

Triage

- **Triage** is a system used by medical or emergency personnel to ration care when the number of casualties needing care exceeds the resources available to perform care.

START

- Simple
- Triage
- And
- Rapid
- Treatment

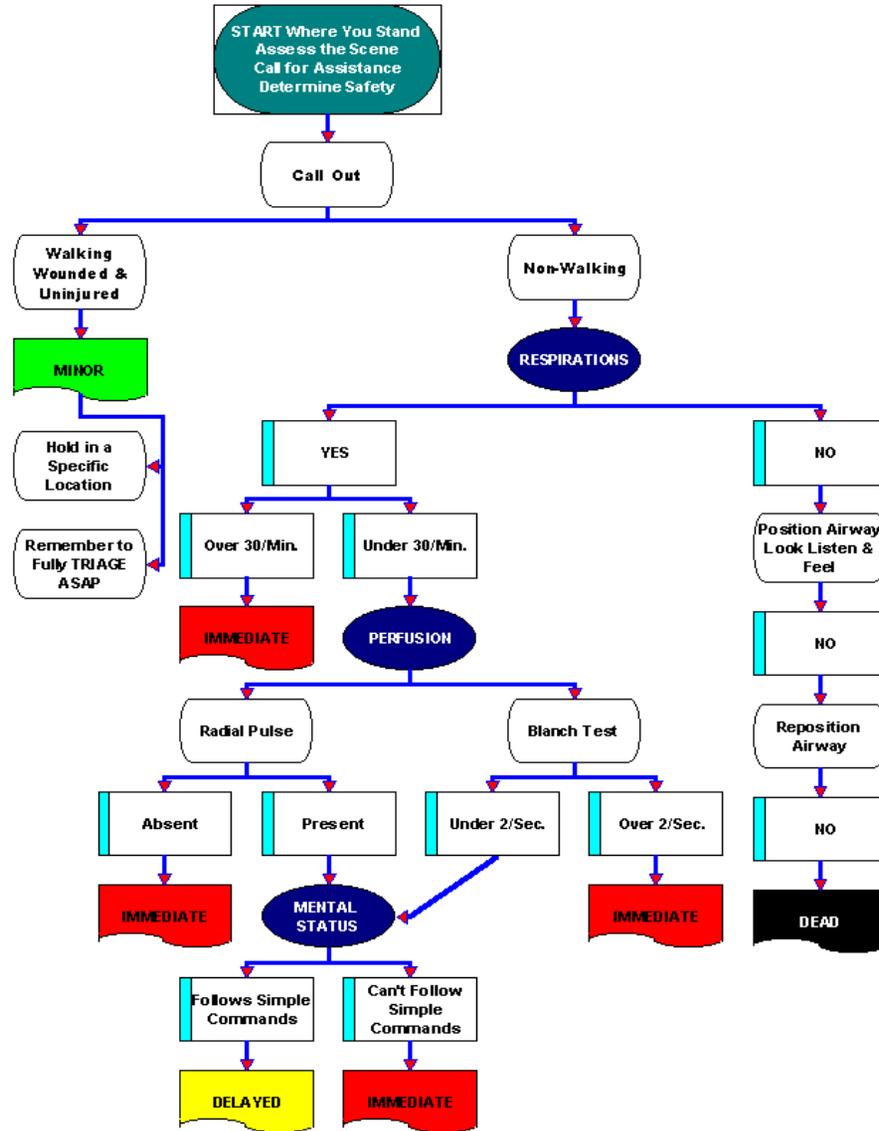
Categories

- Minor
- Immediate
- Delayed
- Presumed Dead

RPM

- Respirations
- Perfusion
- Mental Status

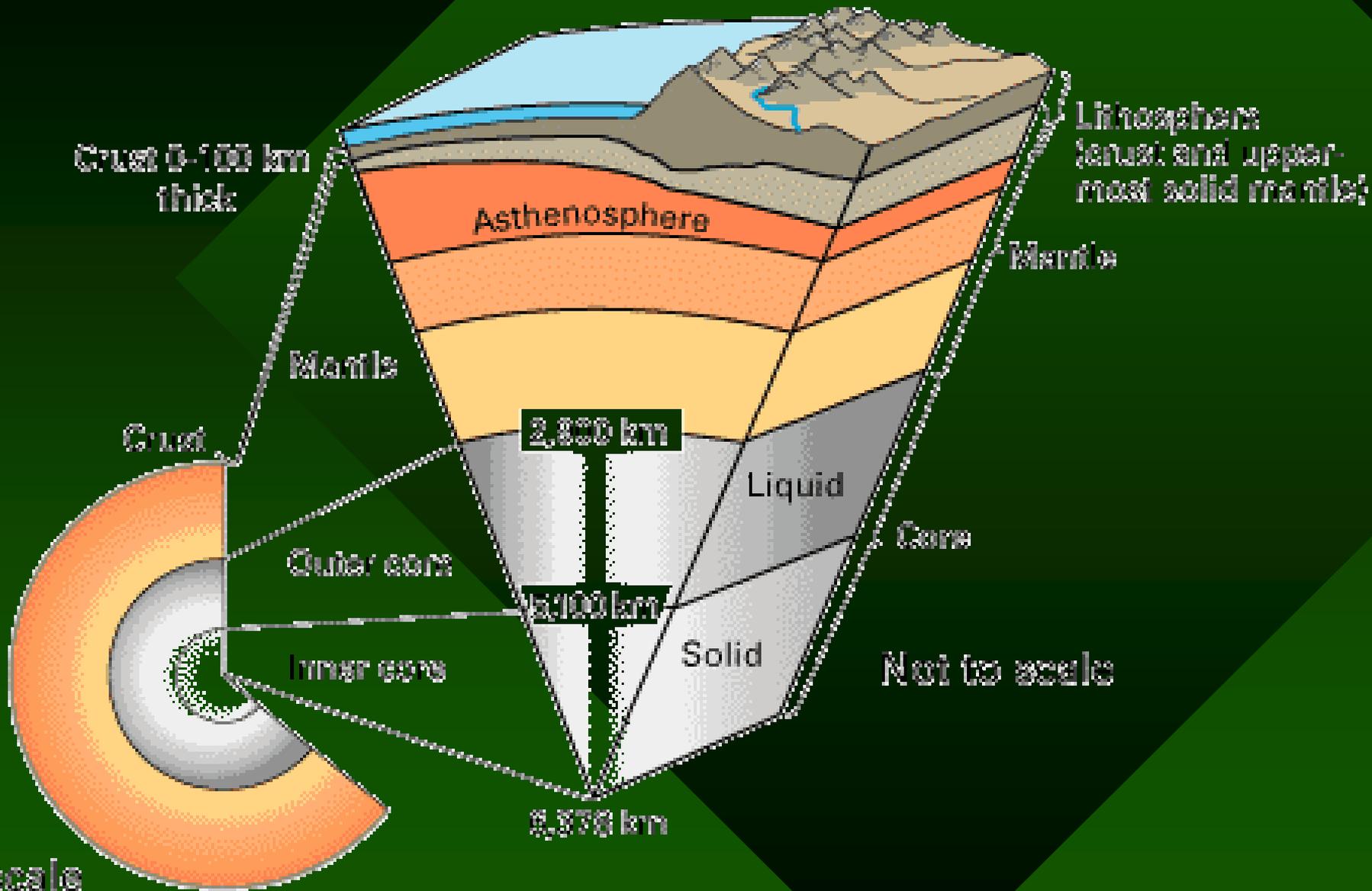
START - Simple Triage And Rapid Treatment

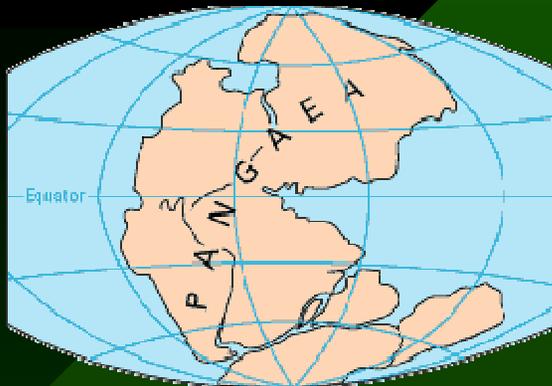


Damage Assessment

Cupertino Community Emergency Response Team

Geology of Earthquakes
Measuring Earthquakes
Effects of Earthquakes
Building Construction
Damage Assessment

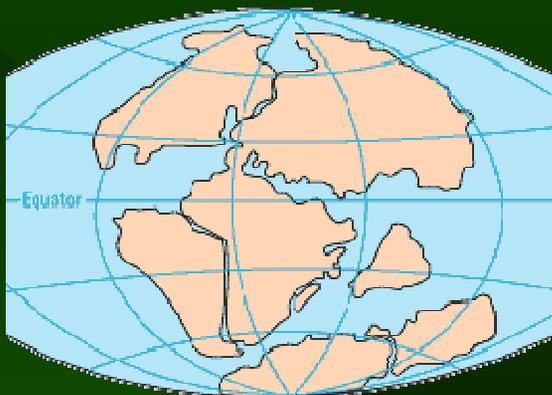




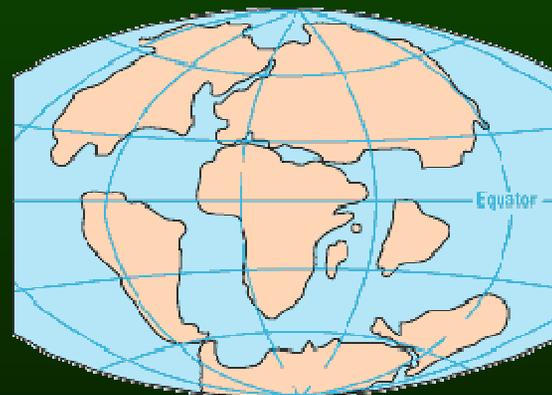
PERMIAN
235 million years ago



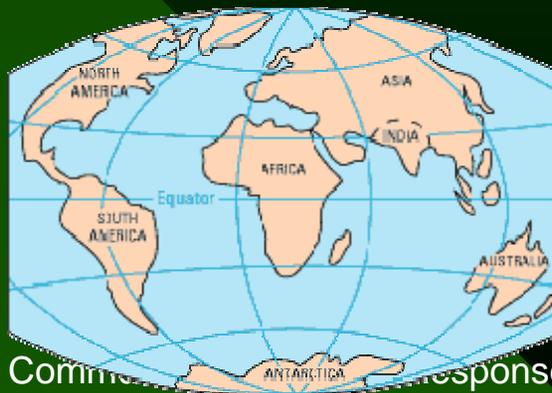
TRIASSIC
200 million years ago



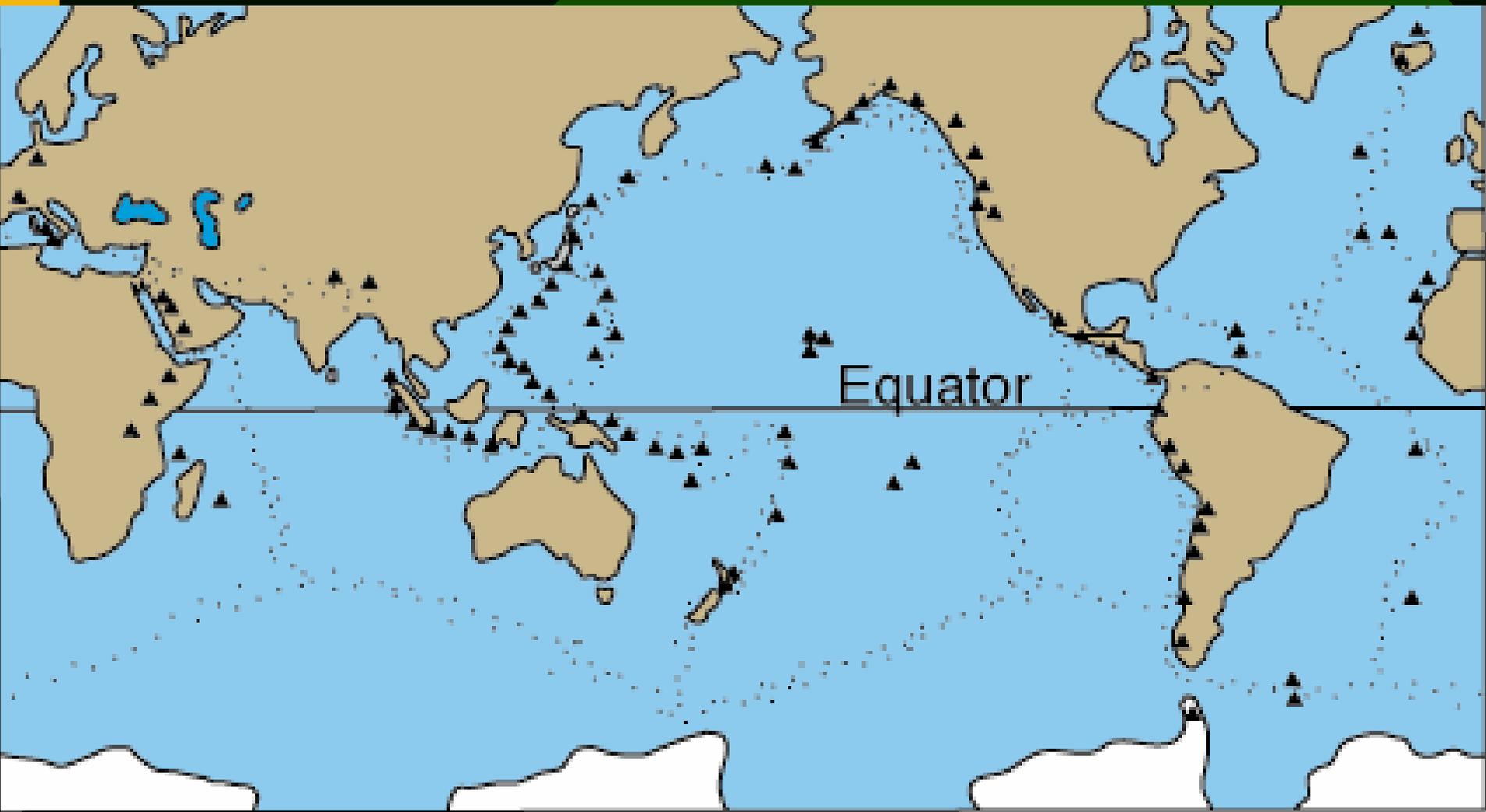
JURASSIC
135 million years ago



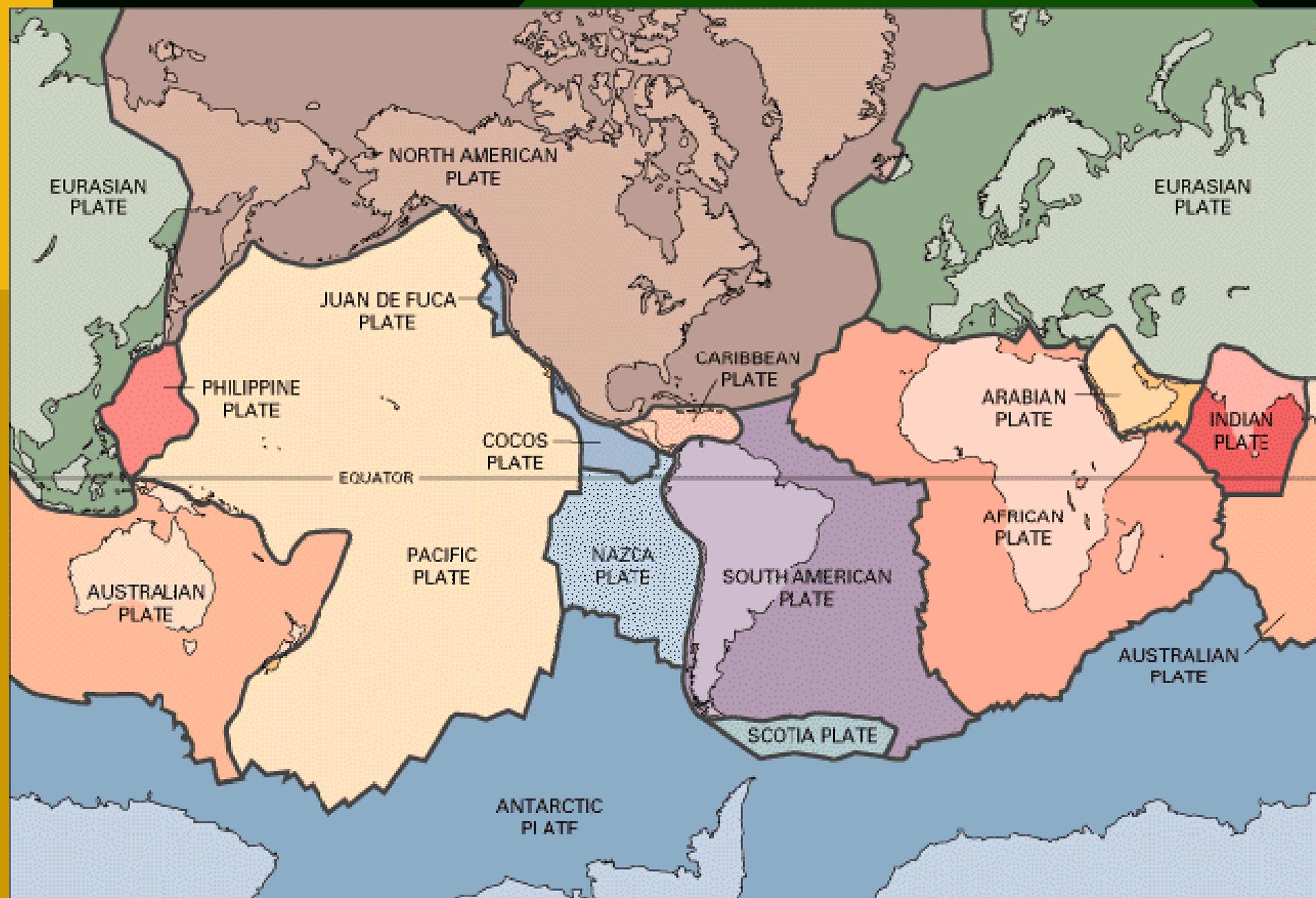
CRETACEOUS
65 million years ago

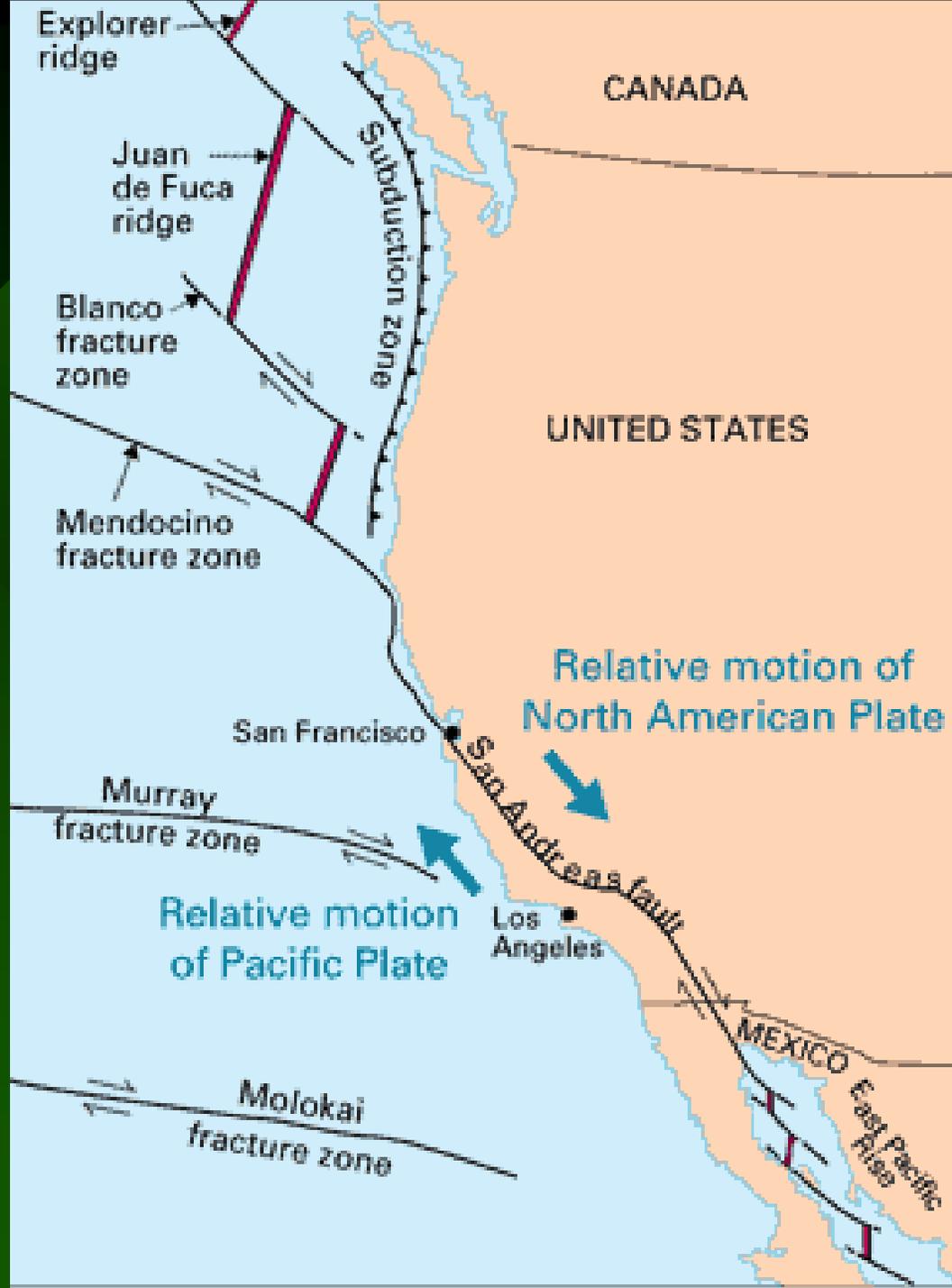


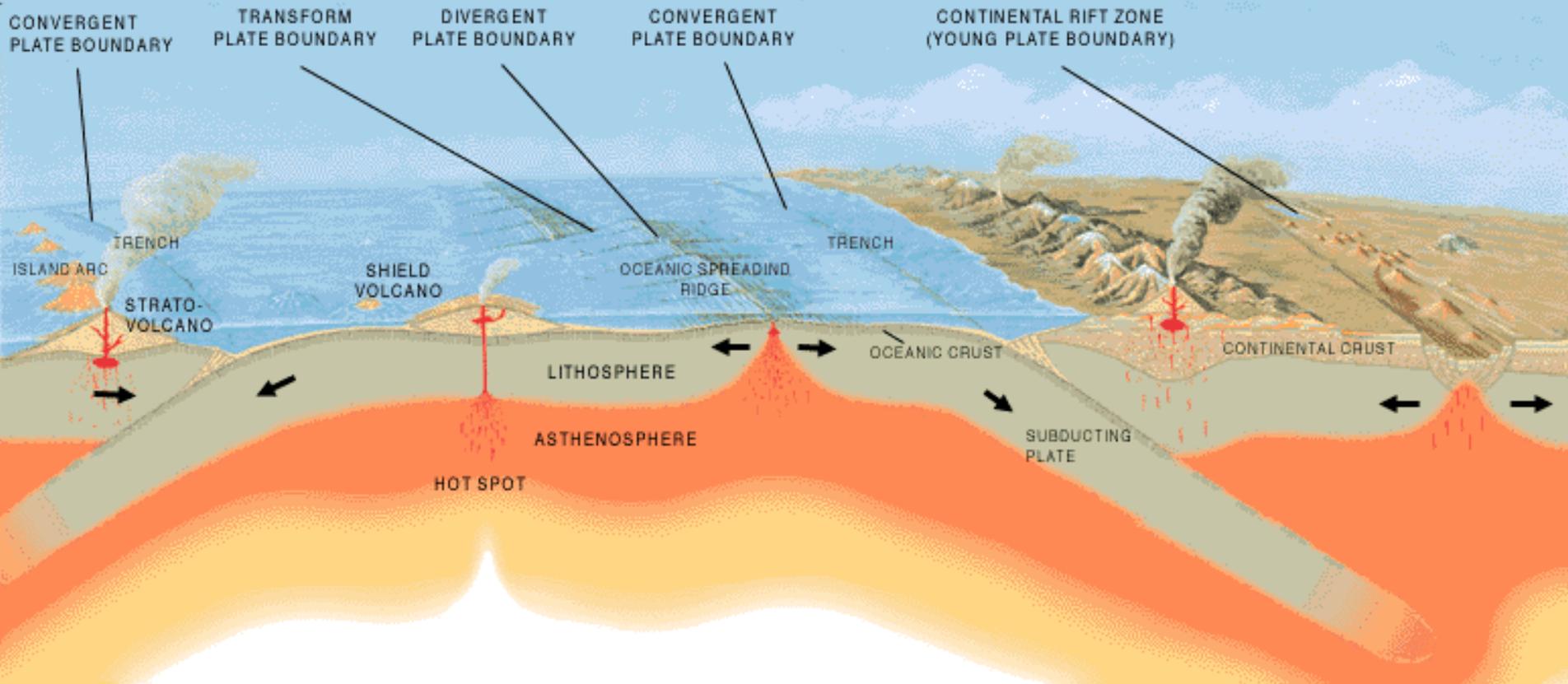
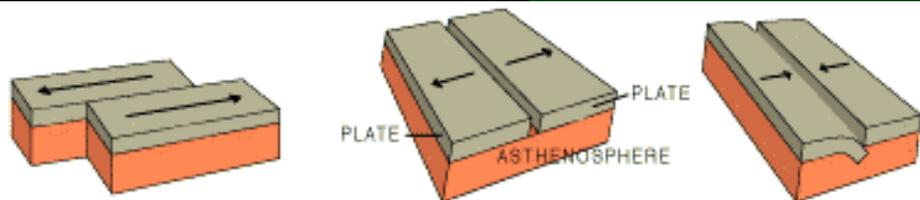
Cupertino Community College Response Team

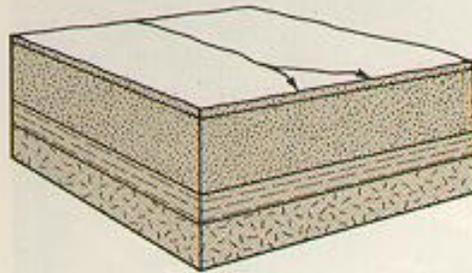


Global distribution of volcanoes (▲) and earthquakes (.....) based on Simkin and others (1989).

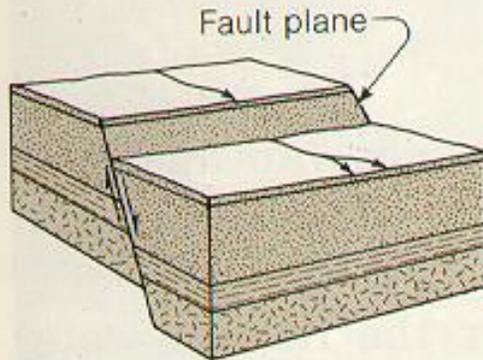




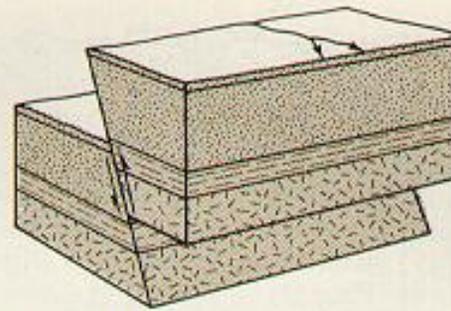




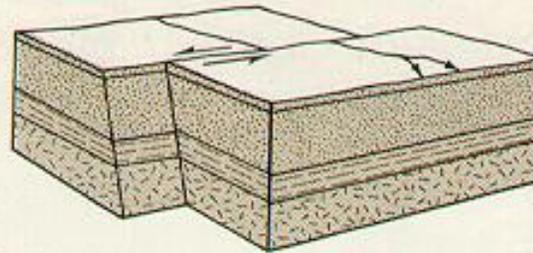
Block before faulting



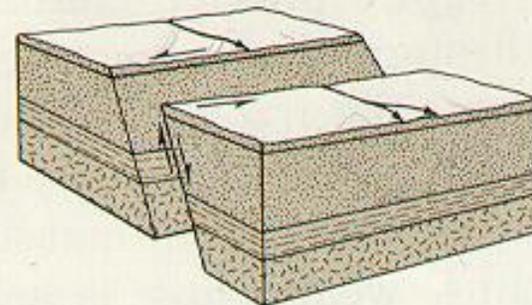
Normal fault
(a dip-slip fault)



Reverse fault
(a dip-slip fault)



Strike-slip fault
(left-lateral)



Oblique-slip fault

Figure 4-24

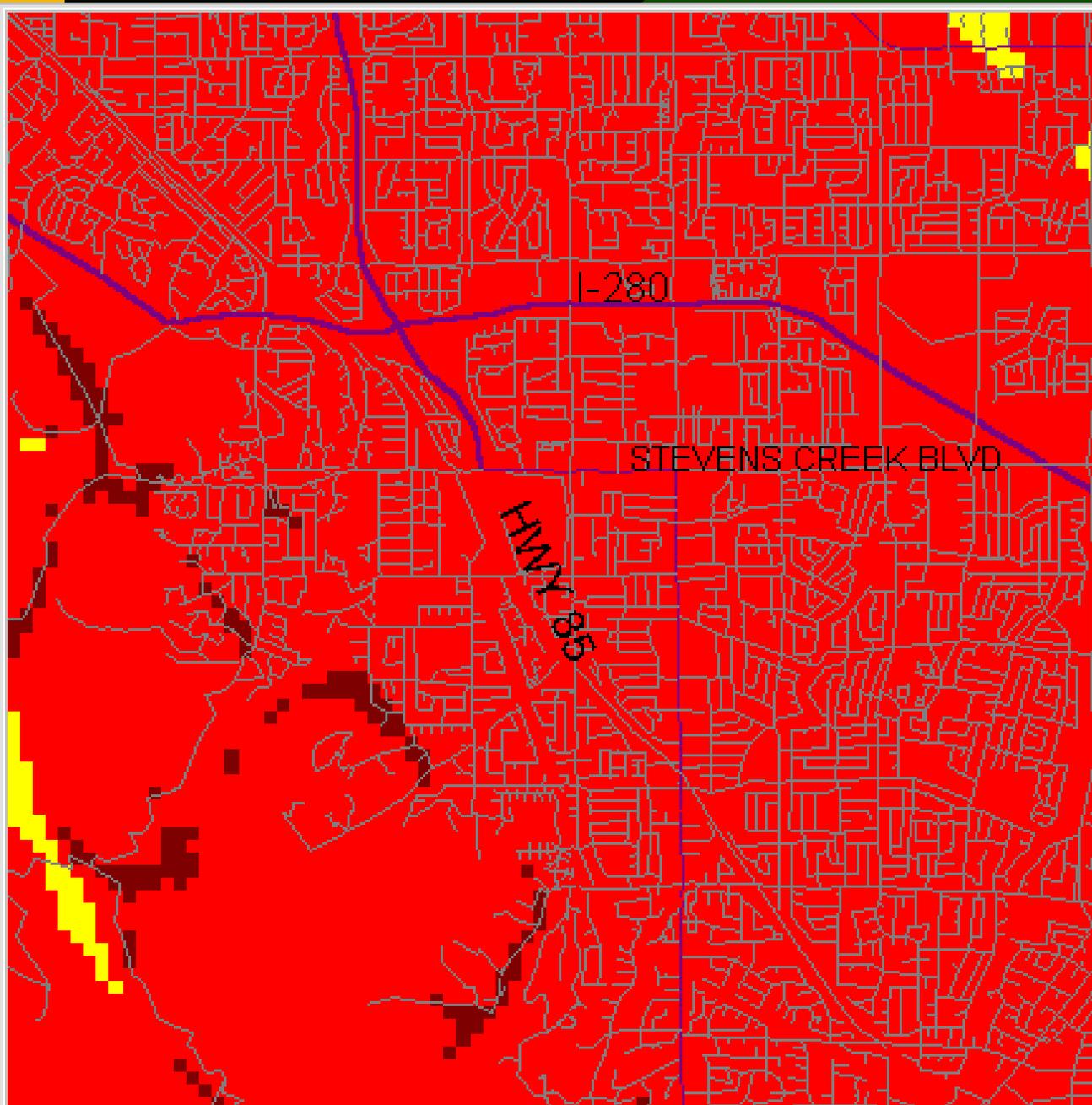
Types of faults.

Measuring Earthquakes

Cupertino Community Emergency Response Team



- **IV.** Felt indoors by many, outdoors by few during the day. At night, some awakened. Dishes, windows, doors disturbed;
- **V.** Felt by nearly everyone; many awakened. Some dishes, windows broken. Unstable objects overturned.
- **VI.** Felt by all, many frightened. Some heavy furniture moved; a few instances of fallen plaster. Damage slight.
- **VII.** Damage negligible in buildings of good design and construction; slight to moderate in well-built ordinary structures; considerable damage in poorly built or badly designed structures; some chimneys broken.
- **VIII.** Damage slight in specially designed structures; considerable damage in ordinary substantial buildings with partial collapse. Damage great in poorly built structures. Fall of chimneys, factory stacks, columns, monuments, walls. Heavy furniture overturned.
- **IX.** Damage considerable in specially designed structures; well-designed frame structures thrown out of plumb. Damage great in substantial buildings, with partial collapse. Buildings shifted off foundations.
- **X.** Some well-built wooden structures destroyed; most masonry and frame structures destroyed with foundations. Rails bent.
- **XI.** Few, if any (masonry) structures remain standing. Bridges destroyed. Rails bent greatly.
- **XII.** Damage total. Lines of sight and level are distorted. Objects thrown into the air.



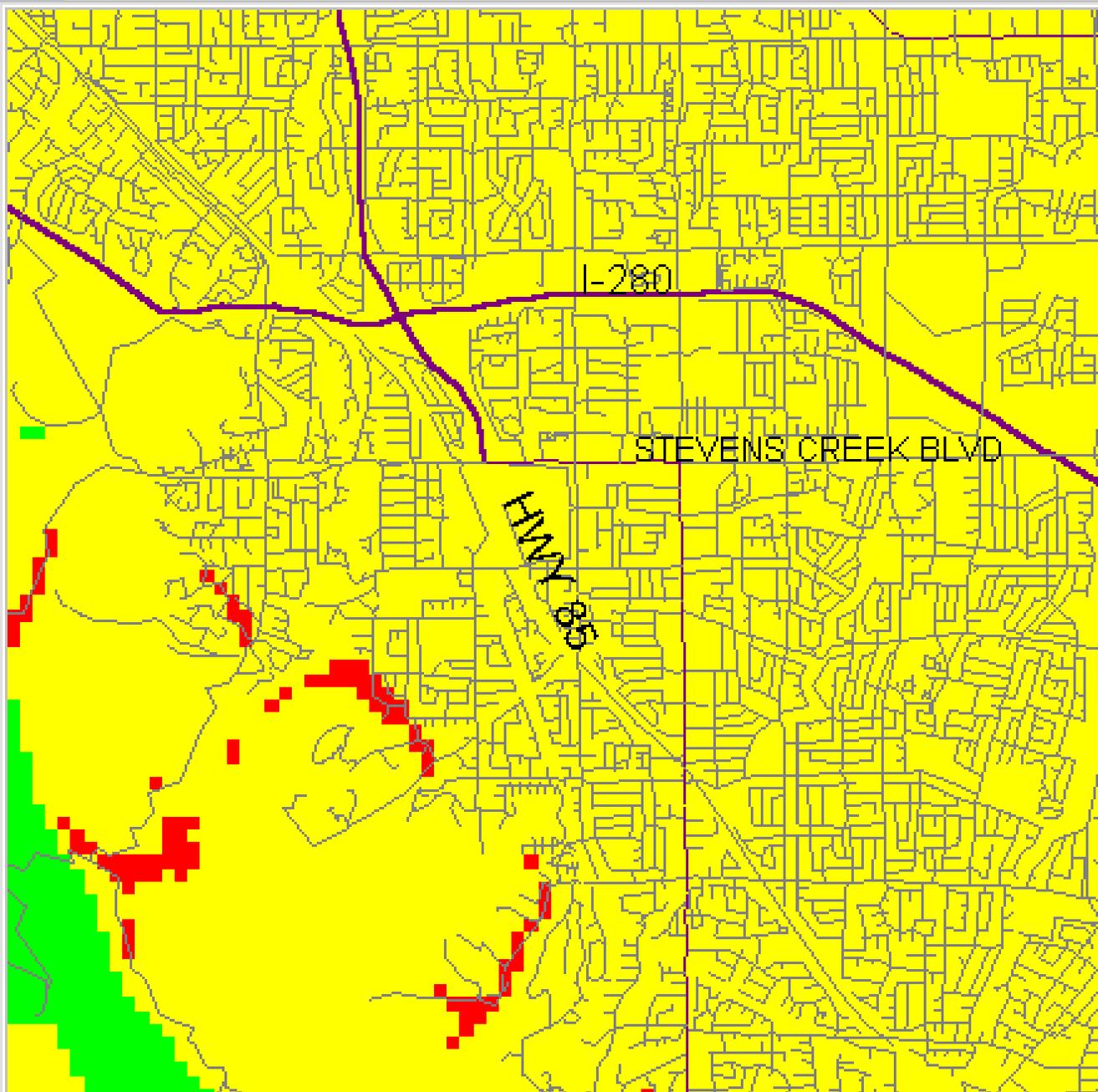
SHAKING INTENSITY

Model of the 1906 San Francisco Earthquake
Magnitude 7.9

Modified Mercalli Intensity Shaking Severity Level

- X-Very Violent
- IX-Violent
- VIII-Very Strong
- VII-Strong
- VI-Moderate
- V-Light
- Highways
- Streets

Source: ABAG, 1999
The map is intended for planning only.
Intensities may be incorrect by one unit higher or lower. Current version of map available on Internet at <http://quake.abag.ca.gov>



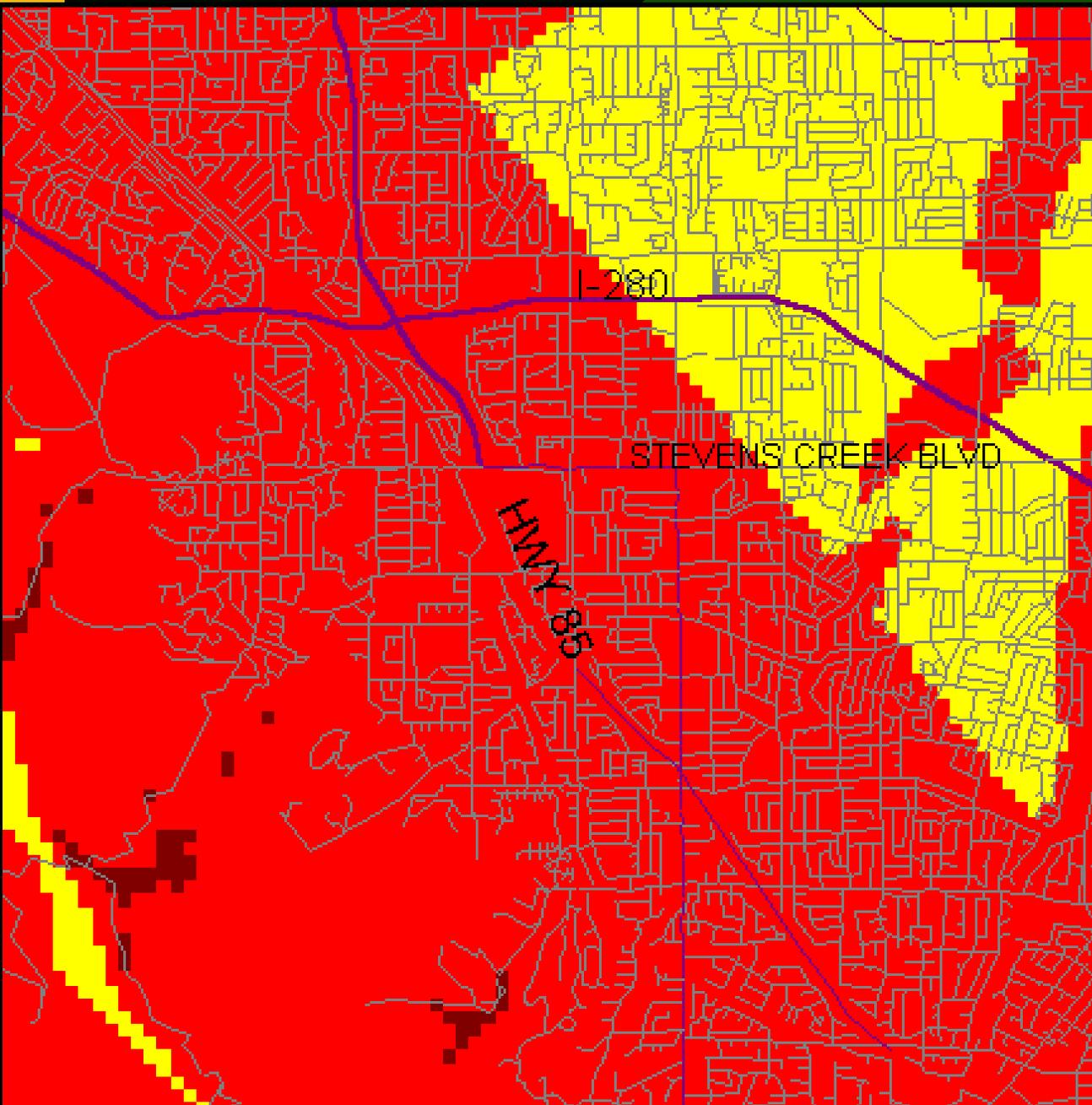
SHAKING INTENSITY

Model of the 1989
Loma Prieta Earthquake
Magnitude 6.9

Modified Mercalli Intensity
Shaking Severity Level

- X-Very Violent
- IX-Violent
- VIII-Very Strong
- VII-Strong
- VI-Moderate
- V-Light
- Highways
- Streets

Source: ABAG, 1999
The map is intended
for planning only.
Intensities may be
incorrect by one unit
higher or lower. Current
version of map
available on Internet at
<http://quake.abag.ca.gov>



SHAKING INTENSITY

Peninsula-Golden Gate
San Andreas Quake
Magnitude 7.2

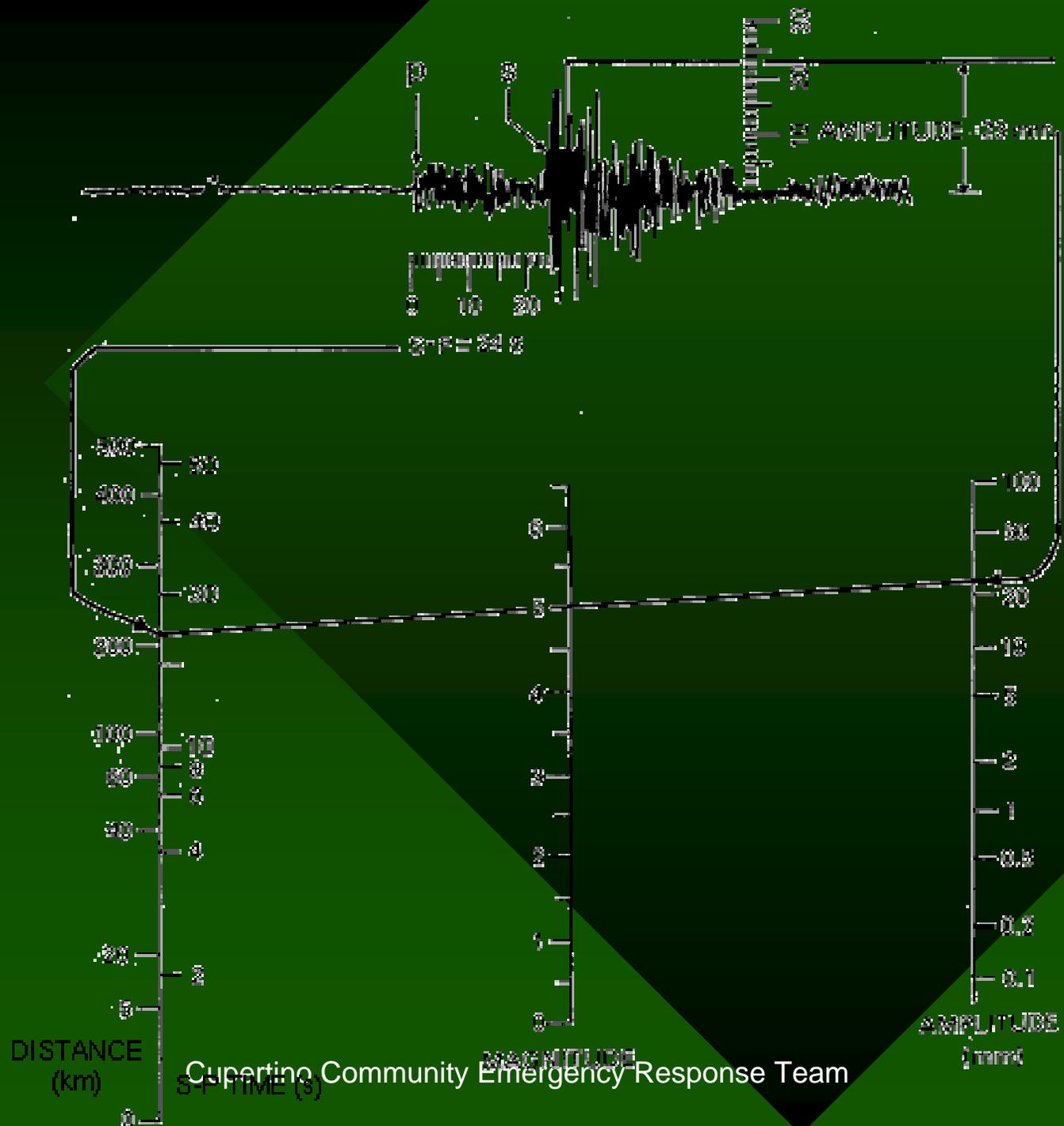
Modified Mercalli
Intensity
Shaking Severity Level

- X-Very Violent
- IX-Violent
- VIII-Very Strong
- VII-Strong
- VI-Moderate
- V-Light
- Highways
- Streets

Source: ABAG, 1999
The map is intended
for planning only.
Intensities may be
incorrect by one unit
higher or lower. Current
version of map
available on Internet at
<http://quake.abag.ca.gov>



© Copyright California Institute of Technology. All rights reserved.
Commercial use or modification of this material is prohibited.



Cupertino Community Emergency Response Team

Earthquake Effects

- Ground Shaking
- Differential ground settlement
- Land and mudslides
- Soil liquefaction
- Avalanches
- Ground displacement along fault
- Tsunamis and seiches
- Floods from dam and levee failure
- Fires



Types of Construction in the Bay Area

- Wood Frame
(From 1 to 4 stories high)
- Steel Frame
- Tilt-up
- Poured Concrete
- Unreinforced Masonry (UMB)
 - No longer permitted

WOOD FRAME CONSTRUCTION

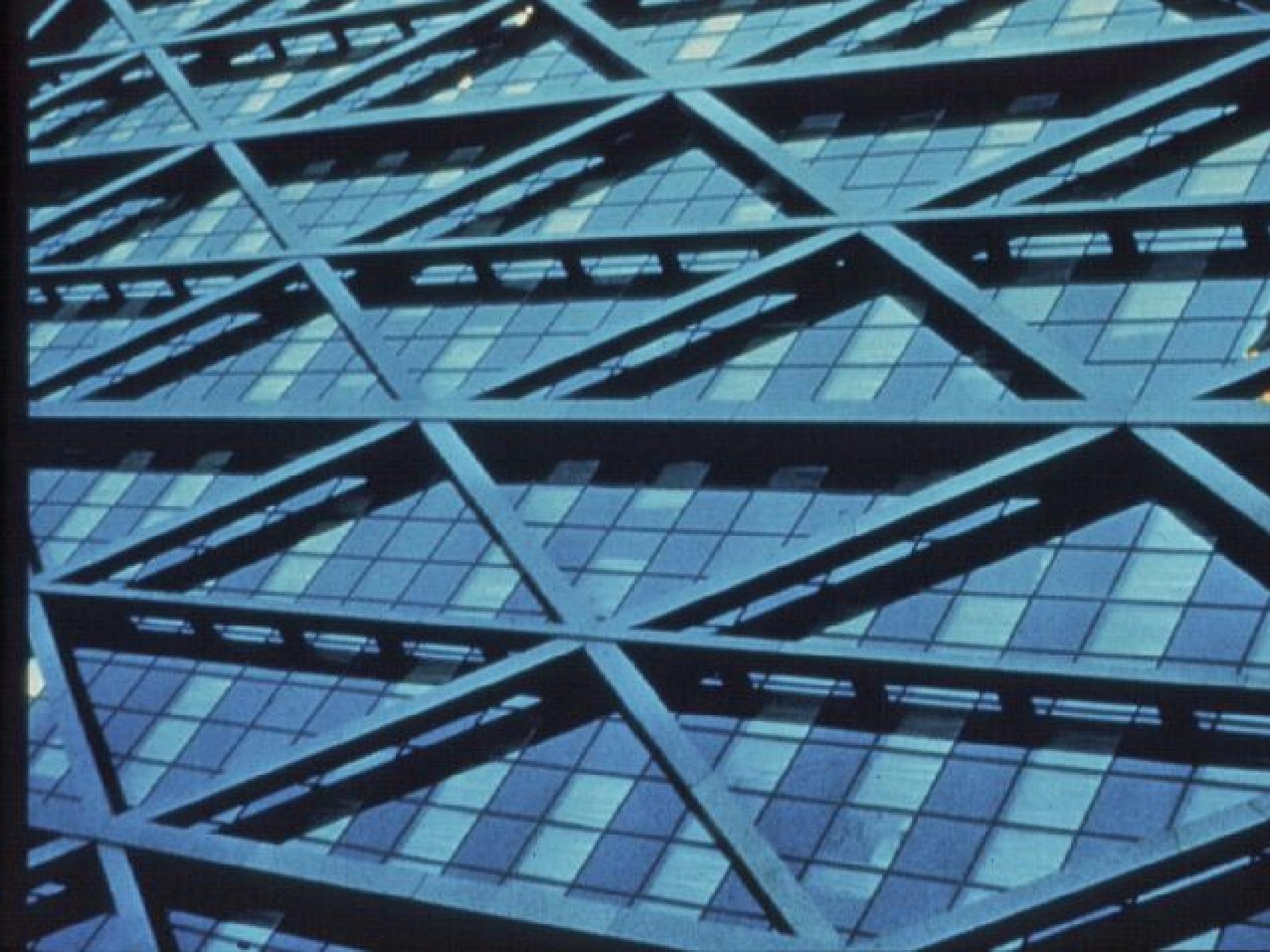
- Single-family residential
- Multi-unit residential and commercial



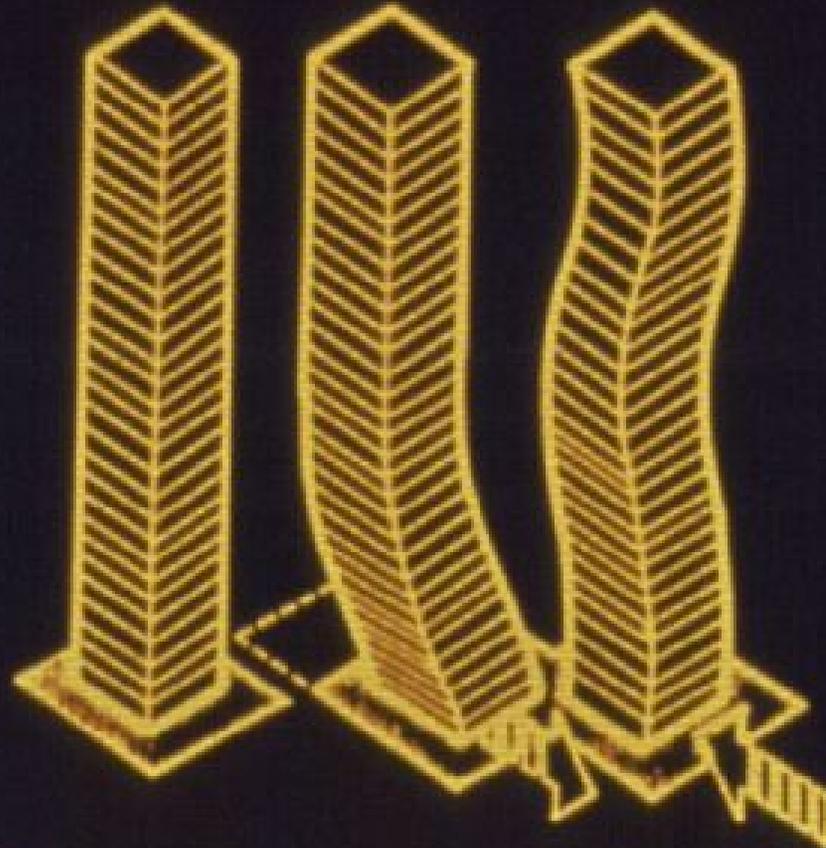


STEEL FRAME CONSTRUCTION

- Multi-story fire resistive frame
- Pre-engineered light frame

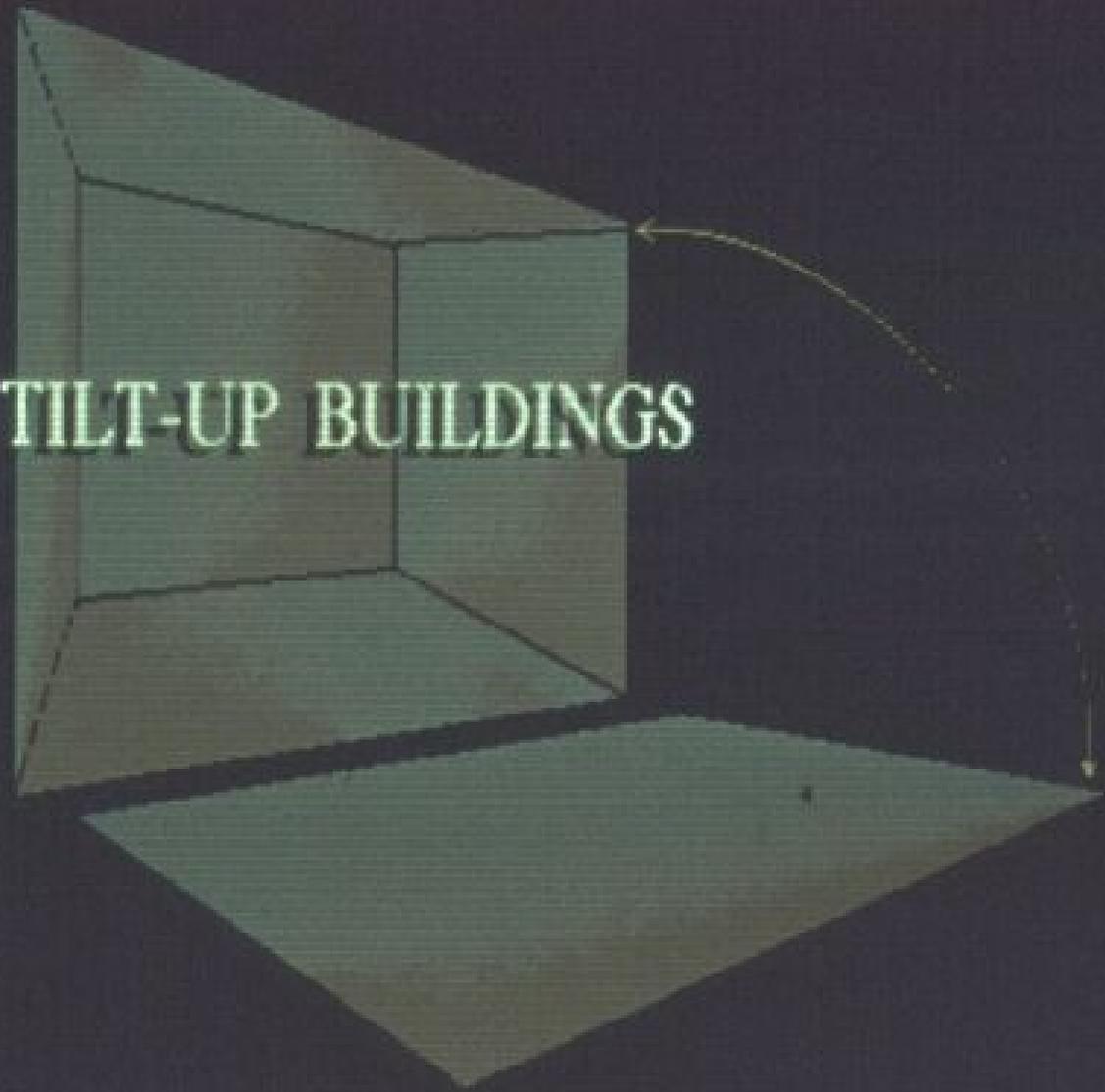


EFFECTS OF CYCLIC REVERSALS OF GROUND ACCELERATION



AT THE SAME TIME THAT THE UPPER PART OF THE STRUCTURE BEGINS TO MOVE TO CATCH UP WITH THE INITIAL DISPLACEMENT, THE GROUND MOTION REVERSES ITSELF.

TILT-UP BUILDINGS







UNREINFORCED MASONRY BUILDINGS









BUILDING PARAPITS





SIGNS OF POSSIBLE STRUCTURAL DAMAGE



PAINT LINES



Large Cracks Around Windows

- Large cracks from the corner of windows
- At a 45 degree angle





Large Cracks Around Doors and Foundations

- Cracks above front door and garage door
- Cracks about one foot above sidewalk foundation line



HORIZONTAL

&

V

E

R

T

I

C

A

L

LINES





Fiberglass

BUILDING DAMAGE CLASSIFICATION

- **Light Damage**
- **Medium Damage**
- **Heavy Damage**

Assess Damage

- Look at all four sides of structure
- Overhead Hazards
- Ground Level Hazards
- Below Grade Hazards
- Special Hazards
- Bystander Reports

LIGHT DAMAGE

- Superficial Damage
- Broken windows
- Cracked or fallen plaster
- Principal Damage is to the Contents of the structure



MODERATE DAMAGE

- Large amount of cracking on exterior
- Small cracks around doors and foundations
- No outward signs of structural damage









HEAVY DAMAGE

- Partial or Full collapse
- Building is off, or leaning off of foundation
- Structural Damage to Building









Assess Damage



Cupertino Community Emergency Response Team

Assess Damage



Cupertino Community Emergency Response Team

Assess Damage



Cupertino Community Emergency Response Team

Assess Damage



Assess Damage



Cupertino Community Emergency Response Team

Assess Damage



Cupertino Community Emergency Response Team

Assess Damage



Cupertino Community Emergency Response Team

Assess Damage



Cupertino Community Emergency Response Team