



地震的緊急應變措施

保護生命與財產安全

報告人：廖介民



「天災之前國國平等，受災後果國國有別」

這句話就是考驗各國政府的救災應變能力，

與是否做好防災救災措施，以減輕災後的損失。

美國 加州急難救災機制簡介

美國聯邦急難管理署 (Federal Emergency Management Agency, FEMA) 設在美國國內安全部之下，是聯邦政府最重要的備災、救災及復建機構。署長下設置多個單位，包括由一助理署長擔任「災難運作指揮官」，負責在災難中聯合其它聯邦、州及地方政府、公益團體和私人公司，進行救災行動，並和軍方保持聯絡，適時取得必要援助。FEMA 在全國有十個區域辦公室，以協助地方災難。沿海救災工作，FEMA 可直接協調同屬國內安全部的海岸防衛隊。FEMA 在財務上也扮演支援地方政府之救災復建經費的重要角色。

加州州長緊急服務辦公室 (California Governor Office of Emergency Services, OES) 的主要職責，是於重大災難時協調州府單位支援地方政府救災復建，並協助地方申請聯邦與州的經費修復公共設施。直屬州長管轄的 OES 它協調對象，也包含州長可派用的國民兵。在救災作業上 OES 協調級合作機構包括各級政府單位、企業界、醫院、學校、公益團體如紅十字會、鄰里與社區組織。在組織上，它在沙加緬度有全天待命的緊急救災中心，負責應變協調。另有多處區域性辦公室，可短時間在災區成立臨時「作業中心」。

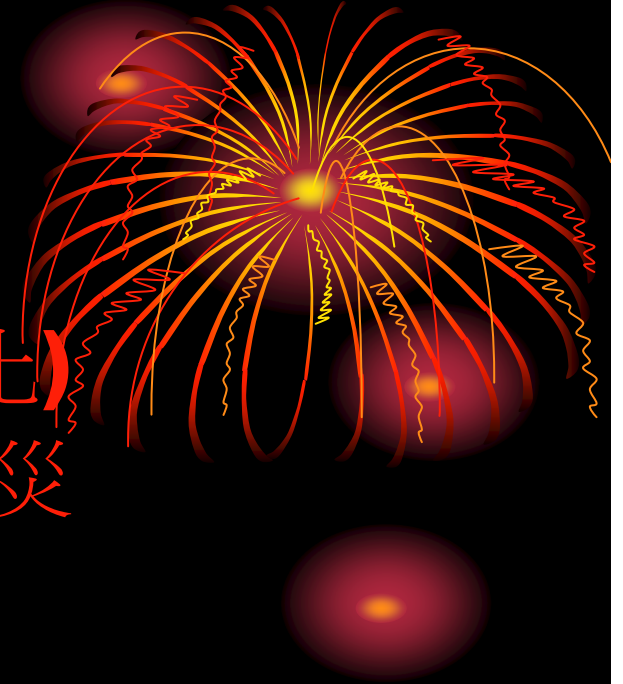
區域救災運作區 (Operational Areas)。由於大災難的發生常跨越單一行政區域，需要各地方政府間彼此支援協調。因此加州「緊急服務法案」責成 OES 設立一套「標準化緊急管理系統」(SEMS)，統一協調各地方政府的緊急運作。它規定：一個縣內所有地方政府組成一單獨的「運作區」，由該縣為領導機構；縣內欲得到州政府救災經費協助的地方政府，必須立法認同此系統，在處理緊急災難時須依系統之規範作業。以洛縣為例，縣屬緊急管理辦公室 (OEM) 擔任縣「運作區」協調官，負責維持 24 小時作業的縣緊急運作中心 (CEOC)，在急難發生時負責協調調度全縣的救援人力及資源。

加州各市也依 SEMS 設有緊急救災單位，如洛杉磯市設有市長領軍、15 個部門首長組成的緊急運作委員會 (EOB) 任決策及指揮單位，其下全天候作業的緊急運作中心

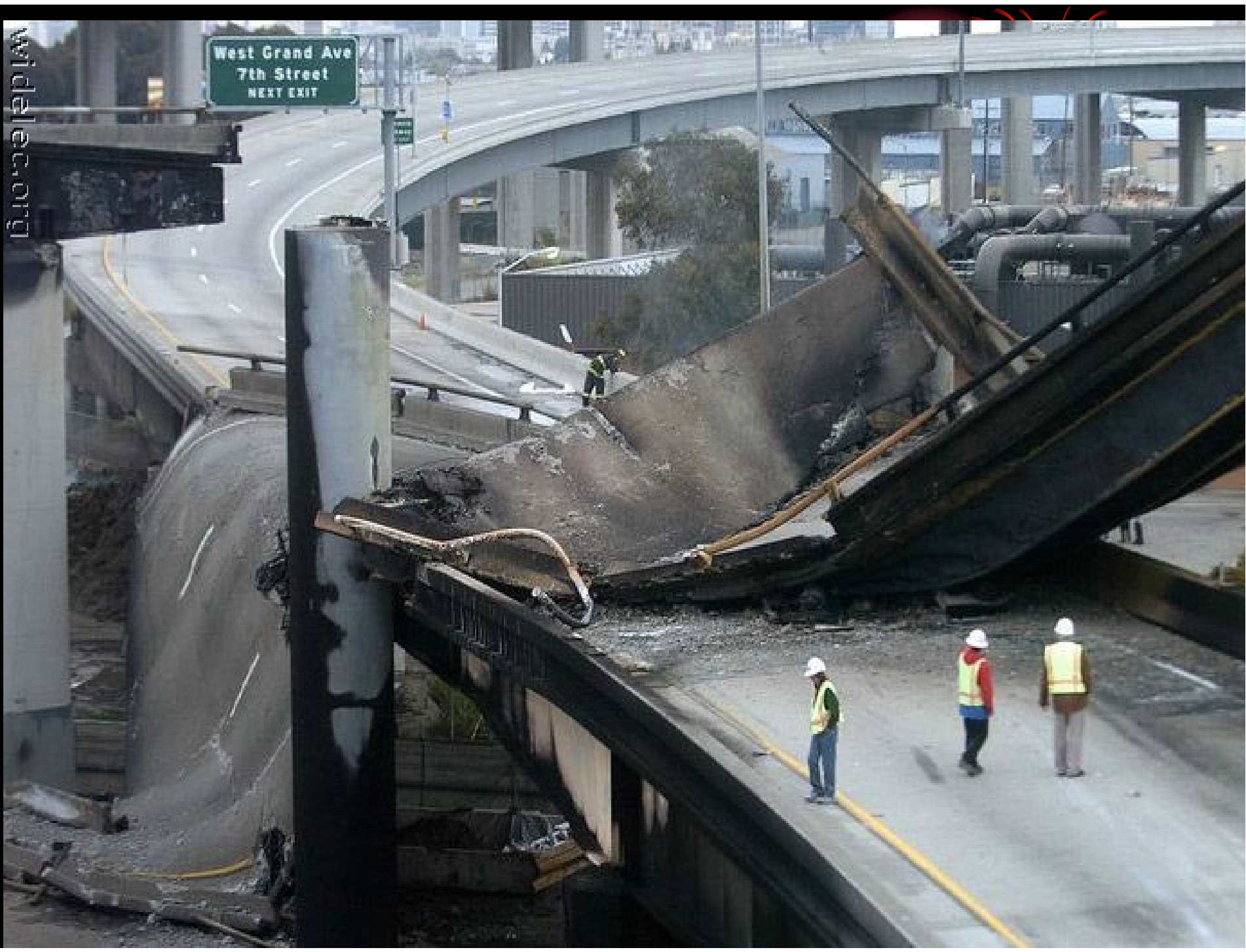
(EOC) 可調度單位。小城亞凱迪亞市也設有跨部門的緊急管理團隊與 EOC。救災作業由聯邦到州到縣都設有專責機構，地方則成立跨部門常設機構以節省開支。這些單位平時擔負訓練及大眾教育的功能，有緊急狀況時即成為救難指揮中心。更重要的是，它們形成的救災體系是個從橫向多層次的嚴密網絡，以有效應付大型災難。

都市災害包括那些？

- 地震 (土石流; 海嘯; 土壤液化)
- 水災 (豪雨; 水庫崩潰) 或 旱災
- 火災 及 森林野火
- 風災 (颱風; 龍捲風)
- 毒害性物資外洩 (石油; 化學物資)
- 水污染; 空氣污染
- 氣溫過高或過低
- 交通事故; 空難; 海難
- 罷工; 示威暴動; 恐怖份子襲擊;
- 公共設施無法正常運作



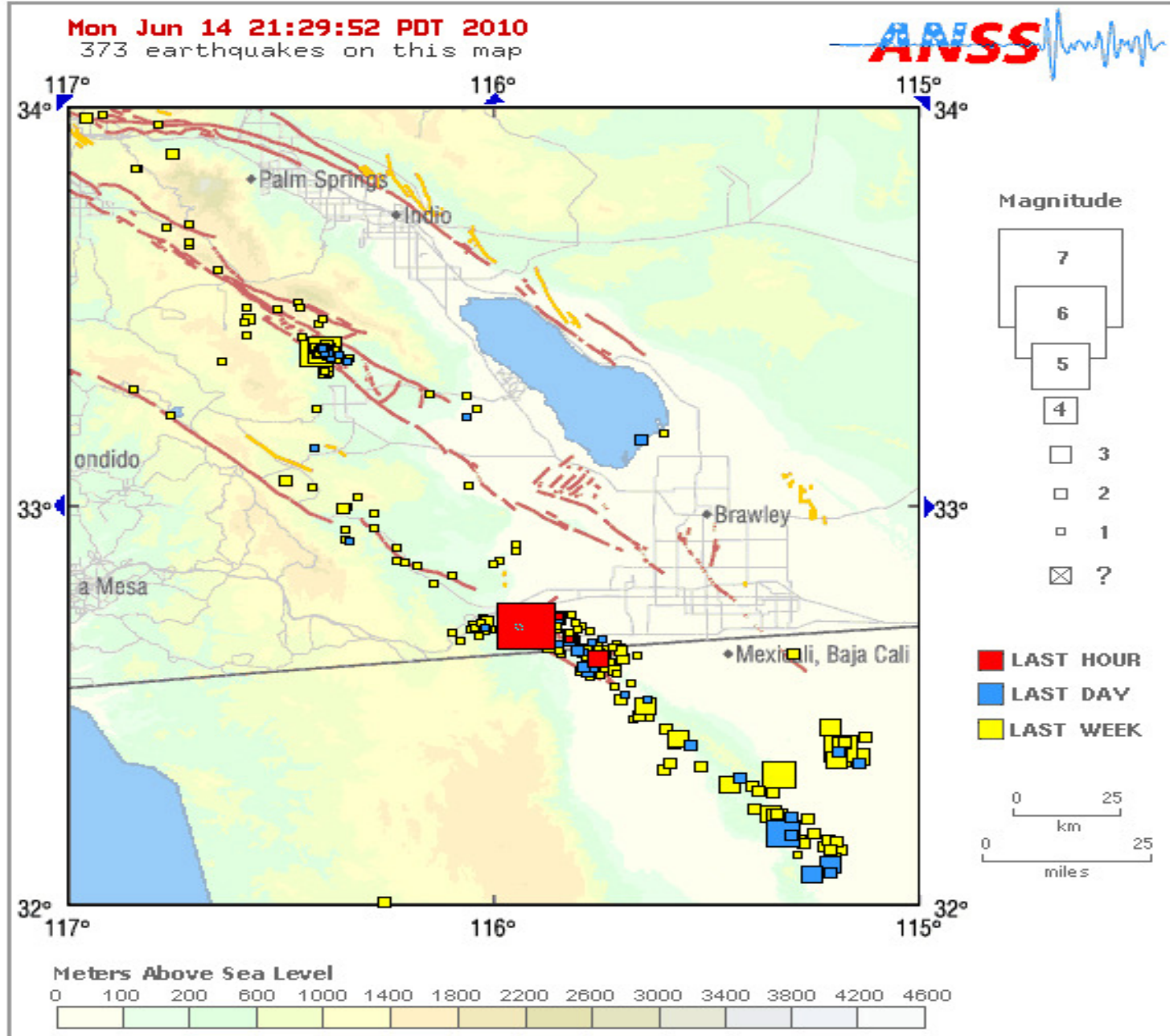
wjdalec.org







California-Nevada Fault Map centered at 33°N, 116°W



Ever Wonder What Causes Earthquakes?

It's probably not something you think about first when earthquakes are mentioned, but knowing what causes these shakers can help you understand your surroundings.

The earth is divided into three main layers — a hard outer crust, a soft middle layer and a center core. The outer crust is broken into massive, irregular pieces called "plates." These plates have been moving very slowly for billions of years, driven by energy forces deep within the earth. It is this movement that has shaped the physical features of the earth — 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 covers most of the Pacific Ocean floor and the California coastline. The North American Plate stretches across the North American continent and parts of the Atlantic Ocean. The primary boundary between them is the San Andreas fault. It is more than 650 miles long and extends 10 miles deep. Many smaller faults, such as the Hayward fault in the north and the San Jacinto fault in the south, branch from the San Andreas fault. Experts suspect there are many other faults that haven't been discovered yet.

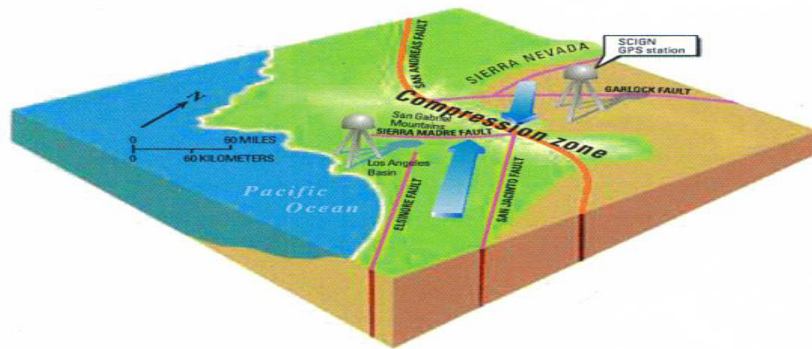
The Pacific Plate grinds northwestward past the North American Plate at a rate of about two inches per year. Parts of the San Andreas fault system adapt to this movement by a constant "creep" resulting in frequent, but moderate, earth tremors. In other areas, movement is not constant

Some Significant California Earthquakes

- **Northridge, M6.7** — January 17, 1994
57 deaths — more than 11,000 injuries — \$40+ billion in damage
- **Landers, M7.3/Big Bear, M6.7** — June 28, 1992
1 death — \$93 million in damage
- **Humboldt County, M6.9** — April 25, 1992
\$60 million in damage
- **Sierra Madre, M5.8** — June 28, 1991
1 death — over 30 injuries — \$33.5 million in damage
- **Upland, M5.5** — February 28, 1990
38 injuries — \$10.4 million in damage
- **Loma Prieta, M7.1** — October 17, 1989
63 deaths — 3,757 injuries — \$5.9 billion in damage
- **Whittier-Narrows, M5.9** — October 1, 1987
Aftershock, M5.3 — October 4, 1987
8 deaths — 200 injuries — \$358 million in damage
- **Palm Springs, M5.9** — July 8, 1986
\$5.3 million in damage
- **Morgan Hill, M6.2** — April 24, 1984
27 injuries — \$10 million in damage
- **Coalinga, M6.4** — May 2, 1983
47 injuries — \$31 million in damage
- **Kern County, M7.7** — July 21, 1952
12 deaths — 18 injuries — \$50 million in damage
- **San Francisco, M8.3** — April 18, 1906
700-800 deaths — \$400 million in damage

and strain can build up for hundreds of years resulting in strong earthquakes when it's released.

Unlike other natural disasters, there is no warning for earthquakes. One could hit today, tomorrow, or next week. Future earthquakes are a serious threat to Californians who could face loss of life, injury and property damage. Consider the sizable damage caused by past quakes.



▲ A schematic block model of Southern California showing the motion of the Pacific and North American plates, and the big bend of the San Andreas fault where the plates squeeze together.

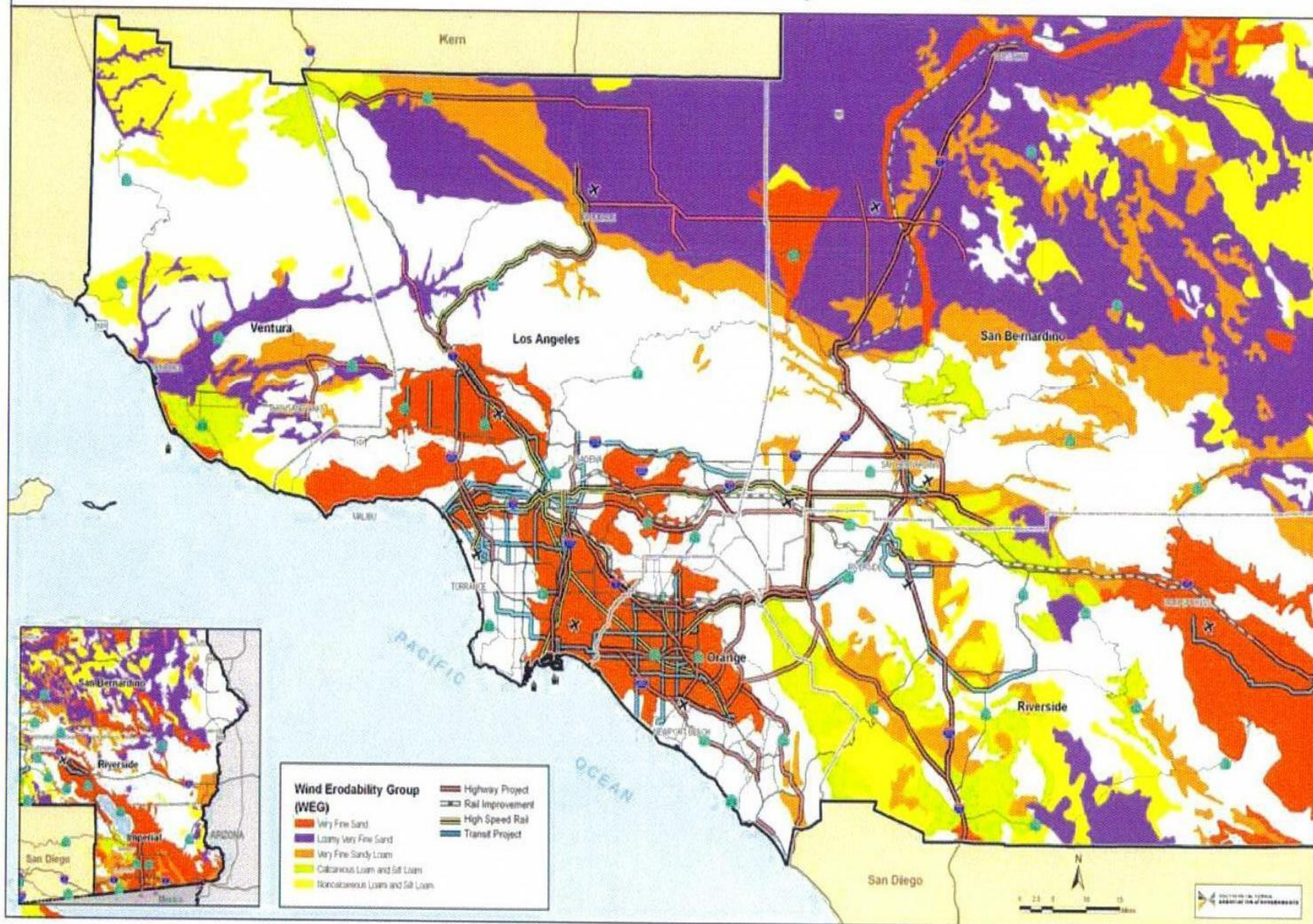


- 1 San Andreas fault
- 2 San Jacinto fault
- 3 Elsinore fault
- 4 Imperial fault

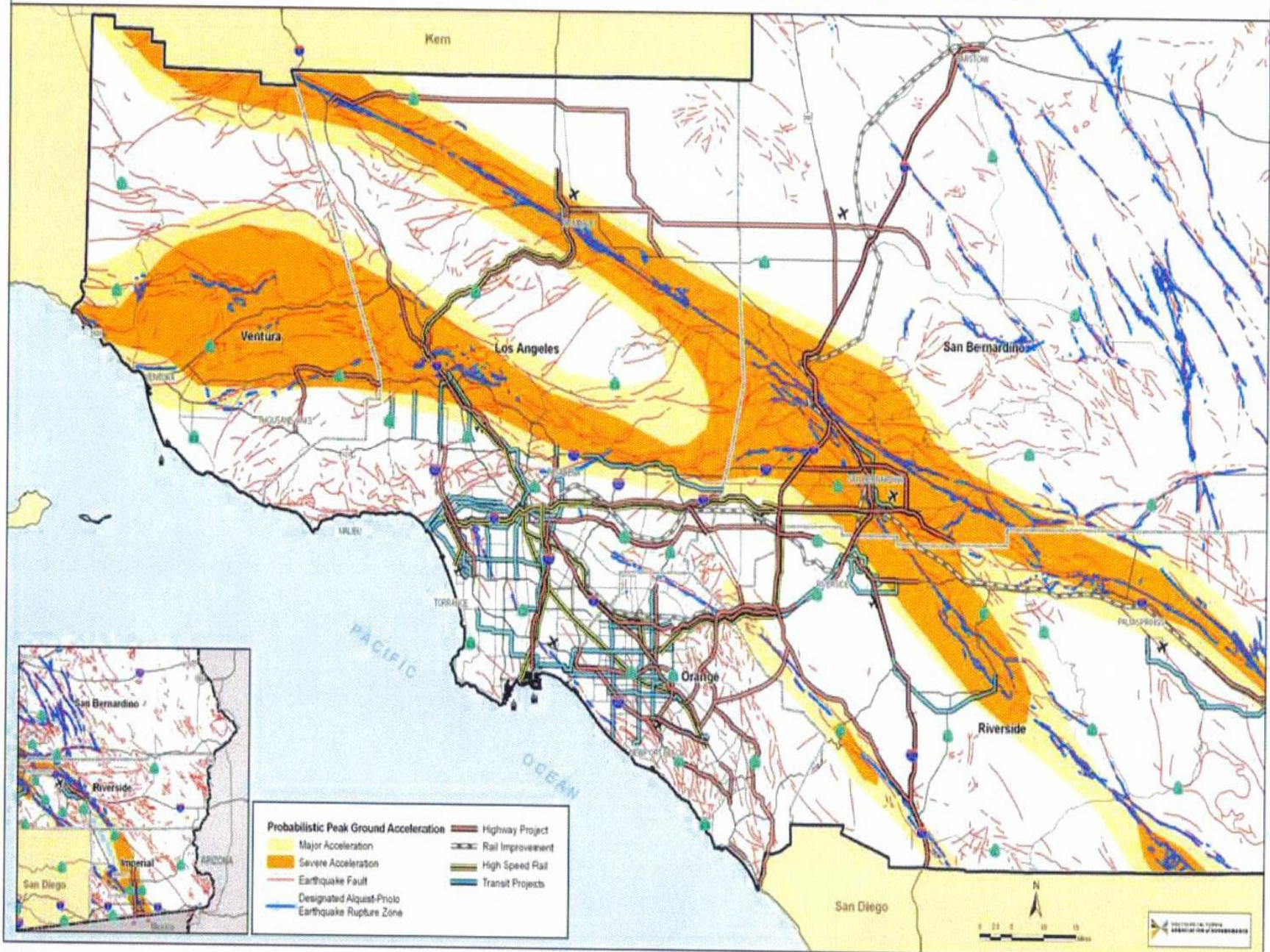
▼ **SCEC Community Fault Model.** This map shows the 3-dimensional structure of major faults beneath Southern California. Vertical faults such as the San Andreas (yellow band from top left to bottom right) are shown as a thin strip. Faults that are at an angle to the surface are shown as wider ribbons of color. The nearest fault to you might be a few miles beneath your home. Areas that seem to have few faults can still experience strong shaking from earthquakes on unmapped faults or from large earthquakes on distant faults.



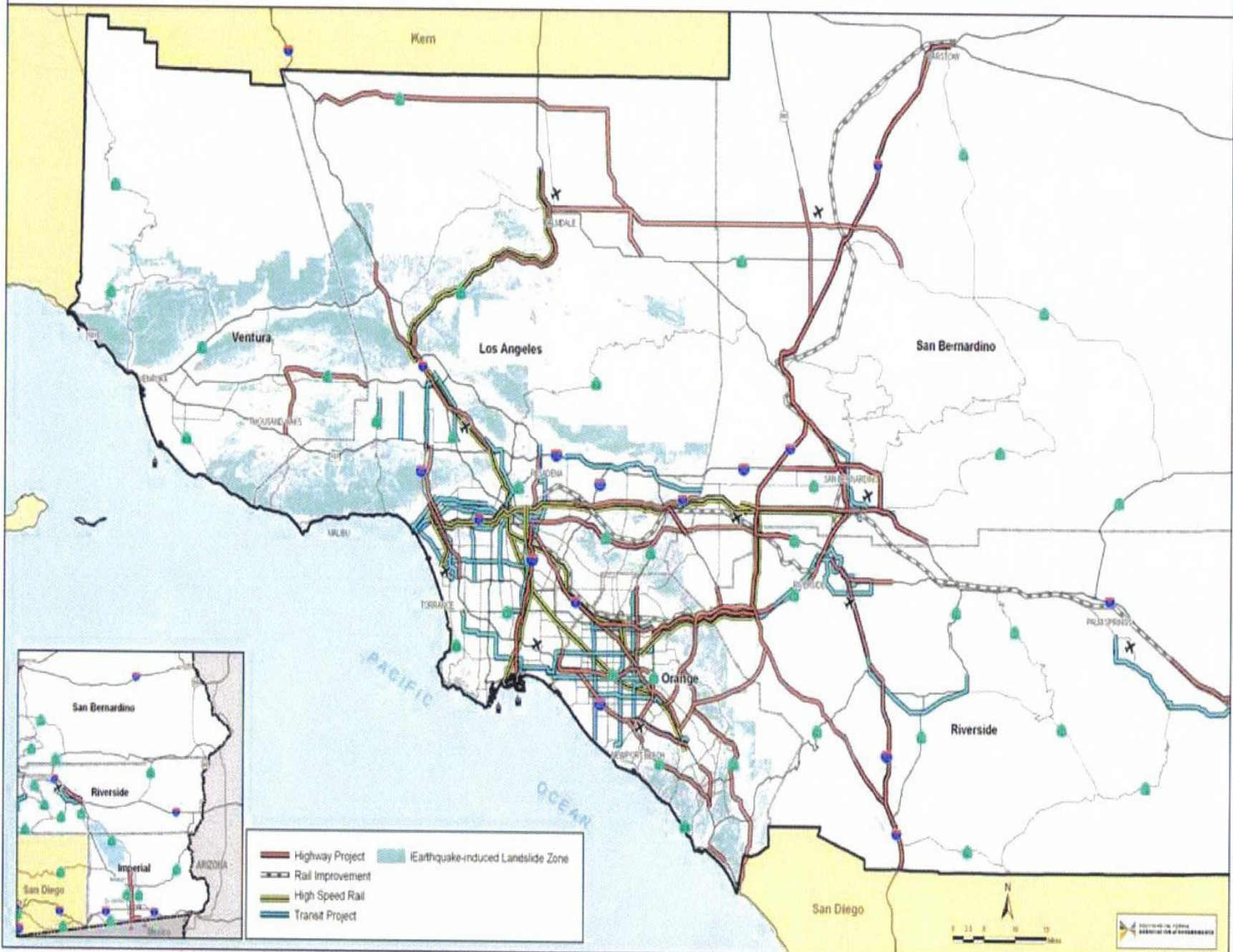
Map 3.6-3 Location of Soils with Moderate to High Erosion Potential



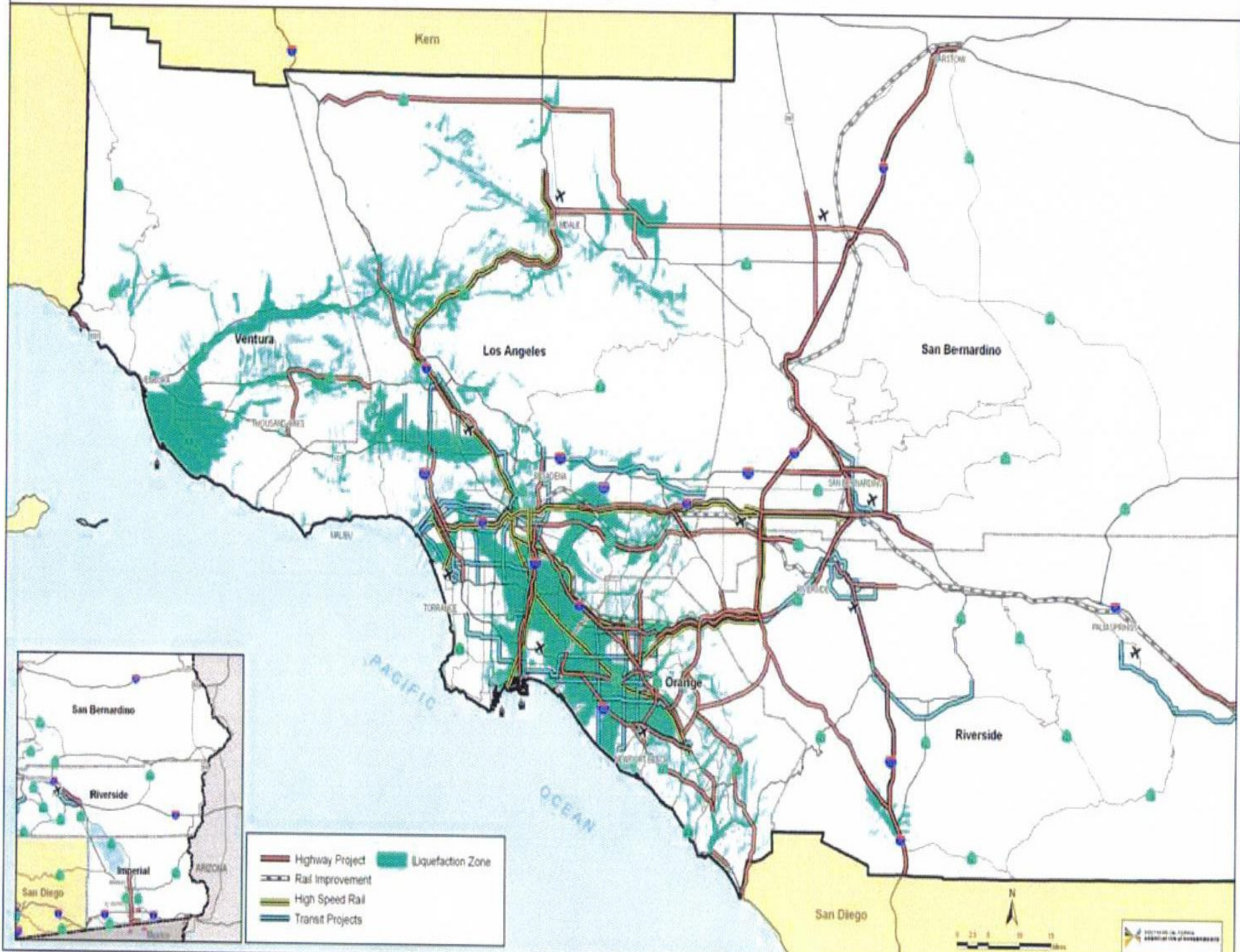
Map 3.6-5 Earthquake Faults and Probabilistic Peak Ground Acceleration

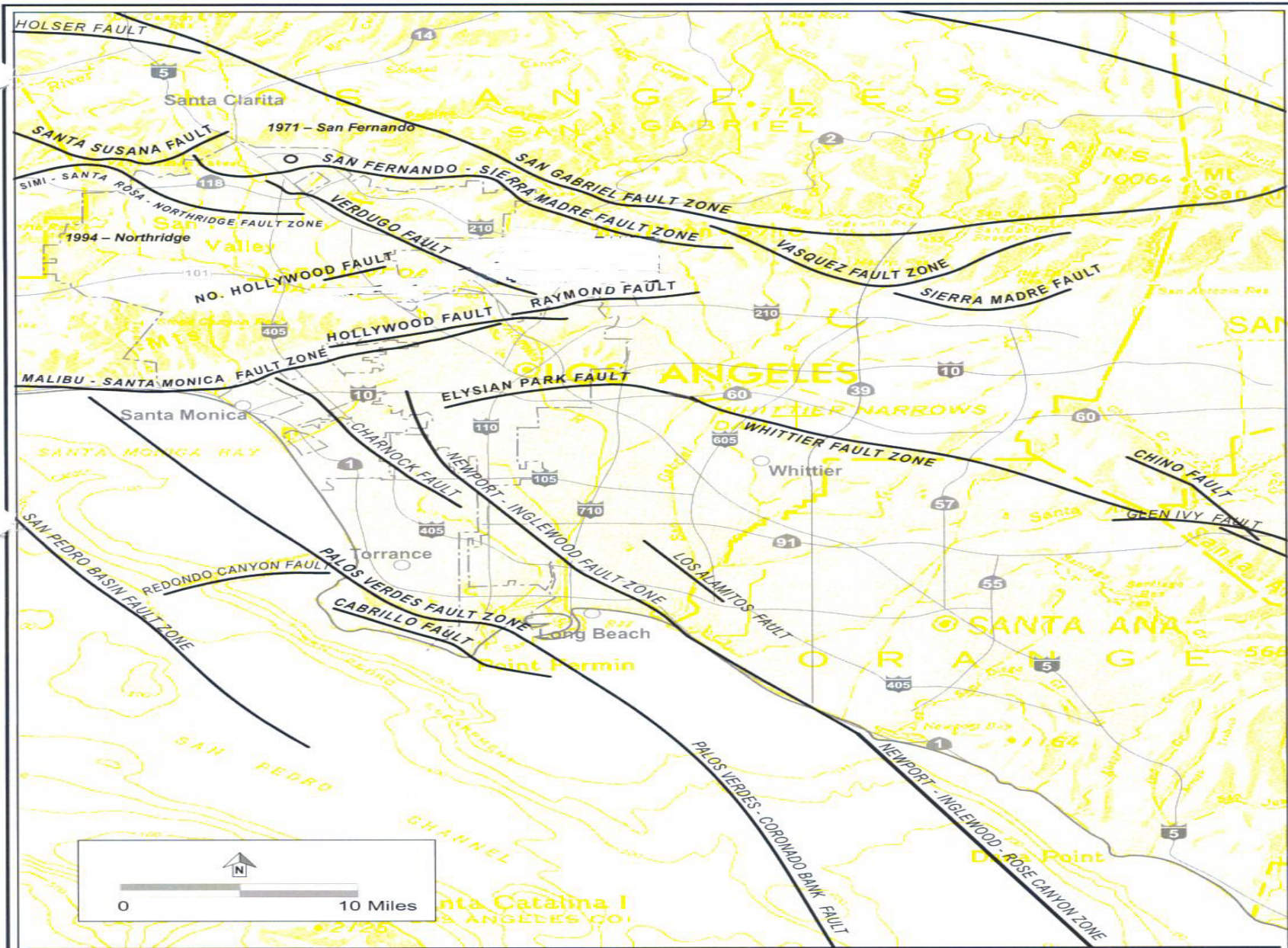


Map 3.6-4 Relative Landslide Potential*



Map 3.6-6 Areas Subject to Liquefaction*





Major Regional Faults

Source: U.S.G.S 1999 Data 1994 Fault Activity DMG Open-File Report by C. Jennings and PCR Services Corporation, 2008

地震对我和家人有什么影响？

发生地震时，您的家人可能不在一起。



- 家人可能在学校、上班、在火车或者公共汽车上。
- 您应当有找到家人的计划（见第18页）。

(FEMA photo)

您可能无法得到医疗护理。

- 911 紧急系统和医院可能病人太多，无法帮助您。
- 其他保健服务设施，比如养老院和洗肾服务可能无法运作。



医院可能被损坏或被摧毁
(USGS photo)。

您的家人可能无法立即回到家里。

- 道路可能中断或者关闭。
- 公共汽车、火车、渡船和飞机可能停止服务。



(USGS photo)

您家人依赖的服务可能无法取得。



- 水、燃气、电力、电话（包括手机和上网）等服务可能无法运作。
- 食品杂货店、药房和银行（包括提款机和支票兑现店）可能关闭。
- 供应品和货物递送将被中断。
- 许多小型商号没有应急计划，因而可能无法重新开业。

地震后，食物、药品和汽油的供应可能被中断 (photo courtesy of the Olympian, Olympia, Wash.)。

您的住家可能不适合安全居住。

- 您的房屋或者车辆可能遭损坏或被摧毁。
- 您可能没有居住或睡觉的地方。



这幢公寓的一楼倒塌，压碎了下面的车子 (FEMA photo)。

您可以在地震发生之前做好准备！

按照第16到23页上面的地震安全七个步骤做起。

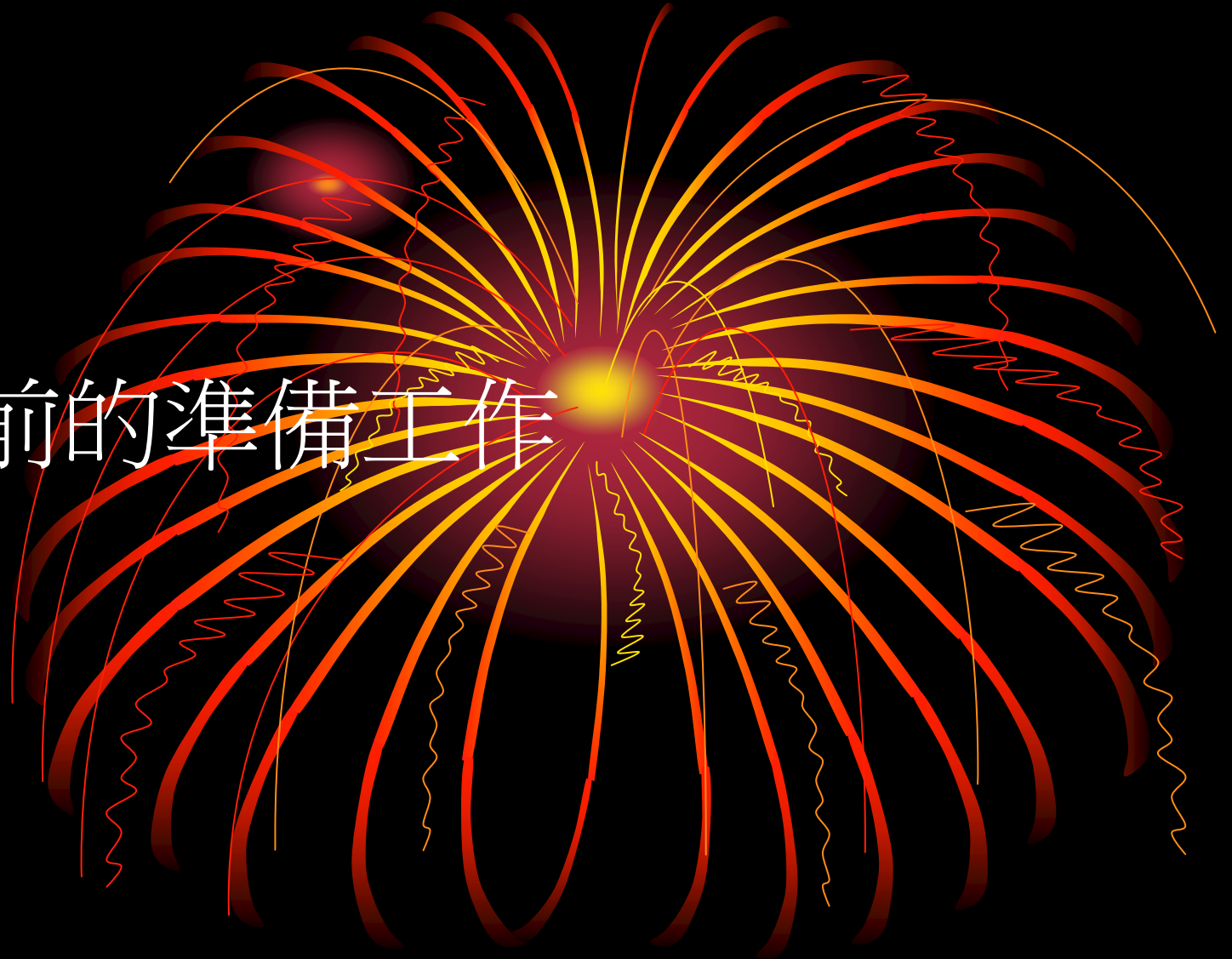
您的家庭收入可能受到影响。



公司或者公寓可能受到严重损害 (USGS photo)。

- 您可能无法去上班，或者你的公司可能关闭。这可能是临时性的或者永久性的。
- 薪水支票或者直接存入可能延迟。
- 您可能无法存取您的财务记录。
- 即使您没有收到工资，您仍然需要支付帐单，比如房屋贷款的分期付款、公寓租金、汽车贷款、信用卡付款，等等。

地震前的準備工作



Tips for Preparing Children

Children need to be prepared for an earthquake as much as adults, if not more.

Infants and Toddlers

For infants and toddlers, special emphasis should be placed on making their environment as safe as possible.

- ✓
 - Cribs should be placed away from windows and tall, unsecured bookcases and shelves that could slide or topple.
 - A minimum of a 72-hour supply of extra water, formula, bottles, food, juices, clothing, disposable diapers, baby wipes and prescribed medications should be stored where it is most likely to be accessible after an earthquake. Also keep an extra diaper bag with these items in your car.
 - Store strollers, wagons, blankets and cribs with appropriate wheels to evacuate infants, if necessary.
 - Install bumper pads in cribs or bassinets to protect babies during the shaking.
 - Install latches on all cupboards (not just those young children can reach) so that nothing can fall on your baby during a quake.

Preschool and School-age Children

By age three or so, children can understand what an earthquake is and how to get ready for one. Take the time to explain what causes earthquakes in terms they'll understand. Include your children in family discussions and planning for earthquake safety. Conduct drills and review safety procedures every six months.

- ✓
 - Show children the safest places to be in each room when an earthquake hits. Also show them all possible exits from each room.
 - Use sturdy tables to teach children to Duck, Cover & Hold.
 - Teach children what to do wherever they are during an earthquake (at school, in a tall building, outdoors).
 - Make sure children's emergency cards at school are up-to-date.
 - Although children should not turn off any utility valves, it's important that they know what gas smells like. Advise children to tell an adult if they smell gas after an earthquake.

Tips for the Elderly

Before an Earthquake

- ✓
 - Eliminate hazards. Make it as easy as possible to quickly get under a sturdy table or desk for protection.
 - Anchor special equipment such as telephones and life support systems. Fasten tanks of gas, such as oxygen, to the wall.
 - Keep a list of medications, allergies, special equipment, names and numbers of doctors, pharmacists and family members. Make sure you have this list with you at all times.
 - Keep an extra pair of eyeglasses and medication with emergency supplies.
 - Keep walking aids near you at all times. Have extra walking aids in different rooms of the house.
 - Put a security light in each room. These lights plug into any outlet and light up automatically if there is a loss of electricity. They continue operating automatically for four to six hours, and they can be turned off by hand in an emergency.
 - Make sure you have a whistle to signal for help.
 - Keep extra batteries for hearing aids with your emergency supplies. Remember to replace them annually.
 - Keep extra emergency supplies at your bedside.

- Find two people you trust who will check on you after an earthquake. Tell them your special needs. Show them how to operate any equipment you use. Show them where your emergency supplies are kept. Give them a spare key.

During and After an Earthquake

- If you are in bed or sitting down, do not get up.
- If you are standing, duck and cover or sit down. You could be thrown to the floor if you are standing.
- Prepare to be self-sufficient for at least three days.
- Turn on your portable radio for instructions and news reports. For your own safety, cooperate fully with public safety officials and instructions.
- Prepare for aftershocks.
- If you evacuate, leave a message at your home telling family members and others where you can be found.

Ready?
side It Out?

Preparing Your Family For An Earthquake

The Plan

- ✓
 Stock up on at least a three-day supply of food, water, clothes, medical supplies and other necessary equipment for everyone in your family. Make sure everyone knows where to find them. (See the information sheet on emergency supplies in this packet.)
- Decide where and when to reunite your family should you be apart when an earthquake happens.
- 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. Do not use the phone immediately after an earthquake.
- Know the policies of the school or daycare center your children attend. Make plans to have someone pick them up if you are unable to get to them.
- If you have a family member who does not speak English, prepare an emergency card written in English indicating that person's identification, address and any special needs such as medication or allergies. Tell that person to keep the card with him/her at all times.
- Conduct Earthquake: Duck, Cover & Hold drills every six months with your family.
- Know the safest place in each room because it will be difficult to move from one room to another during a quake.
- Locate the shutoff valves for water, gas and electricity. Learn how to shut off the valves before a quake. If you have any questions, call your utility company.
- Make copies of vital records and keep them in a safe deposit box in another city or state. Make sure your originals are stored safely.

When preparing for an earthquake, plan on having enough supplies to get you and your family through at least the first 72 hours. After a major earthquake, there's a good chance that traditional emergency response teams will be too busy to take care of you and your family. You need to prepare your home and neighborhood.

- Before a quake occurs, call your local Red Cross chapter and Office of Emergency Services to find out about their plans for emergency shelters and temporary medical centers in case of such a disaster.
- Establish all the possible ways to exit your house. Keep those areas clear.
- Know the locations of the nearest fire and police stations.
- Take photos and/or videos of your valuables. Make copies and keep them in another city or state.
- Include your babysitter and other household help in your plans.
- Keep an extra pair of eyeglasses and house and car keys on hand.
- Keep extra cash and change. If electricity is out, you will not be able to use an ATM.

General Tips

- ✓
 Stay away from heavy furniture, appliances, large glass panes, shelves holding objects, and large decorative masonry, brick or plaster such as fireplaces.
- Keep your hallway clear. It is usually one of the safest places to be during an earthquake.
- Stay away from kitchens and garages, which tend to be the most dangerous places because of the many items kept there.

Tips for the Physically Challenged

Before an Earthquake



- Set up your home, apartment or workplace so that you can quickly get under a sturdy desk, table or other safe place for protection. Identify doorways that do not have doors in which you can take cover.
- Maintain a list of medications, allergies, special equipment, names and numbers of doctors, pharmacists and family members with you at all times.
- Keep extra medication with your emergency supplies.
- Keep extra emergency supplies at your bedside and by your wheelchair.
- Have walking aids near you at all times. Place extra walking aids in different rooms of the house.
- Put a security light in each room. These lights plug into any outlet and light up automatically if there is a loss of electricity. They continue operating automatically for four to six hours, and they can be turned off by hand in an emergency.
- Have a whistle near you to signal for help.
- Find two people you trust who will check on you after an earthquake. Tell them your special needs. Show them how to operate any equipment you use. Show them where your emergency supplies are kept. Give them a spare key.

During and After an Earthquake

- If you are in bed or out of a wheelchair, stay where you are and cover your head and neck.
- If you are in a wheelchair, stay in it and go into a doorway that doesn't have a door. Cover your head and neck with your hands.
- Prepare to be self-sufficient for at least three days.
- Turn on your portable radio for instructions and news reports. For your own safety, cooperate fully with public safety officials and instructions.
- Prepare for aftershocks.
- If you evacuate your home, leave a message at your home telling family members and others where you can be found.

**Ready
to Ride It Out?**

Tips for Pet Owners

Before an Earthquake

- ✓
 Store enough food and water to last for 72 hours, preferably for one week. Prepare a shelter or evacuation kit for your pet, including an unbreakable dish, veterinarian records, a restraint (leash or pet carrier) and medication with instructions.
- Keep your pet's ID tag up-to-date.
- Make sure nothing can fall on your pet.
- Arrange for a neighbor to take care of your pet if you are not able to get home after an earthquake.

When preparing your home for an earthquake, don't forget to include your pets on the list. They will depend on you even more after an earthquake to take care of them and their needs.

During and After an Earthquake

- Do not try to hold onto your pet during the shaking. Animals will instinctively protect themselves and hide where they're safe. If you get in their way, even the nicest pets can turn on you.
- Be patient with your pets after a quake. They get stressed just like people and need time to readjust. They may disappear for some time, but they generally show up again when things have calmed down.
- If you have outdoor pets, you should keep them indoors until the aftershocks have subsided and they have calmed down.
- If you must evacuate your home, leave your pet secured in a safe place. Pets will not be allowed at shelters. Be sure to leave plenty of clean water and food. If possible, visit your pet daily until you can return home.

How To Secure Your Furniture

Secure Tabletop Objects

- ✓
 - TVs, stereos, computers, lamps and chinaware can be secured with buckles and safety straps attached to the tabletop (which allows for easy movement of the units when needed) or with hook and loop fasteners glued to both the table and the unit.
- Glass and pottery objects can be secured with nondrying putty or microcrystalline wax.

Secure Items in Your Kitchen

- ✓
 - Use child-proof latches, hook and eye latches or positive catch latches, designed for boats, to secure your cabinet doors.
- Make sure your gas appliances have flexible connectors to reduce the risk of fire.
- Secure your refrigerator to prevent movement.

Anchor Your Furniture

- ✓
 - Secure the tops of all top-heavy furniture such as bookcases and file cabinets to the wall. Be sure to anchor to the stud, not just to the plasterboard. Flexible fasteners such as nylon straps allow tall objects to sway without falling over, reducing the strain on the studs.

You must secure the contents of your home or office to reduce hazards. You should secure anything heavy enough to hurt you if it falls on you. Here are steps you should take to secure your possessions.

Protect Yourself from Broken Glass

- ✓
 - Replace your windows with ones made from safety glass or cover them with a strong shatter-resistant film. Be sure you use safety film and not just a solar filter.

Secure Overhead Objects

- ✓
 - Ceiling lights and fans should be additionally supported with a cable bolted to the ceiling joist. The cable should have enough slack to allow it to sway.
- Framed pictures, especially glass-covered, should be hung from closed hooks so that they can't bounce off. Only soft art such as tapestries should be placed over beds and sofas.

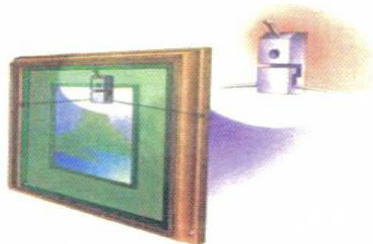
Don't let it out?

第1步——找出家中的潜在危险事项，进行处理

发生地震时，您家里的一切物品都会移动。物品从架子上落下来，挂在墙上的物品掉下来，玻璃破碎，笨重的家具倒下，电视机和电脑在房间摔来摔去。您可以到网站 <http://www.fema.gov/kids/eqhunt.htm> 按照“家庭危险搜寻”检查您家的潜在危险事项。您可以做下面一些简单又花钱少的事情，使您的居家更加安全：

悬挂物品

- ❑ 不要在床铺或沙发上方悬挂重物。只悬挂柔软物品，比如没有装镜框的海报或者挂毯。
- ❑ 把镜子、像片和其它重物挂在闭合式的像片钩里。



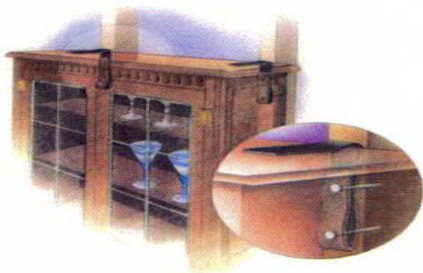
敞开的物架和桌上的物品

- ❑ 把笨重和易碎物品放在架子的下方。
- ❑ 使用可以移去的灰泥、博物馆蜡或地震胶把值钱的物品固定好。



家具和家用电器

- ❑ 使用灵活的夹具，例如尼龙系带把家具靠墙固定，避免坠落。把高的家具的顶角固定在墙壁的螺栓上，而不仅仅是清水墙上。
- ❑ 使用尼龙系带固定电视机，音响，电脑，微波炉等重物。



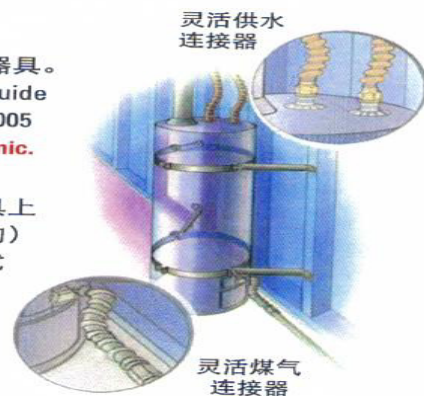
厨房里

- ❑ 固定所有的壁柜门，特别是高处的门。为了地震安全，使用孩子不能打开的门栓。
- ❑ 使用地震安全系带把电冰箱和其它家用电器靠墙固定。



水管和燃气管

- ❑ 固定锅炉和其它燃气器具。（参阅 Homeowner's Guide to Earthquake Safety, 2005 edition, <http://www.seismic.ca.gov/hog.htm>）。
- ❑ 在锅炉和其它燃气器具上使用柔性（缩成波纹的）不锈钢燃气连接器取代刚性连接器。



储存区域

- ❑ 把易燃或危险物品放到较低的安全位置。
- ❑ 确定车辆上方和两旁的储存物品不会掉下，不会损坏或阻挡车辆。

继续往第2步 ➡

关于让您的房屋在地震中更安全的详细资讯，上网：

<http://quake.abag.ca.gov/fixit/>

<http://quakeinfo.org/>

<http://www.fema.gov/hazard/earthquake>

How to Strap Your Water Heater

These instructions are for installing a water heater restraint for a water heater on a straight wall using the conduit method:

1. Mark the water heater 9" down from the top and approximately 4" up from the top of the controls. Locate the wood studs in the wall on both sides of the water heater.
2. Using a stud finder or other appropriate methods, locate the closest stud behind and to one side of the water heater.
3. Transfer the marks on the water heater horizontally to the adjacent wall where the stud identified in step 2 was located.
4. Drill a 3/16" diameter and 3" deep pilot hole at the marked locations for the 1/4" diameter by 3" long lag screw.
5. Measure around the water tank and add 2" to the measurement. Cut two pieces of 3/4" x 24 gauge perforated steel plumbers tape to this length. Place a bolt with the washer through the hole of one end and bend out 90 degrees as close to the edge of the washer as possible. Most plumbers tape comes with 1/4" diameter holes 1" apart with 1/8" diameter holes in between. The tape can be easily broken at the smaller holes by grabbing it with pliers and bending it several times.
6. Place the tape around the tank and place the bolt with the washer through the nearest hole in the end of the tape. Place a washer and nut on the bolt and tighten. The tape should be tight. If the tape is not tight, remove the bolt, place it through the next adjacent 1/4" hole and tighten.
7. Using a straight stick, place the end at the hole in the wall with the side of the stick against the side of the tape around the tank. Measure the distance from where the stick touches the water heater to the hole in the wall. Add 1" to this measurement and cut 1/2" diameter conduit to this length. Repeat this for each piece of conduit.
8. Using a hammer or vise, flatten 1" at each end of the 4 pieces of conduit. Be sure to flatten both ends of each piece of conduit in the same plane.
9. Drill a hole in one end of each conduit approximately 1/2" from each end. Measure 1" from each end and bend up approximately 45 degrees. This angle will have to be corrected slightly as the work progresses. Hold the conduit on the wall with the hole in the conduit over the hole in the wall, and mark the other end at one of the holes in the plumbers tape. Mark the holes in the tape and on the tank and conduit. Take down the conduit and drill a hole at the mark for the bolt through the flattened end of the conduit. Repeat for the conduit on the other side.

Continued on other side

**Ready
To Ride It Out?**

If you strap your water heater and fit it with a flexible gas supply line, you will reduce the risk of a 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.

STRAPPING REQUIREMENTS FOR WATER HEATERS

Since the City of Los Angeles is in Seismic Zone 4, perforated iron strap (plumber's tape) will not be an acceptable method for strapping or bracing water heaters over 40 gallons. Water heaters over 40 gallons shall have *Office of the State Architect* approved straps, and shall be installed according to the manufacturer's installation instructions.

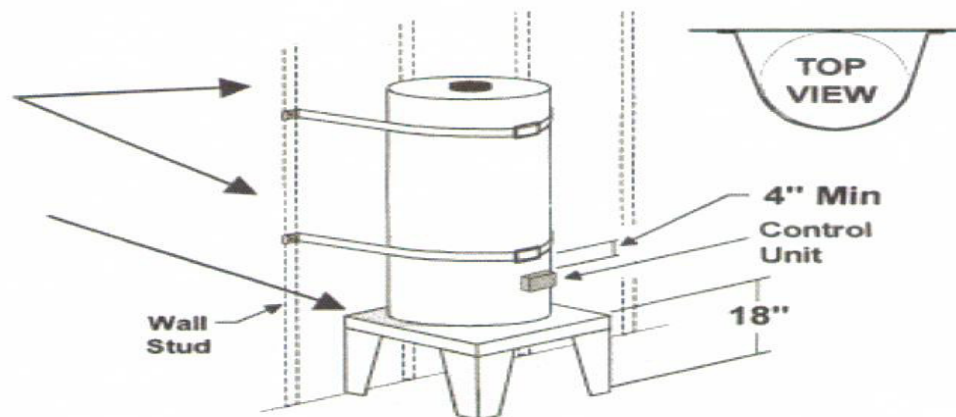
The State of California requires that all water heaters be strapped to resist motion during an earthquake. This may be accomplished by installing an over-the-counter "water heater restraint" kit which has been designed specifically for this purpose, and which has been accepted by the California Division of the State Architect (DSA). Such kits are available from plumbing hardware supplier. An Alternative method is shown below in Example 2, using heavy-duty metal strap material and hardware.

As per 1996 LAPC, Section 94.510.5, water heaters must be strapped in at least two locations, one being in the upper one-third of the unit, and the other in the lower one-third. The lower strap must be a minimum of 4" above the water heater control unit.

Example 1 (side-to-side straps).

Drill pilot holes on centerline of stud (both sides of heater), insert screws through punched holes in strap. Use washers.

Stand required in garage locations as per sec. 94.510.1 LAPC.

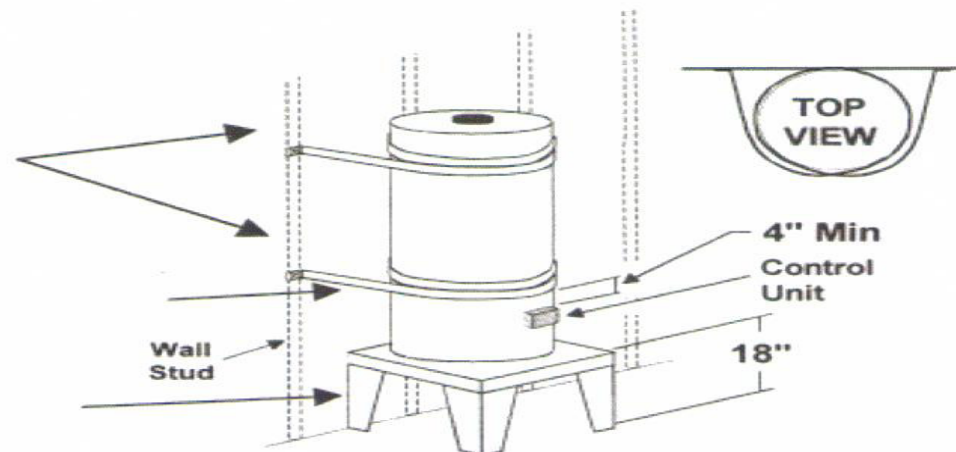


Example 2 (wrap-around straps):

Drill pilot holes on centerline of stud (both sides of heater), insert screws through punched holes in strap. Use washers.

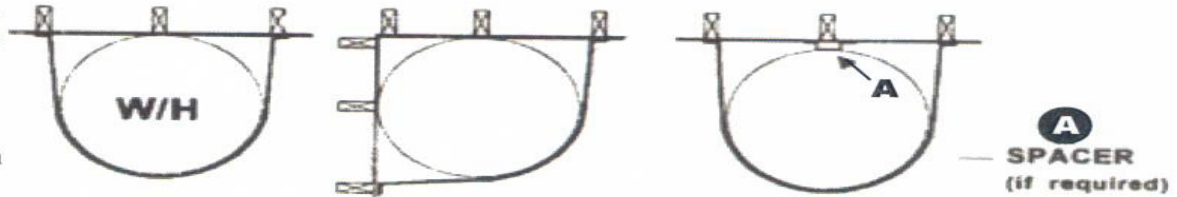
Use minimum 22 Gauge X 3/4" wide metal strap.

Stand required in garage locations as per sec. 94.510.1 LA.P.C.



STRAPPING REQUIREMENTS FOR WATER HEATERS

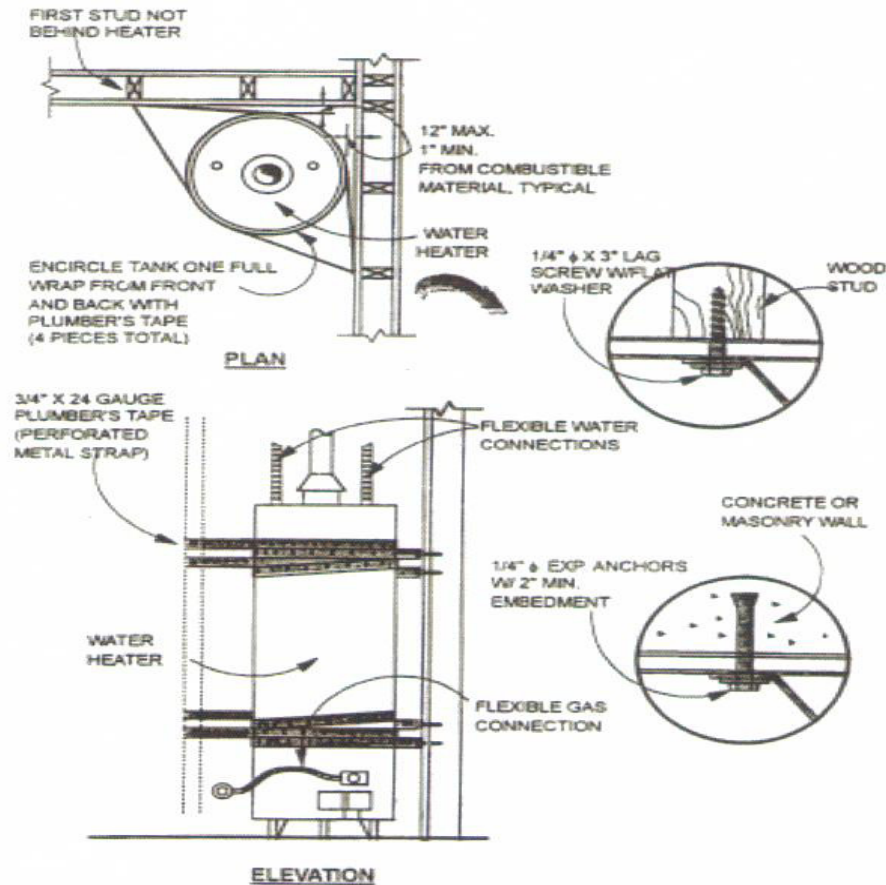
Lag screws not less than 1/4" in diameter must be used to anchor the restraints to the wall, and each lag screw must have at least 1-1/2" thread penetration into a wall stud. A large flat washer must be installed between each lag screw and the strap for reinforcement.



Water heaters generating a glow, spark or flame capable of igniting flammable vapors may be installed in a garage, provided the pilots, burner or heating elements and switches are at least eighteen inches above the floor level.

All over-the-counter kits must be installed according to the manufacturer's instruction, and must also meet the conditions above.

Illustrated are generic examples of City of Los Angeles acceptable methods for restraining a water heater. These examples are not meant to exclude other approved designs:



Tips for Apartment and Mobile Home Park Managers

You shouldn't depend on your tenants to know what to do in an emergency. It will be up to you to get them and your building ready for an earthquake.

More importantly, you will want to prepare people to be self-sufficient for at least 72 hours after an earthquake.

- ✓
 - Consult local building codes to ensure that buildings meet current seismic safety standards.
 - Develop an emergency plan before an earthquake that includes guidelines for storing water and food, obtaining first aid training, appointing floor or area leaders and conducting drills. Encourage tenants to develop their own emergency plans as well.
 - Encourage mobile home tenants to better secure their homes by installing structural support bracing systems, leaving wheels on homes, rather than removing them, and securing awnings. A list of state-certified bracing systems is available from the California Department of Housing and Community Development.
- Organize teams that will be responsible for first aid, search-and-rescue, communications and firefighting.
- Provide tenants with a white flag or a distinguishable sign to post that will indicate which of them haven't been seriously injured.
- Practice Earthquake: Duck, Cover & Hold drills in your complex or park.
- Hold meetings to discuss these plans and provide information to your tenants.

我该怎么办？

——找出建筑物的问题，并且着手解决

您

的房屋、康斗或公寓经受得住地震吗？

- 1978 年以前建造的房子不是根据现代建筑物法律建造的，因而更可能在地震中受到损害。
- 超过一层的建筑物更可能受到损害。一楼不牢固的建筑物在地震中可能倾斜或者倒塌。
- 水泥或砖头墙壁和烟囱可能倒塌，造成严重损害和伤害—1994 年的洛杉矶地震中有 60,000 个烟囱倒塌。
- 您的房屋必须有足够的间柱把木框和地基连接在一起。如果您的房屋下面有地下室或空间，在地基与地面托梁之间有墙壁支柱可以防止强烈地震对房屋的损害。
- 活动房屋容易被从地面掀起而受到损害，除非使用“engineered tie-down system”或者“earthquake-resistant bracing system” (ERBS) 把它们固定，并且这项系统必须有标签注明：“Complies with the California Administrative Code, Title 25, Chapter 2, Article 7.5.”
- 如果您拥有房屋，了解如何使房屋更加安全。如果您是租住，询问房东在使房子安全、抗震方面做了哪些工作。上网 <http://quake.abag.ca.gov/fixit/> 了解建筑工程师和政府官员的建议。



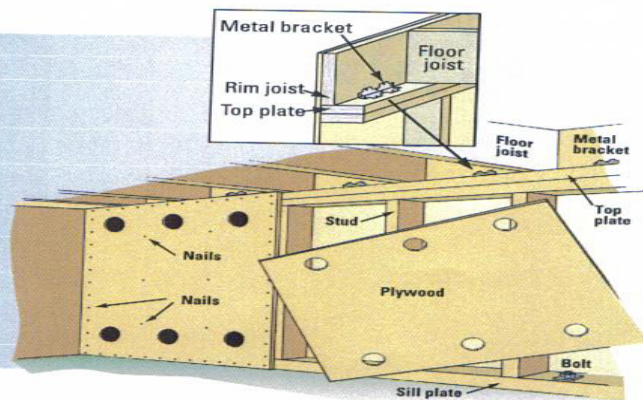
这所房子位于圣塔克鲁斯山区，在 1989 年 6.9 级的 Loma Prieta 地震中倒塌 (USGS photo)。



“Soft story”一般将第一层作为车库的建筑物，像这张照片里面的这栋，在湾区很普遍，在强烈地震中很危险 (USGS photo)。

加固槽隙空间

您的房屋必须有地基间柱、夹板和支柱，它们把地面与墙壁连接起来防震；它们的数量因房屋的大小和重量而异。但是仅加固一件，比如间柱，而不增加夹板，不会为您提供保护。



继续往第 5 步 ➡

什么东西会使一楼不牢固呢？

- 外墙有大开口部份，比如车库门和大窗户。
- 建筑物下面的车库或车位。
- 大型开放空间，里面没有支撑的墙。
- 建筑物下面的倾斜地面。

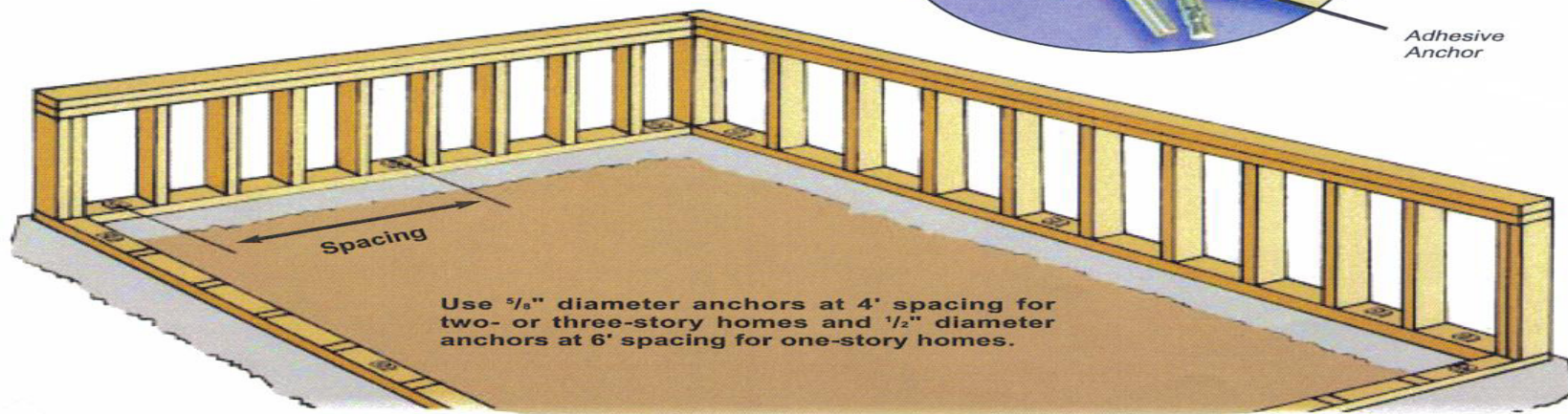
How To Bolt Your Home To Your Foundation

The first step to take if you find your home does not have anchor bolts, or has too few, is to install them! Because anchor bolts cost as little as \$2 each, the perimeter of the average size home can be bolted down by the do-it-yourselfer for a couple of hundred dollars. To install them, follow the procedure below and on the Department's Standard Plan.

1 MEASURE AND MARK

Mark the places for each bolt on the mud sill. Make the first mark between nine and twelve inches from the end of any piece of mud sill and then mark every six feet for one-story and every four feet for two- or three-story homes. Continue this pattern along all of the exterior foundation walls. Make sure you mark each end of the mud sill at stepped foundations. See page 5 for a stepped foundation.

\$200 in bolts can prevent many thousands of dollars of earthquake damage.



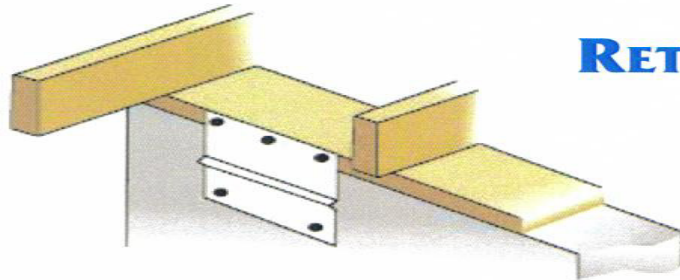
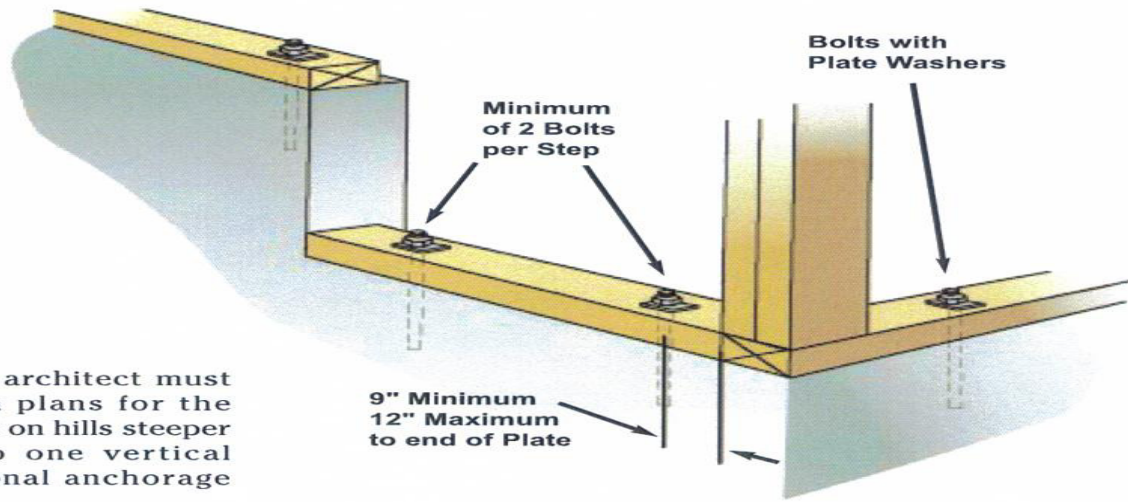
CHECKLIST

- ✓ $\frac{1}{2}$ " or $\frac{3}{8}$ " diameter anchors with nuts and square plate washers
- ✓ Rotary hammer drill with a $\frac{1}{2}$ " or $\frac{3}{8}$ " by 9" carbide tip drill bit
- ✓ Adjustable wrench
- ✓ Measuring tape
- ✓ Torque wrench
- ✓ Dust mask and goggles
- ✓ Short-handled sledge hammer for setting expansion bolts
- ✓ Respirator, air blower and nylon brush for adhesive anchors

STEPPED FOUNDATION

If your house is built on a hill or even a slight grade, you probably have some step-like offsets in your foundation. On every step, the mud sill must be bolted down at each end and along its length.

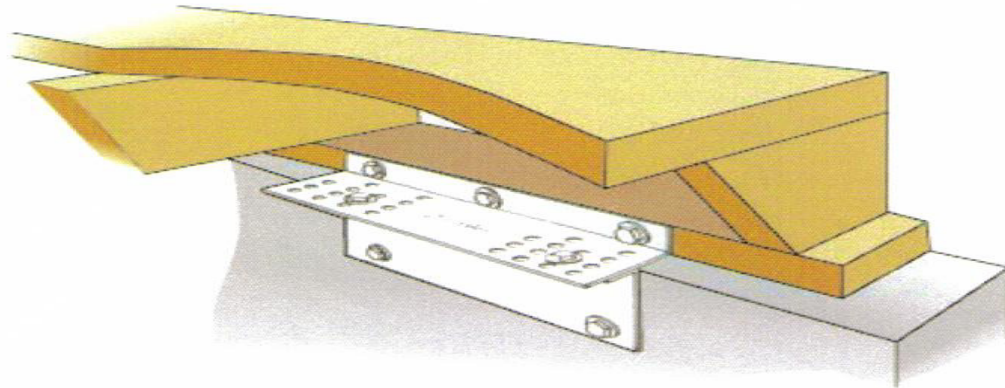
CAUTION: An engineer or architect must prepare the construction plans for the strengthening of homes built on hills steeper than three horizontal to one vertical because there are additional anchorage requirements.

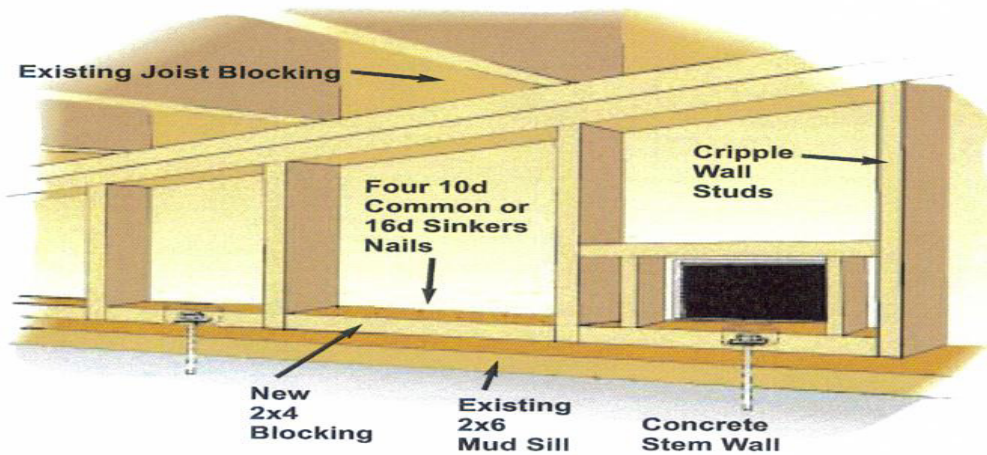


RETROFIT FOUNDATION PLATES

Some floors are supported directly on the foundation without cripple walls. This makes anchoring the mud sill difficult because of the lack of drilling space. Plates can be used to anchor your mud sill from the side. The plates attach to the side of the mud sill with wood screws and anchor to the concrete with either expansion or adhesive anchors.

The mud sill must be pre-drilled before the lag or wood screws can be installed. This helps prevent splitting of the wood. The Department's Standard Plan has more information on proper installation methods. Be sure to use the type and length of screw recommended by the plate manufacturer.

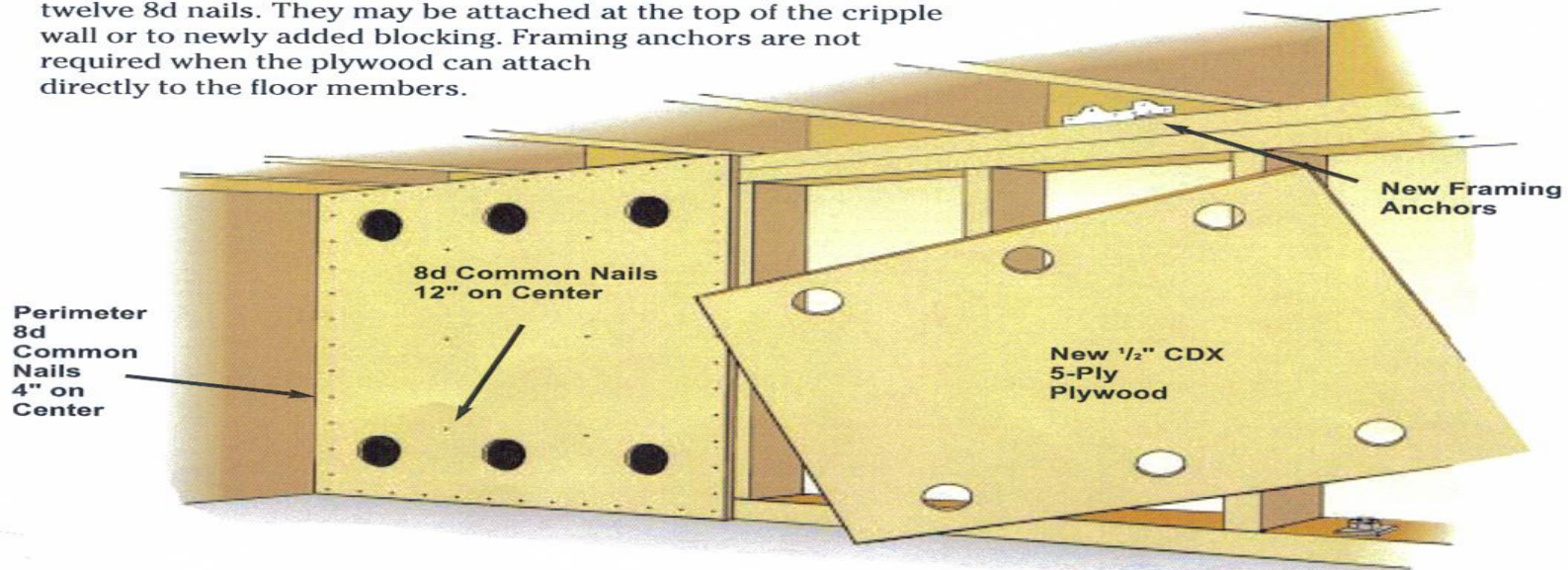




3 FRAMING ANCHORS

Framing anchors are small sheet metal connectors used to fasten wood members together. They are used to connect your floor framing to the newly strengthened foundation or cripple wall. Although the existing floor is connected with nails, these nails tend to rust and loosen over time. The nails are also driven at an angle which is not as strong as nails driven straight in the framing anchors. The addition of framing anchors helps to make sure the building is properly connected to the newly strengthened part.

Framing anchors are four-and-one-half inches long and use twelve 8d nails. They may be attached at the top of the cripple wall or to newly added blocking. Framing anchors are not required when the plywood can attach directly to the floor members.



4 NAILING

Nailing into old wood can cause splitting. Sometimes you will need to pre-drill holes when nailing the added blocking. If you blunt the end of the 10d or 16d nails before you drive them, they will be less likely to split the wood.

Plywood nailing is usually done by contractors with nail guns to speed up the work, but it can be done by hand. Sometimes small working areas make hand nailing difficult.

Most of the strength of the wall bracing comes from the nailing of the plywood. Make sure you use 8d common nails with full heads on them. Place the nails at four-inch spacing along all edges of the plywood sheets. The middle of the sheets can be nailed every twelve inches into the studs.

Organizing Your Neighborhood

Training



- Learn simple firefighting techniques.
- Learn basic search-and-rescue skills.
- Learn to assess yourself, your family and coworkers for injuries.
- Learn to assess your home and workplace for hazards or damage.
- Learn to assess your community for hazards, needs and available resources.

Contact your local police and fire departments, city/county Office of Emergency Services, American Red Cross chapter or community college to arrange for speakers and training workshops. Response teams should arrange to participate in annual earthquake exercises sponsored by local government and businesses.

Inventory Your Neighbors' Skills

As part of the community response team planning process, teams should conduct an inventory of the skills and resources available at home, work and community. You should have this information on hand

After an earthquake or other disaster, emergency response agencies could be overburdened and might not be able to get to your neighborhood immediately. You and your neighbors or coworkers may need to take the initial emergency response actions and take care of others for at least 72 hours. Past earthquakes have thrust many untrained people into positions of providing first aid and rescuing people. You need to be prepared!

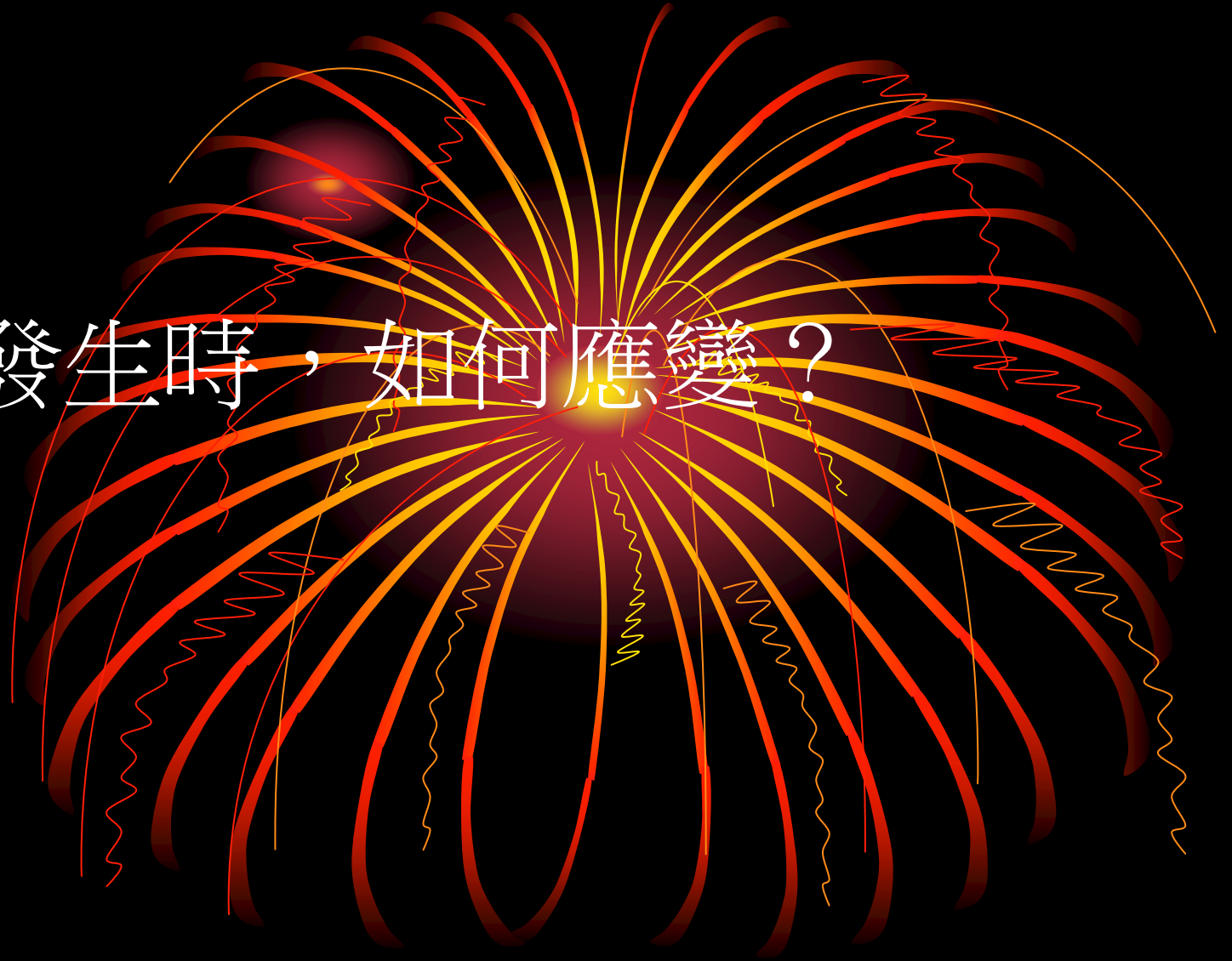
If a response team has not been organized in your neighborhood or workplace, form one now. Joining and forming a community response team can greatly improve your chances of surviving an earthquake and can improve the self-sufficiency of your neighborhood.

before an earthquake for efficient, effective responses. Identify people who:

- Have medical, electrical, child care, leadership, firefighting and survival skills.
- Own chain saws, citizens band radios, four-wheel drive vehicles, motorcycles and water purifiers.
- Are willing and able to be a runner/bicyclist to deliver messages if telephone lines are down.

Continued on other side

地震發生時，如何應變？



Earthquake: Duck, Cover & Hold

No matter where you are, know how to protect yourself and your family during an earthquake. Practice taking cover as if there were an earthquake and learn the safest places in your home and work. Practice getting out of your home and check to see if the planned exits are clear and if they can become blocked in an earthquake. Practice turning off your electricity and water. Know how to turn off the gas, but do not practice this step. In the event of an earthquake, once you turn off your gas, only your utility company should turn it back on for safety reasons.

Tips

- When in a **HIGH-RISE BUILDING**, move against an interior wall if you are not near a desk or table. Protect your head and neck with your arms. Do not use the elevators.
- When **OUTDOORS**, move to a clear area away from trees, signs, buildings, or downed electrical wires and poles.
- When on a **SIDEWALK NEAR BUILDINGS**, duck into a doorway to protect yourself from falling bricks, glass, plaster and other debris.
- When **DRIVING**, pull over to the side of the road and stop. Avoid overpasses and power lines. Stay inside your vehicle until the shaking stops.
- When in a **CROWDED STORE OR OTHER PUBLIC PLACE**, move away from display shelves containing objects that could fall. Do not rush for the exit.
- When in a **STADIUM OR THEATER**, stay in your seat, get below the level of the back of the seat and cover your head and neck with your arms.

Duck



DUCK or DROP down on 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.

**Ready
To Ride It Out?**

—在地震中保护自己

如果您是在室内…

- “蹲下、藏身和抓牢。” 发生强烈地震时，在地上蹲伏，蹲到结实的办公桌或桌子下面，坚定固守，直到地震停止。
- 不要站在门口或者冲到外面去。
- 如果您是在室外，躲开外墙和窗户、砖石饰面（比如壁炉）、高的家具、悬挂的照片或镜子。
- 如果您无法藏到办公桌或桌子底下，则靠内墙蹲下，用双臂保护头和脖子。
- 如果您在厨房烹饪，在藏身之前关掉炉子。
- 如果您在床上睡觉，固守在那里，用枕头保护头部。
- 如果您在高层建筑物中，避开窗户。不要使用电梯。
- 地震停止后，打开收音机了解情况。

不要站在门口

门口不是地震的最安全所在。现代的房屋中，门口不比房屋的其它部分更加结实，不会保护您免于落下碎片的打击。在桌子底下更加安全，所以“蹲下、藏身和抓牢。”

“蹲下、藏身和抓牢”

如果在室内时发现强烈地震，蹲到地上，在结实的办公桌或桌子下面藏身，继续抓牢，直到地震停止。



如果您是在室外…

- 离开建筑物和电线。注意落下的碎片。
- 如果您在海滨，立即移到较高的地面，避免可能发生的海啸。

如果您正在开车…

- 不要在天桥、桥梁上下或隧道中停车。
- 不要在电线、灯柱、树或招牌下面或附近停车。
- 在路边停车，上好刹车和手刹。
- 留在车子里，直到地震结束。



2003年12月22日 San Simeon 地震之后 Paso Robles 市中心的倒塌屋顶。两个人从建筑物向外跑时被掉下的碎片砸死。(USGS photo)

EARTHQUAKE TIPS:

DURING AN EARTHQUAKE

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 and ceiling tiles. Stay under cover until the shaking stops. Hold onto your cover. 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 alarm or sprinkler systems come on. Stay indoors, glass windows can dislodge during the quake and sail for hundreds of feet.
- + If you're **OUTDOORS**, move to a clear area, away from trees, signs, buildings, or 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. Avoid rushing toward exits.

地震中的救命三角空間：

▲ 當建築物倒下時，每個只「蹲下和掩護」的人都幾乎全被壓死了。而那些躲到物體，如桌子，或汽車下躲避的人也總是受到了重傷或死亡。

▲ 貓，狗和小孩子在遇到危險的時候，會自然地蜷縮起身體。地震時，你也應這麼做。這是一種安全的本能。而你在一個很小的空間裡便可做到。靠近一個物體，一個沙發，或一個大物體，結果它僅受到輕微的擠壓。

▲ 在地震中，木質建築物最牢固。木頭具有彈性，並且與地震的力量一起移動。如果木質建築物倒塌了，會留出很大的生存空間，而且，木質材料密度最小，重量最小。磚塊材料則會破碎成一塊塊更小的磚。磚塊會造成人員受傷，但是，被磚塊壓傷的人遠比被水泥壓傷的人數要少得多。

▲ 如晚上發生地震，而你正在床上，你只要簡單地滾下床。床的周圍便是一個安全的空間。

▲ 如地震發生，你正在看電視，不能迅速地從門或窗口逃離，那就在靠近沙發，或椅子的旁邊躺下，然後蜷縮起來。

▲ 大樓倒塌時，被發現很多人在門口死亡。這是怎麼回事？如你站在門框下，當門框向前或向後倒下時，你會被頭頂上的屋頂砸傷。如門框向側面倒下，你會被壓在當中！

▲ 千萬不要走樓梯，因樓梯與建築物搖晃頻率不同，樓梯和大樓的結構物會不斷發生個別碰撞。人在樓梯上時，會被樓梯的台階割斷，會造成很恐怖的毀傷！就算樓梯沒有倒塌，也要遠離樓梯，哪怕不是因為地震而斷裂，還會因為承受過多的人群而坍塌。

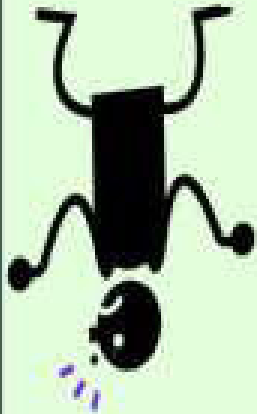
▲ 儘量靠近建築物的外牆或離開建築物。靠近牆的外側遠比內側要好。你越靠近建築物的中心，你的逃生路徑被阻擋的可能性就越大。

▲ 地震時，在車內的人會被路邊墜落的物體砸傷。San Francisco 地震無辜受害者都是呆在車內。其實，他們可簡單地離開車輛，靠近車輛坐下，或躺在車邊就可以了。所有被壓垮的車輛旁邊都有一個 3 英尺高的空間，除非車輛是被物體垂直落下。

▲ 在報社或辦公室裡堆有很多報紙的地方，通常會好些，因為報紙不受擠壓。你在紙堆旁可找到一個比較大的空間。

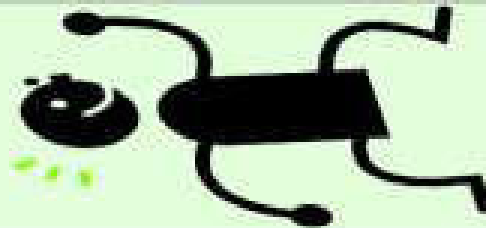
衣櫃

書桌

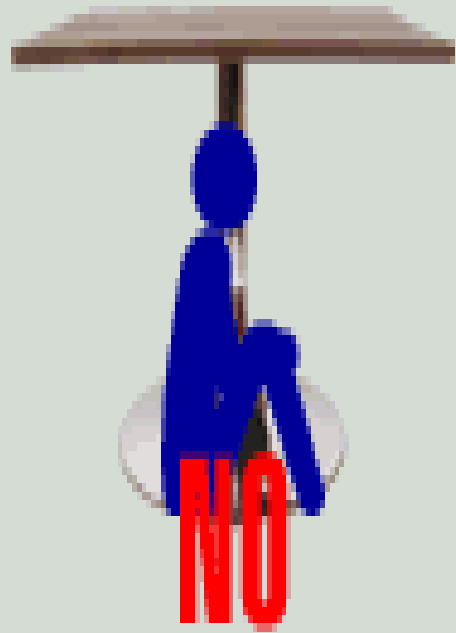


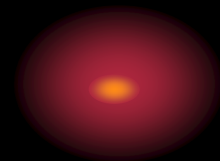
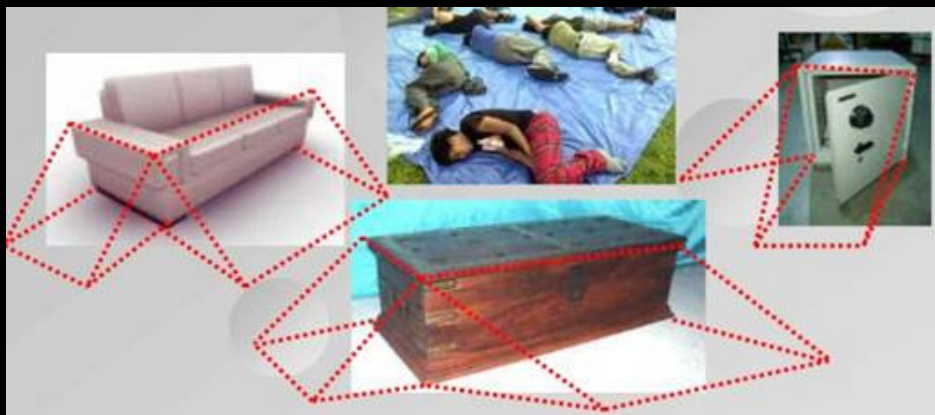
床舖

床頭櫃



沙發









樓層板

完好的傢俱

空間

橫樑

樓層板



橫樑

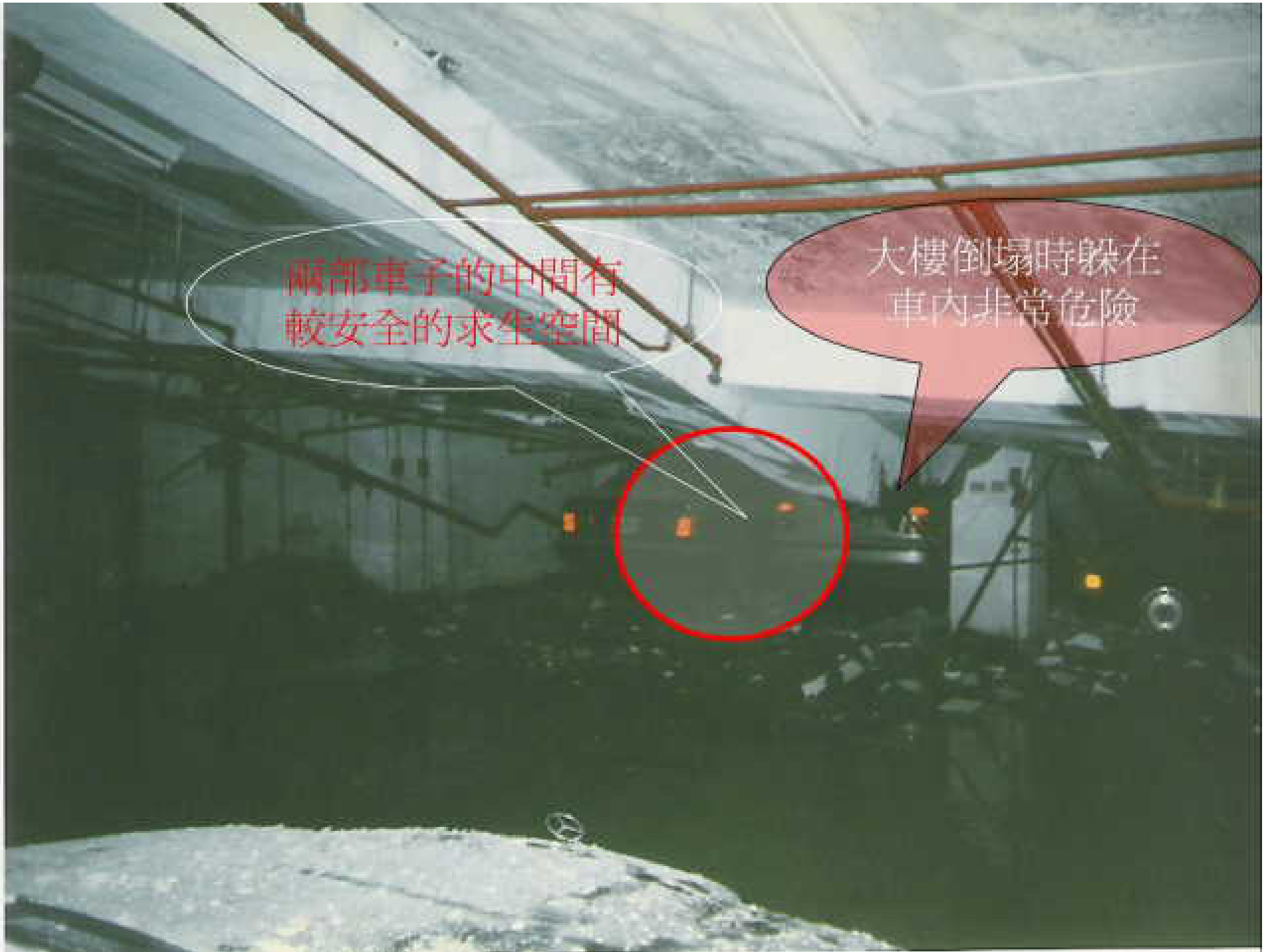
橫樑下最危險

彈簧床

床鋪與樓層板中間有存活的空間



躲在車內降低逃生的
機會！危險！



兩部車子的中間有較安全的求生空間

大樓倒塌時躲在車內非常危險

地震時以低姿勢躲在
兩車的中間或車子旁
邊會有存活的空間



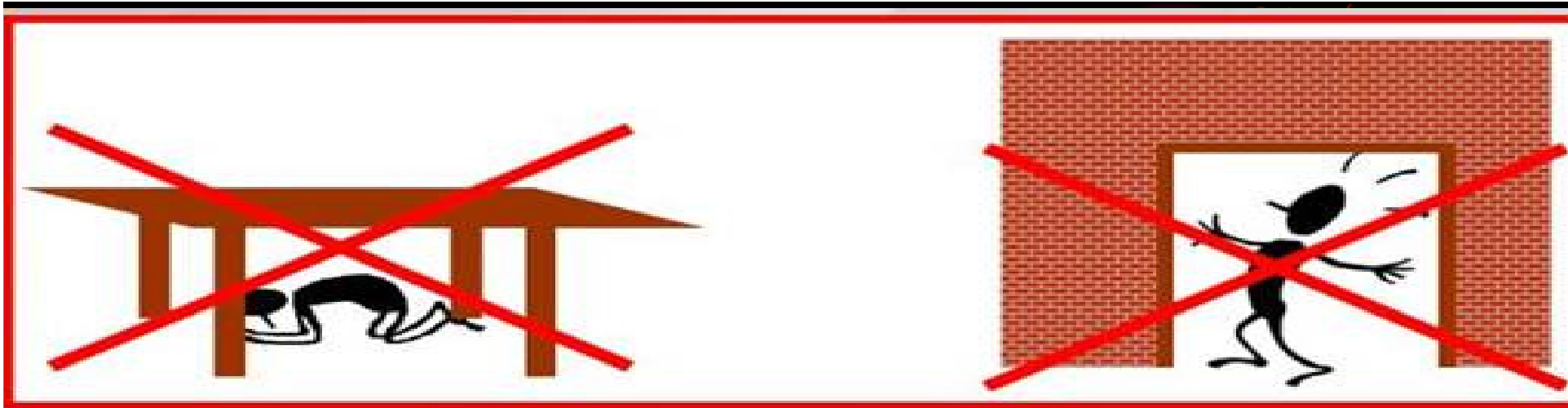


求生的空間

裕山建

水泥紅磚 TEL

求生的空間



FAMILY FIRE SAFETY PLAN

A set of procedures for your home is a good thing to have when dealing with an emergency. As a family, discuss various emergencies and develop plans for how the family members are to deal with them. Survival rates increase in homes with emergency plans. A home evacuation plan should contain at least the following;

- Procedures for actions taken during an emergency
- An evacuation plan showing alternate escape routes
- An assembly point.

1. Draw a floor plan of your home. Include the following:

- a. A primary and secondary exit route from each room. The primary route should be directly to the outside such as through the window.
- b. The location of any fire equipment
- c. Mark the area where everyone is to meet once they are outside of the house.
- d. Mark the location of utility shut-off switches and valves.

2. Physically check the exit routes to be sure that anyone, who will need to use them, can use them. This will clarify the need for things like escape ladders, ramps, security grill release mechanisms for protected doors and windows, and the availability of keys for double key locks.

3. Go over the plan with the entire family.

- a. Make sure that everyone understands that they are not to go back into the house or apartment once they are out. Go to the meeting area and wait.
- b. Discuss how to feel the door if it is closed and not to open it if it is hot.
- c. Talk about the danger of smoke and heat and the importance of staying low.
- d. Discuss what to do in the event that they become trapped.
- e. Be sure that everyone knows what the smoke detector sounds like.

The first thing to consider when formulating a plan is to have some method of being made aware of the danger. Smoke detectors are simple, automatic devices to provide that notification. You may also consider providing each bedroom with a whistle of some sort as a manual method of notifying the family to get out.

Sleeping with the doors closed provides barriers between those you love and night time fire in your home. The average household door will last approximately three to five minutes with a fully involved room. Closed doors have saved many lives by giving people the time to escape. Sometimes, people with small children or infants think that leaving the door open at night will enable them to hear in case their children cry or call out. In a fire, the open door may allow toxic gases to enter the rooms and render both the parents and the children unconscious before any of them are aware of the problem. Inexpensive devices not only allow monitoring other rooms, but in some cases, communicating with them.

At the sound of the alarm or if you suspect that there is a fire in your home, get out! If you reach a closed door, feel it before opening. If it is hot, don't open it. *Try to use a direct exit to the outside.* If the door is cool to the touch, open it cautiously, keeping the door between you and the opening. Stay low and be prepared to close it quickly if heat or smoke is present. In the event that you must move through smoke, stay low, on hands and knees crawling quickly to the nearest exit. If you must break a window because it won't open, you can use a heavy object. Use it to punch out all of the glass starting from the top. Scrape the bottom edge of the window to remove fragments that may be sticking up and could injure you. Placing a blanket, pillow or article of clothing on the sill before you climb out provides additional protection.

Evacuation from a two-story home or a second floor apartment can be a little more difficult. Consider is the purchase of an escape ladder. They are all designed to attach quickly to a windowsill (available for three-story buildings).

It is important that every member of the family practice with the ladder. In a two-story building, you must go out the window without a ladder, lower yourself out of the window feet first, facing the building. Hang down from the windowsill at arm's length, let go, and drop to the ground. In this position in your average residence, an adult's feet are within six or seven feet off the ground.



FIRE SAFETY EQUIPMENT



IF YOU ARE TRAPPED IN A ROOM OR APARTMENT

There may be a situation where there is no way to get out. It may be necessary to sit tight and wait for the Fire Department to put the fire out. Close as many doors between you and the fire as possible. Stuff the cracks of the door, and any vents that are allowing smoke into the room. If available, add additional materials such as a mattress or a table over the door and prop them in place with other pieces of furniture. Make your location known. If there is a phone available and it works, call for help. If there is no phone, or it doesn't work, yell, hang a sheet out a window to get someone's attention. If you need to open a window do so, but avoid breaking the window if possible. The need may arise to close the window if smoke from outside is coming in.

SMOKE DETECTORS

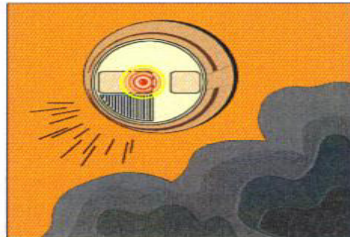
Tests have shown that smoke detectors of either the ionization or photoelectric type should provide adequate warning to the occupants for most residential fires. Ionization detectors respond slightly faster to open, flaming fires than the photoelectric type, but the photoelectric detectors respond faster to smoldering fires with little or no visible flame.

Detectors should be located on the ceiling at least four inches from the wall, or on the wall four to twelve inches from the ceiling to the top of the detector. In the City of Los Angeles, detectors are required in each sleeping room and the areas giving access to them.

Smoke detectors in your home can be of the battery-operated type or wired into your house electrical system, otherwise known as "hard wired". There are also dual function detectors that are hard wired but have a back-up battery in case of power failure. Choosing between photoelectric or ionization type is up to you as both types meet the accepted safety standards.

If you have battery operated smoke detectors you must maintain them, and make sure that the batteries are

replaced regularly. Do not remove the batteries because of nuisance alarms such as steam from showers etc. These problems should be dealt with in another manner such as moving the detector or simply closing doors. Studies have shown that in residential fires causing death, 60% of those residences did not have smoke detectors, had disconnected the smoke detectors, or had dead or missing batteries. Consider changing the batteries every six months. This would also be a good time to vacuum the detector and remove as much dust as possible. This will help to insure that it will work properly when you need it. If you have hardwired detectors, consider purchasing a couple of battery type and mounting them in strategic places as a back-up system.

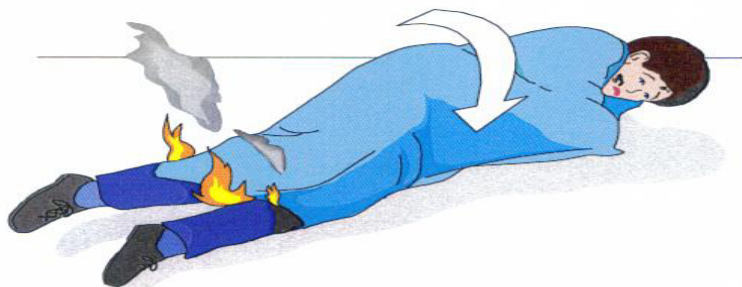


Some special considerations for the elderly or the handicapped may need to be addressed in your home. In general, households with elderly or handicapped occupants need a higher level of protection in order to provide additional escape time. As an example, a supervised alarm system where the alarm is monitored by an alarm company that would call the Fire Department, or in the case of someone with a hearing loss, detectors that activate lights, bed shakers or fans.

SPECIFIC HAZARDS - CON'T.

CLOTHING FIRES

When a person's clothing is on fire, death or serious injury is only seconds away. Because tissue damage begins immediately, upon contact with flames it is essential to have a response planned which can be used in as wide a range of situations as possible, and still be effective.



The **"Stop, Drop and Roll"** procedure that is taught in the schools is a good response to most situations. The intent here is not to discourage the use of additional tools and methods to extinguish a person's clothing, but to give you a place to start.

The purpose of the **"Stop"** is to keep you from running. Running provides more air moving through the clothing and can increase the amount and speed the fire progresses.

The purpose of the **"Drop"** is to get you into a horizontal position. Simply being in a vertical position will cause the fire to rapidly move up your body toward your face. In tests conducted by the National Fire Protection Agency on a woman's cotton dress, it was shown that a fire might travel from the hem to the collar in as little as ten seconds. By getting down in the horizontal position, you've changed the direction of the fire. You have stopped the fire's progress. It is no longer moving up your body toward your face. The most vulnerable portion of your body to heat is your respiratory tract. A single inhalation of flame into the delicate tissue of the lungs can be fatal.

The **"Rolling"** may smother the fire between your body and the floor surface, but even when this is not completely successful, it often reduces the amount of flame and therefore also slows the fire. If the fire does

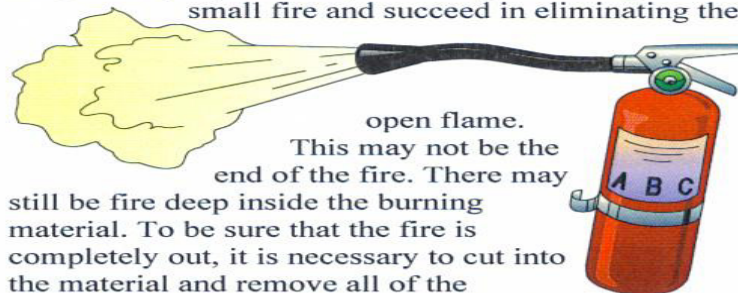
not go out, grab whatever is handy to help cover and extinguish the fire, or try to remove the burning clothing.

UPHOLSTERY FIRES

An upholstery fire poses two main dangers. The materials used to make furniture and mattresses allow fire to penetrate deeply and smolder for a long time. The problems most common to this type of fire are toxic gases associated with slowly burning materials, and difficulty in extinguishing.

Smoke inhalation is the cause of most mattress and upholstery fatalities. One of the gases that effects people early in the fire is carbon monoxide. Since hemoglobin and carbon monoxide are attracted about 200 times more readily than oxygen, the organ most susceptible to a shortage of oxygen is the brain. You may very quickly become disoriented and soon unconscious. One percent of carbon monoxide in your system is considered to be fatal.

Rekindle is another problem with fires in upholstery. Very often people will try to attempt to extinguish a small fire and succeed in eliminating the



open flame. This may not be the end of the fire. There may still be fire deep inside the burning material. To be sure that the fire is completely out, it is necessary to cut into the material and remove all of the charred smoldering and discolored stuffing. If even a small piece is missed, the fire can grow again. This is an extremely dangerous situation, particularly at night, because the smell of the first fire hides the smell of the second one. The proper thing to do is to call the Fire Department to check it out. In any case, the burnt upholstery should never be left inside.

Home fire safety is often a matter of common sense, and a little forethought. Preparation and planning is the key to home fire safety.

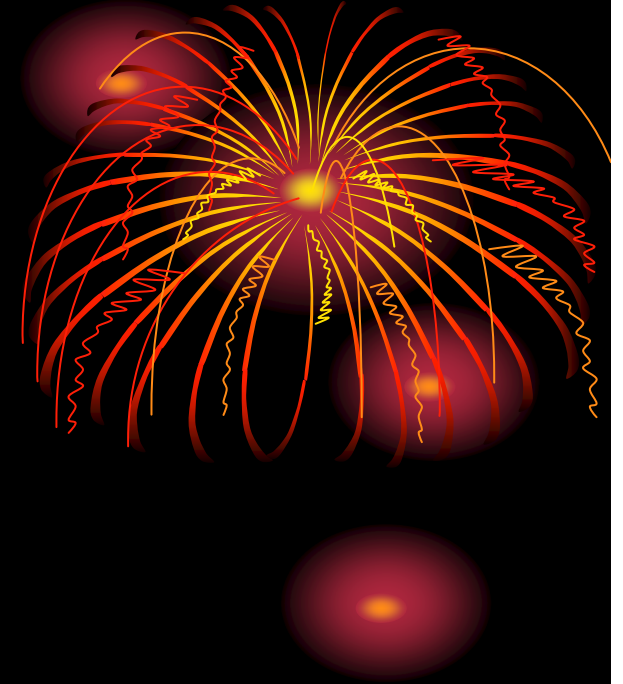
火場之保命方法

臨危不亂~記得關閉門窗

在火場應變技巧中，一個非常簡單卻非常實用之保命方法—關門，「關門」的動作可以有效阻隔火勢，主要讓火燃燒時之氧氣不足自然而然就燒不起來。

如果在室內逃不出去，將門關起來，可以將火勢阻隔在外，爭取更多的逃生時間，

如果起火點在室內，逃離時將門窗關起來，可以將火勢侷限於室內，減緩火勢的延燒速度，方便其他房間或樓層的人逃生，隨手「關門」，這個基本的火場逃生觀念，可以自救也可以救人。



消防觀念（一）當火災發生時，用濕毛巾掩住口鼻，請問毛巾弄濕了要不要擰乾？？

消防觀念（二）如果沒有水可以弄濕毛巾，需不需要當場灑泡尿或吐口水弄濕毛巾？

消防觀念（三）如果房間外都是煙和火而逃不出去的話，這時房間內如果有馬桶，可以把臉埋入馬桶吸取僅存的空氣（意思就是告誡大家平常要多洗馬桶）。如果沒有馬桶....通常衣櫥因為都是關著的，所以衣櫥內也有剩餘的空氣，可以躲在衣櫥內，不管躲在哪裡都要用硬物敲擊牆壁或地面，讓救生員可以找到你...

消防觀念（四）火場逃生採低姿勢爬行逃出，但如果是在公共場所遇到火災就不要再爬了，因為可能沒被燒死先被踩死...當然如果可以的話，沿著牆壁採低姿勢快速逃出最好.

消防觀念（五）在火場內要不要睜開眼睛？當然不要，不要相信電視電影的火災現場，好像紅白藍綠什麼顏色都有，其實根本是漆黑一片，有沒有張開眼睛都沒用，而且如果眼睛長時間，在高溫煙霧下會被灼傷而導致失明...，此時手盡量向前伸，以手代眼.

消防觀念（六）逃生時需不需要用塑膠袋裝空氣套在頭上？如果只是火災初期溫度不高時可以，如果已是火災中後期，四周溫度很高就千萬不要，因為高溫會使塑膠袋溶解粘在皮膚上，導致傷害.

消防觀念（七）愛美的女士遇到火災第一件事是什麼？脫掉絲襪，因為絲襪和塑膠袋的"效果"一樣.

消防觀念（八）現在有一種沒有保存期限的滅火器，而且可以多次使用，這種滅火器所用的材料是"海龍"，可以噴在衣物上逃出火場，但不要直接噴在皮膚上否則可能會凍傷，也可以噴在棉被上披著棉被逃出

消防觀念（九）家裡的滅火器放在那裡？

我该怎么办？

一地震后，检查受伤和损害情况

地震停止后，立即检查您家人的受伤情况和房屋的损害情况：

检查受伤情况

- 在帮助别人之前，先检查自己是否严重受伤。保护您的口鼻眼，避免灰尘侵袭。
- 如果有人出血，直接压住伤口。如果有的话，使用干净的纱布或布。
- 如果有人停止呼吸，施用人工呼吸。
- 如果有人停止脉搏，开始 CPR (cardiopulmonary resuscitation)。
- 不要移动严重受伤的人，以免他们的伤情加重。
- 用毯子或衣物覆盖受伤的人，让他们保暖。

检查房屋的危险情况

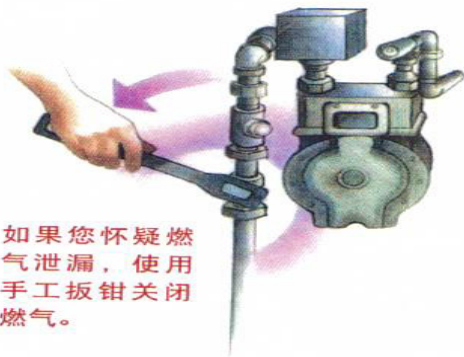
- **火灾**—如果可能，扑灭房屋的小火。打电话求救，但是不要等待消防队。
- **燃气泄漏**—如果您看到管道破裂、闻到燃气味道、或者听到燃气泄漏的声音，认为燃气泄漏，则关掉燃气。使用燃气关闭扳钳按照逆时针方向关闭主燃气阀门。不要自己打开燃气—等待燃气公司！
- **损坏的电线**—如果您的电线受到损坏，关掉主闸。在损坏被修理之前不要打开电源。

- **掉下来的大电缆**—如果您看到街道中有电线掉下来，假设电线危险，离开。千万不要接触街道上的电线或者其它与电线接触的物品！
- **掉落物品**—打开壁橱和食橱门时要特别留意架子上的东西可能掉下。
- **溅出物**—如果物品溅出，要特别注意；如果您不确定安全性，就离开您的房屋！您可以清理药品或其它非致命物品。
- **损坏的砖石建筑**—远离砖头烟囱和墙壁。它们可能不稳定，会在大震之后的小余震中倒塌。不要使用烟囱已经损坏的壁炉，因为它可能给您家带来火灾！

如果您的房屋受到严重损坏...

如果您的房屋不安全，或者有火灾的危险，立即离开。然而，不要仅仅因为没有电或水，或者房屋有一定的损坏而离家。房屋仍然可以给您家庭提供庇护。

如果您撤离，告诉邻居和您家人指定的联络人您去哪里。



如果您怀疑燃气泄漏，使用手工扳钳关闭燃气。

预期余震，采取保护行动，蹲下、藏身和抓牢。

带什么东西去庇护所

- 个人供应品 (参阅第3步，第19页)。
- 水和食物。
- 毯子、枕头、气垫床或睡垫。
- 一天用的衣服和一件夹克。
- 毛巾和洗涤布。
- 尿布、婴儿奶粉、食物、以及婴儿的其它物品。
- 一些全家福照片，或者孩子的洋娃娃、玩具和游戏。
- 个人身份证、家庭和健康保险文件副本。
- 孩子的书籍和游戏。

不要携带

- 庇护所不准带宠物。只准许帮助残障人士的动物。带这些动物的食物。如果您把宠物留在安全的地方，确定它们有食物和水。
- 可能丢失或被偷盗的贵重物品。

打开收音机

收听地震方面的消息，遵循播报的安全建议。

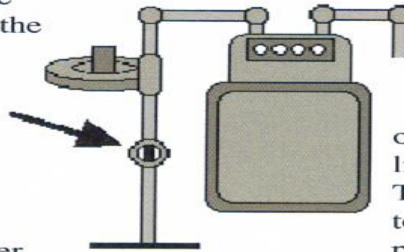
HOW TO SHUT OFF UTILITIES

GAS SHUT-OFF

Locate main gas shut-off (usually outside house) at the gas meter. The valve is usually on a pipe coming out of the ground, going into the gas meter. Turn the valve crosswise to the pipe (see the large example on the "Utilities" page under "Before the Earthquake". All the pilot lights in and around your home (stove, furnace, clothes dryer, swimming pool/spa heater, water heater, etc.) will go out when you turn the valve off. You will need to have the gas company, or another qualified individual (plumber, contractor, or trained homeowner), relight every pilot when turning the gas back on. **Forgetting to relight all the pilot lights could result in a dangerous gas buildup in your home.** Remember, if you don't smell gas or have severe damage to your home you should not have to shut the gas off. It's your decision.

Clear the area around the main gas shut-off valve for quick and easy access in case of emergency.

A wrench (or specialty tool), for turning off the gas, should be attached to a pipe next to the shut-off valve or in another easily accessible location.



You may want to paint the shut-off valve with white or fluorescent paint so that it can be located easily in an emergency.

If you are concerned about your ability to turn off the main gas shut-off valve or are unsure if it is in proper working order (indication of rust, etc.) or do not know how to relight your pilot lights, contact your local gas company. They can send a service representative to your house to show you the proper procedure and check the valve and pilot lights to be sure they operate properly.

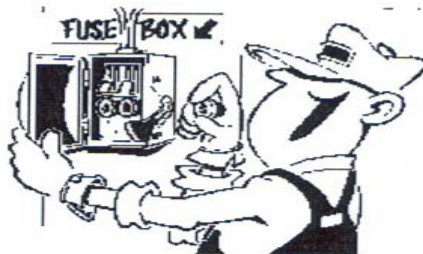
AUTOMATIC GAS SHUT-OFF VALVES

Automatic gas shut-off valves are an excellent way to ensure that your gas is shut off in the case of a major earthquake. They are recommended by the Fire Department. In many cities in California they are required to be installed when you sell your home or do more than a \$10,000 remodel. With an automatic valve your gas will be off even if you aren't home at the time. Contact your local gas company for more information and installation.

ELECTRICAL SHUT-OFF

First locate all of your home's electrical panels. Note: There may be more than one.

Your house may be equipped with fuses or circuit breakers. If your house has fuses, you will find a knife switch handle or pullout fuse that should be marked "MAIN." If your house has circuit breakers, you may need to open the metal door of the breaker box to reveal the circuit breakers (never remove the metal cover). The main circuit breaker should be clearly marked showing on and off positions.



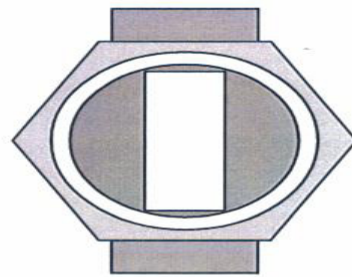
Remove all the small fuses or turn off all the small breakers first, then shut off the "main." If you have any sub-panels adjacent to the main fuse or breaker panel or in other parts of the house, in an emergency be safe and shut them off too. Shorts can sometimes develop that cause a circuit to bypass the breaker or fuse.

Note: All responsible family members should be shown how to turn off utilities in case of emergency. They need to know what the utilities

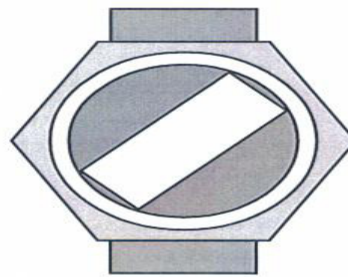
look like in both on and off positions.

UTILITIES

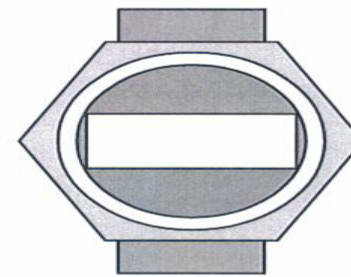
There is no cost involved in teaching everyone in your home about how & when to turn off the gas, electricity, and water after an earthquake. This can be as simple as clearly marking where the shut-off valves are, and posting instructions close by. Below are some common examples of shut-off valves. Even if you have something different, like a propane tank, the shut-off will be similar. If you cannot find the shut-off valves, or you do not understand the valve system, call your local utility company or tank provider. **Remember, consider shutting off utilities if you can smell gas, smell or see fire, or see damage to, from, or near the utility lines. It is wise to shut off utilities if you are going to leave the home for extended periods of time. This is because of the probability of aftershock.**



Gas ON



Test Gas Valve
TURN 1/8 TURN



Gas OFF

BEFORE AN EARTHQUAKE...

- **TEST YOUR GAS VALVE:** Locate and identify your gas meter and main shut-off valve with those persons you believe could and should know how to shut off your gas if necessary. Identify the master shut-off valve. Paint the valve bright red. Note: Caution, there may be more than one shut-off on your meter.
- Use the illustrations of gas meter (pg. 18) and main shut-off valves (above) to help you identify yours.
- Using a 12" adjustable, or other appropriate wrench, turn the main valve 1/8 of a turn only to the right or left. *(This movement may be difficult at first)*
- **CAUTION:** Be careful, do not to turn any valve MORE than 1/8 turn to the right or left when testing. (If you do, pilot lights will very likely go out and it will require a trained person to relight them.)
- After you have moved that valve to ensure that it works, **KEEP THE WRENCH AT THE METER**, use plastic "zip ties" or straps to secure it to your meter.
- If you use an adjustable wrench be sure to store it pre-fit to your valve. That way in case it rusts or corrodes it will still fit. Heavy oil or grease applied to the moving parts of the wrench, before you secure it, will help keep it functional and ready for use. *Do not buy any plastic or fiberglass gas wrenches. They become brittle with time.*

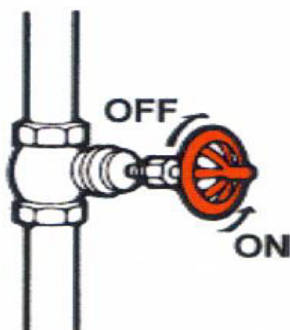
IF THE MAIN VALVE WILL NOT TURN 1/8 TURN, THEN CALL THE GAS COMPANY IMMEDIATELY AND THEY WILL COME OUT AND FIX OR REPLACE IT

HOW TO SHUT OFF UTILITIES *CON'T.*

WATER SHUT OFF

Locate the main water service pipe into your house (probably in the front near ground level). You will see a gate valve on the pipe. If you know you have leaks after an earthquake, you can shut off all water in your house with this valve. You may wish to paint the valve red so it is easy to find in an emergency.

You can shut off all water to your property by finding the water meter box (usually at the street or sidewalk). Open



the cover with a long screwdriver or specialty tool. If this box is inaccessible or you cannot find it, call your local water department. Be sure to identify this box and the water valve inside before the need to use them arises.

Inside the water meter box you will see a valve that is similar to the valve on your gas meter. Turn it just the same as your gas valve.

AFTER THE EARTHQUAKE

TURN OFF YOUR GAS AT THE GAS METER SHUT-OFF VALVE. . . .

- If you smell, hear, or even suspect gas is escaping in your damaged or undamaged building(s).
- If your gas water heater or any other gas appliance has been knocked over and/or pulled free from its wall connection.
- If your building has suffered extensive damage, such as large cracks in the walls or in the concrete slab floors, etc. AND you suspect the gas lines may have been damaged.
- If you smell smoke and/or see or suspect fire

NOTE: If you have none of the above you are probably OK leaving your utilities on.

NOTE: Many gas companies have training programs to teach you how to turn your gas back on. Contact your local company for information.

Remember: Do not use candles or open flame lanterns during periods of an earthquake!

WARNING . . . If you smell gas don't turn on or off any switches. Don't use any open flame to check for leaks. Don't turn on any battery operated flashlights, unless they are a safety/waterproof light. Chemical light sticks are a safe source of light in the event of gas leak.

WARNING . . . It is very dangerous and therefore not recommended that you go searching for gas leaks inside any damaged building.

BE AWARE: After an earthquake, aftershocks will continue to occur, possibly causing additional damage (or even first damage) to your building(s).

REMEMBER: Do not turn the gas valve back on after an earthquake, unless a qualified person has checked extensively for gas leaks.

REMEMBER: A qualified person (plumber, contractor, or trained homeowner) or gas company employee will have to relight all pilot lights.





DISASTER SUPPLY CHECKLIST

Important Family Documents

- Identification: Driver's licenses, birth certificates, passports
- Medical information, insurance, loan documents

First Aid Kit

- Bandages, gauze, wipes, rubber gloves,
- Rubbing alcohol and hydrogen peroxide
- Aspirin

Tools

- Battery-operated AM/FM radio
- Flashlight, Extra batteries
- Wrench for turning off gas

Supplies

- Cash (at least \$50-100 in small bills), an extra ATM and credit card
- At least a seven-day supply of prescribed medicines, and if possible, copies of prescriptions
- Soap, toilet paper and extra plastic bags
- One complete change of clothing and footwear per person
- Blankets or sleeping bags for each person
- Extra set of keys
- Feminine products

Water and Food

- Water – 1 gallon / person / day (a week's supply of water is preferable; label with expiration date)
- Non-perishable food that does not require refrigeration, preparation/cooking, and little or no water
- Extra food, if you are required to have food with your medication

Special Needs and Medical Concerns

If you have a disability or have limited mobility, make sure your emergency kit includes items specific to your needs and have a list of the following:

- Medical providers
- Medications and list of when you need to take them
- Adaptive equipment and/or body system support equipment you use
- Instructions on how to operate any special equipment

For Baby / Children

- Formula, Bottles
- Diapers
- Medications

For Pets

- Identification tags
- Extra food
- Clean-up supplies

For a listing of additional items visit www.lacity.org/emd



EMERGENCY KITS



LED Flashlight

\$15

There are 2 main things that go wrong with flashlights; the batteries or the bulbs break. The Illuminator Wind-up solves both problems by combining wind-up technology with the reliability or unbreakable white LEDs. Wind it up for one minute, and you will have up to an hour of

ITEM#1301



FOOD WITH FIVE YEAR SHELF LIFE

1200 calorie bar \$5.50 each
ITEM 1301 A

3600 calorie bar \$7.00 each
ITEM 1301 B

Emergency Drinking Water
35¢ each ITEM 1301 C



Battery-Free Wind up Flashlight FM Radio
Environment Friendly, Never uses batteries
Perfect for Camping, Road Emergencies,
Power Blackouts.

\$20

ITEM# 130F



Small Survival Kit

\$25.00

Contains the necessary first aid kit in a durable backpack for kids or daycare centers, Contains Emergency blanket, 3 water pouches (five year shelf life) 1 single serving food (five year shelf life) , 3 Dust Mask, 1 Metal Whistle, 1 Adhesive Tape, 3 Sani-Wipes, 1 Scissor, 2 Aspirins, 4 4X4 Gauzes, 1 Glow Stick,

ITEM#1302



Large Survival Kit

\$35.00

Contains the necessary first aid kit in a durable back backpack. Contains Emergency blanket, 9 water pouch (five year shelf life) 2400 cal food bar for 3/days food, (five year shelf life) 2 Dust Mask, 1 Medal Whistle, 1 Adhesive Tape, 6 Sani Wipes, 1 Scissor, 2 Glow Sticks, 10 band-aids 4 Aspirins, 2 Ammonia Inhalants, 1 Ice Pack, 1 pair of Work Gloves, 1 Flashlight & Batteries, 1 Duct Tape, 4 Alcohol Wipes, 3 Gauze Pad 9 wet wipes towelette
Emergency Preparedness Checklist

ITEM#1303



Deluxe Shoulder Bag

\$45.00 optional back pack with wheels for an additional \$8.00

Contains the necessary first aid kit in a durable backpack. Contains Emergency blanket, 11 water pouches (five year shelf life) 2400 cal food bar for 3/days food, (five year shelf life) 3 Dust Mask, 1 Metal Whistle, 1 Adhesive Tape, Sani-Wipes, Scissor, 4 Glow Sticks, 12 band-aids ,6 Aspirins, 2 Ammonia Inhalants, 1 Ice Pack, a pair of Work Gloves, 1 Flashlight & Batteries, 1 Duct Tape, 6 Alcohol Wipes, 4 Gauze, 1 first aid to go kit, 4 Antibiotic Ointment Pads, 1 Tweezer, 1 Hand Radio & batteries
Emergency Preparedness Checklist

ITEM#1304



Pet Survival Kit

\$25.00

Contains the necessary first aid kit for your pet in a durable back pack: 9 water pouches (five year shelf life) 2 clear plastic container's for your pets food and water, 1 Tweezer, 4 pair of latex gloves, Bandages, Adhesive, 2 razors; 1 scissor, 1 medical tape, 1 Owner information sheet and medical data about your pet. Body leash, 1 white handkerchief (this is used for as a name tag for your pet)



ITEM#1305

提前 10 分鐘至幾十秒預測地震的方法

把一塊磁鐵用繩子掛在高處，下面正對地板磚或一個鐵盆，磁鐵上粘一塊大鐵塊。地震前地球磁場發生劇烈變化，磁鐵會失去磁性。鐵塊掉下來，落在地上或盆上，發出響聲。

此法在房屋沒有晃動前就會提前預警。提前時間幾十秒至 10 分鐘。如果掉下來了，必發生大震。



謝謝大家

很有耐心的聽完報告