Westwood Public Schools

Hanlon Elementary School Building Project School Building Committee 07.23.2020



Agenda

- Schematic Design Schedule Overview
- Sustainability Subcommittee
- Next Steps

Schematic Design - SCHEDULE OVERVIEW

July-August:

- Geothermal test well
- Education as Play, Educator input on Room Needs
- Begin 3D model: structural layout, interior, exterior, site
- Life Cycle Cost Analysis, decision on heating/cooling system

Sept-Oct:

Continue site, massing and exterior, interior design, input and feedback

Nov-Dec: Finalize SD package, cost estimates, budget vote

Jan-Feb: Submit to MSBA / MSBA Board Approval

Spring: Special Town Meeting / Ballot Voting

Sustainability Subcommittee Review: Mass Timber vs. Steel Framing



Conventional Construction: Steel Columns, Beams, Braces, and Decking Mass Timber: Glue Laminated Columns, Beams; Timber Decking

Mass Timber Construction – Options



Level 1: Entry, Primary Circulation, Gallery Stair (level 2 not shown)



Level 1: Classroom Floor Area (level 2 not shown)

Mass Timber Construction – Cost

Cost Estimates: \$25 - \$35 Per Square Foot

Increased Coordination of Exposed Structure & M-E-P-FP Components Finishes – Less enclosure with finishes / more finish treatment of exposed systems Non-conventional construction type – labor force, sequencing, protection

Partial: \$300,000

0.4% of Construction Cost

Comprehensive: \$2,000,000 2.9% of Construction Cost

Combined: \$2,300,000



Mass Timber Construction – Acoustics

Three Primary Concerns







Transmission

Reflection / Reverberation

Mechanical

Mass Timber Construction – Aesthetics



Timber Framing and Structural Framing Decision Points

Steel

Contributes to greenhouse gas emissions

Costs less than Timber

Ease of Procurement and familiarity of conventional builds

Timber

Environmental Benefits:

Greenhouse Gas Emissions, water use, waste reduction, total energy used in manufacturing, renewable building material, end of life re-use

Challenges:

Cost: \$25-\$35/sf premium

Acoustics

Unfamiliar to many contractors in New England region



Partial Add \$300K



7% Reduction in Embodied Carbon associated w structure

Comprehensive + Partial

Add \$2.3 M



75% Reduction in Embodied Carbon associated with structure

Sustainability Subcommittee Recommendation

Steel Framing System

- Lower initial capital cost
- Familiar framing system to contractors
- Would rather put \$\$ toward sustainability measures that have direct impact on energy savings and operational greenhouse gas emissions



Life Cycle Cost Analysis (LCCA)

Baseline: Natural Gas heating system

Tier-1: Fossil Fuel Free: Water-Source Heat Pump with supplemental electric boiler

Tier-2: Fossil Fuel Free: Geothermal Heating System

All three systems above include dehumidification ventilation and partial A/C in the Admin and Sp. Educational spaces

Direction for Design Team:

Add 100% AC as a sub-set to each tier

Add Tier 3: Geothermal with supplemental electric boiler to reduce number of wells Window to Wall Ratio: New Energy Code uses 22% as baseline. Keep target of 25%

Next Steps

August 18: Sustainability Subcommittee: Heating/Cooling System

August 25: School Building Committee: Heating/Cooling System