



Departmental Seminar
Department of Civil Engineering and Engineering Mechanics
Columbia University

Bank of America Tower at One Bryant Park

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Construction is complete at One Bryant Park, the 55-story New York headquarters for the Bank of America. With 2.2 million square feet of office space and a height of 945 feet—1200 feet to its spire—it is the second tallest buildings in Manhattan and will remain so until the completion of Freedom Tower. For architectural (9'-6" ceilings) and mechanical (under-floor air circulation) reasons, the typical floor-to-floor height is 14'-6", significantly higher than most office buildings. Consequently, there are fewer floors than might be expected for a building of this height. Although simple in appearance, the structural design was anything but and presented challenges in all of its aspects, from the bottom of the foundation to the tip of its spire. The solutions to these challenges, however, ended up as elegant as the building's crystalline form would imply.

Although a steel-framed building, One Bryant Park utilizes reinforced concrete shear walls that encase the steel frame of the vertical transportation core to resist lateral loads. This system, where the steel frame is erected first and followed by the concrete encasement, was developed in the late 1960s and early 1970s but did not achieve widespread use, mainly due to problems coordinating the two trades and the lack of efficient forming systems. Recently, with the desire by building owners for hardened elevator shafts and stairways, this construction methodology is becoming more attractive. The system maintains the speed of erection of all-steel buildings but takes advantage of the stiffness of concrete shear walls. This construction technique presents its own set of design challenges.

Environmentally, One Bryant Park has been certified as the first Platinum rated high-rise building in the country, and the only one in the world. This was achieved through many mechanical systems and architectural features but was aided by the structural systems as well.