Technology and Engineering Development (TED) Building

Thomas Jefferson National Accelerator Facility

Newport News, VA

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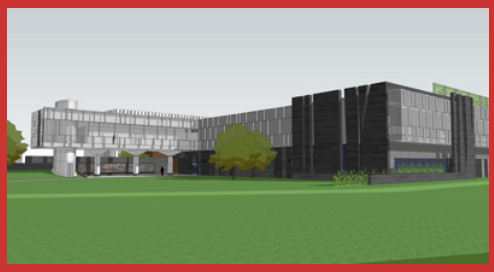

Renderings courtesy of EwingCole

Jefferson Lab Site Plan

General Information

Size: 70,000 SF, Two Stories

Cost: $16 Million

Construction Dates: 8/2010—9/2011

Design Team

Owner: Jefferson Lab

A/E: EwingCole

CM/GC: Mortenson Construction

Front Entrance

Architecture and Construction

The Technology and Engineering Development (TED) building is one phase of a four-phase project designed to upgrade and expand Jefferson Lab's current technical development and support space for the Continuous Electron Beam Accelerator Facility (CEBAF).

The 1st floor contains workshop space for scientists and engineers while the 2nd floor contains their offices. A two story high bay assembly area is located adjacent to the labs and offices. Collaboration between scientists and engineers is encouraged through an open office plan on the second floor and a courtyard between the TED and the existing test lab building.

Courtyard Between TED and Test Lab

Mechanical System

A hybrid geothermal heat pump system utilizing 192 vertical wells, as well as a cooling tower and boiler to offset peak loads, serve 12 water to water heat pumps that provide chilled water and hot water for the entire building.

Two 32,000 CFM air handlers serve the building. Each air handler is connected to an outside air preconditioning unit, which exchanges energy between exhaust air and incoming outside air. Outdoor air quantities are determined by exhaust make-up, pressurization requirements, and occupant ventilation as determined by ASHRAE Std. 62.1—2007.

West Façade

Electrical/Lighting System

A 2500 kVA pad mounted liquid-filled transformer steps voltage down from 12.47 kV (primary) to 480/277V (secondary) before connecting to the main TED switchboard. A 100 kW/125 kVA generator provides back-up power to a life-safety automatic transfer switch and a mission critical automatic transfer switch.

Lighting is primarily achieved through T-5 fluorescent fixtures with LEDs for task lighting. In the open office, photocells detect the amount of natural light and help control perimeter fixtures.

North Façade and Front Entrance

Structural System

The foundation is rooted to the ground using 35’ ft deep, 16” diameter piles. Shallow spread and continuous footings support the interior while a continuous foundation wall supports exterior walls. Foundation concrete has a compressive strength of 4000 psi.

The second floor office is framed by steel wide flange beams. Steel wide flange columns provide vertical support for the office floor, office roof, and high bay roof. The office roof is framed by K-series joists while the high bay roof is framed by DLH joists, allowing greater span.

Visit: http://www.engr.psu.edu/ae/thesis/portfolios/2011/dhb5014/index.html