

The Barnes Foundation  
2025 Benjamin Franklin Parkway, Philadelphia, PA 19130

# Building Statistics Part II

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## Primary Engineering Systems

### Construction

Aegis Property Group was the general contractor for the construction of The Barnes Foundation. The Guaranteed Maximum Price delivery projected had an approximate cost of \$76,000,000 with construction beginning in November of 2009 and ending in February of 2012. The museum portion of the art education facility was constructed first and the artwork put in place before the rest of the facility was built.

### Electrical

An exterior transformer, owned by the facility, converts the 13.2 kV medium voltage primary service that is supplied to The Barnes into 480Y/277V secondary. Power is then fed to a 2500A main switchboard that sends power to four distribution panels; two of which are emergency panels. These emergency distribution panels are fed by a 400 kW/500 kVA diesel generator located outside of the building. Mechanical equipment is primarily running at 480V and lighting and receptacles are running at 120V.

### Lighting

The Barnes Foundation is illuminated mainly by fluorescent, halogen, and metal halide sources. A great deal of indirect lighting was included in the building with the use of cove lighting and clerestories due to the fragile artwork. In the gallery spaces, lighting was also integrated with daylight controls to prevent direct sunlight from hitting the artwork. A CRI of 80 was maintained between all fixtures with the majority of those fixtures being set at 3500K.

Lighting throughout the building is controlled by an ETC dimming system which uses Paradigm and Light Designer in unison to adjust light levels. These programs allow for there to be a base lighting schedule associated with the different spaces on the building; although, this base schedule can be overridden if there is a special event occurring in one of the spaces. Depending on the room, some spaces may have fully addressable fixtures, while other spaces may only have zones to control.

### Mechanical

There is one dedicated outdoor air Air Handling Unit supplying a total of 48,120 CFMs and nine more AHU's supplying a total of 92,500 CFMs throughout the facility. A Variable Air Volume control system is in place throughout the facility to supply specified amounts of CFM to the various galleries, classrooms, lobbies, etc. One 150 ton water cooled centrifugal chiller and one 76 ton water cooled scroll chiller are used in the building, with an additional 150 ton standby chiller. The DOAS uses steam for heating and also has a heat recovery system. The remaining air handling units use a converter to heat hot water using steam.

### Structural

The Barnes Foundation uses a combination of composite steel, non-composite steel, and concrete structural systems with a 10" framed slab on grade base. A composite steel system is used in the museum areas and Light Box roof; while the rest of the facility uses concrete structures. The upper floors on the east end of the building, which are comprised of special exhibits, offices, and a green roof, use 24" concrete void slabs; the lower level uses 14" and 18" concrete slabs. The remainder of the building uses concrete slabs in a range from 6" to 22". The cantilevered end of the Light Box on the west end of the building uses a non-composite steel system for its structure. W12x26 beams along the exterior and W12x40 along the interior of the void are used with steel cross bracing between the interior and exterior beams for support.

## Engineering Support Systems

### Fire Protection

There are sprinklers throughout the entire facility in case of a fire. Smoke detectors and beam detectors are both used to sense smoke in the various spaces. Speaker/Strobes and some strobe lights are used to alert occupants to any fire related danger in the building. The Fire Alarm Control Panel is located on the first floor in the security office.

### Transportation

There are three elevators in the facility; the first is able to transport visitors and employees from the first floor to the lower level where the auditorium, gift shop, and back-of-house areas are. This same elevator is also able to bring employees to the second floor where the offices are located with the use of card access. The next elevator is located in the museum area of the building to transport visitors between the two levels of the galleries. The last elevator is primarily used for freight. There are also six sets of stairs scattered throughout the facility.

### Telecommunication

The main Telecom room is located in the lower level while there is a secondary IT/Comm room located on the second floor. These rooms control the data necessary for the offices on the lower level and second floor, as well as the classrooms located in the museum portion of The Barnes. The Telecom room on the lower level contains six racks that each have individual UPS's to provide emergency power. There are also six empty racks in place for future expansion.