

Abstract

The purpose of this thesis is to explore the structural system behind a new kind of luxury design - the supertall balcony. Recently, one of the first examples of these balconies is what was designed and built at Thirty Hudson yards. At approximately one thousand one hundred feet high, this balcony, known as the observation deck, is the tallest in the western hemisphere. The observation deck offers a study on the various forces and design considerations that must be taken to accomplish such a feat. As there is no typical design guide for these balconies, this thesis will attempt to, holding several parameters, analyze balconies of a similar size to that of Thirty Hudson yards. Three different sized steel superstructure balconies will be analyzed using the structural analysis software Robot Structural Analysis, as well as Autodesk CFD for wind simulation. Wind results will be compared to those calculated from the New York City Building Code 2014 and ASCE7-16 as well as any effects the balcony has on the main tower.