DYNAMIC BEHAVIOR

From a structural point of view, perhaps the greatest matter, and one which necessarily attracts most attention, is the expected behavior of the structure in a massive earthquake, Richter 7.0 or greater.<P>
The classic suspension bridge is a highly flexible, and therefore tends to perform well, providing footing design is good: the structure vibrates, damps the oscillations, and then returns to its original state.<P>
However, it is not always possible to achieve this ideal, and a more sophisticated approach, used more and more in modern times, is to design a structure which is expected to oscillate in certain unpredictable modes, and to build in weak-links into the design, so that under massive dynamic oscillations, these weak links absorb the energy, and focus failure into preassigned localized zones which leave the main structure intact and failure free, and are then relative inexpensive to repair.<P>
The CES bridge design is based on this approach. The different double cantilever sections, will vibrate individually. Because they have different moments of inertia and different footing conditions, the oscillations will be out of phase from bridge segment to segment: but the very small point-like connection between the cantilever sections, allows a controlled , damped failure to occur, absorbing energy, leaving the bridge entirely intact, with a repairable amount of controlled damage at each link.<P>