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Sprinkler Protection for Buildings over 7500 sf

In October of 2009, the Massachusetts Fire Safety Commission/Automatic Sprinkler Appeals Board issued a clarification to MGL c. 148, s. 26G (c. 508 of the Acts of 2008) which requires sprinkler protection in certain buildings which total more than 7500 gross square feet (sf) in floor area. This law has changed in two significant ways. First, the law will now be applied uniformly throughout the state in all cities and towns. The provisions of MGL c. 148, s. 26G, in various forms, have been law since 1982. Until this recent amendment, however, the law only applied within those cities and towns that adopted the law by local option. The new law, however, applies to all municipalities on a statewide basis.

The second major change expanded the instances in which sprinkler systems will be required. The law limits the installation of sprinklers to new buildings and buildings subject to major alterations or additions if said buildings feature more than 7,500 gross sf in floor area. Under the old law, the construction of an addition required sprinklers in the "addition only." The new law requires sprinklers to be installed based upon the building's sum total of sf in floor area "in the aggregate." As an example, under the new law, if you have an existing building that has 5,000 sf of floor area and you are constructing a 3,000 sf addition, you will now be required to install an adequate sprinkler system throughout the building, since the building will now total over 7,500 sf in the aggregate.

The new law clearly applies to "the construction of buildings, structures or additions or major modifications thereto which total, in the aggregate, more than 7,500 gross sf **permitted after January 1, 2010.**" (Sec. 6, c. 508 of the Acts of 2008). Therefore, if the date of the issuance of the permit is after January 1, 2010, the enhanced requirements will be applicable.

The law, in general, applies to "every building and structure..." and does not specify which particular use groups or building classifications are subject to the law. However the law does include several specific exemptions. Click [here](#) for a full clarification of the text.

Springfield Hospital - Oncology/Clinical Lab Relocation & Endoscopy Suite Renovation Springfield, Vermont

Architect: Freeman French Freeman, Inc.

The **scope** of this project was to design HVAC, plumbing, fire protection and electrical systems to relocate a 1200 sf oncology clinic and 3300 sf clinical lab to a new space previously occupied by business offices. In addition a 1300 sf endoscopy suite renovation included procedure and recovery rooms. The oncology clinic included exam rooms, 4-bed infusion bay and a private infusion room. The clinical lab program included a grossing section, blood bank, hematology, chemistry, urine serology and microbiology labs.

The **design challenge** was to upgrade the existing mechanical and electrical infrastructure to suit the new medical and laboratory programs.

Our **solution** involved providing a new 100% outdoor air ventilation system that incorporated exhaust system heat recovery via plate style heat exchanger and redundant cooling systems. The system ensures the laboratory exhaust is fully exhausted, while recovering heating energy to the incoming ventilation air stream. Redundant cooling is provided via provision of both direct expansion and chilled water cooling in the system air handlers. The air handling equipment supports variable air volume ductwork distribution system with controls to maintain proper space pressurization. The entire system is controlled by a direct digital control energy management system.

The electrical design included an extension of the existing normal and emergency power distribution and fire alarm systems. Lighting consisted of high efficiency fluorescent and LED based fixtures. The building will utilize energy-efficient lighting coupled to a lighting control system to meet energy code requirements. Local occupancy sensing is also provided to minimize lighting energy.

The plumbing design included extending the existing sanitary waste and vent, hot and cold domestic water and medical gas and vacuum systems. Medical vacuum and oxygen outlets were located in the oncology exam and infusion bays. A new medical gas zone valve box was installed for the oncology clinic. The endoscopy suite included and extension of existing medical air and vacuum and oxygen. New medical gas zone valve boxes and an alarm panels were also installed.

The fire protection design included reconfiguring the existing wet pipe sprinkler system to accommodate new sprinkler head locations within the new ceiling grid.



Suffolk University - Summer Projects Boston, Massachusetts

Architect: Martin Batt Architects, LLC

The **scope** of this project was to design HVAC, plumbing, fire protection and electrical systems for several interior renovation projects at Suffolk University.

The **design challenge** was to design and complete construction during a 2-month period that required the spaces to be ready for student occupancy in the fall semester.

Our **solution** included a full survey and documentation of the existing systems and meeting with building personal to understand the building infrastructure prior to receiving architectural backgrounds.



HVAC design included providing new diffusers and controls for the repartitioned spaces. Ductwork was reconfigured within the renovated spaces to provide fresh air, heating and cooling to the new spaces. The existing mechanical equipment had adequate capacity to serve the new spaces and required rebalancing of the system only.

Electrical design included new branch circuiting utilizing the existing electric panel and breakers. New lighting, exit signs, emergency lighting and fire alarm devices were implemented as part of the new design.

Fire protection design included reconfiguring existing sprinkler heads and extending piping to accommodate repartitioning of the spaces and creation of a new reflected ceiling plan.

The project was completed on schedule and under budget.

Partners Health Care - MGH/NSMC/MGPO MGH/North Shore Center for Outpatient Care Danvers, Massachusetts

Architect: Shepley Bulfinch Richardson & Abbott

The **scope** of this project was to design HVAC, plumbing, fire protection and electrical systems for a new 122,000 sf ambulatory care center and core/shell for a 78,000 sf medical office building.

The **design challenge** was to provide cost effective HVAC, plumbing, electrical and fire protection systems for a state-of-the-art healthcare facility based upon a **RETAIL MODEL** of an outpatient healthcare facility.



Our **solution** involved providing heat for the building by a gas fired hot water boiler plant consisting of high efficiency gas fired boilers located in a penthouse mechanical room. Cooling and ventilation is provided by commercial grade packaged roof top units which are concealed behind architectural roof screens. Variable air volume (VAV) terminal boxes with hot water reheat coils provide airflow for space pressure and temperature control. Modular gas fired steam boilers provide ventilation pre-heat and global humidification at each rooftop unit. Specialized areas requiring higher humidity, such as operating rooms, use local humidifiers. A 100% redundant medical equipment chiller system provides process chilled water to MRI's, Linac's, and CT scan equipment. A dedicated dry cooler condenser water system provides cooling to the data center and IDF rooms. The entire system is controlled by a direct digital control energy management system.

The electrical system included a new medium-voltage distribution system to serve the 5000 Ampere 480/277V 3Ph 4W electrical service. A 1500kW/1875kVA emergency generator located on the exterior of the building in a sound-attenuated weatherproof enclosure provides emergency power for the building essential electrical system. The essential electrical system provides life safety, critical, equipment and elevator power for the ACC and life safety power for the MOB. The building will utilize energy-efficient lighting coupled to a lighting control system to meet energy code requirements.

The plumbing design included new sanitary waste, natural gas, hot and cold domestic water and medical gas and vacuum systems.

The fire protection design included new wet pipe sprinkler and standpipe system throughout both buildings.