

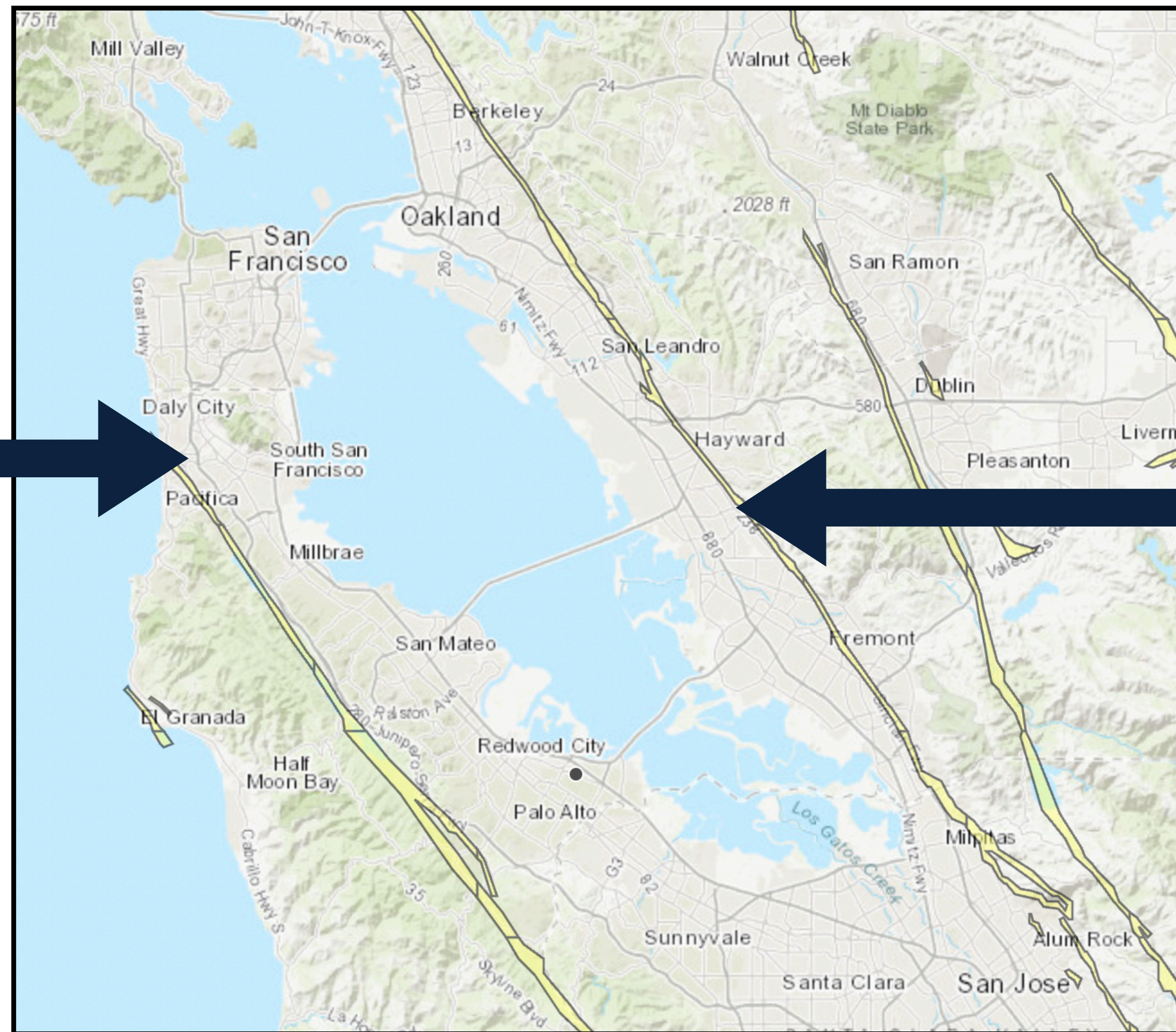
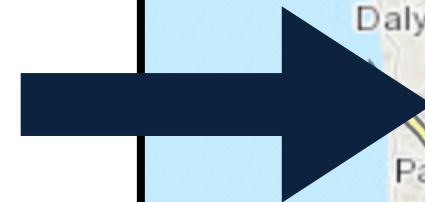
Educational Training For Real Estate Agents

SEISMIC / EARTHQUAKES 101



MAJOR BAY AREA FAULT LOCATIONS

**SAN
ANDREAS
FAULT**



**HAYWARD
FAULT**



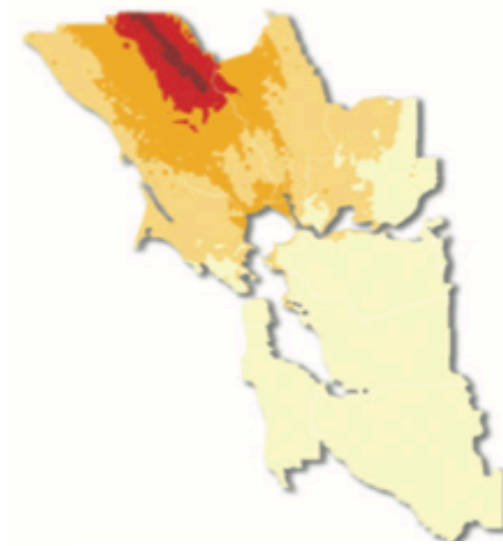
VARIOUS FAULTS & SIZES



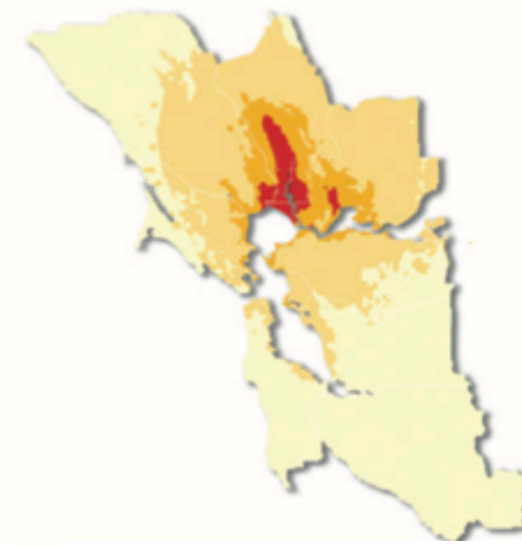
San Andreas M7.8

Shaking Intensity

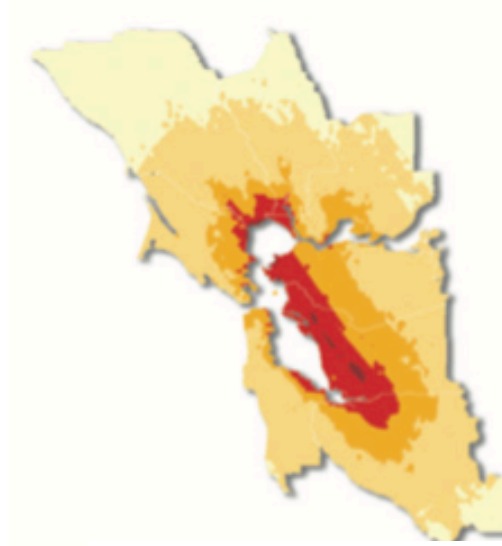
- MMI 9 - Violent
- MMI 8 - Very Strong
- MMI 7 - Strong
- MMI 6 - Moderate
- MMI <5 - Light



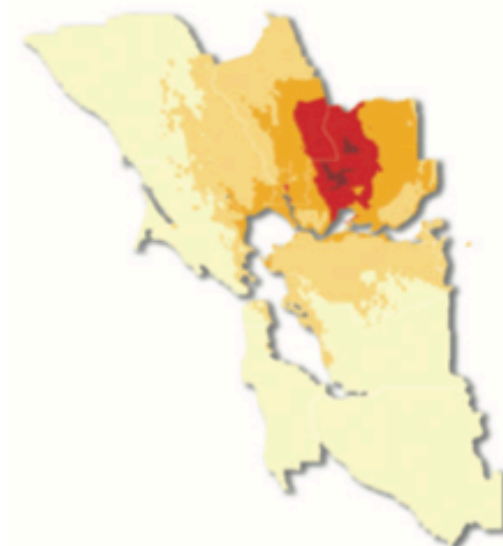
Maacama (7.4)



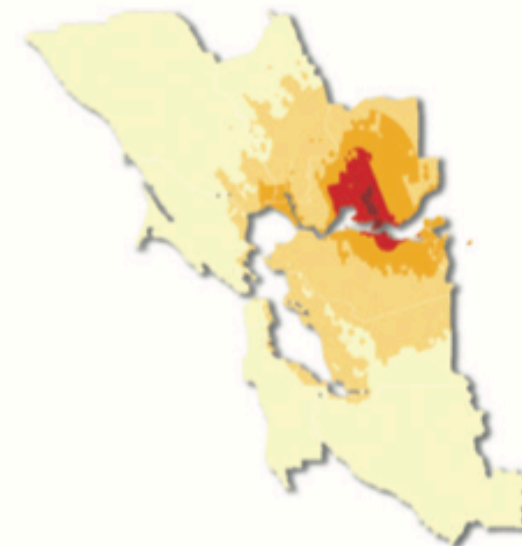
West Napa (6.7)



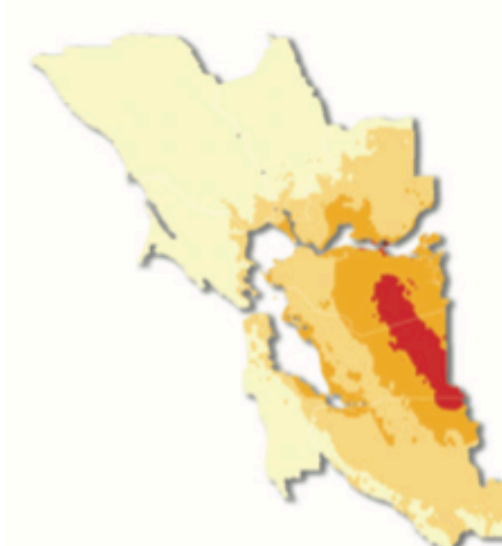
Hayward (7.0)



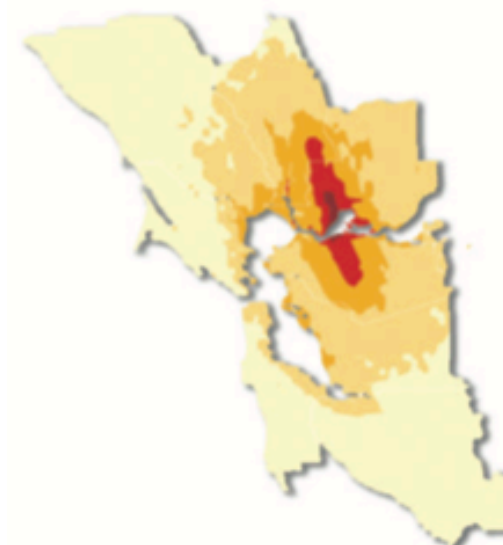
Great Valley (6.8)



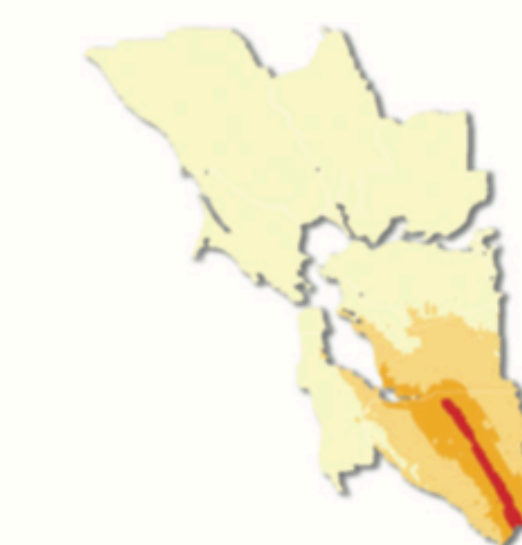
Great Valley (6.7)



Greenville (7.0)



Concord (6.8)



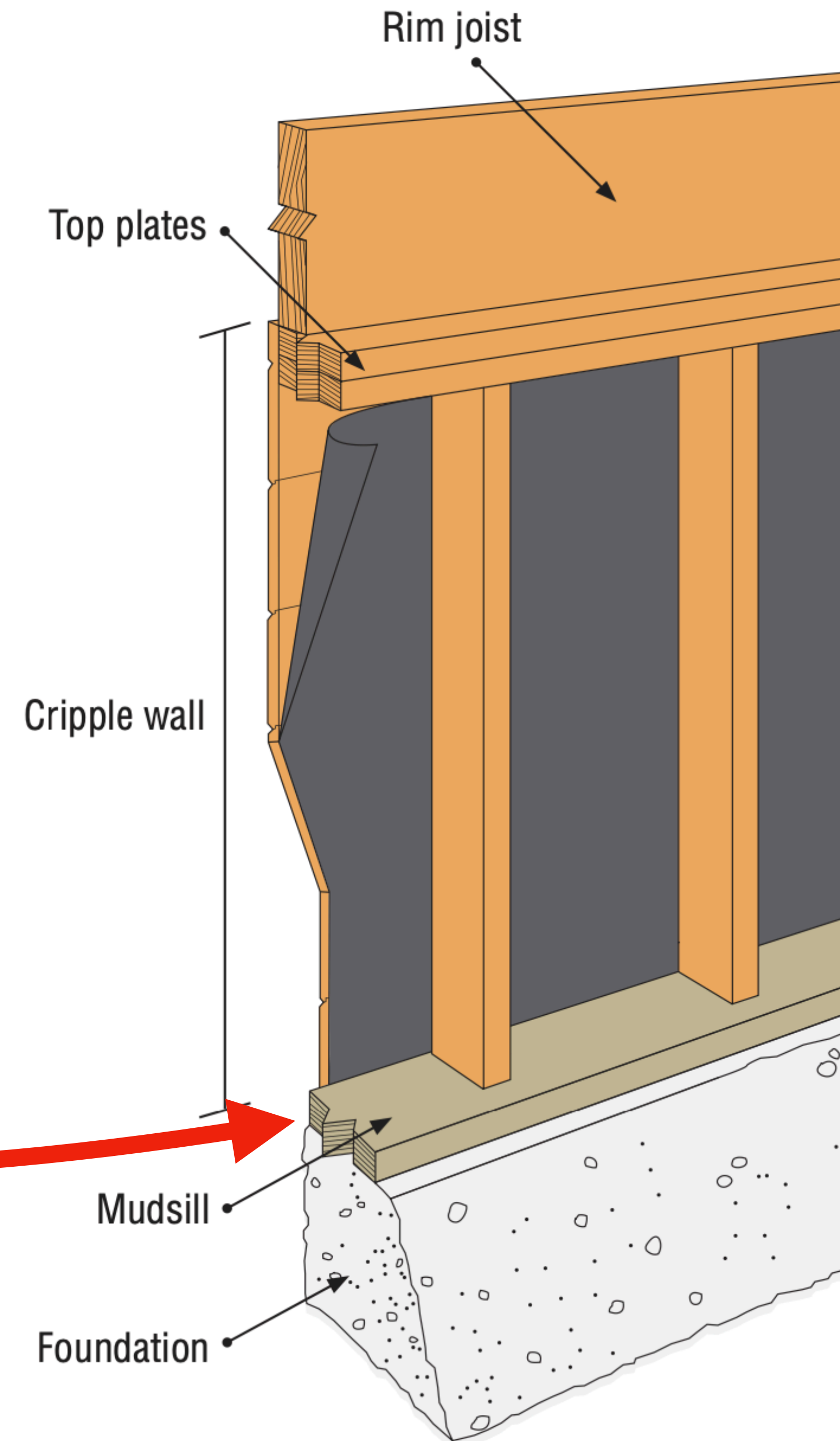
Calaveras (6.4)



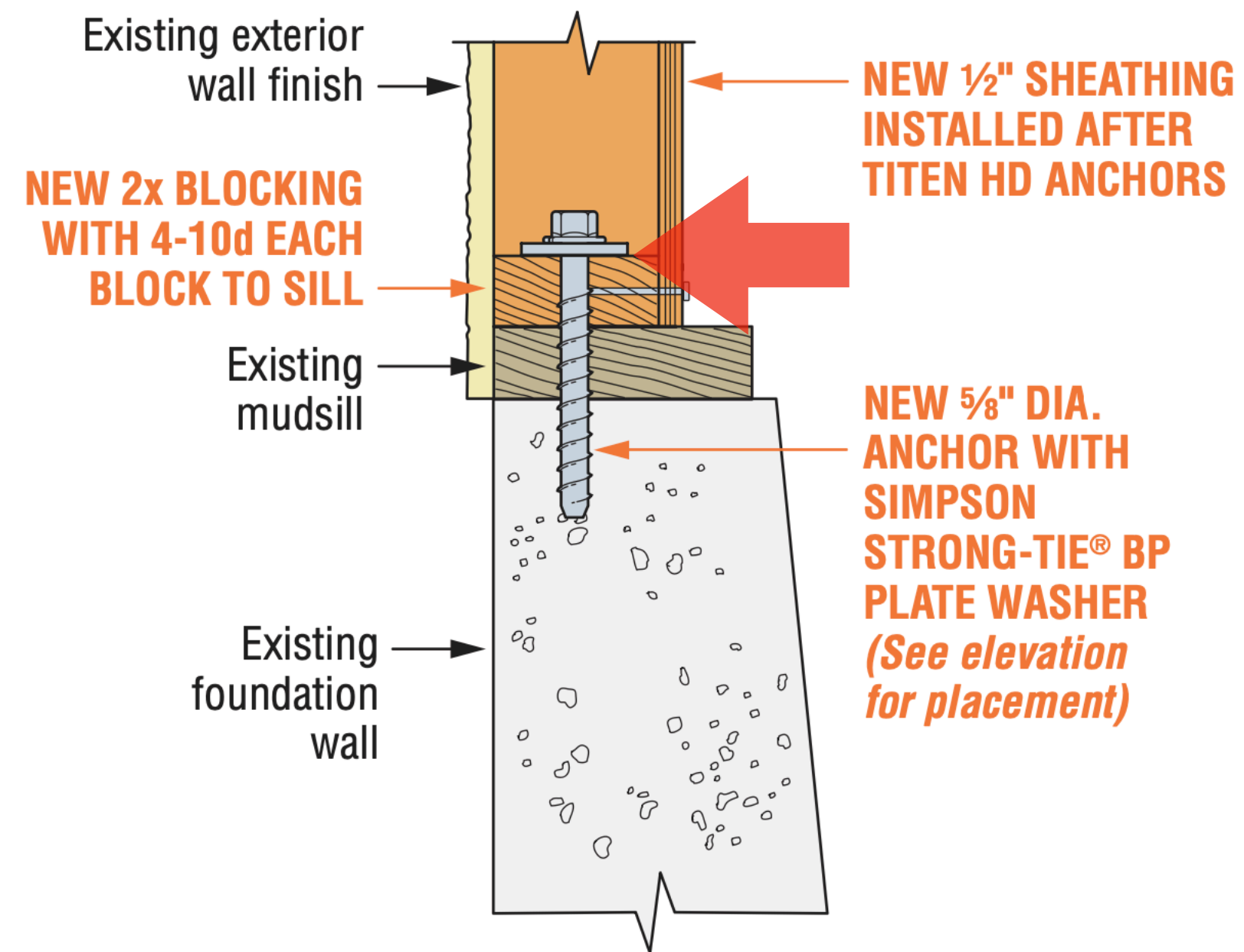
San Gregorio (7.5)



WOOD TO CONCRETE INTERFACE

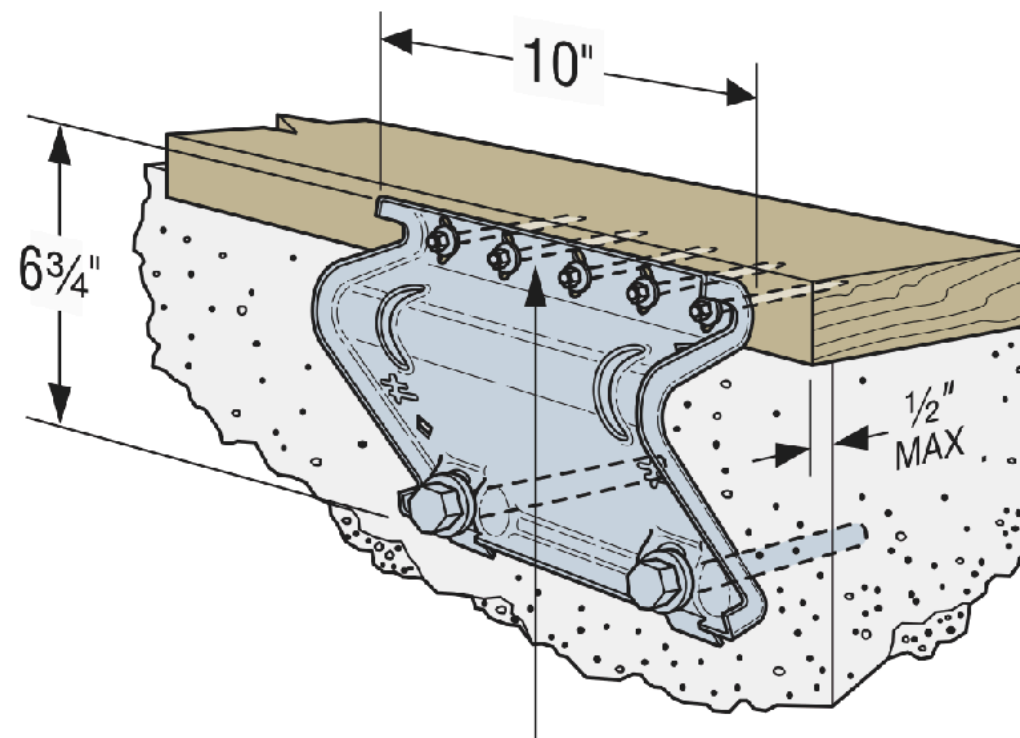


BOLTING RETROFIT



Anchoring Mudsill to Foundation with Titen HD Anchor

NEW BOLTS ARE ADDED WHEN THERE IS SPACE TO DRILL



UFP'S ARE USED WHEN THERE ISN'T SPACE TO DRILL NEW BOLTS



CRIPPLE WALLS



House is
supported on
cripple walls



Earthquake
moves the
foundation



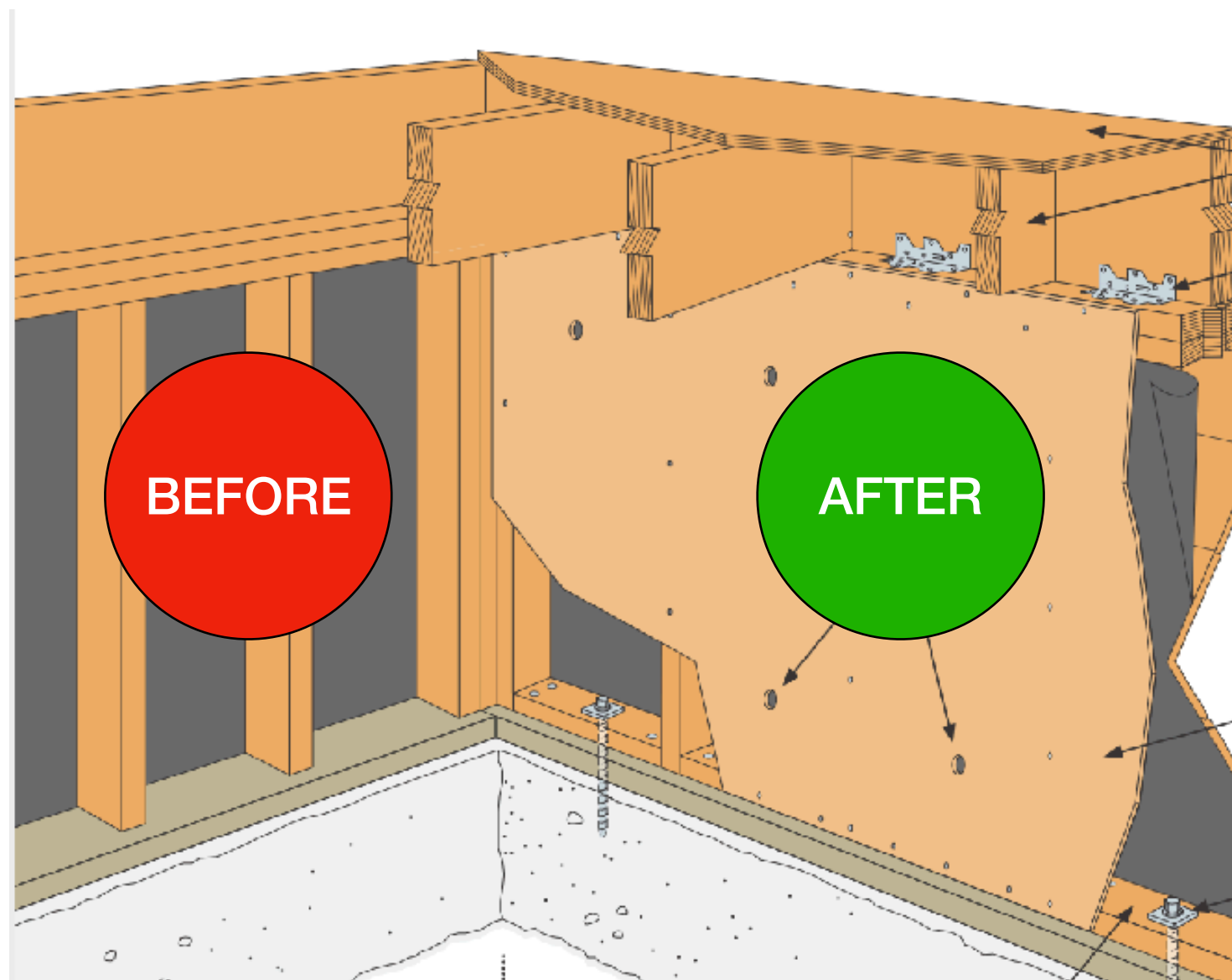
House rocks
on the
cripple wall



House falls when
the cripple wall
collapses



CRIPPLE WALL RETROFIT

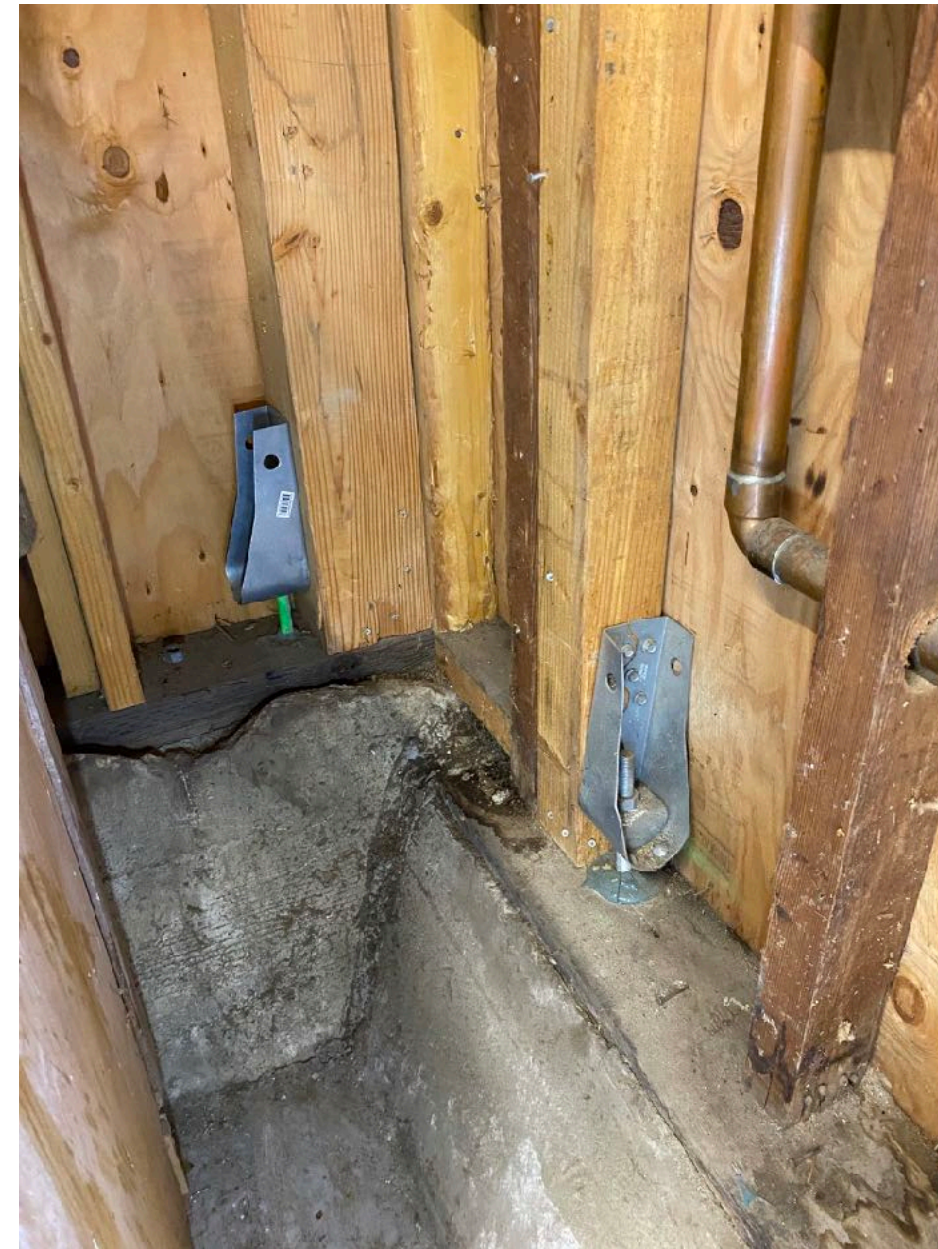
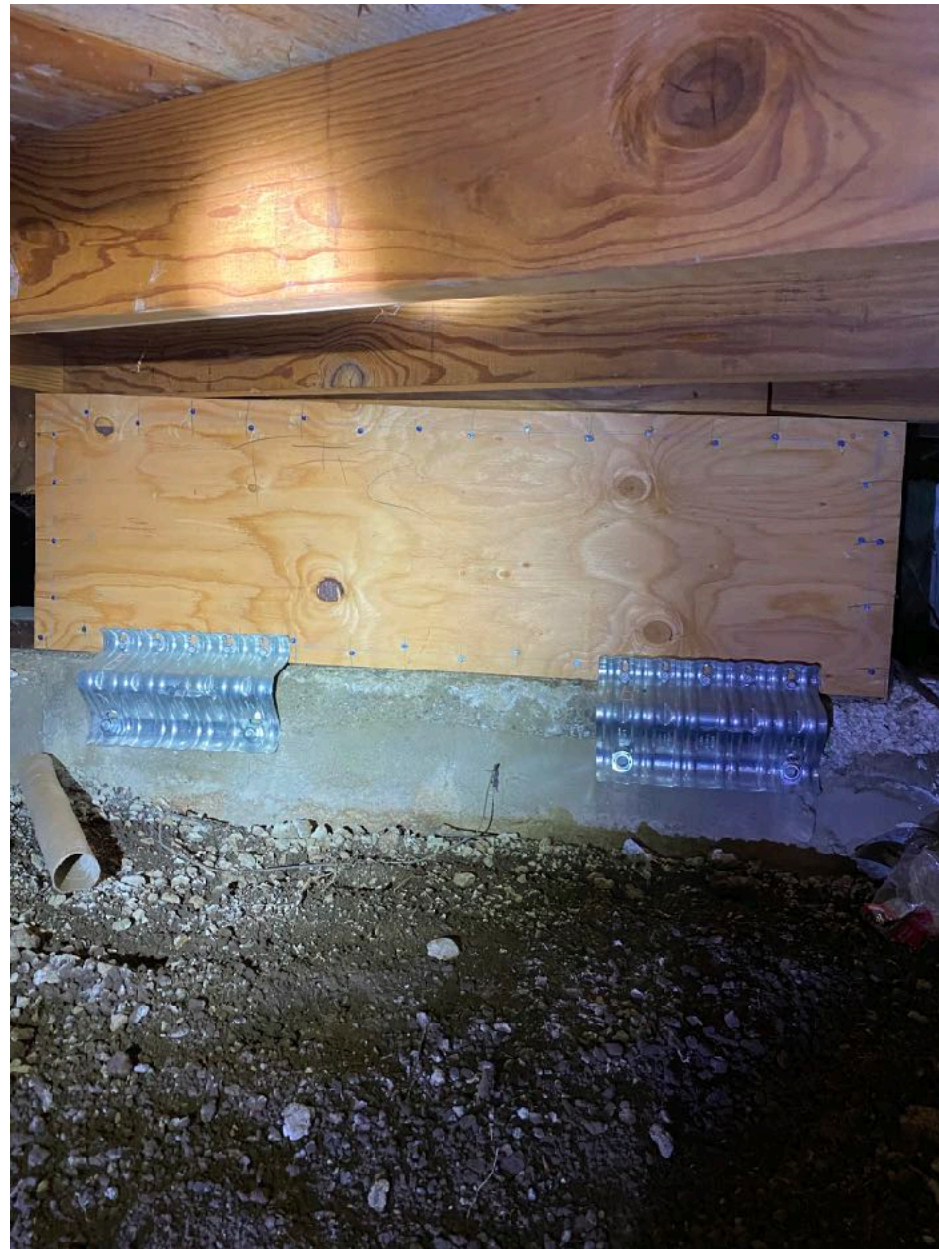


OVERVIEW

- 'Sheer Panels' are installed over the studs
- Consists of plywood of a specified type and thickness
- Nailed in a specified spacing pattern
- Walls 4' and under are 'pre-engineered' over 4' requires design

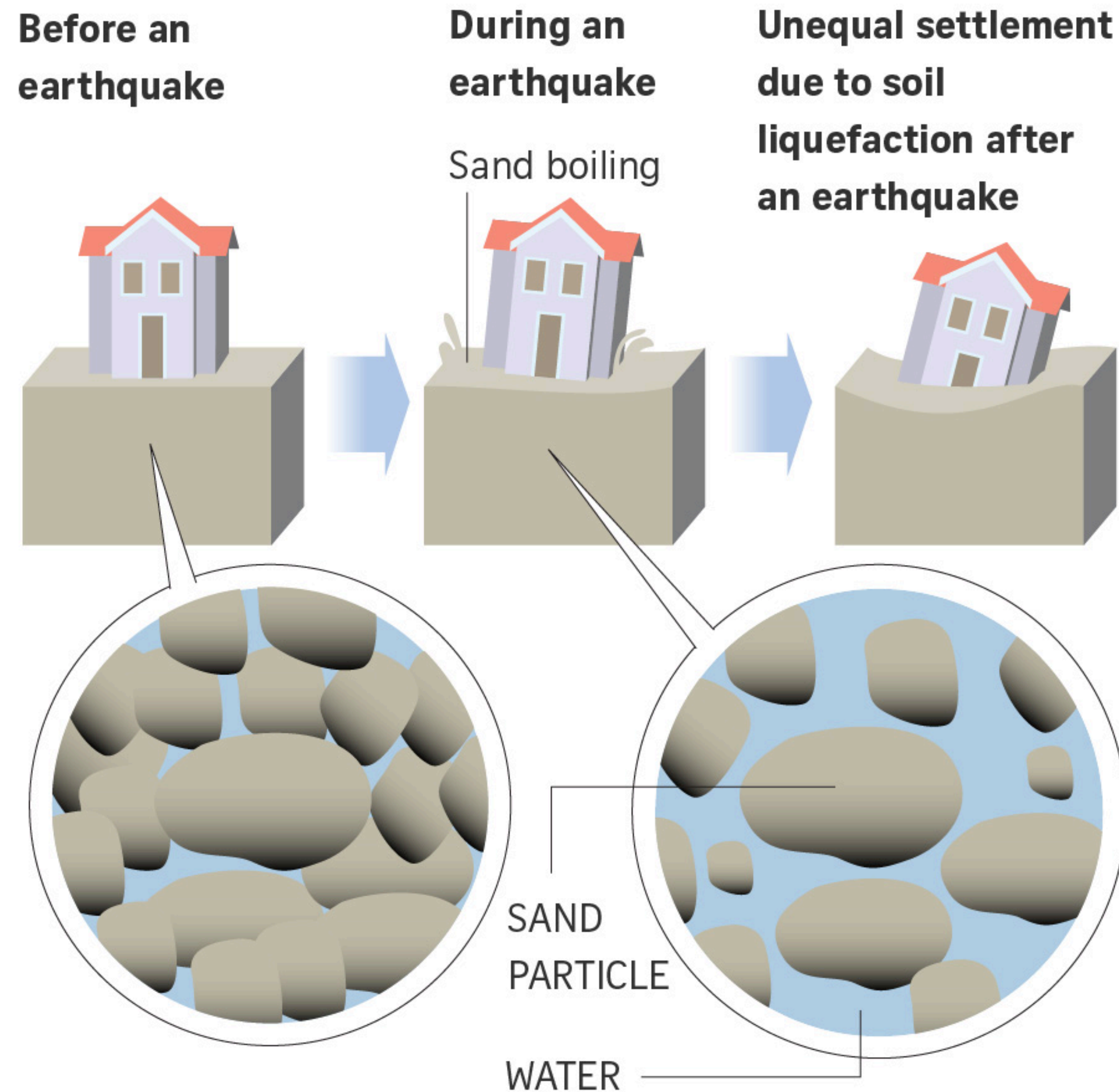


REAL WORLD EXAMPLES



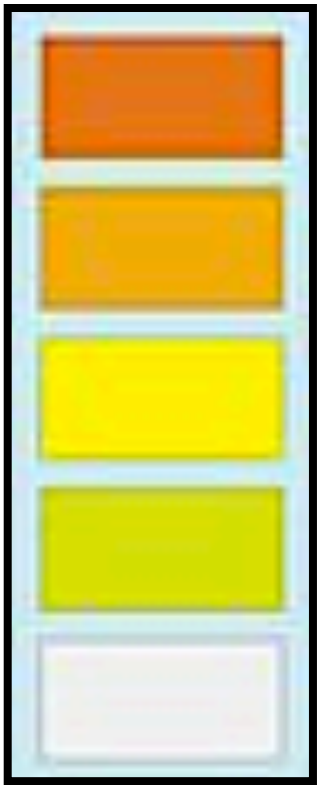
LIQUEFACTION

Phenomenon in which water-saturated sandy layers of earth act like liquids due to the pressure created by earthquakes.



LIQUEFACTION REGION MAP

LIQUEFACTION SUSCEPTIBILITY



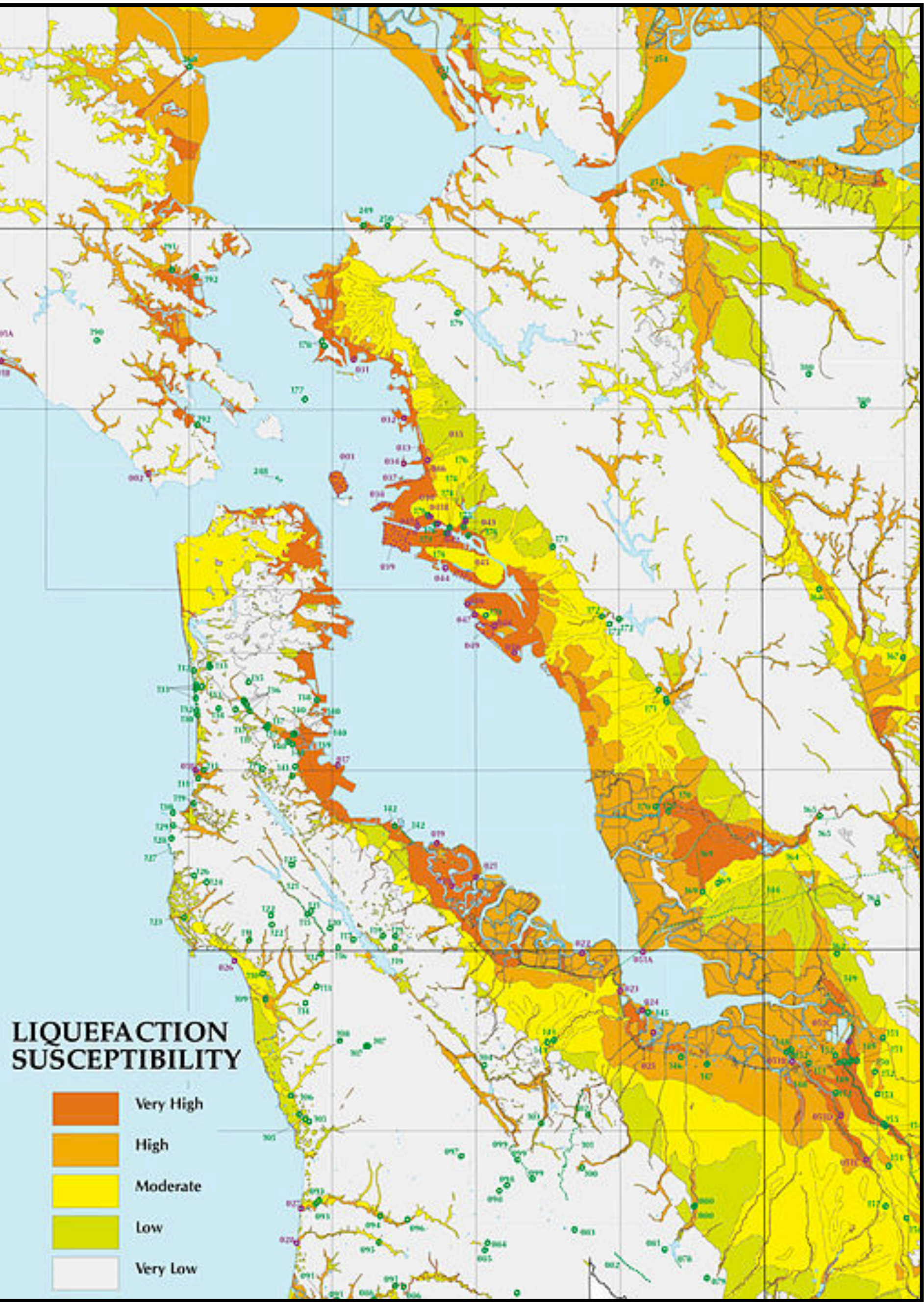
Very High

High

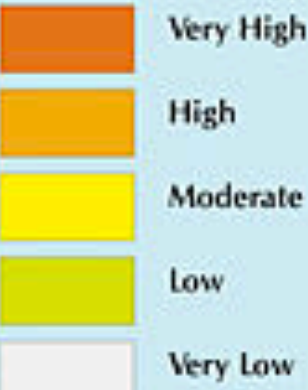
Moderate

Low

Very Low



LIQUEFACTION SUSCEPTIBILITY

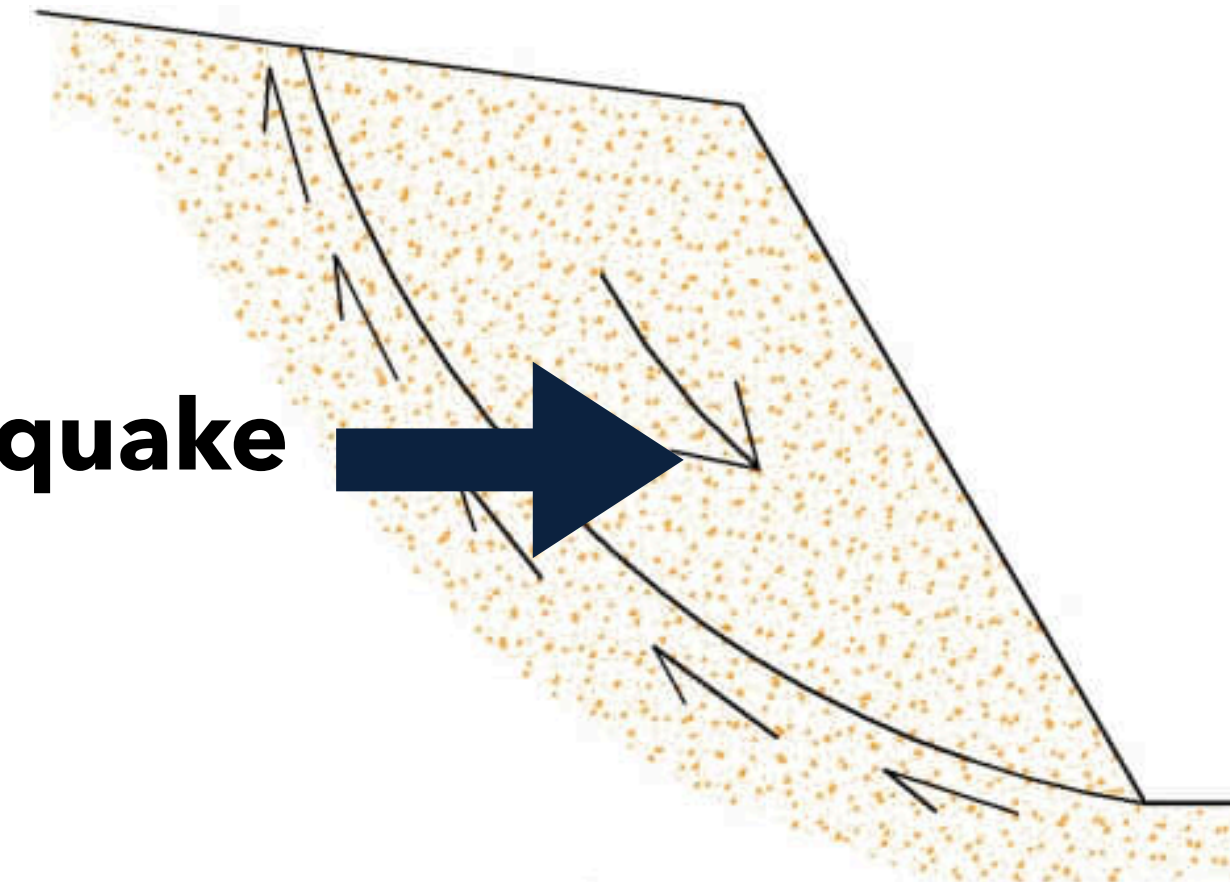


Very High
High
Moderate
Low
Very Low

SEISMIC INDUCED LANDSLIDE



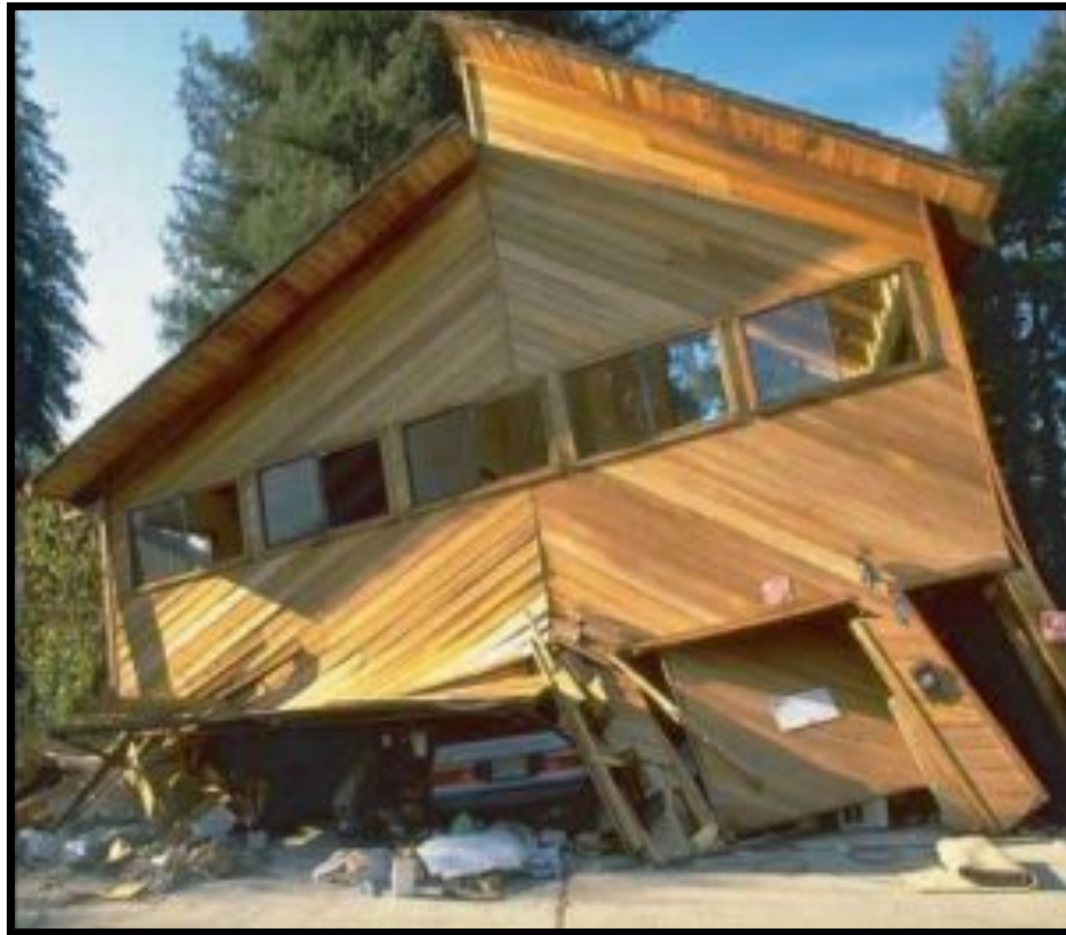
**Earthquake
load**



**Mapped
Areas**



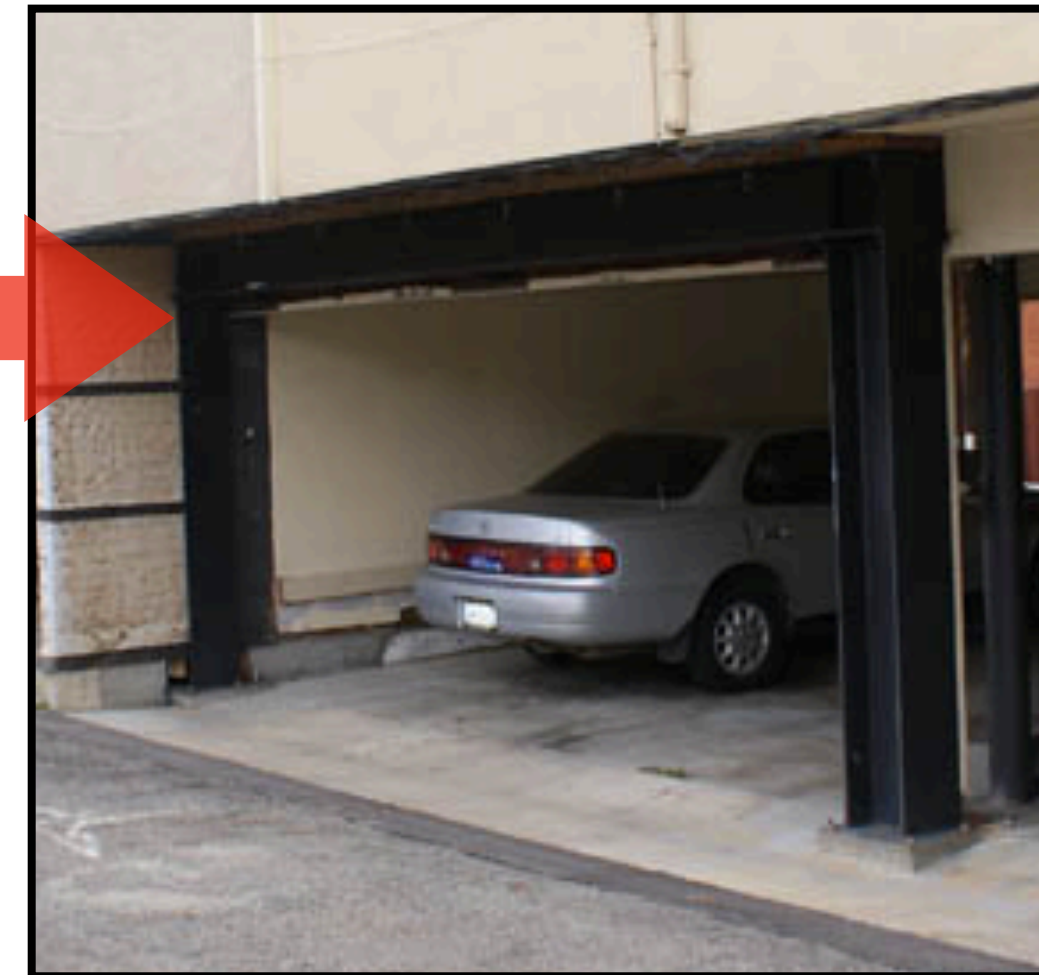
WEAK / SOFT STORY



**FAILURE
POTENTIAL**



**GARAGE
OPENINGS**



**MOMENT FRAME
RETROFIT**

RETROFIT OPTIONS

- Option 1: Steel 'Moment Frame' is installed around the perimeter of the opening.
- Option 2: Shear walls can be added on either side of the opening if there is enough space



WEAK STORY



Single Family Failure



Apartment Bldg Failure



What It Looks Like

Large opening with a living space(s) above it



How It's Retrofitted

A 'Moment Frame' is installed around the perimeter of the opening.

In some instances shear walls can be added on either side of the opening if there is enough space for shear walls

Other options could be closing up the opening with shear walls but this blocks the parking access.

THANKS!



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