

# Bar Chart/Progress Schedule

Friday, January 16, 2009



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Construction Management Option  
Faculty Consultant: Dr. Anumba

**Constitution Center**

400 7th Street SE, Washington, DC 20024



# NATALIE L. BRYNER

## CONSTRUCTION MANAGEMENT OPTION

# CONSTITUTION CENTER

## 400 7TH STREET SE, WASHINGTON, DC 20024



### BUILDING STATISTICS

- Size: 1,500,000-SF base building and 600,000-SF parking garage
- Number of Stories: Three-level underground parking garage, 10 stories + Pent House
- Occupancy Type: Class A Office Space
- Cost: \$246 Million GMP
- Construction Dates: July 2007 - November 2009
- Delivery Method: Design-Bid-Build
- LEED Gold Project



### PROJECT TEAM

- Owner/Developer: David Nassif Associates
- General Contractor: James G. Davis Construction Corporation
- Owners Representative: Kramer Consulting
- Architect: SmithGroup, Inc.
- MEP Engineer: SmithGroup, Inc.
- Civil Engineer: Wiles Mensch Corporation
- Structural Engineer: SK&A

### STRUCTURAL

- Precast panels found at all four corners of the building, which frame the spandrel glass
- Blast resistant curtainwall throughout at Streetscape and Courtyard, with floor two being the most resistant including an air barrier system
- Metal panel on the Pent House level to conceal the MEP equipment
- Blast protection in garage tenant space, entrance ramp, internal ramps, electrical rooms, telecom rooms, elevator shafts, egress stairs, and exposed columns
- Two-way waffle slab on all floors except the Pent House

### ARCHITECTURE

- Renovation of an existing building, originally constructed in 1976 and occupied by the Department of Transportation (DOT)
- 4 separate, but integrated quadrants that have their own elevator, stairs ways, bathrooms, electrical closets, communication closets
- One acre of courtyard that is a private, secure green space with fountain, seating areas, sculpture, and 32 Honey Locust Shade Trees that are 11'-15' tall
- White Marble and Jerusalem Limestone are located around the first level of the building, creating a boarder for the spandrel glass located at the storefront entrances
- Built-up roofing system and metal panels used to conceal the MEP equipment on the Pent House level

### MECHANICAL & ELECTRICAL

- Centralized Plant in the Penthouse Housing:
  - Two 800 h.p. Boilers
  - One 350 h.p. Boiler
  - Three 1200 ton Trane Chillers
  - Eight 30,000 CFM Trane Air Handlers
  - Eight 30,000 CFM Semco Energy Recovery Units
  - Four 1200 ton Cooling Towers utilizing 6,700 Active Chilled Beams
- Power distribution system of 13.8 kVA feed from four primary switchgear connected to Pepco feeders
- 10 secondary 4000A transformers within the garage and Pent House levels
- Two 1000 kilowatt generators are roof mounted to provide power back-up to the critical building systems during a power outage
- Two dedicated chiller/purifier drinking water systems that continuously circulate water throughout the building
- Custom made Chilled-Beam System from Germany



RENDERINGS PROVIDED BY SMITHGROUP, INC. AND STUDIO CHRISTEN

### Milestone One (January 26, 2009):

TROX USA, Inc. Site Visit  
Research the typical costs of an HVAC system  
Become familiar with the curtain wall panels and installation requirements  
Research weather during the installation duration  
Determine the Rules of Credit using R.S. Means

### Milestone Two (February 9, 2009):

Constitution Center Site Visit for installation requirements and storage limitations  
Evaluate publications on the chilled beams  
Interview DAVIS project team for schedule, cost, and site logistics  
Interview SmithGroup to find out why they chose the chilled beams  
Interview Pierce Associates to determine how they familiarized themselves with the system  
Compare chilled beam to typical system  
Interview DAVIS for commissioning requirements  
Send out Interview/Survey questions to industry members  
Interview DAVIS with curtainwall questions  
Create and compile Data Collection Tool  
Interview DAVIS to determine the schedule requirements  
Interview the subcontractor to determine the renovation steps  
Create and send out survey to be sent to industry members

### Milestone Three (February 23, 2009):

Research current commissioning systems  
Finalize Chilled Beam Research  
Calculate expected and actual productivity  
Calculate expected performance factor  
Calculate planned and actual manning  
Calculate actual percent complete  
Calculate control budget  
Determine the factors for delays  
Research structural requirements for parking garage  
Calculate loads the slabs are experiencing

### Milestone Four (March 16, 2009):

Compare Constitution Center data to CE 533 semester project  
Research how the waffle slab were renovated  
Research what qualified a section to be renovated  
Perform a two-way reinforced concrete system analysis  
Compare current renovation system to two-way reinforced concrete system  
Determine the safety requirements for the metro entrance on Constitution Center  
Research the OSHA requirements  
Interview DAVIS for special safety techniques  
Compile survey results



