CoreFirst LLC

A dynamic response for a dynamic situation.

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CoreFirst™ Patented

Deaths from U.S. Earthquakes: 1811-2014

Total deaths excluding fires, tsunamis and landslides: 628, or 3.09 people per year

USGS data as of December, 2014

Date UTC	Location	Deaths	
1812 12 08	San Juan Capistrano, California	40	
1812 12 21	Santa Barbara, California	1	
1857 01 09	Fort Tejon, California	1	
1868 04 03	Hawaii Island, Hawaii	77	Landslides: 31, tsunami: 46.
1868 10 21	Hayward, California	30	
1872 03 26	Owens Valley, California	27	
1877 05 10	Chile, South America	5	Tsunami in Hawaii.
1886 09 01	Charleston, South Carolina	60	
1892 04 19	Vacaville, California	1	
1899 12 25	San Jacinto, California	6	
1906 04 18	San Francisco, California	3000	Deaths (approximate) from earthquake and fire.
1915 06 23	Imperial Valley, California	6	
1918 04 21	San Jacinto, California	1	
1925 06 29	Santa Barbara, California	13	
1926 06 29	Santa Barbara, California	1	
1932 06 06	Eureka, California	1	
1933 03 11	Long Beach, California	115	
1934 03 12	Kosmo, Utah	2	
1935 10 19	Helena, Montana	2	
1935 10 31	Helena, Montana	2	
1940 05 19	Imperial Valley, California	9	
1946 04 01	Aleutian Islands, Alaska	165	Tsunami: 159 Hawaii, 5 Alaska, 1 California.
1949 04 13	Puget Sound, Washington	8	
1952 07 21	Kern County, California	12	
1952 08 22	Kern County, California	2	
1954 12 21	Eureka, California	1	
1955 10 24	Concord, California	1	
1957 03 22	Daly City, California	1	
1958 07 10	Lituya Bay, Alaska	5	
1959 08 18	Hebgen Lake, Montana	28	
1960 05 22	Chile, South America	61	Tsunami in Hawaii.
1964 03 28	Prince William Sound, Alaska	128	Tsunami: 98 Alaska, 11 California, 4 Oregon. Earthquake: 15 Alaska.
1965 04 29	Seattle, Washington	7	
1969 10 02	Santa Rosa, California	1	
1971 02 09	San Fernando, California	65	
1975 11 29	Hawaii Island, Hawaii	2	
1983 10 28	Borah Peak, Idaho	2	
1987 10 01	Los Angeles-Whittier, Cailfornia	8	
1987 10 04	Los Angeles-Whittier, California	1	
1989 08 08	Santa Cruz County, California	1	
1989 10 18	Santa Cruz County, California	63	
1991 06 28	Southern California	2	
1992 06 28	Landers, California	3	
1993 09 21	Klamath Falls, Oregon	2	
1994 01 17	Northridge, California	60	
1995 02 03	Wyoming	1	
2003 12 22	Central California	2	

*Approximately 34 people die per year in the U.S. due to dog-bites.

*Approximately 33 people die per year in the United States due to lightning strikes.

*Approximately 13 people are killed each year by vending machines falling on them.

When we put our money into <u>seismic upgrades for existing buildings</u>, we are betting that:
There will be an earthquake in our region within the useful life of the building.
That earthquake will be extremely large.
That extremely large earthquake will hit not only our state, our city and our neighborhood, but also our street.
That large earthquake will move our building in such a way as to collapse all or some of it.

When we make that costly bet, other items are sacrificed such as:
Affordability.
Better HVAC systems.
Better access to light and air.
Better learning and working environments.
Better access for lower income families.

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CoreFirst is the installation of steel areas of refuge into existing buildings which are at a high risk of collapse in a significant seismic event.

CoreFirst is 20% of the cost of a full seismic upgrade yet provides more protection than a new building.

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Visible, robust and secure.

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Why is our earthquake response a static response when **all other natural and manmade disasters demand a dynamic response**?

Drop, Cover and Hold On?

A static response….

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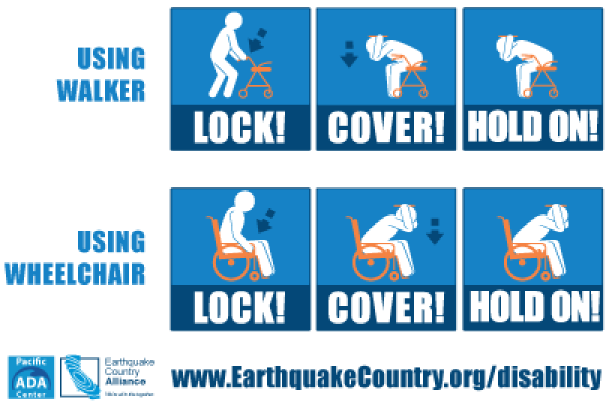


There are **clear challenges** for Drop, Cover and Hold on.

Failure of Drop, Cover and Hold in Katmandu.

The American Red Cross has acknowledged that there has been <u>no substantive studies regarding the efficacy of Drop, Cover and Hold-On.</u>

Again, why is our earthquake response a static response when **all other natural and manmade disasters demand a dynamic response**?

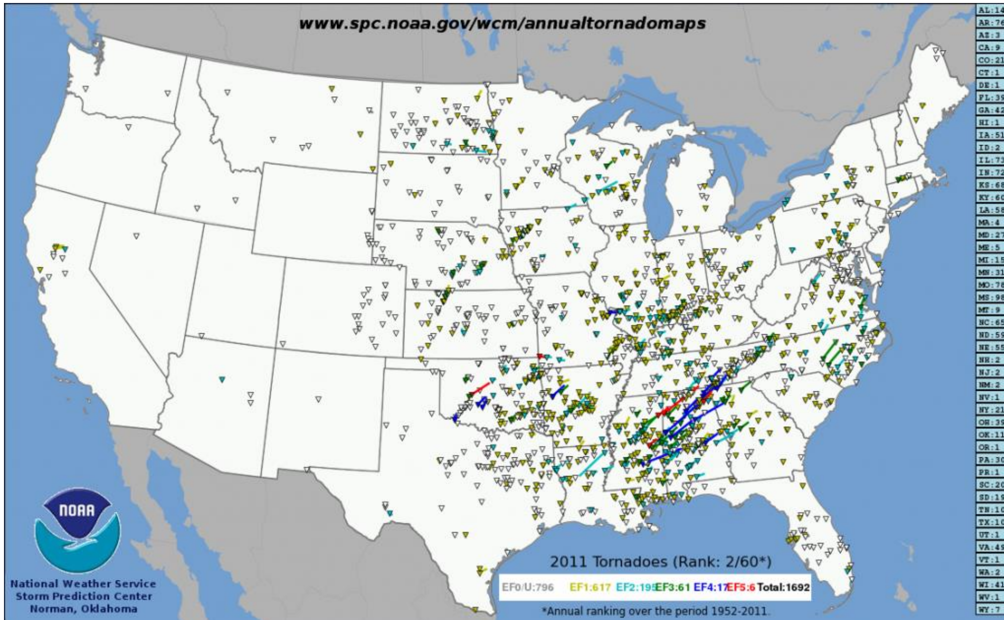
The objective is to be out of the building. Whether it is the fires that follow earthquakes, or the aftershocks, the objective is always to be out of the building.

Tornados hit the Midwest with an average of over **1,000 times per year***.

No one would suggest making all structures in the Midwest, tornado proof.

It would be structurally impossible to achieve and economically **disastrous.**

People in the Midwest learned long ago to "move to safety" either before, *or during*, a tornado.



*NOAA.gov

There is an average of **4,000 school building fires** reported by United States fire departments each year.
Fatalities resulting from school building fires were very rare.

We do our best to reduce the chance of fire within buildings but no one would suggest to make all building materials and items within buildings fireproof. That would be **impossible both physically and economically**.
We do, however, provide most buildings with sprinkler and alarm systems as well as evacuation plans, in the case of a fire. People evacuate structures *during* the fire.

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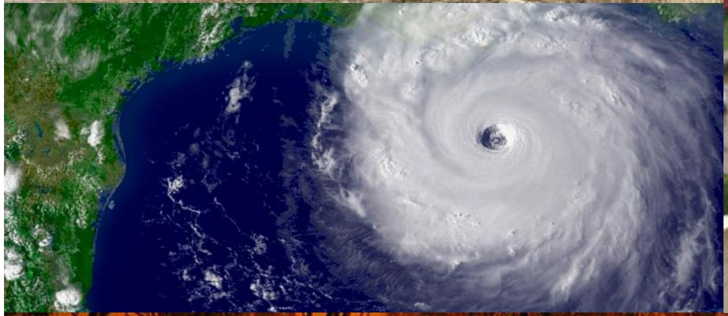


A dynamic response is also applied to;
Hurricanes   Forest fires   Tsunamis
School shootings   Flooding

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In Tokyo, when the shaking becomes too great, **Drop, Cover and Hold is discarded** and **a dynamic response is embraced**.

This video clearly represents that people chose to move great distances during the 4th most powerful earthquake ever recorded. The Tohoku earthquake was a 9.1 on the Richter scale.

Shinjuku, Tokyo March 11, 2011

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Earthquakes are similar to **tornados** in their destructive path.

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erratic course


tornado destruction
unaffected structures

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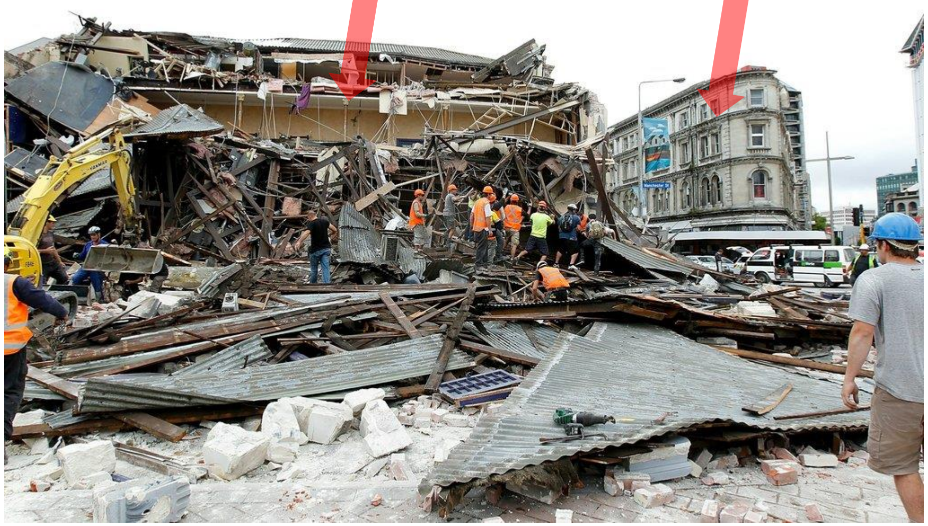
The erratic course of seismic damage is influenced by earthquake type, soil and topography.

damaged

undamaged

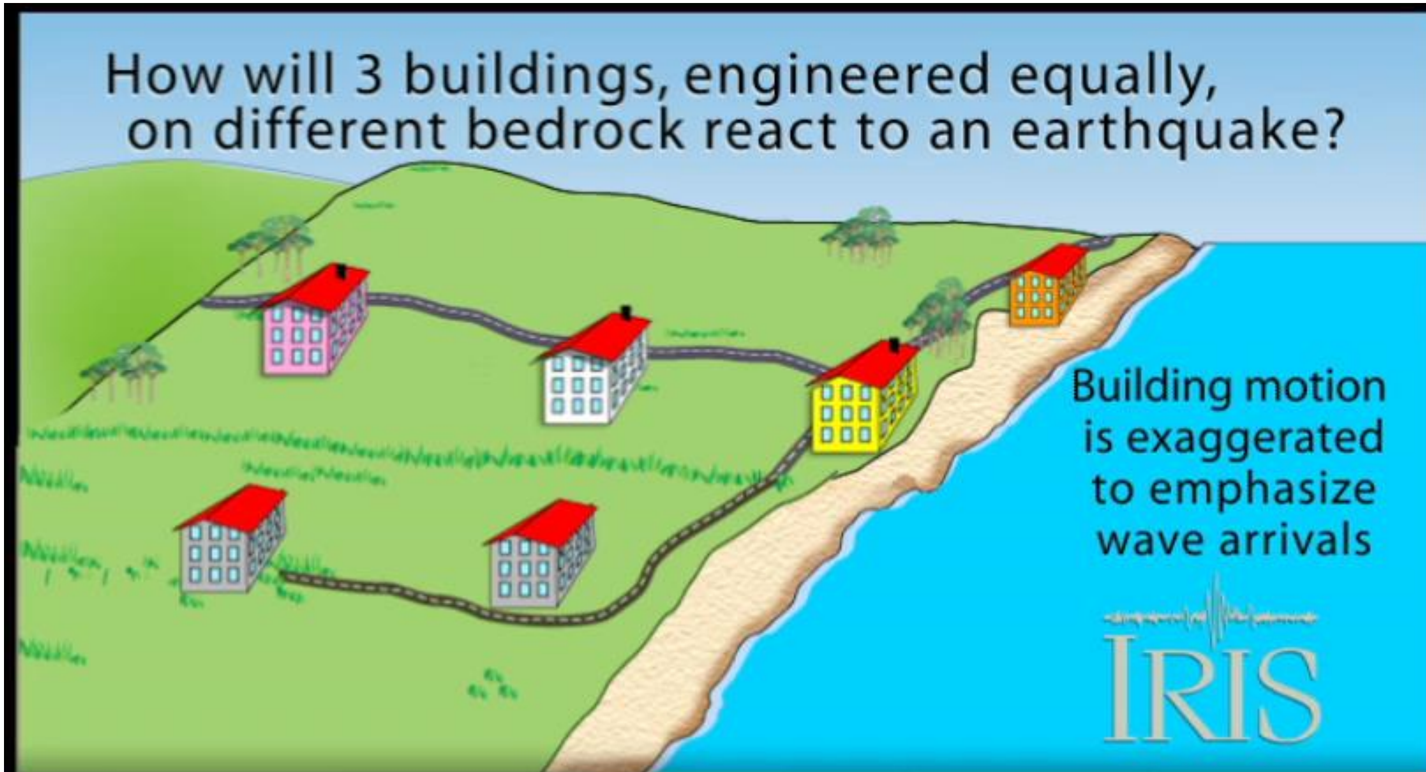


undamaged

damaged

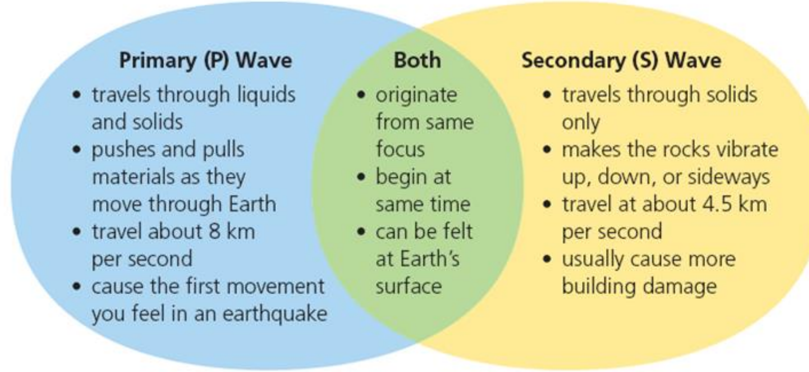
Christchurch, New Zealand 6.3 magnitude earthquake

7.5 earthquake in Kathmandu, Nepal



Two variables affect damage during earthquake:

1) Intensity of shaking (*felt motion, not magnitude*)
2) Engineering

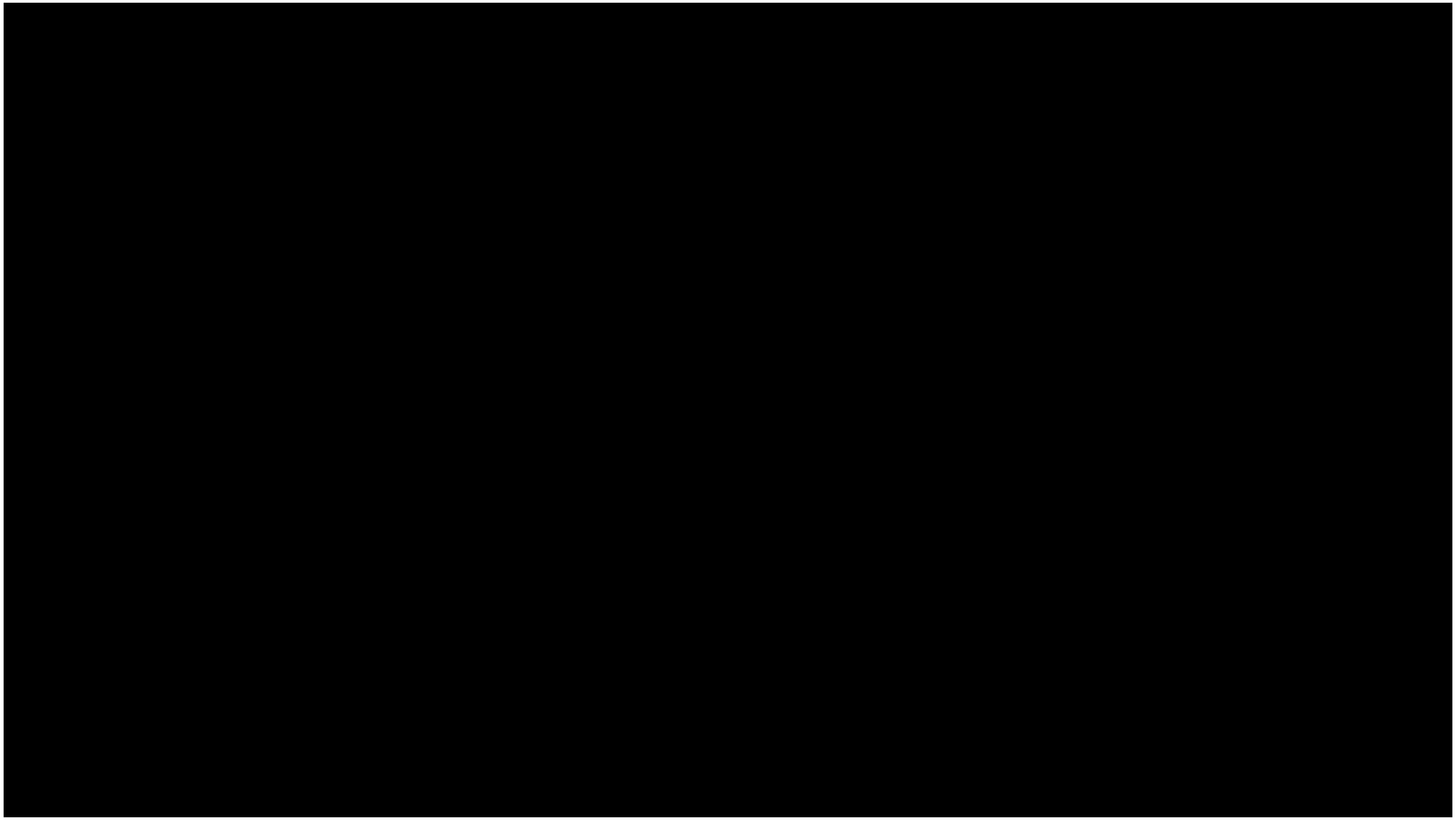


The Conversation is changing.
With the advent of **earthquake early warning systems** and social networking (texting, tweeting) there is now the opportunity to offer an advance warning of an earthquake's damaging S-waves. CoreFirst integrates this tested and proven new technology into their approach to preparedness and safety.

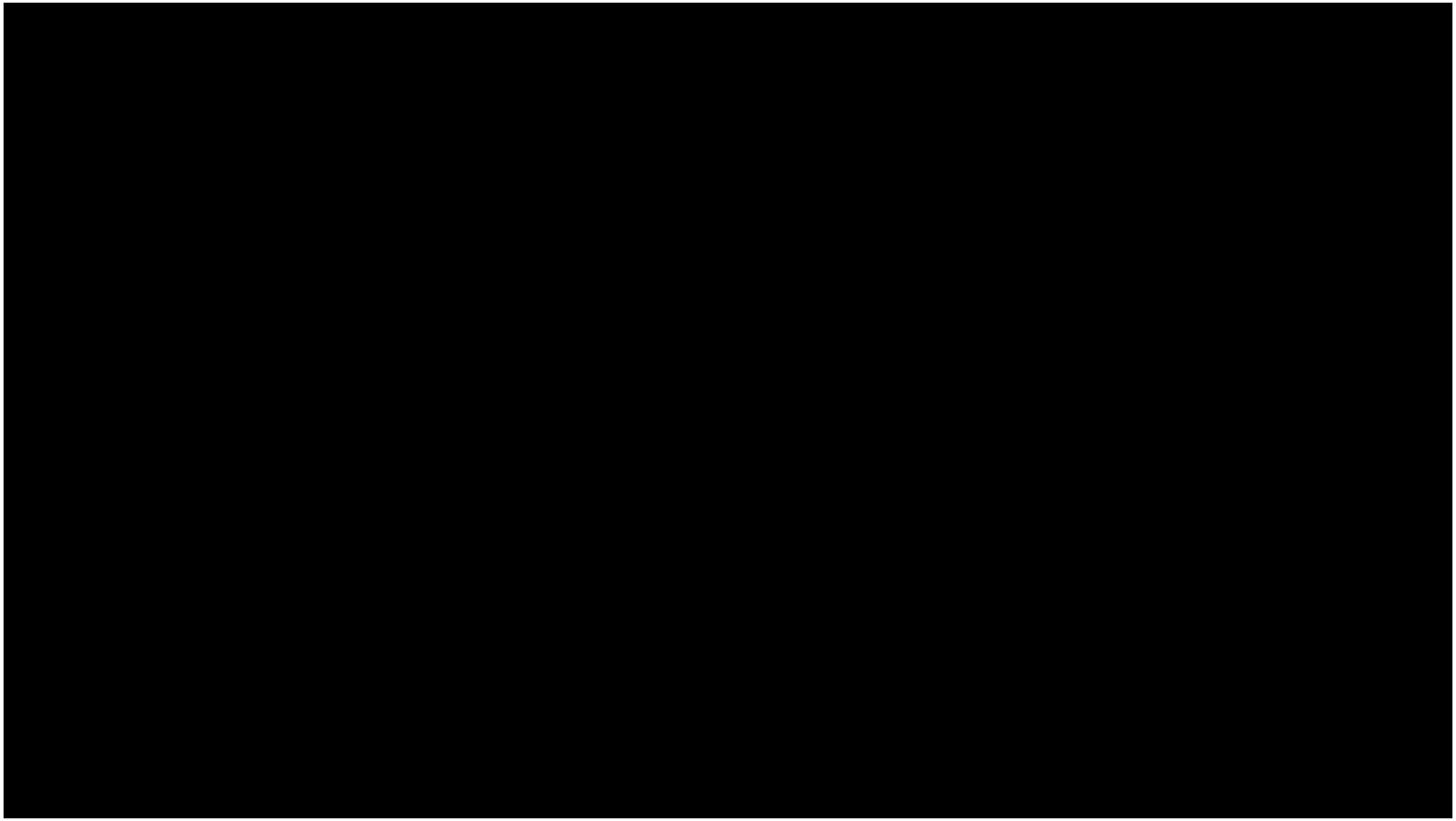
CoreFirst has teamed up with an earthquake early warning provider to install earthquake early warning systems in the United States. Based on the recent success of this technology in the Napa quake, the information will;

- Give notice of an impending quake, allowing building occupants to move to safety prior to the start of shaking.
- Grant businesses time to shut down and move workers to safe locations.
- Shut off gas valves and other dangerous supply lines prior to significant earth movement.
- Give medical professionals time to stop delicate procedures.
- Protect travelers by providing time for trains to slow or stop, for elevator doors to open, for bridge traffic to clear, for slowing or stopping traffic, and even stopping landings and take-offs at airports.
- Enable emergency responders to prepare by opening fire station doors and starting generators.
- During the Tohoku earthquake in 2011, residents of Tokyo received a minute of warning before the strong shaking hit the city, thanks to Japan's earthquake early warning system. The country's early warning system prevented many deaths from the earthquake, by stopping high-speed trains and factory assembly lines. People in Japan also received texted alerts of the earthquake and tsunami warnings on their cellphones.

The p-wave as detected by a dog, followed by the building occupants leaving the building during the 6.5 earthquake in Eureka, California.



The Installation of ShakeAlarm™ into the Radiator project in Portland,Oregon.



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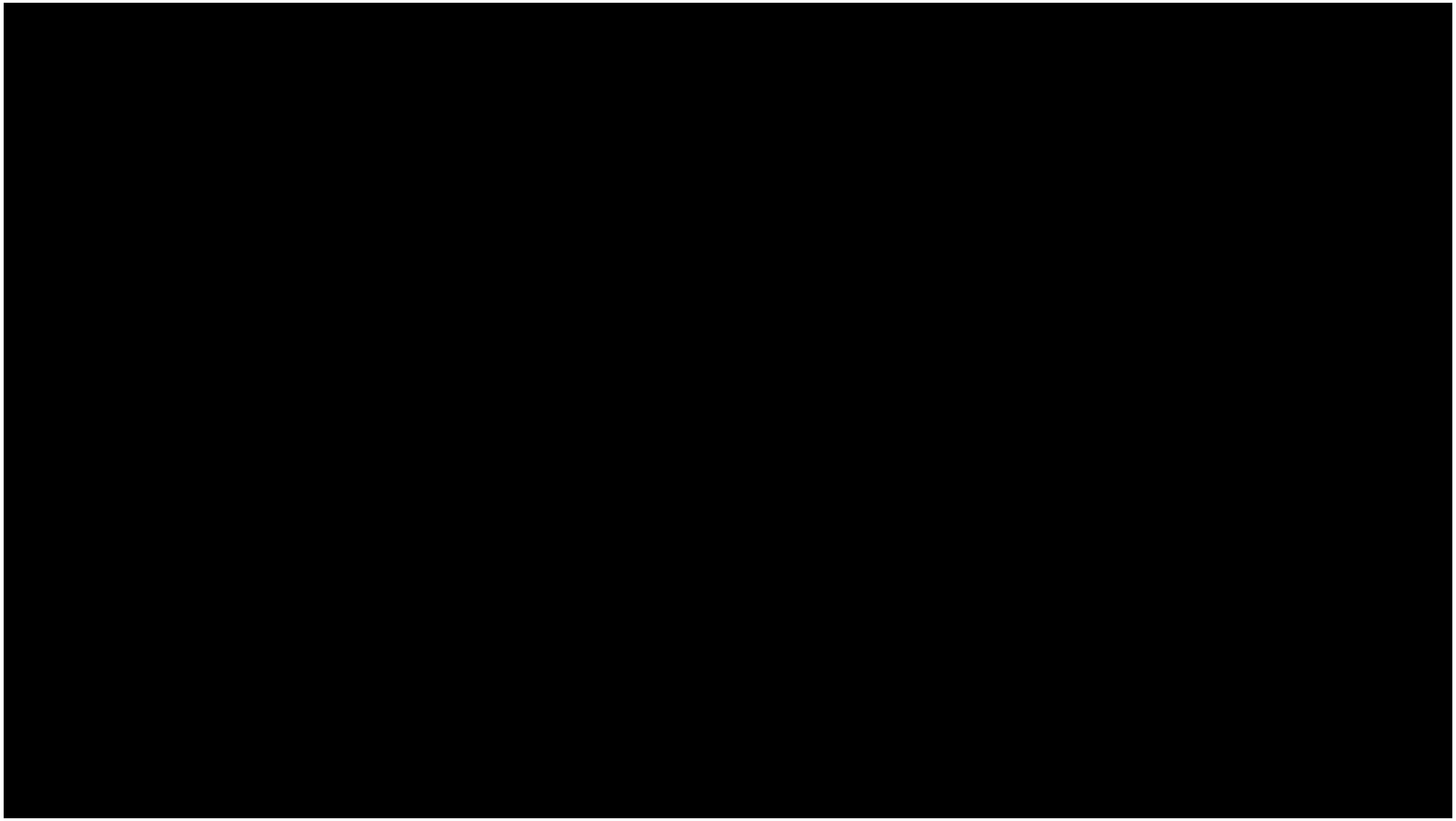
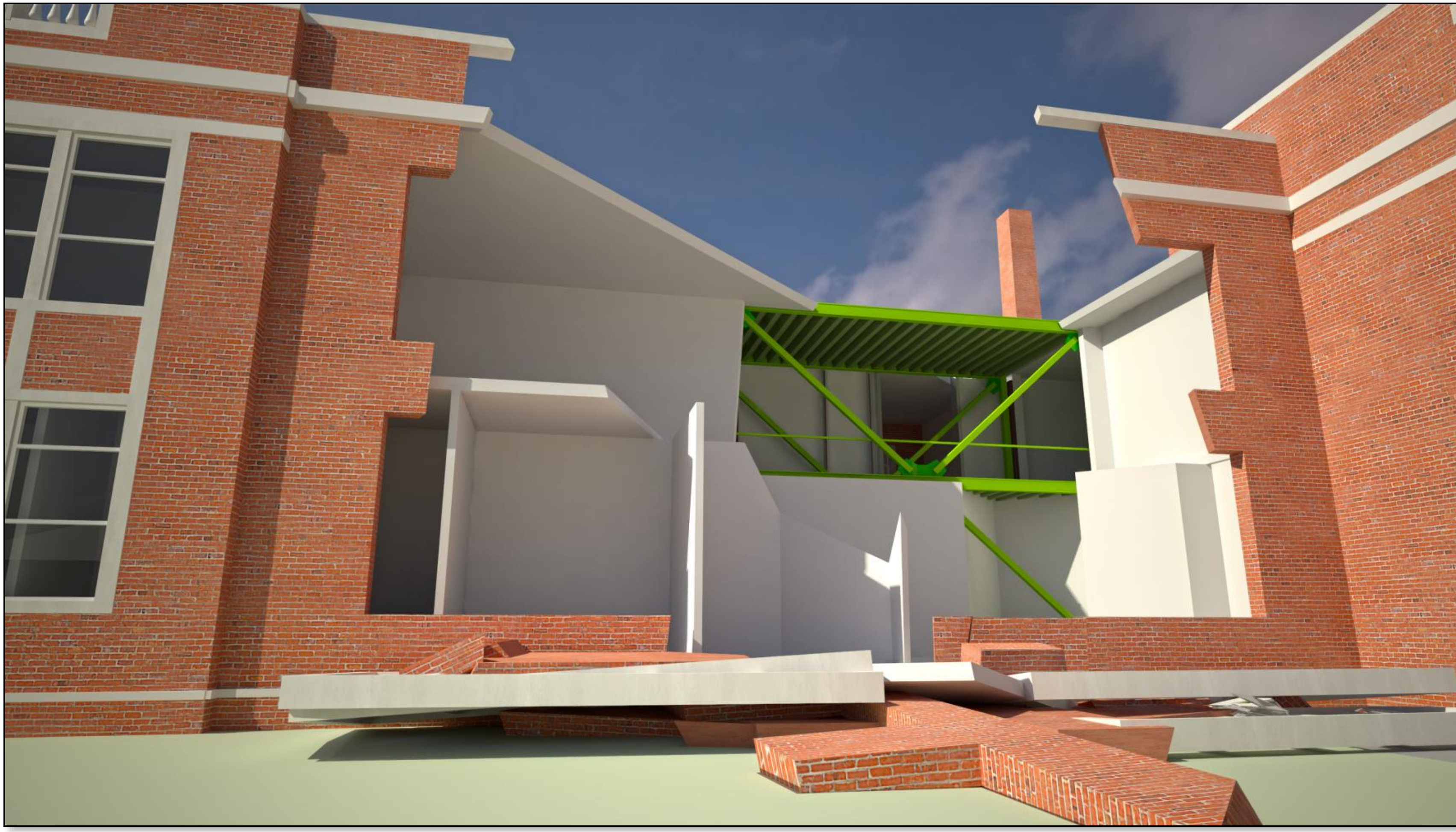
15 minutes of footage from Japan’s 9.0 Tohoku earthquake (unedited by CoreFirst).

3:01 “under the desk”, 4:01 “plastic desk”, 6:45 “We’re leaving”, 10:20 “leaving”, 12:15 “That is where we just were”





A wise approach to safety.