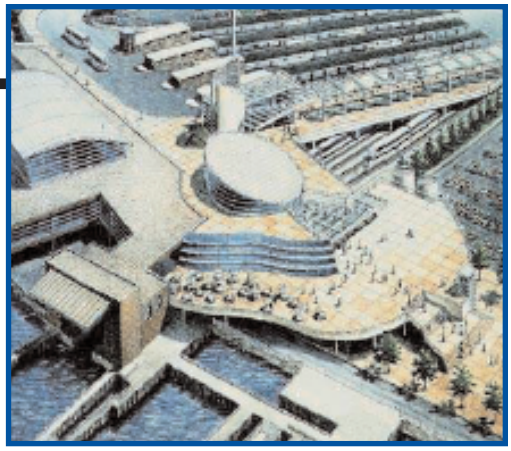
Market Segment - TRANSPORTATION

St. George Ferry Terminal



The Staten Island Ferry has served New York since 1905 and transports over 20 million people between St.George on Staten Island and Whitehall Street on lower Manhattan annually. Approximately 70,000 passengers pass through the Ferry's terminal everyday. The five-mile, twenty-five minute ride also serves as entertainment for many tourist and New Yorkers offering a majestic view of Manhattan's skyline, the Statue of Liberty and Ellis Island.

The St. George Ferry Terminal underwent a $132 million renovation to modernize the terminal.

Construction was completed in the spring of 2005. The renovation was to improve the terminal, offering an inviting atmosphere allowing passengers to watch as the Ferryboats arrive through large glass windows. Construction was done using the buildings original structure and the reconstruction efforts involved many revitalizing improvements to the Ferry's terminal.

BACKGROUND

Project Type:
HVAC

Location:
1 Bay Street
Staten Island, NY

Owner:
The City of New York

Architect:
Hellmuth, Obata+Kassabaum

Engineer:
Goldman Copeland

Project Size:
N/A

Facility Usage:
Passenger Ferry Terminal

The intermodal transportation connections, vehicular and pedestrian access and systems all received upgrades and the building systems were brought up to code as a result of the renovation. In the main waiting area amenities such as retail shopping was added for commuters and tourists to enjoy.

The main waiting area is conditioned by two 28,000 cfm variable air volume air handling units. Each unit is complete with supply and return/exhaust fans with variable frequency drives, airside economizer, hot water preheat and reheat coils and a chilled water coil. Each of the three coils contains a freeze protection pump. The pump is automatically started during low outdoor air temperature conditions. The air handling units are controlled by individual direct digital controllers. In addition to the control of temperature, the DDC controller also monitors the waiting area's relative humidity. On high humidity conditions, the system dehumidifies the air using the chilled water coil and reheats the air, when necessary, to prevent overcooling.

Fan speeds are also regulated to maintain downstream static pressure.

Smoke exhaust from the waiting area is accomplished by operating the air handling unit return/exhaust fan only, opening the exhaust damper and closing the fresh air and return air dampers.

Four smaller air handling units, also with airside economizer, preheat and chilled water coils serve the lower level areas. The lower level areas house the DOT offices, security, and loading areas. These units are also equipped with individual DDC controllers. Three miscellaneous heating and ventilating units with hot water coil and face and bypass dampers serve the maintenance garage and boiler room. Miscellaneous exhaust fans serve

various areas. All of these units are also DDC controlled.

Air curtains located at the main concourse terminal exits and entrances are controlled in groups by the building management system. Each air curtain is equipped with a 3-way hot water valve and a two-speed fan. The valve is controlled to maintain the return air temperature at set-point. The air curtain runs on high speed on low outdoor air temperature conditions.

Hot water for the heating coils and baseboard radiation is produced by three dual fired hydronic boilers. Three constant speed primary hot water pumps circulate the primary hot water through the boilers. Three variable speed secondary hot water pumps circulate the secondary hot water to the heating terminal units.

Chilled water is produced by two centrifugal chillers. Three constant speed primary chilled water pumps circulate the primary chilled water through the chillers. Three variable speed secondary chilled water pumps circulate the secondary chilled water to the air handling unit chilled water coils.

Condenser water is cooled by four 2 speed cooling towers and circulated by three constant speed condenser water pumps.

All three water systems are controlled by the DDC system. Pumps are monitored for run status and run failure and includes the automatic startup of a standby pump on failure of the operating pump. An air compressor plant provides compressed air for the control valves on the air handling units and water systems.

All DDC controllers are LON based and reside on a local area network. A workstation located at the lower level, monitors and controls all HVAC equipment. In addition, the system supports Web access for remote access via the internet.

The building management system installed is an open protocol LON based system. Open systems mean controllers and applications run on a single platform, while interoperating with each other. No matter if those products come from different manufacturers, the system presents a consistent interface to the user.

TSBA Controls

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