



Jessica R. Baker
The Montgomery County
Conference Center and Hotel
(MCCCH), Rockville, MD

4.0 Building Systems

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Primary Building Systems:

Mechanical:	<p>The airside mechanical system for the Montgomery County Conference Center and Hotel consists of eleven air handling units ranging from 1,400 cfm to 50,000 cfm. Eight of the air handling units are located in mechanical rooms throughout the building, two rest on the hotel roof, and one is ceiling mounted in a stairway area. Variable air volume boxes with electric reheat distribute air from the air handling units to all spaces in the two-story conference center, as well as, the restaurant and hotel first floor. Constant volume systems are used in the kitchen, exercise room, pool, and guest corridors/elevator areas on each hotel level. (Two of the three air handling units serving the kitchen area provide makeup air to the kitchen hoods, supplying 100% outdoor air.) Vertical fan coil units are used in each of the hotel guestrooms while other small split system and water cooled air-conditioning units are used in spaces like fire control, telephone, and security rooms.</p> <p>Two 300 ton/5,000 MBH direct fired absorption chillers with dual fuel natural gas burners provide chilled and hot water to the conference center and hotel. The two chillers are located along with the building's end suction pumps in a mechanical room on the lower level of the conference center. Two 1300 gpm cooling towers assist the chillers and are located on the roof of the hotel.</p>
Electrical:	<p>Electric power for MCCCH is supplied by three incoming utility service feeds, fed through three Pepco pad mounted transformers. Two of the transformers are 120/208V, 3-phase, 4-wire and serve the hotel area's electric and</p>

lighting demands. The other transformer is 265/460V, 3-phase, 4-wire and serves the conference center. Three 15-way concrete encased ductbanks connect each transformer to its respective switchboard. Power for the hotel is distributed by two switchboards, each at 2500A and 120/208V. The switchboard for the conference center is 4000A and 265/460V. The electrical system for the conference center also contains two step-down transformers at 265/460V//120/208V which are used prior to lighting and electrical outlet power distribution.

A 15KVA, 208V, 3-phase, 4-wire uninterruptible power supply (ups) exists for the conference center main level office/hotel lobby front desk while also acting as another step-down transformer for the conference center. It provides battery powered output for up to 20 minutes after a power failure.

A 500KW, 265/460V, 3-phase, 4-wire, diesel engine emergency generator with built-in 800A main circuit breaker and four automatic transfer switches provides emergency power to the conference center when needed. A 25,000 gallon outdoor fuel oil containment tank exists for this emergency system and is located at the rear of the conference center. Battery powered emergency lighting is used in the hotel.

Lighting:

The interior lighting system for the Montgomery County Conference Center and Hotel incorporates the use of many types of lighting and lighting fixtures in the different spaces throughout the building. The conference center's main areas like the lobby, pre-function, ballroom, conference/classrooms, and main corridors all contain decorative custom fixtures which utilize incandescent lighting. The hotel lobby, restaurant, lounge, and guestroom corridors

are also lit by these custom fixtures. The fixtures themselves are designed in a variety of forms like ceiling mounted, pendant, wall sconce, and chandelier. The hotel guestrooms use incandescent lighting while both the conference center and hotel back corridors and service areas make use of 2x2 and 2x4 foot recessed fluorescent fixtures. Compact fluorescents are integrated into battery powered custom fixtures for the hotel's emergency lighting.

Daylighting also plays a significant role inside the conference center portion of MCCCH. Areas such as the lobby and pre-function space have exterior walls almost completely composed of glass, exposing those areas to a great amount of daylight.

The lighting system for the exterior of the building consists of metal halide up-lighting, exterior wall sconces, landscape accent lighting, and incandescent step lighting. Twenty-foot light poles are also strategically placed throughout the parking area surrounding the building.

Structural:

The structural system in the hotel portion of MCCCH consists mainly of reinforced structural concrete columns, beams, and girders in conjunction with two-way concrete slabs on every floor. One-way concrete slabs on metal decking are used near the hotel's empty shaft spaces and floor penetrations due to the possibility of future expansion.

The conference center's structure involves a combination of structural concrete and steel. Certain areas of the conference center utilize concrete walls, columns, beams, girders, and slabs but, open web steel joists are used to span over large areas like the ballroom and main lobby. Structural steel is also used at the two canopy entrances to the conference

	<p>center.</p> <p>The lower level roof on the building uses structural steel with metal decking while the upper level roof utilizes structural steel in union with a one-way structural concrete slab. The concrete spread footings for MCCCH rest on geopiers due to the poor soil on which the building sits.</p> <p>All of the structural concrete used in MCCCH has a design strength of 4000 psi except for the girders which are designed for 5000 psi.</p>
Fire Protection :	<p><i>Passive:</i></p> <p>On the lower level of the conference center, two hour fire-rated walls are used around fire control rooms, stairways, and elevator and mechanical shafts. One hour fire-rated walls are used around storage, electrical, mechanical, and pump rooms. Other areas like classrooms, conference rooms, and the theatre are enclosed by smoke resistive construction.</p> <p>The fire-rated walls on the upper level of the conference center follow the same design as the lower level except for where the conference center joins the hotel portion of the building. There is a two hour fire-rated wall spanning this entire location.</p> <p>On the hotel's guestroom floors, two hour fire-rated walls are used around stairways, elevators, and linen closets. One-hour fire separations are located in between each guestroom and one-half hour fire-rated walls divide the guestrooms from the corridors.</p> <p>Firestopping is used at all slab penetrations and spray-on fireproofing covers the steel beams throughout the building.</p>

	<p><i>Active:</i> A complete, automatic wet pipe sprinkler system exists for all areas of the Montgomery County Conference Center and Hotel with the exception of spaces sensitive to water or freezing. These locations contain an automatic dry pipe sprinkler system that is ready for operation when connected to a water supply.</p>
Transportation:	<p>MCCCH contains four elevators and two stairways (two elevators and one stairway at each end) that serve all levels in its hotel tower. From the hotel lobby, there are two more stairways which lead to safe exits from the building.</p> <p>The conference center includes a grand stairway, two escalators, and one elevator at its main entrance. Another elevator and main stairway connect to the conference center from the hotel lobby.</p>
Telecommunications:	<p>Most rooms in the Montgomery County Conference Center and Hotel contain telephone and data cable outlets. Both services enter the building through the main telephone room on the upper level of the conference center. The services are then distributed to telecom closets throughout both the conference center and hotel for further dispersal to individual spaces. Cable television is also provided to the building through the CATV room on the hotel lobby level and is dispersed in the same manner as the telephone and data cable services.</p>
Specialty Systems:	<p>The conference center portion of this building contains an extensive audio/visual system with projectors and speakers mounted in almost every room. The theatre area includes a projector with a large screening area that seats 126 people. Intercom communication is also utilized throughout the conference center</p>

spaces.

The kitchen for the Montgomery County Conference Center and Hotel is designed for use by both the hotel restaurant and conference center ballroom. Multiple stoves, ovens, refrigerators, and freezers are strategically placed for maximum ease of use by both parties. Separate wait stations are also incorporated into the design.