STADIUM COMPLEX CENTRAL CHILLED WATER AND EMERGENCY POWER SYSTEM
ORIOLE PARK AT CAMDEN YARDS & PSI NET / RAVENS FIELD
BALTIMORE, MARYLAND

Ice Vault Construction

Design Firm:
RMF Engineering

Firm Responsibility:
Mechanical, Electrical
Plumbing, Structural
Energy

Project Owner:
Comfort Link
Baltimore, Maryland

Completion Date:
1999

Project Cost:
$8,000,000

In preparation for the construction of the new Ravens Field Football Stadium, the design engineer was contracted to design a new thermal storage system with an expansion of the original central chilled water system. The central system serves the baseball stadium, football stadium, and Camden Yards warehouse office and retail complex.

Changes to the Oriole Park plant include replacement of the existing 900 ton, low pressure (R-11) centrifugal chillers with new, 1,050 ton low temperature chillers, replacement of all chilled water and condenser water pumps, and installation of a state-of-the-art stand-alone central control system.

The existing induced draft cooling towers upgraded to provide additional heat rejection capacity.

Thermal storage is utilized to accommodate cooling loads during peak electric periods. Installation of a 14,000 ton hour underground thermal storage ice vault allows the modified chilled water plant with a total connected chiller capacity of 2,700 tons to serve a cooling load of over 4,000 tons. Chilled water is distributed at 38°F. This is accomplished by building ice during off-peak cooling load hours in the thermal storage vault with 20°F glycol generated by the low temperature chillers.

Orioles Park at Camden Yards

Two 1,850 KW diesel generators will be installed in a separate location between the stadiums and will provide 13.2 kv power and peak electric demand shaving.

The design engineer partnered with a local energy service company and contractor to design and construct a 4 MW generator plant to provide emergency and peak shaving electrical power to both Oriole Park and Ravens Stadium. This unusual project included the installation of two engine generators and paralleling switchgear beneath an overhead Hamburg Street bridge between the two stadiums. The engines are rated for continuous duty at 15 kv and are supplied with No. 2 fuel oil from a new 10,000 gallon underground storage tank complete with all modern EPA spill control and monitoring system.

1875 KW Generator

The design engineer's site work included thousands of feet of underground ductbanks, power cabling and fiber optic communications to both stadiums. Special noise attenuation was applied to the engine exhausts and air inlet louvers for acoustical treatment. The peak power requirements at the baseball and football stadiums are electronically monitored and microprocessor controls allow either / both sports complexes to draw power from the plant. The 1,600 SF plant is lighted, ventilated, and protected with a dry pipe sprinkler system. The plant offers peak shaving operating cost optimization, as well as emergency back-up power.