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Earthquake Engineering Research Institute
Preliminary Engineering Findings from Los Angeles Earthquake of February 9, 1971

The Earthquake Engineering Research Institute has established a committee under the chairmanship of Donald F. Moran, Los Angeles consulting structural engineer, to execute and coordinate a comprehensive investigation of the Los Angeles earthquake of February 9, 1971. This was announced on February 19 by C. Martin Duke, EERI President. Other members of the general committee appointed to date are J. F. Meehan, C. W. Pinkham, W. A. Brugger, Clarence Allen, C. M. Duke, G. W. Housner, H. J. Degenkolb, R. E. Wallace and LeRoy Crandall

EERI is a national organization of 90 experts in the field. EERI members and other engineers and scientists started field investigations within minutes of the earthquake, assessing the significance of the damage incurred. We have concluded that this earthquake is of major engineering importance and warrants a major investigation and report and have so recommended to the National Oceanic and Atmospheric Administration, which has authorized activation of our contract with them.

Completion of an extensive study of the damage and a comprehensive report sponsored by NOAA is anticipated within about one year. All sections of the Structural Engineers Association of California will play a major role in this study.

Some 200 accelerograms and 200 seismoscope records of the quake are available, making it the most instrumentally important earthquake in history. Preliminary indications are that there were some exceptionally high ground accelerations. A preliminary estimate of economic loss as high as a half billion dollars further justifies this major effort.

Numerous public and governmental agencies, educational institutions, professional engineering and scientific societies, and industries are being asked to

cooperate with the EERI in studies of geology and soils, buildings, water supply systems and dams, and transportation systems, including bridges, energy and communication systems, as well as sociological aspects

There are some 15 major failures which will be comprehensively analyzed and an additional estimated 50 selected cases will receive failure studies. Analysis will be made of instrumented buildings. Other studies will cover ground vibration and fracture, detailed geologic and geodetic studies of the area, soil characteristics and aftershock analysis.

The preliminary engineering findings are as follows:

Important instrumental data were obtained with which a review will be made of high rise building technology.

2. The hazard of unreinforced masonry bearing wall buildings has been re-emphasized.
3. Surprisingly large ground accelerations were recorded. They exceeded at some places the El Centro and Taft records that have guided earthquake resistive design.
4. Reassessment of some of the design criteria and methods are required for:
   a) Freeway overpasses
   b) Buildings in general
   c Earth dams containing hydraulic fill

   It is desirable to design for differential foundation movements of important structures.
6. Greater caution is required relative to building in the zones of faults, and effort is required to map better the fault locations and to understand their degree of activity.
7 Confidence has been increased in California school design criteria and methods
8. This is the most important earthquake in history from the standpoint of engineering instrumental data obtained.

9. Standard wood frame houses performed reasonably well considering the unusually high ground accelerations and ground cracking. However, reconsideration of some code provisions and their enforcement is indicated.

10. New effort is needed to safeguard electrical and communication equipment, and to protect essential equipment within buildings

Greater attention to safety measures in the use of glass for windows and doors is called for

Disaster relief activities were effective but should be improved relative to organization and communication.

The earthquake deserves a major investigation in all its aspects.

Facilities such as hospitals, whose continual functioning is essential to the community, should be designed to remain functional after a strong earthquake

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