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From v4.02 onwards, the Appendix 1 concerned with cancellation of unbalanced force vector is added.

From v4.03 onwards, an elastoplastic incremental analysis of a frame containing brittle members can be performed.

From v4.05 onwards, specification of how to estimate the internal force vector of a frame is possible (Appendix 2).

From v5.00 onwards, input of the post-yield non-dimensional strain hardening coefficient of the steel fiber is possible (the form of input data is slightly changed).

From v5.10 onwards, output data increase and the relative additional input data are required.

1. The computation begins by double-clicking a batch file, for example, 'frame-d-2d.bat'. Simultaneously, a command prompt window opens to show the status of computation. When the computation is completed or any error is detected during the computation, the command prompt window closes and four output files, 'd6.txt', 'd7.txt', 'd8.txt', 'd9.txt' and 'd10.txt' are created. The contents of each output file are as follows:

d6.txt: confirmation of the input data

d7.txt: time histories of story shearing forces and story drift angles of the first assigned two stories

d10.txt: time histories of story shearing forces and story drift angles of the remaining three stories

d8.txt: yielded elements and current coordinates of each node at every 200 steps, and the maximum values of displacement, drift angle, acceleration, and shearing force of each story up to the current moment

d9.txt: resultant forces of each element at every 200 steps

Input data file can be changed by editing the batch file.

2. The following are attached: the input data files for a dynamic analysis of the plane frame in Fig. 13 in Chapter 7, and a dynamic analysis of a 3D frame. These files help the user to understand how to create the input data file and can be used as template. The names of the attached files with notes are as follows:

(1) Dynamic analysis of the plane frame in Fig. 13 in Chapter 7

frame-d-2d-4div-e.txt: four element approximation with the standard model.

frame-d-2d-mod-e.txt: one element approximation with the modified model.

frame-d-2d-free-e.txt: input data file for free vibration.

(2) Dynamic analysis of the 3D frame with four columns per story and square plane, which satisfies a 90-degree rotational symmetry with the plane frame in Fig. 13

frame-d-3d-mod-e.txt: one element approximation with the modified model.

frame-d-3d-mod-Y-e.txt: one element approximation with the modified model
(one-directional vibration in YZ-plane).

frame-d-3d-free-e.txt: input data file for free vibration.

The meanings of characters in file name are as follows.

‘d’: dynamic, ‘2d’: two-dimensional, ‘3d’: three-dimensional, ‘4div’:
four element approximation for a member with the standard model,
‘mod’: ‘modified model’, ‘e’: English version

The use of the one element approximation for a member with the modified model is recommended, especially in dynamic analysis, because considerable computation time may be required for the use of four element approximation for a member with the standard model.

3. Three batch files ‘frame-d-2d.bat’, ‘frame-d-3d.bat’ and ‘frame-d-3d-Y.bat’ are also attached. In the analysis by ‘frame-d-2d.bat’, a ground motion in EW-direction of El Centro earthquake is used in X-axis direction of the plane frame. On the other hand, in the analysis by ‘frame-d-3d-Y.bat’, the same ground motion is used as only one ground motion in Y-axis direction of the three-dimensional frame which satisfies 90-degree rotational symmetry with the above plane frame, therefore, we can see the obtained response of the three-dimensional frame in Y-axis direction is the same as that of the plane frame in X-axis direction.

4. The executable files ‘d64.exe’ and ‘md64.exe’ are capable of analyzing a frame model with 1200 nodes and 600 nodes, respectively.

5. The author shall not be responsible for any loss, damages and troubles caused by use of FPHM-D program.

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