STRUCTURAL TECHNICAL REPORT 1
STRUCTURAL CONCEPTS & EXISTING CONDITIONS

EXECUTIVE SUMMARY

A detailed description and a preliminary analysis of the existing structural system of the 57 story Comcast Center located in Philadelphia, PA is presented in this report. The building is used primarily as office space with some restaurant and retail spaces. Three floors of parking are located below grade. A blast-resistant concrete core supports the steel framing of the shell of the building. Composite metal deck floors are utilized to minimize the depth of each floor system. Gravity loads are transferred through caissons to solid rock with a bearing capacity of 20 tons per square foot.

The walls of the concrete core function as shear walls in the lateral force resisting system. A wind tunnel test was conducted to determine the wind loading. Wind load controls the design of the lateral force resisting system with a base shear of 6,247 kips. A vierendeel truss is used to transfer the gravity loads in certain areas where columns are not continuous to the foundation.

The latest edition of the City of Philadelphia Building Code and the 1996 Boca Building code were used to design the Comcast Center. A preliminary analysis was done using the same codes to verify the existing design. Spot checks were performed for a typical steel beam with composite metal deck slab, a steel girder, a steel column, a concrete shear wall, and a steel braced frame were calculated for this report.