

STRUCTURAL TECHNICAL REPORT 1

DESCRIPTION AND ANALYSIS
OF STRUCTURAL SYSTEM

DIMITRY A. REZNIK

STRUCTURAL OPTION
ADVISOR: DR. PARFITT
NORTHBROOK CORPORATE
CENTER

11/5/2005
AE 481W



EXECUTIVE SUMMARY

This report describes and analyses the structural system of the Northbrook Corporate Center located in Philadelphia, PA. This four story building is being erected in the Northbrook corporate development, and after its completion the building will be rented by office occupants. Building is composed of four stories sitting above the garage. The entrance into garage is located on the rear side of a building where the walls are completely above the ground. The garage does not occupy all of the building's floor area; hence, a large area of the first floor is sitting directly on the concrete foundation. The building's structural system is composed of steel columns, steel girders, and steel joists. A four inch thick concrete slab on metal decking is held in place by steel joists; steel joists are connected to steel girders, and girders are supported by steel columns. Lateral loads are resisted by moment frame system.

As stated above, this report provides a detailed description and analysis of the structural system. As part of the analysis, this report provides a spot check of typical girder and typical column. In the report wind and seismic loads are calculated and results are demonstrated through the tables, diagrams, and sketches. Also, sketches of system floor layout, framing elevations, and details, are provided to help better understand the structural system of the building. Report does not show all calculations, however, all in-depth calculations are provided in the appendix.

This report describes the structural system of Northbrook Corporate Center, and confirms that the system is designed in accordance with the IBC 2003 and ASCE 7-02, and is satisfactory to withhold all gravity and lateral loads applied on a building.