



Lincoln Eliot School – Design Review Committee Meeting

Design Review Committee Meeting with others in attendance.

Meeting: September 14, 2022 (6:00PM-9:00 PM)

Location: Digital, via Zoom

Attendees

City of Newton:	Joshua Morse	Alejandro Valcarce	Stephanie Gilman
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Design Review Committee:	Maria Leo*	Peter Barrer*	Carol Schein*
	David Gillespie*	Jonathan Kantar*	Thomas Gloria*
	SingNing Kuo*	Robert Hnasko*	Steve Siegel*
	Emily Prenner*		

School Building Committee: Councilor Maria Greenberg

Arrowstreet Architects:	Larry Spang Katy Lillich	Tina Soo Hoo	Kate Bubriski
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Hill International:	Vivian Varbedian	Douglas Murray	Mark Krikorian
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Foley Buhl Roberts & Assoc.: Jon Buhl

Others:	Terry Sauro	Amelia LeClair	Dan Chen
	Marc Kaufman	Brad Seamans	

* Denotes Voting Members

The Lincoln Eliot school project was addressed at 7:04PM.

Link to Arrowstreet Presentation: ([Link to PDF](#))

Lincoln Eliot Design Updates

The updated site plan was presented and reviewed.

Changes include:

- Parking Lot:
 - Entire parking lot are shifted to the South 8-10ft.
 - Minimizes impact and preserves existing trees along the urban forest.
 - Layout number of spaces, and circulation remains unchanged.
- Playground – Similar footprint as Cabot School playground. (8,000sq/ft)
 - Location of rubberized surfaces has been modified.
 - Location of asphalt has been modified slightly.
 - Playground equipment will be reviewed at the next DRC meeting.

- Working with Lincoln Eliot school staff to determine layout and what type of equipment will be incorporated.
- Dining Patio adjacent to Cafeteria
 - Retaining wall modifications to pull retaining wall back.
 - Preserves existing to remain windows on lower level.
 - Requires less modifications to existing grading.
- Corner of Waban St. and Walnut Park.
 - Scaled down the size of the patio area.
 - Removed stadium seating arrangement
 - Area is still large enough to gather students for outdoor learning or activities.
 - Single walkway from the corner to the new entrance and lobby.
- Along Walnut Park.
 - Reduced modifications to grading
 - Maintaining some type of swale.
 - Maintaining a landscape buffer at the exterior of the building.
 - Aids stormwater management
 - Promotes natural light in lower level classrooms.
 - Teaching garden was removed from the scope of the building/project
 - May get re-incorporated based on future funding or community involvement.
- Multi-use Lawn Area.
 - Overlaid U6/7/8 field outlines.
 - Can incorporate 3 total.

Peter Barrer questioned if a communicating route to the future new addition was being incorporated. Tina Soo Hoo of arrowstreet noted that a communicating route will not be incorporated however, space has been identified for the future classroom addition.

Floor Plan

The updated floor plans were presented and reviewed.

Changes include:

- New Addition/Lobby space
 - Reduced area by 2,000sq/ft. – Footprint has been maintained.
 - Total area: 19,000sq/ft.
 - Programming was preserved and relocated/distributed throughout the building.
 - Media Center on 2nd level.
 - 2nd means of egress
 - Direct stairwell to lobby due to occupancy limits of the Media Center.
 - Elevator preserved on lobby side of the building.
 - 1st Level – Admin suite and lobby areas have remained unchanged.
- Some rooms and spaces have been fine-tuned, relocated, or distributed.
- Auditorium Entrance and Vestibule has been modified slightly.
- Coat room in Auditorium Lobby being maintained as Curriculum Storage.
- Stairwell and ADA Lift in the Auditorium Lobby is being preserved.
- Secondary Elevator at the Auditorium Lobby has been removed
 - Space has been captured as staff toilet and IDF room.

- Special Education, Literacy Specialist, Math Coach, and SEL spaces have been modified to fit more closely with staff and program needs.

Maria Greenberg inquired about the location of the nurse's office and medical rooms, and questioned if there is enough space allotted for the medical suite.

Tina Soo Hoo of Arrowstreet highlighted the location of the medical suite – adjacent to the main office. Based on discussions with the nurse and staff, Arrowstreet identified the requirements and incorporated into the design.

- Number of beds is correct
- Exam Room is preferred
- Office is nice to have for private conversations/consultations
- Counter space is too long – to be shortened.
- Requires a chair for sit down examination or rest.

David Gillespie expressed concerns over the modified lobby space noting that it has lost the inviting feel of the previous designs double-height-space rendering. Mr. Gillespie suggesting acquiring programming intentions and input from the school staff on how this space could be utilized.

Mr. Gillespie also remarked that he hopes the Walnut Park Auditorium entrance will be ADA accessible for school and public auditorium use.

Alejandro Valcarce noted the Walnut Park Auditorium Entrance will be a 100% ADA accessible entrance.

Amelia LeClair questioned how the Auditorium will accommodate groups outside of the school for performances, and how many seats will be available in the auditorium.

Joshua Morse replied, noting that work on the final details is proceeding to issue a Memorandum of Understanding. The Auditorium will meet the needs of the school but will also be utilized by the community.

- Auditorium will be utilized by the school during the school day.
- Auditorium will be transferred to community use after the school day is over.
- Auditorium will operate independent of the school.
- Paula Gannon will be managing access, rentals, and logistics.
- Custodial services will be available.
- Nominal fee will be charged – below private market rate.
 - Goal is to break even on costs.
- Currently 850 seats – will be reduced to approximately 450 seats.

Rob Hnasko identified some potential issues with regards to the location of the IDF rooms.

- Distances of cable allowances at the extreme end of the kitchen may be too long.
- Distances of cable allowances from IDF to the stage are too long
 - May need a connections room somewhere in between.
- Preferred to stack IDF rooms vertically for troubleshooting, ease of cabling, and future additions.
 - Hallway access is preferred.

The basement was briefly presented and reviewed.

- Maintaining a large space for Newton Public School storage.
- Lincoln Eliot designated storage area.
- Electrical and Mechanical Rooms

Auditorium Visioning Survey Update

Themes and Survey Results were presented and reviewed.

Auditorium Survey was performed with the community user groups.

Four common themes throughout the workshops and survey results:

- Priority to school – Students, Faculty and Programs
- Access to Community
- Facility Improvement
- Quality experience.

*Auditorium will be 100% ADA accessible and geared towards multi-performance use.

- Acoustics, A/V, and Lighting to be adjusted to accommodate as many use cases as possible.

Groups that were surveyed felt the venue should include:

- Basic house sound, lighting and communications package with infrastructure for rental equipment.
- Projector and screen
- Broadcast Capabilities, including interface with Newton Public TV and high-speed internet.
- Recording options
- Stage-level Accessible dressing room.
- Stage-level storage.
- Choir risers (removable or built-in to the front of the stage.)
- Back-of-house dressing rooms and green rooms to support up to 30 people with options for overflow.
- Easy loading access for instruments, sets, costumes, etc.
- Security
- Front of house amenity spaces including public adult restrooms, concession area, and common gathering space.
- Easy-to-use and easy-to-operate systems
- Seating Capacity: approximately 400 seats.

Amelia LeClair inquired as to what types of personnel will need to be hired or available in the building when outside arts groups are utilizing the auditorium.

Joshua Morse stated that the intent is to have a simple license agreement for arts groups that would like to use the space. Doors will be outfitted with access control systems (FOB) – Will allow access when the community groups will need it. Arts groups will not be responsible for maintaining systems in the space.

Building Performance

Building Envelope was presented and reviewed.

- New Addition
 - Windows: U-0.30
 - Exterior Wall: R-27.04
 - Slab Edge: R-10 for 36"
- Roof(Entire Building)
 - Proposed EPDM Roof: R-35.81

- Classroom Wing
 - Existing Windows to Remain: U-0.40
 - Existing Spandrels to Remain: R-11.6
 - Existing Masonry to Remain: R-4.55
- Auditorium and Cafeteria
 - Existing Windows to Remain: U-0.40
 - Existing Masonry Wall to Remain: R-4.55

Tina Soo Hoo noted that there will be minimal insulation changes on exterior of building because we are not gutting the exterior walls. Interior walls will be relocated to incorporate classroom sizes. Interior concrete columns are a lathe and plaster assembly and will not be demolished or modified.

Existing Conditions of the East Wall were presented and reviewed.

- Glazing: U-0.4
- Spandrel: R-11.5
- Masonry on Concrete: R-4.5
- Louvers: No insulation wall
 - Potential to add insulation and blank panel
 - Louver will be replaced to maintain exterior aesthetic.
- Foundation: R-4.5
 - Potential to add insulation at lower floor foundation walls (interior)

Tina Soo Hoo noted that some sealing will be needed. Louvers and unit ventilators will be removed, the cavity will be insulated, and a blank panel will be installed.

Existing Conditions of the West Wall were presented and reviewed.

- Glazing: U-0.4
- Spandrel: R-11.5
- Masonry on Concrete: R-4.5
- Louvers: No insulation Value
 - Potential to add insulation and blank panel
 - Louver will be replaced to maintain exterior aesthetic.
- Masonry On Concrete: R-4.5

Peter Barrer inquired about insulating the existing to remain walls in the cafeteria and auditorium.

Tina Soo Hoo stated that due to these walls not being demoed no insulation is planned for the existing walls in the cafeteria and auditorium.

Jonathan Kantar noted that the building is low performing and expressed concerns that the building will not be up to par once completed. Mr. Kantar suggested utilizing stucco over insulation board to encase the exterior. Mr. Kantar requested to see a plan to get the building to Net Zero by the year 2050. Mr. Kantar expressed concern over windows being rated at U-0.30, stating that it was lower performing than expected.

Kate Bubriski of Arrowstreet stated that the new addition is passing code for the roof, walls, windows and slab. U-0.30 rating of the window is being represented as the maximum allowable. More than likely windows will be rated at U-0.20 or better.

Jonathan Kanter expressed concern about utilizing code as a guideline, noting that we should design to beat the code.

Energy & LCCA

HVAC systems were presented and studied.

#1 - VRF - Overhead Ventilation (Least Cost)

- Multiple Small Rooftop Units
- Ventilation supplied overhead
- Air exchange source

#2 - Air Cooled Heat Pump Chiller & Electric Boiler - Displacement Ventilation (More Cost)

- Displacement Ventilation
- Air Exchange Source

#3 - Ground Source Heat Pump - Displacement Ventilation (Most Cost)

- Displacement Ventilation
- Ground Source
- Max 25 EUI.

Differences of Displacement Ventilation vs. Mixing Ventilation were reviewed.

Mixing Ventilation

- Temp and Pollutants are mixed uniformly throughout.

Displacement Ventilation

- Improved Air Quality
- Improved Acoustics
- Improved Thermal Comfort

Findings

GGD has done a model for all three systems and performed a LCCA.

Qualitative comparison of the three options were presented and reviewed.

*System parameters are compared to each other.

Peter Barrer asked if the % provided by PV for just the systems.

Kate Bubriski of Arrowstreet noted that “% Provided” is for the whole building. PV’s will be incorporated on the roof, parking lot and addition. Locating PV’s on the roof of the auditorium will need to be studied.

Peter Barrer noted that moving forward with the most efficient systems will still not bring the project to Net Zero.

Kate Bubriski confirmed, stating that it is affected by the square footage of the building versus the square footage of the floors, and noted that EUI could be improved upon over time with incremental improvements.

Peter Barrer noted that displacement ventilation is a better-quality installation but is not traditional. Mr. Barrer would like to make sure an HVAC engineer, that has good experience with displacement ventilation, is being consulted.

Kate Bubriski of Arrowstreet noted that displacement ventilation is being used in a number of projects by Arrowstreet and confirmed that an HVAC Engineer will be utilized. Ms. Bubriski added that the HVAC engineer has been working on numerous schools that are incorporating displacement ventilation.

Joshua Morse noted to consider purchasing class 1 REC's. After the building is converted to fully electric it will be using 100% renewable energy.

Thomas Gloria asked for a breakdown of the sources of carbon emissions.

Kate Bubriski of Arrowstreet noted that it is all electric and has been based off current ISO New England emissions factors.

David Gillespie questioned if ground source heat pump has been incorporated in other town projects.

Joshua Morse stated that ground source heat pump has not been utilized and the economics of it don't make sense.

David Gillespie asked if there was any feasibility studies performed on geothermal systems.

Joshua Morse noted that comprehensive geothermal studies have been performed on other projects which he can share.

Stephanie Gilman asked what considerations will need to be made with ductwork for displacement ventilation and if there are any issues with floor-to-floor heights.

Kate Bubriski noted that supply ducts to displacement systems are slightly smaller than mixing ventilation systems. Supply duct, diffuser, and returns are smaller than traditional systems.

Joshua Morse noted that achieving fresh air and air exchange during covid required large air flow, to get outside air values and air exchange values up, which drove up operating costs.

Councilor Maria Greenberg asked if there were any considerations made to minimize noise in the neighborhood and exterior of the building.

Tina Soo Hoo noted that screening will be incorporated for rooftop equipment to meet noise ordinances.

Councilor Maria Greenberg inquired how the decision will be made on which HVAC option to proceed with.

Joshua Morse noted that the problem with ground source heat pumps are prohibitively expensive. Mr. Morse would like to review with the Design Review Committee and consult with David Stickney and David Virgilio to identify maintenance and operations considerations.

Thomas Gloria asked if there is a baseline utilization of electricity and carbon emissions intensity.

Joshua Morse noted that there are three elements to the green power purchase, and the fourth element that may need to be considered is ISO New England and the sources of electricity coming through the grid.

Kate Bubriski noted the number being carried is standard grid electricity does not include 50% or 100% renewable number.

Thomas Gloria suggested extrapolating the numbers out 5 to 10 years.

Joshua Morse noted that the inclusion of PV's will get the site very close to Net Zero. Mr. Morse added that we are very close with solar potential and with credits that are purchased he believes it will achieve net zero.

Peter Barrer noted that if the city agrees with the cost comparison presented, he believes Option #2 is the clear path forward. Option #2 provides better air quality, acoustics, thermal comfort, and reduced energy compared to Option #1.

Water Reuse LCCA

Findings were presented and reviewed.

Return on cost of Water Reuse is estimated at 40-50 years.

*Not incorporating water reuse - payback is roughly 92 years.

David Gillespie noted that, if possible and permitted, an irrigation well is an efficient way of watering the lawn. Mr. Gillespie added that depending on how deep it is to groundwater and contamination, he believes irrigation well costs could be less than \$100,000.

Jonathan Kantar added that it is more efficient to install the irrigation well as part of the site work.

David Gillespie added that payback timeline on an irrigation well is short, as there is no cost for water use.

Joshua Morse noted that if the site has easily accessible groundwater the payback is good. If more than 5 wells need to be drilled, the payback period could be extended. Good water and head pressure is necessary.

David Gillespie added that fracking could be utilized to access ground water and the payback period is still attractive.

Tina Soo Hoo of Arrowstreet noted that the water reuse irrigation system is only designated for the grass and lawn. All other landscaping around the site will not be irrigated.

Jonathan Kantar added that the team may need to consult with Parks & Rec. to gain feedback.

Joshua Morse noted that Parks & Rec has been included on conversations and will be consulted moving forward. Mr. Morse added that Parks & Rec. supports utilizing irrigation wells.

Jonathan Kantar added that the shrubs will need to be irrigated for maintenance.

Kate Bubriski of Arrowstreet stated that further studies will be performed on irrigation wells and systems on site.

Embodied Carbon LCA

Embodied carbon vs operational carbon was presented and reviewed.

Path to reduce embodied carbon

- Optimize form & Structure (Height/Grids/Overhangs/Offsets/Lighter Structure)
 - Use Less Materials (Exposed Structure, Lighter Materials, Simpler Systems)
 - Select Low Carbon Materials (Lower Carbon Option, Switch Materials, Carbon Capture)
 - Select Long Life Materials (Repairable, Reusable)
 - Sequestration & Offsets (On-site Carbon Sinks, Vegetation, Off-site Verified Carbon Projects.)

Building Reuse results were presented and reviewed.

Kate Bubriski noted that there is a 69% carbon reduction on the proposed Add/Reno design versus baseline new construction.

Concrete Design Options were presented and reviewed.

Additional SCM option presents a 10% reduction in carbon from concrete.

- Current Design
 - Regional Average 20% Supplemental Cementitious Material(SCM)
- Additional SCM Design Option
 - Foundations: 50% SCM
 - Slabs: 30% SCM

Low Carbon Design Elements include

- Brick cladding on addition
- Mineral wool insulation above grade
- Carbon capture CMU

- Low carbon drywall
- Exposed ceilings in library
- Durable, long-life, extended producer program for interior finishes
- Design for deconstruction

Thomas Gloria asked if Arrowstreet is utilizing the EC3 tool as a basis for calculations.

Kate Bubriski of Arrowstreet stated they are using Tally, and EC3 for individual building components.

Thomas Gloria requested Arrowstreet share its sources for review. Mr. Gloria noted seeing big movements in steel.

Mr. Gloria asked for a ballpark figure for the SCM option and what additional costs would be encumbered if any.

Kate Bubriski stated that Arrowstreet is not seeing any added costs. Ms. Bubriski added that this is a very small project so costs will be determined by when it goes out to bid and when concrete is being procured. Ms. Bubriski stated that 30%SCM across the board, and over 50% for the foundations is achievable.

Wood Construction versus Steel Construction costs and impacts were presented and reviewed. (New Addition)

- Steel Frame - \$65/sf – Current Design – Embodied carbon: Most
- Heavy Timber - \$80/sf – Moderate impact to current design – Embodied Carbon: Less
- Wood Framing & Heavy Timber - \$70/sf – Negative impact to current design – Embodied Carbon: Least
- Wood Framing & Steel Frame - \$65/sf – Negative impact to current design – Embodied Carbon: Less

Tina Soo Hoo of Arrowstreet reviewed the detailed impacts of alternatives.

David Gillespie asked for clarification on the assembly of the existing structure.

Jon Buhl noted that the existing structure of the classroom wing is reinforced concrete structure with one way joist slab and double loaded corridor type layout.

Mr. Gillespie suggested utilizing the existing structure layout in the new wing, expressing concerns of joining the existing building and new addition if the design of the new addition is wood structure.

Jon Buhl noted that the existing structure will be very rigid and a wood structure in the addition would be a noticeable difference between the old and new. Cast-in-place concrete in the new addition is an increased cost as it is more labor intensive and increases embodied carbon.

Tina Soo Hoo of Arrowstreet noted that based on current design, it doesn't make sense to move forward with wood construction. Architectural changes necessitated by a move to wood structure will have a greater impact on costs as well and has not been factored into the construction cost.

Discussion of Lincoln Eliot concluded at 9:00PM.

Meeting recording can be found on the project website at:

<http://lincolneliot-necp-projects.com/meeting-recordings/>

The next Lincoln-Eliot Design Review Committee Meeting is scheduled for October 12th, 2022 at 6:00PM via Zoom.

These notes will become part of the project record as written

To the best of my knowledge, these notes are a fair representation of the items discussed at the meeting.
Additional items or corrections should be brought to the attention of the writer.

Submitted by: Mark Krikorian