend or family member for assistance:

- ◆ Securely anchor any medical equipment, heavy appliances, bookcases, china cabinets, hanging plants, and other items.
- ◆ Place heavy objects on low shelves.
- ◆ Move beds away from windows.
- ◆ Make sure doorways, halls, and exits are clear so that you may exit safely.
- ◆ Add latches to cabinets and drawers to keep them from opening in an earthquake.

Keep a 72-hour supply of emergency food and water. Have a well-stocked first aid kit, flashlight and batteries, portable radio, and essential medications.

## Protect

Know where to go for protection when shaking starts. Find a safe spot in each room: under a heavy piece of furniture like a desk or sturdy table, against inside walls, or under supported archways.

If you cannot reach a safe spot, sit down or stay sitting where you are until the shaking stops. Cover your head with your arms.

If outside, move to a safe spot away from buildings, overhead wires, and windows.

## Special Needs

Many seniors have special needs. Taking the following actions will increase your chances of riding out an earthquake safely:

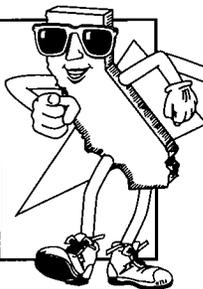
- ◆ If you use life support equipment, such as oxygen, have someone fasten the large tank securely to prevent it from falling over in an earthquake. If you use a wheelchair, walker, crutches, canes, or other types of mechanical walking aids, keep them near you at all times. If possible, have extra walking aids available in different locations throughout your home.
- ◆ Place a security light in each room. These lights plug into any electrical wall outlet and light up automatically if there is a loss of electricity. They will continue operating automatically for four to six hours, and you can turn them off by hand in an emergency.
- ◆ Have a whistle to signal for help in an emergency.
- ◆ If you use battery-operated equipment, store extra batteries and replace them annually.
- ◆ If your life support equipment requires electricity, buy an emergency generator.
- ◆ Have a smoke detector and fire alarm system installed. If you have difficulty hearing, install a system that has flashing strobe lights to get your attention. If you have a battery-operated detector, replace batteries annually.
- ◆ If you use a hearing aid, keep an extra supply of batteries with your emergency supplies. Remember to replace them annually.
- ◆ If you wear glasses, keep an extra pair with your emergency supplies.



# Beat The Quake!

California Earthquake Preparedness Month

## Planning Guides



# Planning Guide For People With Disabilities

## PLAN

Develop a “buddy” system with family, friends, neighbors, and coworkers. Plan how you will help each other in an emergency. If you live alone, you may wish to give your buddy a key to your home.

Make a list of your medications, allergies, special equipment, names, addresses, and telephone numbers of your doctor, pharmacy, family members, friends, and any other important information. Give a copy to each buddy, and keep a copy with you at all times.

## PREPARE

Eliminate hazards in your home. Securely anchor medical equipment, heavy appliances, bookcases, hanging plants, and other items. Place heavy objects on low shelves. Move beds away from windows. Check hallways, exits, doorways, and other areas and remove hazards and obstructions which may impede your safe exit after an earthquake. Install security night lights to provide emergency lighting if power is interrupted.

Gather emergency supplies. Assemble a 72-hour emergency supply kit, which includes water, any special diet foods, sanitary aids, cooking and eating utensils, flashlight, radio, blankets, a change of clothing, and a whistle for signaling for assistance. Include a well-stocked first aid kit, with extra prescription medications and an extra pair of glasses. Store extra batteries for hearing aids, wheelchairs, and other battery-operated equipment. Keep a mini survival kit in your car.

## SPECIAL TIPS

If you are deaf or hearing impaired, keep a battery-operated television on hand, with fresh batteries, for receiving emergency information if power is out. Store flashlight, pencil, and pad for communicating. Arrange for hearing friends or coworkers to relay information broadcast by radio.

If you are blind or have impaired vision, keep extra canes in strategic areas around your home. Plan alternate evacuation routes from home and office. Store extra pet food and supplies for your guide dog.

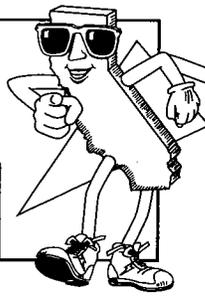
If you use a wheelchair, tie to it a lightweight drawstring bag containing your medications, your special emergency sanitary aids, a small flashlight, and a whistle for emergency use or evacuation. Determine at least two usable exits from each room, and from your building. Store extra batteries for your wheelchair, and a charger for your rechargeable batteries. Participate in earthquake drills, moving to cover, if possible, locking the wheels, and protecting your head with your arms, a pillow, laprobe, books, or any handy object.



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## Plans to Make



# Residential Care Facility Earthquake Plan

## Plan

Each facility is unique. It may be beneficial to work with others when developing plans, but make sure the plan you adopt fits YOUR situation. If you are in a facility in which there is only one caregiver at a time, encourage staff members to coordinate their family plans with the one for the residential care home. Offer the facility as a meeting place for families of staff. This will provide peace of mind for staff members and supply extra personnel at a crucial time.

Inform residents of what could happen during an earthquake and the steps being taken to provide for their safety. Involve residents in the process whenever possible by incorporating their suggestions.

Develop an employee training program. Include training on procedures for providing first aid, securing utilities, suppressing fire, calming/directing residents, conducting light search and rescue, evacuating the facility, providing emergency power, supplying water and food, and providing care to residents with special needs. Ensure that each employee knows his/her earthquake assignment.

## Prepare

Evaluate each room in the facility to determine how it might perform in an earthquake, and eliminate hazards. Secure medical equipment, heavy appliances, bookcases, plants, and other items that might fall. Place heavy objects on low shelves. Move beds away from windows. Check exit routes, and remove items that might block them after an earthquake. Determine a gathering place outside, far enough from the building to be clear of falling debris and safe in case of fire. Install automatic security lights in each room and hallway.

Stock supplies. As a guide, use supply lists developed for homes and businesses. Be sure to add the following items:

- ◆ Canned fruits and vegetables (liquid will supplement water supplies and aid with health concerns)
- ◆ Hard candy (for energy and comfort)
- ◆ Sturdy folding chairs
- ◆ Thermal ground covers
- ◆ A commode or plastic toilet with a seat, plus a supply of trash bags and toilet paper
- ◆ Cards, games, and books (to divert residents and keep them busy)

Keep part of your emergency supplies, including an extra first aid kit, outside the facility itself, in a storage shed or other nearby secure location.

Unless a change in medication is imminent, keep at least a seven- to ten-day supply of prescription medications in a secure area. Have a plastic trash bag nearby so that medicines may be gathered quickly when evacuating the building.

## Protect

Identify a safe spot in each room where residents can go when the earthquake occurs. If they can't reach the safe spot, teach them to get down on the ground, or as low as possible, and cover their heads with their arms. Conduct earthquake drills with staff and residents regularly.

Hold drills at least annually to test the facility's earthquake plan. Emphasize to residents that their caregivers are prepared. Hold private discussions with staff after each drill to determine what worked and what procedures need to be changed.

When the earthquake occurs, staff members need to consider their own personal safety first. They will not be able to provide for the needs of those in their care if they are severely injured themselves. Staff should assist able residents to safety before returning to assist the more frail or injured individuals.

## Special Tips

Maintain a list of the medications and equipment each resident needs; the name, address and phone number of each patient's doctor and pharmacist; and the name, address, and phone number of the relative or other responsible person with whom you deal.

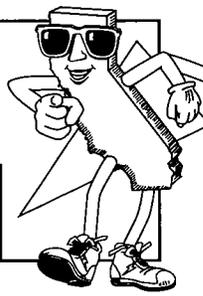
If the resident uses equipment to aid in mobility, have him/her keep it nearby at all times. Place extra canes near exits. Store extra hearing aid batteries and eyeglasses in a secure area.



# Beat The Quake!

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## Plans to Make



# Family Earthquake Plan

## Know Your Environment

Safest place in the house:

During an earthquake, stay away from heavy furniture, appliances, large panes of glass, shelves holding heavy objects, and masonry veneer (such as the fireplace). These items tend to fall or break and can injure you. Usually, a hallway is one of the safest places if it is not crowded with objects. Kitchens and garages tend to be the most dangerous. Also know the safest place in each room. It will be difficult to move from one place to another during a severe earthquake.

Exits and alternative exits:

Always know the possible ways to exit your house and work place in emergency situations.

Location of shutoff valves:

Know the location of the shutoff valves for water, gas, and electricity, and how to operate the valves. If you are not sure, contact your utility company.

## Make Special Provisions

Elderly, disabled, or persons under medication:

These people may have difficulty moving around after an earthquake. Plan to have someone help them to evacuate if necessary. Also, they may need special foods or medication. Be sure to store several days' supply of these special provisions.

Persons who don't speak English:

People who cannot speak English often rely on their family or friends for information. If they are separated during an earthquake, they may need help. Prepare emergency cards written in English indicating identification, address and any special needs.

Pets:

After an earthquake, you should be concerned with your own safety before taking care of your pets. Storing extra food and water for pets is always a good idea. Keep them in a secure place at home after an earthquake. If you are evacuated, they will not be allowed at the emergency shelter.

## Know Community Resources

Police and fire:

Know the locations of the nearest fire and police station.

Shelter and medical care:

After a damaging earthquake, emergency shelters and temporary medical centers will be set up in your community. Contact your local Office of Emergency Services to find out the plans for your area.

Community plans:

Know your neighbors and their skills; you may be able to help each other after an earthquake. Also know where to go to help your community after a disaster. It may be days before outside emergency assistance arrives. It is important to help each other.

## Plan to Meet

Plan to reunite:

Make a plan on where and how to reunite family members. Choose a person outside the immediate area to contact if family members are separated. Long distance phone service will probably be restored sooner than local service. Remember, don't use the phone immediately after an earthquake, and make local calls only for emergencies.

Plan for children:

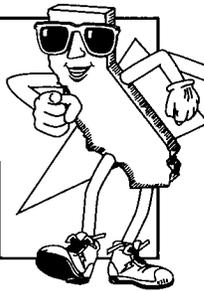
Know the policies of the school or daycare center your children attend. Make plans to have someone pick them up if, after an earthquake, you are unable to do so.

## Plan Responsibilities

There will be many things to take care of after an earthquake. Make a plan with your family, friends, and neighbors assigning specific responsibilities to each person. Remember that it may be difficult to get around after an earthquake, so each person's tasks should be related to where he/she may be.



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## Steps to Take

# Practice Earthquake Procedures

### Earthquake Drill

Encourage your family and co-workers to participate in earthquake drills. Emergency procedures should be reviewed and practiced periodically.

#### Practice taking cover:

Practice taking cover as if an earthquake were taking place. This will make people aware of the safest places in their immediate environment.

#### Practice exiting:

Walk through the possible escape routes from your home and work place. Check to see if the planned exits are clear, and if they can become blocked in an earthquake.

#### Practice shutoff:

Practice turning off electricity and water at your home and office. Be sure everyone can do this quickly. Know how to turn off gas but do not practice this step. (Once gas is turned off, for safety reasons, only your utility company should turn it back on.)

### Review Post-Earthquake Plans

#### Check and renew provisions:

Check supply of emergency food and water. Check medication, first aid materials, for all members of the household including the children, handicapped and elderly. Replenish expired supplies of food, water, medicine, fire extinguishers, and batteries.

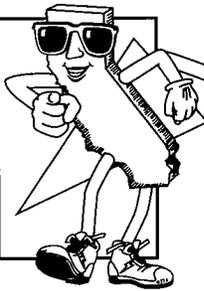
#### Review family plan:

Review the responsibility of each family member after an earthquake. Call the designated contact person outside the area to remind them of their role. Review plans to pick up children and check with schools or daycare centers to ensure the family plan is still appropriate.

#### Review community plans:

Contact your neighbors periodically to review earthquake plans. Contact your local Office of Emergency Services for an update on the local emergency plan.





## Steps to Take

# Earthquake: Duck, Cover, and Hold Tips

When you feel an earthquake, **DUCK** under a desk or sturdy table. Stay away from windows, bookcases, file cabinets, heavy mirrors, hanging plants, and other heavy objects that could fall. Watch out for falling plaster or ceiling tiles. Stay under **COVER** until the shaking stops. **HOLD** onto the desk or table. If it moves, *move with it*. Here are some additional tips for specific locations.

- ◆ If you're in a **HIGH-RISE BUILDING**, and you are not near a desk or table, move against an interior wall, and protect your head with your arms. Do not use the elevators. Do not be surprised if the fire alarm or sprinkler systems come on.
- ◆ If you're **OUTDOORS**, move to a clear area, away from trees, signs, buildings, or downed electrical wires and poles.
- ◆ If you're on a **SIDEWALK NEAR BUILDINGS**, duck into a doorway to protect yourself from falling bricks, glass, plaster, and other debris.
- ◆ If you're **DRIVING**, pull over to the side of the road and stop. Avoid overpasses, power lines, and other hazards. Stay inside the vehicle until the shaking is over.
- ◆ If you're in a **CROWDED STORE OR OTHER PUBLIC PLACE**, do not rush for exits. Move away from display shelves containing objects that could fall.
- ◆ If you're in a **WHEELCHAIR**, stay in it. Move to cover, if possible, lock your wheels, and protect your head with your arms.
- ◆ If you're in the **KITCHEN**, move away from the refrigerator, stove, and overhead cupboards. [Take time **NOW** to anchor appliances and install security latches on cupboard doors to reduce hazards.]
- ◆ If you're in a **STADIUM OR THEATER**, stay in your seat and protect your head with your arms. Do not try to leave until the shaking is over. Then leave in a calm, orderly manner.

**AFTER AN EARTHQUAKE, BE PREPARED FOR AFTERSHOCKS, AND PLAN WHERE YOU WILL TAKE COVER WHEN THEY OCCUR.**



# Beat The Quake!

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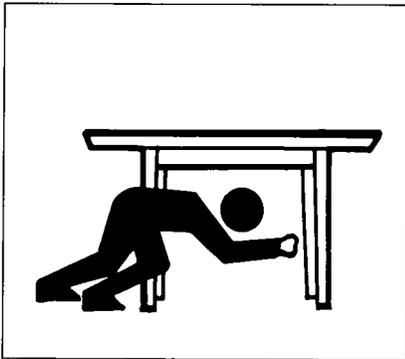
## Steps to Take



*When an earthquake strikes:*

# Duck, Cover, and Hold

Whether you are in your home, a school classroom, a high-rise or other type of building, it is important to know how to protect yourself during an earthquake. Practice what to do during an earthquake and teach yourself and your family members to react automatically when the shaking starts. If you are outdoors when the shaking starts, get into an open area away from trees, buildings, walls, and power lines. If you are indoors, follow the steps below:



# DUCK

DUCK or drop down to the floor.



# COVER

Take COVER under a sturdy desk, table, or other furniture. If that is not possible, seek COVER against an interior wall and protect your head and neck with your arms. Avoid danger spots near windows, hanging objects, mirrors, or tall furniture.



# HOLD

If you take cover under a sturdy piece of furniture, HOLD on to it and be prepared to move with it. HOLD the position until the ground stops shaking and it is safe to move.

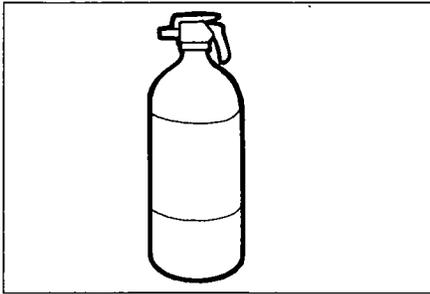




# Steps to Take

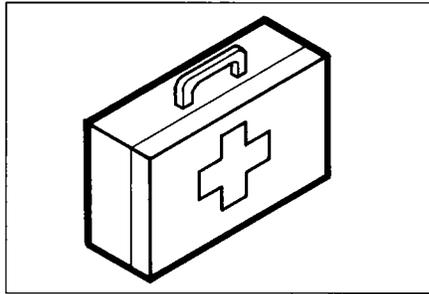
## Store Emergency Supplies

After a major earthquake, electricity, water, and gas may be out of service. Emergency aid may not reach you for several days. Make sure you have the following items in your home, at your office, or in your car.



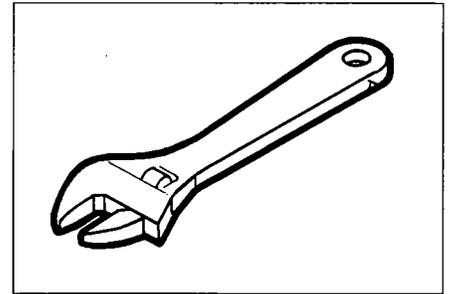
### Fire extinguisher

Your fire extinguisher should be suitable for all types of fires and should be easily accessible.



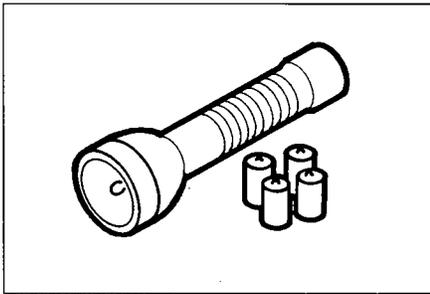
### First aid kit

Your first aid kit should be in a central location and should include emergency instructions.



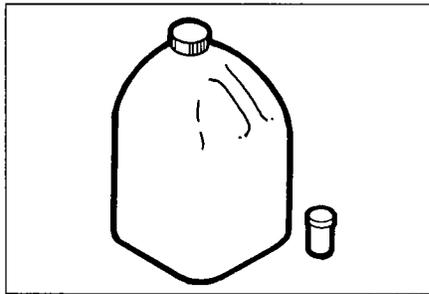
### Wrench

Have crescent or pipe wrench to turn off gas and water valves if necessary.



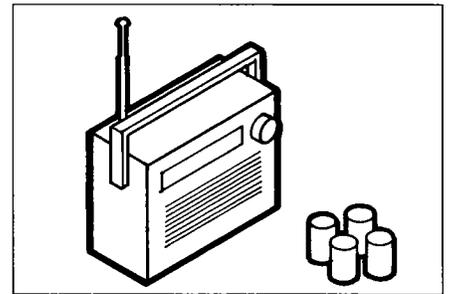
### Flashlight and extra batteries

Keep flashlights in several locations in case of a power failure. Extra batteries last longer if you keep them in the refrigerator.



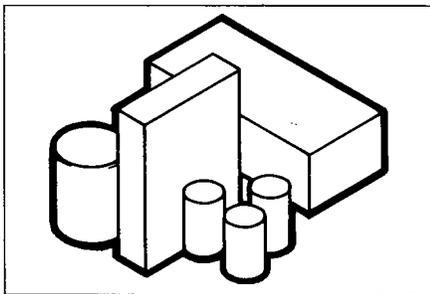
### Water and disinfectant

Store several gallons of water for each person. Also keep a disinfectant such as iodine tablets or chlorine bleach to purify water if necessary.



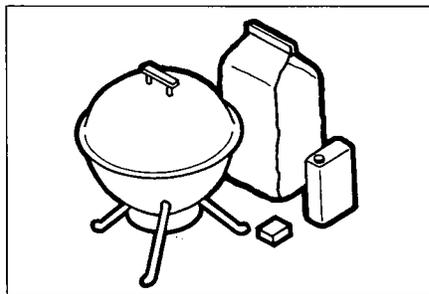
### Radio and extra batteries

Transistor radios will be useful for receiving emergency broadcasts and current disaster information.



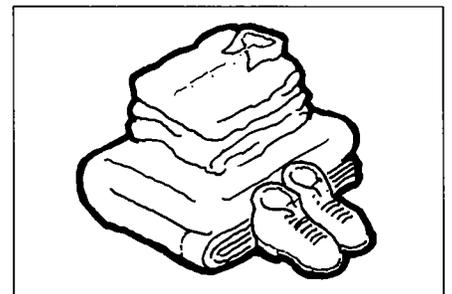
### Dry or canned food

Store a one-week supply of food for each person. It is preferable to store food that does not require cooking.



### Alternate cooking source

Store barbecue, charcoal, starter, and matches for cooking in case utilities are out of service.



### Blankets, clothing, and shoes

Extra blankets and clothing may be required to keep warm. Have shoes suitable for walking through debris.





## Steps to Take

# Emergency Supply Checklist

Stocking up **now** on emergency supplies can add to your safety and comfort during and after an earthquake. Store enough supplies for **at least 72 hours**.

### Survival

- Water—2 quarts to 1 gallon per person per day
- First aid kit—freshly stocked
- First aid book
- Food (packaged, canned, no-cook, baby food, and for special diets)
- Can opener (nonelectric)
- Blankets or sleeping bags
- Portable radio, flashlight and spare batteries
- Essential medication and glasses
- Fire extinguisher—A—B—C type
- Food and water for pets
- Money

### Sanitation Supplies

- Large plastic trash bags for trash, waste, water protection
- Large trash cans
- Bar soap and liquid detergent
- Shampoo
- Toothpaste and toothbrushes
- Feminine and infant supplies
- Toilet paper
- Household bleach
- Newspaper—to wrap garbage & waste

### Safety and Comfort

- Sturdy shoes
- Heavy gloves for clearing debris
- Candles and matches
- Change of clothing
- Knife or razor blades
- Garden hose—for siphoning and fire fighting
- Tent

### Cooking

- Barbecue, camp stove, chafing dish
- Fuel for cooking (charcoal, camp stove fuel, etc.)
- Plastic knives, forks, spoons
- Paper plates and cups
- Paper towels
- Heavy-duty aluminum foil

### Tools and Supplies

- Axe, shovel, broom
- Crescent wrench for turning off gas
- Screwdriver, pliers, hammer
- Coil of 1/2" rope
- Plastic tape and sheeting
- Toys for children



# Beat The Quake!

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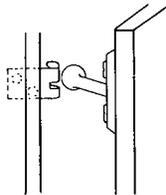
## Steps to Take



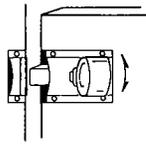
### Secure Furniture:

To prevent injury to your family and minimize damage

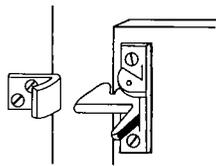
#### CABINETS



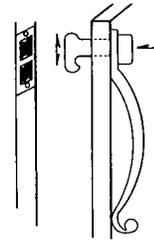
Childproof  
(Out of sight, inexpensive,  
easy to install)



Decorative  
(Turn knob  
to open)



Decorative  
(Pull back handle  
to open)

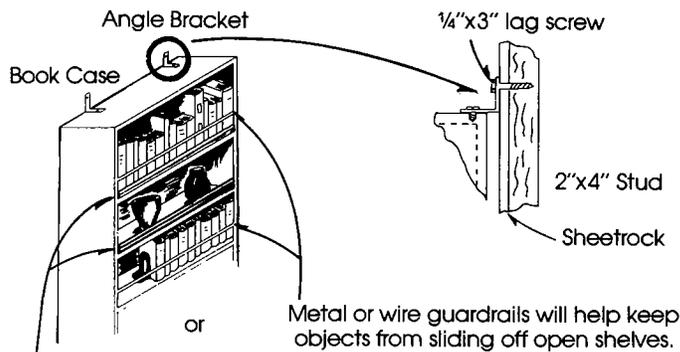


Decorative  
(Release button  
in handle)



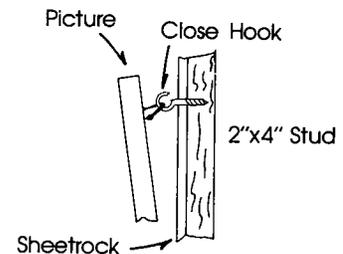
Hook and Eye  
(Suitable for  
Garage Cabinets)

#### TALL FURNITURE OR OPEN SHELVES



Secure piece of wood molding to lower edge of each shelf.

#### HANGING PICTURES



#### Materials Needed

Cabinet Latches  
Brackets  
Lag Screws  
Flat Head Screws

Wood Trim  
Small Nails or Brads  
Screw Hooks

#### Tools Needed

Screwdriver  
Hammer  
Pliers  
Crescent Wrench

#### Cabinets

Install positive catching latches. Many variations are available at hardware stores.

#### Open Shelves

Install guard across shelf, or install wood trim on front of shelf. Place heavy objects on lower shelves.

#### Tall Furniture

Install metal "L" brackets between furniture and wall stud at top. (The "L" bracket can be installed inverted so it will be hidden from view.)

#### Hanging Pictures

Screw hooks into wood members only (stud or ceiling joists). Close hooks used for hanging pictures to prevent their falling.

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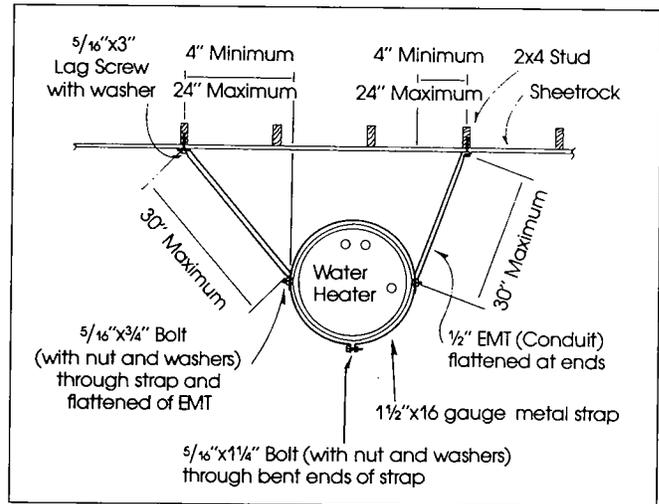
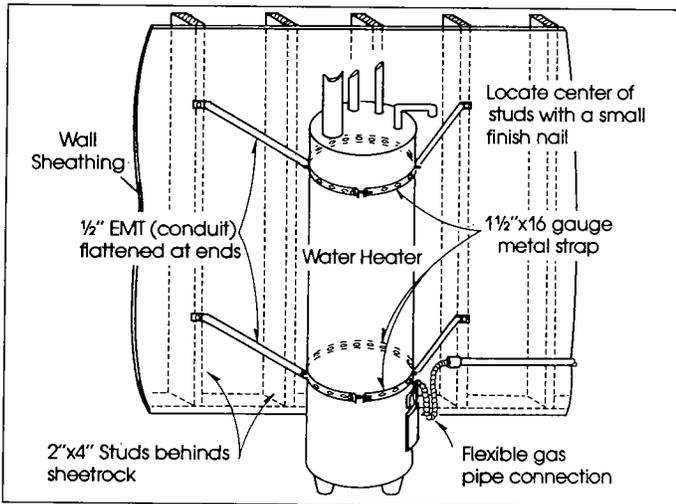
# Beat The Quake!

California Earthquake Preparedness Month

## Steps to Take



### Strap Water Heater:



#### Materials Needed

- (2) 6' lengths of 1-1/2" 16 gauge pre-drilled strap
- (1) 10' length of 1/2" EMT tube (conduit)
- (4) 5/16" x 3" lag screws with washers
- (4) 5/16" x 3/4" long hex head machine bolts with 4 nuts and 8 washers
- (2) 5/16" x 1-1/4" hex head machine bolt with 1 nut and 2 washers each

#### Tools Needed

- |                 |                 |
|-----------------|-----------------|
| Tape Measure    | Power Drill     |
| Hammer          | 3/8" Drill Bit  |
| Hack Saw        | 3/16" Drill Bit |
| Crescent Wrench | Center Punch    |
| Vise or Clamp   |                 |

1. Strapping your water heater and making sure it is fitted with flexible gas supply line will greatly reduce the danger of fire or explosion from a gas leak after an earthquake. If your water heater does not have a flexible gas supply line, contact a licensed plumber to install one. *These instructions are for a 30-40 gallon water heater within 12" of a stud wall.*

2. Mark water heater at 6" down from top and about 18" up from bottom. Transfer these marks to wall. Locate the studs in the wall on both sides of the water heater.

3 Drill a 3/16" hole 3" deep through the wall sheathing and into the center of the wood studs at the four marks made in step 2.

4. Measure around the water heater and add 2" to the measurement. Using a hacksaw, cut the two 1-1/2" x 16 gauge metal straps to this length for encompassing water heater.

5. Mark 1-1/2" from each end and insert in a vise or under a heavy object and bend the ends outward to approximately a right angle. Bend the straps into a curve.

6. Measure the distance from a point midway on each side of the water heater to the holes drilled in the wall. (Probably two different lengths.) Add 1-1/2" to these measurements. Using a hacksaw, cut two pieces of conduit to each of these two lengths.

7. Using a hammer, flatten approximately 1-1/2" at each end of the four pieces of tubing by laying the tube on a flat metal or concrete surface and striking with the hammer. Be sure you flatten both ends on the same plane.

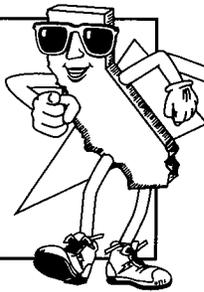
8. Insert the flattened ends of the tubes, one at a time, into a vise or clamp. With the hammer and center punch make a mark 3/4" from each end at the center of the flattened area of the tube. Drill 3/8" holes in the ends of all four tubes (8 holes). Be sure tubes are clamped down while drilling. Bend each end to about 45 degrees.

9. Wrap the straps around the heater and insert a 5/16" x 1-1/4" bolt with washers into the bent ends. Tighten nuts with fingers. Insert 5/16" x 3/4" bolts through strap from the inside at the mid-point on each tube strut to a protruding bolt, add a washer and nut, and tighten with fingers. Insert 5/16" lag screw in the opposite end of each tube strut and insert in hole in the wall stud. You may need to tap the lag screw gently into the hole to start it, then tighten with crescent wrench.

10. Adjust the straps to the proper height and tighten all nuts snugly, but not too tight.

Note: There are many methods to strapping water heaters. The above method is recommended for fire safety in that metal is the only material that comes in contact with the water heater. Reproduced with permission from: *Home Earthquake Preparedness Guide*, EQE, Incorporated, San Francisco, CA.

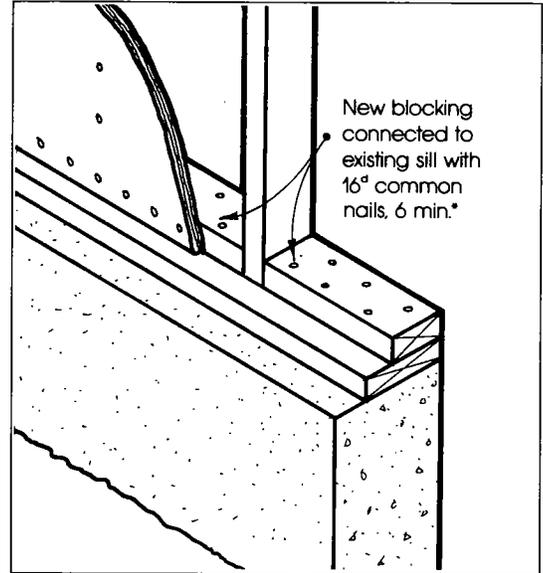
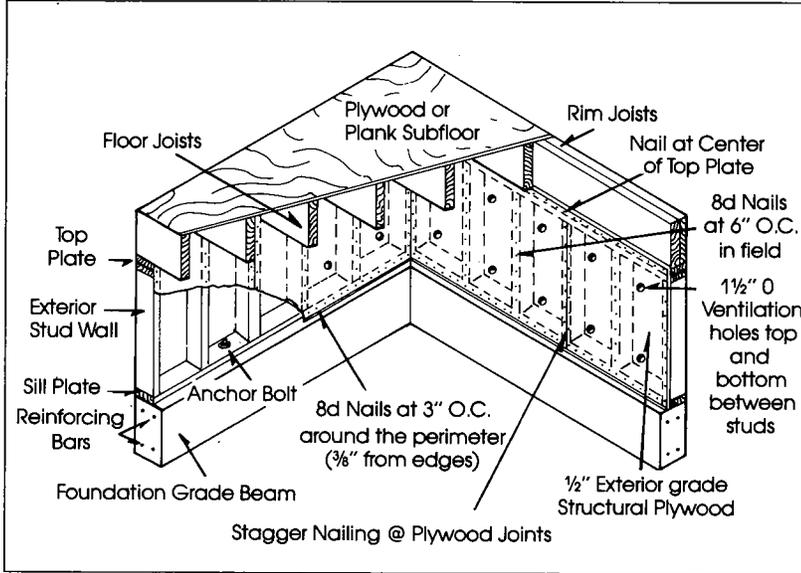




**Steps to Take**

# Sheath Cripple Walls:

To prevent your house from falling off its foundation during an earthquake.



**Materials Needed**

- 1/2" structural I or C-DX plywood
- 8d Common or Sinker Nails
- 16d Common or Sinker Nails

**Tools Needed**

- Circular Saw
- Jig Saw
- 1-1/2" Hole Saw

- Framing Square
- Hammer
- Tape Measure

- Chalk Line
- Pencil

1. Check the sill plate to be sure it has been adequately bolted to the foundation.
2. Check to be sure the sill plate and studs are the same dimensions (flush at face). If not, block between the studs and nail the blocks into the sill plate with six 16d nails per block to create a flush nailing surface for the plywood.
3. Measure the distance between the bottom of the sill plate and the top of the top plate. Measure the distance between the corner stud and the middle of a stud at 4' or 8' away to be sure a standard sheet will fit; if not, two sides of the 4' x 8' sheet will need to be cut. Check that the studs are square with framing square and use it to lay out cuts on the plywood.
4. Mark the center line of the vertical studs on foundation and above cripple wall to locate studs behind plywood for later nailing.
5. Locate all exterior ventilation grates with respect to some easy reference point so that they will not be covered with plywood.
6. Cut the plywood with a circular saw using a plywood blade.

7. Place each pre-cut section of plywood up to check fit. It may need to be trimmed; a jig saw can be used to trim the plywood without taking it out of the crawl space.
8. Tack the plywood up temporarily with a few nails. Using chalk line, snap a line on the plywood between the marks made in Step 4. Nail the plywood to studs and plates with 8d nails. The nails should be spaced 3" apart around the entire perimeter of each plywood panel and 6" apart in the middle of each sheet.
9. Measure and cut out a space with the same dimensions as the ventilation grates previously located using the jig saw.
10. Using a hole saw, drill two 1-1/2" ventilation holes for each cavity between studs. The holes should be 2" up from the sill plate, 2" down from the top plate and centered between the studs.
11. Measure the next section to be cut and fit only after the previous section has been completely attached.

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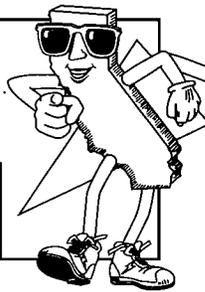
Illustrations: Kit Wong



# Beat The Quake!

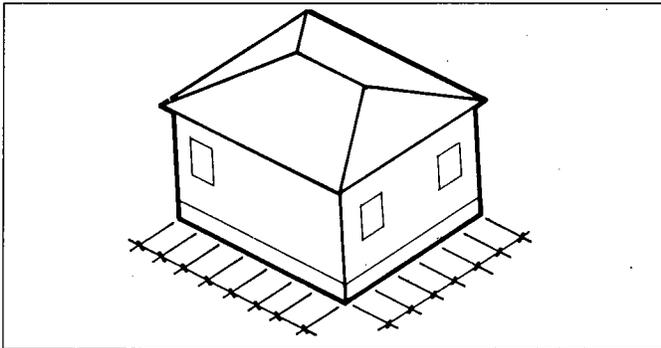
California Earthquake Preparedness Month

## Steps to Take

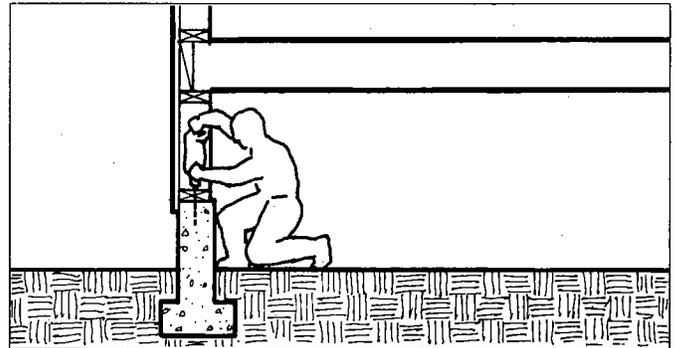


### Add Foundation Bolts:

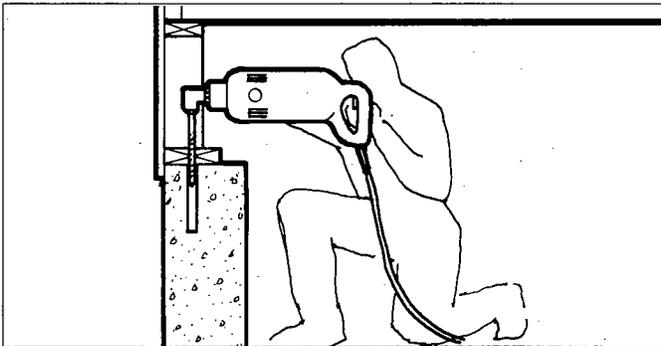
To keep your house on its foundation during an earthquake.



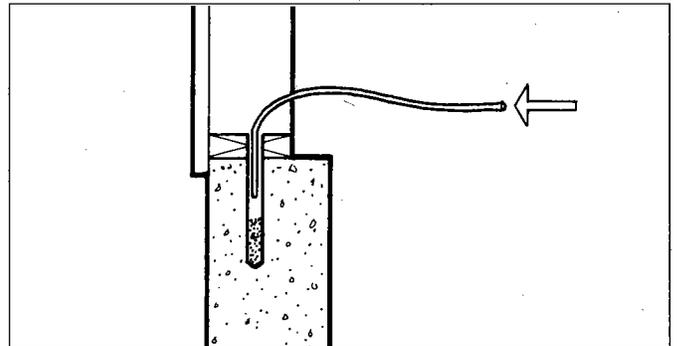
1. Lay out bolt locations. For the typical one-story house, use 1/2" diameter bolts at 6 feet on center.



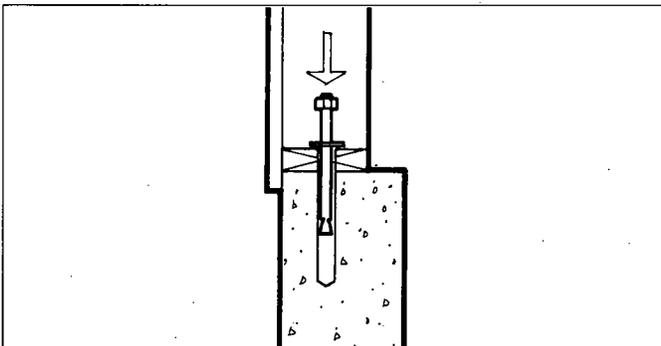
2. Drill holes through existing sill into the concrete foundation for 8-1/2" long expansion bolts, using carbide drill bits.



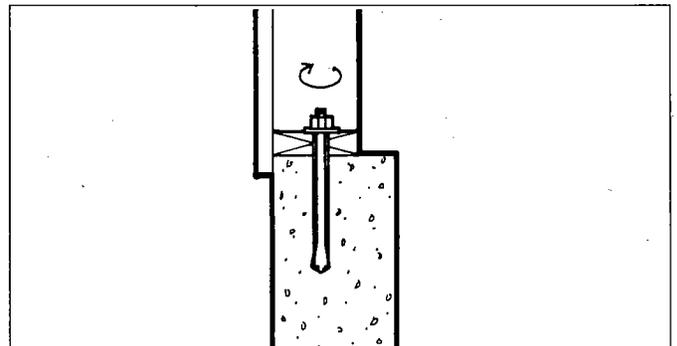
3. Use right angle drill for tight access places where the crawl space is low.



4. Blow all the dust out of the drilled holes using a rubber tube. Wear goggles and dust mask or respirator for protection from dust and debris.



5. Insert expansion bolts with the washer and nut attached. Leave nut at top of bolt when tapping the bolt in place to protect the threads.



6. After tapping bolt in place, tighten the bolt by turning the nut. Do not over tighten or bolt will be damaged.

Illustrations redrawn by Kit Wong, taken from Mary Comerio and Sanford Hirshen, *The Earthquake Advisor's Handbook for Wood Frame Houses*, a National Science Foundation funded project.

