

PROGRAM:

North Carolina Dance Theatre is a 2 story structure that will house the dance company offices and performance space. The building area is 41,450 SF and sits on 0.85 acre site. The facility comprises of five practice studios — two large and three small spaces, a black box theatre for performances, locker facilities and offices for the permanent staff and production facilities. A challenge that was presented in the design of the Dance Theatre was a separation of spaces. The members of the dance company conduct dance classes for students but also required space for their professional rehearsals, as well as training activities.

The contemporary design displays the dance studios to the street and reflects the balance and movement of dance.



PROGRAM:

Owner:

North Carolina Dance Theatre

Architect:

Smallwood, Reynolds, Stewart, Stewart & Associates, Inc.

Interior Designer:

Smallwood, Reynolds, Stewart, Stewart Interiors, Inc.

Civil Engineer:

Cole Jenest & Stone, P.A.

Structural Engineer:

Stanley D. Lindsey & Associates, Ltd

General Contractor:

Rodgers Builders, Inc.

Design-Build HVAC Engineer:

McKennys Inc.

Plumbing Engineering

Consultant to Sub-Contractor:

AME Consulting Engineers

Electrical Engineering

Consultant to Sub-Contractor:

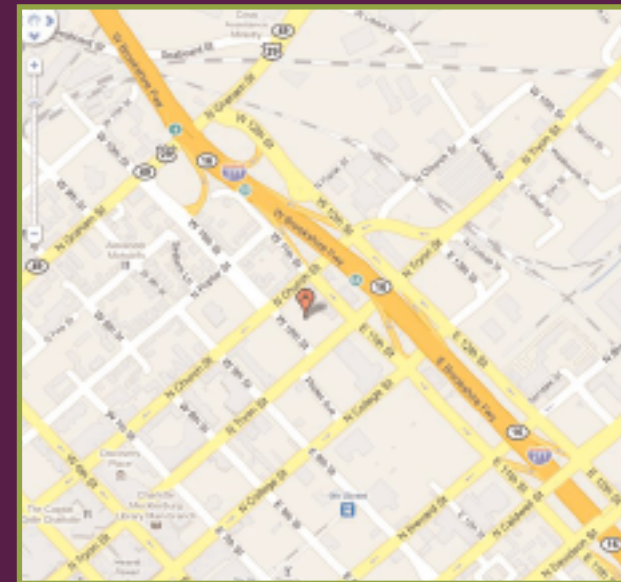
Haas & Kennedy Engineers, PA

Geotechnical Engineer:

GeoScience Group, Inc.

LOCATION:

The Dance Theatre is located in uptown Charlotte, NC at the corner of 10th Street and North Tryon Street. It shares a block with the McColl Center, an artist's studio housed in a Gothic-style church. The building sets back adjacent to the McColl Center to highlight the church. It is an urban location with convenient access to public transportation and within easy walking distance to shops, restaurants, banks and other amenities.



NORTH CAROLINA DANCE THEATRE

performing inspiring educating



GREEN BUILDING EDUCATION

INTEGRATING SUSTAINABILITY IN THE DESIGN PROCESS

Early on in the project, during the Schematic Design phase, the design team began integrating sustainable features at the client's directive to achieve LEED certification for the project. A LEED tracking tool was utilized that listed the LEED credits, responsible party for each credit, whether the credit was achievable for the project, added costs for any credit, action taken and comments. The achievable status of the credits was concretized as the project moved and construction started.

SITE STRATEGIES:

1. Erosion and Sedimentation Control measures were implemented on the project conforming to the 2003 EPA Construction General Permit.
2. The site is located in an urban location on a previously developed land to minimize environmental impact from the development.
3. Several basic services are within walking distance from the site and a number of residential developments are around the site.
4. Employees, students and visitors to the facility will be encouraged to utilize alternative modes of transportation with — convenient access to Charlotte Area Transit System, provision of bicycle storage and shower and changing facilities, and provision of preferred parking for low emitting and fuel efficient vehicles.
5. The project has been designed to reduce heat island. 83% of the roof is covered with Samafil G410 Energysmart roof membrane, a highly reflective membrane that has an SRI value of 104. 53% of the site hardscape is paved with white concrete that has an SRI value greater than 86.

WATER CONSERVATION:

1. The landscape design for the project has been devised to reduce the use of potable water for irrigation by more than 50% through planting low-water need groundcover, drought resistant plants and drip irrigation.
2. Low flow showers, lavatories and sinks have been used in the project to reduce the water consumption in the building by 32% when compared to a building with conventional fixtures.

ENERGY:

1. The building has been designed to be energy efficient through the use of tight building envelope, energy recovery in the HVAC system and efficient lighting design.
2. The building has been designed to provide a total energy cost savings of 18%. Due to the high volumes of ventilation air required to meet the minimum requirements of ASHRAE 62.1, air to air energy recovery ventilators is used to precondition the outside air with toilet exhaust air and locker room exhaust air. The energy recovery system reduces the cooling load by around 16 tons of cooling (13.5%). The allowable interior lighting power density has been reduced by 29.8% from the baseline set forth by chapter 9 of ASHRAE Standard 90.1-2004. The total power consumption associated with the 30% interior lighting reduction, the energy recovery system and the tighter building envelope all combined resulted in a cooling reduction of around 34 tons (28.6% savings).
3. The HVAC system utilizes refrigerant R-22 which is a CFC free refrigerant.
4. The Building Owner has purchased Green-e accredited Tradable Renewable Certificates equal to 70% of the predicted annual electrical consumption over a two year period.

MATERIALS:

1. The facility has a sizeable collection area for recyclables and aims to recycle paper, cardboard, plastic, metal and glass.
2. 92.5% of the construction waste was diverted from landfills to be reused or recycled.
3. The wood flooring in the dance studios and some millwork have been salvaged from the existing facilities to be installed and refinished in the new building.
4. Materials with recycled content constitute approximately 24% of the project's total material cost, as per LEED calculations. In addition, about 33% of construction materials, by cost, were manufactured and their raw materials were extracted within 500 miles of the project site.

INDOOR ENVIRONMENT:

1. The Dance Theatre will be a non-smoking facility.
2. Outdoor Air Delivery Monitoring - The amount of ventilation introduced to the building is measured at the outside air intake hood by a Ampliflow air velocity sensors. These airflow sensors are accurate within 2% of the total flow which is within the plus or minus 15% of the design minimum. These sensors relay the ventilation rates to the BMS system and if the rates drop below the minimum amount set forth by ASHRAE 62.1 then an alarm is generated through the BAS system notifying the building maintenance of a possible deficiency in the outdoor air delivery system. Carbon dioxide sensors are placed, 4' above finished floor, in the densely populated areas such as the dance studios, dancers lounge, function room and conference rooms and monitor the amount of CO2 in the spaces. If the measured amount of CO2 rises above 900 ppm then an alarm is generated through the BMS notifying the building maintenance of a possible deficiency in the outdoor air delivery system.
3. The Contractor adhered to an IAQ Management Plan during construction and before occupancy to prevent indoor air quality problems resulting from the construction process and thus help sustain the comfort and well being of construction workers and building occupants.
4. Low-emitting adhesives, sealants, paints, carpet and composite wood have been used throughout the building.
5. The HVAC and lighting design provide building occupants with a comfortable indoor environment and the Dance Theatre plans to administer occupant surveys and adjust HVAC parameters in response to comfort issues.

