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STRUCTURAL OPTION

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TECHNICAL REPORT ONE

STRUCTURAL CONCEPTS / EXISTING CONDITIONS

EXECUTIVE SUMMARY

This first technical report presents a detailed description and preliminary analysis of the existing structural system found within Memorial Sloan-Kettering Cancer Center. Located in Somerset County, New Jersey, this four story health-care facility will open its doors in the summer of 2006 to serve as one of the premiere cancer treatment centers in nation. A combination of steel, concrete, and masonry, MSK is designed to hold 38 exam rooms, 27 offices, 23 chemotherapy bays, a Laboratory, Pharmacy, and radiotherapy treatment area. From an exterior perspective, the building's brick and stone façade accents the surrounding mountains. Curved exterior walls with large windows allow for an interior layout filled with dynamic hallways, maximizing natural lighting, and scenic views. Structural steel framing creates beam spans between 30' and 45' long, opening up spaces where needed.

The structure below grade consists of foundation walls and columns exclusively made of reinforced concrete. This concrete system ties into the steel framing at grade which continues throughout the rest of the building. The floor systems consist of one-way slab on the first floor and slab on composite metal deck for the remaining four stories. The building envelope is made up of a brick and glass curtain wall which is attached directly to the structural components of Memorial Sloan-Kettering. Steel bracing frames are positioned in both directions to take lateral loads.

This report will discuss and analyze the structural system of Memorial Sloan-Kettering through a combination of design analysis, required loading, and code criteria directly related to the structural design. An in-depth description of the foundation, steel framing, lateral bracing, and all floor systems are provided. To maximize clarification, a number of diagrams are referenced and can be found in Appendix E. Design analysis of both wind and seismic loads on the building were calculated with consideration of all proper modifiers. In addition, structural spot checks have been performed on random beams, girders, and columns. Complete sets of wind and seismic load calculations can be found in Appendix D and handwritten calculations referring to the spot checks made in this report are in Appendix C. Sketches of floor framing plans can be seen by referring to Appendix A.