



Executive Summary:

Structural Existing Conditions Report is an initial investigation into the structural system of 12-story Lexington II residential tower at Market Square North in Washington D.C. For this report, a detailed look will be taken at the structural system of Lexington II, its primary features, design code, and loadings. This report will also check several members for structural integrity.

The structural system for Lexington II is cast in place concrete. The foundation is a MAT foundation resting on original soil. All floor systems throughout Lexington II are 2-way slabs which support the required gravity load. A grid of concrete columns is used to transfer the gravity loads from the floor slabs to the foundation. A typical bay size would be 13.5' by 16.6', however many columns are offset from this grid. A core of several small shear walls is located around the elevator shafts. These shear walls counteract the lateral loads on the building.

When the Lexington was designed for completion in 2002, the primary building code used was the 1996 edition of the BOCA code. For my report loading was recalculated using a more recent code, ASCE7-02. The dead load, live load, roof live load, snow load, wind load, and seismic loads were found. The live load I calculated was very comparable to the one used in the original design of the building. I was unable to compare the other loadings to the original design load due to lack of information about the original design load.

The final part of my investigation was to spot check several structural members for gravity and lateral loading. My results were similar to the original design of the structure and often proved why there is additional top rebar added to most of the structural drawings. My spot checks also proved that the shear walls do not carry the complete lateral load, but instead the columns spaced throughout the building are strong enough to help support the building against the lateral load.