Towers Crescent Building B

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Technical Assignment 1
Structural Concepts / Existing Conditions

Executive Summary:

Towers Crescent Building B, located in Vienna, Virginia was built in 2001 by RTKL Associates Inc, KCE Structural Engineers, and Davis Construction. The overall design is based off of an existing building, which was designed by Phillip Johnson in the 1980's. Building B, and adjacent Building C, were both designed to replace the original idea for five additional buildings on the same plot of land. The façade is made up of a masonry and aluminum curtain wall.

This report describes the analysis of the structural systems of Building B, including Wind and Seismic analysis, and spot checks of the beams and girders on a typical floor, under typical dead and live loads.

This is a summary of the results found after analyzing Building B for lateral and gravitational loading.

Based on a dead load of 63.75 psf and a live load of 100 psf, it was determined that the existing sizes for the design of the beams and girders are adequate to hold the loads.

Through the lateral load analysis, Wind loads control base shear, with a value of 522.6 kips, while Seismic loads control for overturning moment, with a value of 40,477'kips. Braced, wind frames are used to respond to the loads due to wind and seismic forces. In the north – south direction, 4 braced frames are used, while in the east – west direction, only 2 are used.

The appendices provide a more in depth look into the calculations for the lateral systems, gravitational loads, and spot checks for the beams and girders. A.1 is a description of the gravitational loads on the structure. A.2 and A.3 show the calculations and diagrams for the wind and seismic loads on the building, respectively. A.4 shows the Spot checks for the beams and girders.