BUILDING SUMMARY

PROJECT INFORMATION

Memorial Sloan-Kettering Cancer Center is owned and operated by Sloan-Kettering Institute, a highly-respected organization dedicated to improving the understanding and treatment of cancer. To ensure that Memorial Sloan-Kettering Cancer Center maintained it's traditional of high standards, Sloan-Kettering Institute brought on a number of high profile firms to create this facility. Ewing Cole was put in charge of both the structural and architectural design of MSK. Barr & Barr Builders is responsible for the construction management services of the project. All environmental and geotechnical engineering fell into the hands of Langan Engineering & Environmental Services. AKF Engineers is the MEP firm for this project.

Primary Project Team

Owner: Sloan-Kettering Institute
www.ski.mskcc.org

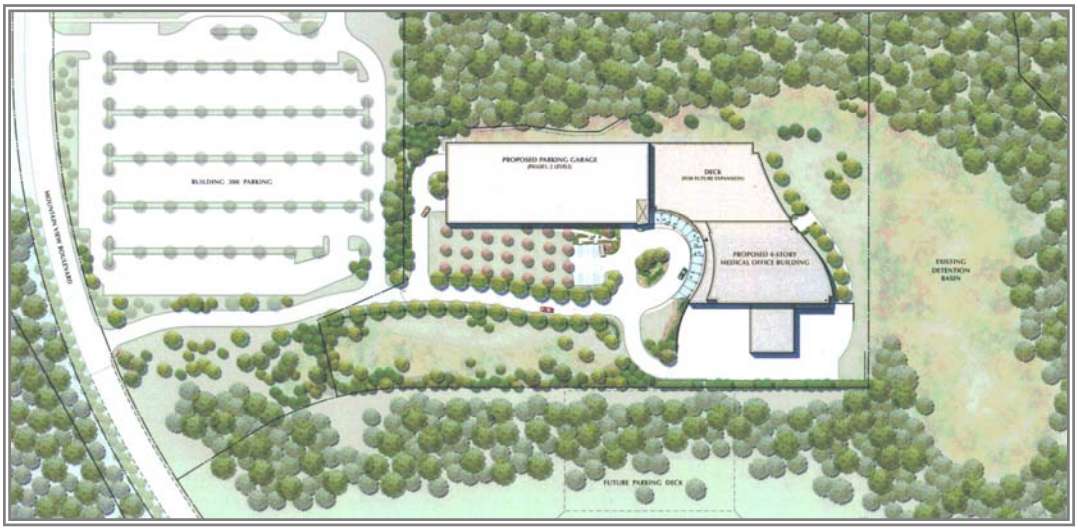
Structural Engineer: Ewing Cole
www.ewingcole.com

Architect of Record: Ewing Cole
www.ewingcole.com

MEP Engineer: AKF Engineers
www.akf-engineers.com

General Contractor: Barr & Barr Builders
www.barrandbarr.com

Memorial Sloan-Kettering's design has been divided into in two phases. The first phase is currently under construction will be opening its doors in the summer of 2006. This four story, 85,000 square foot facility will accommodate offices, exam rooms, chemotherapy bays, a laboratory, a pharmacy, and ambulatory surgery areas. The second phase of MSK is still in its design stage and will most likely break ground around 2009. The 80,000+ square foot addition is also four stories and will be built on the north side of Phase One. This extension will be home to physician practices, an education/prevention center, and a diagnostic imaging area. When fully completed, Memorial Sloan-Kettering will be one of the most equipped cancer treatment centers in the nation.



Images courtesy of Ewing Cole

Site Map

SITE LOCATION

Memorial Sloan Kettering is located at 400 Mountain View in Bernards Township, New Jersey. The site is bounded to the north by wooded wetlands and to the south, east, and west by future development. Approximately 35 miles from New York City, MSK provides a serene, relaxing atmosphere without secluding itself from the rest of the world.

SOIL SITE CONDITIONS

A geotechnical engineering study was conducted by Langan Engineering and Environmental Services to assess subsurface conditions and develop geotechnical recommendations for Memorial Sloan Kettering. Based on their study, it was determined that MSK can be supported by shallow foundations bearing directly on basalt bedrock or on decomposed rock. The footings bearing on the bedrock could have an allowable bearing capacity of 10 tsf while the footings on decomposed rock may only be designed for an allowable bearing capacity of 5 tsf.

From the subsurface conditions encountered, it is expected that the southern portion of the Phase One building will be founded on rock. The northern portion of Phase 2, however, will be founded on decompressed rock and thus will require compacted fill for its basement. The footings within the transition area between Phase 1 and 2 can be conservatively designed to rest on decompressed rock although bedrock may be provided. Furthermore, it was determined that Memorial Sloan-Kettering rests on Site Class "B" according to the 2000 IBC, New Jersey Edition.

ARCHITECTURE

Following Memorial Sloan-Kettering's tradition of "patient-oriented" cancer care, this facility is designed to create a serene environment for all of its patients. The actual building is strategically located on the north end of the 25-acre wooded lot to maximize patients' interaction with nature as they approach the building. The exterior of MSK articulates soft undulating curves with large windows. The façade's natural face, comprised of brick and stone, accents the calming views of the mountain surrounding it.

The interior of Memorial Sloan-Kettering creates a warm and reassuring, yet sophisticated, experience for its patients. The exterior curves of the building transform the interior by creating dynamic hallways filled with natural light and breathtaking views of the wilderness around it. Soft tones and textures, natural materials such as wood and stone, a large fish tank, and many other interior elements are fine-tuned to focus on the patient. From an architectural standpoint, Memorial Sloan-Kettering creates a soothing and relaxing atmosphere for patients and personnel alike.

Memorial Sloan-Kettering Model

BUILDING ENVELOPE

The building envelope of Memorial Sloan-Kettering consists of curtain walls supported by its structural steel framing. The overall façade of MSK is primarily brick with vertical strips of stone panel offset between windows to give the building its natural look. Behind the 3-5/8" brick face, these curtain walls are made up of mortar barrier mesh, 1 ½" thick rigid insulation, vapor barrier, and 8" grout-filled CMU's.

Along with the brick face, Memorial Sloan-Kettering's front façade is full of large glass windows. These window frames span anywhere from 3 to 18 feet wide and have a typical of about 8' on the front elevation and 5'-4" on the remaining three faces. The windows are made up of 1" insulated glass with aluminum framing.

Building Envelope

The front entrance of MSK is entirely glass, providing an open, welcoming feel to the building. Similarly, the northwest and southwest corners of the building are incased entirely in spandrel glass for the three highest floors, framing the brick facade inside and creating a symmetrical look. Above the front entrance of Memorial Sloan Kettering is a cantilevered canopy, providing shelter to entering patients and divides the glass façade from the brick. The canopy is made up of steel beams and ties directly into the structural framing of the building.

MECHANICAL

The mechanical and boiler rooms in Memorial Sloan-Kettering Cancer Center are both located in the basement. There are three large air handling units in the basement along with chiller water pumps, two boilers, hot water pumps, and a number of air separators. There are also three Rooftop Air Handling Units and coils located on top of the roof, each having a 3-phase, 480 volt energy supply.

The interior portion of MSK has a variable air volume system (VAV) for its HVAC system on every floor above grade. The perimeter areas of the building use continuous slot linear diffusers as its mechanical system. There are two 250 ton chillers located on the south side of the building which provide for all floors, including the roof. There is also room for two additional 250 ton chillers for Phase 2 of MSK.

ELECTRICAL/LIGHTING

The electrical system of Memorial Sloan-Kettering is a 15 kV service to a 15 kV/ 600A switch meter. This then proceeds to the new substation located in the main electrical room, coming in via three #4/0 15 kV aluminum cables and one #4/0 copper insulated 600V ground wire in a 5" conduit. This steps down to a 2500 kVa transformer, rated 12.47 kV. Emergency power is provided by a 1000 kw/1250kVa generator.

Memorial Sloan Kettering primarily uses downlighting to illuminate its interior. The offices and exam rooms are lit exclusively by 1' x 4' pendant fluorescent lighting. The laboratory/pharmacy and surgical areas, located on the third and fourth floors, also make use of fluorescent lighting. All of the corridors throughout the building are accented with wall washers. Daylight also permeated the perimeter of the building through the large glass windows on all sides.

Interior Lobby Space

Fire Protection

Memorial Sloan Kettering follows IBC fire-protection requirements. The floors and structural framing are constructed with a two-hour fire rating, while the roof maintains the required one-hour fire rating.

The interior of MSK also exhibits required fire protection. Two-hour rated fire walls are built throughout each floor to minimize the spread of a possible fire. All floors and elevator shafts are also equipped with automatic wet sprinkler systems. Emergency lighting, standard smoke detectors, pull stations, and exit signs are all found throughout the building to assure that all codes are met.

Transportation

The building is equipped with two passenger elevators, along with one larger service elevator. The two stairwells in MSK are located on opposite ends of the building. A third stairwell welcomes patients in the lobby and climbs up to the second floor.