

by

E. J. Teal, J. Lord and C. Meyer

DISCUSSION by: Sigmund A. Freeman^I

The MDOF presented by the authors uses an idealized building model to represent a real building. The example in Figure 1 illustrates little difference between the MDOF and the SDOF spectra for fundamental periods less than 2 seconds. Therefore, it appears that the usefulness of the MDOF is most significant for large highrise structures over 20 stories. For buildings of this size it will usually be economically feasible to develop a mathematical model that more accurately describes the actual building rather than use an idealized model. However, as the authors state, the MDOF approach may be useful for preliminary design purposes.

In reviewing the Table I roof accelerations, columns a) and b) agree fairly well except in one case the difference is over 100% and in some others the differences are 20% to 40%. These differences represent variations between the calculated mathematical model and the idealized mathematical model as indicated by the authors. However, the comparison of roof accelerations in column c) and column a) appear to be in unreasonably poor agreement. I suspect that there may be some error in the values listed in column c). If the same mathematical models were used for a) and c), on the average, the agreement between the two methods should be fairly good. My own experience has shown that the SDOF response spectra using the square root of the sum of squares (which the author refers to as the RMS Method) usually gives good agreement with time-history analysis methods (1).

REFERENCE

- (1) "San Fernando, California, Earthquake of February 9, 1971," Leonard Murphy Scientific Coordinator, ERL, NOAA. Department of Commerce, to be published December 1973. Buildings 29 and 30, Tables 8 and 9.

^IAssociate, John A. Blume & Associates, Engineers, 130 Jessie Street, San Francisco, California 94105

Paper 353:

Multi-Degree of Freedom Response Spectra for Elastic Systems

by

E. J. Teal, J. Lord and C. Meyer

Reply to Discussion by Sigmund A. Freeman

As Mr. Freeman noted, spectrum values computed by the root mean square method seemed to be in unreasonably poor agreement with results from time history analysis, as they were listed in Table I. Unfortunately, erroneous values had been recorded in Table I for the RMS method (Columns "C"). These values have now been corrected. The comparison shows much better agreement, but the authors believe none of the statements made in the paper are affected.