

# BARNSTABLE CHILDHOOD CENTER



744 West Main Street, Hyannis, MA

## PROJECT DATA

PROJECT TYPE:  
New Construction

OWNER:  
Town of Barnstable

ARCHITECT:  
TBA Architects

PROJECT BUDGET:  
\$352,000

CONSTRUCTION COMPLETED:  
2015



## PROJECT DETAILS

The Barnstable Early Childhood Center project involved new construction of a modular building that included six preschool classrooms. NSE's scope of work included HVAC, plumbing and fire protection design engineering and construction administration services. The HVAC system design included Variable Refrigerant Flow (VRF) heat pumps with ductless indoor fan coils as an economical approach to provide both heating and air conditioning. The design for ventilation air featured individual Energy Recovery Ventilators (ERV's) for each classroom that provided both bathroom exhaust as well as outside air to support occupancy. The plumbing system design exhibited child friendly fixtures and a centralized domestic hot water system with scald preventing thermostatic tempering valves at the lavatories. The fire protection sprinkler system was designed per NFPA 13 for complete coverage of all areas, including the crawlspace, for the protection of life and property.

# BELMONT COMPLEX

Belmont, MA



## PROJECT DATA

PROJECT TYPE:  
Renovation

OWNER:  
Town of Belmont

ARCHITECT:  
Donham & Sweeney  
Architects

PROJECT BUDGET:  
\$3,100,000

CONSTRUCTION COMPLETED:  
2005

## PROJECT DETAILS

This project involved complete renovations of two historically significant municipal buildings: the Town Hall Annex and the School Administration Building. Our scope of work included design of heating, cooling, electrical, and fire protection systems. Both buildings received energy efficient mechanical systems designed in compliance with the ASHRAE Energy Code (ASHRAE 90.1), and ADA Compliant. The heating systems featured 98% efficient condensing boilers, heat recovery units to pre-heat outside air for ventilation, and implementation of variable frequency drives on hydronic circulators. The challenge to retrofit the mechanical systems into a building where they were never intended was met by use of a two pipe change over hydronic system and low-profile ducted fan coil units. This scheme provided multiple zones to achieve optimal temperature control and also enabled the architect to preserve the ceiling height necessary for a building of this type. Automatic Temperature Controls with user-friendly Web based graphics were installed to monitor and command the various systems from a single point.

# CARTER MEMORIAL

Needham, MA

**NSE**  
Norian/Siani Engineering



## PROJECT DATA

PROJECT TYPE:  
Building Renovation

OWNER:  
Carter Memorial United  
Methodist Church

PROJECT BUDGET:  
\$2,000,000

CONSTRUCTION COMPLETED:  
2014

## PROJECT DETAILS

This project included extensive renovations and upgrades to the 12,300 square foot facility which contains a sanctuary wing, educational wing and an administrative wing. Norian/Siani Engineering provided HVAC and Plumbing design and construction administration services. HVAC elements involved new VRF air source heat pumps, new high efficiency hydronic boiler plant and panel radiators, Energy Recovery Ventilator's (ERV), and ducted dehumidifiers. Plumbing includes new bathrooms with low consumption plumbing fixtures, piping, and water heaters.

# LEXINGTON HIGH SCHOOL MODULAR

251 Waltham Street, Lexington, MA



## PROJECT DATA

PROJECT TYPE:

Modular Phases 1 and 2

OWNER:

Town of Lexington

ARCHITECT:

TBA Architects

PROJECT BUDGET:

\$352,000

CONSTRUCTION COMPLETED:

2017

## PROJECT DETAILS

Norian/Siani Engineering, Inc. provided mechanical, plumbing and fire protection design and construction administration services as part of a design team for two modular additions to the Lexington High School. One addition was a 16,700 sq. ft., 10 classroom modular building. The second building was a 7,500 sq. ft. modular building. The design included plumbing for bathrooms, heating, ventilation, air conditioning and sprinkler systems.

# LUDLOW SENIOR CENTER

228 State Street, Ludlow, MA



## PROJECT DATA

PROJECT TYPE:  
New Construction

OWNER:  
Town of Ludlow

ARCHITECT:  
Dietz & Company Architects

PROJECT BUDGET:  
\$7,500,000

CONSTRUCTION COMPLETED:  
2022

**PROJECT DETAILS** The Ludlow Senior Center project includes new construction of a 18,000 square foot, single story, slab on grade building with a commercial kitchen and dining facilities. Amenities include arts and crafts rooms, exercise and dance rooms, billiards/game room, wellness areas, and administrative areas. NSE provided design and construction administration services for plumbing, HVAC, sprinkler and electrical systems.

Plumbing system design included selection of accessible, water saving plumbing fixtures, and commercial kitchen grease trap.

HVAC design featured a high efficiency gas boiler plant and multizone hydronic heating system with perimeter convectors for occupant comfort. HVAC equipment included variable refrigerant flow (VRF) air source heat pump systems with both concealed ducted units and wall mounted ductless units. Energy recovery ventilators provide outside air and exhaust to support occupancy.

Electric design included coordination with utility for new electrical service, high efficiency lighting with automatic controls and standby generator.

Fire protection scope includes full coverage sprinkler design per NFPA 13 and an addressable fire alarm system.

# MASSACHUSETTS AIR NATIONAL GUARD



Various locations



## PROJECT DATA

PROJECT TYPE:

House Doctor / On-Call  
Engineering

OWNER:

Massachusetts Air National Guard

PROJECT LOCATIONS:

Agawam Armory  
Ayer Armory  
Cambridge Armory  
Braintree Armory  
Gardner Armory  
Pittsfield Armory  
Quincy Armory  
Ware Armory  
Whitinsville Armory

**PROJECT DETAILS** Norian/Siani Engineering as a prime consultant and as a sub-consultant provided house doctor/on-call engineering services to the Massachusetts Air National Guard. As part of this project NSE provided MEP Study, Design and CA services for restoration and repairs to multiple armories. Projects included handicap upgrades, roof replacements, window replacements as well as general HVAC upgrades and repairs.

# LONGFELLOW'S WAYSIDE INN

Sudbury, MA



## PROJECT DATA

PROJECT TYPE:  
Master Plan and  
Renovation

OWNER:  
The Wayside Inn Foundation

CONSTRUCTION COMPLETED:  
2000

## PROJECT DETAILS

Longfellow's Wayside Inn is the oldest, continually operating inn in the country and includes a set of historically registered set of buildings.

### MECHANICAL MASTER PLAN

The condition of mechanical heating, ventilating and air conditioning systems and the large set of refrigeration systems are of varying ages and states of repair with most in very poor condition. The time for careful planning had more than passed. Norian/Siani Engineering developed a Master Mechanical Plan for the Inn, plotting a course for system upgrade and replacement over the next few years. Considerations included: modern standards for health and comfort, current mechanical and life safety codes, energy efficiency and economic viability. The report consisted of an existing conditions investigation, complete heat loss and gain calculations, catalog and plan of existing equipment, definition of system and renovation/replacement alternatives, recommended options, and product cuts illustrating elements of the recommended systems. Recognizing that the refrigeration and HVAC systems play a very important role in maintaining the success of the Inn, particularly because they serve over 700 meals per week and never close down, we developed a cohesive plan and a recommended construction approach that does not damage the historic character of the Inn.

### ADDITION & RENOVATION

As part of a project team, Norian/Siani Engineering conducted the mechanical design for a 3,200 square foot addition and a 2,400 square foot renovation of this historic landmark. The design consisted of a gas fired duct furnace, air handlers, and air-cooled condensing units. Significantly, outside air was supplied via a mixing box, both for economizer cooling and air quality throughout the addition and renovation. The design included extensive coordination with other members of the project team, as well as, particular attention to the sensitive nature of the Inn's aesthetic requirements, while ensuring proper environmental control and comfort.