BALDWIN

Feasibility Study Report

Driscoll School, Brookline, Massachusetts

Owner

Brookline, Massachusetts

Client

Brookline, Massachusetts

Architect

Jonathan Levi Architects LLC

December 8, FINAL DRAFT

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OVERVIEW AND BACKGROUND

0.1 Overview and Background

Since 2005, Brookline has experienced historic enrollment growth in its public schools. The K-8 elementary schools have grown by 40% going from 3,904 students in 2006 to 5,482 students in 2017, which is equivalent to adding four schools into our existing schools in just over 10 years. For a decade now, the Town and School Department have been addressing the expanding student population by studying potential sites for a new elementary school and by adding classrooms to existing schools by dividing classrooms; converting offices, locker rooms, and hallways into classrooms; renting private buildings; and building new classrooms or adding modular classes. Despite adding nearly 60 classrooms to our existing schools through this "Expand-in-Place" strategy, the schools continue to be severely overcrowded.

On June 13th 2018, the Town completed its third study since 2013 on selecting a site for a new school. The Select Board and School Committee approved moving forward with expanding the Baldwin School, expanding and renovating the Driscoll School, and renovating and possibly expanding the Pierce School.

Expanding and renovating Baldwin, Driscoll, and Pierce over time allows the town to address the enrollment increases in North Brookline and South Brookline while not overbuilding in either part of town. The Baldwin School will directly address the ongoing student enrollment growth that is affecting all eight Brookline K-8 schools. Driscoll and Pierce have each grown by more than 57% since 2006.

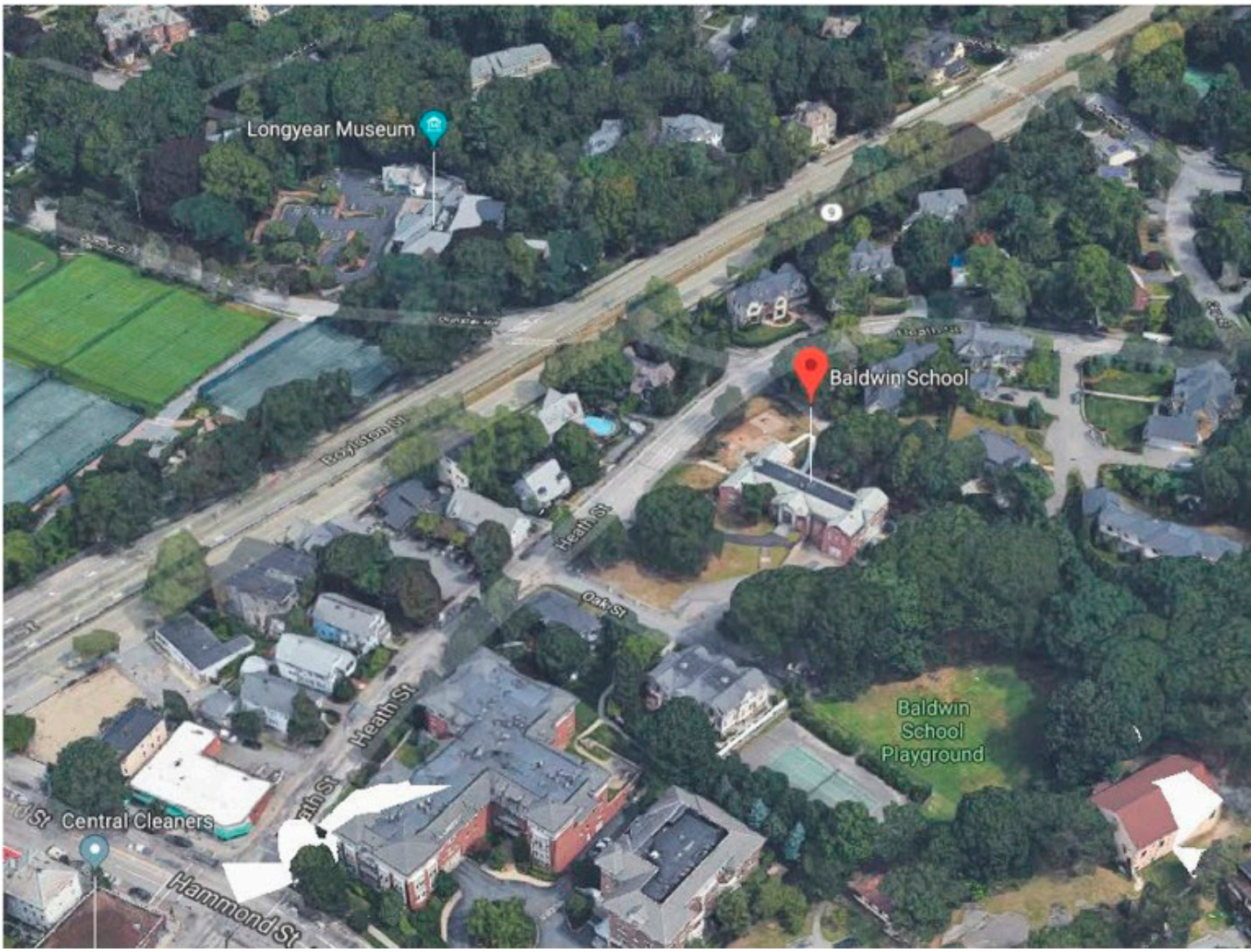
The Baldwin School Expansion will add 18 classrooms and address ongoing and future growth in South Brookline and Townwide. It will also Provide additional capacity for two of the town's fastest growing programs (RISE and English Language Education) and re-balance special education demand at Runkle.

PRELIMINARY DESIGN PROGRAM
1.1 Introduction

1.1.1 Introduction

This study was initiated in September 2018 with the purpose of assisting the town of Brookline, its constituents, School Committee, Board of Selectmen and staff in developing and analyzing alternative layouts for a K-8 elementary school on the Baldwin site. The need for this school, including the underlying demography and educational program intent, is well described elsewhere in the school departments and school committees various presentations and publications on the subject.

The charge to the design team was to work with the Town and its relevant departments to assess the relative feasibility of alternative design strategies. The Baldwin site was selected by the Board of Selectmen and School Committee in October 2016.



In 2017 the 9th School Building Committee approved a design for a larger school that included significant upgrades and renovation to the Soule Recreation Center. Because of restrictions in a federal grant and related federal land conservation regulations and guidance documents, the Town did not pursue that design. The current plan expands and renovates the existing Baldwin School and builds a smaller school on land that is owned and controlled by the Town without these restrictions on its use.

1.1.2 Enrollment

The School is currently anticipated to accommodate 420 to 450 students from Pre-K through eighth grade, and to comprise approximately 108,500 gsf.

1.1.3 Summary of Capital Budget Statement

The project cost for the project is expected to be between $72M - $76M if 10 parking spaces are provided on site, and between $78M - $82M if 40 parking spaces are provided on site. These costs include $1M for sidewalk improvements in the area

1.1.4 Project Directory

BALDWIN - Project Directory

Board of Selectmen:	**Neil Wishinsky**	*Chair*
	Ben Franco	
	Nancy Heller	
	Bernard Greene	
	Heather Hamilton	
School Building Committee:	**Bernard Green**	*Co Chair, Select Board*
	Julie Schreiner-Oldham	*Co Chair, School Committee*
	Nathan Peck	*Building Commission*
	Suzanne Federspiel	*School Committee*
	Mike Sandman	*Advisory Committee*
	Clara Batchelor	*Parks and Recreation Commission*
	Blair Hines	*Planning Board/ Greater Baldwin Community Representative*
	Rebecca Manor	*SEPAC/ School Parent Community Representative*
	Michelle Morrissey	*Community Representative*
	Deborah Abner	*Community Representative*
	Mary Weitzel	*Community Representative*
	Mel Klecker	*Town Administrator*
	Andrew Bott	*Superindendent of Schools*
	Casey Ngo-Miller	*Interim Deputy Superindendent for Student Services*
	Mary Ellen Dunn	*Duputy Superintendent of Schools for Administration and Finance*
	Dr. Mary Brown	*Senior Director for Teaching and Learning*
	Ben Lummis	*Project Manager, School Department*
	Ray Masak	*Project Manager, Building Department*
	Daniel Bennett	*Building Commissioner*

BALDWIN - Project Directory

School Committee:	**David Pollak**	*Chairman*	
	Julie Schreiner-Oldham	*Vice Chairman*	
	Helen Charlupski	Member	
	Susan Wolf Ditkoff	*Member*	
	Suzanne Federspiel	*Member*	
	Michael Glover	*Member*	
	Jennifer Monopoli	*Member*	
	David Pearlman	*Member*	
	Barbara Scotto	*Member*	
Designer - Architect:	**Jonathan Levi Architects** 266 Beacon Street Boston, MA 02138		617-437-9458
	Jonathan Levi, FAIA jlevi@leviarc.com	*Principal in charge*	
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	Alexander Shaw, RA ashaw@leviarc.com	*Project Architect & Exterior Envelope*	
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	David Stephen, President david@newvistadesign.net		
Traffic Consultant:	**Vanasse & Associates** 35 New England Business Center Drive, Suite 140 Andover, MA 01810		978-474-8800
	Giles Ham, PE gham@rdva.com	*Principal*	

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Fire Protection Engineer/ Plumbing Engineer: **HVAC Engineer:** **Electrical Engineer/ Lighting:** **Data/Communications:**	**Garcia Galuska & DeSousa** 370 Furnace corner Road North Dartmouth, MA 02747 **Christopher Garcia, PE** christopher_garcia@g-g-d.com **Dominick Puniello, PE, CEM, LEED** dominick_puniello@g-g-d.com **Carlos DeSousa, PE** carlos_desousa@g-g-d.com **David Pereira, PE** david_pereira@g-g-d.com	*Principal* *Principal, HVAC Engineer* *Principal, Electrical Engineering and Lighting* *Principal, Data/Communications and Security*	508-998-5700
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BALDWIN - Project Directory

Cost Estimating:	**Daedalus Projects, Inc** 1 Faneuil Hall Marketplace South Market Building, Suite 4195 Boston, MA 02109 **Richard Marks** rmarks@dpi-boston.com	617-451-2717

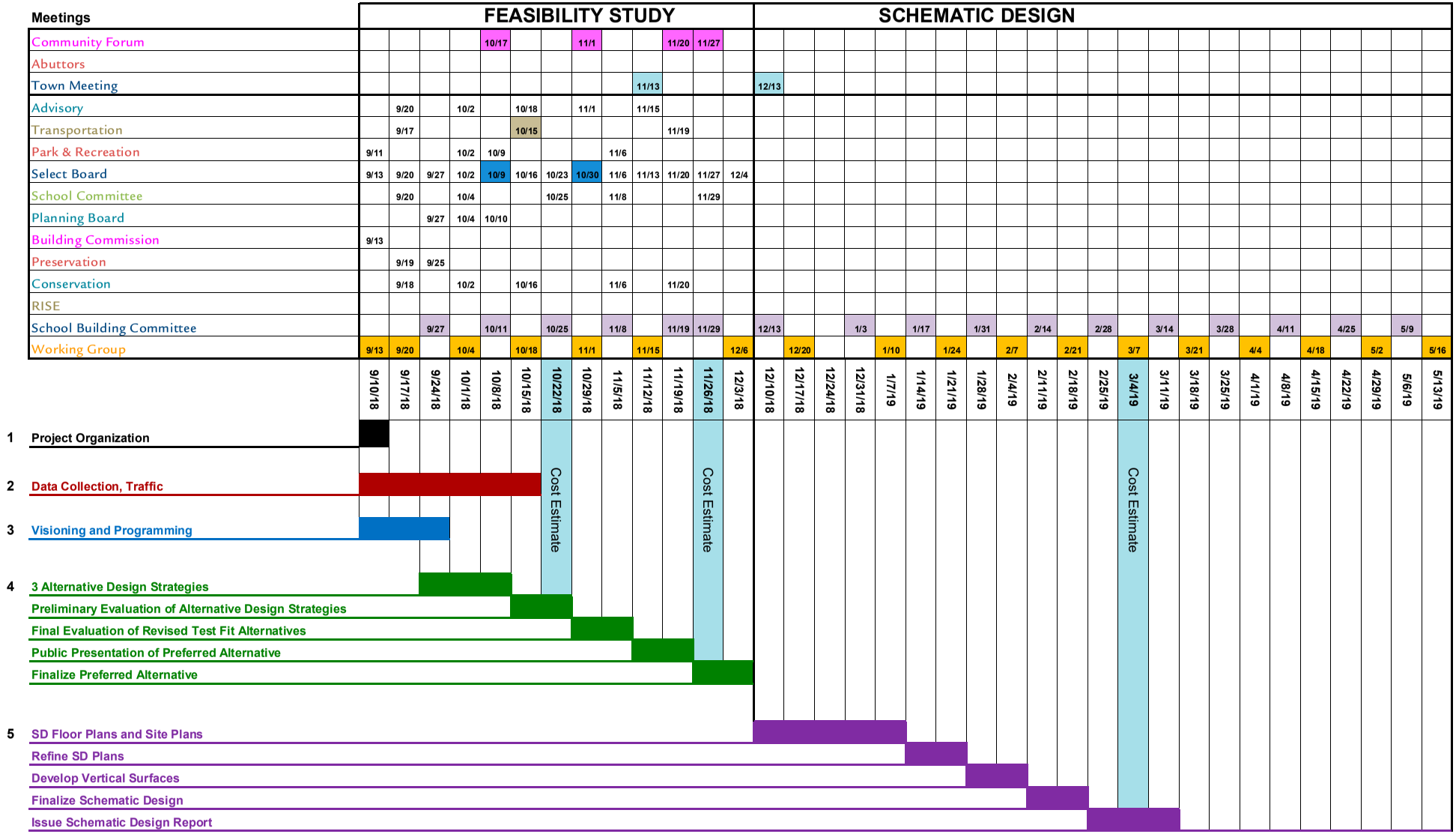
1.1.5 Project Schedule

The currently proposed project schedule is as follows:

Design Feasibility Phase: August 2018 - December 2018
Schematic Design Phase: January 2019 - April 2019
Design Development and Construction Documents: July 2019 - June 2020
Construction: July 2020 - August 2022
Occupancy: Fall 2022

BALDWIN SCHOOL EXPANSION

SCHEDULE OF MILESTONE DELIVERABLES - Working Document 10/11/18



1.2 Educational Program

1.2.1 Educational Program

Please reference the following Baldwin School Educational Program prepared by the Public Schools of Brookline.

Enrollment

When completed, the new Baldwin School will have approximately 420 to 450 students. The school will have two classrooms per grade, a districtwide special education program (RISE) serving 45 students, a English Learners program also serving 45 students, and three pre-kindergarten classrooms.

Transportation Policies

Like at all of Brookline's schools, students arrive by a variety of means – walking and biking and being delivered by car/carpooling, buses, and vans. Assumptions as to how many students will use particular modes are described in the Transportation Impact Assessment (TIA) attached. Also in the TIA are recommendations on improving safety by improvements to sidewalks and street crossings. During schematic design, the SBC will work with Town departments and the Massachusetts Department of Transportation (MassDOT) on implementing the recommendations of the TIA, the parking plan, and safety of routes to schools.

Baldwin School
Educational Program

Public Schools of Brookline

October 15, 2018

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OVERVIEW - BALDWIN SCHOOL EXPANSION EDUCATIONAL PROGRAM

The Public Schools of Brookline (PSB) provides an education to preschool through twelfth grade students in eight elementary schools, one comprehensive high school, and early childhood programs in rental spaces across town. In addition to school-based programs, the Public Schools of Brookline offers continuing education courses, summer school, enrichment programs, and numerous athletic opportunities.

For more than two decades, the Public Schools of Brookline has been guided by four core values: high achievement for all, excellence in teaching, collaboration, and respect for human differences. More recently, a fifth core value was added – educational equity. The core values, along with a vision, mission, and set of aspirational goals, create the foundation for the work in our schools and across the district. PSB'S district vision begins with:

> *Brookline provides an extraordinary education for every child. Each child's unique path to achievement is supported in academically exciting and programmatically rich environments.*

These two sentences could be part of a school system's vision statement today or 50 years ago; however, the reality of what schools from these two eras would look like is vastly different. Fifty years ago, or in some cases just ten years ago, what was considered extraordinary, exciting, and programmatically rich now borders on being irrelevant for the teaching and learning that is required today. No longer is learning confined to the classroom. Learning is ubiquitous. No longer is there a finite body of knowledge that a teacher imparts to her students. Now, there is a vast amount of information available to students, not just by way of the teacher, but also by virtue of access to technology. Described as the "Four Cs" or "super skills" for the 21st century, communication, collaboration, critical thinking, and creativity are redefining the basics of children's learning experiences. No longer is "smart" defined solely by scores on standardized tests. Instead, intelligence and talent are expressed in a variety of ways: applying knowledge, creating products, solving complex problems, systems thinking, design and testing, and knowing how to learn[1].

[1] M. Neumeier, *Metaskills: Five Talents for the Robotic Age,* New Riders, 2013

STRATEGIC PLAN GOALS

Our teaching and learning aspirations described in the strategic plan visionary goals drive our building plans. The Baldwin School building plan has been developed with an understanding of how the physical structures can create and sustain an environment that maximizes student learning. It is essential that the school be flexible, with spaces that are used for multiple purposes, are accessible (both physically and technologically), and create an environment that promises interest, creativity, and multiple learning opportunities.

Goal 1: Every Student Achieving

Ensure that every student meets or exceeds Brookline's high standards and eliminate persistent gaps in student achievement by establishing educational equity across all classrooms, schools, and programs.

Goal 2: Every Student Invested in Learning

Increase every student's ownership of individual learning and achievement by using rigor, relevance, and relationships to foster a spirit of inquiry and the joy of learning.

Goal 3: Every Student Prepared for Change and Challenge

Instill in every student the habits of mind and life strategies critical for success in meeting the intellectual, civic, and social demands of life in a diverse, ever-changing, global environment.

Goal 4: Every Educator Growing Professionally

Foster dynamic professional learning communities that inspire inquiry, reflection, collaboration, and innovation, and use data to improve teaching, advance student learning, and refine the programs and practices of the Public Schools of Brookline.

GRADE AND SCHOOL CONFIGURATION POLICIES

The Public Schools of Brookline provides educational programs for students in preschool through grade 12. Brookline enjoys an international reputation, welcoming students from all over the world. As of October 1, 2017, there were 7,876 pre-K through 12 students enrolled in the Public Schools of Brookline. The eight elementary schools educate students in grades pre-K through grade 8, with an October 1, 2017 enrollment of 5,482 students. Students attend the Brookline elementary school in their geographical neighborhoods. Brookline High School serves students in grades 9 – 12, with an enrollment in October 1, 2017 of 2,063 students. In 2017-2018 we enrolled 62 pre-K students in classrooms located in our elementary schools, and another 218 pre-K students in off-campus leased sites in town. The projected K-8 enrollment for the 2020-2021 school year is currently projected to be 5,640; this represents an increase of 158 students from October 1, 2016[2].

The expansion and rebuilding of the Baldwin School is one part of the three-part solution the Select Board, School Committee, and Ad Hoc Subcommittee of the Advisory Committee decided on in June 2018 to address the historic enrollment growth and overcrowding in Brookline's public schools. These three committees approved moving forward with expanding the Baldwin School, expanding and renovating the Driscoll School, and renovating and possibly expanding the Pierce School.

Expanding and renovating Baldwin, Driscoll, and Pierce over time allows the town to address the enrollment increases in North Brookline and South Brookline while not overbuilding in either part of town. The Baldwin School will directly address the ongoing and expected student enrollment growth that is projected to continue for at least five more years.

Pursuing this three-part solution to the town's enrollment growth allows the Baldwin School to be a smaller school similar to the size that Lincoln, Heath, and Runkle were until recently. The school will have two homeroom classrooms per grade plus three pre-kindergarten classrooms, three classrooms for the district-wide program *Reaching for Independence Through Structured Education* (RISE), and three classrooms for a district-wide English learner program known as a native language support program. This structure is being called a 2+++ program, meaning 2 classroom sections per grade, plus early education, plus RISE, plus the native language support program. Enrollment is anticipated to within the range of 440 to 460 students across all grades and programs.

[2] Source: 2017-2018 Enrollment Projection Report. April 2018; Public Schools of Brookline

To serve students of this age most effectively, the physical space, at a minimum, needs to feel intimate and small, although not cramped and with plenty of room. Students thrive in a small learning community where teachers know them well; in a community that supports a sense of safety, respect and trust; in a community that is energizing and promotes creativity; and in a community that supports learning *every* way with the appropriate facilities that promote learning inside and outside of the building. Our educational plan, for pedagogical reasons, calls for clustering grade levels. This creates the necessary intimacy and scale to create caring, connected, and collaborative learning communities in the rebuilt and expanded Baldwin School.

SCHOOL SIZE AND CLASS SIZE GUIDELINES

The Brookline School Committee recognizes that class size is an important factor in a quality education. Steadily increasing enrollment in Brookline, coupled with limited space in our school buildings, continues to put upward pressure on class sizes resulting in the average system-wide class size growing during the recent 13-year period of enrollment growth. A goal of the new facility is to create classroom spaces that are small personalized learning environments and to create more classroom capacity across the district to relieve the class size increases all schools have experienced.

The number of required classrooms based on current anticipated enrollment for 440-460 students is outlined below. Acknowledging that Brookline has a history of and commitment to class sizes of 21 or fewer, the design of the new school should consider building classrooms that could hold up to state standard of 25 students per class in order to allow for the ongoing enrollment increases experienced in the district.

Baldwin School Expansion - 2+++

Grade Level	# of Classrooms	Anticipated Average Class Size	Enrollment with Avg. Class Size
Pre-Kindergarten	3	15	45
Kindergarten	2	21	42
Grade 1	2	21	42
Grade 2	2	21	42
Grade 3	2	21	42

Grade 4	2	21	42
Grade 5	2	21	42
Grade 6	2	21	42
Grade 7	2	21	42
Grade 8	2	21	42
RISE	3	10	30
Native Language Support	3	Students included in grade level homerooms - Do not add to overall enrollment	
Total	3		453

Historically, all Brookline elementary schools have housed pre-kindergarten classrooms, providing inclusive educational opportunities to the children of Brookline. Since 2012, pre-kindergarten classes have been moved out of most elementary schools to other leased sites in town due to increasing enrollment and space constraints. We value PreK-8 configurations, and believe that pre-kindergarten classes serve students best as part of a contiguous PreK-8 school community. Therefore, the 9th Elementary building project creates three inclusive pre-kindergarten classrooms allowing the school's youngest learners to be housed, once again, in an elementary school setting.

Applying the design principle of making a large school feel smaller, grade levels should be clustered to allow teams of teachers to work with their cohort of students. A smaller, more personalized learning environment is created within such clusters, which also promotes a strong sense of teachers "owning" all students and helps to ensure that no student feels anonymous. We suggest a clustering of grades that will support teachers to collaborate within specific grade spans (PK-2, 3-5, and 6-8). Clustering in these three groupings will support a culture where these groups of teachers taking collective responsibility for preparing students in their grade span for the upcoming grade span. In addition to supporting a strong sense of community and allowing teachers to get to know their students well, clustering grade levels promotes collaboration. For this reason, proximity matters. Teachers teaching side-by-side in classrooms with windows to the hallways naturally promotes a sharing of practice. Internal windows help make student learning more visible and teachers' practice more public while allowing for a clear line of sight into hallways and gathering spaces for informal supervision of students.

Input from teachers, principals, and district administrators makes it clear that classroom spaces need to be adaptable to the many different structures and instructional methods used today and into the future. While the choice of classroom furniture will play a large role in how flexibly a classroom can be used, the model classroom will have some consistent features such as areas for small group instruction and work, a seating area at desks or tables for an entire class for full group instruction, counter space that abuts a wall and can be used for individuals to work at either while standing or sitting on stools, magnetic whiteboard space to be used during instruction as well as display space, built in storage, and movable walls within a classroom and between classrooms that will enable the creation of larger or smaller spaces when needed.

Through programming and physical space this school will also take into consideration the separate and distinct needs of 6-8th grade students while still allowing older students to be leaders and role models for the entire school community and interact with and support their younger peers. The middle school program should have a space that is distinctly theirs and that provides a sense of "graduating" to a different and unique part of the school community. At the same time, it should feel "semi-permeable" in that the middle school program should not feel sequestered or entirely separate from the rest of the school.

SCHOOL SCHEDULING METHOD

The Public Schools of Brookline has a rich program of specials – visual arts, performing arts, physical education, and health -- that allows students to begin to develop mastery in these areas within separate classes and through the integration of these subjects with the other disciplines. A *secondary* benefit of these classes is the use of this time for teachers' planning (individual and common planning time). Appropriate space for the specialists to provide a high level of instruction is essential.

Within a school week, all students in the school will typically take as many as five specials (two music, one art, and two physical education classes). For music, grades 4-8, students take Conservatory classes. With all grade 6-8 students scheduled *simultaneously* in Conservatory classes, students participating in Conservatory will need to be scheduled in 6 or 7 different spaces that can support music/performing arts instruction. The visual arts room requires storage that can accommodate the on-going work of hundreds of students, stored from week to week as students are working on their projects. The school will also require spaces to display artwork and student work throughout the school. To properly schedule high-quality physical education, one or two appropriately sized spaces will be required depending on their size.

K-8 students also take world language within their homeroom classes. The world language program is described in detail later in the document and listed here only for purposes of understanding the complexity of the Baldwin School scheduling process. Teachers travel from classroom to classroom for instruction. Typically world language is taught three times per week with the length of each class period lengthening as the grade level increase.

The English Language Learner (ELL) program is another area of attention in the school district's' master schedule. The support system for our ELL students is both push-in and pull-out, as determined by the student's level of English proficiency. Students at the entering and developing stage, and those who participate in the Native Language Support Program need a designated ELL learning classroom. We anticipate needing three designated ELL classrooms in the Baldwin School to provide instructional support in small group and whole-class settings for students.

In addition to the spaces needed for the programming described above, the Baldwin School must also provide additional types of spaces for the teaching and learning that is aligned to our local standards and our strategic goals. These include:

- Appropriate spaces to schedule math specialists and literacy specialists providing intervention services to students; 6 literacy and math specialist spaces will be needed;
- Special education services stationed and provided throughout the school with proximity to the clustered grade levels;
- Open spaces/makerspaces and a Fab Lab that support the work of the *Engineering Design Process*[3] – define the problem, explore, design, create, test, and improve; provided with proximity to clustered grade levels;
- Grade level clusters to allow elementary teachers to collaborate on interdisciplinary and project based learning across all the classes of the grade, integrating the learning of students
- Grade level clusters would also allow elementary world language teachers to move from class to class across a grade level more efficiently;
- Instrumental lessons conducted in the proper space, and not in a classroom, hallway or an alcove where they can disrupt to other classes; We anticipate classes will be provided in strings, chorus, clarinet, guitar, and orchestra with additional small group lessons;
- Fully accessible classrooms allowing students with physical disabilities to be scheduled into any learning space in the building;

[3] See Appendix C: *Engineering Design Process*, a student-friendly version of the engineering design process provided by TheWorks.org. The graphic supports Brookline teachers' understanding of how to build engineering practices into and across the curriculum.

- Appropriate professional spaces available for teacher collaboration during common planning time;
- Adequate and secure storage spaces with moveable furniture allowing use by multiple users;
- Availability of appropriate open space for informal gathering; and
- Adequate spaces (walls, glass cabinets, display areas) for extended display of student work so that a space is not deemed "not available" while displaying student work.

TEACHING METHODOLOGY AND STRUCTURE

"Form follows function" is a fundamental principle in science/engineering. The Baldwin School expansion provides the opportunity to create the school facility in a form that supports the functions of a 21st century education and promotes the collaboration that drives the high-quality and innovative teaching and learning that is called for in our strategic plan goals.

Brookline's K-8 curriculum[4] is created across all disciplines within our local standards, called *Learning Expectations*[5] (LEs). We teach for understanding and mastery[6] of the *Learning Expectations* and pay particular attention to personalization, and attention to 21st Century skills (e.g., critical thinking), Habits of Mind (e.g., reflection), social emotional learning (e.g., respect), and non-cognitive skills (e.g., perseverance)[7].

In addition, the our goals require shifts in our curriculum, instruction, and assessment practices in order for students to acquire the high-priority skills and essential knowledge needed to flourish in high school and succeed in the digital age. The Baldwin School should be a learning environment that supports the learning necessary for students to prepare for the future. Twenty-first century learning requires 21st century teaching in a 21st century school.

An overview of Brookline's educational programs follows that includes descriptions of how the new school building will support and promote this pedagogy to enable us to meet our goal of fully preparing students for their futures.

[4] See Appendix D: *Public Schools of Brookline Grade 3 Curriculum Overview*. Brookline has a comprehensive K-8 curriculum across all subjects defined by the *Learning Expectations*. It is essential that parents and the community are aware of the Brookline curriculum. Each grade level's *Curriculum Overview* introduces the discipline and a summary of important content, skills, and concepts in that discipline and grade.
[5] See Appendix E: *Grade 3 Science/Engineering Learning Expectations*. Every subject has *Learning Expectations* – statements that define what students will know and be able to do, K-8.
[6] See Appendix F: A subset of *Learning Expectations* across the subjects in grades 1-5 are defined as *Essential Learning Expectations* (ELE). Student learning and growth of each ELE is monitored, measured/described, and reported on the grade 1-5 Progress Reports with the use of rubrics. Rubrics describe the continuum of learning for each ELE. On the rubrics, *Established* defines grade level proficiency.
[7] See Appendix G: *Work Habits and Skills*. Beyond the acquisition of discipline- specific content and skills, all students need to know how to learn in a variety of settings and be a good citizen. *Work Habits and Skills* define a set of high-priority skills that Brookline values greatly and, therefore, measures/describes on the *Progress Reports*.

Tiered Instruction

Teachers at the Baldwin School will support students through a variety of teaching models: co-teaching, team teaching, flexible grouping, small group instruction, and individualized instruction. PSB recognizes that all students learn in different ways, rates, and timeframes. To that end, the Baldwin School needs to be adaptable with its staffing support, instructional methodologies, and assessment practices.

In PSB, tiered levels of instruction provide the general education foundation in all classrooms. With high quality Tier I instruction provided to every student every day, Tier II support provided inside and outside of class, and Tier III interventions typically provided in a pullout or separate classroom. If a student demonstrates academic and/or social/emotional/behavioral concerns despite thorough Response to Intervention (RTI) procedures, the teacher refers the student to the building Child Study Team (CST). The CST supports teachers in implementing additional strategies. CST meetings require a professional space for collaboration.

Grouping Practices

General education teachers, in collaboration with special educators and other instructional specialists, determine a variety of grouping methods to meet the instructional needs of their students. Grouping and regrouping methods take place weekly within classrooms and across a grade level. General education, special education, literacy and math specialists, ELL teachers, and ECS teachers collaborate to provide tiered instruction in the inclusive environment. Pullout instruction is provided for students who require it, based on their identified need for Tier II support or Tier III intervention. Grade level classrooms should be organized within common hallways and adjacent locations. Close proximity of grade level classrooms and the necessary small group learning spaces is critical in order to achieve the requisite communication and collaboration for a variety of grouping methods in grade level teams. Additionally, classrooms should include spaces where small groups of students can work independently, receive instructional support, and participate in interventions within the classroom.

Educational Technology

Technology and digital learning play an ever-increasing and critical role in teaching and learning, both inside and outside of schools. Technology provides an opportunity to transform learning, when used purposefully. Our classrooms need to be flexible and dynamic spaces that allow for all types of learning, have reliable access to the digital resources available to enhance teaching and learning, and operate with an understanding of the appropriate role of technology in our schools and students' lives.

In Brookline, we envision technology improving our ability to:

- Communicate and collaborate in our schools, our community, and the evolving global society;
- Maximize learning for all students using techniques and materials that take into account varying backgrounds, capabilities, and learning styles;
- Ensure that all students obtain digital literacy skills that are required in the 21st century;
- Create a well-integrated, learner-centered environment focused on inquiry into engaging problems;
- Enrich and extend professional learning for all teachers and instructional leaders; and,
- Enable all school personnel to effectively and comfortably use technology as a teaching and administrative tool so that more resources and time can be focused on teaching students.

The new facility will support a variety of what are now considered basics in a school's technology infrastructure including, but not limited to: a robust and reliable wireless network to support multiple devices per user; multiple and strategically placed electrical outlets and drops for easy access, relocation and setup; sufficient space for technology closets; and well provisioned classrooms that redefine the current standard. We are planning for the standard learning space to include: a wireless access point and appropriate network drops; voice over internet protocol (VOIP) phone; a mounted projection/interactive whiteboard with enhanced audio system; two (2) classroom desktop computers with speakers and headphones; a district-issued teacher laptop; classroom tablet; and a document camera. Teachers should have access to control and utilize much of this technology through a smart teacher control panel with USB ports that allow for easy document camera connections, interactive whiteboard equipment controls, and speakers. With this as the standard, there will be learning spaces that have more technology in the room and others possibly less. The technology in the room should be dependent on the educational goals and functional demands of the space.

The School Building and School Setting as a Classroom

Building a new school in the early 21st century when our community and society are more conscious than ever of the delicate balance between environmental sustainability and ongoing development provides an opportunity to have the physical plant itself play a significant role in the culture, educational approach and daily lives of students and teachers. Whether it's through monitoring wastewater, understanding the science behind passive and active solar power, or studying conservation measures built into the new building, the physical plant can be used to help students learn about science, sustainability, and taking care of the environment. For example, signs and working exhibitions created by students could identify design elements that demonstrate architectural, structural, mechanical, and green building strategies. Student tour guides could be

trained to introduce visitors to the building's features. Back-of-the-house spaces could be used as instructional spaces for students and staff, and could be used by town building and maintenance staff for hands-on training. Brookline's new elementary school could stand as a physical demonstration of environmental stewardship and innovation, providing a local case study for sustainable school construction.

The design should thoughtfully connect the school grounds with the natural resources on the school property and allow the school to:

- Create a richer teaching environment and enable pupils to connect the natural world to their daily experience in school;
- Create a sense of responsibility for and an awareness of nature within the school grounds;
- Encourage pupils to explore and understand biodiversity in their locality and to appreciate the need for environmental care on a global level; and
- Encourage pupils to value the school grounds as a place to play, explore and make a connection with the natural world.

Further, we would like to consider leaving some of the school grounds unfinished and allow the students who ultimately attend this school to lend a hand in the final design and even construction of a portion of the school grounds.

English Language Arts/Literacy

The K-8 English Language Arts program emphasizes explicit instruction in strategies of proficient readers and writers as well as meaningful exploration of the content of Language Arts and literature.

Brookline was well positioned for the move to the Common Core State Standards. Through our rigorous Program Review process, an ambitious K-8 literacy initiative began in the 2010-2011 school year. This initiative provided a strong foundation with which to meet the demands of the new Massachusetts Curriculum Frameworks. The literacy initiative, like the Massachusetts Curriculum Frameworks, emphasizes reading and writing in fiction and nonfiction. In addition, just as the Frameworks require students to read texts at ever increasing levels of difficulty, the Brookline initiative has focused on providing students access to a text gradient that supports their reading achievement.

Literacy instruction in Brookline is guided by *The Continuum of Literacy Learning, PreK-8*, a comprehensive and detailed description of student proficiency in literacy in the elementary and middle grades. One of the many strengths of this guide is the broad definition of *Literacy Learning*, including:

- Interactive Read-Aloud and Literature Discussion
- Shared and Performance Reading
- Writing About Reading
- Writing
- Oral, Visual, and Technological Communication
- Phonics, Spelling, and Word Study
- Guided Reading (small-group reading instruction)

Schedules for grades 1 – 5 reflect a daily, uninterrupted literacy block of 60-900 minutes. During this instructional block, students receive small group reading instruction from their classroom teachers and may participate in a variety of language arts learning centers, allowing students to refine reading and writing skills. Students who receive targeted literacy interventions do so outside of this time. Interventions may be provided by one of the Baldwin School's literacy specialists, a special educator, or an ELL teacher.

In grades 6-8, at a minimum, students have a daily 50-60 minute block of English Language Arts instruction. Students requiring additional supports and literacy intervention receive targeted instruction from classroom teachers, special educators and ELL teachers during designated 45-55-minute instructional blocks each day.

Teachers use multiple assessments to measure student progress, including the *Benchmark Assessment System* (BAS), running records and observational notes. In grade level data meetings, teachers examine whole class and small group instructional implications, as well as identify students and develop plans for individual literacy interventions. Tier two intervention includes the *Leveled Literacy Intervention (LLI)* and *Reading Recovery* (grade 1).

Although most of the reading and writing instruction takes place within the classroom environment, smaller work areas are necessary to facilitate individualized instruction, including both 1:1 and small group settings for book discussions and conferring. In addition, small work areas are needed to support individual and small group general education interventions in reading and writing, inside and outside the classroom. The Baldwin School's literacy specialists and coaches also need office space in which planning, coaching, direct instruction, and intervention can take place. This space should be a part of one of the grade level hubs for faculty and staff described below in the Professional Learning and Teacher Planning section.

Library/Media Center

The school library/media center remains an integral part of the learning and school community in Brookline schools. The library/media center should be placed in the building so that it is easily accessible by classrooms and be large enough to accommodate multiple classes at once. Having moved well beyond being a repository for books and card catalogs, the media center/library can act as another learning hub that provides access to resources and tools essential to learning in the 21st century. The library/media center needs to provide large group and small group learning spaces that allow for both quiet and collaborative work. Flexible space with moveable and varied furniture will allow numerous configurations for work and learning. Space for computers and easy access to technological devices should be prevalent while, at the same time, there is a need for spaces where students can simply read comfortably without being disturbed. There should be an allowance for integrated office space, workroom, and storage space to be used by the library media center staff and volunteers. In Brookline's elementary schools, it is typical to have a book room integrated into the library that is overseen by the librarian where class sets of books are available for teachers to access for their classes and reading groups. A well-provisioned school book room is a vital element of our literacy efforts. Beyond use by students and educators, the library/media center or an adjoining space that is integrated into the library/media center will be used as community meeting space for the PTO and similar community-based organizations.

Mathematics

The goal of the mathematics program in Brookline is to meet the needs of all learners so that they become critical problem solvers and reflective thinkers about mathematics in our evolving global, technological, and digital world. We also seek to stimulate interest and curiosity in the field of mathematics to develop students' passion and interest in a math career.

The mathematics program is grounded in the 2011 Massachusetts Curriculum Frameworks for Mathematics, in both Standards for Mathematical Content and the Standards for Mathematical Practice and is currently undergoing a comprehensive program review. Brookline's transition to the new standards started with focused attention on students' learning through the eight Standards of Mathematical Practice. In addition, for students in K-5, we increased the focus on the critical areas of *place value,* addition, subtraction, multiplication, division, fractions and decimals with an emphasis on understanding and application.

The most effective instruction for in-depth math content and deliberate attention to mathematical practices places different requirements on the physical space. Instruction varies, in that there are opportunities for individual learning, pairs and small groups, and whole-class instruction. Teachers

need the space to change as instruction changes – furniture easily configured for different groups, technology easily deployed throughout the room, ample space so students can spread out and use a variety of objects to manipulate and see the math, projection with robust Internet access to show real-life applications and simulations, examples of mathematical models, and sharing student work. Appropriate, safe and secure storage space is also critical to accommodate the various manipulative materials that students use to explain their mathematical thinking and problem solve.

The needs of the physical space in K-5 for math are mirrored in the middle grades. In grades 6-8, students continue this progression to geometry, algebra, probability and statistics, again focused on student learning and application. Brookline teachers use instructional materials from chosen curricula, as well as those developed by the Math Department to align with the content and practice standards. Teachers utilize instructional practices and mathematical experiences that are accessible to all, and provide opportunities for all students to engage in meaningful mathematics. There are opportunities to work with other teachers to integrate the disciplines and highlight STEM project-based opportunities.

Students are supported and challenged in various ways through teacher collaboration with Math Specialists. In addition, we are piloting adaptable universal screening assessments and instructional support programs in different grades across the schools. This will help us target student-learning needs across the units of the math curriculum and across all grades.

Students who show mastery of grade level standards engage in extensions that allow them to investigate math concepts more deeply. Also, with the support of Enrichment and Challenge Support (ECS) teacher, teachers will engage students in challenging authentic projects that require a deep understanding of the topic. As with all other examples, this type of creative investigation requires flexible educational spaces. Students also have opportunities to engage in online coursework, requiring access to devices and robust Internet connections.

The math specialists at the Baldwin School, who provide individual and small group support across all grade levels, require adequate office and teaching space. The office and meeting spaces should be located within the grade level clusters and professional workspace described below in the Professional Learning and Teacher Planning section. The space is used for collaborative planning, coaching teachers, and intervention work with students. For interventions and pullout services, math specialists need well-equipped learning spaces with access to the appropriate technology that supports math learning and assessment. The space should be adaptable to accommodate students of various ages as specialists work with students across all grade levels. Teachers and students will benefit from the office size, storage facilities, flexible configurations of space, and location.

Proximity to classrooms as well as other specialists (literacy, ECS) is important due to the frequent student transitions to and from the Math Center, and the ongoing collaboration between specialists.

Performing Arts

The Public Schools of Brookline is proud to continue a tradition of a strong performing arts department. Each K-8 school has music instruction for all students across all grades. In grade four, all students begin the study of a string or band instrument, and then choose to participate in band, orchestra, and choral ensembles in grade 5. In grades 6 through 8, students may continue with band, orchestra, or chorus or take classes in music production, guitar, or general music. It is anticipated that the Baldwin School will host a variety of music concerts (choral and instrumental) and a musical theater production during the school year. Performances will require a space has a capacity of at least 250 people.

Wellness Education

The Wellness Education department provides standards-based instruction to all students across grades, K-8. Students participate in quality instructional physical education programming twice per week, for 40-45 minutes in each class. The curriculum is presented in accordance with the Massachusetts Frameworks and the National Standards for Quality Physical Education. The curriculum follows a developmental sequence from body management competence, to fundamental skills, to specialized skills, while simultaneously addressing physical fitness and social skills.

As described in the School Scheduling Method section we require one gym that can be divided so the space can be used by multiple classes concurrently without disturbing each other. The school requires the capacity to accommodate two classes happening simultaneously. The physical education facilities will require ample and appropriate storage space for large physical education equipment and supplies that can be easily accessed and set up in the gym.

The physical education department utilizes technology to enhance teaching and learning. Teachers engage students with the use of Polar Heart Rate Monitors, multiple iPad apps for instruction, monitoring student performance, taking pictures and videos, and the web-based Polar GoFit fitness assessment. The anticipated use of similar technology requires a facility with continuous wireless access and safe, secure storage.

Health Education

Students receive instruction in health education, in grades 7-8, two times per week. Health education is aligned in the Massachusetts Curriculum Frameworks and National Standards for Health Education. We strive to provide a “wellness” approach to student learning and well-being.

Wellness encompasses a culture of holistic well-being focused on educating, promoting and supporting all dimensions of health (physical, mental/intellectual, emotional, social, ethical) in order to live a longer, healthier, and more productive life. Health education is skills-based, offering students continuous opportunities to practice skills such as analyzing influences on health behaviors, decision-making, goal setting, and communication to enhance health and avoid or reduce risk behaviors. Health classes would require a classroom for instructional delivery. The classroom needs to be large enough to allow for various student groupings, student movement, and fitness equipment that would allow us to modernize our health education classes and offer a wider variety of programming.

Science and Engineering

The Brookline PreK-8 Science & Engineering program is designed to actively engage students in their own learning using hands-on inquiry, outdoor learning, intriguing materials, science notebooks, scientific tools and high quality media (books, video and online resources) accessible to all learners. The curriculum integrates science/engineering content, science and engineering practices, and crosscutting concepts and is aligned with the new Massachusetts Science Technology and Engineering Curriculum Frameworks that are based on the national Next Generation Science Standards. Also in an effort to inspire students to think of themselves as scientists and engineers and to reflect on how they use science/engineering practices throughout their learning we utilize the Nature of Science curriculum where students address questions such as: What is science? Who are scientists? How and where to they work? How does science change over time based on new evidence and tools?

In order to implement our robust and rigorous hands-on, inquiry-based science and engineering curriculum, teachers require flexible spaces that invite and promote creativity, innovation, and collaboration. These spaces require the use of movable tables so that open spaces can be created to allow for projects-based learning. Every classroom needs to be equipped with wall space for recording questions and ideas, sinks to provide water for investigations and cleanup, space for storing tools and "making" materials (glue guns, cardboard, etc.), and adequate storage space for science materials. Sunny windows are needed to grow plants.

Two science labs need ample, flexible space for students to work and for the safe storage of science materials and supplies. Specific needs of a science lab are in addition to the general design and development of other contemporary teaching spaces – wall space for visuals, projection area(s), technologically versatile, natural light, flexible furniture, etc. Storage space for tools and other "making" materials needs to be provided.

Outdoor learning is built into the PreK-8 science and engineering curriculum. We envision using the outdoor spaces of the school as learning labs (providing field trips right outside the school doors). Students can observe and study the natural world in areas that attract birds and butterflies through the planting of native plants. For example, students will have the opportunity to study rotting logs, birds at bird feeders, grow vegetables, create a milkweed/wildflower meadow to attract monarchs and other butterflies, and much more. Outdoor seating areas are also needed so that classes can go outside, not only to study science, but also to listen to stories and do other group work.

Although students will be "making" (solving real world problems by creating solutions) in their classrooms, a stand-alone makerspace (an updated version of an industrial arts shop) is needed to allow students to have a place to extend their projects. This space will provide a common area where students of all ages can meet before, during or after school to collaborate and pursue problems that are of interest to them. This space will need to be equipped with sinks, design thinking walls for recording ideas and questions, tools, tool walls, sewing machines, etc. as well as spaces for laptops.

In addition the inclusion of a Fab Lab that blends STEM (Science, Technology, Engineering and Math) skills into a unique learning opportunity would appeal to all students. Fab Labs, which are embedded in technology, allow for different learning styles to be embraced and create a collaborative environment in which students can make their ideas tangible and engage deeply in their learning. In the Fab Lab, students learn how to be project managers, engineers and designers – all at once. The lab simulates the research and development process and allows students to make everything from furniture to action figures to circuit boards. They learn what it takes to turn an image in their heads into an image on a computer screen and ultimately into a physical prototype. Typically a Fab Lab will contain equipment such as a three-dimensional (3D) printer, vinyl cutter, laser cutters/engravers, a milling machine or a computer-guided router. Such a lab will serve as hub of invention, creation, discovery, inquiry, and sharing for students of a wide range of interests and abilities.

Ideally, the library, makerspace Fab Lab, and art rooms would be a combined or co-located to create an area for design and innovation.

Social Studies

The K-8 social studies department has been deep in the process of curriculum revision and renewal. Across the grades, the curriculum coordinator, in collaboration with teacher-teams, develop new units of study and common assessments at every grade level. The skills and habits of social scientists are a thread throughout the revised curriculum. Professional development for teachers

accompanies each new unit of study. Examples of content include: civics, physical and human geography, economics, and US and world history. Along with content, teachers are developing strategies for explicit literacy instruction, including how to make difficult primary texts accessible to all students and disciplinary literacy instruction. Each unit lesson includes modification and differentiation suggestions, assessment options, and identification of natural connections to other subjects to support the development of interdisciplinary units.

Teachers continue to incorporate more technology into social studies teaching, enabling them to access real-time data, utilize digital textbooks and atlases, and support the development of digital literacy that includes Internet research, online student learning activities, and diverse instructional strategies to accommodate all learning styles. Students are also taught media literacy skills to prepare them to be discerning media consumers and critical thinkers.

The social studies curriculum and instruction demand physical spaces similar to the other subjects – flexible, accessible, safe and secure storage, and wall space for visuals and student work displays. To make sure 21st Century learners can engage in classroom activities, classrooms require a combination of electrical outlets and power strips that are distributed through the classroom, along with a smart teacher control panel with USB ports that allow for easy document camera connections, interactive whiteboard equipment controls, and speakers. In addition, teachers need to be able to control natural and artificial lighting quickly. Lastly, the physical space available to students needs to go beyond the single classroom, extending into collaborative environments with breakout, presentation, and display space beyond a single room.

Visual Arts

The Public Schools of Brookline has a vibrant visual arts program that provides students repeated opportunities to develop observational skills, decision-making skills, and craftsmanship using art as the visual language to communicate ideas and demonstrate understandings. The visual arts program has a K-12 continuum of key understandings, concepts, and processes as the framework for its curriculum. The department continues to collaborate with other coordinators and teachers to create more interdisciplinary units in the K-8 curriculum.

The Baldwin School expansion provides an opportunity to update how we think of the physical space for visual arts instruction. The renovation can provide what's needed: one art classroom with ample natural light and with enough space for the largest class to sit a maximum of four students per table. Also, the visual art classrooms need a separate storage closet for materials, equipment, and teacher preparation. The visual art classrooms also require ample storage capacity within the classroom for artwork in process. The layout of the classroom should separate work tables from

preparation/sink areas. Multiple sinks at appropriate student height, and furniture and amenities (i.e., sinks), scaled to meet the needs of each grade level clusters, are required. A separate kiln room attached to the classroom is required. A contemporary visual art classroom needs a technology/media station (computers with photo/video software and Internet access) set-up to serve 4-6 students located away from paints and clay preparation.

There should be ample space for whole-class demonstrations and exhibiting exemplary artwork on the walls. In the corridor outside the visual art classroom, as well as in corridors throughout the school, there should be ample wall space designed for student artwork to be exhibited, including a 3D wall case centrally located in the school. Displaying student work throughout the school is essential for: building a sense of pride and ownership of the space and the school; providing a public audience which serves as a natural motivator for students; and for providing models of high quality work that help to set expectations for students.

World Language

Brookline is fortunate to have a K-8 world language program that immerses students in language and culture beginning in Kindergarten, with the ultimate goal of intermediate level proficiency for students at the end of grade 8. The curriculum is based on the "5 C's" of the World-Readiness Standards for Learning Languages: Communication, Cultures, Comparisons, Connections and Communities, and builds a solid foundation in oracy, the partner of literacy in language learning, in grades K-5. While literacy entails the ability to read and write fluently, oracy is fluency in listening and speaking, or oral/aural language. Lessons are carried out through the use of songs, games, books, and other interactive activities designed to develop real-world communication skills rather than learning vocabulary words in isolation.

K-5 world language instruction takes place in the grade level classroom, and therefore is directly impacted by the distribution of classrooms throughout the building, individual classroom space, as well as individual classroom set-up. World language teachers need ample room to enter and navigate their teaching cart to the "rug area" (particularly in grades K-2) or the projection space/instructional area of the classroom. Space for full access to all sides of the cart is required: drawers on either side hold materials; a laptop and teacher organizational materials as well as large posters/books are in the rear; a magnetic white board, the center of instruction, holds a variety of visuals and other materials to support understanding of target language lessons. Grade-level classrooms clustered together would minimize world language teacher travel time between lessons within a grade level, allowing the world language and classroom teacher to touch base at the end of a lesson, to exchange quick observations about a particular student during a lesson or to debrief an element of a lesson during the 5-minute travel time.

As K-5 world language teachers do not have one classroom in which they teach, a common office space is needed for them with a desk for each teacher, ample storage for K-5 world language materials, and space to meet with other teachers and parents.

With a solid foundation in oracy, students are well prepared to move into literacy-based language instruction in grades 6-8. A minimum of one world language classroom will be needed. The needs of the physical space in K-5 for world language are mirrored in the middle grades. In grades 6-8, students continue to focus on oral proficiency while also developing skills in in the interpretive and presentational modes of communication. Authentic materials in the target language become an essential source of input for students, requiring individual and group access to technology. Flexible space is needed for students to circulate to talk with each other or to work individually, in pairs or in small groups.

Enrichment and Challenge Support Program (ECS)

Many students enter a grade with experiences and/or developmental sophistication that allow them to grasp concepts quickly and easily, with little repetition. These students need opportunities to apply what they know and investigate the curriculum in more depth. Some students show a level of advanced understanding that requires a more specialized response from teachers, providing time and opportunity for self-directed investigations and projects. A very small number of students may require very specialized interventions that extend outside the traditional classroom walls. The PSB Challenge Framework is a system of interconnected supports for addressing the range of needs of students who show advanced understanding of the curriculum and/or innovative and creative problem solving skills beyond their peers. We have recognized the need to shift to a classroom-centered approach that includes, but is not limited to ECS resource teachers who have expertise in designing learning that is connected to the curriculum and addresses the needs of individuals through a project-based learning approach.

ECS Specialists work together with classroom teachers to meet the needs of their students for challenge, enrichment, and extension across all disciplines, within the classroom, throughout the school day. To do this, ECS Resource Teachers spend most of their time collaborating with classroom teachers in conjunction with other specialists. Collaboration among classroom teachers and ECS teachers could include:

- *Co-teaching a differentiated lesson;*
- *Working in the classroom with small groups of students or stations;*
- *Designing and implementing digital, inquiry-based, personalized, and project-based learning;*
- *Assessing students and co-planning appropriate follow-up.*

In support of this collaboration with classroom teachers, ECS Resource Teachers should be located in one of the collaborative workspaces in the grade level clusters so they can easily plan with and debrief lessons together. In addition, ECS Teachers will occasionally pull out students to facilitate small groups of students on Tier II enrichment interventions.

The Enrichment and Challenge Support Program is a vital component of the Public Schools of Brookline Challenge Framework and requires many of the same structural classroom components as other content areas such as: easily reconfigured furniture that lends itself to flexible student groupings and accessible areas where students can engage in the use of technology that provides Tier II interventions in the form of online courses and access to other online resources. Additionally, as mentioned in the Science section of the proposal a stand-alone makerspace and a Fab Lab are needed to allow students to have a space to engage in ongoing projects, and collaborate on and pursue problems that are of interest to them.

English Language Education (ELE)

The English Language Education (ELE) program provides services to students whose primary language is not English and who are not yet proficient in English. The program provides support at each school, with services focused on students' English language acquisition, literacy development, social integration, and academic achievement.

The ELE program serves students outside of the classroom and, therefore, needs its own space. Like special education, housing the ELE programs in the general vicinity of the grade level clusters is intentional. Wall space and storage is also important, given the use of visuals and the need for storage of the general education program materials made available to the teachers and students in the ELE classrooms. ELE classrooms will be reflective of other learning spaces – flexible, well provisioned, and accessible, and able to be used to support small group instruction and center-based learning.

10% of the student population in our schools are English Language Learners so in and 450 student school, we would anticipate that the ELE program will support upwards of 45 students or four classrooms in the Baldwin School. Small groups of students meet with ELE teachers several times per week both in and out of the classroom for direct English instruction. In addition to these four classrooms, to alleviate crowding in the North Brookline schools, the Baldwin School could become the home to one of the district-wide Native Language Support Programs. To support our English learners the Baldwin will require three full-sized classrooms.

STUDENT SERVICES & SPECIAL EDUCATION

Special education services throughout the district address the needs of identified learners with disabilities between the ages of three and twenty-two, who require specialized instruction to support access to the curriculum. A wide range of services is provided to meet the individual needs of students, from academic intervention to related services in areas such as speech therapy, occupational therapy and physical therapy. Availability of therapeutic services for students requiring special education intervention in the realm of social, emotional and adjustment areas is present at all schools and levels. Staff works closely with families in ensuring that necessary services are identified and provided to students in accordance with applicable mandates.

Inclusion is a core belief and practice in the Public Schools of Brookline. This educational model expects schools to meet the needs of all students by educating learners with disabilities alongside their non-disabled peers. The environment necessary to nurture and foster inclusion is built upon a shared belief system between general and special education, and a willingness to merge the talents and resources of teachers. An inclusive education helps prepare students with disabilities for an integrated adult life and builds understanding and acceptance within the broader community. In 2017-2018, 15.5% of 9th Elementary students in Brookline had disabilities.

Physical environment impacts learning for all students and especially for students with disabilities. The physical structure of the new school building should support our inclusive approach, our commitment to providing all students an appropriate education in the least restrictive environment, and our system-wide special education programs. It is important that every student has an authentic sense of belonging and feels safe in their school. Clustering grade levels, integrating special education classes and spaces throughout the school, and providing services to students in close proximity to their cohort peers are examples of how the design of the school can support the academic and social-emotional learning goals for students with special needs.

The location of the classrooms allows staff to communicate and collaborate fluidly throughout the day on student needs and programming. To support teachers, special educators and families, the school based Education Team Facilitator (ETF) should have office space within one of the grade level cluster teacher work areas described in the Professional Learning and Teacher Planning section, and there should be one conference room that is primarily used for IEP meetings and Child Study Team meetings. This conference room should be able to hold at least 12 people comfortably.

Additionally, the new school should provide equitable access to high quality learning spaces and classrooms that are comparable in every way to general educations classes. Equitable access begins

with being fully ADA compliant and includes equity in classroom quality, access to natural light and windows, the size of rooms as well as proper heating and ventilation. Special education classrooms need to be flexible and easily reconfigured, given that different students are served in the same space at different times. In addition, accessibility to a wide variety of technology options is essential. Assistive technology plays a critical role in supporting engagement and learning for students with special needs. Different devices and equipment for different purposes need to be available with supports for quick set-up and secure storage.

Learning Centers

Each Brookline school has Learning Center rooms that support students with special needs. Learning Centers are designed for students with varied disabilities who require a flexible level of services both inside and outside of a general education classroom. The Learning Centers are classroom spaces within which special educators conduct small group instruction, social skills groups, and collaborate with other related service providers to support students. Learning Center classes have a low staff to student ratio allowing for increased individualization. Students may receive higher levels of direct, specially designed instruction in academic areas within the Learning Centers. There should be three Learning Center rooms in the building with one located in each of the K-2, 3-5, and 6-8 areas. Within each Learning Center room there should be adequate space for academic support, social skills instruction, an area for sensory support and quiet academic work.

Specialized Programs

Given the demand for space throughout Brookline and the increasing enrollment demands in district-wide programs, the building of a new school facility gives the school district the opportunity to build a state-of-the-art, flexible and inclusive space that can be used for district-wide special education programs and will return classroom space to schools in North Brookline. It is anticipated that the new school would provide a home to one of the district-wide specialized programs such as a Therapeutic Learning Center for students with complex emotional and behavioral challenges or the RISE program.

Programs like the TLC and RISE are typically organized into smaller rooms that serve between 4 and 10 students who have a higher ratio of adults working with them in that classroom. Each TLC or RISE classroom requires a defined therapeutic space within or adjacent to the classroom that can be used for relaxation. Each classroom also requires a separate room where students and staff work together on de-escalation when needed. Either program would serve a range of ages in their classrooms and be organized into PK-2, 3-5, and 6-8. RISE classrooms require an adjoining bathroom that should not be located near the relaxation space. All told, the Baldwin School should include a total of three classrooms for specialized district-wide programs that should be placed within or near the appropriate grade level cluster.

At Baldwin, PSB will further develop our approach in the area of functional life skills that begin to prepare lower functioning students for life beyond elementary and middle school. The curriculum will emphasize daily living skills, community skills, and social skills that students will need across a range of settings, including leisure and recreation activities. This work will be provided as part of the RISE curriculum and will take place in the classrooms dedicated to RISE.

Student Services

In addition to the special education services our educators provide, other essential services and support are provided by a wide range of specialists including school psychologists, social workers, speech/language pathologists, occupational therapists, physical therapists, nurses, and guidance counselors. In many cases, these positions are shared among more than one school, but together they represent a team-based approach to supporting students and families at the elementary level in Brookline. In order to provide coordinated services and promote collaboration among these professionals the Baldwin School should be organized into two "suites" – a Guidance and Therapy Suite and a Health Services Suite -- that are easily accessible to all students.

Guidance and Therapy Suite

The Guidance and Therapy Suite should have two separate but connected areas. One of these areas would include individual spaces for an occupational therapist, a physical therapist, and a speech therapist. The speech therapist is likely to support more students than the other therapists. The second area would have two offices, one for the guidance counselor and one for the school psychologist. All of these spaces should allow for privacy but include doors with windows that can be covered as necessary. The suite should have a small area where students can wait prior to receiving services.

Health Services Suite

The Health Services Suite houses the nurse and allows students to be checked, receive services, or wait comfortably for a parent, guardian or family member to pick them up. The Health Service Suite requires an entry or reception area where students can await services, a treatment area that includes three or four cots/beds, and a space for private meetings and confidential consultations. There should also locked storage, a sink, and a refrigeration unit.

Motor Room (Occupational and Physical Therapy)

Students require occupational and physical therapy multiple times per week. These services include physical exercise, strength building, balance skills, and fine and gross motor skills development. The occupational and physical therapists provide these services in a dedicated space called a Motor

Room that has specialized equipment and sufficient space. The Motor Room should be the size of a regular classroom.

SCHOOL CULTURE AND SOCIAL EMOTIONAL LEARNING

It is the mission of the Public Schools of Brookline (PSB) to ensure that every student develops the skills and knowledge to pursue a productive and fulfilling life. To truly live this mission, it is essential that our schools are safe, welcoming, respectful and nurturing. Such a culture is created when everyone in the school is aligned to requisite beliefs, values, and behaviors. Children need to learn these beliefs, values and behaviors, and adults need to model, guide, and explicitly teach them to children using intentional strategies in order to establish a culture conducive to learning.

To support a positive, collaborative, and welcoming culture, the physical structure of the school needs to provide gathering spaces to promote social interaction and engagement among students and adults. The rebuilt and expanded Baldwin School needs to facilitate and encourage connections among grade levels and across the disciplines, be welcoming by design, and show evidence of collaboration, respect, and high expectations with student work prominently displayed throughout the school, all of which support the social emotional learning of students

Responsive Classroom (K-5) and *Developmental Design* (6-8) currently represent the core social emotional curriculum in Brookline. Our approach to social emotional curriculum requires classroom meeting areas to conduct "morning meetings" in grades K-5 and advisory groups in grades 6-8. Each classroom should have an area available for these class meetings and other similar functions that is appropriate for the age range.

OUTDOOR SPACE FOR PHYSICAL ACTIVITY

The use of outdoor spaces for physical education, athletics, recess, and curriculum-based learning will be an integral part of the learning at Brookline's new PK-8 elementary school. A play area specifically for prekindergarten and/or the PK-2 grade cluster is necessary with easy access for these grade levels, as they may have more than one recess per day. Space for grades 3-5 and 6-8 play areas can be integrated as long as they contain a variety of spaces and structures appropriate for the broad developmental and recreational needs of this age span.

A School Garden, maintained by staff and students and integrated across the K-8 science curriculum, should be easily accessible from an exit in close proximity to classroom clusters to ease access during class periods for a variety of grade levels.

PROFESSIONAL LEARNING AND TEACHER PLANNING

The new elementary school's physical spaces will support a culture of professional learning characterized by: shared norms and values; a focus on student learning; making professional practice more visible; collaboration; and, inquiry, reflection, and analysis. We have moved past the mindset of a classroom teacher only being responsible for the general education students in his or her classroom toward a team approach that better balances the essential community of a classroom with the collective responsibility of a team of adults ensuring every student succeeds. The physical spaces where teachers meet and collaborate need to support this shift towards a professional learning culture and teams of adults taking responsibility for all of their students succeeding.

As designers of learning, teachers will spend time planning with colleagues to create the best learning experience for all students. Educators need appropriate and well-provisioned spaces to gather to discuss student learning, share instructional practices, analyze data, determine next steps for instruction, participate in webinars, review student work, vet online resources, and read and discuss the contemporary literature of the profession. Each grade level span (PK-2, 3-5, and 6-8) will require the meeting space necessary for this variety of professional collaboration and learning. The hub of each grade level cluster should be a work area for teachers that replaces individual, isolated desks within a classroom. This work area should have tables for group work, storage for materials and professional resources, and individual workspaces. Adjacent to this work area will be a small conference room for meetings for grade-level teacher teams

Professional learning also includes instructional coaching by staff members in a variety of roles including: Math Specialists, Literacy Specialists and Literacy Coaches, Educational Technology Specialists (ETS), Librarians, Enrichment and Challenge Support (ECS) teachers, and Inclusion Facilitators and Inclusion Specialists. Math and Literacy Specialists, Literacy coaches, ETS's and Inclusion Facilitator and Specialists should be embedded in the grade level hubs described above so when they are not in classrooms, they are easily accessible to teachers integrated into the work of teacher teams, and can provide support to colleagues and easily

LUNCH PROGRAMS

The mission of Food Services is to provide healthy, tasty, high-quality, sustainable, affordable meals to the students and staff of the Public Schools of Brookline. Breakfast and lunch are served at all nine schools in the district. As part of the National School Breakfast and Lunch Program, we follow guidelines set by the USDA regulating what qualifies as a healthy breakfast and lunch. Meals are

cooked from scratch, using real food, and we are continually looking for ways to improve our school meals.

The Baldwin School cafeteria should be large enough so that the entire school is able to eat lunch over the course of three lunch periods. An appropriately sized cafeteria will ensure that the Baldwin School can both start and end lunch at appropriate times.

Students typically pay for lunch using online accounts that allow families to pre-pay for student meals and provide easy access for food service workers to children's allergy information and dietary restrictions.

TRANSPORTATION POLICIES

The Public Schools of Brookline provides bus transportation for K-8 students residing more than 2.0 walking miles from their districted school. These students are transported at district expense. All students in Grades K-6, who live less than 2.0 miles from their school, are responsible for their own transportation. The district does make exceptions for students whose needs are "safety" related. K-6 students who live 2.0 miles or more from the school may opt to purchase a bus pass in accordance with the MBTA fee schedule. Special education transportation services are separate from regular bus transportation.

The Baldwin School will provide transportation to students with wide variety of transport needs. In addition to vans for any specialized programs for students with disabilities and one Boston bus for students in the METCO program, we believe two or three additional buses will be required to transport students to and from school.

FUNCTIONAL AND SPATIAL RELATIONSHIPS AND ADJACENCIES

The rebuilt and expanded Baldwin School will serve South Brookline and will have a population of 800 students. Our schools enjoy an international reputation. Academically, we welcome students from all over the world, and socially, we reflect and respect human diversity. The Baldwin School will be a relationship-oriented community that practices and values inclusive partnerships and mutual support in all aspects of the school community. This is the overall spirit of the school that will drive the design of the facility.

Functional and spatial relationships and adjacencies are the key to the successful design of the new facility. These relationships between classrooms and programs in the school define the

programmatic, functional, spatial, and environmental requirements of the educational facility and become the basis for the design at the next phase. The Baldwin School will rely upon adjacencies for communication, collaboration, flexible grouping, and teaming. Providing learning areas both in and outside classrooms for small group work, individual tutorial spaces, and additional instructional break out rooms are critical in a school with a focus on integrated classrooms at grades K-8, requiring specialized instruction and an emphasis on inclusive practices.

Community is a core value among students, staff and parents. The Baldwin School will be a warm and inviting place for children, staff and families. A priority for the students, staff and Baldwin School community is to bring a "small school" feel to the elementary school design. The Baldwin School will require a welcoming main office and community arrival space that can accommodate a large morning influx of students, as well as active dismissal procedures. The students, faculty and parent community in Brookline value spaces where the school community can gather to celebrate learning and to spotlight the arts through assemblies and performances. After school, extended day programming that will be provided until 6:00pm with several hundred students participating in this program daily. While the extended day program will utilize the learning spaces in the building, an administrative office with storage space will be needed.

SECURITY AND VISUAL ACCESS REQUIREMENTS

As with all Brookline schools, safety and security is of the utmost importance. Students, families, and our staff need to feel safe and secure in their school community in order to take full advantage of all educational opportunities. At the same time it is essential to provide the necessary level of security without impacting the building's physical organization or sense as an inviting and open learning environment for students, teachers, parents, and visitors. There needs to be a balance between the type of open, accessible learning spaces that encourage sharing and collaboration with the need to have safe and secure classrooms when needed. It is possible and necessary to prioritize light, glass, and openness and still institute necessary safety measures. Safety and security measures should be designed and integrated in ways that allow for future enhancements. The following features should be considered as part of the school design:

- Access Control to rooms and spaces that utilizes a security access fob device by authorized staff that can also be controlled centrally
- Visual Security of entrances utilizing a video monitoring/recording system that will be monitored at the school secretary's desk
- Safe and well lit staff parking
- Safe and well lit visitor parking
- Safe pathways for pedestrians and bicyclists coming from varied directions to the school
- Safe bus access systems that do not interfere with drop off and pick up traffic

- Safe recess grounds and play fields that can be properly supervised by staff and protected from vehicular traffic
- Open and easily visible front access to the school
- Safe access for kitchen, facility and shipping/receiving separate from school traffic at the main entrance
- Safe and appropriate access to the perimeter of the building and play fields

1.3 Initial Space Summary

1.3.1 Space Summary

Please reference the following Baldwin Space Summary approved by the School Committee.

Baldwin School Expansion Project - DRAFT Space Summary

= Change from MSBA Template
= Renovation Space at CCS

2 Section School
Pre-K
District-Wide SWD Program
District-Wide NLS Program

Baldwin School Expansion 420- 450 Students*
* Dependent on Individualized Education Plans

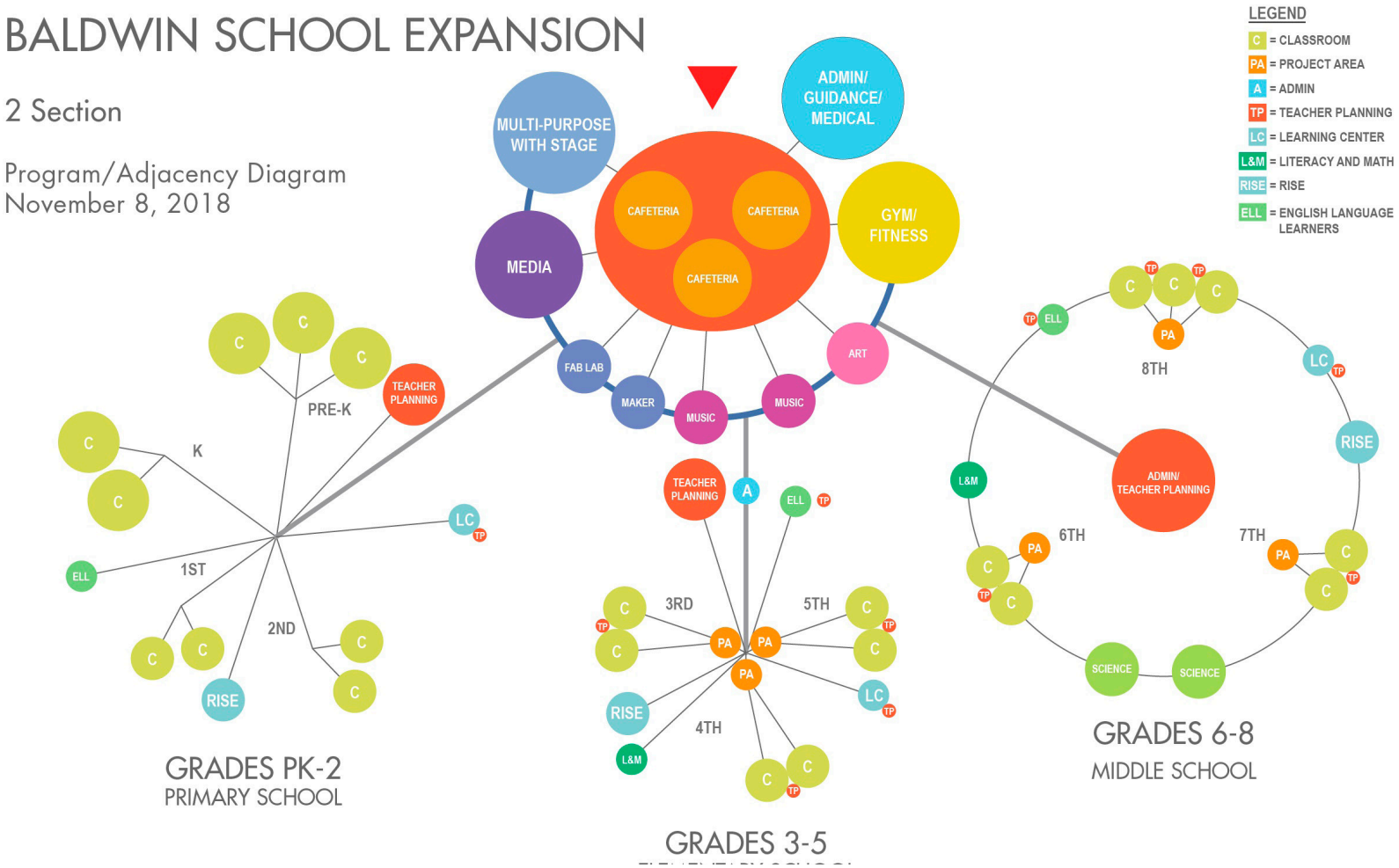
ROOM TYPE	Baldwin School Expansion 420- 450 Students* ROOM NFA	# OF RMS	area totals	Comments	Original 9TH School 3++ (2017) 690 students ROOM NFA	# OF RMS	area totals	Coolidge Corner (For Reference) 1,010 Students ROOM NFA	# OF RMS	area totals	MSBA GUIDELINES (For Reference) 453 Students ROOM NFA	# OF RMS	area totals
CORE ACADEMIC SPACES			**27,900**				**40,020**			**55,710**		**22**	**20,410**
Pre-Kindergarten w/ toilet	1,200	3	3,600		1,200	3	3,600	1,225	2	2,450	1,200		-
Kindergarten w/ toilet	1,200	2	2,400	1,100 SF min - 1,300 SF max	1,200	3	3,600	1,174	5	5,870	1,200	3	3,600
General Classrooms - Grades 1-5	840	10	8,400	900 SF min - 1,000 SF max	900	15	13,500	890	25	22,250	950	11	10,450
General Classrooms - Grades 6-8	840	6	5,040		900	9	8,100	891	15	13,370	950	4	3,800
Teacher Planning Grades 3-8	50	12	600		50	18	900						
Science Classroom / Lab	1,200	2	2,400	1 period / day / student	1,200	2	2,400	1,193	3	3,580	1,200	2	2,400
Prep room	120	1	120		120	1	120	133	3	400	80	2	160
ELE Classroom	450	3	1,350	Native Language Support	900	3	2,700						
Teacher Planning ELE	50	3	150		50	6	300						
Project Areas	400	6	2,400	Grade 3-8 Common Project Areas	400	6	2,400	231	9	2,080			
World Language Classrooms	840	1	840					850	2	1,700			
Literacy and Math Specialist	150	2	300										
Literacy Specialist K-2					150	1	150	170	1	170			
Literacy Specialist 3-5					150	1	150	155	2	310			
Literacy Specialist 6-8					150	2	300	150	2	300			
Small Group/ Math Specialists	150	2	300										
Math Specialist K-2					150	1	150	215	2	430			
Math Specialist 3-5					150	2	300	155	2	310			
Math Specialist 6-8					150	1	150	0	0	0			
Small Group Rooms													
Small Group Rooms - Grades K-2								157	3	470			
Small Group Rooms - Grades 3-5								150	3	450			
Small Group Rooms - Grades 6-8								150	3	450			
Enrichment Challenge Support								230	1	230			
ELE Small Classroom	400	0	0		400	3	1,200	297	3	890			
SPECIAL EDUCATION			**6,690**				**5,180**			**10,980**			**6,040**
RISE				Subtotal RISE = 3,090 sf									
RISE Classroom PK-8	840	3	2,520	RISE - 1 per cluster	900	3	2,700				950	4	3,800
RISE Classroom Teacher Planning	50	3	150		50	3	150						
RISE Classroom PK-8 toilet	90	3	270	Larger for Medically Fragile	60	3	180				60	4	240
De-Escalation Room	50	3	150		50	3	150						
Resource Room - Grades 1-5	500	0	0								500	2	1,000
Resource Room - Grades 6-8	500	0	0								500	1	500
Small Group Room / Reading	250	0	0								500	1	500
LEARNING CENTER				Subtotal Baldwin 1,500 sf CCS = 6,970 sf									
Learning Center K-2	450	1	450					470	2	940			
Learning Center 3-5	450	1	450					400	2	800			
Learning Center 6-8	450	1	450					450	1	450			
Learning Center Teacher Planning	50	3	150		50	4	200						
Therapeutic Learning Center Large Group K-2								450	1	450			
Therapeutic Learning Center Small Group K-2								190	2	380			
Therapeutic Learning Center Chill Out K-2								90	1	90			
Therapeutic Learning Center Relax K-2								80	1	80			
Comprehensive Learning Center K-2								380	1	380			
Comprehensive Learning Center Chill Out K-2								70	1	70			
Shared CLC/ LC Office K-2								100	1	100			
Therapeutic Learning Center Large Group 3-5								360	1	360			
Therapeutic Learning Center Small Group 3-5								200	2	400			
Therapeutic Learning Center Chill Out 3-5								80	1	80			
Therapeutic Learning Center Relax 3-5								100	1	100			
Comprehensive Learning Center 3-5								410	1	410			
Comprehensive Learning Center Chill Out 3-5								70	1	70			
Shared CLC/ LC Office 3-5								110	1	110			
Self-Contained SWD - Grades K-2 toilet								60	1	60			
Self-Contained SWD - Grades 3-5 toilet								60	1	60			
Self-Contained SWD - Grades 6-8													
Therapeutic Learning Center Large Group 6-8								360	1	360			
Therapeutic Learning Center Small Group 6-8								200	2	400			
Therapeutic Learning Center Chill Out 6-8								80	1	80			
Therapeutic Learning Center Relax 6-8								100	1	100			
Comprehensive Learning Center 6-8								400	1	400			
Comprehensive Learning Center Chill Out 6-8								70	1	70			
Shared CLC/ LC Office 6-8								110	1	110			
Self-Contained SWD - Grades 6-8 toilet								60	1	60			
Offices / Conference / Multi-Use				Subtotal Baldwin 1,950 sf CCS = 4,010 sf									
Speech	150	2	300		150	1	150	147	3	440			
OT / PT	950	1	950		950	1	950	1,090	1	1,090			
Special Ed Team Facilitator	150	1	150		150	1	150	150	1	150			
Special Education Conference	250	1	250		250	1	250	130	1	130			
BCBA	150	1	150					150	1	150			
Psychologist	150	1	150					150	1	150			
OT / PT Office	150	1	150										
Special Education Team Clerk								100	1	100			
Special Education Records								60	1	60			
Special Education Waiting								390	1	390			
Special Education Conference								170	1	170			
TLC Social Worker								150	1	150			
Psychologist								170	1	170			
Psychologist / Social Worker Conference								280	1	280			
Psychologist / Social Worker Safe Room								70	1	70			
Psychologist / Social Worker Testing								80	1	80			
Psychologist / Social Worker Waiting								430	1	430			
Life Skills Store					300	1	300						
ART & MUSIC			**9,160**				**10,310**			**13,990**			**7,150**
Art Classroom - Grades 1-5	1,000	0	0		1,000	1	1,000	1,020	2	2,040	1,000	1	1,000
Art Classroom - Grades 6-8	1,200	1	1,200		1,200	1	1,200	1,180	1	1,180	1,200	1	1,200
Art Workroom w/ Storage & kiln	150	1	150		150	2	300	160	3	480	150	2	300
Band / Chorus - 100 seats	1,500	1	1,500		1,500	1	1,500	1,810	1	1,810	1,500	1	1,500
Music Classroom / Large Group - 25-50 seats	1,200	1	1,200		1,200	1	1,200	1,185	2	2,370	1,200	1	1,200
Music Practice / Ensemble - Grades 1-5	75	0	0		75	0	0	80	4	320	75	2	150
Music Practice / Ensemble - Grades 6-8	200	1	200		200	1	200	280	1	280	200	1	200
Multipurpose Room	3,200	1	3,200		3,200	1	3,200	3,780	1	3,780			
Stage	1,600	1	1,600		1,600	1	1,600	1,600	1	1,600	1,600	1	1,600
Multipurpose Chair Storage	110	1	110		110	1	110	130	1	130			
VOCATIONS & TECHNOLOGY			**2,350**				**2,350**			**2,970**			**3,200**
Tech Clrm. - (E.G. Drafting, Business)	950	1	950	Fab Lab	950	1	950	910	1	910	1,200	1	1,200
Tech Shop - (E.G. Consumer, Wood)	1,400	1	1,400	Maker Space	1,400	1	1,400	2,060	1	2,060	2,000	1	2,000
HEALTH & PHYSICAL EDUCATION			**8,220**				**10,420**			**10,680**			**8,330**
Gymnasium	6,000	1	6,000	6000 SF Min. Size	6,000	1	6,000	6,120	1	6,120	6,000	1	6,000
Gym Storeroom	210	1	210		210	1	210	210	1	210	150	1	150
Gym Storeroom	80	1	80		80	1	80	80	1	80			
Health Instructor's Office w/ Shower & Toilet	180	1	180		180	1	180	220	2	440	180	1	180
Locker Rooms - Boys / Girls w/ Toilets	400	2	800		400	0	0	420	2	840	1,000	2	2,000
Small Gym	3,000	0	0		3,000	1	3,000	2,990	1	2,990			
Health / Fitness Classroom	950	1	950		950	1	950						
MEDIA CENTER			**3,310**				**3,815**			**5,170**			**2,791**
Media Center/Reading Room	3,000	1	3,000		3,505	1	3,505	4,860	1	4,860	2,791	1	2,791
Media Center Office	140	1	140		140	1	140	140	1	140			
Media Book Room	170	1	170		170	1	170	170	1	170			
DINING & FOOD SERVICE			**5,464**				**6,464**			**7,850**			**5,715**
Cafeteria / Dining (2 seatings)				2 seatings - 15SF per seat							3,398	1	3,398
Cafeteria / Dining (3 seatings) / Multi-Use	2,700	1	2,700		4,000	1	4,000	5,100	1	5,100			

Baldwin School Expansion Project - DRAFT Space Summary

= Change from MSBA Template
= Renovation Space at CCS

2 Section School Pre-K District-Wide SWD Program District-Wide NLS Program	**Baldwin School Expansion 420- 450 Students*** * Dependent on Individualized Education Plans				**Original 9TH School 3++ (2017) 690 students**			**Coolidge Corner (For Reference) 1,010 Students**			**MSBA GUIDELINES (For Reference) 453 Students**		
ROOM TYPE	**ROOM NFA**	**# OF RMS**	**area totals**	**Comments**	**ROOM NFA**	**# OF RMS**	**area totals**	**ROOM NFA**	**# OF RMS**	**area totals**	**ROOM NFA**	**# OF RMS**	**area totals**
Kitchen	1,753	1	1,753	1600 SF for first 300 + 1 SF/student Add'l	1,753	1	1,753	1,790	1	1,790	1,753	1	1,753
Kitchen Office	70	1	70		70	1	70	70	1	70			
Kitchen Storage	60	1	60		60	1	60	60	2	120			
Kitchen Toilet	200	1	200		200	1	200	200	1	200			
Kitchen Custodial	30	1	30		30	1	30	30	1	30			
Chair / Table / Equipment Storage	351	1	351	200 SF for first 300 + .333 SF/student Add'l	351	1	351	540	1	540	351	1	351
Staff Lunch Room	300	1	300		213	0	0		0		213	1	213
MEDICAL			**510**				**510**			**720**			**510**
Medical Suite Toilet	60	1	60		60	1	60	100	1	100	60	1	60
Nurses' Office / Waiting Room	250	1	250		250	1	250	290	1	290	250	1	250
Examination Room / Resting	100	2	200		100	2	200	190	1	190	100	2	200
Examination Room / Resting								70	2	140			
ADMINISTRATION & GUIDANCE			**5,501**				**5,551**			**4,920**			**2,768**
Principal's Office w/ Conference Area	375	1	375		375	1	375	350	1	350	375	1	375
Principal's Secretary / Waiting	0	0	0	In General Office	125	0	0		0	0	125	1	125
Assistant Principal's Office - AP1	129	1	129		129	1	129	140	2	280	129	1	129
Assistant Principal's Office - AP2	129	0	0		129	0	0	230	1	230	129	0	-
General Office / Waiting Room / Toilet	361	1	361	Includes Principal's Secretary	361	1	361	870	1	870	361	1	361
Conference room	280	1	280		280	1	280	300	1	300	280	1	280
Teachers' Mail and Time Room	100	1	100	Includes Duplicating Room	100	1	100	370	1	370	100	1	100
Duplicating Room	165	0	0	Included in Mail Room	165	0	0		0	0	165	1	165
Records Room	137	1	137		137	1	137	130	1	130	137	1	137
Supervisory / Spare Office	129	1	129		129	1	129	110	1	110	129	1	129
General Waiting Room	100	1	100		100	1	100	120	1	120	100	1	100
Guidance Office	150	3	450	2 Guidance, 1 Soc. Worker	150	3	450	305	2	610	150	3	450
Guidance Storeroom	40	1	40		40	1	40	40	2	80	40	1	40
Professional Learning and Teacher Planning													
Teachers' Work Room	400	3	1,200		500	3	1,500	1,010	1	1,010	377	1	377
Small Conference Room	250	3	750		250	3	750						
Specialist Collaborative Workspace	250	4	1,000	Includes Enrichment Challenge	250	3	750						
World Language Office	150	2	300		150	2	300	310	1	310			
METCO Office	150	1	150		150	1	150	150	1	150			
CUSTODIAL & MAINTENANCE			**2,155**				**2,065**			**4,920**			**2,015**
Custodian's Office	120	1	120		120	1	120	120	1	120	150	1	150
Custodian's Toilet / Shower	90	1	90					90	1	90			
Custodian's Workshop	337	1	337		337	1	337	450	1	450	337	1	337
Custodian's Storage	375	1	375		375	1	375	470	1	470	375	1	375
Storeroom	302	1	302		302	1	302	668	4	2,670	302	1	302
Recycling Room / Trash	400	1	400		400	1	400	270	1	270	400	1	400
Receiving and General Supply	251	1	251		251	1	251	380	1	380	251	1	251
Network / Telecom Room	200	1	200		200	1	200	390	1	390	200	1	200
Outdoor Storage	80	1	80		80	1	80	80	1	80			
OTHER			**910**				**5,510**			**13,120**			**0**
Other *(specify)*													
Extended Day Storage	420	1	420		420	1	420	420	1	420			
Extended Day Office	250	1	250		250	1	250	320	1	320			
PTO	60	1	60		60	1	60	380	1	380			
Staff Showers	90	2	180		90	2	180	90	2	180			
Mechanical / Emer Generator				In Grossing Factor				11,820	1	11,820			
Soule Gym	0	0	0		3,800	1	3,800						
Soule Environmental Ed Center	0	0	0		800	1	800						
Total Building Net Floor Area (NFA)			**72,170**				**92,195**	**(MSBA - 104,588)**		**131,030**			**58,929**
											K-5	317	
Proposed Student Capacity / Enrollment			**453**				**690**			**1,010**			**453**
											6-8	136	
Total Building Gross Floor Area (GFA)[2]		GSF new	**108,256**			GSF new	**136,449**	**(MSBA - 156,882)**		**196,979**			**88,394**
Grossing factor (GFA/NFA)			**1.50**				**1.48**			**1.50**			**1.50**

1.3.2 Program/ Adjacency Diagram



1.4 Evaluation of Existing Conditions

1.4.1 Title search

The new Baldwin School will be built on the site of the old Baldwin School, which is owned by the Town and has no restrictions on it. There are no legal grounds that would prevent the Town from using its own unrestricted school property for the construction of a new school. The logistics of doing so will be developed with input from the SBC who will be listening to the concerns of abutters to the property and will be implemented to minimize any disruption to the community.

1.4.2 Availability for Development

There has been a school on the Baldwin site since 1927. Currently the school includes Winthrop House, which is a Brookline High School program supporting 32 students, and the Brookline School Employees Child Care program.

1.4.3 Historic Registrations

Please reference the following letter from the Brookline Preservation Commission.

The Building Commissioner is required to withhold a demolition permit for the building for a period of 18 months beginning November 6, 2018.

TOWN OF BROOKLINE

Massachusetts

BROOKLINE PRESERVATION COMMISSION
DAVID KING, Chair
ELTON ELPERIN, Vice-chair
JAMES BATCHELOR
WENDY ECKER
ROSEMARY BATTLES FOY
PETER KLEINER
DAVID JACK
ELIZABETH ARMSTRONG, Alternate
RICHARD PANCIERA, Alternate

Valerie Birmingham, Staff

November 7, 2018

Town of Brookline c/o Public Schools of Brookline
Ray Masak, Project Manager
333 Washington Street, Building Department, 3rd Floor
Brookline, MA 02445

Dear Mr. Masak:

The Preservation Commission received an application for a Demolition Certificate for the demolition of the **Baldwin School building at 484-490 Heath Street**. In accordance with Section 5.3 of the Town's By-law, the Commission staff, in consultation with the Chair, made an initial determination as to whether the buildings in question falls into one or more of the categories listed under paragraphs a-d in Section 5.3.5 and which identifies a building as significant. In the case of the Baldwin School building at 484-490 Heath Street, the property's significance meets the following criteria in Section 5.3.5—

> b. The building is listed on or is within an area listed on the National or State Registers of Historic Places; is eligible for listing on the National or State Registers of historic places; or is a building for which a preliminary determination of eligibility has been made by the Massachusetts Historical Commission;
>
> c. The building is associated with one or more significant historic persons or events, or with the broad architectural, cultural, political, economic, or social history of the own or Commonwealth; and
>
> d. The building is historically or architecturally significant in terms of its period, style, method of construction, or its association with a significant architect or builder, either by itself or as part of a group of buildings.

At the public hearing on November 6, 2018, **the Commission voted to uphold the initial determination of significance. The Building Commissioner is required to withhold a demolition permit for the building for a period of 18 months beginning November 6, 2018** except for the provision of Section 5.3.11 of the By-law.

Please contact preservation staff to answer any questions you may have.

Sincerely,

Valerie Birmingham, Preservation Planner

cc: Building Department
Town Clerk

1.4.4 Development Restrictions

There is no reasonable basis for thinking that public school children attending the new Baldwin School can be prevented from using, on a non-exclusive basis, the adjacent Baldwin School Playground that is a part of the school site and has been used by Baldwin School children continuously since 1927 and is currently also being used by children attending nearby private schools and daycare programs. This conclusion was presented by the co-chairs of the SBC in the Report of the Co-Chairs, which is supported by Town Counsel and outside Special Town Counsel.

1.4.5 Building Code Compliance

APPLICABLE CODES AND REQUIREMENTS

The following codes are presently adopted in the State of Massachusetts:

Building

Massachusetts State Building Code (MSBC), 9th Edition, which is an amended version of the 2015 International Building Code and the 2015 International Existing Building Code (IEBC).

Accessibility

Massachusetts Architectural Access Board (MAAB), 521-CMR.
2010 ADA Standards for Accessible Design

Electrical

Massachusetts Electrical Code, 527-CMR, 12.00. The Massachusetts Electrical Code is an amended version of the 2017 National Electrical Code (NFPA 70).

Elevators

Massachusetts Elevator Regulations, 524-CMR.

Energy

2015 Edition of the International Energy Conservation Code (IECC) as amended by the State of Massachusetts

Fire Prevention

527 CMR Massachusetts Fire Prevention Code, NFPA 1, 2012 Edition

Mechanical

International Mechanical Code, 2015, as adopted and amended by the MSBC (Chapter 28).

Plumbing

Massachusetts Fuel Gas and Plumbing Codes, 248-CMR.

Other

National Fire Protection Association (NFPA) Standards, as referenced by the MSBC and the MFPR.

1.4.6 Accessibility Compliance
Please reference applicable code noted above.

1.4.7 Geotechnical Evaluation
Please reference Appendix 3.1 for full report.

Subsurface borings were performed at both the Baldwin and Soule sites to assess the subsurface soil and groundwater conditions at the site as they relate to foundation design and construction. Data was collected and formalized by McPhail Associates into a conceptual Foundation Engineering Report. It is recommended that the proposed school building be supported on conventional spread footing foundations in conjunction with a soil-supported slab-on grade. Depending upon the location of the proposed school building and the elevation of the lowest level floor slab, bedrock excavation may be required for construction of footings, slabs-on grade and utilities. Based on the extent of the bedrock excavation and the quality of the bedrock, shallow rock excavation may be feasible using mechanical means. A final subsurface exploration program will be conducted in Schematic Design to obtain supplemental geotechnical information for the final foundation design and foundation engineering report. For additional detail, please refer to the appendix of this report.

1.4.8 Geoenvironmental
Please reference Appendix 3.2 for full report.

A Phase 1 Site Assessment was performed by EndPoint Engineers with the following Findings:

A 5,000-gallon #2 Fuel Oil tank, is located in a room adjacent to the boiler room, within a block enclosure at the School, and is reportedly still used for at least one week each year. The tank is also completely covered by sand and unable to be visually inspected, and is therefore considered an underground storage tank (UST). Standard practice indicates that Additional study is needed to determine whether any leakage has occurred, or special remediation measures required.

1.4.9 Hazardous Materials
Please reference Appendix 3.3 for full report.

A survey was produced by EndPoint Engineers. Suspect ACMs were observed to be in good condition (intact). The Suspect ACMs would need to be sampled, analyzed, and removed as part of future asbestos abatement activities prior to any renovation or demolition projects that would disturb those materials. Visual inspection identified potential PCB-containing materials, including window/door glazing and caulking, and brick or cement joint caulking/grout. These would need to be sampled and analyzed in order to determine if the materials do not contain PCBs, prior to any renovation or demolition. For additional detail, please refer to the appendix of this report.

1.4.10 Traffic

Please reference Appendix 3.4 for full report.

A Transportation Impact Analysis was developed by Vanasse and Associates for the site to evaluate on-site traffic proposals as well as neighborhood impacts. In summary, the proposed site is a good location for a new school and a safe environment can be maintained with traffic conditions maintained at manageable levels. While the school can be safely accommodated and will increase delays and queues during limited period of the day (20-25 minutes at peaks), improvements will be necessary to minimize the impacts and enhance safety conditions.

Site Safety

The new school at Baldwin, like any new school, will require improvements to pedestrian crossings. These will include crossing guards at several intersections and other intersections, sidewalk improvements, signage, including school zone flashing and pedestrian signals, and with Mass DOT cooperation, a signalized Route 9 pedestrian crossing at either Dunster or Norfolk Roads and enhanced traffic enforcement. Crossing Route 9 is a big concern not just at Baldwin but also for the many Heath, Lincoln, Pierce, and Brookline High School students who cross Boylston Street each day (and have for many years). The same goes for the many Baker students who cross Independence Drive. Neighborhood streets need to be safe as well, and the Baldwin budget includes funds for sidewalk and crosswalk improvements throughout the neighborhood to accomplish this and the ongoing sidewalk improvement program of the Department of Public Works (DPW) that is funded through the Town's Capital Improvement Program will provide additional school related sidewalk safety improvements to the area. Finally, it should be noted that traffic data published by the Massachusetts Department of Transportation shows that all intersections surrounding the proposed Baldwin school expansion site have average or above average levels of safety.

1.4.11 Traffic - Prior Studies

VAI also previously made two earlier reports on traffic around the Baldwin School site, in 2016 and 2017. Both previous studies differed in significant ways from the current study in their scope and the type of project that was being analyzed.

In 2016, VAI conducted a preliminary traffic analysis for the 2016 Site Selection that compared the Baker School, Stop & Shop, and Baldwin sites. This study was not comprehensive and was not designed to make a definitive determination of the quality of the specific site. The 2016 analysis simply compared the quality of traffic and access between three sites – Baker, Baldwin, and the Stop & Shop on Harvard Street. The study's evaluation criteria, including "advantageous" and "disadvantageous" designations, were used for the purpose of relative comparisons to compare the various potential advantages and

disadvantages of these possible school sites, pending further study. Also, this initial analysis considered an 800 student school at Baldwin and Soule, not the currently planned 450 student school.

In 2017, VAI completed a traffic study for the 9th Elementary School at Baldwin Feasibility Study. VAI's 2017 report studied a proposed school project for a much larger school with 660 students, a school design with a front entrance on the Soule Recreation Center, and student drop off and pick up in a different location - an expanded Soule Recreation parking lot.

In the current 2018 report, VAI analyzed the impact on existing traffic conditions of a much smaller school and determined that having only 450 students would significantly reduce the overall impact to the area. The current, more detailed analysis has also resulted in specific recommendations to facilitate traffic flow in the area and manage peak conditions, which were not considered in prior studies. These include, but are not limited to: crossing guard control at Heath Street at Oak Street (School Drive), new phasing and timing at Heath Street and Hammond Street with a crossing guard; and a recommended earlier start time. These new measures are designed to improve area safety conditions and reduce the school traffic during the area peak periods. Prior opinions with respect to this project were without benefit of these recommendations

Prior Studies:

There were two prior studies conducted for the Baldwin site. The first of which was the 2016 Baldwin Site Selection Study involving three sites and included a cursory review of conditions and did not include a formal traffic study. This evaluation was utilized for a conceptual comparison of the sites and did not review final recommendations, such as delayed school start, signal timing and phasing changes at Hammond Street and Heath Street and safety-related recommendations. The second study involved a significantly larger school program with different access and egress, and is not a viable comparison to the current program.

Regional and School Traffic:

The current Baldwin Traffic Impact Study includes recommendations to be implemented as part of the school project, achievable within its scope, which allow efficient and safe operation of the site and its immediate environs.

It is recognized that traffic in this neighborhood is significantly impacted by regional commuters coming from and headed to destinations well outside the community. Several of the recommendations of this study, which are part of the school project proper, have the potential to lessen the adverse impact of the current commuter traffic.

In concert with Town and State partners, further mitigation measures, while not necessary to the safe and efficient operation of the new school, will be considered in the next phase to help further reduce the impact of commuter traffic in conjunction with the school project

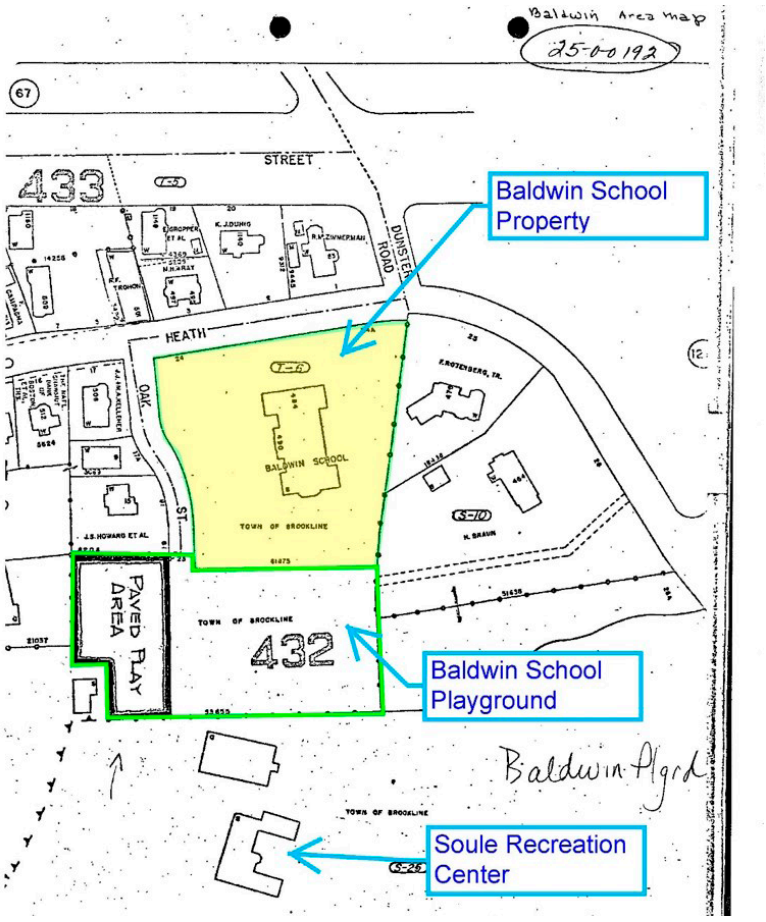
1.5 Site Development Requirements

1.5.1 Site Narrative

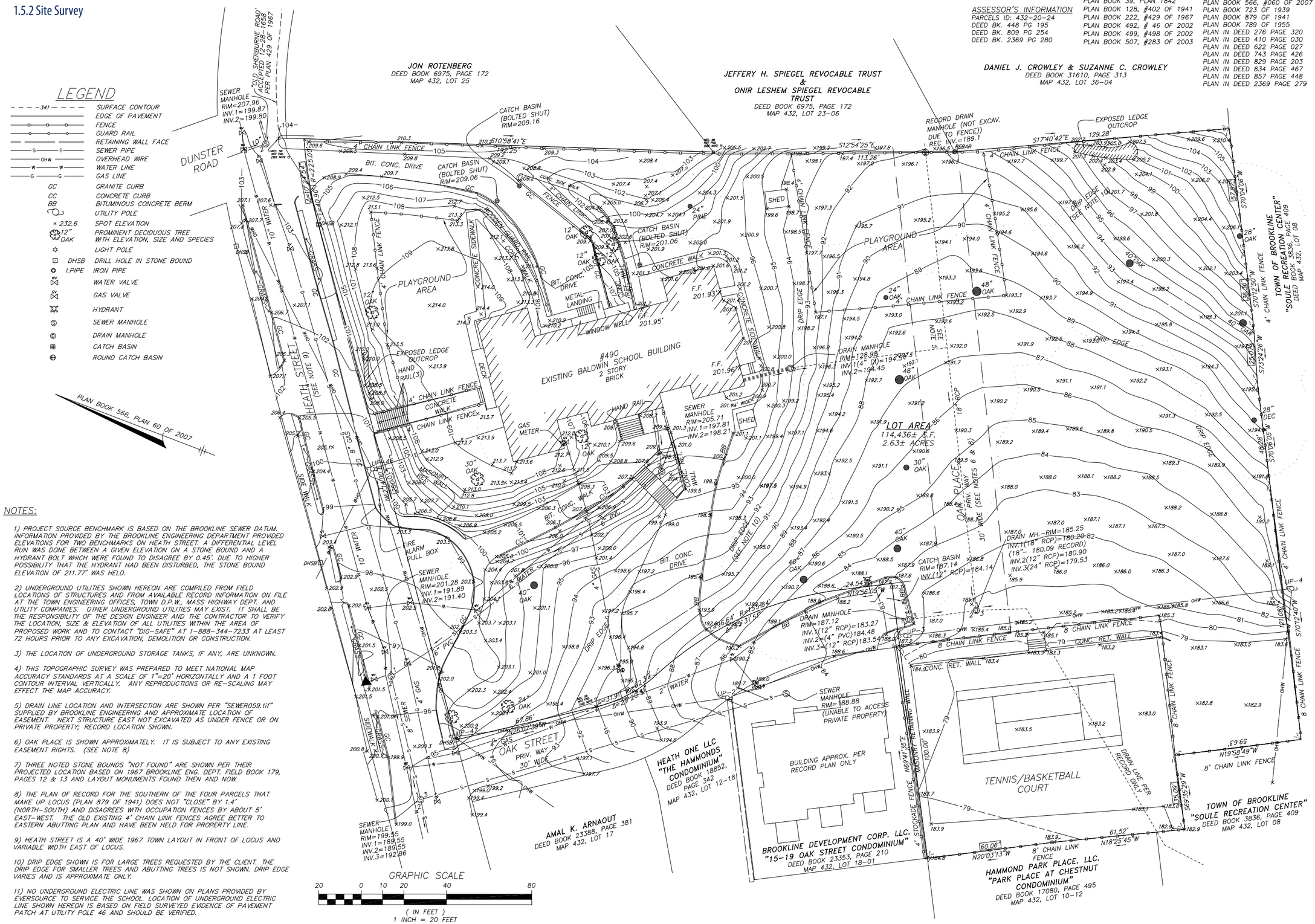
The Baldwin site consists of two parcels totaling 2.6 acres with the Baldwin School property at 1.4 acres and the Baldwin School Playground at 1.2 acres. The first, fronting on Heath Street, is controlled by the school department and includes a small former elementary school which is currently being used for a specialty high school program and as a daycare facility. Abutting the school is the Baldwin School Playground, dedicated for recreational use and developed with tennis courts. The second parcel is adjacent to the Soule Recreation Center, part of the Town of Brookline Parks and Recreation portfolio.

Access to the school department site is from Heath Street. The site includes complex topography. There are a number of large trees as well as exposed ledge indicating the presence of ledge throughout the site below grade. A short private road, Oak Street, serves several single-family residence abutters and the existing school. There are also a significant number of abutters in single and multifamily structures to the East and Southwest.

Please reference the following Baldwin site survey.



1.5.2 Site Survey



OWNER OF RECORD
TOWN OF BROOKLINE

ASSESSOR'S INFORMATION
PARCELS ID: 432-20-24
DEED BK. 448 PG 195
DEED BK. 809 PG 254
DEED BK. 2369 PG 280

PLAN REFERENCES
PLAN BOOK 39, PLAN 1838
PLAN BOOK 39, PLAN 1842
PLAN BOOK 128, #402 OF 1941
PLAN BOOK 222, #429 OF 1967
PLAN BOOK 492, # 46 OF 2002
PLAN BOOK 499, #498 OF 2002
PLAN BOOK 507, #283 OF 2003

PLAN REFERENCES
PLAN BOOK 550, #024 OF 2006
PLAN BOOK 566, #060 OF 2007
PLAN BOOK 723 OF 1939
PLAN BOOK 879 OF 1941
PLAN BOOK 789 OF 1955
PLAN IN DEED 276 PAGE 320
PLAN IN DEED 410 PAGE 030
PLAN IN DEED 622 PAGE 027
PLAN IN DEED 743 PAGE 426
PLAN IN DEED 829 PAGE 203
PLAN IN DEED 834 PAGE 467
PLAN IN DEED 857 PAGE 448
PLAN IN DEED 2369 PAGE 279

NOTES:

1) PROJECT SOURCE BENCHMARK IS BASED ON THE BROOKLINE SEWER DATUM. INFORMATION PROVIDED BY THE BROOKLINE ENGINEERING DEPARTMENT PROVIDED ELEVATIONS FOR TWO BENCHMARKS ON HEATH STREET. A DIFFERENTIAL LEVEL RUN WAS DONE BETWEEN A GIVEN ELEVATION ON A STONE BOUND AND A HYDRANT BOLT WHICH WERE FOUND TO DISAGREE BY 0.45'. DUE TO HIGHER POSSIBILITY THAT THE HYDRANT HAD BEEN DISTURBED, THE STONE BOUND ELEVATION OF 211.77' WAS HELD.

2) UNDERGROUND UTILITIES SHOWN HEREON ARE COMPILED FROM FIELD LOCATIONS OF STRUCTURES AND FROM AVAILABLE RECORD INFORMATION ON FILE AT THE TOWN ENGINEERING OFFICES; TOWN D.P.W., MASS HIGHWAY DEPT. AND UTILITY COMPANIES. OTHER UNDERGROUND UTILITIES MAY EXIST. IT SHALL BE THE RESPONSIBILITY OF THE DESIGN ENGINEER AND THE CONTRACTOR TO VERIFY THE LOCATION, SIZE & ELEVATION OF ALL UTILITIES WITHIN THE AREA OF PROPOSED WORK AND TO CONTACT "DIG-SAFE" AT 1-888-344-7233 AT LEAST 72 HOURS PRIOR TO ANY EXCAVATION, DEMOLITION OR CONSTRUCTION.

3) THE LOCATION OF UNDERGROUND STORAGE TANKS, IF ANY, ARE UNKNOWN.

4) THIS TOPOGRAPHIC SURVEY WAS PREPARED TO MEET NATIONAL MAP ACCURACY STANDARDS AT A SCALE OF 1"=20' HORIZONTALLY AND A 1 FOOT CONTOUR INTERVAL VERTICALLY. ANY REPRODUCTIONS OR RE-SCALING MAY EFFECT THE MAP ACCURACY.

5) DRAIN LINE LOCATION AND INTERSECTION ARE SHOWN PER "SEWER059.tif" SUPPLIED BY BROOKLINE ENGINEERING AND APPROXIMATE LOCATION OF EASEMENT. NEXT STRUCTURE EAST NOT EXCAVATED AS UNDER FENCE OR ON PRIVATE PROPERTY; RECORD LOCATION SHOWN.

6) OAK PLACE IS SHOWN APPROXIMATELY. IT IS SUBJECT TO ANY EXISTING EASEMENT RIGHTS. (SEE NOTE 8)

7) THREE NOTED STONE BOUNDS "NOT FOUND" ARE SHOWN PER THEIR PROJECTED LOCATION BASED ON 1967 BROOKLINE ENG. DEPT. FIELD BOOK 179, PAGES 12 & 13 AND LAYOUT MONUMENTS FOUND THEN AND NOW.

8) THE PLAN OF RECORD FOR THE SOUTHERN OF THE FOUR PARCELS THAT MAKE UP LOCUS (PLAN 879 OF 1941) DOES NOT "CLOSE" BY 1.4' (NORTH-SOUTH) AND DISAGREES WITH OCCUPATION FENCES BY ABOUT 5' EAST-WEST. THE OLD EXISTING 4' CHAIN LINK FENCES AGREE BETTER TO EASTERN ABUTTING PLAN AND HAVE BEEN HELD FOR PROPERTY LINE.

9) HEATH STREET IS A 40' WIDE 1967 TOWN LAYOUT IN FRONT OF LOCUS AND VARIABLE WIDTH EAST OF LOCUS.

10) DRIP EDGE SHOWN IS FOR LARGE TREES REQUESTED BY THE CLIENT. THE DRIP EDGE FOR SMALLER TREES AND ABUTTING TREES IS NOT SHOWN. DRIP EDGE VARIES AND IS APPROXIMATE ONLY.

11) NO UNDERGROUND ELECTRIC LINE WAS SHOWN ON PLANS PROVIDED BY EVERSOURCE TO SERVICE THE SCHOOL. LOCATION OF UNDERGROUND ELECTRIC LINE SHOWN HEREON IS BASED ON FIELD SURVEYED EVIDENCE OF PAVEMENT PATCH AT UTILITY POLE 46 AND SHOULD BE VERIFIED.

SITE ADDRESS:

484-490
HEATH STREET
BROOKLINE, MA

PREPARED FOR:

JONATHAN LEVI
ARCHITECTS
256 Beacon St.
Boston, MA 02116

HANCOCK
ASSOCIATES

Civil Engineers
Land Surveyors
Environmental Consultants

315 Elm Street, Marlborough, MA 01752
VOICE (508) 460-1111, FAX (508) 460-1121
WWW.HANCOCKASSOCIATES.COM

BY	APP	DATE	ISSUE/REVISION DESCRIPTION

DATE:	1/19/16		
SCALE:	1" = 20'	DRAWN BY:	JTL
APPRVD. BY:	JDB	CHECK BY:	JDB

EXISTING CONDITIONS PLAN OF LAND

DWG: 20276-SV3.dwg
LAYOUT: EC
SHEET: 1 OF 1
EC
PROJECT NO.: 20276

PREFERRED SCHEMATIC REPORT
2.1 Introduction

2.1.1 Overview of process
The study process was organized with the structure of regular meetings with key Brookline staff to discuss the team's findings as well as facilitating information gathering and inputs from key stakeholders. More formal presentations were made to both the School Building Committee. In addition there were also presentations at the Baker School and Heath School for public input and commentary.

The collaborative effort across Brookline Departments and Commissions included meetings with:

- Police Department
- Fire Department
- Traffic Department

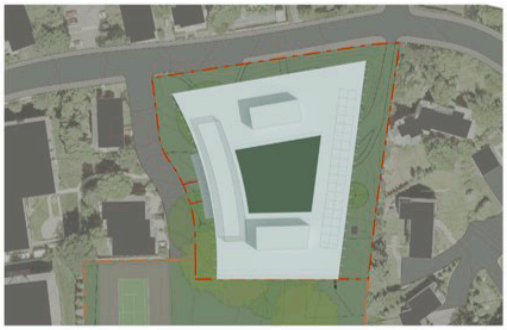
Community Input

The Town has listened to, and has been very responsive to the views of all neighborhood and community-wide groups with an interest in the Baldwin School project, especially abutters and will continue the open and transparent process through the completion of construction and the opening of the new Baldwin School. All meetings of the SBC are public and the discussions at the meetings and all materials used are posted on the School Department's website (https://www.brookline.k12.ma.us). There have been over 74 public meetings with public comment. In addition, the co-chairs of the SBC extended an offer to families in the Baldwin community to meet in small informal settings. In those meetings, the co-chairs listened to concerns, criticisms, and suggestions of the Baldwin School neighbors regarding traffic, safety, on-street parking, construction disturbance, and other matters. In response to what was learned from these listening sessions, the SBC recommended changes to the architects and to the School Department that have been incorporated into the building and the plans for the operation of the school. The Select Board, the School Committee, and the SBC will continue to hold public meetings to address the issues that arise during the schematic design phase. Finally, the Town has reduced the size the project twice, from an initial 800 students to 660 students and then again from 660 students to 450 students in response to concerns and complaints from the local community. Many of these changes, in deference to the local neighborhood, have increased the per seat cost of the school. Nonetheless, the Baldwin School will be the most cost effective option available to solve the Brookline enrollment problem.

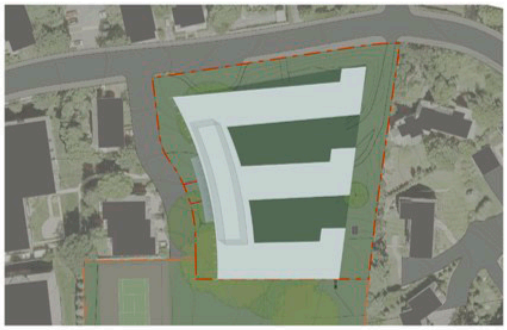
2.1.2 Summary of Final Evaluation of Alternatives

The goal of the Design Feasibility Phase was to identify a preliminary design for the expansion of the Baldwin School that could be feasibly built. Jonathan Levi Architects developed three design options that the SBC reviewed and debated.

Option A: Quadrangle
Option B: Solar Harvest
Option C: Twin Court



Option A
"Quadrangle"



Option B
"Solar Harvest"

Option C
"Twin Court"

Jonathan Levi Architects

CONCEPT DESIGN THUMBNAIL SITE PLAN

2.1.3 Summary of Preferred Solution

On November 19, the SBC selected the Solar Harvest option as its preferred design that will be recommended to the Select Board, the School Committee, and the Building Commission. The preferred design includes basic drawings of the exterior, interior, and grounds and allows for an "order of magnitude" project cost estimate that is more refined than the project cost estimate generated during the recently completed Alternative Site Study. The design feasibility phase also includes reports on traffic and transportation impact, geotechnical engineering, environmental assessment, engineering, tree assessment, and a site survey. Much of this work was completed during the 2017 design feasibility study of a 9th School at Baldwin and was updated as necessary during this phase. The design feasibility phase will be followed by the schematic design phase during which the architects will produce detailed drawing of the building and locations of classrooms, other learning and ancillary spaces, and utilities and mechanical systems.

Includes $1M for sidewalk improvements

Option B
Solar Harvest

Includes 10 On-Site Parking Spaces Under Building
$72M – $76M

Includes 40 On-Site Parking Spaces Under Building
$78M – $82M

2.2 Evaluation of Existing Conditions

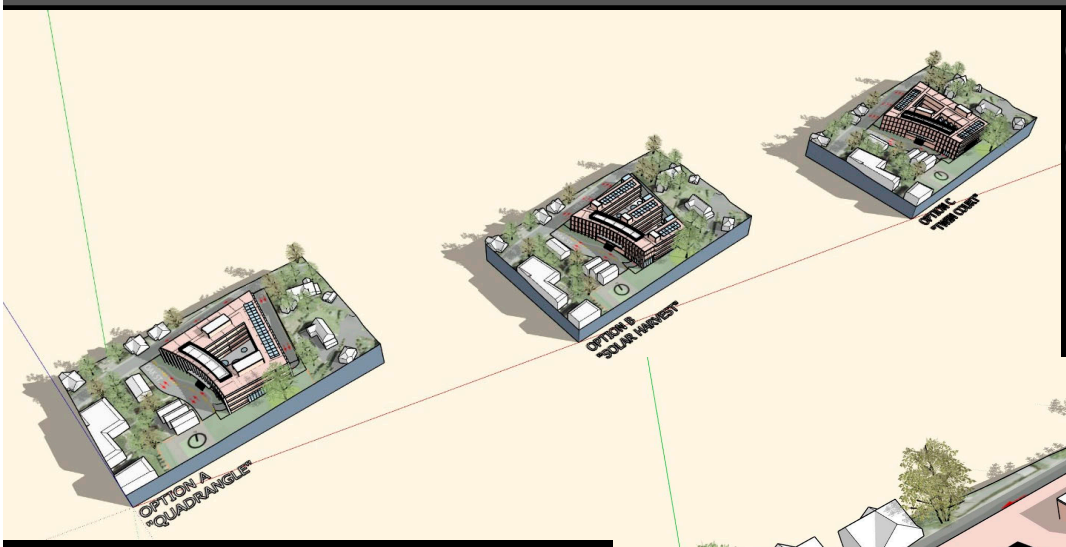
2.2.1 Existing Conditions Update

Please reference 1.4 Evaluation of Existing Conditions in the Preliminary Design Program for Existing Conditions information and Reports.

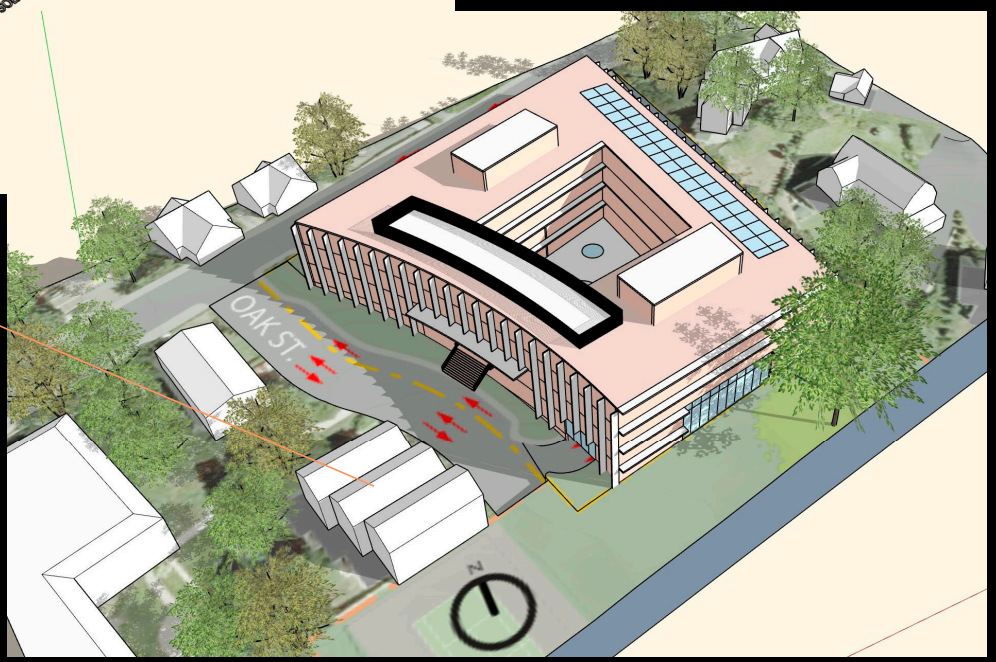
Site Addition

3 condominiums on Oak Street, adjacent to the school property, have shown interest in selling to the Town. Purchase requires approval through Town Meeting. The current program and traffic design fits well on the current site that the Town currently owns. The additional property would offer additional benefits.

Site Addition Options – Project Status Background

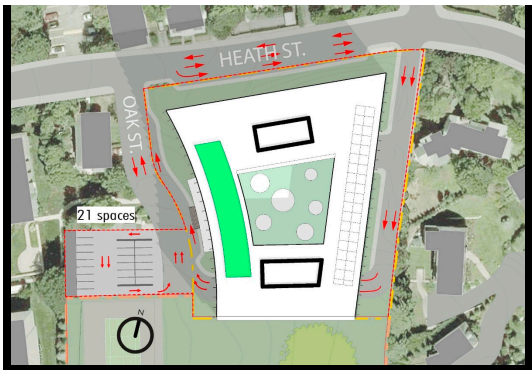


Current
Baldwin School Expansion
Overall Concept Sketch Options



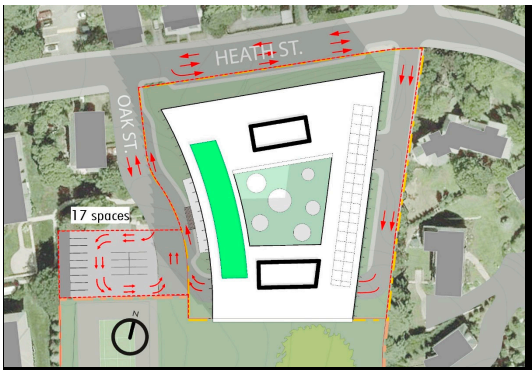
Existing Townhouse Condominiums

Sample Overall Option 'A'
As Base for Pre-Concept
Alternatives for Potential
Site Addition



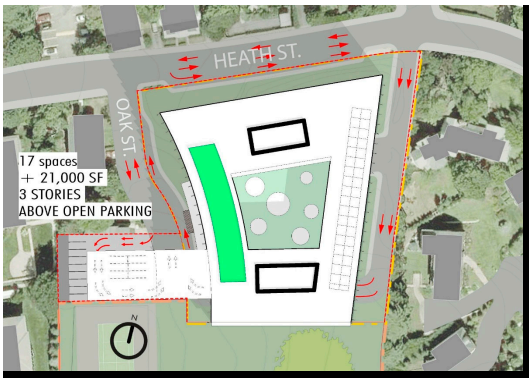
- Reduced structured parking.
- Reduced Ledge Excavation
- Enhanced Baldwin School Playground Access
- Enhanced School Access during Day

Surface Parking



- Reduced structured parking.
- Reduced Ledge Excavation
- Enhanced Baldwin School Playground Access
- Enhanced School Access during Day
- Additional safety equipment turn around
- Additional Drop off
- Additional safety equipment turn around

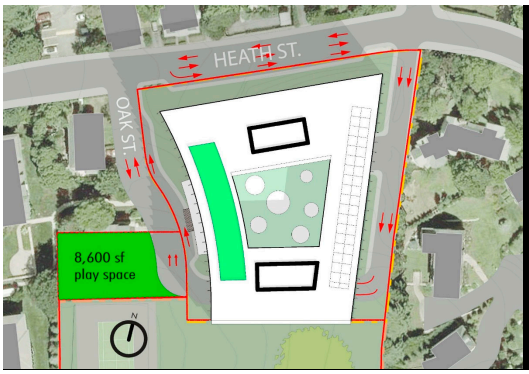
Surface Parking/Cul-de-Sac



Project Benefits:

- Reduced structured parking.
- Reduced Ledge Excavation
- Enhanced Baldwin School Playground Access
- Enhanced School Access during Day
- Additional safety equipment turn around
- Additional Drop off
- Greater building design flexibility
- Reduction of building height at Oak Street.

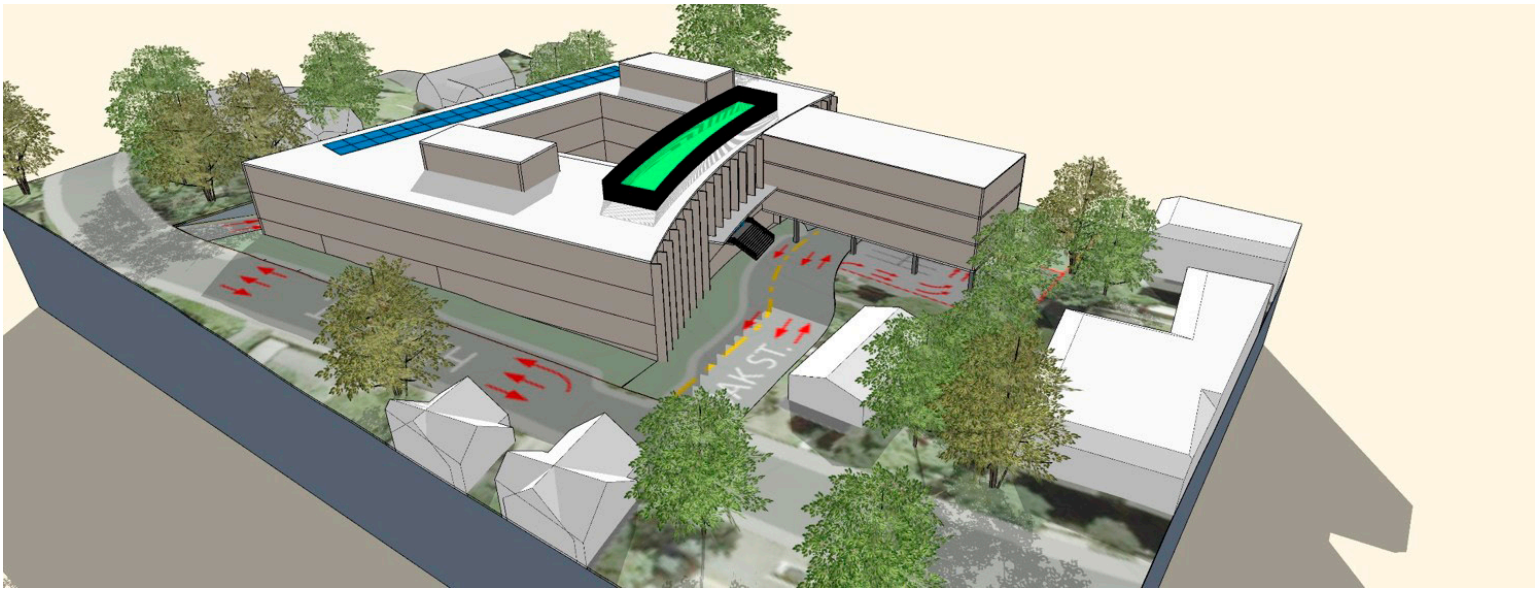
Surface Parkingwith new Building



Project Benefits:

- Additional at grade play space

Play Area



Model View from Heath Street of potential loggia above surface parking

The acquisition of the Oak Street properties, although not essential to the feasibility of the project, will give the architects a great amount of flexibility that can be used to reduce the parking impact on the neighborhood, change the massing of the building, provide additional environmental opportunities, and allow for the design of possible additional roof top open spaces. Adjustments to the selected preferred design as a result of the acquisition of Oak Street will be made during the schematic design phase but will not be disruptive of the basic design of Solar Harvest.

Surface Parking:
New parcel allows 21 surface parking spaces, access provided on Oak Street.

Surface Parking/ Cul-de-Sac:
New parcel as 17 surface parking spaces with queuing for drop-off/pick up in parking turn around area.

Surface Parking with Building:
New parcel as surface parking/ cul-de-sac with new 21,000sf building above.

Play Area:
An additional alternative for the new parcel as additional open/play space.

Oak Street Entry - without additional parcel

Oak Street Entry - with additional parcel

2.3 Final Evaluation of Alternatives

2.3.1 Final Evaluation of Alternatives

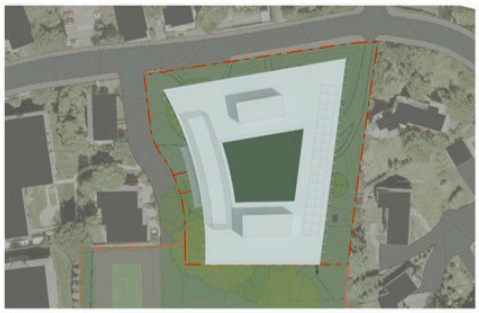
Option A: Quadrangle
Option B: Solar Harvest
Option C: Twin Court

Shared Features

The three current concept designs for the Baldwin school expansion share some similar features. All of the projects contemplate a clockwise parent drop-off circulation loop entering at the northeast corner of the site and proceeding down a ramp to a basement level where there will be limited visitor parking. The drop-off queuing then emerges from the building at the southwest corner of the site, then proceeding up Oak Street with a dedicated drop-off lane to exit at the corner of Oak and Heath. All also share the concept that service access will be from the northeast corner down the same ramp but to a level 1 landing with access to a service bay under the building. This service bay is located for adjacency to the kitchen/ cafeteria and is contiguous with the main custodial, storage, and receiving/loading zones.

All three schemes also allow the concept of providing additional green space at the rooftop level to supplement the existing Baldwin school playground. The building massing of the various concepts is limited to four stories in height. Because of existing topography, three stories will be visible at Heath Street; then, as the site drops off to the south, the full four stories emerge above grade. In all schemes, the main cafeteria/ learning commons is located at level 1 which is coplanar roughly with the Baldwin school playground. The front door is located on Oaks Street, facing to the west and the parent drop-off lane. Bus drop-off will occur at Heath Street in a dedicated pullout Lane.

Because the gymnasium in multipurpose rooms require limited daylight, these are either fully or partially below grade. Each option has a basement level for parking. For cost purposes, either 10 or 40 parking spaces are considered, although, the final number of parking spaces will depend on other considerations such as the availability of on-street parking for teachers and visitors. Each option can be flexibly adapted to a variety of parking quantities and assumes a stair and elevator connection up to the west-facing main lobby.



Option A
"Quadrangle"

Option B
"Solar Harvest"

Option C
"Twin Court"

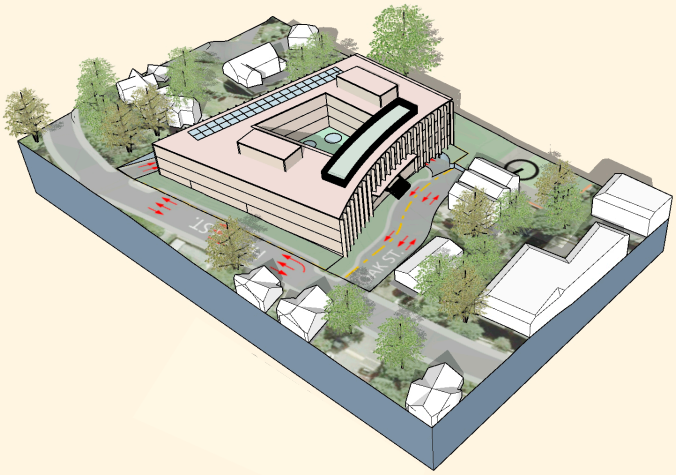
Option A from Heath Street

Option A -'Quadrangle'

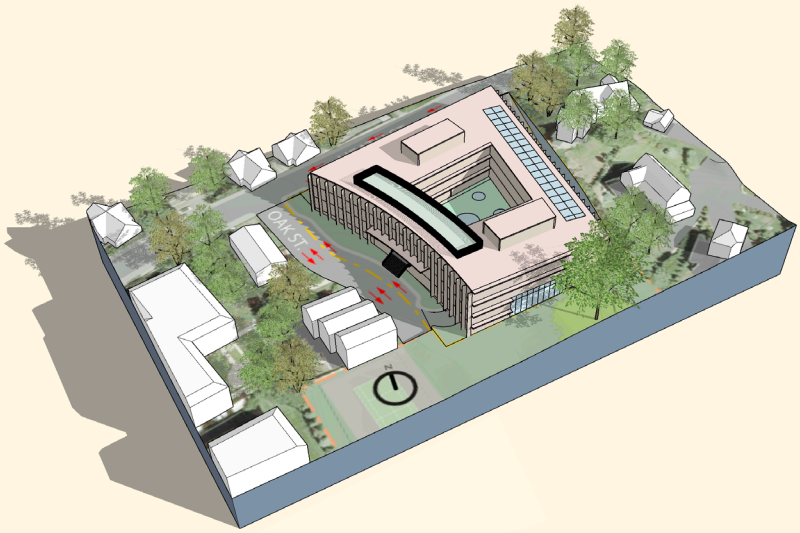
This option is the most direct solution to the constraints of the available building site by building fully to the perimeter, leaving the interior of the site as an open-space void providing both daylighting views to the surrounding classrooms. The cafeteria is located at the southern wall. It is two stories in height and opens two grand views of the Baldwin school playground and its rolling landscape. The cafeteria is adjacent to the centrally located media center also on level I. As described above gymnasium and multipurpose spaces are submerged below grade the front of the building

On the second level, the landscape courtyard supplies light the upper story of the cafeteria and is also the venue for a series of project collaboration spaces on each of the upper three floors - each floor ostensibly associated with a given cohort - primary, elementary and

Option A - "Quadrangle"



VIEW FROM HEATH STREET



VIEW FROM BALDWIN PLAYGROUND

Option A from Baldwin Playground

Option A Section through Courtyard

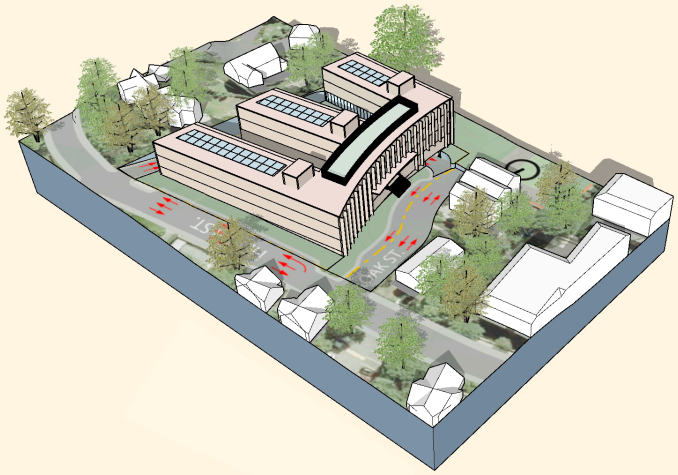
middle. The cohorts in the case of this option would need to be formed horizontally.

The upper floors reveal the primary generator of the plan dimensions with a double-loaded corridor element at both North and South with a single loaded corridor element framing the East and West. Therefore, the north and south boundaries of the courtyard are lined by active programs space and the East and West boundaries of the courtyard are circumscribed by corridors. In the building section, we can see how the open courtyard level is elevated above the central media Center which is lit primarily by skylight elements from above.

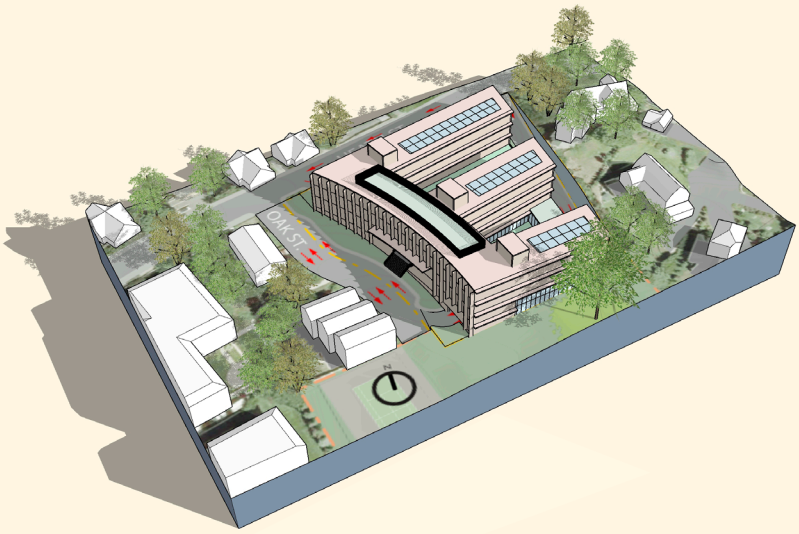
Option B -'Solar Harvest'

In an attempt to loosen the boundaries of the building envelope and in order to more fully engage the outdoors, the solar harvesting option breaks the building mass down to three peninsula-like wings branching from the western facing front of the building. It is intended that each of these wings would afford the district the opportunity to organize cohorts vertically with each cohort occupying a separate wing or horizontally by floor. The frontal portion of the building is lined by a multistory linear atrium which connects all parts of the school. This linear atrium is also the location of the cohort-centering project collaboration zone, which also looks out onto the shared courtyards. These courtyards provide a high degree of interaction between interior and exterior, academic spaces as well as applying abundant life and views to each classroom - each of which is oriented directly south in order to harvest the maximum amount of natural light.

Option B - "Solar Harvest"



VIEW FROM HEATH STREET



VIEW FROM BALDWIN PLAYGROUND

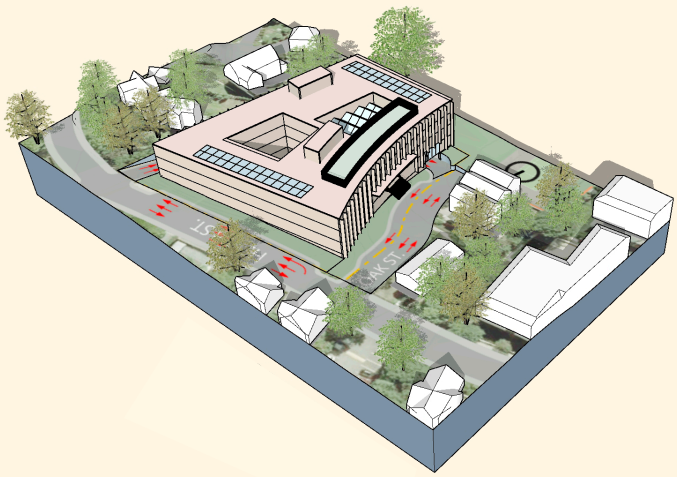
Option B Courtyard

At level 1, the media center is at the center of the complex with potentially extensive combine-ability with the multipurpose room, gymnasium, and cafeteria. It fronts directly on the south courtyard, as well as gaining light from skylights in the floor of the landscaped north courtyard. In the cross section we can see how the two courtyards are placed one story in height from one another; with the broad cafeteria, this time spanning fully from west to east, fronting both south towards the Baldwin school playground and north towards the courtyard shared with the media center

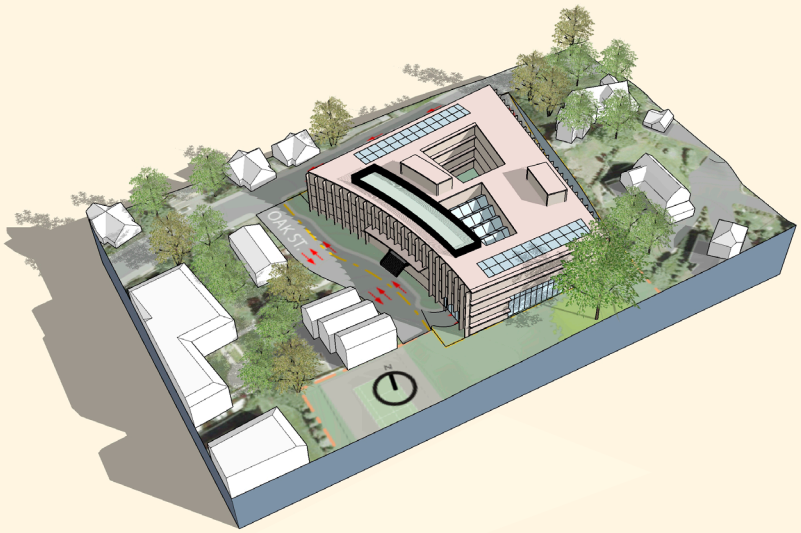
Option C-'Twin Court'

In this final approach, the double loaded in single loaded portions of the building are mixed in a way which produces two interior voids - one a small open courtyard and the other a skylit four-story atrium which houses the media center at its lowest level. As in the quadrangle approach above scheme is best suited to a horizontal organization of cohorts with primary, elementary and middle school schools within a school each located on its level. A project collaboration space for each level forms a kind of nucleus to the plan overlooking both the open and media Center skylit shared open spaces.

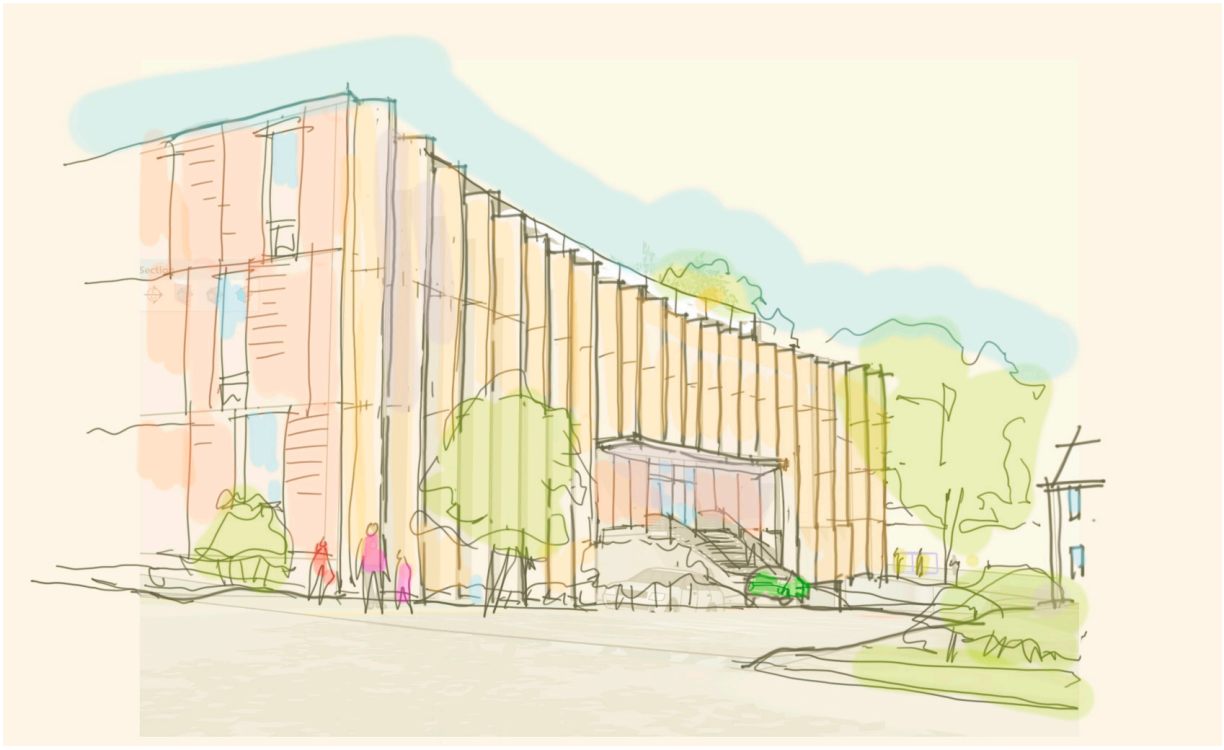
Option C - "Twin Court"



VIEW FROM HEATH STREET



VIEW FROM BALDWIN PLAYGROUND



Option A, B, C from Oak Street

Option C Section through Atrium

2.3.2 Structural Systems

Baldwin School (Options A, B, C) Feasibility Study

Structural Systems Overview

The proposed new building will consist of three and four stories with a lower level below grade primarily for parking. The proposed building structure will be a structural steel frame with concrete floor slabs on composite steel deck. The roof will be steel roof deck except at areas where concrete is required for sound attenuation below rooftop mechanical equipment or for fire ratings. Lateral loads will be resisted by structural steel braced frames. Foundations will be cast-in-place reinforced concrete walls, slabs-on-grade, and spread footings.

Foundations

Based on information provided by McPhail Associates in the 15 February 2017 document titled "Geotechnical Engineering Data Report", foundations for the project will be as follows:

Walls

Typical foundation walls will be 16-inch thick reinforced concrete with 8-inch wide shelves as required to support façade elements. Exterior foundation walls will extend down to a minimum of 4'-0" below finished exterior grade. A drainage system will be installed around the perimeter of the foundation to divert ground water away from the building. All foundation walls enclosing below-grade space shall be waterproofed on the exterior surface.

Slab-on-Grade

The lower level and first floor slab-on-grade will be a 5-inch thick slab-on-grade. A 15-mil vapor barrier and a 12-inch layer of crushed stone will be placed beneath the slab to provide an adequate substrate and to allow for an under-slab drainage system. An allowance shall be provided for depressions, and trenches, and other potential equipment requirements.

Footings

The foundations will be reinforced concrete spread footings and continuous wall footings bearing on compacted structural fill or undisturbed soil. The allowable bearing pressure will be per the recommendations of the geotechnical report which states a maximum uniform design force of 4 tons per square foot.

Pits

Elevator and other pits that may be required pits will consist of an 18-inch thick reinforced concrete base slab and 12-inch thick reinforced concrete pit walls. All pits shall receive waterproofing. Baldwin School (Options A, B, C) Feasibility Study

Foundation Requirements

Based on the geotechnical report the site is underline with shallow bedrock. Depending on the final location of the building it is possible that bedrock excavation will be required to construct the building foundation and underground utilities.

Gravity Load System

Ground Floor

Slab-on-grade as described above.

Typical Floor Construction

Floor construction will be 3¼-inch lightweight concrete on 3-inch deep, 18-gage galvanized, composite steel deck for a total slab thickness of 6¼-inches. The floor slab will be reinforced with WWF 6x6-W4.0xW4.0 throughout. Beams and girders will be structural steel rolled shapes (typically W14, W16, & W18) made composite with the floor slabs via ¾-inch diameter, 5½-inch long welded steel shear studs. Columns will be structural steel rolled shapes (typically W12).

Typical Roof Construction

The roof will be 3-inch deep, 18 gage, galvanized steel roof deck. Roof beams and girders will be structural steel rolled shapes. Where it is preferred or necessary to place concrete on the roof, the construction will be similar to the typical floor construction described above. Hot-dipped galvanized steel dunnage will be provided on top of the roof if necessary to support mechanical equipment and for mechanical equipment screening.

Typical Façade Support

Continuous support of the building façade is expected to occur from each framed level above grade. This may likely consist of hung steel angle frames with all material outside the air and vapor barrier system to be hot-dipped galvanized.

Lateral Load System

The lateral force resisting system will consist of concentrically braced steel frames in both primary structural directions. Structural steel tubes will be oriented diagonally in vertical planes between columns to provide resistance to wind and seismic forces. Final locations of the frames will be coordinated with the architectural layout as design progresses.

2.3.3 Utilities

General

It is assumed that existing utility service levels from Heath Street will be more than adequate for the new school. A flow test will be performed in Schematic Design, to confirm sufficient flow for the fully sprinklered new building.

Water Service

An existing 10" water main is present along Heath Street directly in front of the school, along with a 2" water line along the south side of the site which services an adjacent property and existing fire hydrant along the private drive, additional hydrants are located along Heath Street itself. The existing school building school appears to be serviced by a 6" water service.

Sewer Service

An existing sewer main is present along Heath Street directly in front of the school.

Gas Service

A gas main is present along this portion of Heath Street.

Stormwater

The on-site drainage system appears to be a simple system comprised of catch basins and manholes which connect to an existing 18" pipe running along the rear of the site which appear to connect out to the existing street drainage system on Hammond St.

Flood Plain

The site is not in a flood plain.

Potential Site Improvements

Water Service

The existing 2" water service along the private drive to the south will be upgraded to an 8" water line to provide adequate flow to the existing hydrant. Separate domestic and fire flow services will be provided to the new school building from the new 8" line.

Sewer Service

The existing sewer service will be replaced.

Gas Service

The existing gas service will be replaced.

Stormwater

The existing on-site drainage system does not appear to meet current stormwater management standards. Depending on the proposed site improvements the existing system will need to be upgraded to provide mitigation to reduce stormwater runoff, increase groundwater

infiltration, and increase stormwater discharge quality. These improvements could include above or below ground stormwater infiltration/detention systems, deep sump catch basins, and water quality structures.

2.3.4 Building Systems

Please see the following reports prepared by Gracia Galuska Desousa for the following:

- Fire Protection Systems
- Plumbing
- HVAC
- Electrical
- Technology

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FIRE PROTECTION SYSTEMS

NARRATIVE REPORT

The following is the Fire Protection system narrative, which defines the scope of work and capacities of the Fire Protection system, as well as, the Basis of Design.

1. CODES

   A. All work installed under Section 210000 shall comply with the MA Building Code and all state, county, and federal codes, laws, statutes, and authorities having jurisdiction.

2. DESIGN INTENT

   A. All work is new and consists of furnishing all materials, equipment, labor, transportation, facilities, and all operations and adjustments required for the complete and operating installation of the Fire Protection work and all items incidental thereto, including commissioning and testing.

3. GENERAL

   A. In accordance with the provisions of the Massachusetts Building Code, a school building of greater than 12,000 s.f. must be protected with an automatic sprinkler system.

4. DESCRIPTION

   A. The new building will be served by a new 8-inch fire service, double check valve assembly, wet alarm valve complete with electric bell, and fire department connection meeting local thread standards.

   B. System will be a combined standpipe/sprinkler system with control valve assemblies to limit the sprinkler area controlled to less than 52,000 s.f. as required by NFPA 13-2013.

   C. Control valve assemblies shall consist of a supervised shutoff valve, check valve, flow switch and test connection with drain. Standpipes meeting the requirements of NFPA 14-2013 shall be provided in the egress stairwells and in the Stage area.

   D. All areas of the building, including all finished and unfinished spaces, combustible concealed spaces, all electrical rooms and closets will be sprinklered.

   E. All sprinkler heads will be quick response, pendent in hung ceiling areas and upright in unfinished areas.

5. BASIS OF DESIGN

   A. The mechanical rooms, kitchen, science classrooms, and storage rooms are considered Ordinary Hazard Group 1; stage is considered Ordinary Hazard Group 2; all other areas are considered light hazard.

   B. Required Design Densities:

      Light Hazard Areas = 0.10 GPM over 1,500 s.f.
      Ordinary Hazard Group 1 = 0.15 GPM over 1,500 s.f.

Ordinary Hazard Group 2 = 0.20 GPM over 1,500 s.f.

C. Sprinkler spacing (max.):

Light Hazard Areas = 225 s.f.
Ordinary Hazard Areas = 130 s.f.

D. A flow test will be performed to confirm the Municipal water supply capacity.

6. DOUBLE CHECK VALVE ASSEMBLY

A. Double check valve assembly shall be MA State approved, U.L./F.M. approved, with iron body bronze mounted construction complete with supervised OS & Y gate valves and test cocks. Furnish two spare sets of gaskets and repair kits.

B. Double check valve detector assembly shall be of one of the following:

1. Watts Series 757-OSY
2. Wilkins 350A-OSY
3. Conbraco Series 4S-100
4. Or equal

7. PIPING

A. Sprinkler piping 1-1/2 in. and smaller shall be ASTM A-53, Schedule 40 black steel pipe. Sprinkler/standpipe piping 2 in. and larger shall be ASTM A-135, Schedule 10 black steel pipe.

8. FITTINGS

A. Fittings on fire service piping, 2 in. and larger, shall be Victaulic Fire Lock Ductile Iron Fittings conforming to ASTM A-536 with integral grooved shoulder and back stop lugs and grooved ends for use with Style 009-EZ or Style 005 couplings. Branch line fittings shall be welded or shall be Victaulic 920/920N Mechanical Tees. Schedule 10 pipe shall be roll grooved. Schedule 40 pipe, where used with mechanical couplings, shall be roll grooved and shall be threaded where used with screwed fittings. Fittings for threaded piping shall be malleable iron screwed sprinkler fittings.

9. JOINTS

A. Threaded pipe joints shall have an approved thread compound applied on male threads only. Teflon tape shall be used for threads on sprinkler heads. Joints on piping, 2 in. and larger, shall be made up with Victaulic, or equal, Fire Lock Style 005, rigid coupling of ductile iron and pressure responsive gasket system for wet sprinkler system as recommended by manufacturer.

10. SPRINKLERS

A. All sprinklers to be used on this project shall be Quick Response type. Sprinklers shall be manufactured by Tyco, Victaulic, Viking, or equal.

B. Furnish spare heads of each type installed located in a cabinet along with special sprinkler wrenches. The number of spares and location of cabinet shall be in complete accord with NFPA 13-2013.

C. Upright sprinkler heads in areas with no ceilings shall be Tyco Model "TY-FRB" Quick Response, upright natural brass finish heads. Include heavy duty sprinkler guards in all mechanical rooms and storage rooms.

D. Sidewall heads shall be Tyco Model "TY-FRB" Quick Response with white polyester head and escutcheon.

E. Pendent wet sprinkler heads shall be Tyco Model "TY-FRB" Quick Response recessed adjustable escutcheon, white polyester finish.

F. Concealed heads shall be Tyco Model "RFII" Quick Response concealed type, 1-1/2 inch adjustment white cover plate. In special areas, as may be noted on the Drawings, provide alternate cover plate finishes.

G. Use of flexible stainless steel hose with fittings for fire protection service that connect sprinklers to branch lines in suspended ceilings is acceptable. Flexible hoses shall be UL/FM approved and shall comply with NFPA 13 standards. Hose assemblies shall be type 304 stainless steel with minimum 1-inch true-bore internal hose diameter. Ceiling bracket shall be galvanized steel and include multi-port style self-securing integrated snap-on clip ends that attach directly to the ceiling with tamper resistant screws.

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PLUMBING SYSTEMS

NARRATIVE REPORT

The following is the Plumbing system narrative, which defines the scope of work and capacities of the Plumbing system as well as the Basis of Design. The Plumbing Systems shall be designed and constructed for ***LEED v4*** where indicated on this narrative.

1. CODES

   A. All work installed under Section 220000 shall comply with the MA Building Code, MA Plumbing Code and all state, county, and federal codes, laws, statutes, and authorities having jurisdiction.

2. DESIGN INTENT

   A. All work is new and consists of furnishing all materials, equipment, labor, transportation, facilities, and all operations and adjustments required for the complete and operating installation of the Plumbing work and all items incidental thereto, including commissioning and testing.

3. GENERAL

   A. The Plumbing Systems that will serve the project are cold water, hot water, tempered water, sanitary waste and vent system, grease waste system, special waste system, storm drain system, and natural gas.

   B. The Building will be serviced by Municipal water and Municipal sewer system.

   C. All Plumbing in the building will conform to Accessibility Codes and to Water Conserving sections of the Plumbing Code.

4. DRAINAGE SYSTEM

   A. Soil, Waste, and Vent piping system is provided to connect to all fixtures and equipment. System runs from 10 feet outside building and terminates with stack vents through the roof.

   B. A separate Grease Waste System starting with connection to an exterior concrete grease interceptor running thru the kitchen and servery area fixtures and terminating with a vent terminal through the roof. Point of use grease interceptors are to be provided at designated kitchen fixtures. The grease interceptor is provided under Division 33 scope.

   C. Storm Drainage system is provided to drain all roofs with roof drains piped through the building to a point 10 feet outside the building.

   D. Drainage system piping will be service weight cast iron piping; hub and spigot with gaskets for below grade; no hub with gaskets, bands and clamps for above grade 2 in. and larger. Waste and vent piping 1-1/2 in. and smaller will be type 'L' copper.

E. A separate Special Waste System shall be provided starting with a connection to an interior limestone chip acid neutralizer, running thru the building to collect science classroom fixtures and terminating with vent terminals through the roof. Special Waste and Vent piping will be Schedule 40 electric heat fused polypropylene piping, fittings and traps, flame retardant above grade and non-flame retardant below ground.

5. WATER SYSTEM

A. New 4-inch domestic water service from the municipal water system will be provided. A meter and backflow preventer will be provided.

B. Cold water distribution main is provided. Non-freeze wall hydrants with integral back flow preventers are provided along the exterior of the building.

C. Water piping will be type 'L' copper with wrot copper sweat fittings, silver solder or press-fit system. All piping will be insulated with 1 in. thick high density fiberglass.

D. A dedicated non-potable water system will be provided to Science Classrooms. Water system will be protected with a reduced pressure backflow preventer.

E. Tepid (70 deg. F – 90 deg. F) water will be provided to the emergency shower/eyewash fixtures in Science Classrooms as required by code.

F. Domestic hot water will be provided with electric, point-of-use, instantaneous water heaters.

6. FIXTURES ***LEED v4***

A. Furnish and install all fixtures, including supports, connections, fittings, and any incidentals to make a complete installation.

B. Fixtures shall be the manufacturer's guaranteed label trademark indicating first quality. All acid resisting enameled ware shall bear the manufacturer's symbol signifying acid resisting material.

C. Vitreous china and acid resisting enameled fixtures, including stops, supplies and traps shall be of one manufacturer by Kohler, American Standard, or Eljer, or equal. Supports shall be Zurn, Smith, Josam, or equal. All fixtures shall be white. Faucets shall be Speakman, Chicago, or equal.

D. Fixtures shall be as scheduled on drawings.

1. Water Closet: High efficiency toilet, 1.28 gallon per flush, wall hung, vitreous china, siphon jet. Manually operated 1.28 gallon per flush-flush valve.

2. Urinal: High efficiency 0.13 gallon per flush urinal, wall hung, vitreous china. Manually operated 0.13 gallon per flush-flush valve.

3. Lavatory: Wall hung/countertop ADA lavatory with 0.35 GPM metering mixing faucet.

4. Sink: MAAB/ADA stainless steel countertop sink with gooseneck faucet and 0.5 GPM aerator.

5. Drinking Fountain: Barrier free hi-low wall mounted electric water cooler, stainless steel basin with bottle filling stations.

6. Janitor Sink: 24 x 24 x 10 Terrazo mop receptor Stern-Williams or equal.

7. Laboratory Sinks: Faucets with vacuum breakers and 0.74 GPM aerators.

7. DRAINS

A. Drains are cast iron, caulked outlets, nickaloy strainers, and in waterproofed areas and roofs shall have galvanized iron clamping rings with 6 lb. lead flashings to bond 9 in. in all directions. Drains shall be Smith, Zurn, Josam, or equal.

8. VALVES

A. Locate all valves so as to isolate all parts of the system. Shutoff valves 3 in. and smaller shall be ball valves, solder end or screwed, Apollo, or equal.

9. INSULATION

A. All water piping shall be insulated with snap-on fiberglass insulation Type ASJ-SSL, equal to Johns Manville Micro-Lok HP.

10. CLEANOUTS

A. Cleanouts shall be full size up to 4 in. threaded bronze plugs located as indicated on the drawings and/or where required in soil and waste pipes.

B. Cleanouts for Special Waste System shall be Zurn #Z9A-C04 polypropylene cleanout plug with Zurn #ZANB-1463-VP nickel bronze scoriated floor access cover.

11. ACCESS DOORS

A. Furnish access doors for access to all concealed parts of the plumbing system that require accessibility. Coordinate types and locations with the Architect.

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HVAC SYSTEMS

NARRATIVE REPORT

The following is the HVAC system narrative, which defines the scope of work and capacities of the HVAC system as well as the Basis of Design. The HVAC systems shall be designed and constructed for ***LEED for Schools v4*** where indicated on this narrative.

1. CODES

   All work installed under Division 230000 shall comply with the State of Massachusetts Building Code and all local, IBC 2015, IECC 2015 and IMC 2015 with MA Amendments, county, and federal codes, laws, statutes, and authorities having jurisdiction.

2. DESIGN INTENT

   The work of Division 230000 is described within the narrative report. The HVAC project scope of work shall consist of providing new HVAC equipment and systems as described here within. All new work shall consist of furnishing all materials, equipment, labor, transportation, facilities, and all operations and adjustments required for the complete and operating installation of the Heating, Ventilating and Air Conditioning work and all items incidental thereto, including commissioning and testing.

3. BASIS OF DESIGN: (MASS CODE)

   Project weather and Code temperature values are listed herein based on weather data values as determined from ASHRAE weather data tables and the International Energy Conservation Code.

   Outside: Winter 5 deg. F, Summer 91 deg. F DB 74 deg. F WB

   Inside: 72 deg. F +/- 2 deg. F for heating, 75 deg. F +/- 2 deg. F (55% RH) for cooling for areas with air conditioning, 78 deg. F +/- 2 deg. F (<60% RH) for areas with displacement/dehumidification*(see note below). Unoccupied temperature setback will be provided (60 deg. F heating (adj.), 85 deg. F cooling/dehumidification (adj.).

   Outside air is provided at the rate in accordance with ASHRAE guide 62.1-2013 and the International Mechanical Code as a minimum. All occupied areas will be designed to maintain 800 PPM carbon dioxide maximum.

4. SYSTEM DESCRIPTION

   A. Heating and Air Conditioning System

      It is proposed that new high efficiency Air Source Heat Recovery Variable Refrigerant Flow (VRF) systems be installed to serve the building Classroom, Media Center, Administration office areas, Multi-Purpose and Cafeteria areas of the building. Indoor VRF air handling units shall be connected with refrigeration piping to branch controllers and outdoor roof mounted air cooled VRF heat pump condensing units. This system allows for simultaneous heating or cooling capability year-round. It is estimated that (4) 30-ton outdoor roof mounted VRF air source heat recovery heat pump condensing units will be required to serve the indoor VRF air handling equipment.

New dedicated outdoor air (DOAS) rooftop air handling units with supply and return fan with VFDs, energy recovery wheels, air source heat pump heating and cooling section with modulating capacity control, supplemental electric heat and MERV 13 filtration will be provided to serve the ventilation requirements of the building. Supply air will be provided to areas of the building through new galvanized steel supply duct distribution. Return air will be drawn back to the units by a combination of ceiling and low wall return air registers located throughout the building and will be routed back to the air handling units by an insulated galvanized sheetmetal return air ductwork distribution system. VAV (variable air volume) terminal boxes shall be installed in the supply air distribution ductwork and will control the amount of ventilation provided to the classroom, Media Center, Cafeteria, Multi-Purpose and Administration office zones based on CO2 demand ventilation controls.

C. Classroom Heating and Ventilation *(General Classrooms, Science, Art & Music, SPED, & Technology Classrooms):*
LEED for Schools Credit Ep2 & 4, Ec2 & 3, IEQp1 & 3, IEQc1, 2, 3, 4, 5, & 9

Spatial heating and air-conditioning for the Administration areas will be served by the proposed VRF system. It is estimated that each typical classroom would require (2) 12 MBH ductless ceiling mounted cassette type VRF units, and that larger Science, Technology, Art, and Music Classrooms would require approximately (2) 18 MBH ductless ceiling mounted cassette type units. The indoor VRF units in other areas shall be a combination of ceiling mounted cassette type, wall mounted ductless, floor mounted vertical style units, and ducted fan coil type unit with the style selected to provide the best performance and aesthetic for the space served. Supplemental electric radiant heating will be provided along perimeter of exterior walls.

Ventilation for Classroom areas shall be provided by dedicated outdoor air handling units. New air handling units shall be equipped with supply and return fan with VFDs, dual energy recovery wheels, direct expansion heat pump section for heating and cooling with modulating capacity control, and MERV 13 filtration shall be installed to provide code required ventilation air to classrooms. Supply air will be provided to the space through new insulated, galvanized steel supply duct distribution system and shall be connected to wall ceiling diffusers or VRF heat pump fan coil unit return ductwork located within the classrooms. Exhaust air will be drawn back to the units by ceiling exhaust air registers located within the classroom and will be routed back to the air handling unit by an insulated galvanized sheetmetal return air ductwork distribution system. Each classroom will be provided with a variable air volume terminal box and CO2 sensor for demand ventilation control.

It is estimated that the air handling equipment with the capacity of 30,000 CFM (76 tons cooling/ and 90 tons heating) will be required to serve the Classroom areas:

D. Gymnasium (Partial AC/Dehumidification):
LEED for Schools Credit Ep2 & 4, Ec2 & 3, IEQp1 & 3, IEQc1, 2, 3, 4, 5, & 9

The gymnasium will be served by an air handling unit of the recirculation design. The unit will be approximately 7,500 CFM and will include supply and return fans with VFDs, 23 Ton cooling/heating heat pump section with modulating capacity control, MERV 13 filtration, supplemental electric heating and carbon dioxide controls which will reduce outside air as allowed maintaining a maximum of 800 PPM. Supply air ventilation will be provided to the space through galvanized steel supply duct with high capacity ceiling mounted diffusers to project the air to the floor. As levels of carbon dioxide drop generally relating to a reduction in population a variable frequency drive located in each air-handling unit will modulate to reduce airflow and ventilation while always maintaining a maximum of 800 ppm. Return air will be drawn back to the air handling unit by a low wall return air register.

E. Administration Areas (Air Conditioned):
LEED for Schools Credit Ep2 & 4, Ec2 & 3, IEQp1 & 3, IEQc1, 2, 3, 4, 5, & 9

Spatial heating and air-conditioning for the Administration areas will be served by the proposed VRF system.

The air handling unit will have a capacity of approximately 3,000 CFM and will include supply and return fan with VFDs, 1MERV 13 filtration, 8 ton capacity heating/cooling heat pump section, supplemental electric heating and exhaust air energy recovery wheel. Supply air ventilation will be provided to each space that will satisfy building code requirements based on population.

F. Media Center (Air Conditioned):
LEED for Schools Credit Ep2 & 4, Ec2 & 3, IEQp1 & 3, IEQc1, 2, 3, 4, 5, & 9

It is proposed that spatial heating and air-conditioning for zones will be provided by the proposed VRF system. For ventilation, the Media Center will be provided with an air-handling unit capable of providing 100% outside air and variable air volume operation. The air handling unit will be approximately 4,000 CFM and will include supply and return fan with VFDs, MERV 13 filtration, 9 ton capacity heating/ cooling heat pump section, supplemental electric heating, and exhaust air energy recovery wheel. Supply air ventilation will be provided to each space which will satisfy building code requirements based on population. Supplemental electric radiant heating will be provided along perimeter of exterior walls.

G. Cafeteria and Multi-Purpose (Air Conditioned):
LEED for Schools Credit Ep2 & 4, Ec2 & 3, IEQp1 & 3, IEQc1, 2, 3, 4, 5, & 9

The Cafeteria area will be served by an air-handling unit capable of providing 100% outside air. The units will be approximately 9,500 CFM and will include supply and return fan with VFDs, MERV 13 filtration, 30-ton heating/cooling heat pump section, and exhaust air energy recovery wheel. Supply air ventilation will be provided to each space through galvanized steel supply duct that will connect to floor level displacement diffuser distribution which will satisfy building code requirements based on population. In addition, carbon dioxide controls will be installed which will monitor the overall level of carbon dioxide at a threshold level of 800 ppm. As levels drop generally relating to a reduction in population the air-handling unit outside air damper will modulate to reduce airflow and ventilation while always maintaining a maximum of 800 ppm. Return air will be drawn back to the units by ceiling mounted return air registers. Supplemental electric radiant heating will be provided along perimeter of exterior walls.

H. Kitchen (Heating/Partial AC Dehumidification):
LEED for Schools Credit Ep2 & 4, Ec2 & 3, IEQp1 & 3, IEQc1, 2, 3, 4, 5, & 9

The kitchen areas shall be provided with a kitchen exhaust fan from a new kitchen exhaust air fan system. It is estimated that a kitchen exhaust fan system with a capacity of 5,000 CFM is required. The kitchen will be heated and provided with make-up air from a 4,500 CFM make-up air handling unit equipped with heat pump heating and partial cooling (dehumidification) control.

A variable volume kitchen exhaust hood control system consisting of kitchen exhaust stack temperature and smoke density sensors, supply and exhaust fan variable speed drives and associated controller will be provided by the kitchen equipment vendor. This system installation shall be field installed and coordinated with the ATC and Electrical contractors.

I. Lobby, Corridor, and Entry Way Heating:

A combination of VRF fan coil air handling units and supplemental electric radiant heating shall be provided to provide spatial heating to these areas. Corridors shall be ventilated from adjacent air handling unit systems.

J. Custodial Support Areas:

Custodial support areas will be heated and ventilated by a combination of VRF air handling units and supplemental electric radiation heating. Storage areas will be heated by radiation heating equipment. Horizontal type unit heaters will heat areas adjacent to the loading dock. All custodial closets will be exhausted by exhaust air fan systems.

K. Utility Areas:

Utility areas will be provided with exhaust air fan systems for ventilation and will typically be heated by horizontal type ceiling suspended electric unit heaters.

The main IDF room will be air conditioned by high efficiency ductless AC cooling units.

L. Testing, Adjusting, Balancing & Commissioning:

All new HVAC systems shall be tested, adjusted, balanced and commissioned as part of the project scope.

M. Automatic Temperature Controls – Building Energy Management System:

A new DDC (direct digital control) automatic temperature control and building energy management system shall be installed to control and monitor building HVAC systems. Energy metering shall be installed to monitor the energy usage of building HVAC systems and utilities (fuel, gas, water).

Lighting control and door access control system shall be integrated into the BMS system.

The control system shall be as manufactured by Johnson Controls (Metasys), Siemens (Apogee) or Delta Controls.

5. NET ZERO OPTION

For the Net Zero Option, the Variable Refrigerant Flow system shall be served by a ground source well field system consisting of approximately (38) thirty-eight closed loop 4-pipe 750 Ft. Deep wells. The wells shall be connected to manifold boxes, which in turn shall be routed to ground water supply and return header piping located in the mechanical room. Two (2) ground loop water pumps shall be provided with VFD drives to distribute ground source water from the well field to the heat pump equipment.

The ground source water shall be connected to a water to refrigerant high efficiency heat recovery heat pump units located in the mechanical room. It is estimated that four (4) water-refrigerant heat pump units with a capacity of 30 (thirty) tons heating/cooling capacity each shall be required to serve the VRF indoor air handling units.

The ground water to refrigerant heat pump units shall be connected with insulated refrigerant piping to the indoor VRF (variable refrigerant flow) units similar to the Base Option. Indoor unit quantities and sizes shall be similar to the Base Option.

Ground source water shall also be piped to the ventilation air handling units. Ventilation air handling units shall be ground water source heat pumps instead of water source heat pump units for this Net Zero Option. Units capacities shall be similar to the Base Option

6. TESTING REQUIREMENTS:

   A. The mechanical contractor shall provide testing of the following systems with the owner and owner's representative present:

      1. Net Zero Option – Ground-source Heat Pump system

      2. VRF (Variable Refrigerant Flow) System

      3. Air handling unit systems including all indoor and rooftop air handling systems and exhaust air systems

      4. Terminal heating and cooling devices

      5. Automatic temperature control and building energy management system

   B. Testing reports shall be submitted to the engineer for review and approval before providing to the owner.

7. OPERATION MANUALS AND MAINTENANCE MANUALS: When the project is completed, the mechanical contractor shall provide operation and maintenance manuals to the owner.

8. RECORD DRAWINGS AND CONTROL DOCUMENTS: When the project is completed, an as-built set of drawings, showing all mechanical system requirements from contract and addendum items will be provided to the owner.

9. COMMISSIONING: The project shall be commissioned per Section 018000 of the specifications.

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ELECTRICAL SYSTEMS

NARRATIVE REPORT

The following is the Electrical system narrative, which defines the scope of work and capacities of the Power and Lighting system as well as the Basis of Design. The electrical systems shall be designed and constructed for ***LEED for Schools v4*** where indicated on this narrative. This project shall conform to a Platinum award level and has a minimum target of a Silver award level. The project has a goal of Net Zero.

1. CODES

   All work installed under Division 26 shall comply with the Massachusetts State Building Code, IBC 2015 and all local, county, and federal codes, laws, statutes, and authorities having jurisdiction.

2. DESIGN INTENT

   The work of Section 260000 is indicated in this narrative report. All work is new and consists of furnishing all materials, equipment, labor, transportation, facilities, and all operations and adjustments required for the complete and operating installation of the Electrical work and all items incidental thereto, including commissioning and testing.

3. SEQUENCE OF OPERATIONS AND INTERACTIONS

   A. Classroom and corridor lighting will be controlled via “addressable relays”, which is achieved through programming. The control of the relays shall be by automatic means such as an occupancy sensor in each classroom and corridors. The lighting controls will be part of the Building Management System.

   B. Exterior lighting will be controlled by photocell “on” and “schedule” for “off” operation. The vehicle circulation area lighting will be controlled by “zones” and will have dimming-level control.

   C. Emergency and exit lighting will be run through life safety panels to be on during normal power conditions as well as power outage conditions.

4. DESCRIPTION OF THE SYSTEMS

   A. Electrical Distribution System:

      1. New construction service ratings are designed for a demand load of 10 watts/s.f. The service capacity will be sized for 1600 amperes with 100% rating at 277/480 volt, 3Ø, 4wire. New lighting and power panels will be provided to accommodate respective loads. The service capacity will be sized for 20% spare capacity. The service will be central to main building and feed other buildings. A single meter will be used for entire site so that future PV will serve all loads on site.

B. Interior Lighting System:

1. Classroom lighting fixtures consist of indirect LED luminaries with dimming drivers. The fixtures will be pre-wired for dimming control where natural daylight is available and also for multi-level switching. Office lighting fixtures will consist of similar fixtures to classrooms. Offices on the perimeter with windows shall have daylight dimming controls.

   In general lighting power density will be 40 percent less than IECC 2015. The power density reduction relates to ***LEED for Schools Credit EAC1.***

2. Lighting levels will be approximately 30 foot candles in classrooms and offices. The daylight dimming footcandle level will be in compliance with ***LEED for Schools IEQ 6.1.***

3. Gymnasium and multi-purpose lighting will be comprised of indirect LED fixtures with dimming drivers. The fixtures will be provided with protective wire guards. The light level will be designed for approximately 40 foot candles.

   Daylight dimming will be provided within 15 feet of skylights or glazing. Daylight dimming controls will be similar in operation to classrooms.

4. Corridor lighting will be comprised of linear indirect lighting using LED light source. The corridor light level will be designed for approximately 20 foot candles. Corridor lighting will be on a schedule through the BMS system control and only “on” during occupied hours. The corridor lighting will have two level control.

5. Cafeteria lighting will be LED fixtures with dimming drivers. The light levels will be designed for approximately 30 foot candles.

6. Kitchen and Servery lighting will consist of recessed 1 ft. x 4 ft. lensed and gasketed LED panels. Light levels will be approximately 50 foot candles.

7. Library lighting will consist of indirect fixtures with LED dimmable drivers. Light levels will be approximately 30 foot candles.

9. Each area will be locally switched and designed for multi-level controls. Each classroom, office space and toilet rooms will have an occupancy sensor to turn lights off when unoccupied. Daylight sensors will be installed in each room where natural light is available for dimming of light fixtures. The manual controls will allow user to dim each scene.

10. The entire school will be controlled with an automatic lighting control system using the BMS control system for schedule and programming of lights controls.

C. Emergency Lighting System:

1. An interior 300 kW natural gas fuelled indoor emergency generator will be provided. Emergency light fixtures and LED exit signs will be installed to serve all egress areas such as corridors, intervening spaces, toilets, stairs and exit discharge exterior doors. The administration area lighting will be connected to the emergency generator.

2. The generator will be sized to include life safety systems, VRF (heating for freeze protection) and communications systems.

D. Site Lighting System

1. Fixtures for area lighting will be pole-mounted cut-off 'LED' luminaries in the drop-off areas. The fixtures shall be per Town of Brookline standards. Pole heights will be below 12 ft. The exterior lighting will be connected to the automatic lighting control system for photocell on and timed off operation. The site lighting fixtures will be dark sky compliant. The illumination level is 0.5 foot candle minimum for parking areas in accordance with Illuminating Engineering Society.

2. Building perimeter fixtures will be wall mounted cut-off over exterior doors for exit discharge.

E. Wiring Devices:

1. Each classroom will have a minimum of (2) duplex receptacles per teaching wall and (2) double duplex receptacles on dedicated circuits at classroom computer workstations. The teacher's workstation will have a double duplex receptacle also on a dedicated circuit. Refer to drawings.

2. Office areas will generally have (1) duplex outlet per wall. At each workstation a double duplex receptacle will be provided.

3. Corridors will have a cleaning receptacle at approximately 25 foot intervals.

4. Exterior weatherproof receptacles will be installed at exterior doors.

5. A system of computer grade panelboards with double neutrals and transient voltage surge suppressors will be provided for receptacle circuits.

F. Fire Alarm System:

1. A fire alarm and detection system will be provided with 60 battery back-up. The system will be of the addressable type where each device will be identified at the control panel and remote annunciator by device type and location to facilitate search for origin of alarms. The control panel shall be manufactured by Notifier.

2. Smoke detectors will be provided in open areas, corridors, stairwells and other egress ways.

3. The sprinkler system will be supervised for water flow and tampering with valves.

4. Speaker/strobes will be provided in egress ways, classrooms, assembly spaces, open areas and other large spaces. Strobe only units will be provided in single toilets and conference rooms. A mass notification system shall be provided integral with fire alarm system.

5. Manual pull stations will be provided at exit discharge doors.

6. The system will be remotely connected to automatically report alarms to fire department via wireless master box (32 zones).

G. Uninterruptible Power Supply (UPS):

1. One (1) 24kw, three (3) phase centralized UPS systems will be provided with battery back-up.

2. The system will provide conditioned power to sensitive electronic loads, telecommunication systems, bridge over power interruptions of short duration and allow an orderly shutdown of servers, communication systems, etc. during a prolonged power outage.

3. The UPS systems will also be connected to the stand by generator.

H. Lightning Preventer System:

1. Lightning preventer devices will be provided to provide coverage for the entire building.

2. The lightning preventer equipment will include lightning preventers, conductors, conduits, fasteners, connectors, ground rods, etc.

5. NET ZERO OPTION – NON USE OF FOSSSIL FUELS

The following items are regarding the Net Zero Energy Design for the Electrical Systems without the use of fossil fuels.

The Electrical service will be increased in size to compensate for electric cooking and domestic hot water. The anticipated electrical load is approximately 150 KW. Presently, the service size 1,600 amps, 277/480 volt, 3 phase, 4 wire with 4,000 amp bussing to accommodate the PV System.

The additional service increase of approximately 181 amps will result in utilizing a service of 2,000 amps, 277/480 volt, 3 phase, 4 wire with 4,000 amp bussing to accommodate the PV system.

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6. TESTING REQUIREMENTS

The Electrical Contractor shall provide testing of the following systems with the Owner and Owner's Representative present:

- Lighting and power panels for correct phase balance.
- Emergency generator.
- Lighting control system (interior and exterior).
- Fire alarm system.
- Security system.

Testing reports shall be submitted to the Engineer for review and approval before providing to the Owner.

7. OPERATION MANUALS AND MAINTENANCE MANUALS:

When the project is completed, the Electrical Contractor shall provide operation and maintenance manuals to the Owner.

8. RECORD DRAWINGS AND CONTROL DOCUMENTS:

When the project is completed, an as-built set of drawings, showing all lighting and power requirements from contract and addendum items, will be provided to the Owner.

9. COMMISSIONING

The project shall be commissioned per Section 018000 of the specifications.

10. RENEWABLE ENERGY PROVISIONS

Provisions for a renewable energy system will consist of largest capacity (restricted by roof area) grid connected photovoltaic PV system intended to reduce the facilities demand for electricity and reduce carbon emissions. The photovoltaic system will be installed at a future date. The project will be PV ready.

11. SITE UTILITIES

The Electric, Telephone and Cable TV utilities will be underground for each system provided.

12. INTRUSION SYSTEM

An intrusion system will consist of security panel, keypads, motion detectors and door contacts. The system is addressable which means that each device will be identified when an alarm occurs. The system is designed so that each perimeter classroom with grade access will have dual tech sensors along the exterior wall and corridors, door contacts at each exterior door.

The system will include a digital communicator to summons the central station in the event of an alarm condition.

The intrusion system will be connected to the automated lighting control system to automatically turn on lighting upon an alarm.

13. CARD ACCESS

A card access system includes a card access controller, door controllers and proximity readers/keypads. Proximity readers will be located at various locations. Each proximity reader will have a distinctive code to identify the user and a log will be kept in memory. The log within the panel can be accessed through a computer.

The alarm condition will also initiate real time recording on the integrated CCTV System. The system may be programmed with graphic maps allowing the end-user to quickly identify alarm conditions and lock/unlock doors.

The system is modular and may be easily expanded to accommodate any additional devices.

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TECHNOLOGY SYSTEMS

NARRATIVE REPORT

The following is the Technology System narrative, which defines the scope of work and capacities of the Communications system infrastructure and Security system as well as the Basis of Design.

1. CODES

   A. All work installed under Section 270000 shall comply with the Massachusetts Building Code, IBC 2015, and all local, county, and federal codes, laws, statues, and authorities having jurisdiction.

2. DESIGN INTENT

   A. All work is new and consists of furnishing all materials, equipment, labor, transportation, facilities, and all operations and adjustments required for the complete and operating installation of the Technology and Security work and all items incidental thereto, including commissioning and testing.

3. TECHNOLOGY

   A. The data system infrastructure will consist of fiber optic backbone cabling. Horizontal wiring will consist of Category 6A UTP Non-Plenum rated cabling for both data and telephone systems for gigabit connectivity. The telephone infrastructure will accommodate VOIP based voice systems. An IP telephone system will be used.

   B. Each classroom will have 2 data outlets for student computers. Two data with video and audio connections to a wall mounted touch screen monitor will be provided at teacher's station. A wall phone will be provided for communications with administration in each classroom. Wireless access points will be provided in all classrooms and other spaces with (2) CAT6A cables.

   C. A central paging system will be provided and integrated with the telephone system. The speakers shall be IP and manufactured by Valcom.

   D. A wireless GPS/LAN based master clock system will be provided with 120V wireless remote clocks that act as transceivers.

   E. The Main Distribution Frame (MDF) will contain all core network switching and IP voice switch. Intermediate Distribution Frames (IDFs) will serve each floor/wing of the school. A fiber optic backbone will be provided from each IDF to MDF. The backbone will be designed for 10 Gbps Ethernet.

4. TESTING REQUIREMENTS

A. The Technology and Security Contractors shall provide testing of the following systems with the Owner and Owner's representative present:

- Telephone and data cabling
- Fiber optic backbone cabling
- IP Paging system
- Wireless clock system
- A/V wiring for classrooms

Testing reports shall be submitted to the engineer for review and approval before providing to the Owner.

5. OPERATION MANUALS AND MAINTENANCE MANUALS:

A. When the project is completed, the Technology Contractor shall provide operation and maintenance manuals to the Owner.

6. RECORD DRAWINGS AND CONTROL DOCUMENTS:

A. When the project is completed, an as-built set of drawings, showing all lighting and power requirements from contract and addendum items, will be provided to the Owner.

7. COMMISSIONING

A. The project shall be commissioned per Commissioning Section of the specifications.

2.3.5 Evaluation Matrix

Please reference the following Evaluation Matrix completed with the School Building Committee on 11/16/18 and associated narrative.
At an early point in the process the design team proposed the development of a comprehensive evaluation matrix to collect, correlate, summarize and compare the diverse evaluation criteria in one document. The evaluation matrix, having been drafted by the design team, was then thoughtfully updated as variety of relevant ideas and concerns came to light from multiple sources from Brookline officials and neighborhood stakeholders.

The following building test fit alternatives, the commentary which they have elicited from the wide range of stakeholders, and the summary tool of the evaluation matrix, are provided here to support a solid decision-making consensus going forward.

BALDWIN SCHOOL EXPANSION

Concept Options Evaluation Matrix

DRAFT

RATINGS: Advantageous / Neutral / Disadvantageous

	PROJECT EVALUATION CRITERIA	OPTION A QUADRANGLE	OPTION B SOLAR HARVEST	OPTION C TWIN COURT	COMMENTS
Project Cost					
1	Project Cost - Includes 10 On-Site Parking Spaces, $1M for Sidewalks	$70M - $74M	$72M - $76M	$73M - $77M	Parking under building. Additional Parking Spaces would cost approximately $180,000 per space
	Project Cost - Includes 40 On-Site Parking Spaces, $1M for Sidewalks	$76M - $80M	$78M - $82M	$79M - $83M	
Teaching and Learning					
2	Educational Program Accommodation	Neutral	Neutral	Neutral	All accommodate program
3	Flexibility-Fixed Classroom Count per Cohort	Advantageous	Advantageous	Advantageous	Option B slightly less flexible due to courtyards along east side
4	Collaborative / Project Based Learning	Advantageous	Advantageous	Advantageous	All accommodate collaborative learning
5	Cohort Configuration, With Student Support	Neutral	Advantageous	Neutral	Option B has most successful cohort configuration with more defined wings
6	Core Space Location (Library/Cafeteria/Gym)	Advantageous	Advantageous	Advantageous	All have successful core space location
7	RISE				All can successfully include RISE
Project Viability Issues					
8	Schedule	Neutral	Advantageous	Neutral	Option B open courtyards are best lay-down area for construction
9	Traffic	Neutral	Neutral	Neutral	All similar and conform with traffic recommendations
10	Risk	Neutral	Neutral	Neutral	All similar
Site					
11	Construction Impact to Neighbors	Neutral	Neutral	Neutral	All similar
12	Open Space /Building Massing	Disadvantageous	Advantageous	Disadvantageous	Option B has more contextual massing and accessible open space
13	Community Use	Neutral	Neutral	Neutral	All allow convenient community use
Building Environment					
14	Flexibility-Building Systems	Neutral	Neutral	Neutral	All similar
15	Provides Logical, Clear Interior Circulation	Neutral	Advantageous	Disadvantageous	Option B has clearest circulation, Option C would be least intuitive
16	Security	Advantageous	Advantageous	Neutral	Option C would be least open visually due to more convoluted circulation
17	Natural Light	Disadvantageous	Advantageous	Disadvantageous	Option B has best solar orientation for daylighting
18	Connects Interior with Natural Outdoors	Neutral	Advantageous	Disadvantageous	Option B has all classrooms relating to outdoor play areas, Option C has fewest
19	LEED / Sustainability	Neutral	Advantageous	Neutral	Option B most energy efficient due to solar orientation
20	Potential for Future Building Expansion	Disadvantageous	Advantageous	Disadvantageous	Option B would allow future expansion if desired by enclosing open courtyards
Long Term Costs					
21	Annual Maintenance Costs	Neutral	Neutral	Neutral	All similar
22	Annual Energy Costs	Neutral	Advantageous	Neutral	Option B most energy efficient due to solar orientation

Total GSF	108,250	108,250	108,250	

Baldwin School Expansion
Evaluation Matrix - Architect's Narrative
12/8/18

Evaluation Matrix Comments Executive Summary
All options being contemplated are new construction and in each case afford the designer the freedom to explore the greatest efficiency and appropriateness to the educational program possible. Therefore, the variations between these options can be subtle.

All options will perform similarly in terms of:

- Future maintenance
- Separate community access while maintaining security for academic areas
- Appropriate accommodation of the academic program
- Traffic
- Construction impact on neighbors
- Risk factors

There are minor differences in costs. However, these likely are within the margin of error for this level of conceptual estimation; though Option B, with its significant connection to the outdoors and daylighting, is intuitively slightly more expensive because it has more window walls.

There is a gradation regarding the clarity of interior circulation for "wayfinding" purposes; with Option B and its "main street" offering the clearest circulation, Option A with its 'doughnut,' the next clearest, and Option C being somewhat "mazelike."

The key differentiators between the schemes typically concern the advantages offered by Option B which include:

- Better access for construction and more convenient laydown areas
- A more sensitive building massing which reduces the impact of the building volume on the adjacent properties to the east
- The ability to offer flexibility in the organization of cohorts whether vertically according to building wings or horizontally according to building floors
- Optimization for the collection of natural light to improve student performance, reduce long-term operating costs and increase the building's overall sustainability
- Because of the geometry of its courtyards with their open ends Option B offer some flexibility for future classroom additions

Evaluation Matrix Architect's Narrative
In sum, the three options, all consisting of new construction which has been designed, to the extent possible, for optimization, are equivalent in desirability across a number of criteria. These include:

- Traffic
- Risk

- Construction Impact on Neighbors
- Community Use
- Educational Program Accommodation (and related criteria)
- Core Space Location
- Annual Maintenance Costs

A brief discussion, from the Architect's perspective, by individual criteria, follows for use in interpreting the Evaluation Matrix:

Project Viability Issues
While there are differences indicated in total project cost among the three options, these differences are primarily within the margin of error for estimating at this conceptual stage of the project. It is intuitively recognizable that, with its more extensive relationship to the outdoors and lengthier envelope perimeter, Option B will tend to be incrementally more costly per square foot. The other criteria that offer some differences include schedule impact - again with Option B offering some variation because the distribution of open-space and ease of access to that open-space, as opposed to an enclosed courtyard, potentially allows for greater "lay down" area and therefore ease of construction.

Site
The main differentiator in this category is the ability of Option B to present a more contextual massing to the adjacent properties to the east due to the three wings and the resulting two courtyards, offering more open space and views to the roughly aligned residences nearby. This porous massing is as opposed to the monolithic east wall elevations of either Option A or C. All options were designed for favorable separation of community use areas versus secured academic areas. Construction impact on neighbors is assumed to be similar among all options.

Teaching and Learning
Among the various criteria accommodating the educational program, including flexibility and facilitation of the District's advanced teaching approaches, Option B once again is somewhat different from the others. It is different in that the separate wings allow the possibility of organizing cohorts either vertically within the wings or horizontally by floor, and because of the fluid relationship between indoor and outdoor educational spaces.

Building Environment
All three new construction options are similar in that new construction accommodates future changes in use including structure and technical building systems. There are some differences regarding what architects call 'wayfinding' or the clarity of circulation and how easily comprehensible the organization would be, say, to a first-time visitor. Here there are gradations between the schemes. Option B has the clearest organization because of its "main street" circulation spine running north-south, connecting all elements of the building. Option A is the second clearest because of its simple 'doughnut' type arrangement. With Option C running, perhaps, a distant third, because

of what some might consider a maze-like corridor arrangement. The same argument about the logic of circulation relates closely to the question of security.

The categories of sustainability, natural light, and connections to the outdoors are all closely related. As stated above, Option B was designed to facilitate the harvesting of daylight and connections to the out of doors with two south facing courtyards. It, therefore, is more advantageous from this perspective as well as the corresponding reduction in energy use.

Because of the geometry of its courtyards with their open ends, Option B also offers some flexibility for future classroom additions.

Long-Term Costs
Similar to the observation about sustainability, as all of the options are new, annual maintenance costs will be the same. However, energy costs because of maximization of daylight and optimization of solar orientation for simplification of mechanical systems, are more advantageous with Option B.

Appendix – Narrative Review of Concept Design Options

Shared Features
The three current concept designs for the Baldwin School expansion share some similar features. All of the projects contemplate a clockwise parent drop-off circulation loop entering at the northeast corner of the site and proceeding down a ramp to a basement level where there will be limited visitor parking. The drop-off queuing then emerges from the building at the southwest corner of the site, then proceeding up Oak Street with a dedicated drop-off lane to exit at the corner of Oak and Heath. All also share the concept that service access will be from the northeast corner down the same ramp but to a level 1 landing with access to a service bay under the building. This service bay is located for adjacency to the kitchen/ cafeteria and is contiguous with the main custodial, storage, and receiving/loading zones.

All three schemes also allow the concept of providing additional green space at the rooftop level to supplement the existing Baldwin School playground. The building massing of the various concepts is limited to four stories in height. Because of existing topography, three stories will be visible at Heath Street; then, as the site drops off to the south, the full four stories emerge above grade. In all schemes, the main cafeteria/learning commons is located at level 1 which is coplanar roughly with the Baldwin School playground. The front door is located on Oaks Street, facing to the west and the parent drop-off lane. Bus drop-off will occur at Heath Street in a dedicated pullout lane.

Because the gymnasium and multipurpose room require limited daylight, these are either fully or partially below grade. Each option has a basement level for parking. For cost purposes, either 10 or 40 parking spaces are considered, although, the final

number of parking spaces will depend on other considerations such as the availability of on-street parking for teachers and visitors. Each option can be flexibly adapted to a variety of parking quantities and assumes a stair and elevator connection up to the west-facing main lobby.

Option A -‘Quadrangle’
This option is the most direct solution to the constraints of the available building site by building fully to the perimeter, leaving the interior of the site as an open-space void providing both daylighting views to the surrounding classrooms. The cafeteria is located at the southern wall. It is two stories in height and opens two grand views of the Baldwin School playground and its rolling landscape. The cafeteria is adjacent to the centrally located media center also on level I. As described above gymnasium and multipurpose spaces are submerged below grade the front of the building

On the second level, the landscape courtyard supplies light the upper story of the cafeteria and is also the venue for a series of project collaboration spaces on each of the upper three floors - each floor ostensibly associated with a given cohort - primary, elementary and middle. The cohorts in the case of this option would need to be formed horizontally.

The upper floors reveal the primary generator of the plan dimensions with a double-loaded corridor element at both north and south with a single loaded corridor element framing the east and west. Therefore, the north and south boundaries of the courtyard are lined by active programs space and the east and west boundaries of the courtyard are circumscribed by corridors. In the building section, we can see how the open courtyard level is elevated above the central media center which is lit primarily by skylight elements from above.

Option B -‘Solar Harvesting’
In an attempt to loosen the boundaries of the building envelope and to more fully engage the outdoors, the solar harvesting option breaks the building mass down to three peninsula-like wings branching from the western facing front of the building. It is intended that each of these wings would afford the district the opportunity to organize cohorts vertically with each cohort occupying a separate wing or horizontally by floor. The frontal portion of the building is lined by a multistory linear atrium which connects all parts of the school. This linear atrium is also the location of the cohort-centering project collaboration zone, which also looks out onto the shared courtyards. These courtyards provide a high degree of interaction between interior and exterior, academic spaces as well as applying abundant life and views to each classroom - each of which is oriented directly south to harvest the maximum amount of natural light.

At level 1, the media center is at the center of the complex with potentially extensive combinability with the multipurpose room, gymnasium, and cafeteria. It fronts directly on the south courtyard, as well as gaining light from skylights in the floor of the landscaped

north courtyard. In the cross section we can see how the two courtyards are placed one story in height from one another; with the broad cafeteria, this time spanning fully from west to east, fronting both south towards the Baldwin School playground and north towards the courtyard shared with the media center.

Option C-‘Twin Court’
In this final approach, the double loaded in single loaded portions of the building are mixed in a way which produces two interior voids - one a small open courtyard and the other a skylit four-story atrium which houses the media center at its lowest level. As in the quadrangle approach above scheme is best suited to a horizontal organization of cohorts with primary, elementary and middle school schools within a school each located on its level. A project collaboration space for each level forms a kind of nucleus to the plan overlooking both the open and media center skylit shared open spaces.

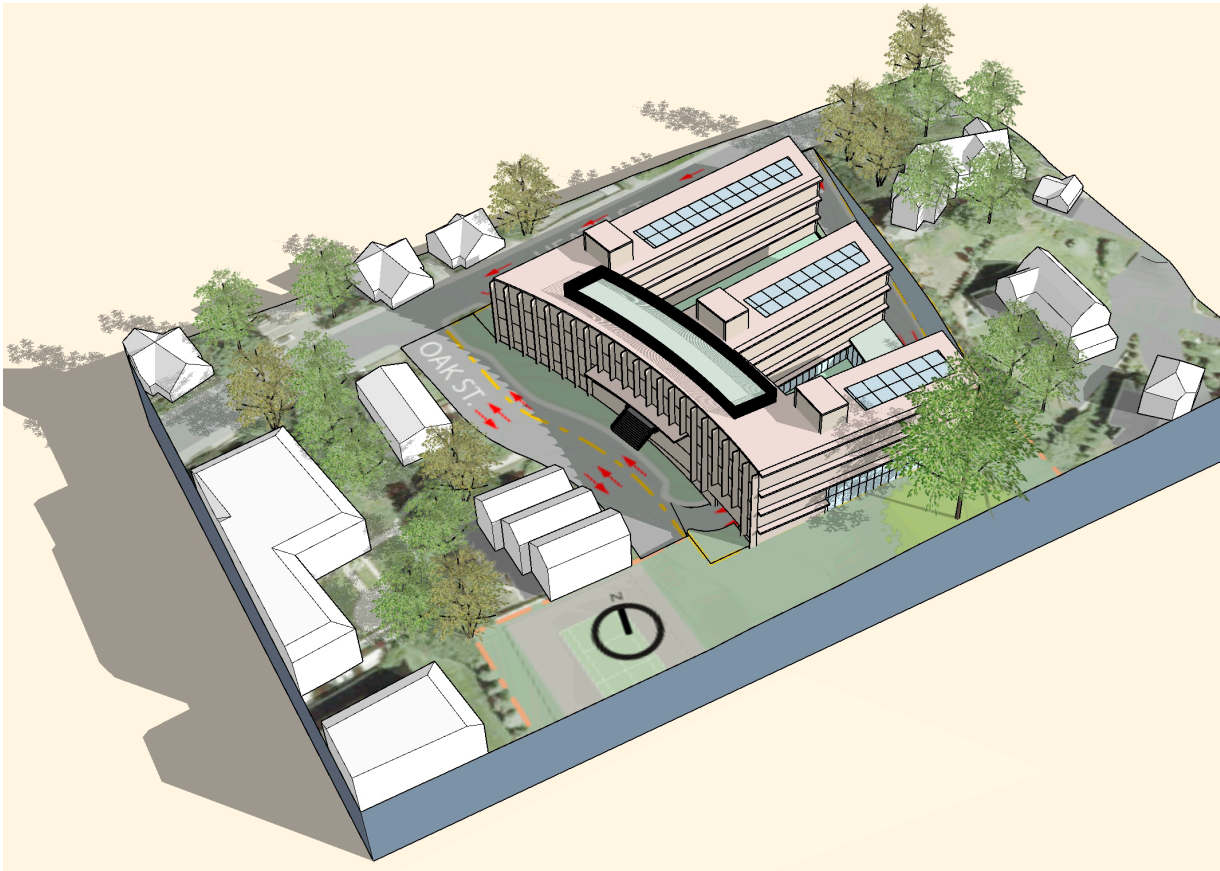
2.4 Preferred Solution

2.4.1 Preferred Solution

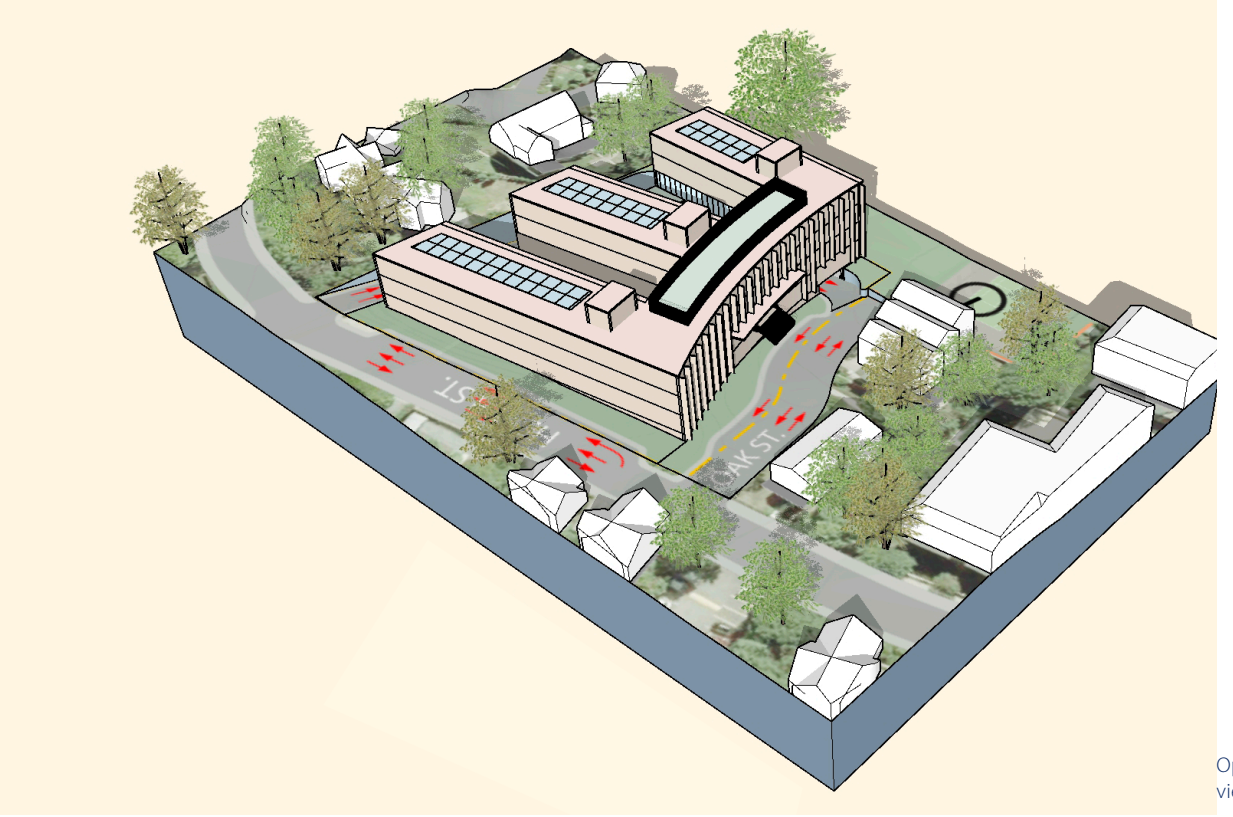
The goal of the Design Feasibility Phase was to identify a preliminary design for the expansion of the Baldwin School that could be feasibly built. Jonathan Levi Architects developed three design options that the SBC reviewed and debated. On November 19, the SBC selected the Solar Harvest option as its preferred design that will be recommended to the Select Board, the School Committee, and the Building Commission. The preferred design includes basic drawings of the exterior, interior, and grounds and allows for an "order of magnitude" project cost estimate that is more refined than the project cost estimate generated during the recently completed Alternative Site Study. The design feasibility phase also includes reports on traffic and transportation impact, geotechnical engineering, environmental assessment, engineering, tree assessment, and a site survey. Much of this work was completed during the 2017 design feasibility study of a 9th School at Baldwin and was updated as necessary during this phase. The design feasibility phase will be followed by the schematic design phase during which the architects will produce detailed drawing of the building and locations of classrooms, other learning and ancillary spaces, and utilities and mechanical systems.

Option B: Solar Harvest

SBC members expressed their support for an exciting building and a ground-breaking design that would gracefully fit into the neighborhood and be the pride of the Chestnut Hill community.



Option B 'Solar Harvest' view from playground



Option B 'Solar Harvest' view from Heath Street

Many SBC members noted that the Solar Harvest design would bring more natural light into the building, especially into the classrooms, which creates a better learning environment generally and enhances the enjoyment and the effectiveness of teaching and learning. They noted the warmth of the design. And that because of the capture of natural light, the ability to use sunlight for temperature control and energy generation, Solar Harvest will be more energy efficient and have lower long-term operating costs with a smaller carbon footprint.

SBC members also noted that Solar Harvest provided more useable open space outside of the building in addition to the Baldwin Playground and surrounding area. Also the integration of the outdoors and the indoors in the courtyards can be very advantageous to learning. The architects noted that outdoor noise from the courtyards can be easily mitigated with current technologies and materials.

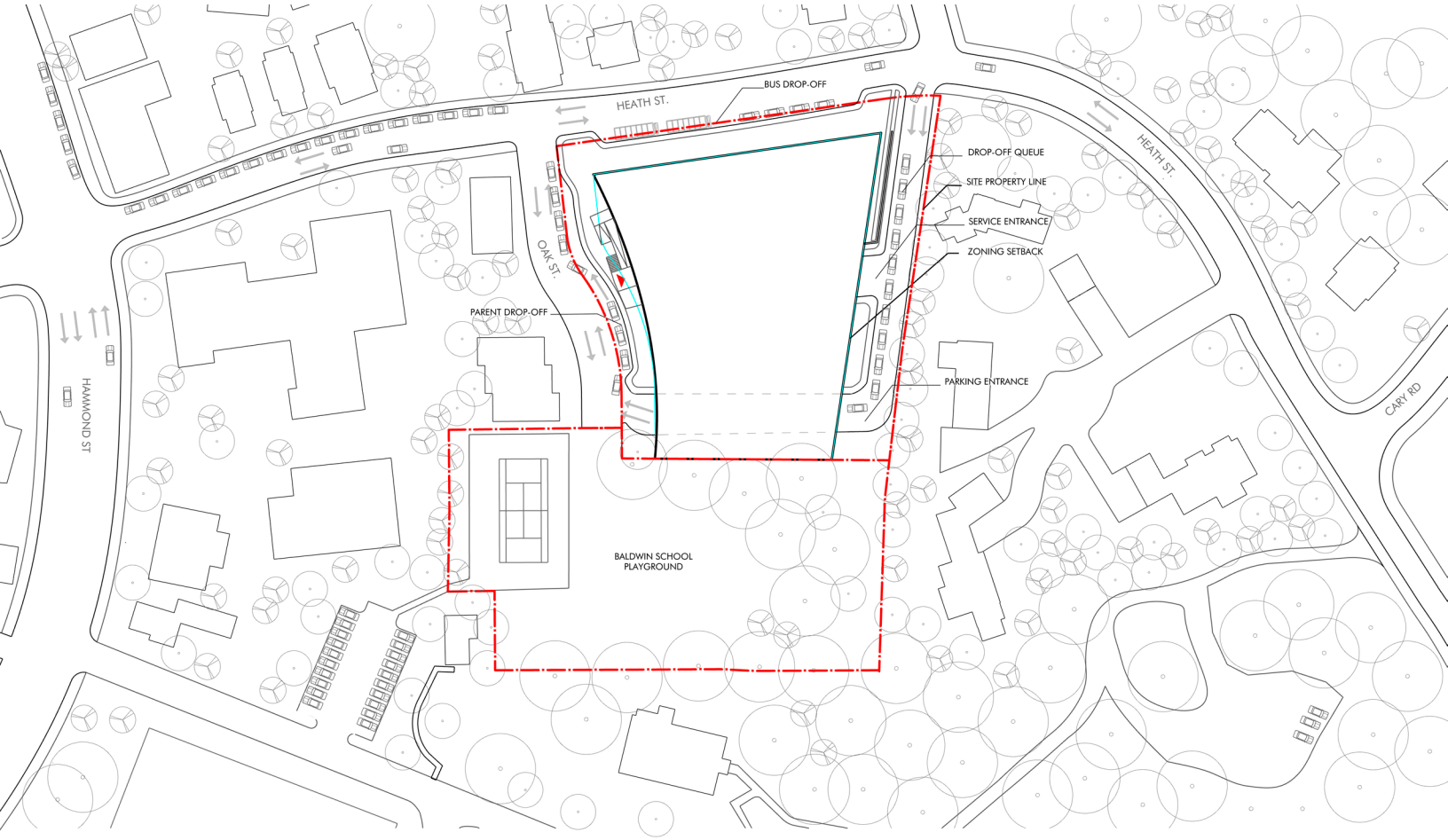
Lincoln School librarian and Building Committee member Deborah Abner was particularly sensitive to the needs of children with visual and auditory issues and stated her belief that the Solar Harvest design addressed these issues relative to the proposed location of the library/ media center. School project manager Ben Lummis reported that when presented with the design alternatives, the parents of children in the RISE program preferred Solar Harvest for these reasons among others. The Town Building Commission is always concerned with the presentation of a proposed building to abutters. The SBC appreciated that Solar Harvest presents a less imposing facade to the residential neighbors to the west of the site and that on Heath Street the presentation is only three stories. Further, when coming from the west on Heath Street, the courtyard side of the building would initially come into view and would make the building less imposing to the viewer. SBC members also noted the importance of showing all residents

of Brookline that they are sensitive to the impact of a building on a neighborhood and that the SBC is offering a design with minimal impact on abutters, even though some abutters will continue to oppose the school.

Superintendent Bott said that Solar Harvest best supported the Baldwin School's Education plan. The design allows for more flexibility in organizing the PreK-2, 3-5, and 6-8 grade level clusters, and provides integrated collaborative space that is conducive to project-based learning. He also noted that the centrally-located "Main Street" that connects the building's clusters, classrooms, levels, and common spaces provides for easy travel through the building for students, families, staff, and visitors.

Site Design

Car drop-off and pick-up will occur on a two lane, one way road underneath the school with a 650 foot queuing lane, which will be the



Option B 'Solar Harvest'
Site diagram

longest queuing lane among all the Brookline schools. Busses will have a separate drop-off and pick-up off-street area in the front of the school. Vans will use either the bus drop-off and pick-up lane or the queuing lane depending on their arrival time and other factors. Quick passage of cars through the queuing lane will be accomplished by teachers helping children out of their cars upon arrival. The queuing lane will be designed with sufficient length (650 feet) to accommodate approximately 32 cars at a time and prevent backups onto Heath Street

Parking

Specific decisions on staff, parent, handicapped, and visitor parking will be further developed during schematic design phase based on estimated project cost, decisions by the Transportation Board and other Town entities, and Town Meeting's decision on the Oak Street property acquisition.

The school will need a maximum of 86 parking spaces for teachers, which could be reduced by the implementation of a transportation demand management plan (TDM plan). Similar to most other schools in the district, there is sufficient parking on surrounding streets for all the teachers, based on the Transportation Board's criteria (no more than 40% of the available safe parking spaces on any street can be reserved for teachers). During schematic design the SBC will work with the Transportation Board to determine the feasibility or advisability of reducing the number of teacher cars parked on surrounding streets and identify ways to accomplish that goal. The options to reduce on-street parking available to the SBC include (1) a traffic demand management plan – e.g., carpooling, public transportation, etc., (2) on-site parking, including under the building and/or on the adjacent Oak Street property, if approved by Town Meeting, (3) satellite parking, and (4) carpooling.

Parent and visitor parking after drop-off will be accommodated within the queuing lane and, comparable to all the other schools, on nearby Town streets. Handicapped parking spaces will be part of the design of the underground queuing space.

2.4.2 Space Summary

Please reference 1.3.1 Space Summary in the Preliminary Design Program.

2.4.3 Sustainability Documents

Our base scenario for the LEED Scorecard is a gas fired displacement air heating and cooling system which targest LEED Silver.

Please reference the following preliminary LEED Scorecard.

After selection of the preferred schematic, the SBC, in response to the organized request of environmentally concerned members of the community, asked the architect for an order of magnitude discussion of net zero carbon options.

Working with the team engineer, Garcia, Galuska, DeSousa (GGD), the following order of magnitude ranges were offered to give the committee and the community a sense of the capital costs which would be involved, in essence, to construct a building without fossil fuel service for its main heating and cooling systems.

Option 1:

All Electric 'VRF' HVAC Heating and Cooling

- Assumes purchase of Green Energy
- Order of Magnitude Project Cost Range = $1.3 - 2M

Option 2:

All Electric 'VRF' HVAC Heating and Cooling with Roof –Mounted Photovoltaics

- Assumes PV's provide 50% Heating and Cooling Energy Needs with Balance from Green Energy
- Order of Magnitude Project Cost Range = $2.6 - 4M

The decision as to how to proceed between these options and other gas-fired alternatives will hinge on a number of factors to be explored during the upcoming schematic design phase of work. Chief among these is a comparison between initial capital cost and long-term operating costs. Another major consideration will be a larger picture analysis of total carbon emissions both on-site and off-site over the lifespan of the building.

The following language has been adopted by the Brookline School Committee to address the importance of sustainability considerations to be explored with engineering detail in the upcoming phase of work:

> "The School Committee is enthusiastic and energized by the potential for Brookline to actively pursue net zero and zero-carbon building projects.
>
> Given the magnitude of the capital projects underway, we are also mindful of our fiduciary responsibility to be fully transparent to taxpayers and the public, especially with respect to adding new, unknown cost variables such as capital, operating, and lifecycle costs.

In addition, we expect that pursuing more aggressive environmental renewable sustainability goals will in no way compromise our educational programs for our buildings; to the contrary, we hope and expect that they would enhance our educational plan.

Therefore, in the interests of full transparency and education to the public, we fully endorse a thorough analysis of Net Zero, Zero-Carbon/Fossil Free Fuel, and conventional building options from which to make clear comparisons for an informed decision.

We recognize that there may be a premium to meet these environmental values in the construction of school buildings. The Committee endorses Net Zero/Zero-Carbon construction.

LEED for Schools v4
Project Scorecard

Project Name: Baldwin School
Project Address: Heath Street, Brookline, MA
Date Updated: November 27, 2018

Yes	?	No
54	23	33

Phase	Yes	?	No			
	1	0	0		**Integrative Process**	1
D	1			Credit 1	**Integrative Process**	1

	Yes	?	No			
	8	3	4		**Location & Transportation**	15
D			x	Credit 1	**LEED for Neighborhood Development Location**	15
D	1			Credit 2	**Sensitive Land Protection**	1
D			2	Credit 3	**High Priority Site**	2
D	2	2	1	Credit 4	**Surrounding Density and Diverse Uses**	5
D	3		1	Credit 5	**Access to Quality Transit**	4
D		1		Credit 6	**Bicycle Facilities**	1
D	1			Credit 7	**Reduced Parking Footprint**	1
D	1			Credit 8	**Green Vehicles**	1

	Yes	?	No			
	5	4	3		**Sustainable Sites**	12
C	Y			Prereq 1	**Construction Activity Pollution Prevention**	Required
D	Y			Prereq 2	**Environmental Site Assessment**	Required
D	1			Credit 1	**Site Assessment**	1
D		1	1	Credit 2	**Site Development - Protect or Restore Habitat**	2
D			1	Credit 3	**Open Space**	1
D		3		Credit 4	**Rainwater Management**	3
D	2			Credit 5	**Heat Island Reduction**	2
D	1			Credit 6	**Light Pollution Reduction**	1
D			1	Credit 7	**Site Master Plan**	1
D	1			Credit 8	**Joint Use of Facilities**	1

	Yes	?	No			
	4	1	7		**Water Efficiency**	12
D	Y			Prereq 1	**Outdoor Water Use Reduction**	Required
D	Y			Prereq 2	**Indoor Water Use Reduction**	Required
D	Y			Prereq 3	**Building-level Water Metering**	Required
D	1		1	Credit 1	**Outdoor Water Use Reduction**	2
D	2	1	4	Credit 2	**Indoor Water Use Reduction**	7
D			2	Credit 3	**Cooling Tower Water Use**	2
D	1			Credit 4	**Water Metering**	1

	Yes	?	No			
	14	6	11		**Energy & Atmosphere**	31
C	Y			Prereq 1	**Fundamental Commissioning and Verification**	Required
D	Y			Prereq 2	**Minimum Energy Performance**	Required
D	Y			Prereq 3	**Building-level Energy Metering**	Required
D	Y			Prereq 4	**Fundamental Refrigerant Management**	Required
C	3	2	1	Credit 1	**Enhanced Commissioning**	6
D	11		5	Credit 2	**Optimize Energy Performance**	
					6% Improvement in Energy Performance	1
					8% Improvement in Energy Performance	2
					10% Improvement in Energy Performance	3
					12% Improvement in Energy Performance	4
					14% Improvement in Energy Performance	5
					16% Improvement in Energy Performance	**6**
					18% Improvement in Energy Performance	7
					20% Improvement in Energy Performance	8
					22% Improvement in Energy Performance	9
					24% Improvement in Energy Performance	10
				x	26% Improvement in Energy Performance	11

					29% Improvement in Energy Performance	12
					32% Improvement in Energy Performance	13
					35% Improvement in Energy Performance	14
					38% Improvement in Energy Performance	15
					42% Improvement in Energy Performance	16
D		1		Credit 3	**Advanced Energy Metering**	1
C			2	Credit 4	**Demand Response**	2
D			3	Credit 5	**Renewable Energy Production**	
				Credit 2	1% Renewable Energy	1
				Credit 3	5% Renewable Energy	2
				Credit 4	10% Renewable Energy	3
D		1		Credit 6	**Enhanced Refrigerant Management**	1
C		2		Credit 7	**Green Power and Carbon Offsets**	
				Credit 7	50% Total Energy Addressed by Green Power, RECs +/or Offsets	1
				Credit 8	100% Total Energy Addressed by Green Power, RECs +/or Offsets	2

Yes	?	No				
6	1	6		**Materials & Resources**		13
D	Y			Prereq 1	**Storage & Collection of Recyclables**	Required
C	Y			Prereq 2	**Construction and Demolition Waste Management Planning**	Required
C	3		2	Credit 1	**Building Life-cycle Impact Reduction**	5
C	1		1	Credit 2	**Building Product Disclosure and Optimization**-Environmental Product	2
C			2	Credit 3	**Building Product Disclosure and Optimization**-Sourcing of Raw Matls.	2
C		1	1	Credit 4	**Building Product Disclosure and Optimization**-Material Ingredients	2
C	2			Credit 5	**Construction and Demolition Waste Management**	2

Yes	?	No				
8	6	2		**Indoor Environmental Quality**		16
D	Y			Prereq 1	**Minimum IAQ Performance**	Required
D	Y			Prereq 2	**Environmental Tobacco Smoke (ETS) Control**	Required
D	Y			Prereq 3	**Minimum Acoustical Performance**	Required
D	1	1		Credit 1	**Enhanced IAQ Strategies**	2
C	1	1	1	Credit 2	**Low-Emitting Materials**	
			Y		Three of seven compliant categories	1
			M		Five of seven compliant categories	2
			N		Six of seven compliant categories	3
C	1			Credit 3	**Construction IAQ Management Plan**	1
C	2			Credit 4	**IAQ Assessment**	2
D	1			Credit 5	**Thermal Comfort**	1
D	1	1		Credit 6	**Interior Lighting**	2
D		3		Credit 7	**Daylight**	3
D	1			Credit 8	**Quality Views**	1
D			1	Credit 9	**Acoustic Performance**	1

Yes	?	No				
6	0	0		**Innovation**		6
D	1			Credit 1	**Innovation in Design: To be determined**	1
D	1			Credit 2	**Innovation in Design: To be determined**	1
D	1			Credit 3	**Innovation in Design: To be determined**	1
C	1			Credit 4	**Innovation in Design: To be determined**	1
C	1			Credit 5	**Innovation in Design: TBD Pilot**	1
C	1			Credit 6	**LEED Accredited Professional**	1

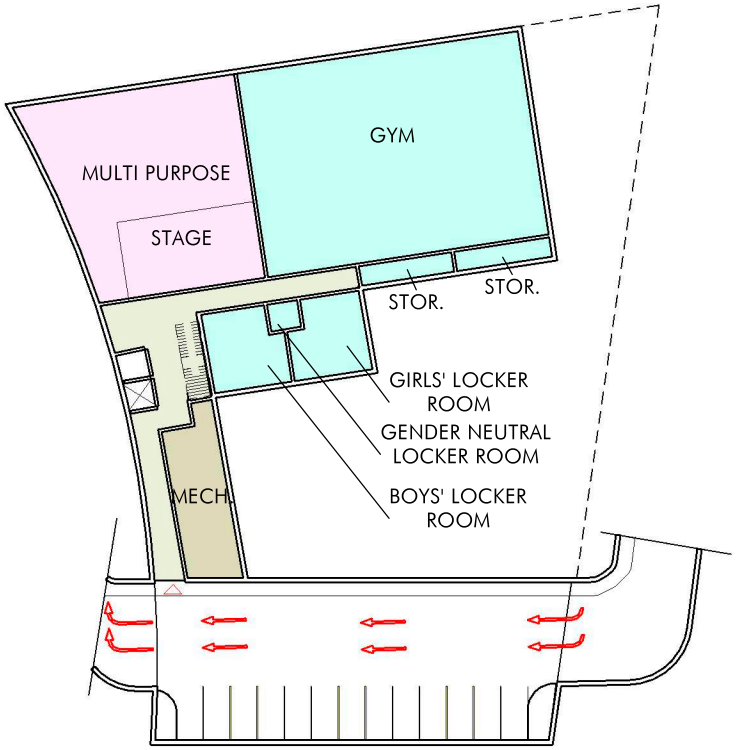
Yes	?	No				
2	2	0		**Regional Priority Credits** - earn up to 4 points		4
					Zip code: 02445	
		1		Credit 1	**Renewable Energy Production (2pt / 3%)**	1
		1		Credit 2	**High Priority Site (2 pts)**	1
	1			Credit 3	**Rainwater Management (2 pts)**	1
1				Credit 4	**Building Life-Cycle Impact Reduction (2pts)**	1
1				*Credit 5*	**Optimize Energy Performance (8pts)**	
	1			*Credit 6*	**Indoor Water Use Reduction (4 pts)**	

Yes	?	No		
54	23	33	**Project Totals (Certification Estimates)**	110

Certified: 40-49 points, **Silver:** 50-59 points, **Gold:** 60-79 points, **Platinum:** 80+ point

ROOM TYPE LEGEND

- 3 ART & MUSIC
- 5 HEALTH & PHYSICAL ED.
- 10 CUSTODIAL & MAINTENANCE
- 12 CIRCULATION

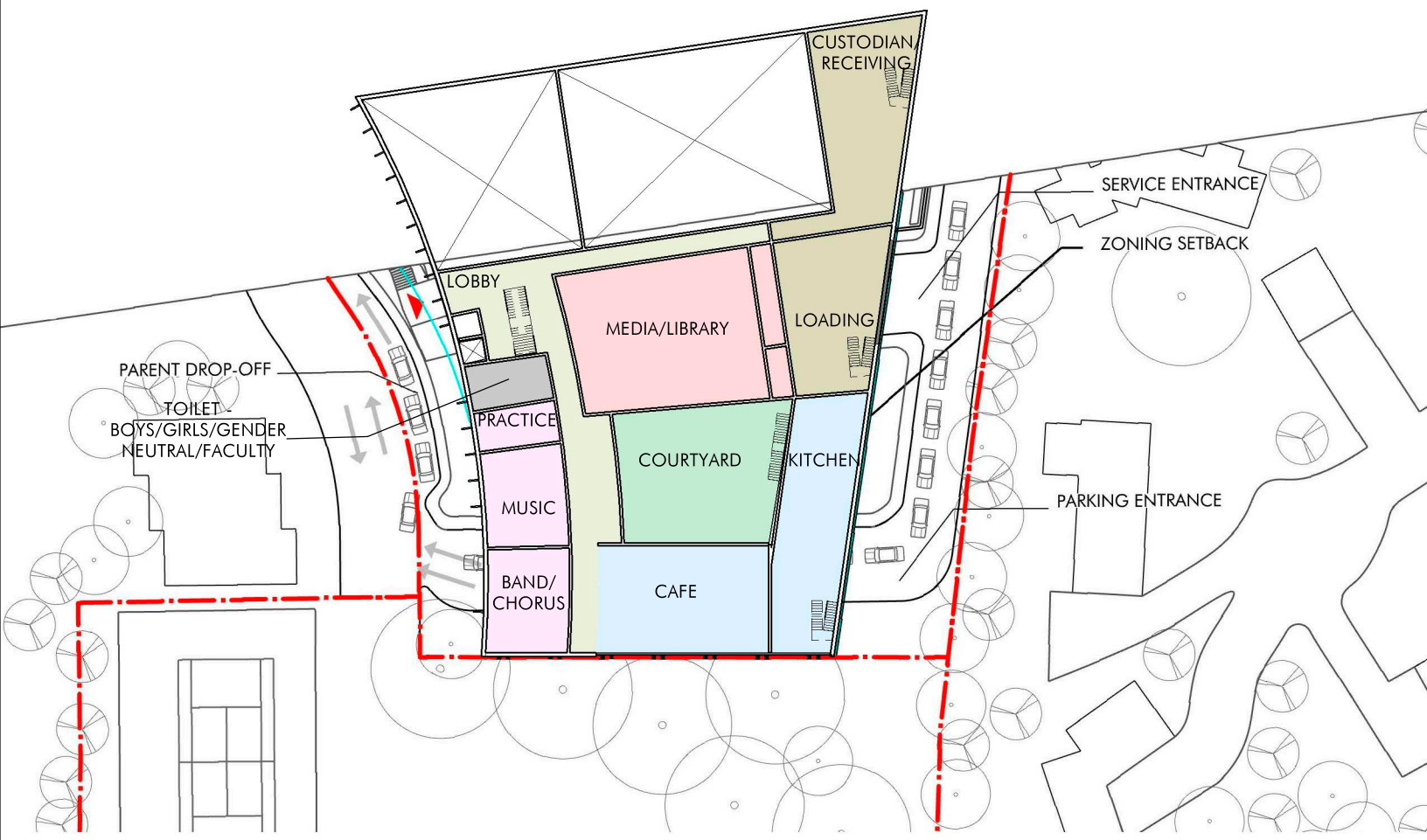


OPTION B - FLOOR PLAN - LEVEL B

0' 32' 64' 128'

ROOM TYPE LEGEND

- 3 ART & MUSIC
- 6 MEDIA CENTER/LIBRARY
- 7 DINING & FOOD SERVICE
- 10 CUSTODIAL & MAINTENANCE
- 12 CIRCULATION
- 12 TOILET - BOYS/GIRLS/GENDER NEUTRAL/FACULTY



OPTION B - FLOOR PLAN - LEVEL 1

0' 32' 64' 128'

ROOM TYPE LEGEND

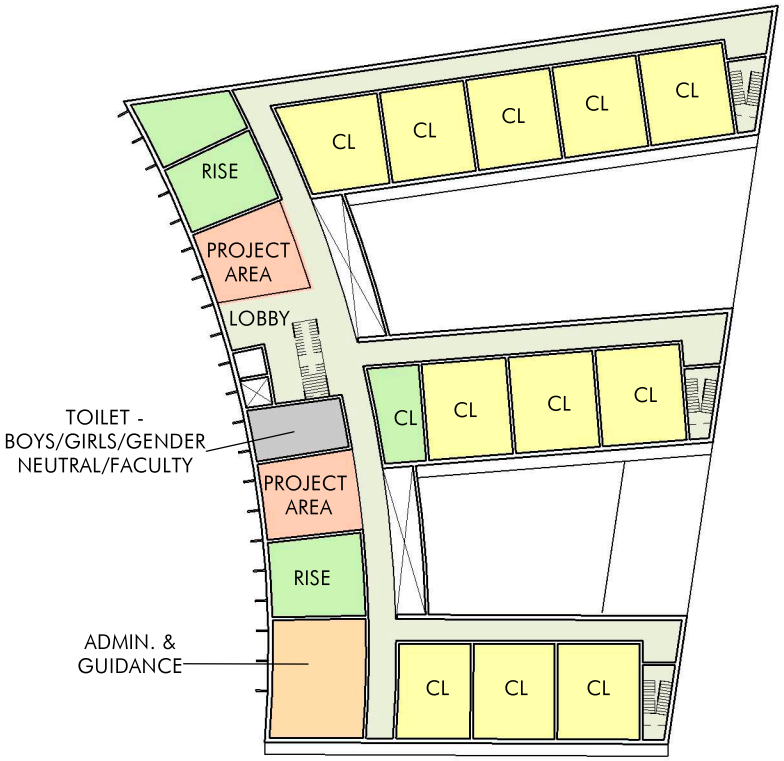
- 1 CORE ACADEMIC SPACES
- 2 SWD/RESOURCE/RISE
- 4 VOCATIONS & TECHNOLOGY
- 8 MEDICAL
- 9 ADMIN. & GUIDANCE
- 12 CIRCULATION
- 12 TOILET - BOYS/GIRLS/GENDER NEUTRAL/FACULTY

OPTION B - FLOOR PLAN - LEVEL 2

0' 32' 64' 128'

ROOM TYPE LEGEND

- 1 CORE ACADEMIC SPACES
- 2 SWD/RESOURCE/RISE
- 9 ADMIN. & GUIDANCE
- 12 CIRCULATION
- 12 TOILET - BOYS/GIRLS/GENDER NEUTRAL/FACULTY
- PROJECT AREA

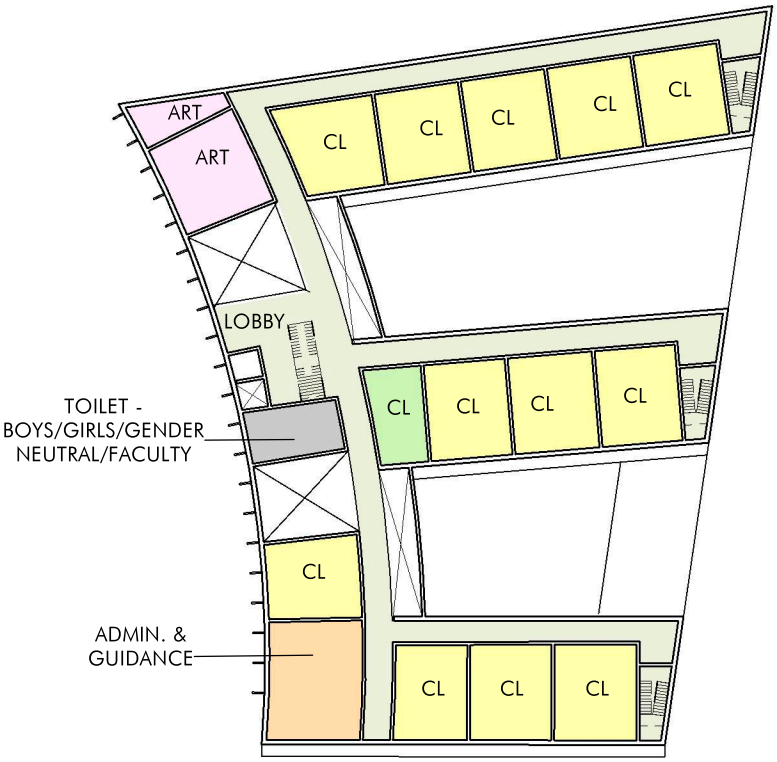


OPTION B - FLOOR PLAN - LEVEL 3

0' 32' 64' 128'

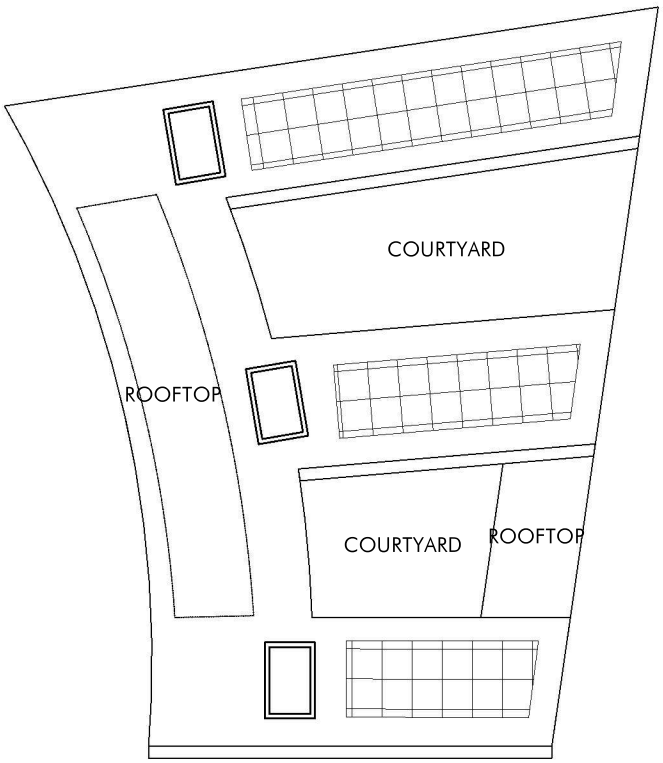
ROOM TYPE LEGEND

- 1 CORE ACADEMIC SPACES
- 2 SWD/RESOURCE/RISE
- 3 ART & MUSIC
- 9 ADMIN. & GUIDANCE
- 12 CIRCULATION
- 12 TOILET - BOYS/GIRLS/GENDER NEUTRAL/FACULTY



OPTION B - FLOOR PLAN - LEVEL 4

0' 32' 64' 128'



OPTION B - FLOOR PLAN - ROOF PLAN

0' 32' 64' 128'

2.4.5 Site Plan

HEATH ST.

BUS DROP-OFF

HEATH ST.

DROP-OFF QUEUE

SERVICE ENTRANCE

SITE PROPERTY LINE

ZONING SETBACK

PROPOSED BUILDING FOOTPRINT

DEMO.

OAK ST.

PARENT DROP-OFF

PARKING ENTRANCE

HAMMOND ST

CARY RD

BALDWIN SCHOOL PLAYGROUND

8' 32' 64' 128'

N

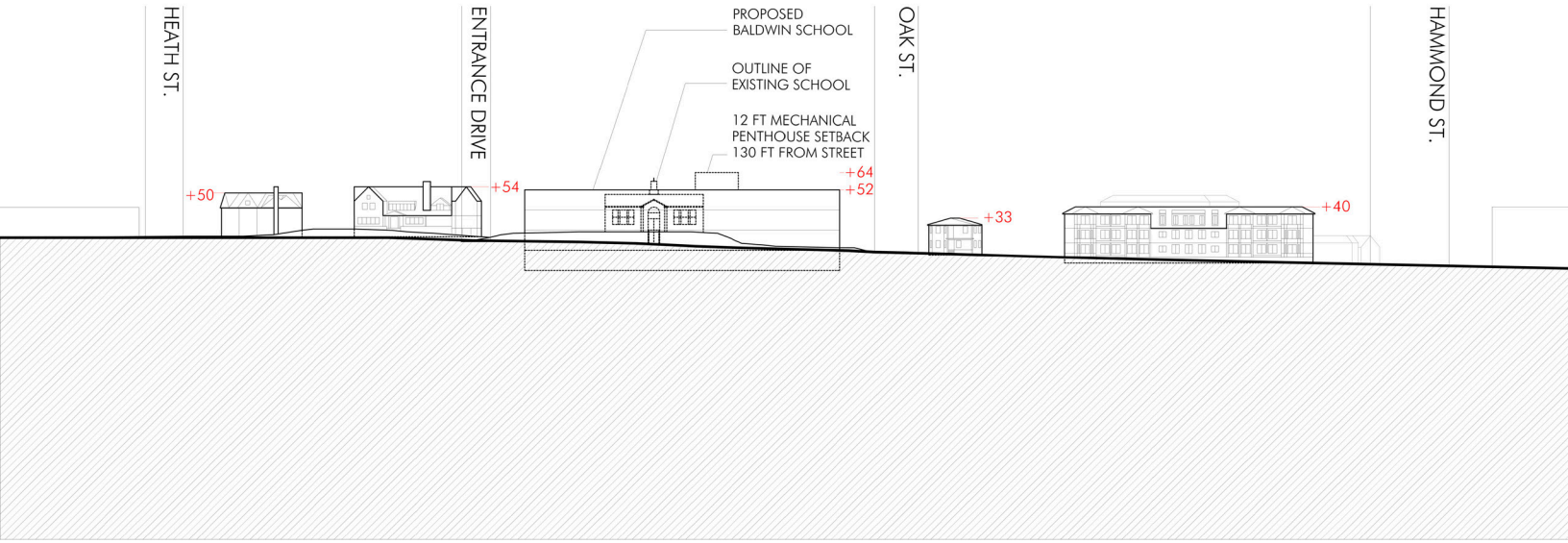
Jonathan Levi Architects

OPTION B

SITE PLAN
BALDWIN SCHOOL, BROOKLINE

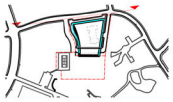
2.4.6 Massing and Relation to Context

Attached here is a diagrammatic drawing which compares the massing of the preferred option B to both the heights of the existing Baldwin school and the surrounding neighborhood. It demonstrates that, excluding the mechanical penthouse which will be set well back towards the middle of the site and occluded from view at the sidewalk level, the new school will be lower in height than the existing school, significantly lower than the nearest residential building and similar in height to nearby multi-family residences.



Jonathan Levi Architects

Site elevation through Heath Street



OPTION B
HEATH STREET SOUTH ELEVATION
BALDWIN SCHOOL, BROOKLINE
*APPROX. HEIGHTS

2.4.7 Budget

The Solar Harvest building design will have 108,250 square feet of space. The cost is estimated to be in the range of $72 to $76 million with ten underground handicap and other parking spaces. The cost would be estimated at $78 to $82 million if 40 underground parking spaces were included. The cost of each underground parking space is estimated at $180,000. The above estimates include $1 million for sidewalk improvements around the school. The $1 million amount is in addition to the sidewalk improvement program of DPW that is funded through the Town's Capital Improvement Program.

Oak Street Parcel

The acquisition of the Oak Street condominiums estimated at a price of $4.8 million. The purchase of the Oak Street site will reduce the need for the construction of underground parking and will allow the possibility for visitors to the school during the day to access the front door utilizing a surface cul-de-sac turnaround. The Oak Street site would also provide an additional approximately 21,000 square feet of building footprint in a potential wing above the turnaround. This additional footprint area will allow for some combination of reduced building height, more outdoor play space and more extensive relationships between interior classrooms and outdoor landscape.