BUILDING STATISTICS | PART 2

UNIVERSITY OF MARYLAND – BALTIMORE
HEALTH SCIENCES FACILITY III

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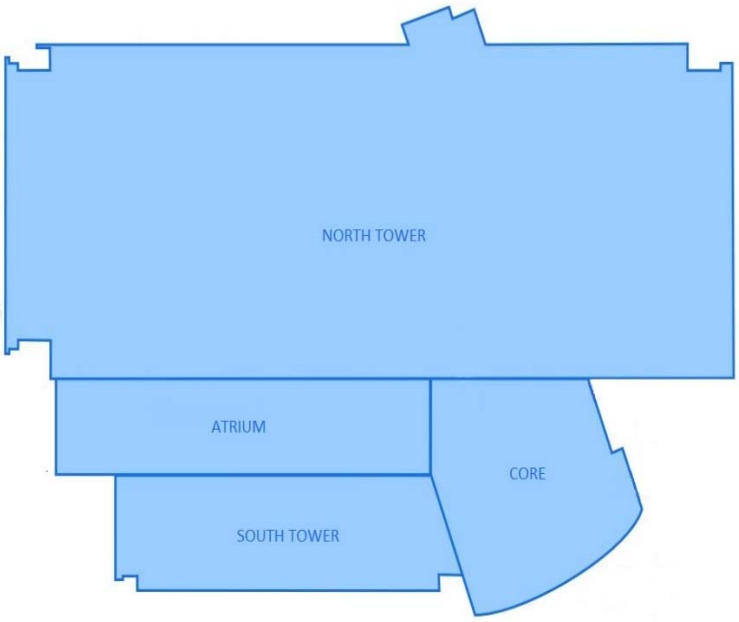
EXECUTIVE SUMMARY

The following report is an in-depth statistical summary of the existing general engineering systems for the University of Maryland – Baltimore Health Sciences Facility III. Evaluations of the building construction, structural framing, general electrical load, fire safety ratings, mechanical equipment, and lighting systems are shown. Addition research went into the building's security and telecommunications systems, and general circulation.

PRIMARY ENGINEERING SYSTEMS | CONSTRUCTION



The Health Science Facility III is a multiphase project where the construction manager, (Barton Malow Company) is at Risk with a maximum GMP. There are four design assist subcontractors on the project. Construction of the building can be categorized into four sections, the central atrium separating the north and south towers, the north and south towers respectively, and the core elevator lobby tower. During construction, the tower crane will be located in the atrium space. It will remain in place until construction of the eighth floor, after which it will be remounted to its final height, and continue construction of the additional floors.

PRIMARY ENGINEERING SYSTEMS | ELECTRICAL

The building features multiple distribution panels to accommodate multiple receptacles, laboratory equipment, and emergency power. There are 2 distribution boards on the first level, and a total of 13 panel boards, one for each floor. Equipment panel board's voltages are 480/277V and 208/120V. General lighting is 120V and 277V. Receptacles are 120V. Emergency power is listed for a business group B, assembly group A-3 classification. The main electrical room is located in the basement. It receives power from the dual redundant 13.2 KV feeders. Of the four main switchgear, 2 serve as backup generators.

PRIMARY ENGINEERING SYSTEMS | LIGHTING

The lighting systems are comprised of fluorescent and LED sources. All fluorescent lamps use electronic ballasts, including continuous runs. These are predominantly used throughout the corridors and special offices. The majority of the building fixtures are recessed, and grid mounted. Lighting for railings is also provided in the atrium bridges, and exterior walkways. The exterior plaza fixtures are all LED.

PRIMARY ENGINEERING SYSTEMS | MECHANICAL

The building has a large amount of lab space, where research groups are using a myriad of chemicals and contaminants. Because of this, the nanomedicine centers house a series of fume hoods to prevent any contaminants leaving the space. There is also a chilled water system for the equipment in the labs space. The building contains four chilled water systems that service the air handling units. There are four air-handling units that service these labs with a 100% DOAS system at 63000 CFM. The additional two air-handling units service the office and conference spaces. They house a mixed air system with 35% outside air at 38000 CFM. These air handling units are located on the penthouse level.

PRIMARY ENGINEERING SYSTEMS | STRUCTURAL

A geotechnical report was provided by the Kim Engineering subcontractor on the project. The report confirmed all foundations have been placed on undisturbed soil at elevations indicated that have been designed for a net allowable bearing pressure of 5000 PSF, and require placement of structural fill on portions of the site. The facility has a mat foundation due to the high water table location. The mat slab is poured into eight sections, where the form joints already fit together. The superstructure is cast in place concrete spanning an average of 21 ft. The core slabs are 10 in thick while the elevated slabs are 8 in. Shear walls are located at all stairwells and shafts within the building. All floors and roof decks are galvanized steel. Structural wide flange columns and beams provide the skeletal structure of the building.

The atrium curtain wall features a steel framing plan using HSS6X4X1/4 “mega column” connections. The HSS6X4 truss chords hold the steel column in place at the connection of the corner of the curtain walls. The atrium ceiling contains skylights with a W8X10 and W18X40 beams framework.

ENGINEERING SUPPORT SYSTEMS | FIRE PROTECTION

All stairs, elevators, and shafts are given a two-hour fire rating. Electrical and mechanical room partitions receive a one-hour fire rating. The highest fire rating is for three-hours, only mandated for the oil tank room, as it is considered a hazardous space. According to NFPA 13, all laboratory spaces are considered an ordinary hazard, group 2, however the remaining spaces are considered group 1. The atrium space features a water curtain and sprinkler system in order to protect the storefront windows for each of the levels of the north tower. There are two connections for the fire department to access at the corners of the building. An incoming pipe is located in the basement with a double check backflow preventer.

ENGINEERING SUPPORT SYSTEMS | TRANSPORTATION

There are four entrances to the building. The first is located at the east wall of the atrium with a vestibule connection. This can be considered the main entrance as it is the closest entrance to the drop-off circle. The second is located under the overhang of the south tower connecting to the atrium. A small third entrance is located closest to the exterior plaza on the west side of the building and is a means of egress from the elevator lobby. The final entrance is located at the north end of the central hallway directly connected to the elevator lobby. There is a small pedestrian wheelchair lift at the end of the hallway due to the small set of stairs located there. The elevator lobby features four main elevators and a service elevator for the upper and lower basements. The four main elevators service floors one through nine however only two continue to the tenth floor, and one to the interstitial tenth floor. The penthouse levels, as well as the basements can be accessed via the service elevators that run throughout all the floors of the building. In addition to the elevators, there are 5 main stairwells throughout the building, while only one extends to the roof. These stairwells separate the means of egress from the basements and the upper floors, which is ideal for a building of this size.

ENGINEERING SUPPORT SYSTEMS | TELECOMMUNICATIONS

The facility features a series of projection rooms. The projection systems are low voltage and ceiling mounted. Most rooms feature standard wall outlets, junction boxes, and floor boxes to provide for students and staff. All data connections are routed and serviced at the two IT rooms found on each floor. The building is implemented with an electronic security system. The system is featured on every floor in addition to the exterior. It includes access control intercommunications, and video systems. A card access system is also included for building staff outside of normal business hours.

There are no special systems required other than listed above.