Reduce analysis run time

How can I reduce analysis run time?

ANSWER: Apart from revising the model, which is usually best, run time may be reduced by implementing the suggestions which follow:

- Trim earthquake records Strong shaking typically occurs over only a portion of the earthquake record. Maximum response should occur during or shortly after this period. It may be appropriate to trim the earthquake record to consider only the portion ranging from just before the onset of strong shaking to a few seconds past its decline.
- Increase the Overshoot Factor When you set up an Analysis Series, it may be reasonable to use a larger Event Overshoot Factor, perhaps 5%. The default is 1%, which may be tight, especially for a large structure. This increase tends to reduce the number of nonlinear events, thereby reducing the number of times the stiffness matrix is re-factorized. When setting a higher Overshoot Factor, be sure to check the energy balance at the end of each Echo***.txt file. Energy unbalances below approximately 5% should be acceptable, whereas larger unbalances may indicate nume rical inaccuracy in the analysis.
- Save fewer results You may be able to save results every 2 or 3 steps, rather than at each step. Time-history plots will subsequently be more jagged, though demand/capacity ratios and usage ratios are always calculated for every step.
- Follow Capacity Design Follow Capacity Design principles such that significant inelastic behavior is only present in some components and regions of the structure, rather than the entire structure. In doing so, it may be reasonable to model and design the remaining components to remain essentially elastic. This can substantially simplify the analysis model and reduce analysis time.