



# Chilmark School



## HVAC Engineering Services

September 9, 2020

The Up Island Regional School Committee & the Town of Chilmark are seeking proposals from qualified engineers to provide the services necessary to accomplish the following:

### **Chilmark School HVAC System Project # 2020-10**

The Town of Chilmark and the Up-Island Regional School District have approved a project to renovate and modernize the school's HVAC system. A previous engineering study identified two options for an electric heat pump approach to provide both heating and air conditioning for the school. The planning team has selected the Variable Refrigerant Flow (VRF) air-sourced heat pump option as most appropriate for the project.

We are soliciting bids for a contract to provide a construction-ready engineering design for the system as well as project management for the subsequent construction and installation of the equipment. Please see the attached Chilmark Elementary School Mechanical Assessment and Recommendations – Final Report (April 11, 2020) by TE2 Engineering, our phase 1 engineer.

#### **I. The engineering design project will include:**

- **Determination of the optimal code-compliant equipment set including the number and sizing of external and internal units as well as the recommended manufacturer(s);**
- **Development of engineering drawings and associated specifications for locating that equipment;**
- **Design and documentation of the appropriate control subsystem.**

**As an additional option:**

- **Project management for the subsequent installation and prove-out of the system, including assistance in the selection of local HVAC and electrical contractors, to ensure the compliance of the as-installed system with the engineering design;**

Note that the system to be designed should be capable of handling the full heating load for the building, but that the building owner wishes to utilize the existing oil-fired hot water system as a backup for a period of time.

#### **II. The full HVAC design should encompass:**

- VRF heat pumps with ducted air handlers for all classrooms/offices
- o Heat pumps to be located on stands on either the roof or ground with vibration isolation

- Air handlers to be supplemented by electric resistance heat
- Energy Recovery Ventilators (ERVs) for balanced ventilation (MERV 13 filters) and to serve as the exhaust system for the bathrooms
- All air handlers and ERVs to be located in attic spaces for sound mitigation
- Attic spaces to be insulated and air sealed as part of the conditioned envelope
- Hallways to be conditioned by ceiling cassettes or electric ceiling convectors recessed into the hallway ceilings (limited space)
- Reconfigured fire sprinkler system (attic spaces)
- Location for the installation of an appropriately sized back-up generator to power: heating, lights, kitchen/office, and limited outlets in building.
- Existing fin tube and oil burner to remain as supplemental heat for the foreseeable future and for potential severe weather conditions.

**III. Specific deliverable will include:**

- HVAC notes, narrative, and control logic
- HVAC zone plan
- HVAC ductwork layout (plain view)
- HVAC conceptual piping plan
- HVAC outdoor heat pump locations
- HVAC interior unit locations
- HVAC details
- HVAC equipment schedule

Designs recommended by the engineer will take into consideration all normal industry standards, with special focus on

- Building & Occupant Health
- Installation cost
- Operating cycles
- Operating costs
- Environmental Impact/Energy Efficiency

**IV. Existing Systems**

The building was constructed in 1998.

It was fitted with a two boiler system that provided domestic hot water to hand washing sinks in classroom, hot water to baseboard radiators, and hot water to heat exchangers in six (6) attic mounted

air handing units for forced hot air and to heat fresh air for the classrooms. The boilers ran separately and together to meet the design load for the building. This system was sufficient to the comfort needs of the occupants.

Several non-boiler system building issues came up that resulted in water damage from frozen pipes in the domestic water and fire suppression system.

The “flat roof” areas over the hallways received remedial thermal treatment with spray foam insulation after domestic water lines froze and leaked through the ceilings.

The Air Handlers in the uninsulated and ventilated attics were wrapped in insulation after (the rooves were designed as “air washed”) after the cold outside air caused one unit to go into “survival mode” during particularly cold weather, and a poorly installed section of the fire suppression system piping froze and burst flooding the classroom. Ceilings of classrooms also received additional insulation.

The Control system was modified at some point since construction when the PC controlled thermostats and outdated software/hardware were failing.

One of the two boilers has now failed. It was being replaced this summer, when the school decided to stop and consider the installation of non-fossil fuel heating. We are running successfully on one boiler at this time.

When the new ERVs were installed into the classrooms, the air handlers were disabled. We don’t know how they were disabled or if they were fully decommissioned in place.

With the disabling of the air handlers the classrooms stopped receiving heat from the forced hot air ceiling vents. This left some rooms colder as linear feet of baseboard covers was not all radiators. The installation of a donation “mini-split” in one classroom has made the room usable in the cold months again.

MGL Ch 7 sec. 44-58

Registration in the Commonwealth of Massachusetts required.

Minimum required Insurance of \$1,000,000.

Standard Designer application and Designer Evaluation forms required.

*INFORMATIONAL MEETING: September 16, 2020 @ 1:00 PM on Zoom*

<https://zoom.us/j/95414255150?pwd=cXRsaFBkNHNPMytUWnFKU1JoTnhzZz09> Meeting ID: 954 1425 5150 Passcode: 6452101

**QUESTIONS:** Are accepted in writing until **September 21, 202 @ 10:00 AM** via email or facsimile

**PROPOSALS DUE: September 25, 2020 @ 2:00 PM**

**PROPOSALS should be sent to:**

Town Administrator, PO Box 119, 401 Middle Road, Chilmark, MA 02535

**QUESTIONS:** Tim Carroll [townadministrator@chilmarkma.gov](mailto:townadministrator@chilmarkma.gov)

508-645-2101 voice 508-645-2110 facsimile

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Request For Proposals (MGL Ch.7C) for Design Services for a comprehensive approach to convert the Chilmark Elementary School from Oil Heat to a Cold Climate Heat Pump HVAC system. Information: townadministrator@chilmarkma.gov. Deadline for proposals is September 25, 2020 at 2:00PM. Briefing Session: Sept 16, 2020 at 1:00PM sep11,1-t Vineyard Gazette.

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