WESTWOOD ELEMENTARY SCHOOLS BUILDING PROJECT COMMITTEE
Westwood, Massachusetts

SUSTAINABILITY SUBCOMMITTEE MEETING MINUTES

October 8, 2020

Attendance and Call to Order

The meeting, held remotely[1], was called to order at 9:33am by Chair Maya Plotkin. Also present on the videoconference were: Ken Aries, Brian Bayer, John Cummings, and Nancy Hyde. Lemma Jn-baptiste joined the meeting at 10:15am. Anthony Mullin was absent. Mr. Bayer and Mrs. Hyde left prior to adjournment. Ex-officio members Julie Gervais and Tom Philbin were also present. John Cianciarulo recorded the minutes.

Tim Bonfatti and Chin Lin of Compass Project Management; and Rob Fitzgerald of Dore and Whittier were also present.

Mrs. Plotkin recognized the live stream of the meeting which was provided for real-time, public access to the activities of the Sustainability Subcommittee. Members of the public were able to view a live stream of the meeting via the Internet at www.westwood.k12.ma.us/live.

Discussion Items

Mrs. Plotkin recognized Rob Fitzgerald of Dore and Whittier. Mr. Fitzgerald noted that Matt Disalvo, Mechanical Engineer at GGD (Garcia, Galuska & DeSousa), David Pereira, Electrical Engineer at GGD, Dominick Puniello, Principal at GGD, and Erik Ruoff from The Green Engineer were also in attendance to answer any questions. Mr. Puniello presented.

HVAC Systems

Ground Water Source Heat Recovery Heat Pump Chiller/Heater Plant

Benefits

- High-efficiency
- Modular design provides level of redundancy and individual module control
- Heat recovery provides reheat during cooling season
- Maneuverable – All modules fit through 36" door and have low center of gravity with base cutouts for pallet jacks/forklifts
- Durability and reliability
- Service-friendly with easy access to all major components
- Fossil fuel-free, zero combustion design

The Subcommittee discussed how the modular design functions, maximum temperatures, and heating capacity.

Ground Source – Closed Loop Geothermal Well Field

Vertical closed loop wells are used to provide ground source condenser water to heat recovery heat pump chiller plant, which is used to provide hot water heating and chilled water cooling.

[1] Remote meeting held in accordance with Executive Order of Massachusetts Governor, March 12, 2020

Air Handling Units for Displacement Systems

Features

- Hot water heating and chilled water cooling
- Variable speed airflow control
- Energy recovery ventilation
- MERV-14 supply filtration
- CO2 demand ventilation control
- Lower noise levels (No compressors or condenser fans)

The Subcommittee discussed the advantages and disadvantages to using filters with a higher MERV rating.

Air Handling Unit Zone Roadmap Level 1

Shared zoning diagrams were reviewed.

Displacement Ventilation System Benefits

- High Ventilation Effectiveness and Pollutant Removal
- Load Reduction
- Low Noise Operation
- Energy Efficiency

Space Level HVAC Systems and Equipment

- Wall-mounted combination thermostat
    - Controls variable air volume box for heating, ventilation, and cooling
    - Controls heating/cooling from ceiling-mounted radiant panels
    - Slide/incremental adjustment of setpoints:
        - Heating 70°F +/- 2°F
        - Cooling 75°F +/- 2°F
    - Space level CO2 and humidity reading
- Displacement diffuser
    - Provides supply/ventilation air to the space
    - Supply air will vary based upon reading from wall-mounted thermostat
- Radiant Heating/Cooling Panels
    - Provides supplemental heating and cooling

Current Proposed HVAC System Design Benefits for Mitigation of Airborne Pathogens

- HVAC system provides ventilation rates that meet or exceed ASHRAE 62.1-2016 and International Mechanical Code (IMC) 2018 ventilation requirements
- Air handling units are capable of 100% outside airflow
- Air handling unit ventilation distribution systems are provided with MERV-14 filters (ASHRAE recommendation for new school design)
- Classroom areas have displacement ventilation which has increased ventilation effectiveness (20-40% better) versus other overhead mixed air systems.

- Excellent pollutant removal: With displacement systems, there is no airflow mixing at the space level. Airflow moves upward towards ceiling exhaust point and pollutants are removed from the occupied zone.
- HVAC system controlled by building automation system which can schedule occupied/unoccupied periods and override CO2 demand ventilation controls to provide increased air ventilation.
- Other benefits include low noise operation, reduced cooling loads, and high energy efficiency

HVAC System – UV-C Technology

Potential addition of UV-C system to RTUs

Benefits:

- UV-C has very short wavelengths and is therefore extremely energetic
- UV-C, aka Germicidal UV, deactivates microorganism DNA/RNA to stop reproduction.
- UV-C system when placed near cooling coils will continuously clean coils, helping to maintain efficiency. Reduced coil cleaning costs.
- Minimum fan energy pressure drop penalty
- Can be unit or duct mounted
- Proven technology
- Approximate 90%+ kill rate effectiveness when used with high. efficiency filter and typical design ventilation air flow rates (CO2 demand controls should be overridden)
- Industry test data available (ASHRAE standard 185.1)
- Use with high efficiency filter increases effectiveness (MERV-13 minimum, MERV-14 (preferred by ASHRAE))

Potential Addition of UV-C System to RTUs

- Cons
    - Additional maintenance costs
    - Additional precautions must be taken by maintenance staff to avoid exposure to UV-C and Mercury vapor located in emitters
    - Under normal operation, UV-C system will not expose occupants to UV-C, Mercury vapors, or Ozone
        - Equipment must be properly maintained to ensure safe operation
    - Not all manufacturers are equivalent in terms of technology and efficiency
- Costs
    - First cost is approximately 70¢ per square foot installed
    - Maintenance cost is approximately 10¢ per square foot for emitter inspection/changes (Emitters last 9,000 hours)
    - Energy costs have a negligible increase in energy costs

Mr. Cummings stated that he would definitely like to increase the system to MERV-16 for the recirculated air.

The Subcommittee had a great deal of ongoing discussion related to HVAC. Mrs. Plotkin suggested that the design team schedule a conference call and include Mr. Aries and Mr. Cummings so that all issues are addressed. She suggested that ongoing discussion continue. In the interest of time, however, she stated that she would entertain a motion to approve meeting minutes so that those who were unable to stay longer could leave the meeting.

Mr. Cummings made a motion to approve the meeting minutes of September 24, 2020. Seconded by Mr. Aries

Roll-Call Vote:

Mr. Aries	Yes
Mr. Bayer	Yes
Mr. Cummings	Yes
Mrs. Hyde	Abstain
Mrs. Jn-baptiste	Yes
Mrs. Plotkin	Yes

Vote: 5-0-1.

Result: Approved

The Subcommittee then discussed ionization and UV-C and the proper maintenance that would be required.

HVAC System – Emergency Generator

Mr. Perreira reviewed options for the emergency generator, which would power emergency lighting and the fire alarm. He stated that natural gas is more expensive than diesel.

The Subcommittee agreed that this discussion would need to continue in a subsequent meeting.

Action Items

Approval of September 24, 2020 Minutes

The Subcommittee took this action earlier in the meeting.

New Business

There was no new business.

Adjournment

Mr. Cummings made a motion to adjourn the meeting. Seconded by Mr. Aries.

Roll-Call Vote:

Mr. Aries	Yes
Mr. Cummings	Yes
Mrs. Jn-baptiste	Yes
Mrs. Plotkin	Yes

Vote: 4-0-0.

Result: Approved

The meeting adjourned at 11:00am.

Documents and Exhibits Used at Meeting

- Draft Sustainability Subcommittee meeting minutes of September 24, 2020 for the Subcommittee's review and approval
- HVAC Systems Overview and LEED and NZE Review slideshow presentation, drafted by Dore and Whittier; Garcia, Galuska, and DeSousa; and The Green Engineer, dated October 8, 2020