

Design Coordination

The MEP coordination for the Capital One project was a huge task. The first two floors needed to be concentrated on for coordination, but floors three through fourteen of the tower had an easier time. The first two floors have a concrete structure, with a massive amount of mechanical, electrical, sprinkler, and security systems above the ceiling. During the design, DAVIS would hold various coordination meetings with the electrical, mechanical, and sprinkler subs in order to go over the drawings. They would mark them up together in the meetings and submit them to the architect. They were required by contract to make composite, or overlay, drawings, one for each of the trades. Also required by the contract was the submission of coordination drawings for approval after the construction documents had been released, which ended up happening during the project excavation.

One of the greatest coordination challenges of the first and second floors was the main lobby ceiling. The ceiling above the bridge on the second floor did not have enough room planned into it for as much equipment that needed to be placed up there. Some of the mechanical duct sizes and shapes needed to be changed in order to make things work. Another challenge was the kitchen area. The area was not fully designed when the slabs were being poured, so some slab cuts had to be made later on. Also the county had requirements on the layout and ventilation of the equipment for the kitchen. All wall rough-ins had to be strategically placed in order to line up with the pieces of equipment that would be placed there. There were also extremely large ventilation hoods over the different ovens and grills. These hoods were specially designed to remove grease from the area, as well as the aroma of the foods being prepared. They have different filters throughout the system in order to deplete the smell of foods, so that the exhaust from the kitchen does not come back into the building through the building air intake.

One of the main issues that posed a problem in the tower of the building was coordinating the location of the VAV boxes under the floor with the location of the raised flooring pedestals. The raised floor tiles are a two foot by two foot square, putting the pedestals they stand on in a grid across the floor. VAV boxes, fans, and diffusers all had to be located between these pedestals and in a way that the pedestal would not interfere with the purpose of the piece of equipment. An issue with the structure in the tower that came about during construction was that some of the steel members were too deep to allow for the proper return air about the ceiling. With the raised floor system, the mixed air is pushed out under the floor panels, and released up into the room through various diffusers throughout the floor. There are also return air diffusers located in the ceiling tiles. The air goes up through those diffusers and is brought back into the mechanical room where it is mixed with fresh air before being pushed back out into the space. Some of the structural steel members above the suspended ceiling came down too close to the ceiling plane, not allowing enough space between them for the return air to travel properly. In some cases to fix the problem, some ceiling heights had to be lowered.

Design Coordination con't

The commissioning for Cap One is being done by DAVIS, but with a separately hired commissioning company to oversee the processes. They issue a VTP, verification test procedure at the beginning. The commissioning company will then be notified when commissioning is to begin and will be witness to all of the procedures. There are also many inspections that need to occur before the MEP systems can be considered complete. They begin with trade close-in inspections for all wall and ceiling areas of the building. Once all of the trade close-ins are obtained, then the building close-in inspection can begin. This includes making sure that all MEP rough-in holes through partitions and floor slabs have been filled with fire rated material. All of these inspections are done by Fairfax County. There are also many sprinkler hydro inspections. There are three different fire protection systems throughout the entire project. There is an active system in the building, a passive system in the parking garage, and a combination of a preactive sprinkler system and an Inegen gas system in the Comm Room. All of these systems went through extensive testing and inspecting before the certificates could be obtained.