

Cyclic pushover analysis

Cyclic pushover analysis may be performed using either of two approaches, outlined as follows:

Sequence of nonlinear-static load cases

Cyclic pushover analysis may be performed through a sequence of chained pushover analyses. Two key aspects of this approach include:

- Each pushover analysis would be pushing the structure in the direction opposite to that of the preceding pushover load case.
- Each pushover load case, aside from the first, would use stiffness at the end of the previous pushover load case.

Time-history load cases

An alternate approach is to use a single nonlinear time-history load case.

Some special considerations are necessary when using a time-history load case to model applied loading, listed as follows:

- Load should be scaled up or down to achieve the monitored pushover displacement desired for each cycle.
- The time function should consist of linear segments which apply the loads in one direction and then the reverse, possibly with a constant segment to hold loads before their reverse.
- For each cycle in the sequence, the peak positive and negative time-function values must be found, starting with the first cycle of load application.

A sample of a time function is shown in Figure 1:

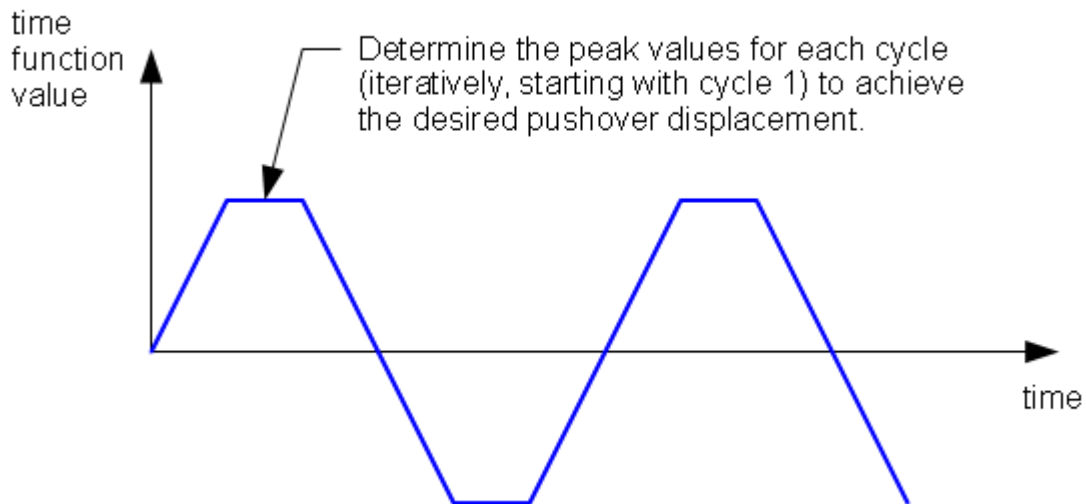


Figure 1 - Cyclic time function