

WM Group Engineers

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The Church of Latter Day Saints – Manhattan Temple Full MEP Renovation (40,000 GSF)

New York, NY

The Manhattan Temple project entailed a full mechanical, electrical, and plumbing renovation for a 40,000 sq ft area within an existing building overlooking Lincoln Center. The \$13.0 million fast-track project stressed coordination between architectural, structural, and MEP trades. In addition to comprehensive MEP design and construction assistance services, WM Group Engineers also provided on-site start-up and commissioning assistance.



The mechanical work included the installation of a 100 ton air-cooled chiller and chilled water system serving three air handling units. A steam humidification system was also designed for each air handling unit. A steam to hot water heat exchanger generated low temperature hot water for distribution to heating and re-heat coils. To meet stringent noise, comfort, and energy requirements, several variable-air-volume distribution systems with re-heat coils were used. The chiller, air handling units, pumps, variable speed fan drives, and each VAV box was connected to a central building management station for control and monitoring from a remote site. Comprehensive engineering analysis was conducted for each system, employing thermodynamics, psychrometrics and hydraulic principles to develop a reliable and cost-effective design, including those listed below:

- Detailed heat load calculations for individual rooms were performed based on ASHRAE values for building construction obtained in the field and through architectural specifications.
- Pressure loss calculations for the ductwork systems were conducted based on ASHRAE and SMACNA empirical data to select power requirements of the fan.
- Hydraulic calculations were performed for the low temperature hot water and chilled water systems to develop pump power requirements of each system.
- Psychrometric analysis for each individual zone was developed to specify the air handling unit equipment for temperature and humidity control within the spaces.

A new 120/208V, 2000A electrical service was provided for the upgrade of the facility. One challenge in adding the new service was to maintain power to the site through temporary means while the permanent system was installed. A diesel generator was provided with means for automatic transfer to power emergency lighting and life safety systems. The electrical work also included lighting design, which exceeded 5 watts/sq ft in critical areas.

Completion Date: August 2004
Project Cost: \$ 13.0 Million

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