

## SYNOPSIS



**Owner : DARTMOUTH  
COLLEGE, HANOVER, NH**

**Architect: BOHLIN CYWINSKI  
JACKSON / PITTSBURG**

**Area : Total 6714 SF (3000 SF  
science / 3714 SF teaching)**

**Completed September 2011**

**Costs: Total project \$92M,  
Greenhouse: \$2.5M**

## GREENHOUSE



## LIFE SCIENCES CENTER / RESEARCH AND TEACHING ROOFTOP GREENHOUSE

The project started in February 2007 with the redaction of a technical program followed by design and construction phases. The rooftop greenhouse is divided into a science side with 7 individual compartments plus an isolation room, a teaching side with 8 compartments and a small headhouse with office. A central corridor leading to the headhouse spans the entire length of the facility. The entire science side is BSL-2. With such an ambitious program and small area available for greenhouse, the numerous systems that were required created a challenge in space occupation.

A total of 15 new independent compartments are provided. One compartment is air-conditioned, capable of maintaining relatively constant temperatures on a year round basis. All other compartments are fitted with mechanical exhaust fans with insect screens. Two compartments on the science side are provided with automatic blackout systems.

The greenhouse roof is glazed with laminated, tempered glass, the exterior walls are insulated glass units and the partition walls are tempered glass. Evaporative cooling is achieved through a fog system in each zone, independently controlled. The benches are not anchored to the floor and allow for any benching arrangement while providing for ADA compliance. Several compartments are fitted with custom-designed display benches. Shading systems are provided in all rooms. Supplementary lighting uses 600 watts HPS fixtures reaches fairly high levels with 355  $\mu$ E on science side (one room at 500  $\mu$ E) and up to 200 microeinsteins on the teaching side. The greenhouses are ventilated up to 1,75 air changes per minute. Winter ventilation is achieved through positive pressure fans and horizontal airflow fans. All air inlets are screened against insects. Main heating is through radiant finned tubing installed on the perimeter walls while an additional snow-melting system is provided closer to the gutters and roof. RO water, constant-temperature tempered water are provided to each zone and in the central corridor. Each zone is provided with fertilizer injector connections.

The greenhouses are under control of a specialized, dedicated greenhouse computer control system with over 450 distinct input/outputs including computer controlled power outlets in each zone. These outlets can be programmed to turn on and off based on any input or output available in the system.