U.S. DEPARTMENT OF THE INTERIOR
U. S. GEOLOGICAL SURVEY

Make your own paper model of the Northridge, California Earthquake

January 17, 1994

By
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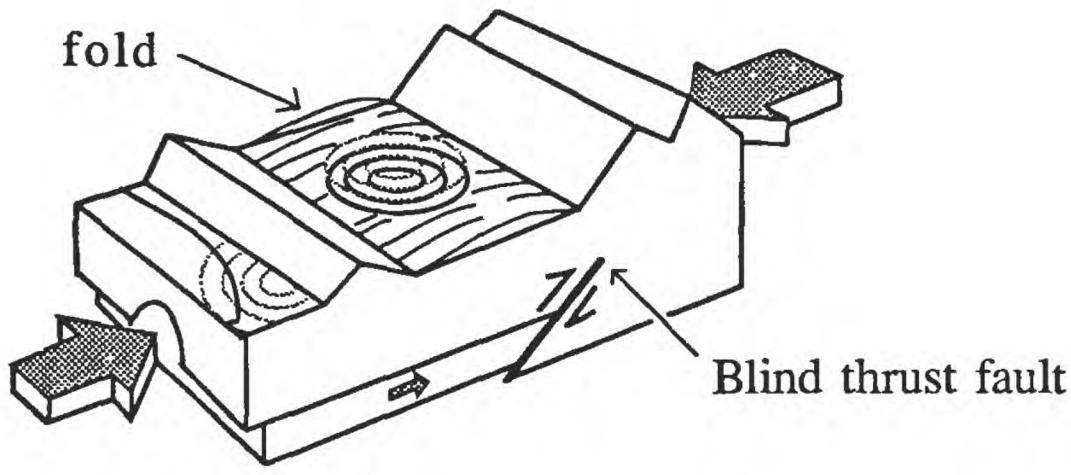
Open - file Report 94-143



The January 17, 1994, magnitude 6.6 Northridge, California, earthquake struck on a blind thrust fault. A **fault** is a fracture in the earth's crust. Stress builds up on the fault until it ruptures, with each side of the fault slipping in opposite directions for several feet, causing seismic waves to travel outward from the fault, much as ripples expand outward from a stone dropped into a pond. **Seismic waves** are simply sound waves traveling through rock at about 6,000 mph. The San Fernando Valley and Santa Monica were strongly shaken by the earthquake. A **thrust fault** is inclined to the earth's surface; when it moves, the crust is pushed together, with one side moving upward and the other down. A **blind thrust fault** does not cut the surface of the earth. Instead, the upper layers of the crust are warped upward by several feet into a gentle fold, as seen in the model. In 1971, a magnitude 6.5 earthquake occured on the nearby Santa Susana fault. A magitude 6 shock occurred on a nearby blind thrust fault, the Elysian Park fault in 1987.

Further Reading: R. S. Stein and R. S. Yeats, Hidden Earthquakes, **Scientific American**, June 1989.

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Cut solid lines
except fault lines or roads

Fold dashed lines

Glue

Base One

Santa Susana Mts.

Santa Susana Fault

Santa Susana Fault

Earthquake in 1971

Base One

Glue

Earthquake in 1994

blind thrust fault

State Highway 118

Northridge

San Fernando Valley

U.S. Highway 101

blind thrust fault

Earthquake in 1994

cut

cut

Cut Out

Earthquake in 1987

Elysian Park Fault

Index Finger here

Pacific Ocean

Santa Monica

Thumb here

Elysian Park Fault

Base One

Glue

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Alpha & Stein

Base One

Glue

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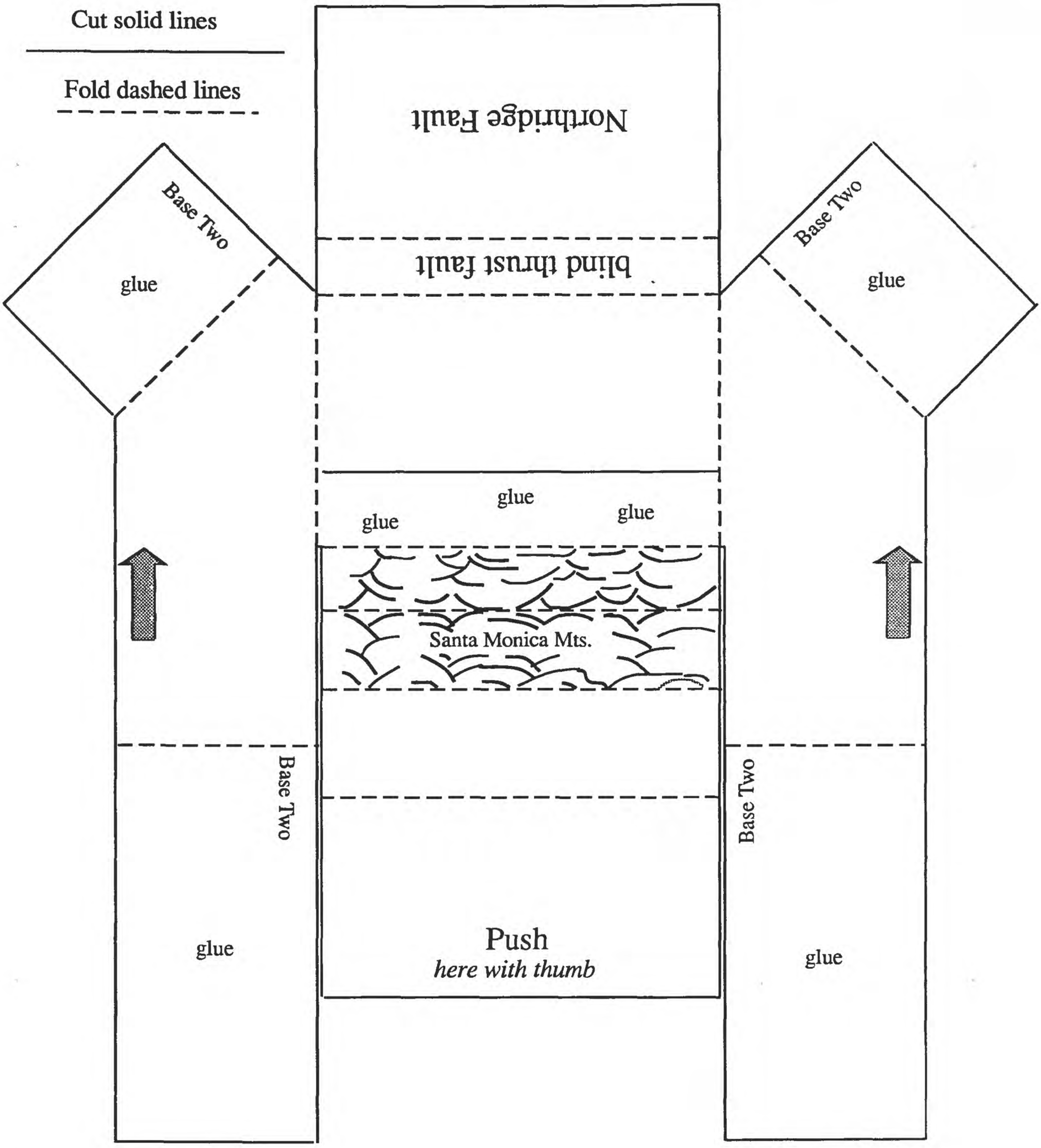


Instructions

Cut
1. Carefully cut out both Base One and Base Two, on ALL solid lines (except fault lines or roads). Do not cut dashed lines.
2. With your scissors point, poke a hole in Base One near the words "Cut Out". Then cut out the space between the San Fernando Valley and the Pacific Ocean. This is where the Santa Monica Mts. from Base Two will fit.

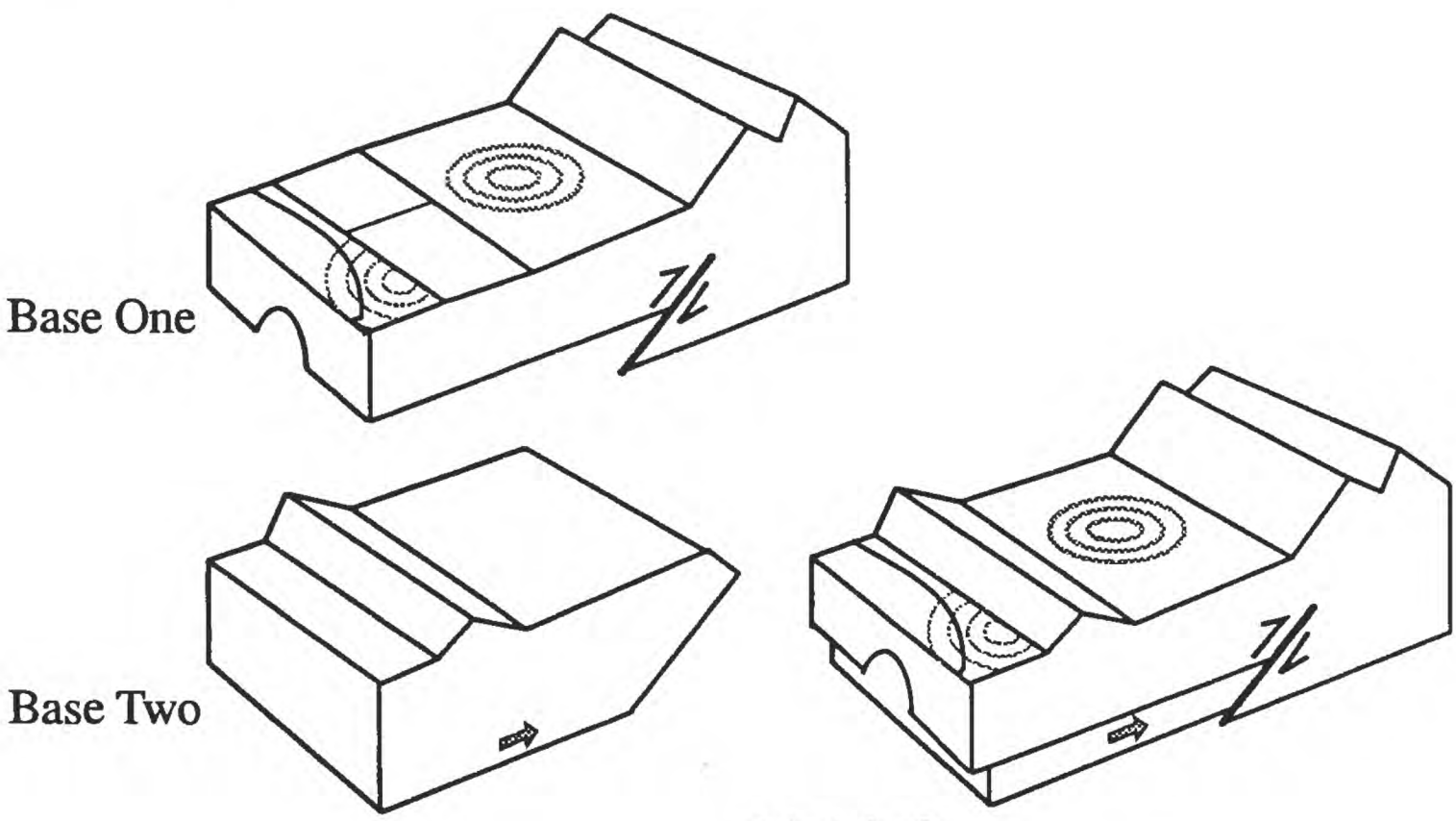
Fold
1. Fold ALL dashed lines.

Begin on Base Two
1. Fold down Santa Monica Mts. along center dashed crest.
2. Fold up on dashed lines at base of Santa Monica Mts. (mts. will stand up)
3. Fold down on the "Push herewith thumb" (this will be part of the base structure).

Base One
1. Fold up on dashed line above Hwy 118.
2. Fold down above Santa Susana fault in Santa Susana Mts.
3. Fold up Santa Susana Mts.
4. Fold down back side.
5. Fold down blank Base One.

Glue
1. Place Base Two on scrap paper. Glue the four tabs carefully to make Base Two.
2. Glue Base One. All tabs marked "glue" will fit behind solid ends of the base.

Now you have two glued parts.
Try Base Two under Base One for fit.
1. On BaseTwo, add glue to the area marked "glue glue glue" behind the Santa Monica Mts. Gently fit Base Two under Base One and push Hwy. 101 onto the glue. IMPORTANT: let dry.
2. Hold the front sides of Base One, gently, and slowly push Base Two back, creating a rolling, vertical earthquake in the valley.



Model of
Northridge earthquake