

Abstract

Mohamed A Elsayed

Peak Wind Load Comparison: Theoretical Estimates and ASCE 7

A new procedure to derive the distribution of peak pressure and load coefficients from individual sample records is applied to wind tunnel records obtained from a generic flat-roof model tested at the Univ. of Western Ontario (UWO). The initial step of this procedure requires the identification of the appropriate marginal probability of these records. The corresponding distribution of the peaks is then obtained with the use of the standard translation process. Predicted load coefficients over variable tributary areas as determined from UWO records, based on a preset probability of non-exceedence are compared with the provisions of the ASCE 7 standard. Based on the open-terrain observations, the code provisions generally correspond to relatively low levels of non-exceedence of 84% less. The ASCE 7 suggested method to estimate the peak pressure coefficients for the suburban environment based on those for the open terrain could be successfully applied to the UWO observations. This, however, is generally not true when performing a similar estimation procedure for peak load coefficients from the Clemson experiments.