

SEISMIC EVALUATION OF RC SCHOOL BUILDINGS WITH PUSHOVER ANALYSIS

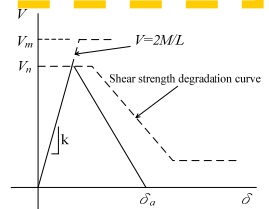
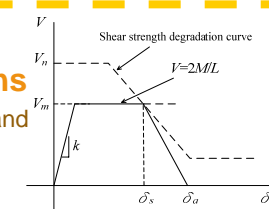
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Summary

This paper provides a seismic evaluation process for RC school buildings with pushover analysis. It can consider the seismic resistance of the structure is not only controlled by the strength but also by the stiffness. This process introduced the ETABS-Nonlinear to be a tool program for the precisely seismic evaluation. It can be used to get the relative curve of the base shear versus the roof displacement. The relative curve of the base shear versus roof displacement can present the relation of the loading and deflection of the RC structure. Through the verification with the experiment data from in-situ tests done by NCREE in Taiwan, the result from this study can provide a good approximation for RC school buildings. Therefore, the seismic evaluation process which suggested by this paper can provide the engineers a good way to precisely seismic evaluation of RC school buildings.

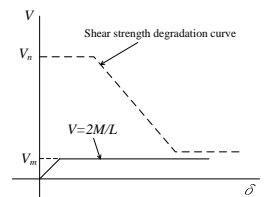
Nonlinear behavior of beams or columns

According to the difference between the flexural strength and the shear strength, the failure modes of columns can be divided to three kinds, flexure-shear, shear, and flexure failures.



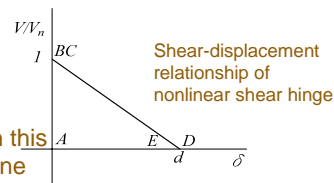
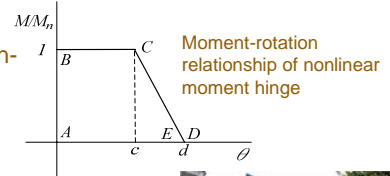
Nonlinear hinges for beams or columns

- The engineers can define the hinge properties by research papers or experimental data with their experience.
- This paper depends on the previous lateral loading-displacement curves of column and beam, and suggests the parameters of moment hinges and shear hinges which can be the reference for the engineers.



Analysis results

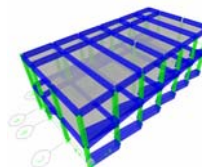
- The comparison of analytical and experimental pushover curves of in-situ test.
- The comparison shows that the analytical model presents well prediction before the pushover curve is decurved. In the future research, the negative slope of pushover cure will be improved by modify with the plastic hinge properties..



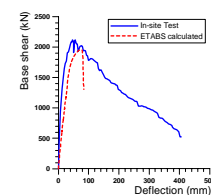
Pushover test in Kouhu elementary school

Conclusions

- The detailed seismic evaluation method proposed in this paper can reasonably provide a measure to determine the seismic capacity of buildings.
- Through the verification with the experiment data from in-situ tests done by NCREE in Taiwan, the result from this study can provide a good approximation for RC school buildings.
- The seismic evaluation process which suggested by this paper can provide the engineers a good way to precisely seismic evaluation of RC school buildings.



Numerical model of ETABS for the specimen in Kouhu elementary school



Comparison of analytical and experimental pushover Curve of in-sited test

NCREE