

Capital One Lecture Hall Addition



General Project Data:

- Building Name
 - Capital One Lecture Hall
- Location and Site
 - 1680 Capital One Drive, McLean, VA 22102
 - Located just off the Capital Beltway at the crossing of I-495 and MD-123
 - Capital One's property spans 26 total acres
- Building Occupant
 - Capital One
- Occupancy Type
 - Primary Occupancy – A-3 Assembly Lecture Hall
 - Secondary Occupancy – B- Business Conference Rooms
 - The new lecture hall is being designed for Capital One's recruiting and educational events. The auditorium will hold approximately 450 seats, all with tablet arms and wireless internet access. The main hall includes projectors and screens, audio-visual support, and a multi-use stage. Additional space includes a garden atrium, green room, catering pantry, and conference rooms.
- Size
 - 32,400 ft² auditorium and lecture hall
- Stories Above Grade
 - 2 Stories + Stage Storage and Mechanical Equipment in Cellar
- Primary Project Team
 - Owner: Capital One Financial Corporation (www.capitalone.com)
 - Owner's Representative: Jones Lang LaSalle (www.joneslanglasalle.com)
 - Architect:
 - Base Building - VOA Associates (www.voa.com)
 - Interiors - Mancini Duffy (www.manciniduffy.com)
 - MEP Engineers: KTA Group (www.ktagroup.com)
 - Structural Engineer: Rathgeber/Goss Associates (www.rath-goss.com)

- General Contractor: James G. DAVIS Construction Corporation
(www.davisconstruction.com)
- Dates of Construction
 - May 2005 – August 2005
- Overall Cost
 - \$15 Million (GMP given to Capital One 8/19/2005)
- Project Delivery Method
 - Construction Management by General Contractor - DAVIS Construction

Architecture

Base Building



Base Building and Lecture Hall Rendering



- Architecture
 - As an addition to the recently completed Capital One Northern Virginia Campus Consolidation project, the new Lecture Hall will complement the base building perfectly. Driving along the Capital Beltway at Tyson's Corner, one would be able to view the immense reflective west façade over the tree line. This portion of the office tower is a convex curve made of metal panels and large windows.
 - The elliptically shaped Lecture Hall follows the same smooth aesthetic appeal as the base building. From the front of the site, one can view the beautiful glass wall system that will be designed and fabricated in Italy. To better increase the availability of natural sunlight into the garden atrium, a skylight covering a 50' x 55' area has been engineered at the front lobby.
- Major National Codes
 - 2000 International Building Code
 - 2000 International Mechanical Code
 - 2000 International Plumbing Code
 - 2000 International Fire Code
 - 2000 Virginia Uniform Statewide Building Code
- Zoning Requirements
 - Being only a few miles away from Tyson's Corner, Virginia's largest office market and one of the leading business centers in the nation, the Capital One Lecture Hall is one of five Commercial Revitalization Districts in Fairfax County. The C-3 Commercial Zoning requirement specifies a minimum lot area of 20,000 ft² and a maximum building height of 190'.

- Historical Requirements
 - The 26 acre site owned by Capital One does not have many constraints concerning historical requirements. Although there are a few existing utilities running through the site that feed adjacent apartments, these will not have a significant affect on the construction of the Lecture Hall.
- Building Envelope
 - The exterior walls consist primarily of architectural pre-cast concrete and architectural cast-in-place concrete with colors to match the existing structure. A pressure sprayed finish on the pre-cast panels create a light and textured surface of the exposed aggregate. The South and North elevations utilize primarily pre-cast panels. To the West, the building envelope at the rear of the site contains both cast-in-place and pre-cast. As shown below, the entrance of the Lecture Hall not only has an envelope of architectural pre-cast, but it also utilizes a glass screen wall. This product of Italy exposes the entire garden atrium in the lobby to natural sunlight and also gives the East façade some depth set off the pre-cast panels.
 - A pre-finished composite metal coping along the upper rim of the Lecture Hall gives the structure a similar look to that of the metal panel and window system of the base building. The sleek look of the metal coping can be easily noticed on the rendering below.



Primary Building Systems

- Construction
 - The Construction Management portion of Architectural Engineering has been my education emphasis over the past few years. The two points to follow contain possible thesis ideas to research at a later date.
 - At this point in time, the cellar shear walls and first floor steel has been erected. Currently the owner has requested the possibility of completing the project two months earlier than contractually agreed upon. To accomplish this goal, numerous factors will have to be taken into consideration. Some of these include alternative construction means and methods, schedule acceleration, overtime work, increasing crew sizes, and evaluation of costs.
 - During the Preconstruction and early Construction phases of the project, DAVIS held a GMP contractual agreement with Capital One. In hopes of receiving a more accurate max price estimate and construction documents, interim GMP bids were collected and given to the owner. These bids and the subcontractor uncertainties were to be shared with the architect and design teams to assist them in creating documents with fewer mistakes and in turn decrease the number of change orders during construction.

- Electrical
 - The Lecture Hall power distribution originates from the base building. By removing one existing 3 phase – 400 A circuit breaker and replacing it with a new 3 phase – 1200 A circuit breaker, the two specified main distribution panels can be supplied with power. Both main panel boards are specified to be 277/480V, 800A, 3-phase, 4 wire. MDP-A and MDP-B have a total connected / demand load of 464.2 KVA / 397.4KVA and 280.0KVA / 280.6KVA respectively. The remaining secondary surface mounted panels are either 120-208V or 277/480V 3-phase, 4 wire.
 - Two main dimming panels DP-1 and DP-2 service the Lecture Hall and its lighting system for the main stage.
 - All temporary power provided to the construction site is being fed from the base building.

- Lighting
 - Throughout the entire basement floor, one of three specified fluorescent fixtures are used. These include a 3-32W, T8, 277V industrial type pendant strip fluorescent, a 2-32W, T8, 277V surface mounted commercial fluorescent, or a 3-32W, T8, 277V surface mounted fluorescent fixture.
 - Outside of the Lecture Hall, numerous lighting types are utilized. Controlled by the auditorium dimming system, incandescent step-lights and fluorescent wall-mounted up-light fixtures set the calm tone along the auditorium corridors. Inside the main lobby recessed down-light fixtures are located at the underside of the balcony and metal halide up-lighting is used to illuminate the interior landscaping features of the garden atrium. Although not used as a lighting feature, special gro-lights shall be located above the landscaping to assist in its growth when natural sunlight may be hindered.
 - The Lecture Hall itself contains numerous fixture types. Incandescent and Halogen down-lights, as well as a few Halogen wall-washer fixtures are used throughout the seating area. These lights can be useful when lectures and other presentations are taking place when the open space needs to be illuminated. Halogen ellipsoidal projectors with 19” lens barrels finish out the most important fixtures used for the main stage.

- Structural
 - The building is supported by a foundation with 14” thick cast-in-place shear walls and concrete column footings. The basement floor is slab-on-grade reinforced with 6x6 W2.0 x W2.0 WWF. A building envelope of architectural pre-cast and cast-in-place concrete panels overlay the structural steel columns behind. The abnormally shaped building prevents the use of beam and girder repetition of size and length.

- Mechanical
 - Mechanically Capital One's lecture hall is supported by 3 air handling units and 2 boilers. The three air handling units have cold water supply and return lines coming from the base building. AHU-1 services the offices located along the second floor with its 4,800 CFM supply fan, 220 MBH cooling coil, and 148 MBH heating coil. AHU-2 services the main lobby atrium with its 19,200 CFM supply fan, 988 MBH cooling coil, and 660 MBH heating coil. AHU-3 services the auditorium with its 10,725 CFM supply fan, 673 MBH cooling coil, and 456 MBH heating coil.
 - Fan powered variable air volume boxes located throughout the lecture hall and 2nd floor office area are supplied by AHU-1 and -3. The air handling unit which services the main lobby atrium distributes air through multiple continuous linear diffusers located around the balcony.
 - Two boilers are also located on the basement plan. These two pieces of equipment will be utilized for heating and hot water. Both 4,100 pound boilers are specified with an AGA rating MBH input/output of 1329/1063 and an efficiency of 80%.

Engineering Support Systems

- Fire Protection
 - In the event of a fire, the Lecture Hall is equipped with a wet pipe sprinkler system with alarm indicators, check valve, tees and all associated piping. Concealed sprinkler heads are located in all public areas, while pendant heads are in storage/service areas and equipment rooms. Fire extinguishers are also placed throughout the building as required.
- Transportation
 - The relatively small structure houses only one hydraulic elevator about 6'-6" x 5' in size. To create a more handicap accessible Lecture Hall, a 2-stop, 3' wheelchair lift will be installed in the corridor nearest the front entrance.
 - In order to maintain equipment and allow large staging materials to be brought into the Lecture Hall, a 12' x 12' empty areaway has been attached to the rear West wall. This areaway begins level with the first floor finish elevation and continues down one story into the cellar.
- Audio/Visual
 - Being a large lecture hall with accompanying conference rooms, Capital One has spared no expense in providing their employees with a quality audio/visual system. The Lecture Hall alone contains 3 high resolution video projectors in the ceiling alcove with access along the catwalk. Accompanying these projectors are 3 motorized drop down ceiling mounted projection screens. To complete the auditorium system, ceiling mounted loudspeakers and wall mounted surround sound speakers are located throughout the space.
 - The 3 conference rooms located on the second floor also contain their own video projector with accompanying screen. Standard ceiling speakers are also located throughout the conference rooms.

- Garden Atrium
 - Interior landscaping governs the area right inside the front entrance and extends all the way up to the skylights above. Planting beds are located on top of the 2% sloped concrete vaults. These vaults include thin drainage layers below groundcover soil and plants.
 - Some of the vegetation planned for this space includes Black Olive Trees, Kimberly Queen Ferns, and White Bird of Paradise plants. Other seasonal plants may be inserted with discretion of Capital One or the landscape contractor.
 - To break up the planters, small water features have been included in the accompanying area. These concrete basins will only be 1'-6" deep, but will give the garden atrium a nice outdoor atmosphere.

