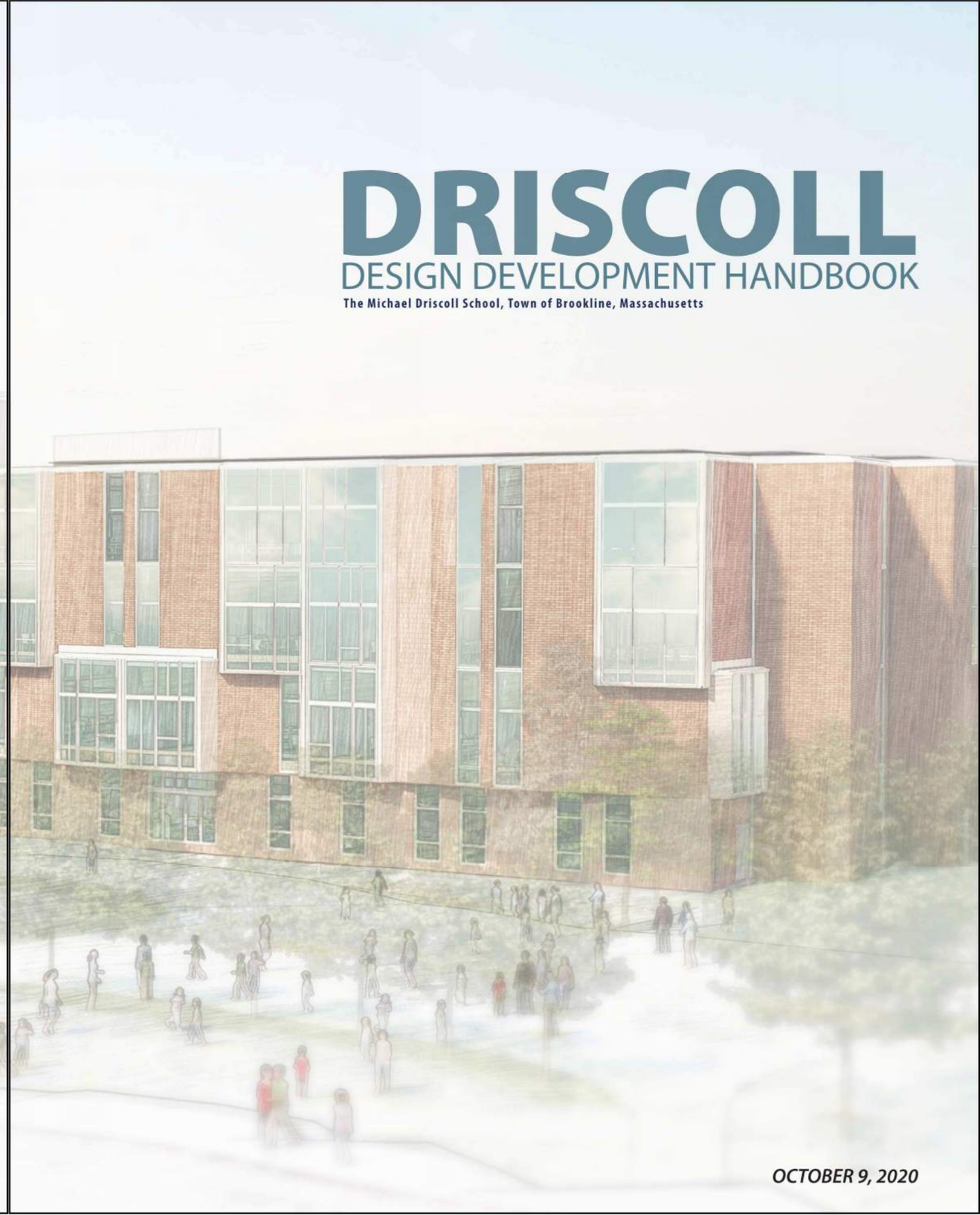
DRISCOLL

DESIGN DEVELOPMENT HANDBOOK

The Michael Driscoll School, Town of Brookline, Massachusetts

Jonathan Levi Architects



OCTOBER 9, 2020

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DESIGN DEVELOPMENT HANDBOOK

The Michael Driscoll School, Town of Brookline, Massachusetts

Owner

The Town of Brookline, Brookline Massachusetts

Client

School Committee and Select Board

Architect

Jonathan Levi Architects LLC

Owner's Project Manager

LeftField LLC

Construction Manager

Gilbane Building Company

Acknowledgments

The foundation of the Driscoll design process has been the building of consensus among the large and multifaceted group of stakeholders to be affected by the project. This consensus could not have been achieved without the tireless leadership of LeftField, Gilbane, Susan Wolf Ditkoff, Heather Hamilton, Charlie Simmons, Erin Gallentine, Ray Masak, and Tony Guigli.

School Building Advisory Committee Members

Susan Wolf Ditkoff	Co-Chair (School Committee)
Heather Hamilton	Co-Chair (Select Board)
Karen Breslawski	Building Commission
Daniel Bennett	Building Commissioner
David Lescohier	Town Meeting Advisory Committee
Ali Tali	Transportation Board
Nancy O'Connor	Parks and Recreation
Mel Kleckner	Town Administrator
Dan Deutsch	Community Representative
Victor Kusmin	Community Representative
Arjun Mande	Community Representative
Lakia Rutherford	Parent / Metco Representative
Sara Stoutland	Community Representative
Linda Monach	Special Education Parent Advisory Council
Ben Lummis	Interim School Superintendent
Dr. Nicole Gittens	Deputy Superintendent, Teaching and Learning
Mary Ellen Normen	Deputy Superintendent Admin and Finance
Dr. Suzie Talukdar	Driscoll School Principal
Robert Mullin	School Department PM
Tony Guigli	Building Department PM

Building Design Subcommittee

David Youkilis	Driscoll School Principal
Dan Deutsch	Community Representative
Arjun Mande	Community Representative
Matt Gillis	School Department PM
Karen Breslawski	Building Commission

Park and Playground Design Review Committee

Susan Wolf Ditkoff	Co-Chair (School Committee)
Nancy O'Connor	Co-Chair (Parks & Recreation)
Helen Charlupski	School Committee
Clara Batchelor	Parks & Recreation
Derek Hatchett	Neighborhood Representative
Sam Ditzion	Neighborhood Representative
Victor Kusmin	Neighborhood Representative
Lakia Rutherford	Parent Liaison [non-voting member]
Linda Monach	SEPAC Liaison [non-voting member]

INTRODUCTION AND DESIGN APPROACH

The new Driscoll School for the Town of Brookline is a collaborative project representing the best efforts of many contributors who have envisioned the future of education in Brookline, Massachusetts and how to best prepare for that future by building in the present.

This booklet is a 'big picture' summary of the many design initiatives and innovations which have been created to respond to the specific needs of the Town, its students, faculty, parents, the larger community and the state. Timed at a point nearing the end of technical documentation, it is ***a record of the project's aspirations and objectives and will help serve as a guide to its overall intent during the execution phase.***

Inherent in the approach of the design team is the belief that the planned learning environment is more than an efficient receptacle for the otherwise separately conceived educational programs it will house. The team sought to understand the proposed educational program to the extent that its physical shape in the form of the building would help instrumentalize and interactW with the program activities. In the case of the New Driscoll School the intent was more proactive in the sense of anticipating, through design, the means of promoting a specific set of educational qualities based on the approved space summary and educational program from the Feasibility Study. These qualities or 'Learning Space Principles', highlighted in blue below and later fleshed out in greater detail, are woven through the design narrative in the same way that, it is hoped, they will be woven through the fabric of the completed environment. Qualities and objectives of the curriculum that played a primary role in determining the configuration of the new building include:

- Small-scale learning communities
- Collaborative learning
- Collaborative teaching
- Visible learning
- Flexible learning
- Community engagement
- Civic place making
- Community accessible performing arts and athletic facilities

These qualities, taken together with the pedagogic approaches they interactively support, will form ***a new kind of K-8 school experience which emphasizes the pre-eminence of spontaneous interaction, mutual inspiration and student-centered initiative*** over mono-directional instruction. A kind of 'learning' rather than 'teaching' based education which will characterize the hybrid virtual/physical learning communities of the future and of which the designs for the new Driscoll are a prudent harbinger and model.

REVIEW OF PLANNING AND PROCESS

Project Overview

The Driscoll School Building Project began in 2018 as part of the Public Schools of Brookline's long-term capital plan to address overcrowded schools, substandard facilities, and historic enrollment growth experienced by the district over the past ten years.

The design process began with a Feasibility Study, in which several alternative design approaches, including renovation, were studied and priced. The committee unanimously voted to move the current design approach forward into Schematic Design in November 2018. The Schematic Design of the project began in January 2019. Information and reports from the Feasibility Study and Schematic Design have been posted on the Town's website *www.brookline.k12.ma.us/Page/2355*. On December 10, 2019, the Town of Brookline voters approved a $115.3M debt exclusion override to fund the construction of a brand-new school building adjacent to the existing Driscoll, located on 64 Westbourne Terrace.

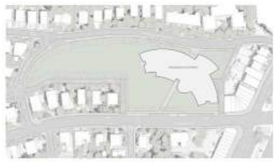
Current Driscoll students will continue to go to school in the existing building while the new building is constructed. The existing school has 615 students in grades Pre-K - 8, with approximately 144 staff. The new building is sized to accommodate the school's projected enrollment growth, for an expected enrollment of 36 classrooms and approximately 800 Pre-K through 8th grade students, with 144 staff. Once complete, the students will move into the new building, and the existing school will be demolished. A new park and playground will be built for student and community use where the existing school now stands. The new park and playground will have appropriate play areas for all grade levels and a synthetic turf play field.

Building from Consensus : The Preferred Solution

Option H, the "Modified Star" was ***preferred because of its footprint's organization of complementary site space, its definition of the Washington street frontage, its minimization of massing on Westbourne Terrace and its generous expansion of found additional open space*** which would be of great benefit to the students and community. In addition, the buildings three wing design offers the possibility of flexibly organizing the school's cohorts either by wing or by floor level. Finally, it's typical radiating floor plan exemplifies the districts educational vision through the conjoining of its educational sub-community wings into a central shared visible learning Commons/cafeteria atrium.

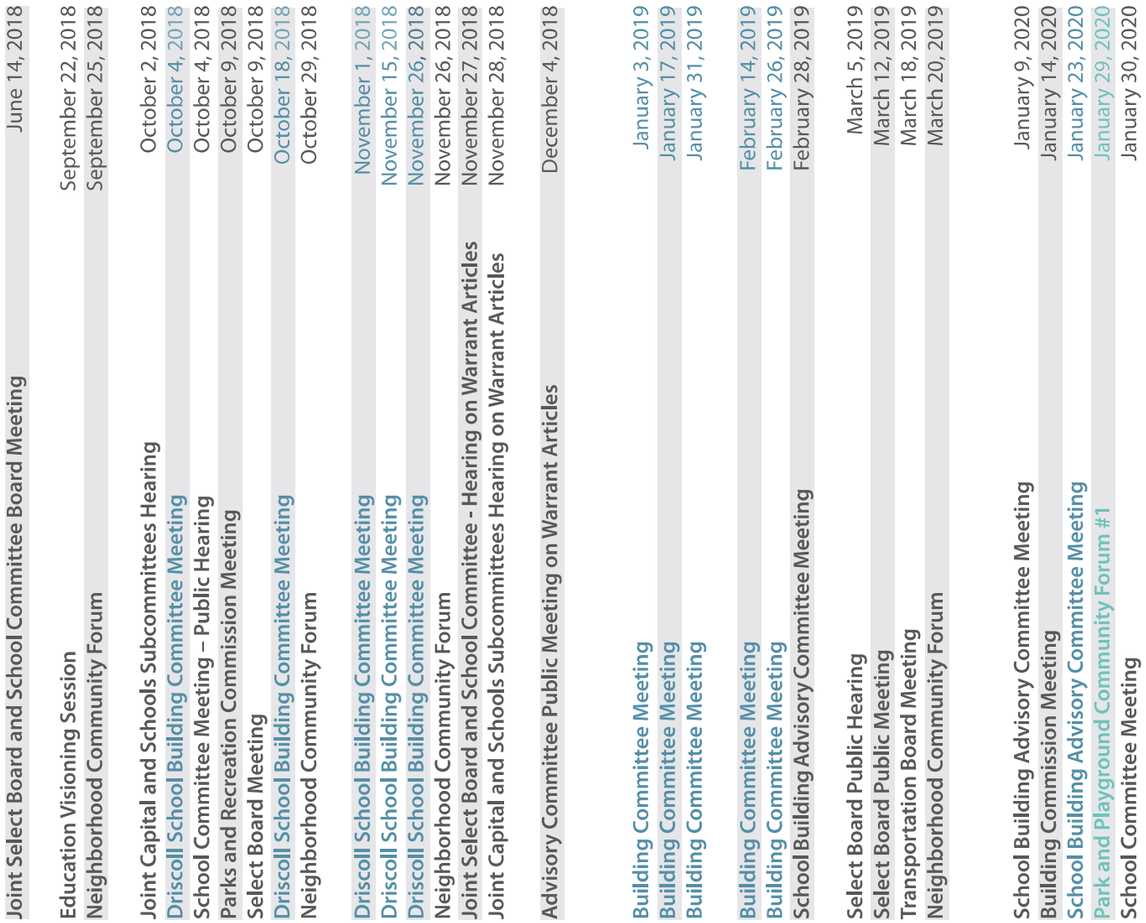
OPTION 0
MINIMUM CODE RENOVATION/ ADDITION

OPTION A.1
RENOVATION WITH EAST ADDITION



OPTION F.1
MODIFIED MAGNET - NEW CONSTRUCTION

OPTION H
MODIFIED STAR - NEW CONSTRUCTION



Listening to the Stakeholders

The Driscoll School design is the result of a thorough community - based process which began in the fall of 2018. To date, ***over 50 formally posted public meetings have been held to inform the design.*** Representatives from the Community, Select Board, School Committee, Parks and Recreation, Transportation Board, Advisory Committee, Building Commission, Town Administrator, and the Building Commissioner have been regularly involved to evaluate alternatives and gain consensus on all major decisions. Minutes and copies of the presentations, notices of upcoming meetings, and FAQs have been posted from the outset on the Town's website:
www.brookline.k12.ma.us/Page/2353

COST CONTROL

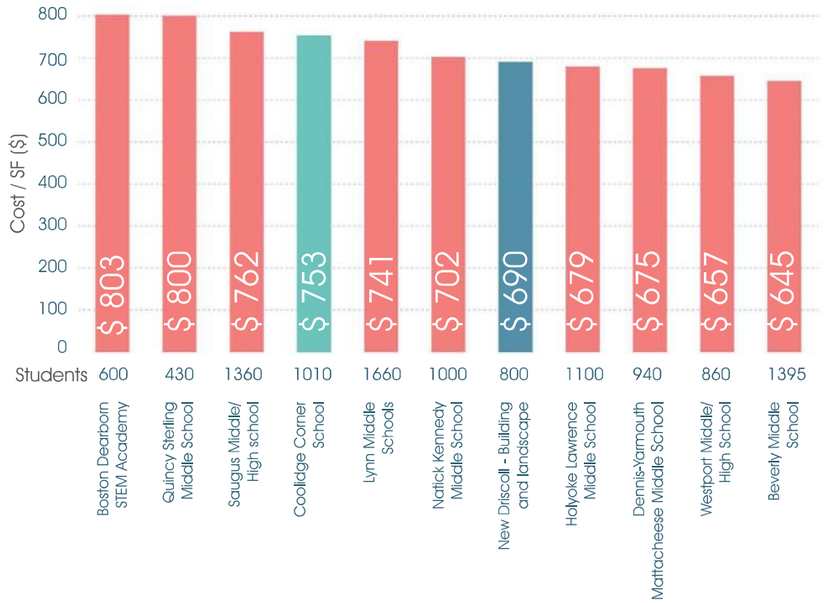
Innovative and attractive public school design which improves teaching and learning does not need to cost more. Driscoll is an example of this.

Comparison

From the inception of the project, the design team and the town have kept a clear eye on cost control. Each massing alternative (including renovation) was presented with a corresponding construction budget. The design approach was selected for the advantages in functionality and urban design and because it has the lowest price tag. ***By way of comparison, Driscoll's cost per sf and cost per student are both squarely in the median price range of MSBA Middle Schools*** (please see graphic).

In addition, 3 new bid alternatives were recommended to the School Building Advisory Committee and the Brookline Building Commission, which were unanimously approved. These combined measures have successfully reduced the estimated base bid construction budget from $93.3M in February 2020 to about $90M. To improve accuracy and reliability, the most recent estimate was developed with a 3rd reconciled estimate and a market study to inform projected escalation in the Covid-19 bidding environment.

In addition to capital costs, the design team has also successfully reduced anticipated operating costs. GGD has performed a thorough energy analysis based on the massing and construction of the new school and compared alternative building systems in regard to ongoing energy costs, maintenance costs, and equipment replacement costs. This analysis will allow the Driscoll to save Brookline money every day from the time the school opens and long into the future.



COMPARISON OF RECENT MIDDLE SCHOOL PROJECT COSTS
(SORTED BY TOTAL COST PER SQUARE FEET, ADJUSTED FOR ESCALATION)

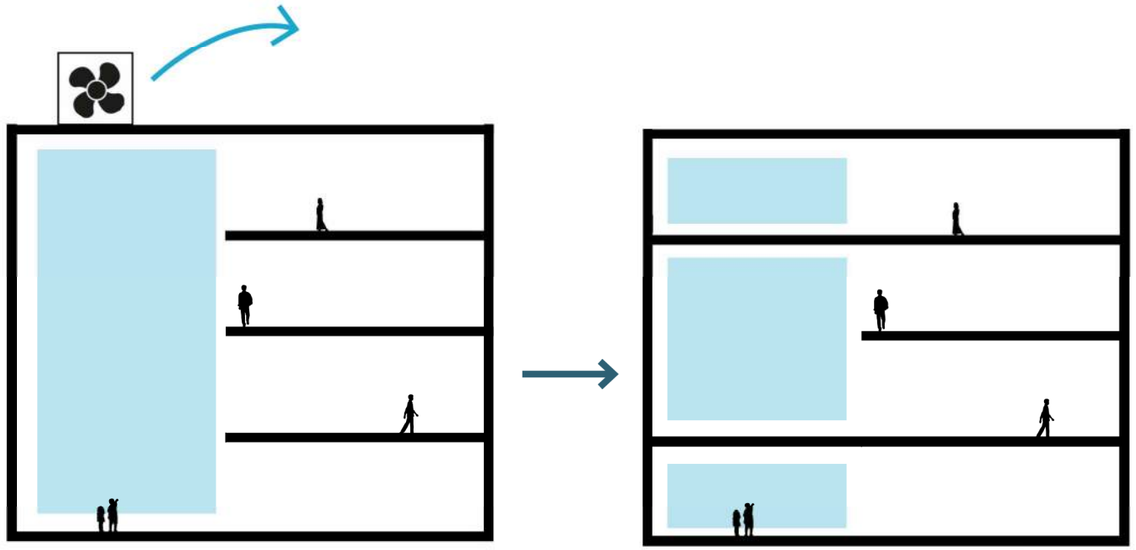
Cost History

PROJECTED CONSTRUCTION COST

Design Development Value Management Initiatives

Value management is about targeting efficiencies in the design which will cost less, but do not affect the long-term success of the building. To jump start this process, in partnership with, Construction Manager, Gilbane, a formal reconciled cost estimate was produced at 50% Design Development rather than waiting for the conventional MSBA 100% DD estimate. This proved fruitful in identifying available savings early on. A list of potential value management items was presented to the School Building Advisory Committee at 50% DD and again at 100% DD. These items were approved, ***bringing the projected construction cost comfortably below budget without compromising program or use.***

Holistic Value Management Example



4 STORY ATRIUM WITH 500 K SMOKE EXHAUST, AND INCREASED OPERATION COST PRIOR TO VM.

COMPARTMENTALIZED PROJECT AREAS WITHOUT SMOKE EXHAUST NET SAVINGS $ 500 K AFTER VM.

Making a Better School

VIEW FROM THE PARK

The park entrance route - visible from the parents' car door to the entrance threshold.

The cafeteria terrace - spilling out directly from the Cafeteria/ Learning Commons to the recess play areas.

PROGRAMMING

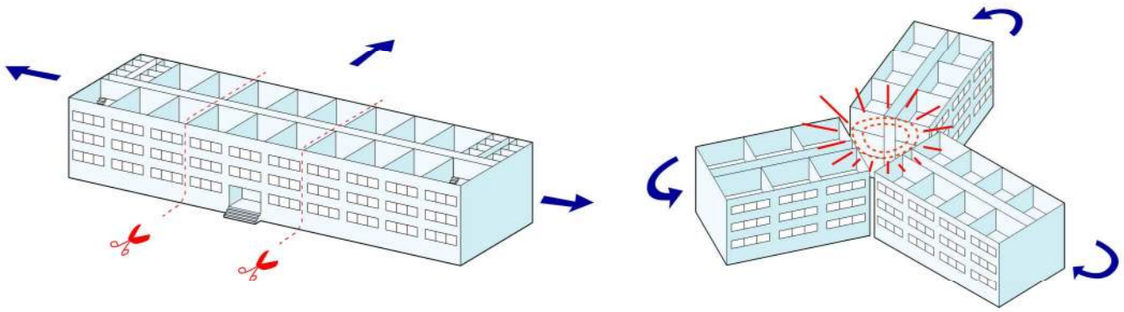
Using the standard MSBA program for an 800 student school as a starting point, JLA worked with the PSB to refine the program so as to:

- Achieve parity with the other Brookline schools. To this end, JLA toured all eight of Brookline K-8 Schools, and reviewed with each Principal what was working and what challenges their buildings posed
- Increase efficiency by rightsizing spaces and providing spaces which would not sit empty for long stretches of time
- Allow for the creation of 3 "cohorts" of similarly aged students so as to create "schools within the School" to engender a community for each grade level within the comparatively large school.

The program was refined during the Feasibility Study through the course of dozens of meetings with Brookline's central administration, department heads, Special Education staff, Driscoll's School Principal, and extensive meetings with Driscoll teachers and staff. Minutes of these meetings were shared with the School Building Advisory Committee and the Brookline School Committee, and following JLA's presentations of the program, both groups formally and unanimously voted to approve the proposed program.

Fitting the Program to the Building Context:

The traditional school offers its students long narrow corridors, with little possibility of interaction. The new Driscoll breaks such a long scheme into three, shorter community building wings.



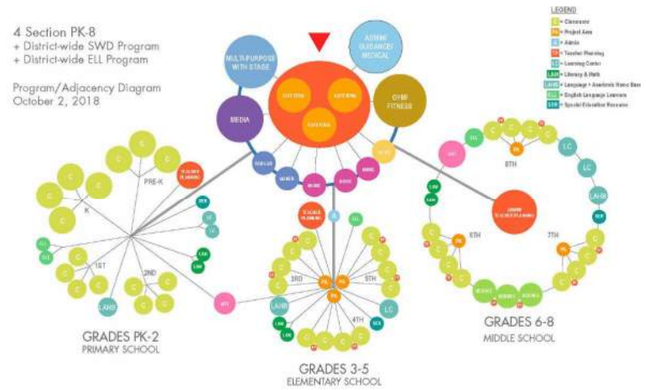
The wings pivot in order to optimize daylight use, varied views, and in order to allow a strong connection to the new core with its shared visible Cafeteria and Learning Commons. Each wing/floor corresponds to a grade cohort. Students can be part of a large school community while simultaneously identify as a unique group with a strong sense of identity.

The typical radiating floor plan exemplifies the District's educational vision through the conjoining of its educational subcommunity wings into a central shared visible collaboration zone.

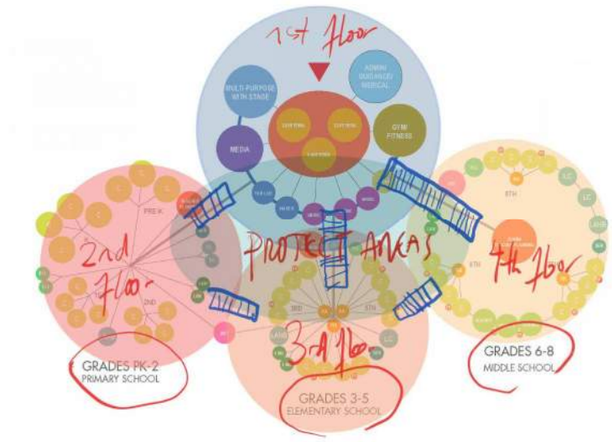
FUNCTIONAL RELATIONSHIPS

Functional relationships for the new Driscoll School are best described in the program "bubble" diagram where each school within a school, primary, elementary, and middle school, is geographically' situated to create a sense of identity. And, in turn, each of the schools shares an overall sense of community through its proximity to the vertical sequence of the shared collaboration zone.

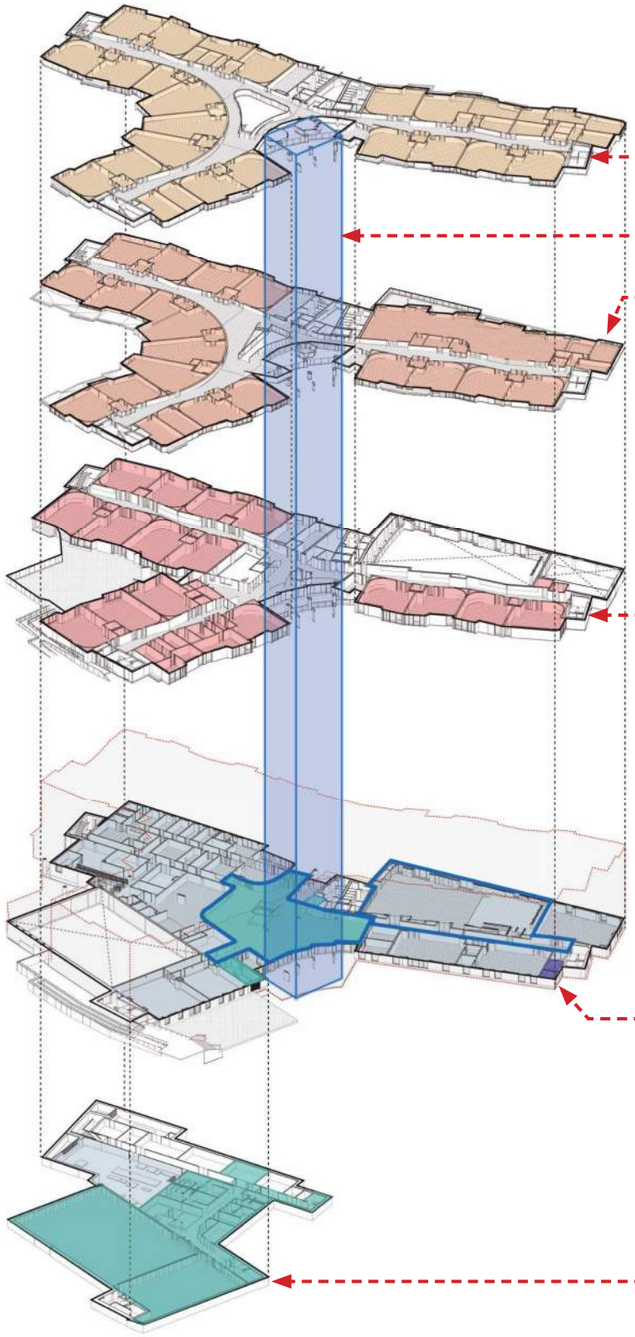
The grade cohorts progress from the youngest children at level II to the oldest on level IV. Each level has a theme according to its association with a special shared program. The primary school is associated with its directly accessible outdoor space. The elementary school is associated with the buzz of activity in the media center. The middle school takes its theme from the exploration of science with its suite of science classrooms.



THE BUBBLE-DIAGRAM IS TRANSLATED INTO FLOOR BY FLOOR SPATIAL RELATIONSHIPS IN THE NEW SCHOOL DESIGN.



COHORT DISTRIBUTION BY FLOOR



Fourth Floor - Grades 6 - 8

Project areas tying all floors together

Third Floor - Grades 3 - 5

In the vertical dimension, the balconies and open stairs allow for students and teachers to be aware of activities and work product on display from one floor to another. The Fabrication Lab, Maker Space, Science Labs and Art rooms are meant as demonstration platforms; the exploration and discovery that occurs within them is shared publicly.

Second Floor - Grades Pre - K - 2

Community Access

- Multipurpose Room
- Athletic Suite with Elevator
- Outdoor Storage + Restroom

The school is zoned to operate in a variety of independent modes outside of school hours: cafeteria, multi-purpose room, athletic suite, and outdoor storage and restroom. These can also be used in combination with one another, making Driscoll a place where the community can come together.

First Floor

Each class cohort occupies one level, resulting in the primacy of horizontal continuity to establish three schools - primary, elementary, and middle - within the school, whereas the vertical connections allow for a sharing of the collaboration zones, a core of school community life.

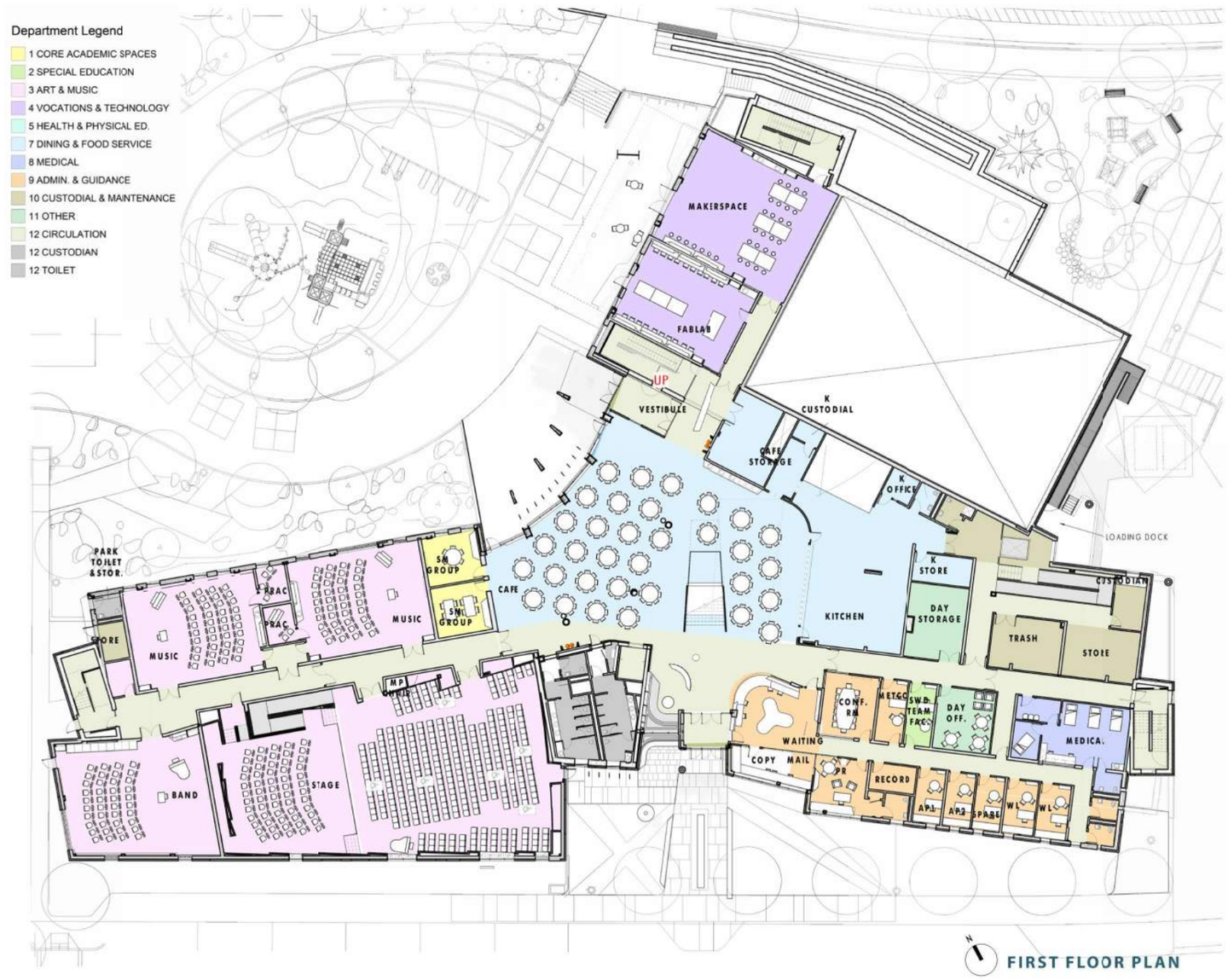
Gym Floor

FLOOR PLANS

BASEMENT FLOOR PLAN

Department Legend

- 2 SPECIAL EDUCATION
- 5 HEALTH & PHYSICAL ED.
- 10 CUSTODIAL & MAINTENANCE
- 11 OTHER
- 12 CIRCULATION
- 12 CUSTODIAN
- 12 MECHANICAL
- 12 TOILET



FIRST FLOOR PLAN

SECOND FLOOR PLAN

Department Legend

- 1 CORE ACADEMIC SPACES
- 2 SPECIAL EDUCATION
- 3 ART & MUSIC
- 5 HEALTH & PHYSICAL ED.
- 6 MEDIA
- 9 ADMIN. & GUIDANCE
- 10 CUSTODIAL & MAINTENANCE
- 12 CIRCULATION
- 12 CUSTODIAN
- 12 MECHANICAL
- 12 OUTDOOR
- 12 TOILET

THIRD FLOOR PLAN

Department Legend

- 1 CORE ACADEMIC SPACES
- 2 SPECIAL EDUCATION
- 9 ADMIN. & GUIDANCE
- 10 CUSTODIAL & MAINTENANCE
- 12 CIRCULATION
- 12 CUSTODIAN
- 12 MECHANICAL
- 12 TOILET

FOURTH FLOOR PLAN

SOUTH ELEVATION

The media terrace continues the tradition of the library garden - a refuge for taking books out into the open air and an outdoor classroom.

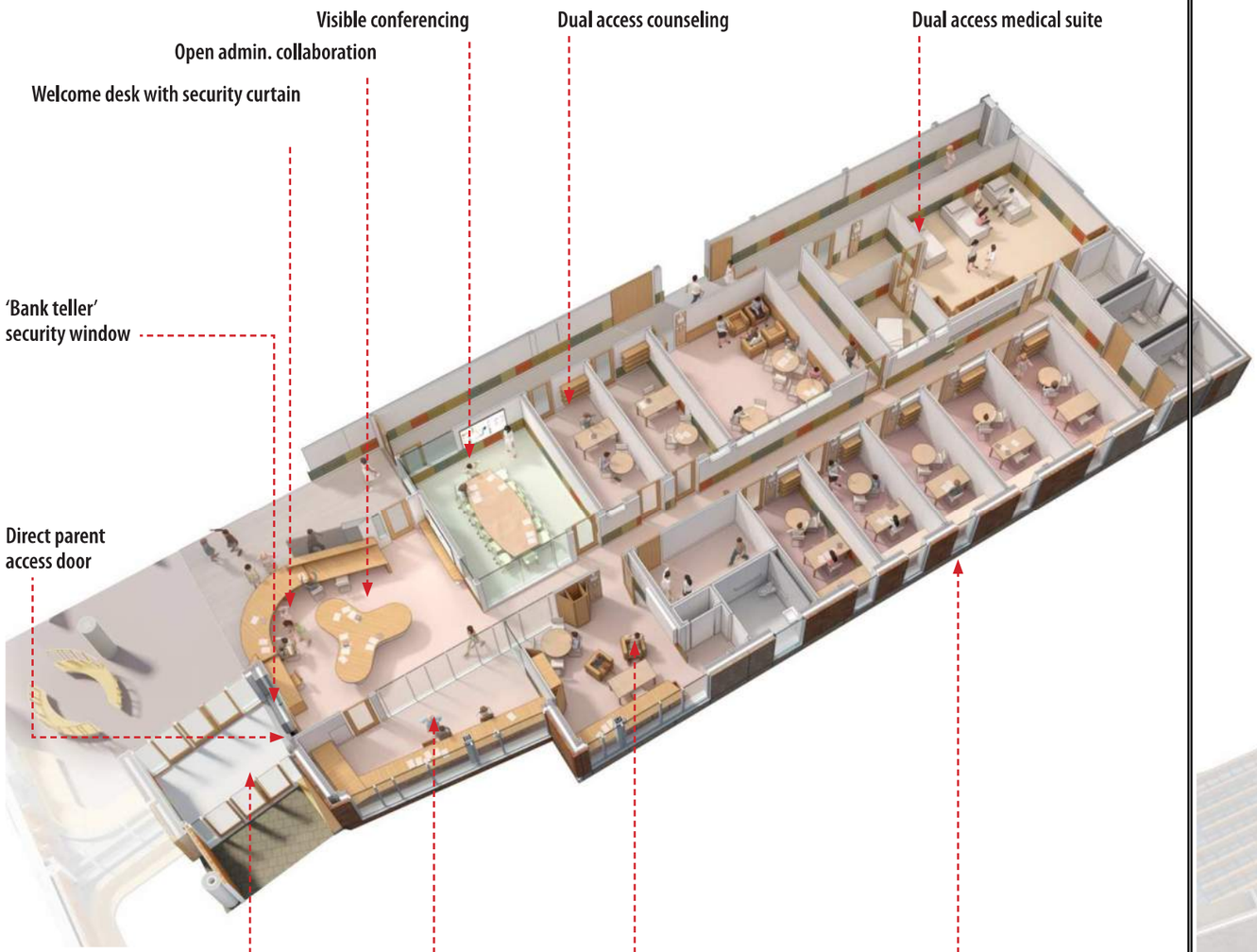
The front door with its light transmitting hovering canopy; offering welcome and protection. The welcome sequence starts with a playfully shaped terrain which, at the same time, serves the important purpose of safeguarding the school from vehicular intrusions. Ample benches invite students and parents to gather before and after school.

Each classroom features a residential scaled bay window where students, bathed in sunlight, cluster together around small group projects while surveying the outside world.

Continuing the welcome sequence, a soft seating alcove invites parents, teachers and administration to linger amid a backdrop of display cases and monitors highlighting Driscoll school academic life.

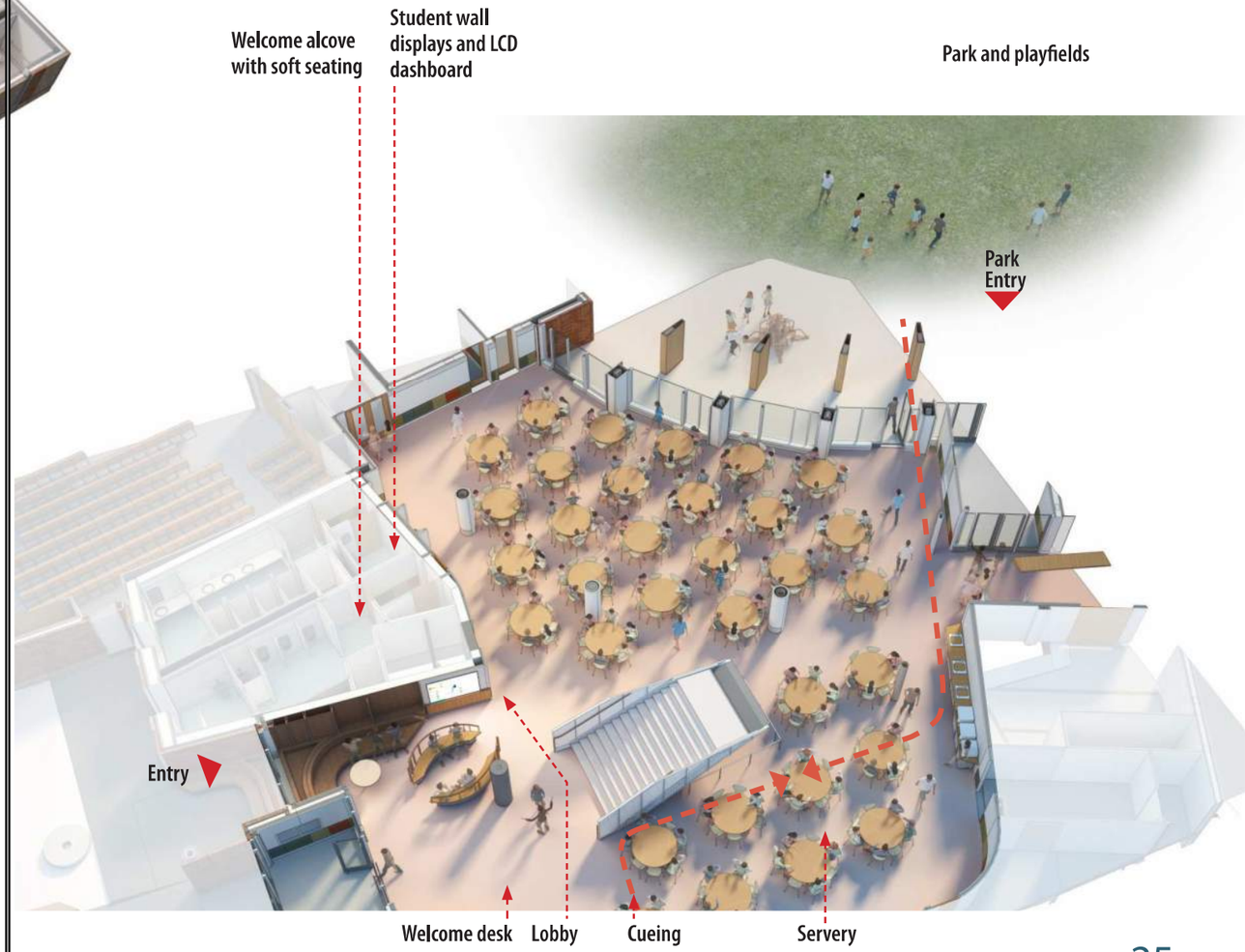
The administration wing is a friendly street side presence.

ADMINISTRATION



LEARNING COMMONS / CAFETERIA & WELCOME ALCOVE

The centrally located learning commons/ cafeteria is a day long resource to the whole school, with broad views directly out to the new play field and recess area.



MULTIPURPOSE ROOM & MUSIC SUITE

Acoustic panels

Integrated 'band shell'

Daylighting with blackout shades

Practice rooms

Sound vestibule

Music education suite

Separated corridor acts as sound and light vestibule

Double height band room

Lighting and projection balcony

Flat floor with flexible seating

Stage with configurable upstage curtains for drama or music

Directly to the left of the entrance, conveniently situated for separated community access, is the two-story high multipurpose room which is grouped in a performance suite with the music spaces behind.

CORRIDORS & CIRCULATION

Cubbies or lockers

Extra space around classroom entries for conversation and door swing safety.

Highly visible teacher offices with corridor supervision sight lines

Typical widened corridor 'node'

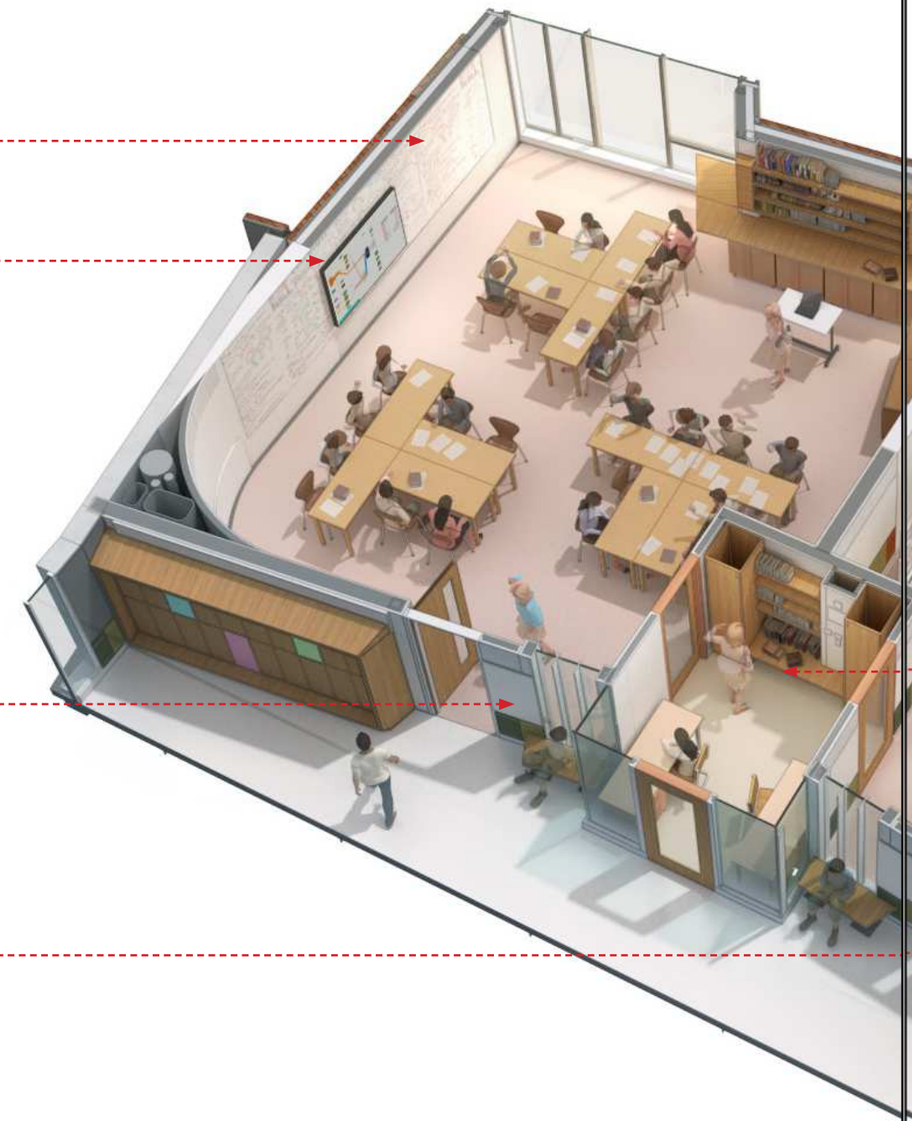
Public space and visible learning

A core principle of 21st century education concerns the ability of students to influence and inspire one another as much as they are influenced and inspired by their teachers and mentors. To this end, the new school is arranged, unlike a conventional school with its cloistered corridors, as a largely transparent and multi-directionally interconnected interior.

THE CLASSROOM SUITE

Continuous 44 foot long magnetic writable teaching surface sweeps around two walls

Oversize monitor



Precisely configured corridor glazing protects students by enabling areas of refuge while at the same time preserving openness and transparency.

The classroom entrance -
A place for impromptu conversation. Pulled back from the corridor to avoid interference with circulation It incorporates bench seating and a broad pin up space for announcements and student work.

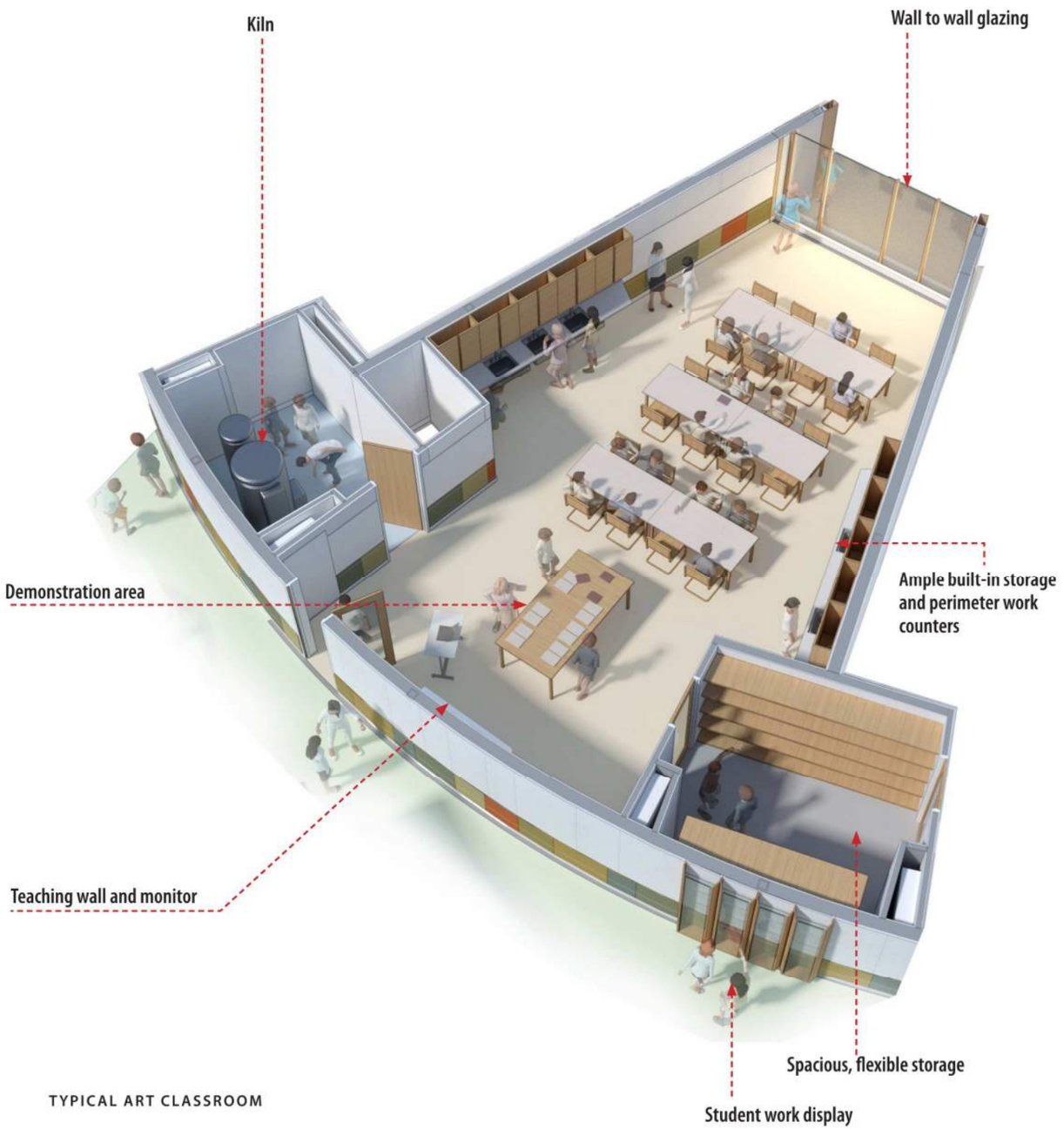
Concentrating on the students' immediate experience, ***the building block of the classroom is at the heart of the design proposal.*** Its conception and detail are the beginning of the overall development of the building. The classrooms are sized in order to allow for multiple centers of learning to operate simultaneously within the confines of the room, fostering a collaborative learning environment. This is facilitated by the classroom size of 950 ft^2.

Manufactured mobile storage units allow classroom flexibility and reduce expensive mill-work. A continuous project work counter with adjustable shelves above, makes use of exterior wall real estate which, because of glare, is not usable as a teaching surface.

Shared teachers office -
A separated teacher workspace which allows for flexible, uninterrupted, instructional use of the classrooms. The dedicated teachers offices also provide a much-needed place for private mentoring while promoting teacher partnering and collaboration. Their projecting glass and angled views allow for greater teacher presence and supervision of the corridors. Students can also see teachers modeling collaboration and mentoring.

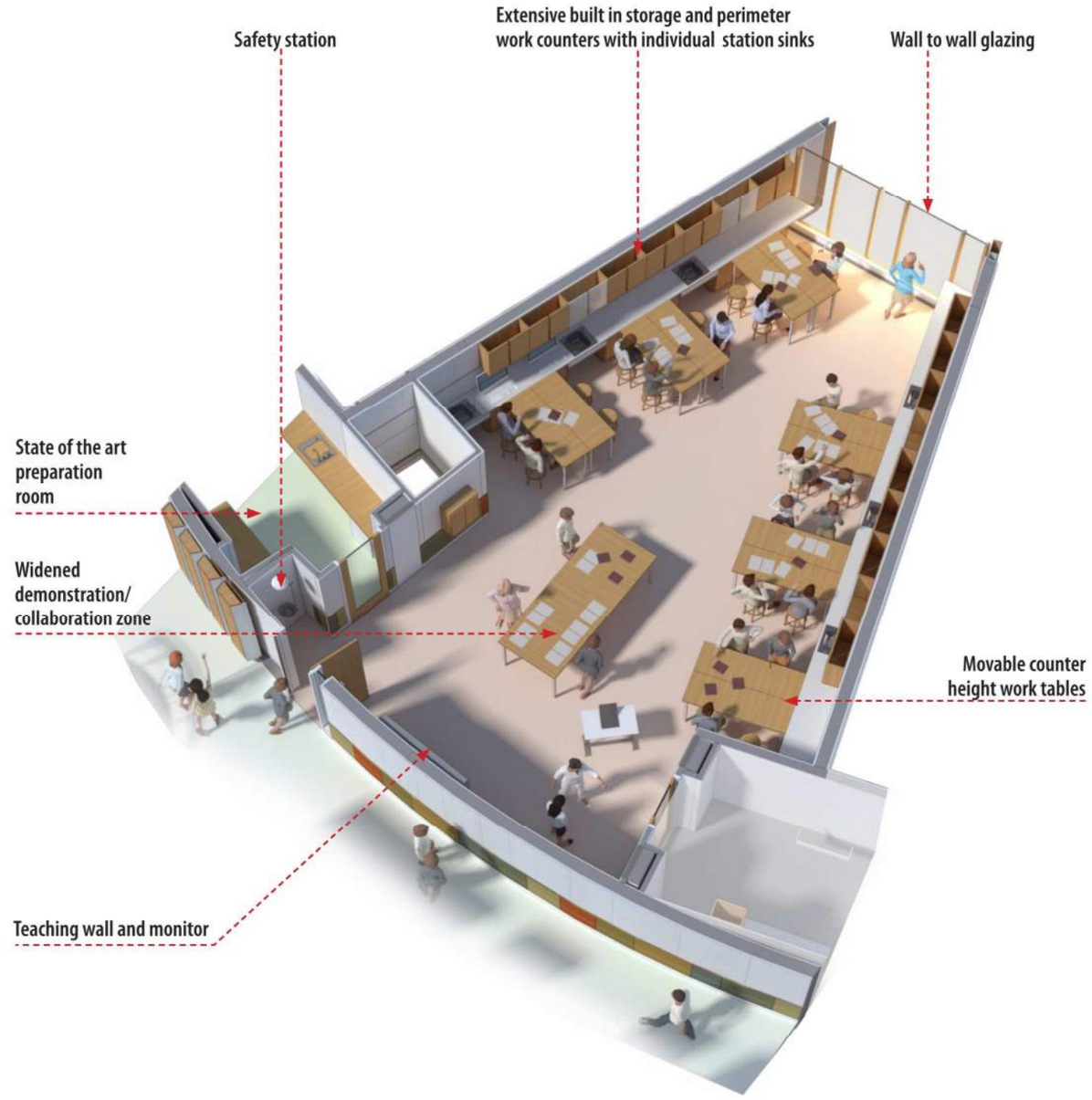
The panorama teaching wall -
The corner is transformed from wasted space to a mini teaching theater with displacement air mechanicals tucked behind.

ART



TYPICAL ART CLASSROOM

SCIENCE



TYPICAL SCIENCE CLASSROOM

SPECIAL EDUCATION

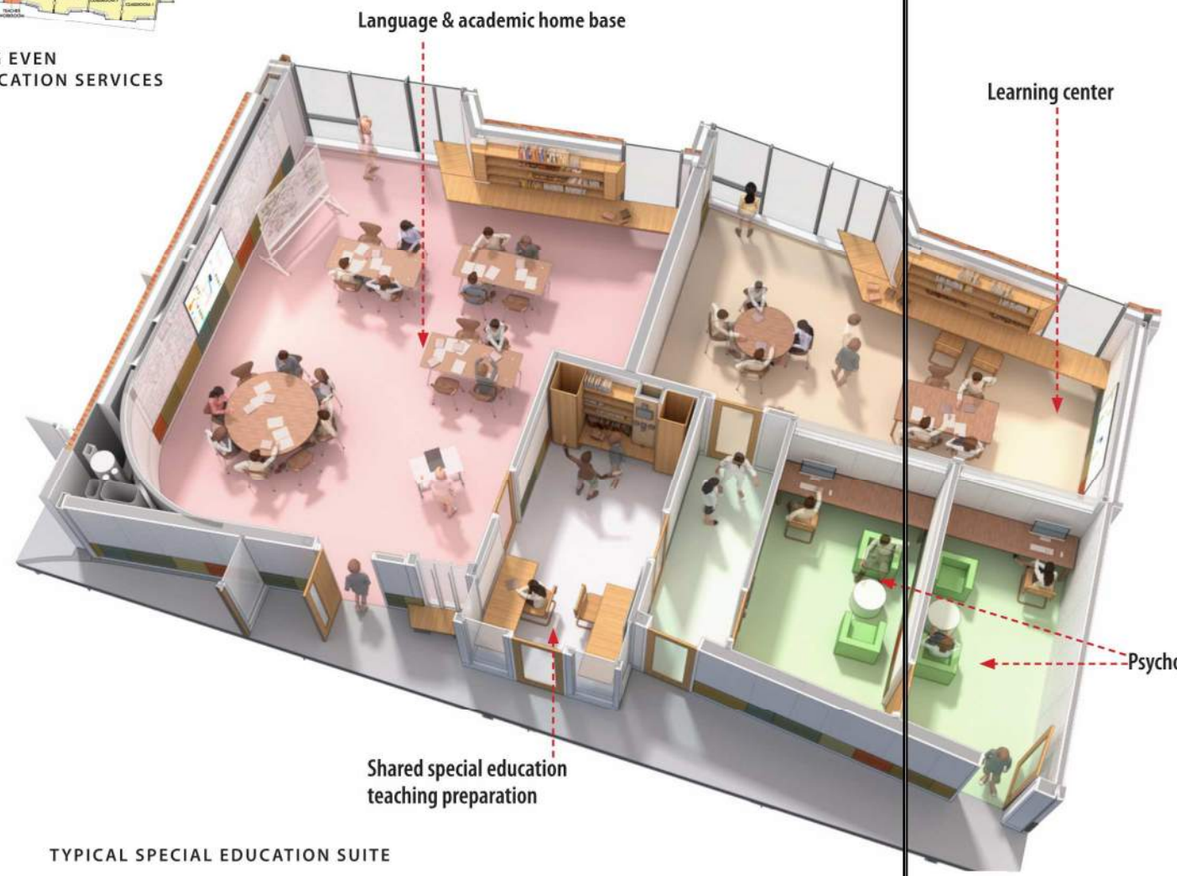
Driscoll will support Special Education programs which are provided at each of the K-8 schools as well as the specialized services currently provided at just at Driscoll.
The room counts, sizes, and adjacencies were established through the course of multiple meetings with Brookline's central office for student services as well as Driscoll staff, and have been approved by Massachusetts DESE.

TYPICAL FLOOR PLAN SHOWING EVEN DISTRIBUTION OF SPECIAL EDUCATION SERVICES (IN ORANGE)

Services which are supported at all of Brookline's K-8 schools include:

- Learning Center Support
- Inclusion opportunities in academics and specials
- Therapies: Occupational, Speech, Physical
- Adaptive Physical Education
- Applied Behavior Analysis
- Teacher of the Visually Impaired
- Orientation and Mobility
- Counseling

In addition to these services, Driscoll houses the Language & Academic Home Base (LAHB) Program. This program serves students of average or above-average cognitive abilities for whom learning is challenging due to disabilities in basic perceptual processes associated with understanding or using language. Instruction for these students is provided in small group rooms as well as in general education classrooms.

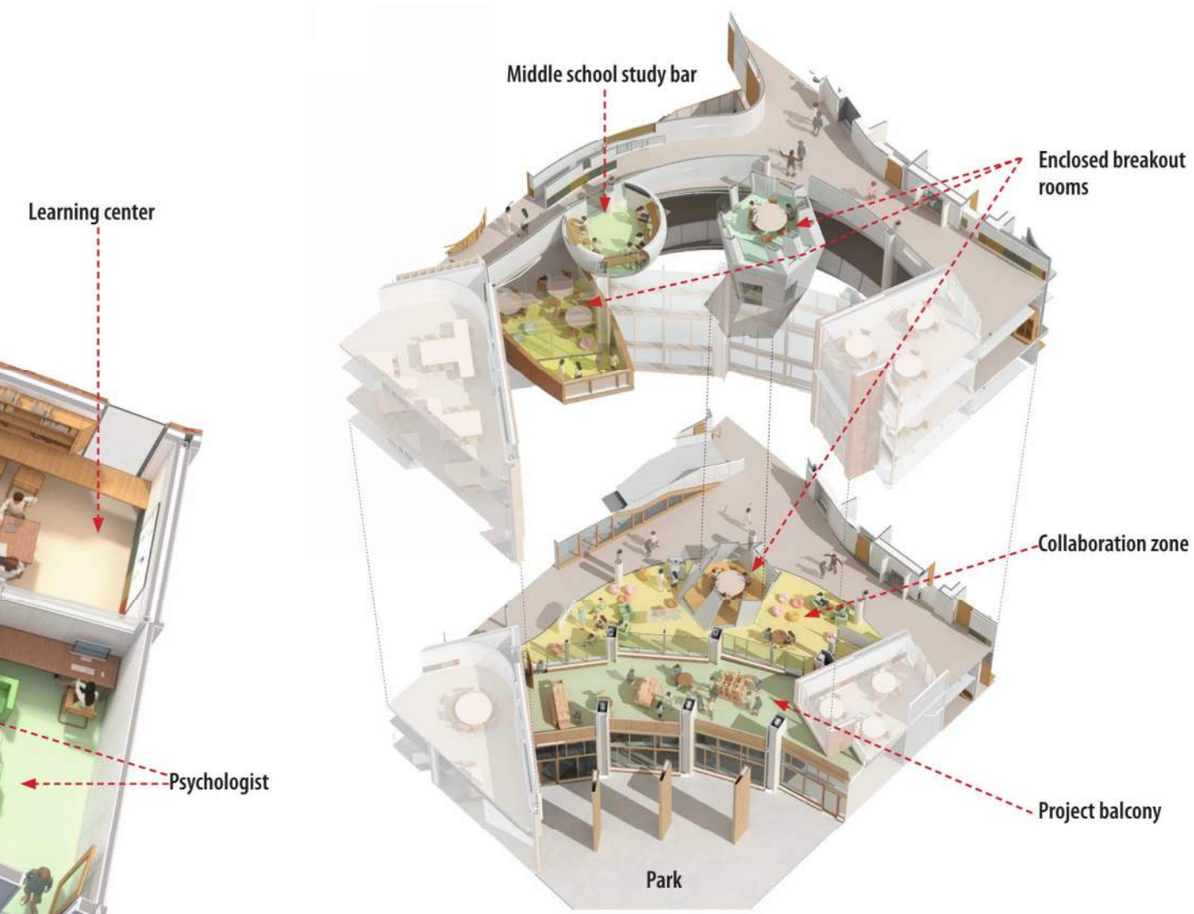


TYPICAL SPECIAL EDUCATION SUITE

COLLABORATION & BREAK-OUT

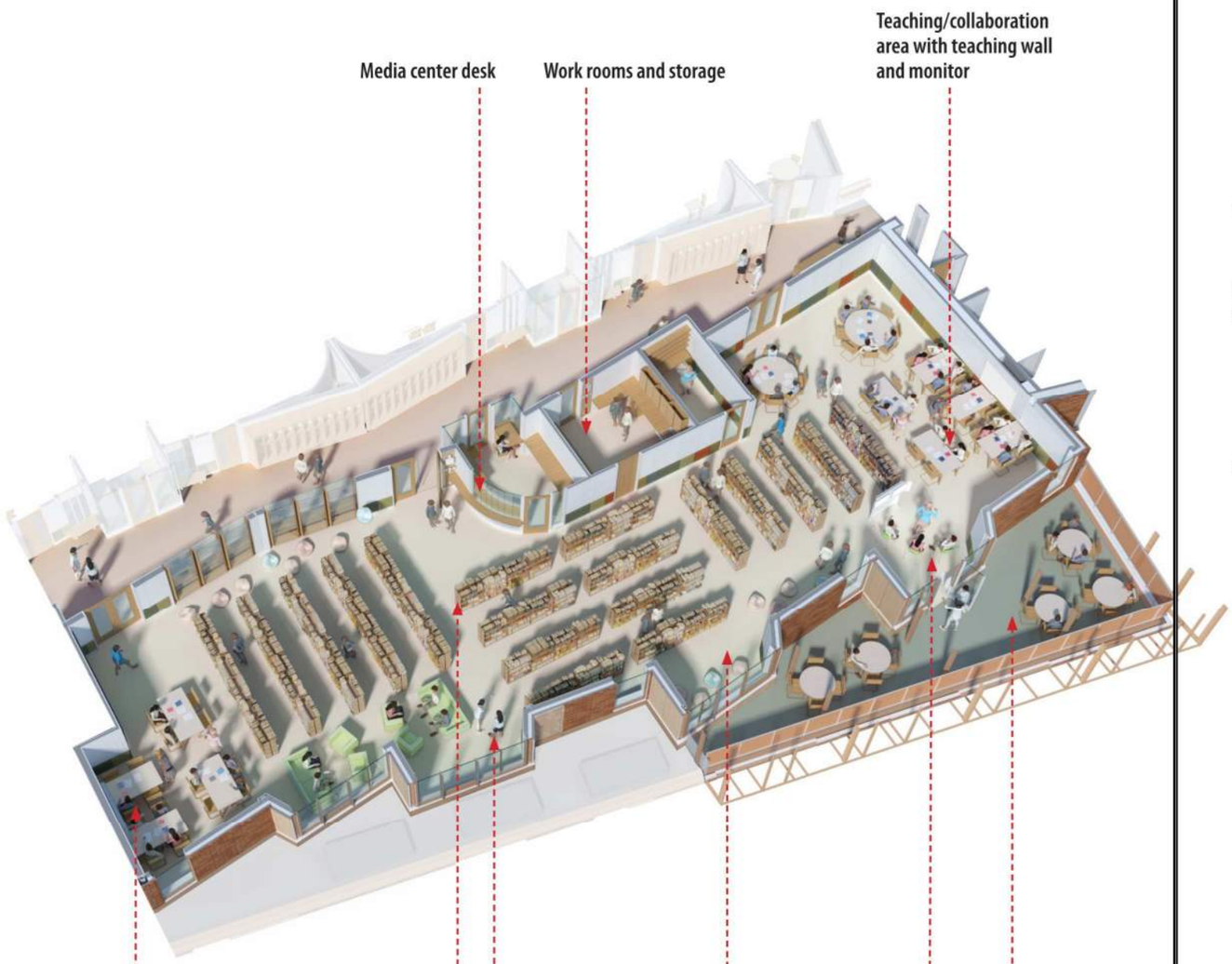
Collaborative learning will be fostered on a number of different levels by the configuration of the new building. First and foremost is the combinable arrangement of the classrooms.
Secondary to the classrooms, a series of open group project areas are provided, in the collaboration zone. These allow for small-scale student groupings around work or socialization and to allow for mentoring o small groups of students by the faculty. Finally, there are the enclosed break-out rooms.

The breakout rooms are open and are positioned to allow supervision from the adjacent classrooms and their attendant teacher preparation offices.
These spaces are intended to be built without fixed furnishings so that there can be variable interpretations of use - from individual study to group learning activities.

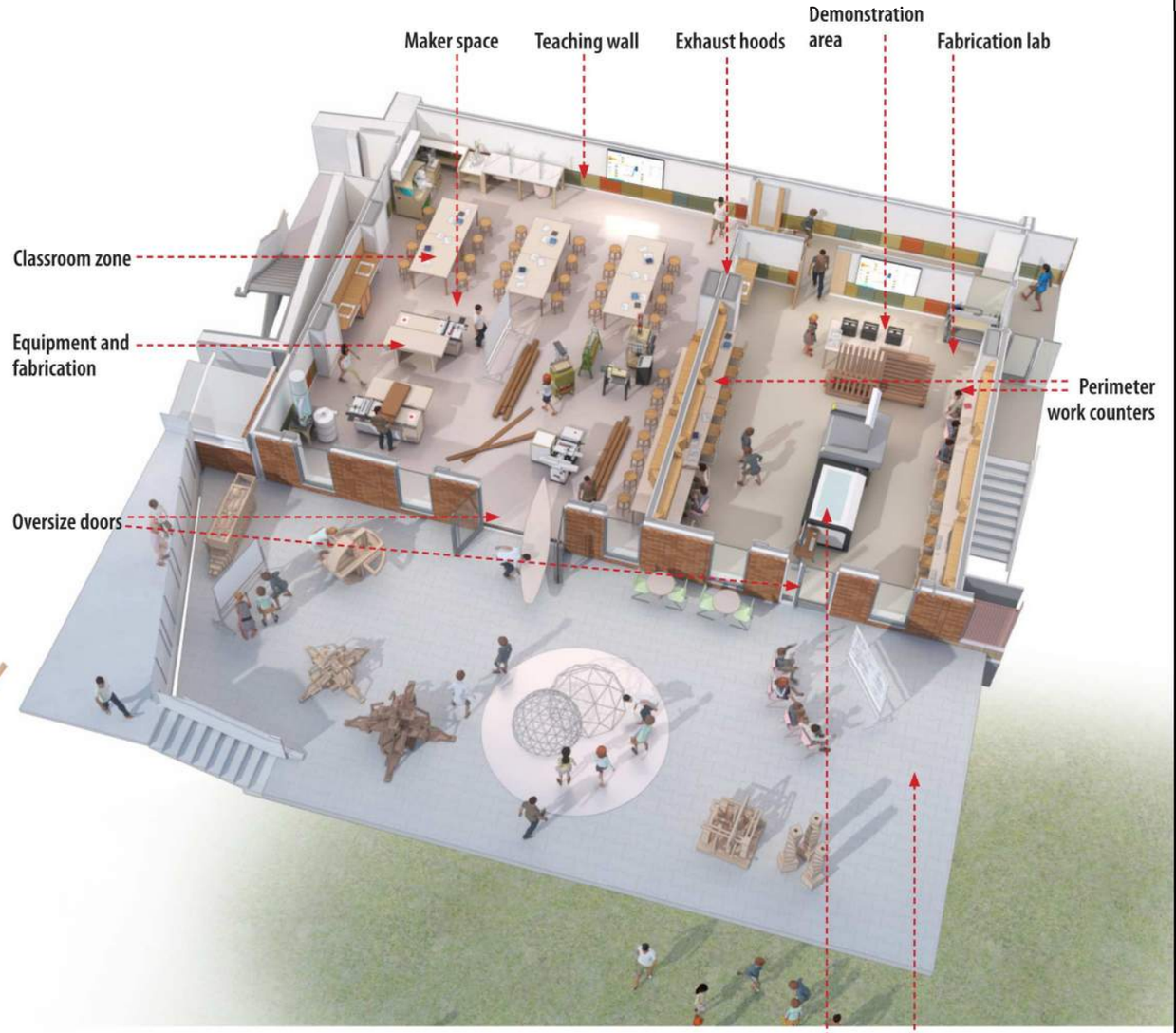


THE COLLABORATION ZONE

MEDIA CENTER

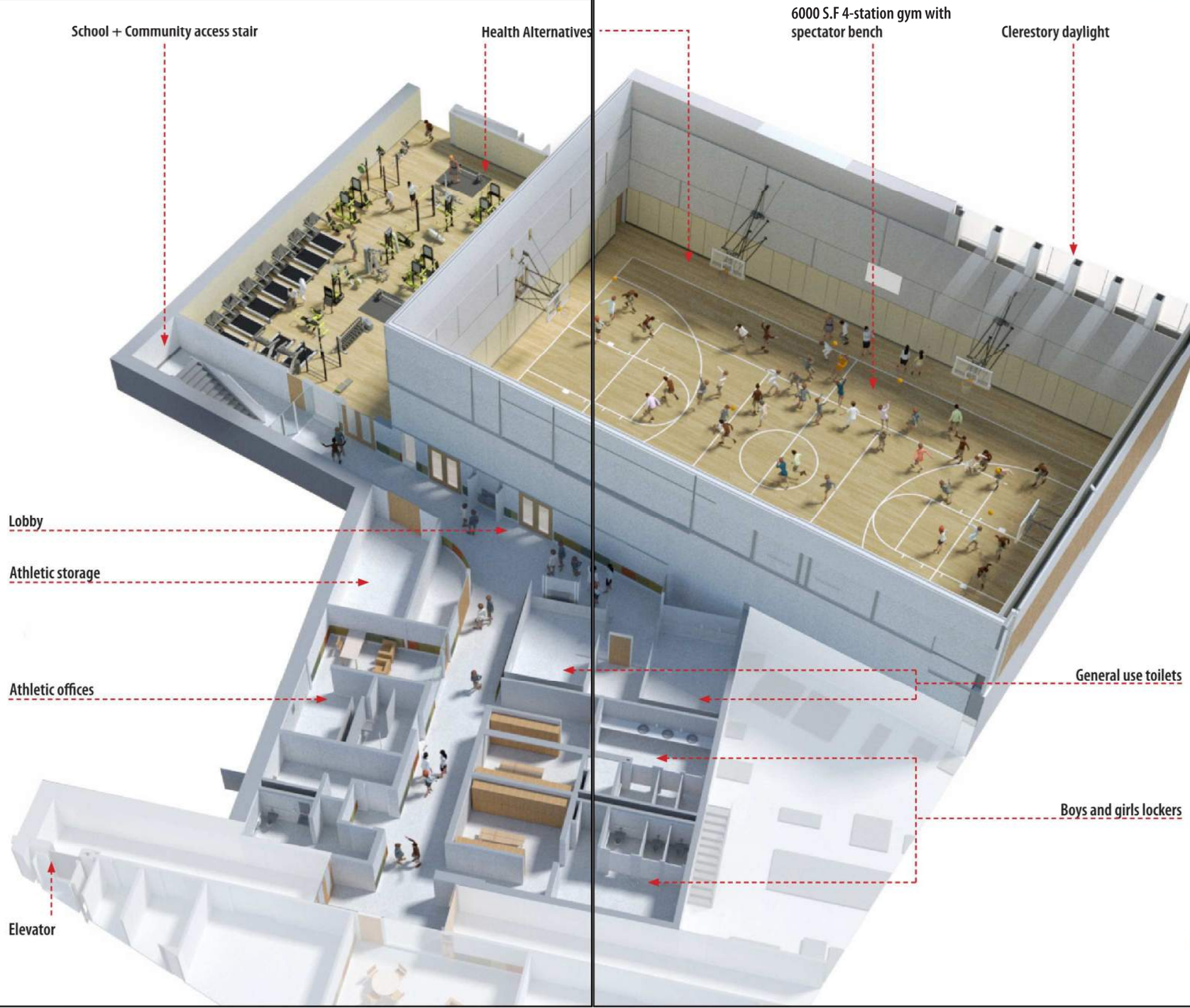


MAKER SPACE & FABRICATION LAB



At the first floor level, these rooms provide a highly visible place of learning and project activity to be adapted by the students and the faculty as the needs of the curriculum evolve.

THE ATHLETIC SUITE

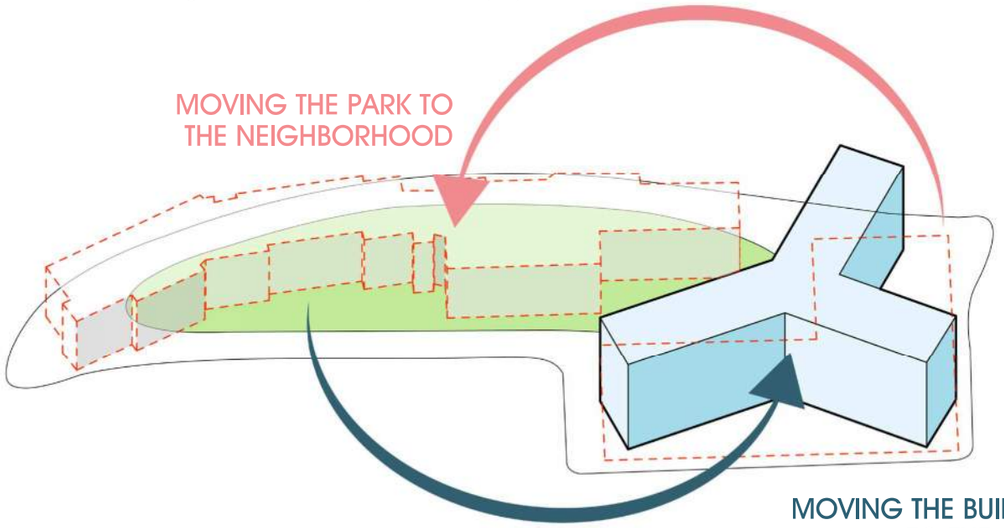


Making a Better Neighborhood

THE SCHOOL & THE SITE

Open Space

From the outset, the project worked to maximize open space for community benefit for this and future generations, while minimizing adverse effects on the neighborhood. ***The new park and playground, which will be built for student and community use, where the existing school, now stands will be larger and better than the existing one with a net gain of 17,100 sf of useable open space and 185 new trees.*** It will have appropriate play areas for all grade levels and a synthetic turf playfield.



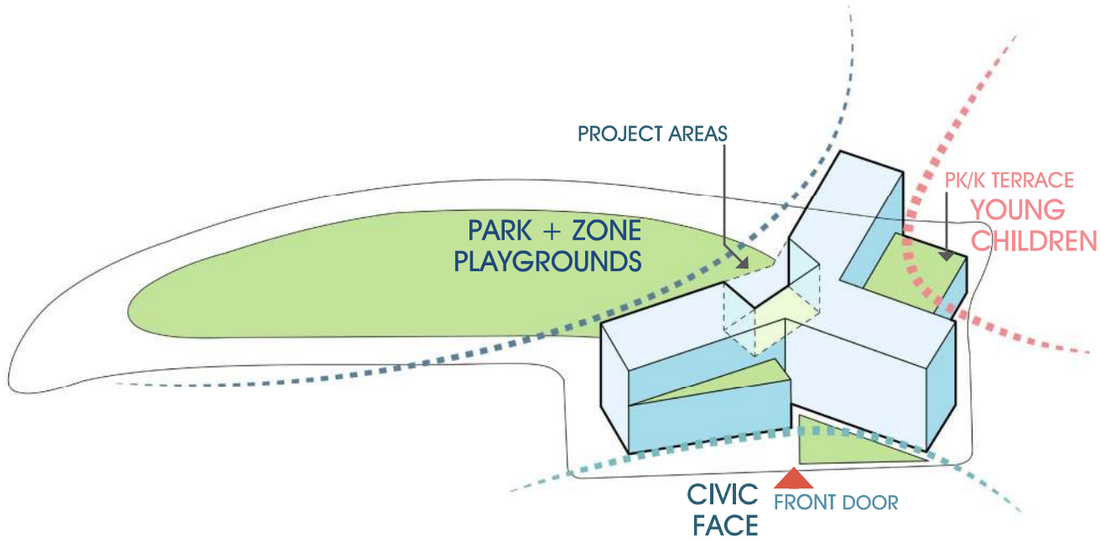
THE BUILDING'S SHAPE AND LOCATION ALLOW FOR THE LARGEST OUTDOOR AREA FOR BOTH THE SCHOOL AND THE TOWN OF BROOKLINE.

Occupancy during Construction

As illustrated in the diagram, the project will be built in two primary phases.

In the first phase, the new school will be built while the existing building remains in operation, causing the minimum possible disruption to Driscoll's current teaching and learning programs. Phase 1 will begin with the expansion of Westbourne Terrace and Washington Street to improve traffic flow by establishing a new dedicated vehicular drop-off area and new parking for the school. A temporary play area will be also be added to serve the students during construction. Once this work is complete, a construction fence will safely separate the contractor's area so they can demolish the existing gym and build the new school. When phase 1 is complete, the students will move into the finished new school building.

In the second phase, a new construction fence will be erected, the old building will be demolished, and new finished outdoor play fields will be created.



Outdoor 'Rooms'

Each wing generates three distinct outdoor areas and inter-relationships between the school and the site. On the civic face, the multipurpose room greets passersby, while also generating a more intimate main entrance area, as well as a terrace for the media center, and a welcoming façade for Washington St. On the Westbourne Terrace side, the gym roof creates a playground area for the Pre-K and K pupils, providing a safe, sunny, and quiet space for the school close to the more domestic street. On the park, the project areas take part in the site and its views. ***The 'star' responds to each individual orientation, fully integrating the building with its site.***

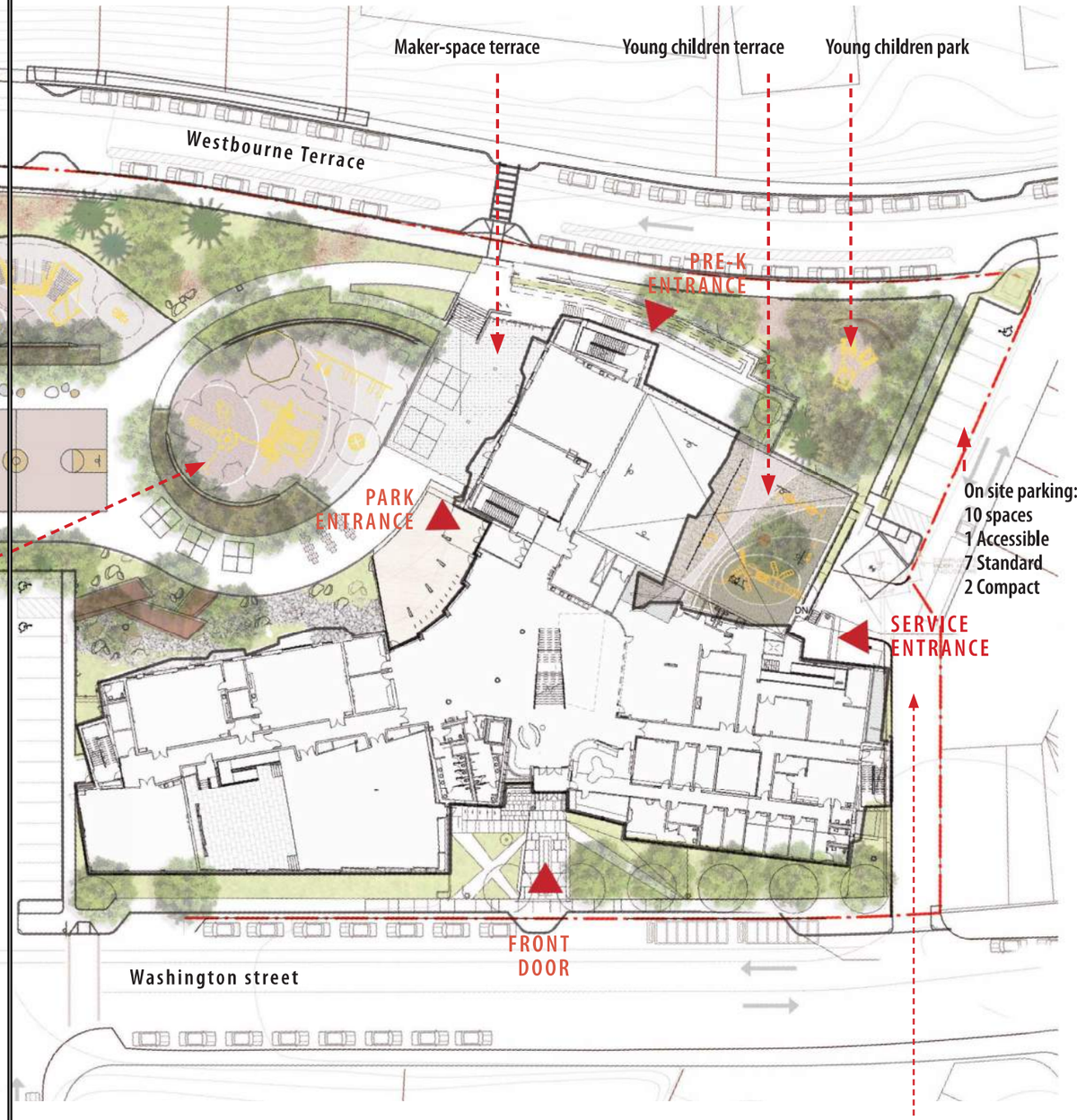
Safety and Security

The building has been designed with input from the Town's emergency personnel including police and fire departments, confirming sufficient egress in case of emergency. The play areas and other regions of the site will be open, visible and safe.

Traffic and Parking

The new school will have significantly improved pedestrian, bike, and vehicular access from both Westbourne Terrace and Washington Street.

PARK & PLAYGROUND PLAN



	SCHOOL BUILDING FOOTPRINT	CAR / TRUCK ZONE	USABLE OPEN SPACE	UNOCCUPIED SPACE	TOTAL
EXISTING SITE	39, 500 SF	23, 800 SF	80, 700 SF	29, 000 SF	173, 000
PROPOSED DESIGN	38, 200 SF	14, 200 SF	97, 800 SF	22, 800 SF	173, 000

EXISTING VS. NEW SITE METRICS

The service entrance and loading dock are located off of an existing service alley which serves the rear side of several commercial buildings which face Beacon Street, thus removing these functions from the residential streets.

VIEW FROM WESTBOURNE TERRACE

An outdoor room shaped by the form of the school makes a separate place for young children.

Young children's play Terrace surrounded by kindergarten and prekindergarten classrooms.

The east façade's central feature is composed of the all-important science and art classrooms with their expansive glass.

While for efficiency, the gymnasium is buried below grade, it nevertheless receives extensive daylighting through clerestory windows.

The specialized pre-kindergarten entrance is entered directly from Westbourne Terrace.

THE WASHINGTON STREET FRONT

The window patterns are variegated in order to reflect the individuality of the students and to reflect the variation and character of the surrounding town-scape.

Residential-like bay windows punctuate the façade, breaking down its mass, while at the same time reflecting the vernacular of similar bay windows sprinkled throughout the surrounding neighborhood.

Two stories in height the multipurpose space volume engages the community with its presence directly on the street, while at the same time breaking down the overall school's size to relate to its residential neighbors.

The low administration wing relates to the one-story commercial structure next door

Fitting in to the context

In order to create a positive and welcoming addition to the existing neighborhood, the facade and massing will respond to the scale and material of the surrounding residential structures. The building massing is therefore broken down to reflect its constituent classroom sub-masses. These are similar in size and scale to that of the adjacent residential volumes.

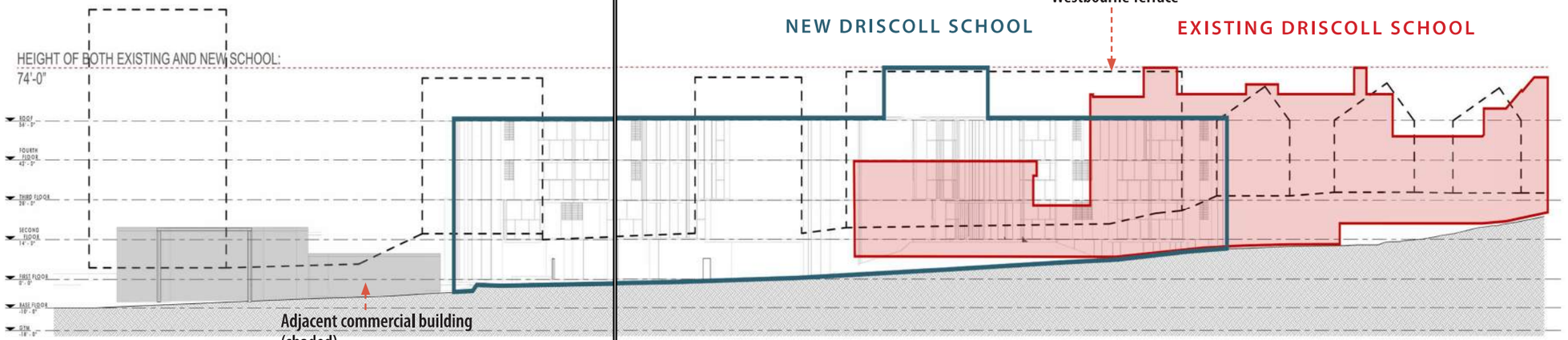
BAY WINDOW TYPES OF THE NEW DRISCOLL

THE BAY WINDOWS OF THE DRISCOLL NEIGHBORHOOD CONTEXT

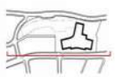
A GOOD NEIGHBOR

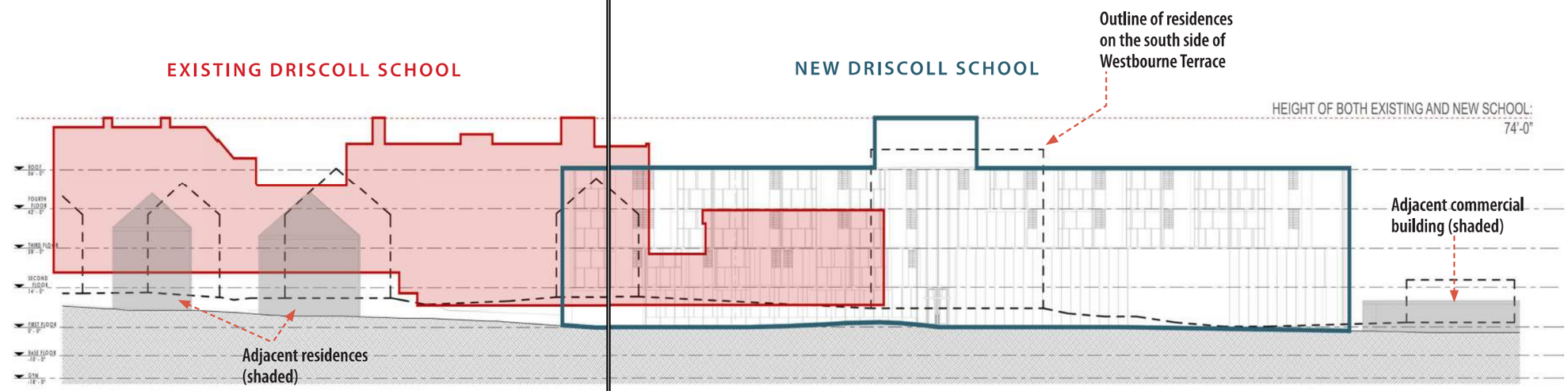
The massing of the new school is designed to fit in with the existing neighborhood fabric. Both Washington Street and Westbourne Terrace have 4 story buildings directly across the street from the proposed 4 story school. The building's front face properly faces Washington Street, which is both larger and more commercial than Westbourne Terrace. Buildings to the north are located higher than the new school on a steep slope, with the new school designed to have one narrow end elevation facing them.

By moving the park to face the residential neighborhood of Westbourne rather than Washington Street, it will have more of a residential feel. The neighbors on Westbourne will look across the street to a park, rather than at the existing school building which is actually taller than the new school.



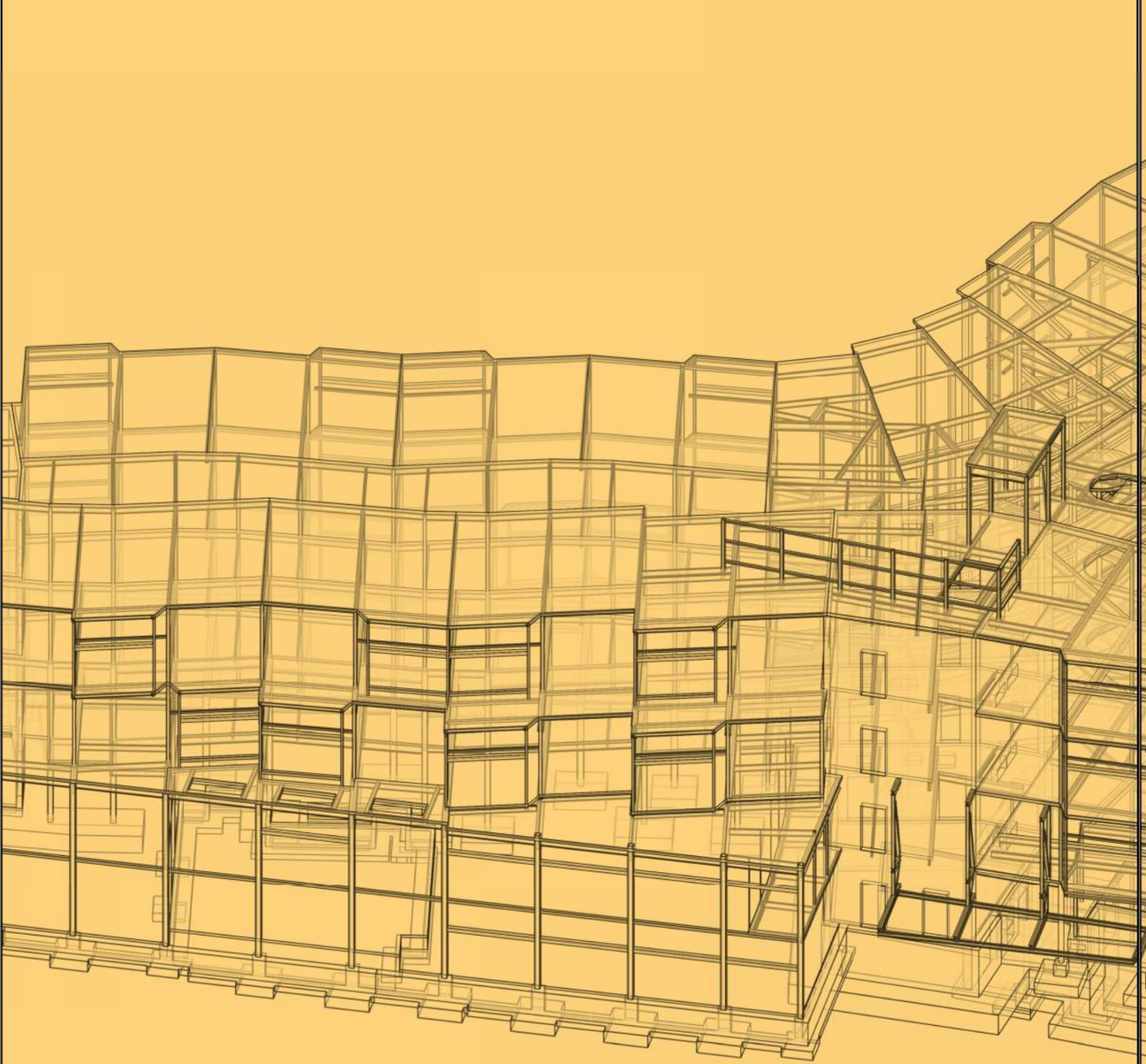
WESTBOURNE TERRACE ELEVATION

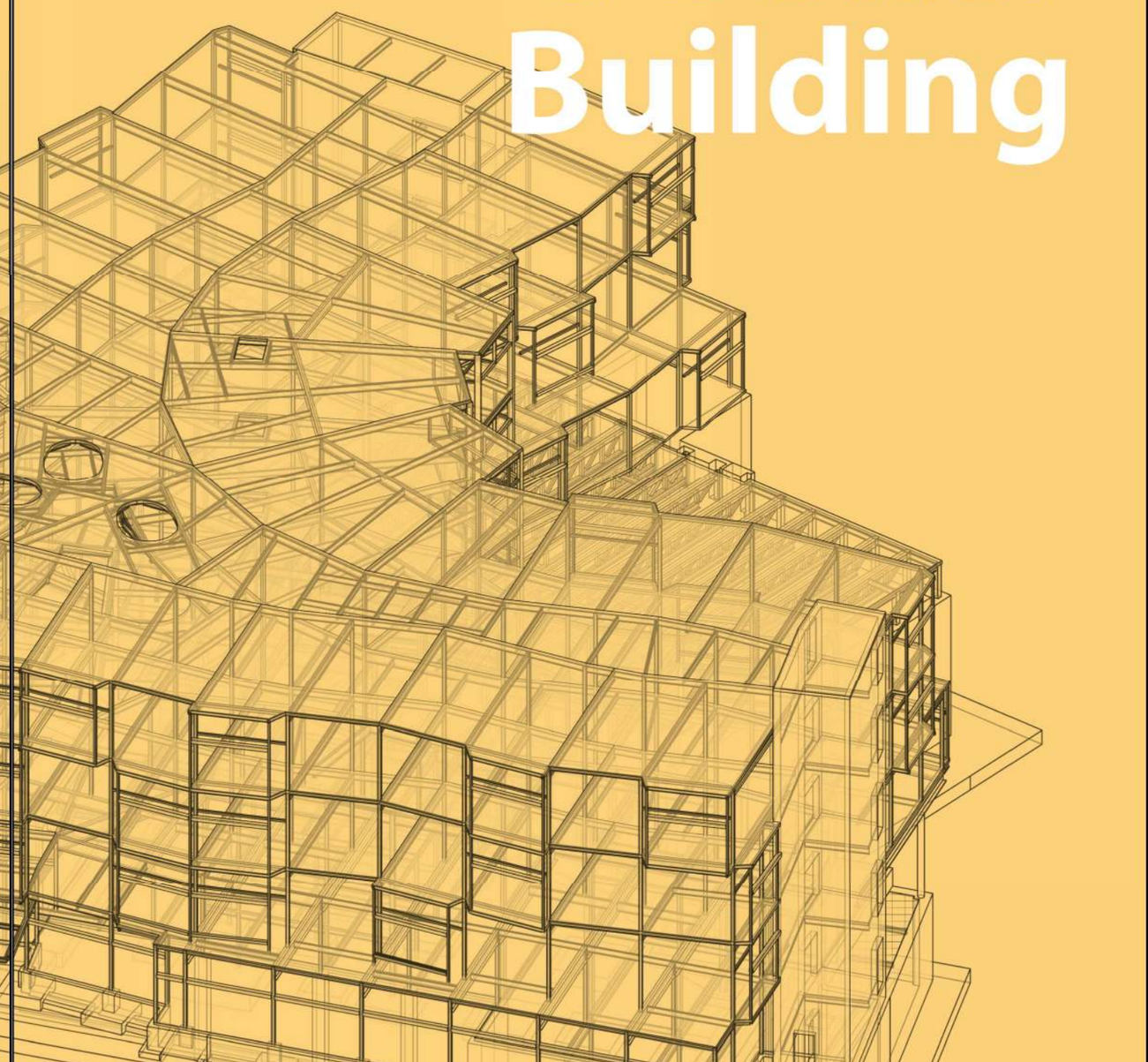




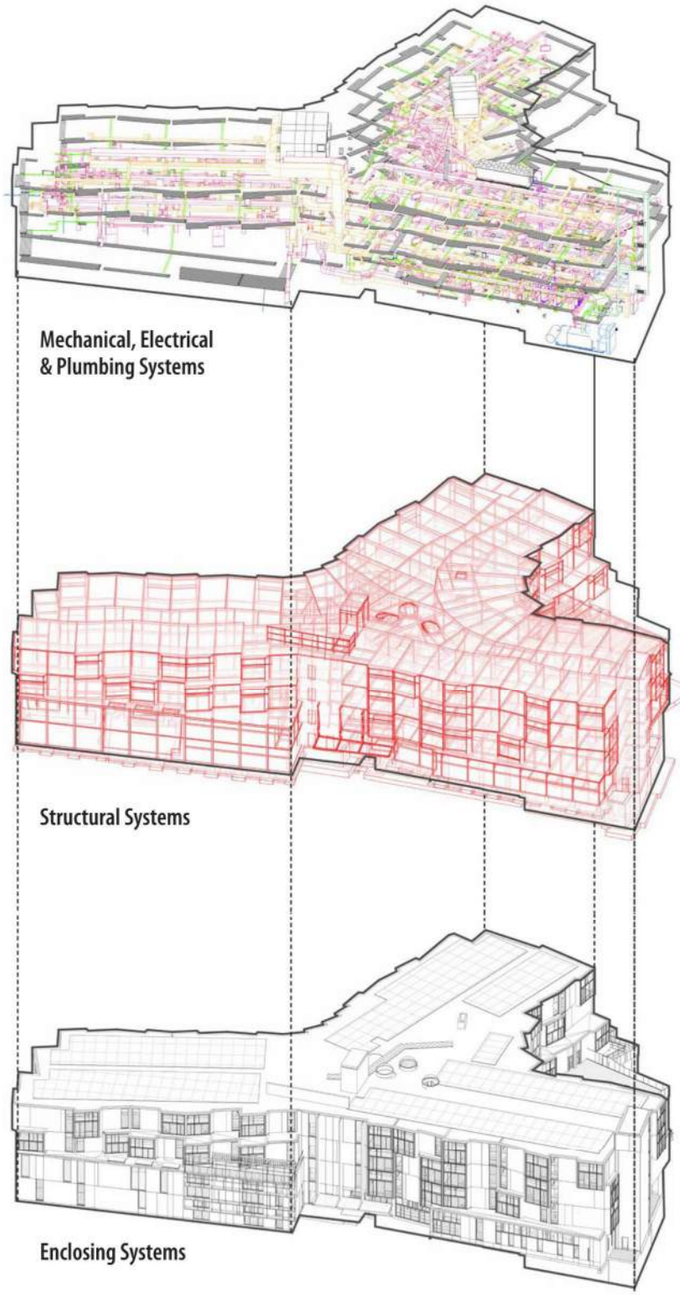
WASHINGTON STREET ELEVATION

Making a Better Building





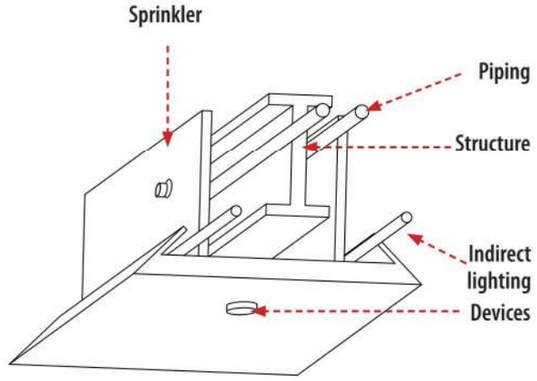
INTEGRATION OF BUILDING SYSTEMS



The 'BIM' Model is the shared platform which enables integrated-co-creation among the Architect and Engineers.

Development of all phases of the project's design, from concepts through technical drawings and specifications, moved ahead utilizing building information modeling (BIM) software. All architectural, structural and MEP elements at all scales were modeled in BIM software to assist in discipline coordination and to provide greater accuracy, document quality control and explicitness during estimating and bidding. The same BIM model used for technical development of the project was used as a platform for creating three dimensional views to illustrate design features for committee design making.

CLASSROOM INTEGRATION

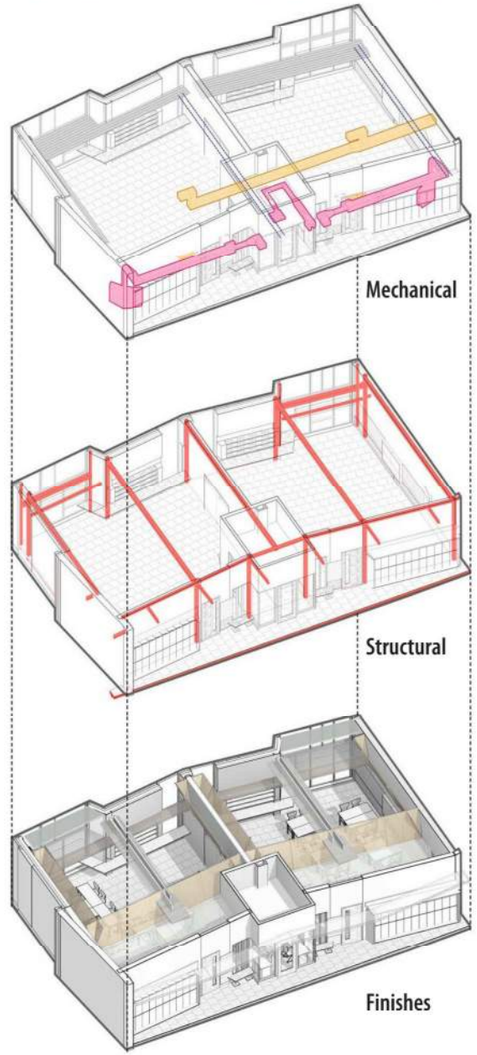


The Summer Beam

Structure & mechanicals are organized into one slender zone eliminating the need for wasteful, unused dropped ceiling dead space

Integrated Design at the classroom scale

The BIM model was employed to integrate all mechanical components, from piping to ductwork, with the structural framework and finish envelope. This applied both to design and to clash detection quality control.



Computer - enabled concentration of inboard mechanicals frees up increased ceiling heights for improved daylighting

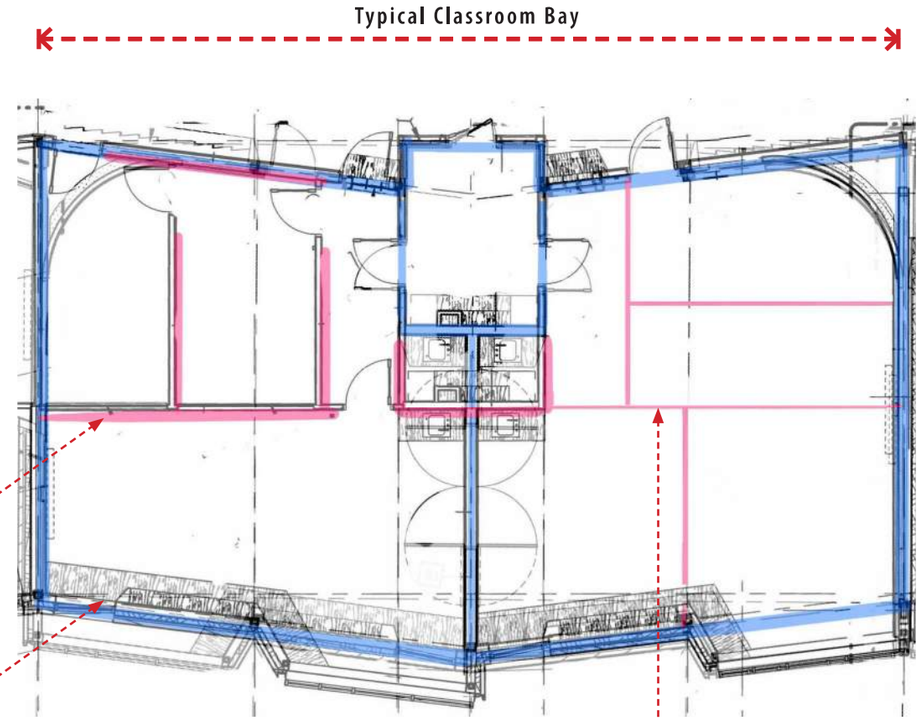
TYPICAL CLASSROOM AND CORRIDOR SECTION

STRUCTURE

Working with structural engineer, LeMessurier, the team sought 'outside-the-box' alternatives for structural materials, systems and lay-out that might bring both short- and long-term advantages to the project. The building systems are generally divided into three areas – the typical classroom perimeter, long-span gymnasium and multipurpose room, and the long span central area with its projected balcony circulation.

The selected system is a steel frame with long span decking. In the typical classroom, three 16" beams run the length of the space – two at the demising walls and one in the center of the space. The decking is exposed for three quarters of the ceiling.

All the spaces within the building have been designed foreseeing pedagogical changes or needs: ***the typical classroom unit is the base for different smaller room arrangement*** so that they can be easily re-configured or joined together to add more classrooms to the school.



Minor offices are inscribed within the standard classroom bay to allow for long term flexibility i.e. in the future, unimpeded by structure, classrooms can becomes offices and offices can become classrooms.

DESIGN FOR HEALTH

Design strategies for healthy design at the new Driscoll fall into 2 primary categories – design and culture. Most of these are by now well known to the public because of the Covid 19 pandemic. Primary strategies include:

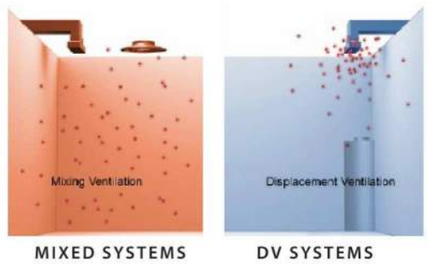
- **Hand Hygiene -** Frequent hand washing remains the single most important intervention in infection control. The Driscoll design is far ahead of most public schools in addressing this by placing sinks in all classrooms and hand washing stations facing the cafeteria. Sanitizer stations at all entries and "Please wash hands" signs over sinks may be added.

- **Clean and Cleanable Surfaces -** All surfaces that people touch will be able to withstand chemical cleaners / disinfectants.

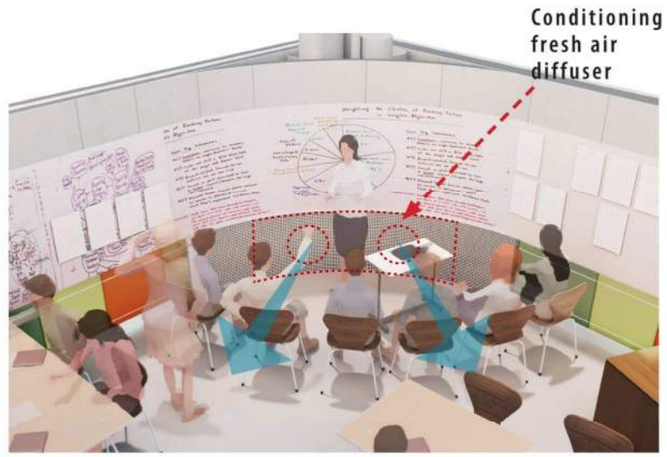
- **Indoor Air Quality -** The new Driscoll with have a displacement ventilation system which provides both excellent pollution removal and a high percentage of fresh air to all rooms. All outdoor air and return air will be filtered before it enters occupied spaces. LEED requirements for additional Indoor Air Quality measures will also be incorporated into the design.

- **Social Distancing -** The new Driscoll will have approximately 25% more GSF per student than the existing building. This will improve social distancing. Depending on the situation, measures currently to reduce the number of students eating together in the cafeteria could be considered. This could mean that 4 seatings rather than 3 would be employed for lunch, or potentially that some students might eat in their classrooms.

- **Testing -** The new Driscoll's design includes separate entries for students arriving from Washington Street, Westbourne Terrace, and Pre-K - K. This allows significantly more queuing space for temperature taking on arrival than a traditional single entry.



In addition to increased energy efficiency and low noise, the displacement ventilation system provides excellent pollution removal. By displacing airborne pollutants upward toward room exhaust (rather than blowing them around the room), more pollutants are removed. There is an added benefit of lower room CO_2 levels compared with traditional systems.

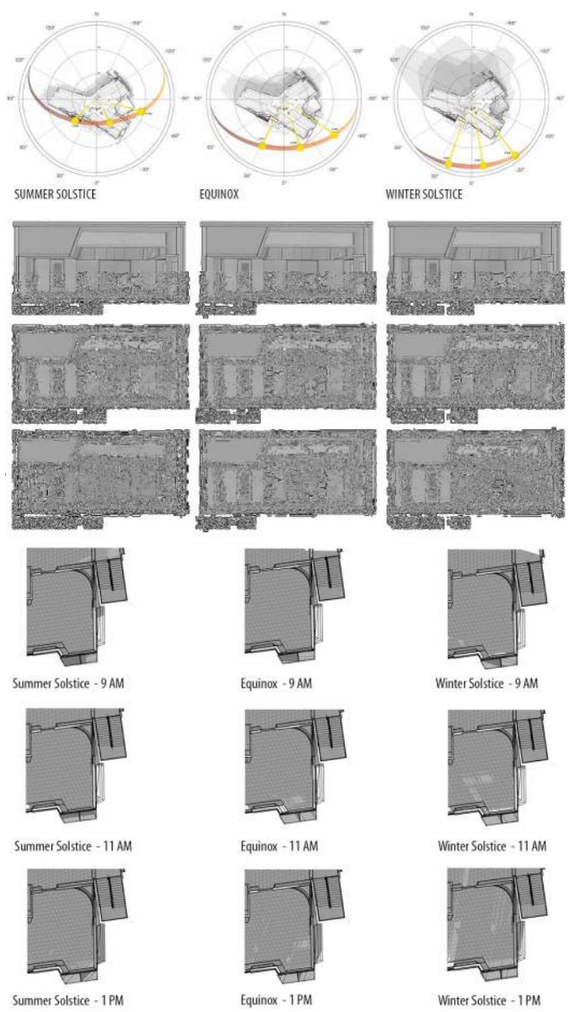


THE DISPLACEMENT AIR DIFFUSER AT THE TEACHING CORNER -
REDUCING ABSENTEEISM AND INCREASING CLASSROOM ALERTNESS

SOLAR CONTROL

Precluding Unwanted Heat Gain and Glare

Given the predominant occupation of the building during daylight hours, daylighting was approached as a primary generator of form, orientation and envelope configuration. In order to accurately test daylighting proposals, the Design Team used solar shading software and work surface foot-candle modeling software. The former assisted in determining the depth and spacing of shading structures. The latter in the placement of skylights and reflecting surfaces such as light shelves.



SOLAR CONTROL STUDY

3D VIEW OF FENESTRATION/ SOLAR SHADING ALTERNATE

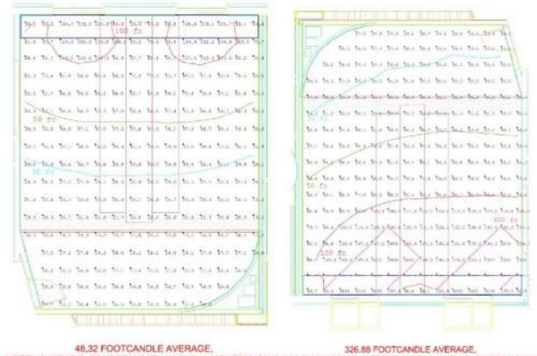
SPRING EQUINOX = MARCH 19
SUMMER SOLSTICE = JUNE 20
FALL EQUINOX = SEPTEMBER 22
WINTER SOLSTICE = DECEMBER 21

CLASSROOM DAYLIGHTING

The new Driscoll School will utilize a sophisticated system of glazing, skylights, reflecting surfaces and sunscreens to achieve close to 100% natural daylight for the regular classroom spaces of the building during the occupied school day and throughout the school year. This includes both cloudy and sunny days and both north and south glazing orientations. The exterior light-harvesting classroom wall section is configured with interior light reflecting shelves as part of the extensive clerestory glazing system.

LIGHT SHELF RADIANT PANEL

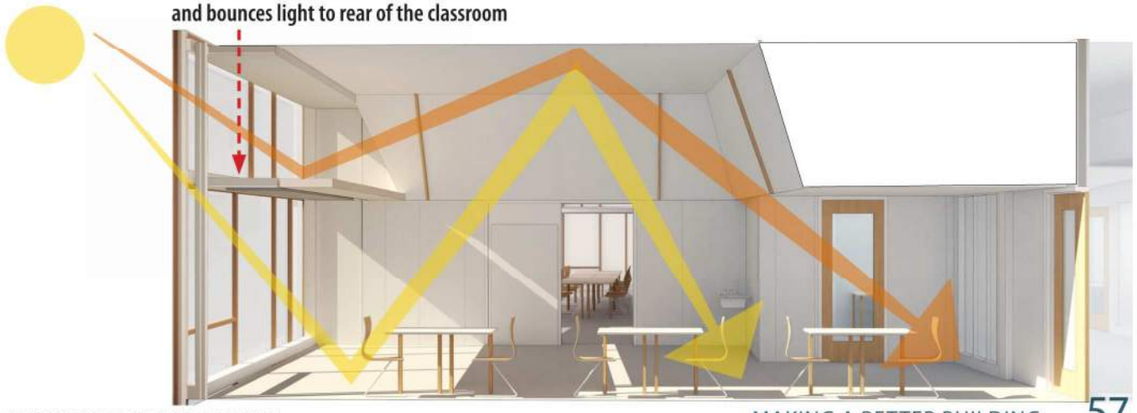
Manufacturer's prefab light shelf with integrated perimeter heat -
Two solutions in one cost effective package



DAYLIGHT ILLUMINATIONS AT WORK SURFACE
(IN PROCESS)

Light from the sky or sun is reflected by the shelves to the ceiling and then to the depth of the classroom. Utilizing computer simulation software, the lighting engineer will optimize reflecting surfaces to achieve standard work surface illumination. As electricity for room lighting is a significant portion of the energy usage of a conventional school building, the daylighting system reduces long term building operating costs for the Town.

Light reflecting shelf:
Light shelf reduces over illumination at perimeter to balance light levels and bounces light to rear of the classroom



CLASSROOM CROSS-SECTION

ENVIRONMENTAL RESPONSIBILITY

Energy Efficiency

The building will be fossil fuel free with advanced energy efficient mechanical, electrical and plumbing systems. The building is oriented for daylight harvesting for all classrooms and the efficient LED lighting system will be designed to minimize energy usage. It is expected that photo-voltaic panels will be installed on the roof as part of a power purchase agreement.

Sustainability

The Fossil Fuel Free all electric New Driscoll School will incorporate an array of sustainability features including:

1. Site: Improve Storm Water Runoff, Remove Hazards in the Soil, Reduce Heat Island Solar Absorption, Reduce light Pollution, Provide Community Use

2. Reduce Energy Use: "Fossil Free" Systems, Photovoltaics on Roof, 3rd Party Verification of Mechanical Systems and Envelope Performance, High Efficiency Heat and Hot Water Systems, Excellent Thermal Insulation

3. Reduce Water Consumption: Low Flow Fixtures, Minimize Irrigation, Meter Usage

4. Materials and Resources: Design for Reduced Life / Cycle Costs, Use Environmentally Friendly Materials, Recycle Demolition and Construction Waste

5. Indoor Environmental Quality: Excellent Indoor Air Quality, Use Low -Emitting Materials, Enhanced Acoustic Performance, Incorporate Daylighting, Provide Access to Outdoor Views

LEED SCHOOLS V4 DRISCOLL SCHOOL

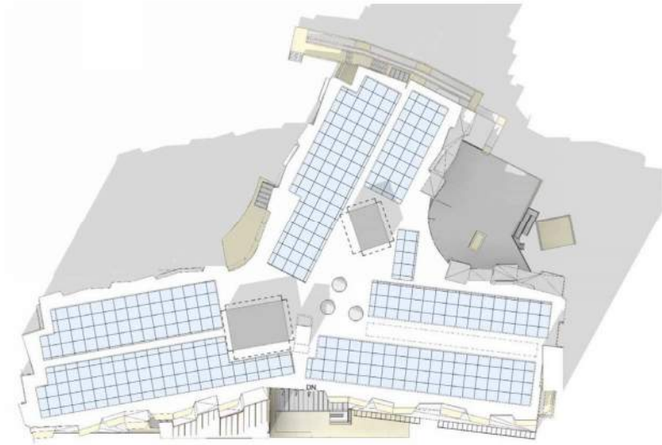
110 | 55 | 16 | 2 | 36 — TOTAL (SILVER EQUIVALENT CERTIFICATION IS TARGETED)

October 7, 2020

Certified 40 points
Silver 50 points
Gold 60 points
Platinum 80 points

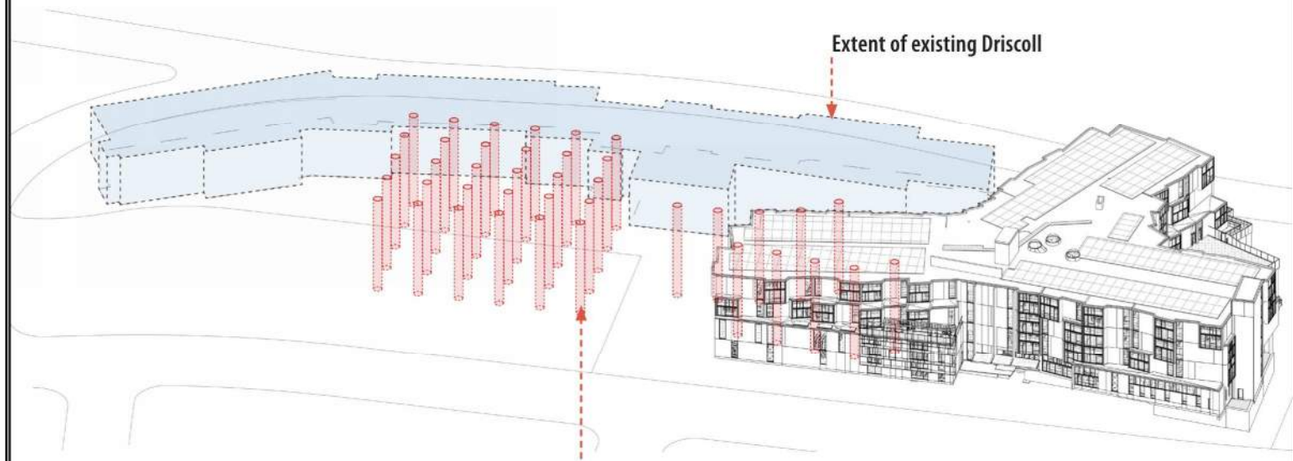
Available Pts.	Likely	Possible	Less Likely	Not Viable	
1				1	Integrative Process — 1 Possible Points
15	7	3		5	Location and Transportation — 15 Possible Points
Av	L	P	LL	NV	
15				15	LT 1 LEED for Neighborhood Development Location
1	1				LT 2 Sensitive Land Protection
2				2	LT 3 High Priority Site
5	2			3	LT 4 Surrounding Density and Diverse Uses
4	1	3			LT 5 Access to Quality Transit
1	1				LT 6 Bicycle Facilities
1	1				LT 7 Reduced Parking Footprint
1	1				LT 8 Green Vehicles
12	7	1	1	2	Sustainable Sites — 12 Possible Points
Av	L	P	LL	NV	
Y					SSp1 Construction Activity Pollution Prevention
Y					SSp2 Environmental Site Assessment
1			1		SS 1 Site Assessment
2				2	SS 2 Site Development - Protect or Restore Habitat
1	1				SS 3 Open Space
3	2	1			SS 4 Rainwater Management
2	2				SS 5 Heat Island Reduction
1	1				SS 6 Light Pollution Reduction
1				1	SS 7 Site Master Plan
1	1				SS 8 Joint Use of Facilities
12	2			10	Water Efficiency — 12 Possible Points
Av	L	P	LL	NV	
Y					WEp1 Outdoor Water Use Reduction
Y					WEp2 Indoor Water Use Reduction
Y					WEp3 Building-Level Water Metering
2				2	WE 1 Outdoor Water Use Reduction
7	2			5	WE 2 Indoor Water Use Reduction
2				2	WE 3 Cooling Tower Water Use
1				1	WE 4 Water Metering
31	18	7		6	Energy and Atmosphere — 31 Possible Points
Av	L	P	LL	NV	
Y					Prereq 1 Fundamental Commissioning and Verification
Y					Prereq 2 Minimum Energy Performance
Y					Prereq 3 Building-Level Energy Metering
Y					Prereq 4 Fundamental Refrigerant Management
6	3	2		1	EA 1 Enhanced Commissioning
16	12	4			EA 2 Optimize Energy Performance
1				1	EA 3 Advanced Energy Metering
2				2	EA 4 Demand Response
3	3				EA 5 Renewable Energy Production
1		1			EA 6 Enhanced Refrigerant Management
2				2	EA 7 Green Power and Carbon Offsets
13	4		1	8	Materials & Resources — 13 Possible Points
Av	L	P	LL	NV	
Y					Prereq 1 Storage and Collection of Recyclables
Y					Prereq 2 Construction and Demolition Waste Management Planning
5				5	MR 1 Building Life-Cycle Impact Reduction
2	1			1	MR 2 Building Product Disclosure and Optimization - EPD
2	1			1	MR 3 Building Product Disclosure and Optimization - Sourcing of Raw Materials
2	1			1	MR 4 Building Product Disclosure and Optimization - Material Ingredients
2	1		1		MR 5 Construction and Demolition Waste Management
16	10	3		3	Indoor Environmental Quality — 16 Possible Points
Av	L	P	LL	NV	
Y					Prereq 1 Minimum Indoor Air Quality Performance
Y					Prereq 2 Environmental Tobacco Smoke Control
Y					Prereq 3 Minimum Acoustic Performance
2	1	1			EQ 1 Enhanced Indoor Air Quality Strategies
3	3				EQ 2 Low-Emitting Materials
1	1				EQ 3 Construction Indoor Air Quality Management Plan
2	1	1			EQ 4 Indoor Air Quality Assessment
1				1	EQ 5 Thermal Comfort
2	1			1	EQ 6 Interior Lighting
3	2	1			EQ 7 Daylight
1	1				EQ 8 Quality Views
1				1	EQ 9 Acoustic Performance
6	5	1			Innovation & Design Process — 6 Possible Points
Av	L	P	LL	NV	
					Maximum of 3 Exemplary Performance
1	1				ID 1.1 Green Cleaning Program, Integrated Pest Management
1	1				ID 1.2 Low Mercury Lamp Purchase or EP Renewable Energy
1	1				ID 1.3 Occupant Comfort survey (or Design for Active Occupants)
1	1				ID 1.4 Green Education, School as Teaching Tool
1		1			ID 1.5 Pilot- Resiliency
1	1				ID 2 LEED™ Accredited Professional
4	2	1		1	Regional Priorities — 4 Possible Points
Av	L	P	LL	NV	
1	1				RPc1 Regional Priority: Optimize Energy Performance
1		1			RPc2 Regional Priority: Rainwater Management
1				1	Rpc3 Regional Priority: Outdoor water use reduction
1	1				Rpc4 Regional Priority: Access to Quality Transit

SOLAR AND GEOTHERMAL ENERGY



ROOF-MOUNTED PHOTO-VOLTAIC PANELS

ESTIMATED TO PROVIDE 180 KW OR APPROXIMATELY 20 % OF THE SCHOOL'S ELECTRICAL REQUIREMENTS.



GEOTHERMAL WELL FIELDS

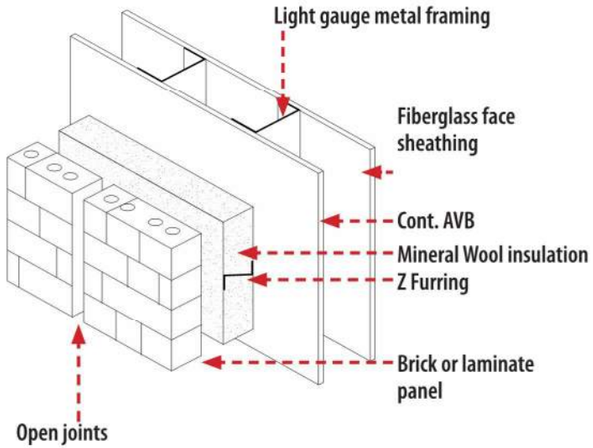
39 GEOTHERMAL WELLS AT 300 ' DEPTH WILL SUPPLY YEAR ROUND 50 DEGREE WATER TO THE SCHOOL.

39 Geothermal Well field to be constructed after demolition of the existing school

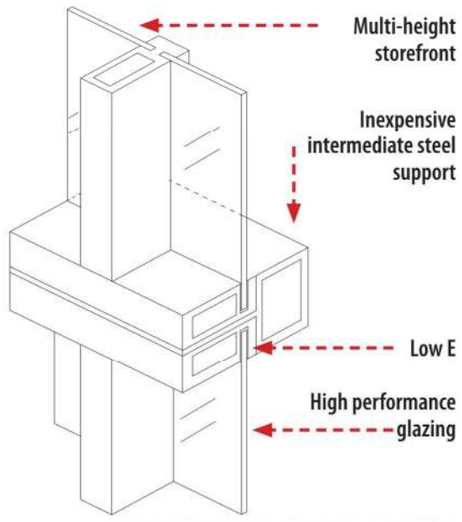
DURABILITY & COST EFFECTIVENESS
EXTERIOR

Wall assemblies will utilize contemporary open joint construction which allows thorough inspection and quality control of the complete weather barrier (AVB) before installation of cladding. The AVB is spray applied over fiberglass faced gypsum sheathing with self-sealing 'peel and stick' transitions. ***The envelope will have no sealant joints to fail or maintain.***

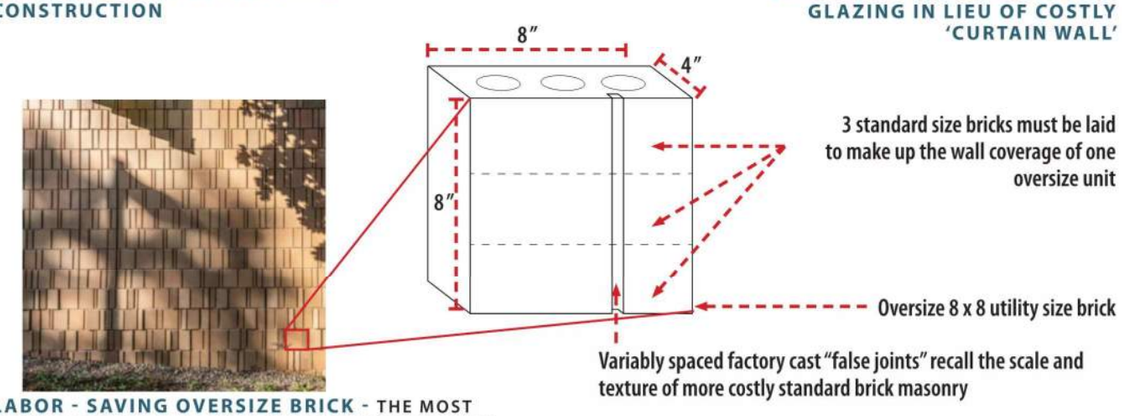
Windows are sealed to the AVB level and are protected from UV exposure by exterior sunshades and vertical battens allowing for extended service life. The insulation is continuous regardless of cladding material and consists of mold resistant, fireproof, ecologically sustainable mineral wool panels held in place by thermally efficient 'Z' furring. Low maintenance laminate panels simulate wood clad bay windows and will be used in combination with brick masonry to create a sense of warmth and consistency with the neighborhood.



LEAK - FREE RAIN SCREEN WALL CONSTRUCTION

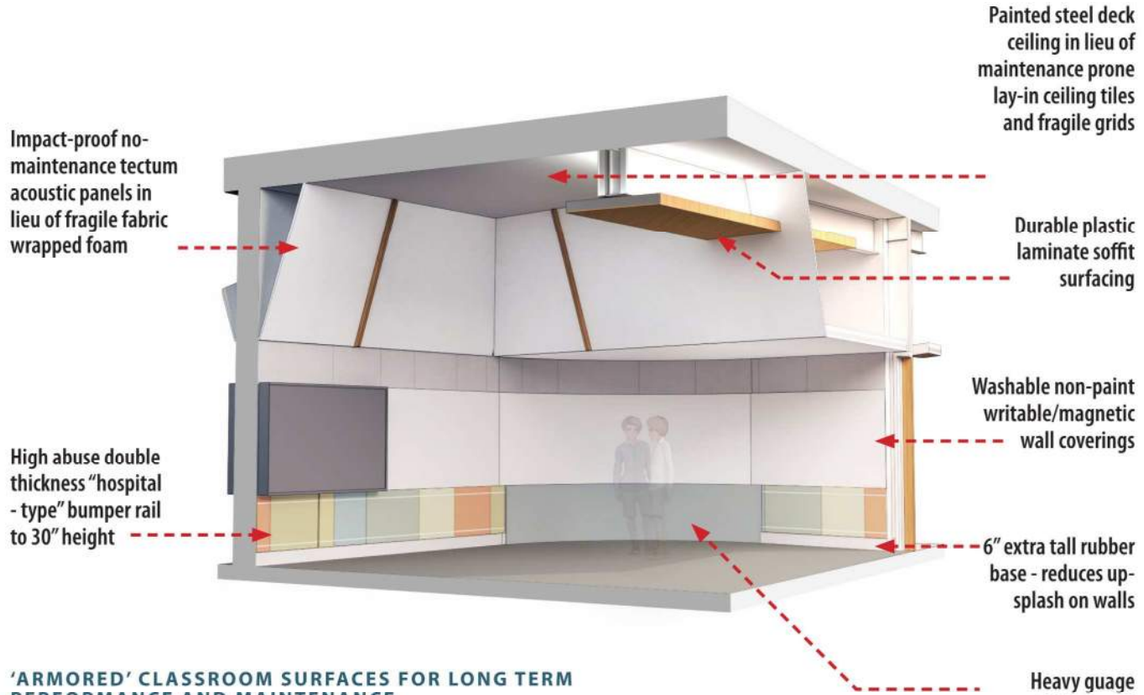


COST-EFFECTIVE 'STORE FRONT' GLAZING IN LIEU OF COSTLY 'CURTAIN WALL'

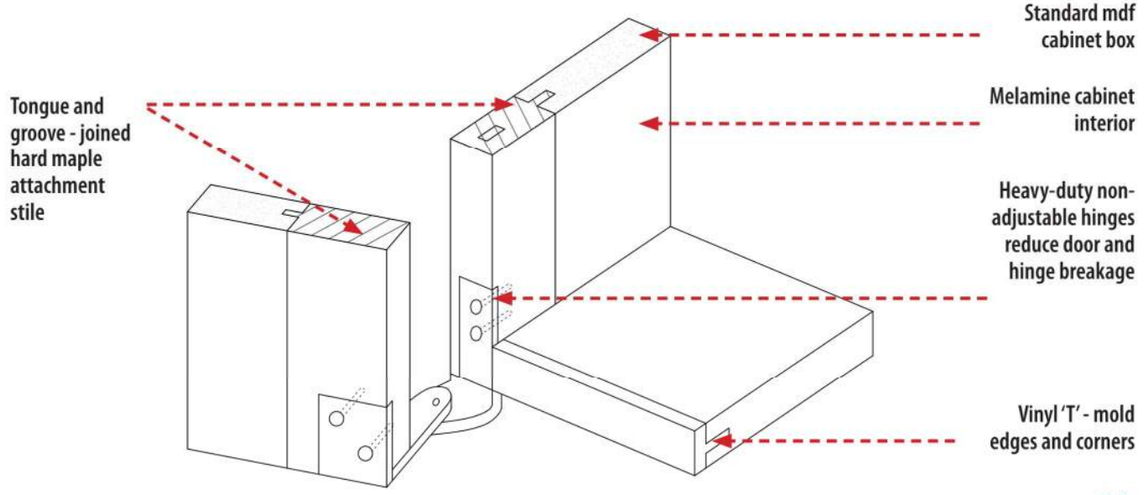


LABOR - SAVING OVERSIZE BRICK - THE MOST COST EFFECTIVE AND DURABLE CLADDING MATERIAL FOR PUBLIC BUILDINGS

DURABILITY & COST EFFECTIVENESS
INTERIOR



'ARMORED' CLASSROOM SURFACES FOR LONG TERM PERFORMANCE AND MAINTENANCE



CABINETRY CUSTOM-DETAILED TO LAST