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Seismic Performance Evaluation of Existing Building Using Structural Information Modeling

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Abstract : The procedure for the seismic retrofit of existing buildings includes the seismic evaluation. In the evaluation step, it is assessed whether the buildings have satisfactory performance against seismic load. Based on the results of that, the buildings are upgraded. To evaluate seismic performance of the buildings, it usually goes through the model transformation from elastic analysis to inelastic analysis. However, when the data is not delivered through the interwork, engineers should manually input the data. In this process, since it leads to inaccuracy and loss of information, the results of the analysis become less accurate. Therefore, in this study, the process for the seismic evaluation of existing buildings using structural information modeling is suggested. This structural information modeling makes the work economic and accurate. To this end, it is determined which part of the process could be computerized through the investigation of the process for the seismic evaluation based on ASCE 41. The structural information modeling process is developed to apply to the seismic evaluation using Perform 3D program usually used for the nonlinear response history analysis. To validate this process, the seismic performance of an existing building is investigated.

Keywords : existing building, nonlinear analysis, seismic performance, structural information modeling
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