

Needham Public Schools

Study to Implement Full-Day Kindergarten

February 2018

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Executive Summary

Purpose and Scope

In October 2017, the Town of Needham, through the Town Manager and its Permanent Public Building Committee, hired Dore & Whittier to provide designer services for the preparation of a Space Study and Cost Estimate to address the School Committee's objective to provide Full-Day Kindergarten (FDK) within the Needham School District. This study's key objective was to determine how best to utilize the existing assets within the District to roll out the FDK program without redistricting and causing the least impact on existing educational programs such as Art, Music, STEAM, and Language programs.

Dore & Whittier's primary scope included the following:

- Review all prior studies and background information for the FDK program.
- Analyze the program needs with the NPS staff and Principals from each elementary school and assess how the kindergarten students could best be accommodated at each school. Identify the size of the existing Kindergarten rooms including bathrooms and storage, and the programmatic needs of the additional Kindergarten rooms.
- Identify the rooms that will be available once KASE moves out and determine how they might be repurposed. Identify other spaces within each school that could be repurposed or reallocated for Kindergarten use and any required upgrades. Determine which programs could be consolidated or relocated within each school to make way for FDK.
- Review the room scheduling to see if there are opportunities to better utilize existing space,
- Identify existing administrative, departmental or other spaces that could be repurposed for classrooms (if any).
- Review enrollment growth projections and trends and analyze how it might impact classroom scheduling, technology implementation, or design, programming and construction phasing,
- Study how redistricting might help solve overcrowding at one school, where capacity may exist at another school. Study if this is a short-term or a required long-term solution.
- Study class size for the FDK programs to determine if the recommended solutions fall within the Districts maximum class size and meet the Districts goals for Special Education at each school.
- Identify budget costs associated with each alternative recommended,
- Prepare feasibility estimates of the various options including both construction and soft costs. The budget estimates should also include escalation and/or phasing costs.

Summary of Findings

- McKibben Demographics revised its projections up from previous years due to higher than anticipated housing stock turn-over and two housing developments in Needham. This revision makes the implementation of full-day kindergarten more challenging.
- Mitchell is deficient in PE and Special Education space and will require Art on a Cart beginning in 2019-2020 without additional space.
- It appears that the District will be able to both implement its full-day kindergarten program and absorb any forecast enrollment increases for the 2019-2020 school year.
- Full-day K and the enrollment increase may require repurposing of some Art, Music, STEAM, World Language, and Technology spaces as general classrooms. FDK and expected enrollment increases may also result in slightly higher than desired class sizes even in 2019-2020.
- Eliot may experience largest enrollment impact & may require modular classrooms beginning in 2023-2024. Should the enrollment forecast provide accurate, Eliot will either need to be a fully 4 section school by 2029-2030 or require redistricting once Mitchell is reconstructed.
- There may be an opportunity to redistrict toward Mitchell at the end of the enrollment forecast as its enrollment declines to defray the enrollment increases at Eliot expected around the same time.
- Other elementary schools better positioned to absorb enrollment increases in their respective catchment areas and accommodate full-day K throughout the enrollment forecast.

The table below summarizes the projected classroom need at each school over the course of the enrollment forecast. There are currently the equivalent of four classroom-sized spaces dedicated to the KASE program that can all be repurposed as grade level classrooms. The remainder of the deficiencies would need to be addressed through a combination options including repurposing of dedicated space for Specials, the installation of modular classrooms, and/or redistricting.

Total Grade Level Sections per School	Existing Classrooms	2019-20	2020-21	2021-22	2022-23	2023-24	2024-25	2025-26	2026-27	2027-28	2028-29	2029-30	2030-31	2031-32	2032-33
Broadmeadow	24	24	24	24	25	25	25	25	25	24	24	24	24	24	24
Eliot	17	18	18	18	18	19	19	21	22	22	22	24	22	22	21
Mitchell*	22	24	24	24	24	24	24	24	23	22	21	21	20	18	18
Newman	30	31	32	32	32	30	30	30	30	30	30	30	30	30	30
Williams	24	23	24	24	24	24	24	24	24	24	24	24	24	24	24
Total Need		120	122	122	123	122	122	124	124	122	121	123	120	118	117
Total Available Classrooms	117	117	117	117	117	117	117	117	117	117	117	117	117	117	117
Available KASE Classrooms	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4
Deficiency*	0	+1	-1	-1	-2	-1	-1	-3	-3	-1	+0	-2	+1	+3	+4

* Includes the four modular classrooms already installed. Two are being used for Kindergarten currently.

Dore and Whittier prepared several cost estimates associated with potential work to address space needs. A summary of those costs is below and should be considered a cafeteria menu of options. More detailed information is provided in the respective school sections in the body of the report and in the Appendices.

Modular Classrooms at Eliot School	\$3.73 M
Modular Classrooms at Mitchell School	\$1.25 M
Fabric Gymnasium Structure at Mitchell	\$2.07 M
Pre-engineered Gymnasium Structure at Mitchell	\$2.40 M
Renovation of Storage Space into Art at Mitchell	\$1.35 M
Renovation of KASE Classrooms into Grade Level Classroom at Mitchell	\$125,000
Conversion of Technology Classroom to Grade Level Classroom at Broadmeadow	\$164,500
Conversion of Technology Classroom to Grade Level Classroom at Eliot	\$164,500

Additional Factors to Consider

- Actual enrollment for the next several years and real impact of housing developments on enrollment. McKibben’s enrollment forecast is contingent on several assumptions, including how many new school-aged children result from the construction of the two housing developments, one of which is not even permitted. Actual outcomes from these assumptions may produce more or fewer children than anticipated. Due to the expected timing of completion, the District may have an opportunity to react if it continues to monitor these developments.
- The District capital plan includes the renovation or replacement of the Mitchell school within the next 15 years. Depending on the timing of that major project, the District should weigh the value of sizing a new or renovated Mitchell School to help absorb the expected enrollment increases and to return class sizes across the District to within the District’s class size guidelines.
- Based on the data in this study and the McKibben enrollment forecast, the District may need additional staffing in response to higher than desired class sizes. The District should consider performing a staffing projection to better understand the impact of the enrollment forecast on staffing needs.

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Assumptions & Methodologies

In conducting the study, Dore & Whittier made several assumptions based on information provided by the District.

- Kindergarten Enrollment Forecast
 - McKibben Demographic's forecast did not account for the effect of the Full-Day Kindergarten program. Historic data suggests that about 7.5% more students arrive to the District in 1st grade than in Kindergarten, largely due to the current policy of half-day kindergarten.
 - Dore & Whittier's calculations have accounted for this phenomenon and are based on McKibben's projections plus an additional 7.5% for kindergarten in each year of the forecast.
- Class Size Guidelines
 - Kindergarten through 3rd Grade = 18 to 22 Students
 - 4th and 5th Grade = 20 to 24 Students
 - District's preference is to implement FDK and maintain class sizes within these guidelines but is willing to exceed these guidelines by one student per section if it prevents a need to eliminate a dedicated space for Art, Music, STEAM, and/or World Languages or prevents a need for newly constructed space.
- Number of Sections for Specials
 - Kindergarten students will receive Art, Music, and PE 40 minutes per session, twice per week.
 - 1st and 2nd Grade will receive Art, Music, Spanish, Media, and STEAM 40 minutes per session once per week each and PE 40 minutes per session twice per week.
 - 3rd Grade will receive Art, Music, Media, and STEAM 40 minutes per session, once per week and Spanish and PE 40 minutes per session twice per week.
 - 4th and 5th Grade will receive Art, Music, Media, and STEAM 40 minutes per session, once per week, Spanish and PE 40 minutes per session twice per week, and Chorus 40 minutes per session once every two weeks.
- Conversion of Space
 - Spaces currently dedicated to specials like Art, Music, STEAM, Technology, and World Languages may be considered as targets to be converted into general classrooms.
 - Spaces currently dedicated to Special Education functions may not be considered as targets to be repurposed into general classrooms.
- Priorities for Conversion to Grade Level Classrooms
 - Each school has a different set of dedicated rooms for Specials. Each school, therefore, also has a different set of priorities should it prove necessary to convert some of those dedicated spaces to grade level classrooms. In general

terms, dedicated spaces serving World Languages and STEAM have the lowest priority for dedicated space because they can more easily be accommodated in other spaces, including grade level classrooms. Art and Music have the highest priorities for dedicated space because of the specialty equipment and storage needs associated with those programs.

- Redistricting
 - o The goal is to implement FDK without a need to redistrict. However, the study should take a holistic view of the elementary schools to see if redistricting “around the edges” will prevent the need to eliminate dedicated space for specials or eliminate the need for newly constructed space.

Methodology

In order to understand the capacity of each facility and the impact of the enrollment forecast on space, Dore & Whittier performed several calculations. Dore & Whittier’s methodology for performing those calculations is detailed below.

Elementary Building Capacity

Number of Grade Level Classrooms X Maximum Allowable Class Size for Each Grade Level

$$\begin{aligned} &4 \text{ Kindergarten} \times 22 \\ &+ 4 \text{ 1}^{\text{st}} \text{ Grade} \times 22 \\ &+ 4 \text{ 2}^{\text{nd}} \text{ Grade} \times 22 \\ &+ 4 \text{ 3}^{\text{rd}} \text{ Grade} \times 22 \\ &+ 4 \text{ 4}^{\text{th}} \text{ Grade} \times 24 \\ &+ 4 \text{ 5}^{\text{th}} \text{ Grade} \times 24 \\ &544 \text{ Student Capacity} \end{aligned}$$

Theoretical Classroom Count Need

Total Forecasted Enrollment by Grade ÷ Maximum Allowable Class Size for Each Grade Level

$$100 \text{ Kindergartners} \div 22 \text{ Students per Classroom} = 4.55 \text{ Sections} = 5 \text{ Sections Needed}$$

Theoretical Classroom Size

Total Forecasted Enrollment by Grade ÷ Bounding Number of Sections per Grade

$$\begin{aligned} 90 \text{ Kindergartners} \div 4 \text{ Sections} &= 22.50 \text{ Students per Section} = 22 \text{ in 2 sections, 23 in 2 sections} \\ 90 \text{ Kindergartners} \div 5 \text{ Sections} &= 18.00 \text{ Students per Section} \end{aligned}$$

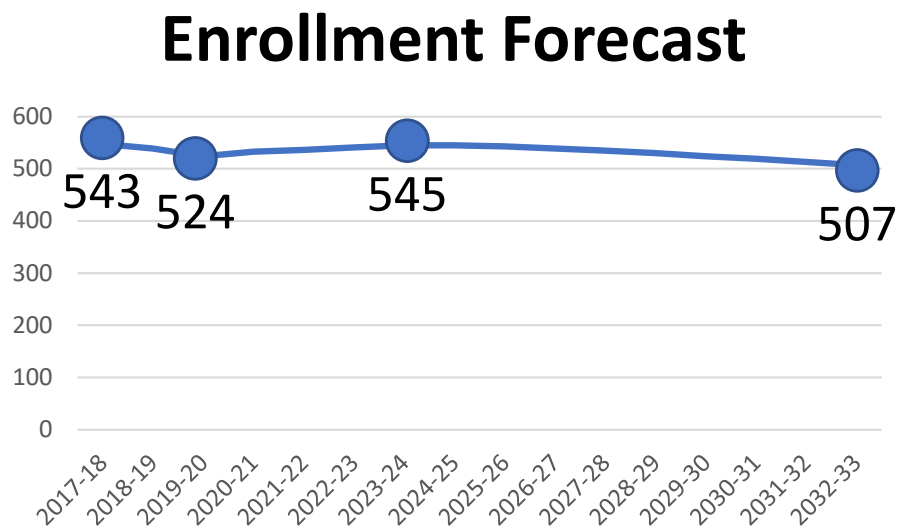
Broadmeadow School

Overview

- Broadmeadow has 24 general classrooms currently, but no dedicated space to the KASE program.
- Broadmeadow appears to be well positioned to both implement Full-Day Kindergarten and accommodate the enrollment forecast in 2019-2020.
- Broadmeadow will require a combination of four and five sections per grade level to maintain the District's class size guidelines.
- Enrollment forecast data suggests 3rd grade will require 5 sections per grade level for a span of five years beginning in 2022-2023 and concluding in the year 2026-27.
- The spatial deficiency created by the need for one additional section of 3rd grade for these years can be addressed by re-purposing the existing Spanish classroom as a general classroom and delivering the Spanish program in general classrooms.
- With the exception of dedicated space for Spanish, it appears that each of the existing specials can remain in their dedicated spaces and accommodate both the enrollment forecast and the implementation of full-day kindergarten.
- No renovations, additions, or modularity appear to be needed over the span of the enrollment forecast.
- Should the District choose to convert the Technology Lab to a general classroom, the conceptual cost would be \$165,000.

Enrollment Forecast

The enrollment chart below represents the K-5 enrollment forecast as prepared by McKibben Demographics with one exception, the Kindergarten forecast has been increased by 7.5% to reflect the likely return of students to Needham Public Schools once its Full Day Kindergarten program goes into effect. Class size calculations and classroom count calculations were based on this adjusted forecast. The McKibben forecast is provided as an appendix. Similarly, the year-by-year and grade level by grade level calculations are provided as another appendix. Please refer to those for more information.



Building Capacity

For elementary schools, the building capacity algorithm is based on the number of grade level classrooms. Broadmeadow has typically been a four section school. As such, it has a typical capacity of 4 sections per grade level or 24 sections total or a capacity of 544 students. This capacity could be increased slightly by converting dedicated spaces for Technology, Spanish, Art, and Music to grade level classrooms. It is important to note, however, that Broadmeadow is incapable of functioning as fully five section per grade level school without additional spaces. Fortunately, Dore & Whittier's space needs analysis revealed that Broadmeadow had a peak need of 25 total sections in any one year of the forecast.

$$\begin{aligned}
 &4 \text{ Sections Per Grade Level} \times 4 \text{ Grade Levels} \times 22 \text{ students} = 352 \text{ Students} \\
 &+ 4 \text{ Sections Per Grade Level} \times 2 \text{ Grade Levels} \times 24 \text{ students} = 192 \text{ Students} \\
 &\hline
 &544 \text{ Students}
 \end{aligned}$$

Class Size Calculations

The chart below communicates information about class sizes across the enrollment forecast. Reported are the District's class size guidelines, data for Broadmeadow as a four or five section school, and the minimum, average, and maximum class sizes experienced over the enrollment forecast. A red shading indicates a data point where the District's class size guidelines are exceeded. The darker the shade of red, the further beyond the guideline. In general, the data suggests that Broadmeadow can function as a predominately 4 section school and keep its class sizes within its guidelines. Third grade is the exception. Over the entire projection, the average class size for third grade is slightly above the guidelines, which is why our space needs analysis indicates a need for five sections for third grade in certain years.

Class Size Calculations

	Class Size Guideline	Number of Sections	Min	AVG	MAX
K	18-22	4	19.89	21.06	21.77
		5	15.91	16.85	17.42
1 st	18-22	4	20.00	21.38	22.25
		5	16.00	17.10	17.80
2 nd	18-22	4	21.00	22.23	23.00
		5	16.80	17.79	18.40
3 rd	18-22	4	22.00	23.02	23.75
		5	17.60	18.41	19.00
4 th	20-24	4	22.00	22.79	23.50
		5	17.60	18.23	18.80
5 th	20-24	4	20.50	22.25	23.00
		5	16.40	17.80	18.40

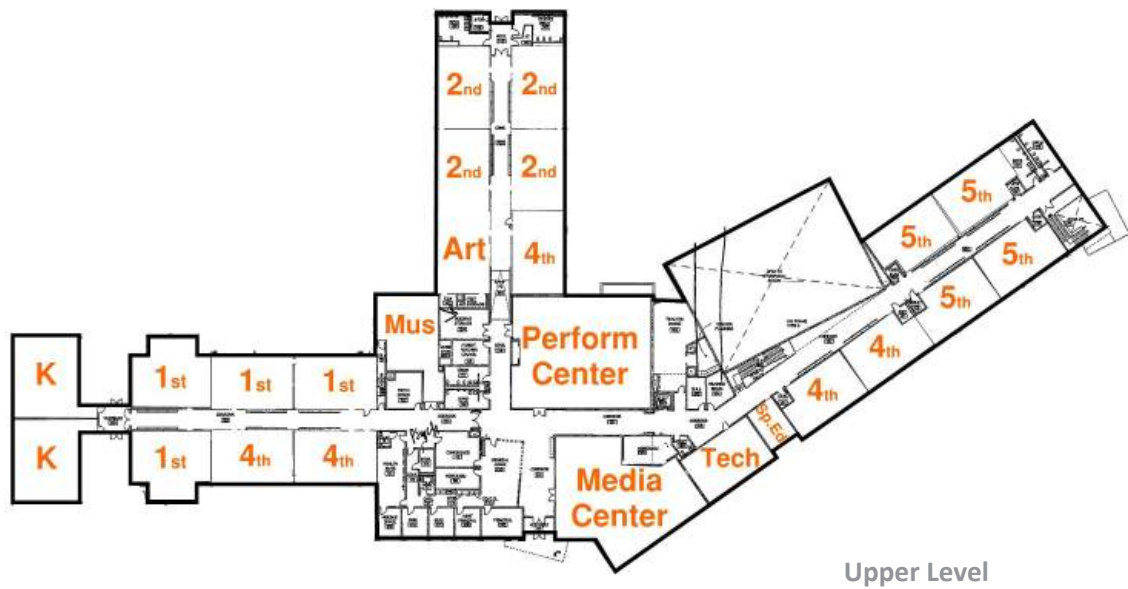
At Or Below Guideline

8 student or more Above Guideline

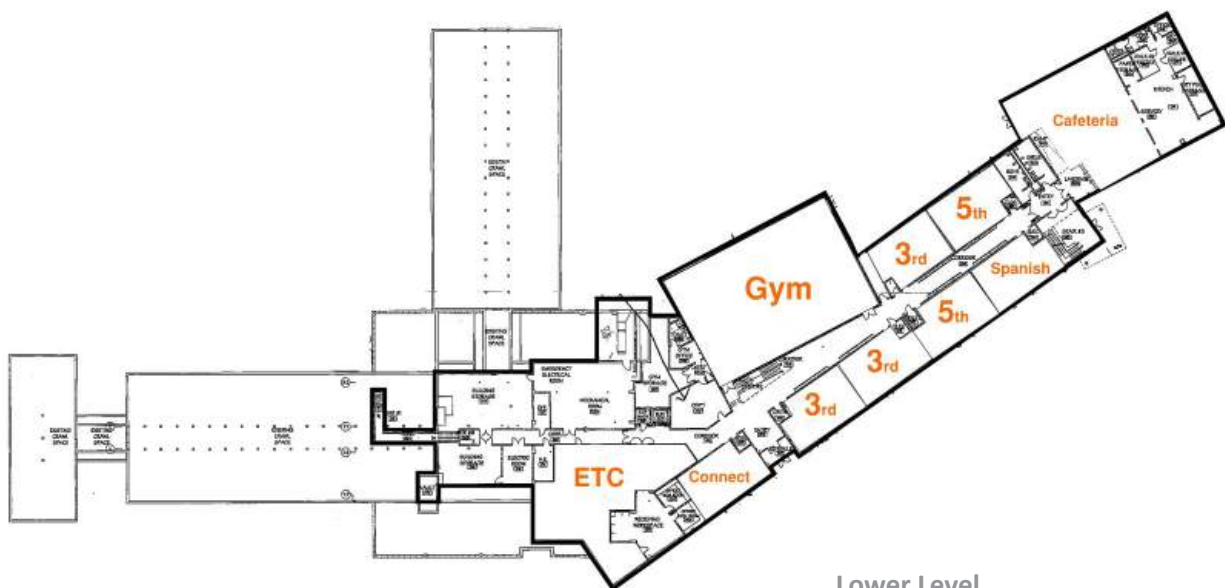
Study To Implement Full Day Kindergarten – Needham Public Schools
Broadmeadow School

Existing Space Use Floor Plans

The images below depict the current use for each space.



Upper Level

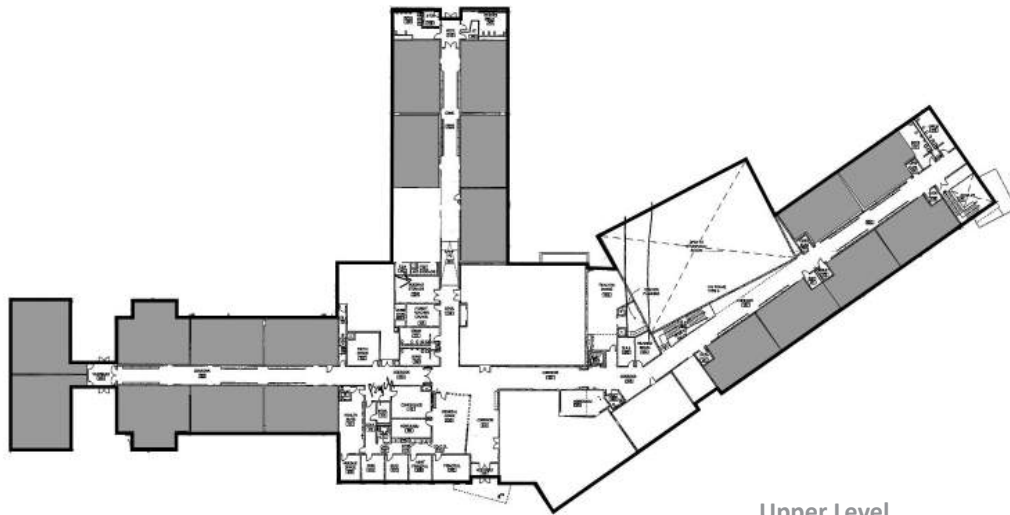


Lower Level

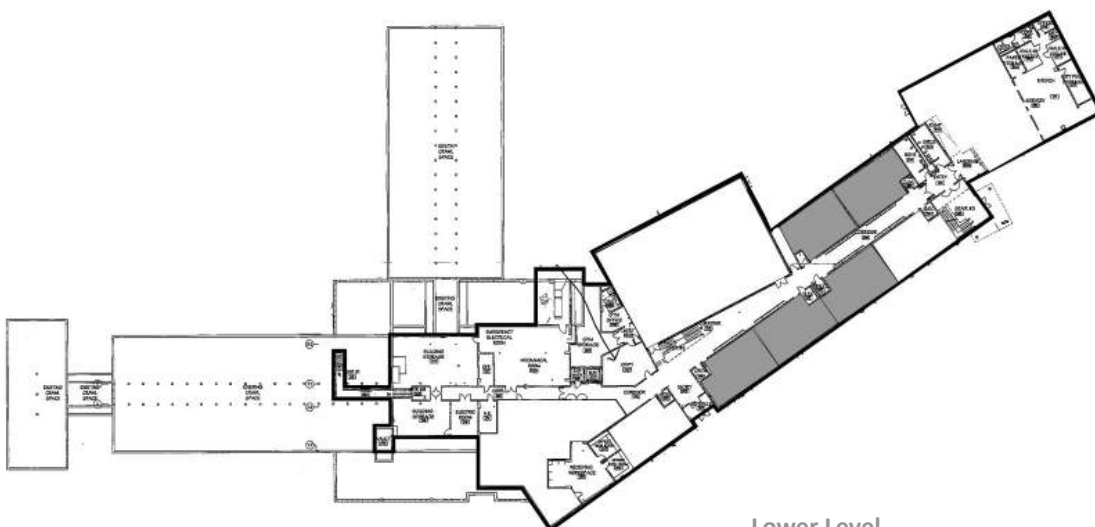
Broadmeadow School

Existing Grade Level Classroom Locations

The shaded areas below depict the current location of grade level classrooms. In total, 24 spaces are occupied by grade level classrooms.



Upper Level



Lower Level

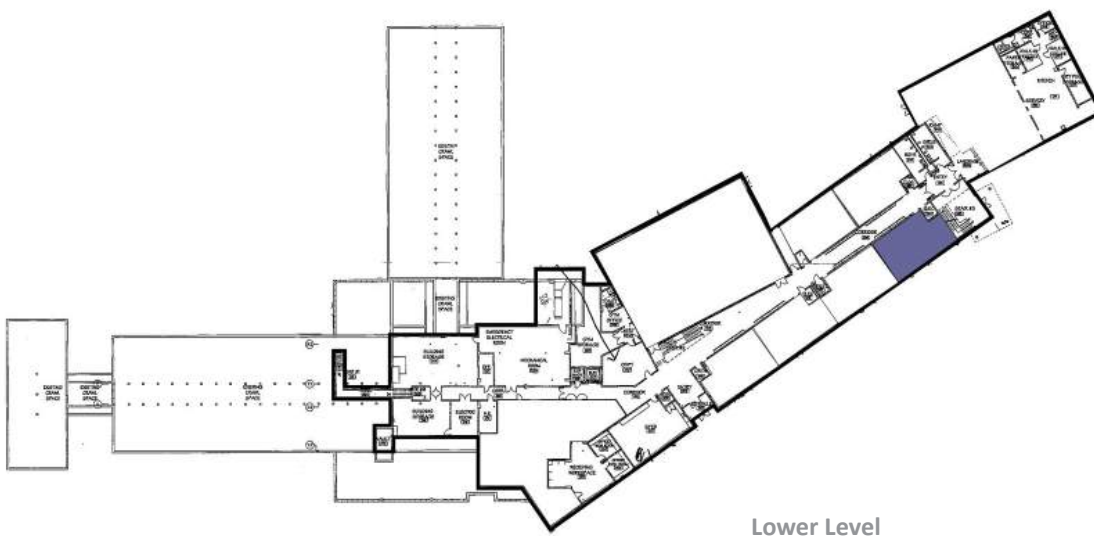
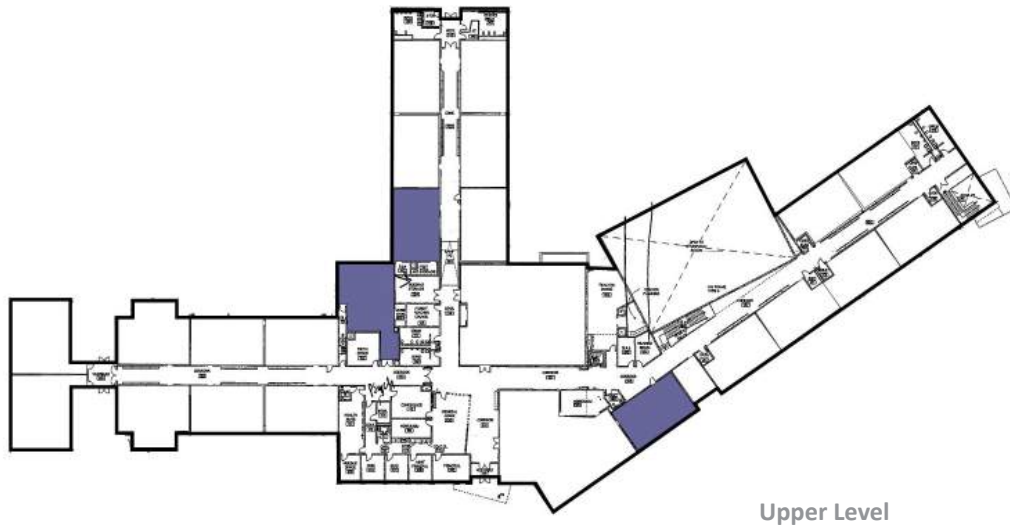
Broadmeadow School

Existing Dedicated Specials, Candidates for Conversion to Grade Level Classrooms

The shaded areas below depict the current location of spaces dedicated to specials like Art, Music, Spanish, and Technology with the potential to be converted to grade level classrooms if the special no longer had dedicated space. In total, 4 spaces demonstrate potential to be converted to grade level classrooms. Should conversion become necessary, the likely sequence of conversion would be:

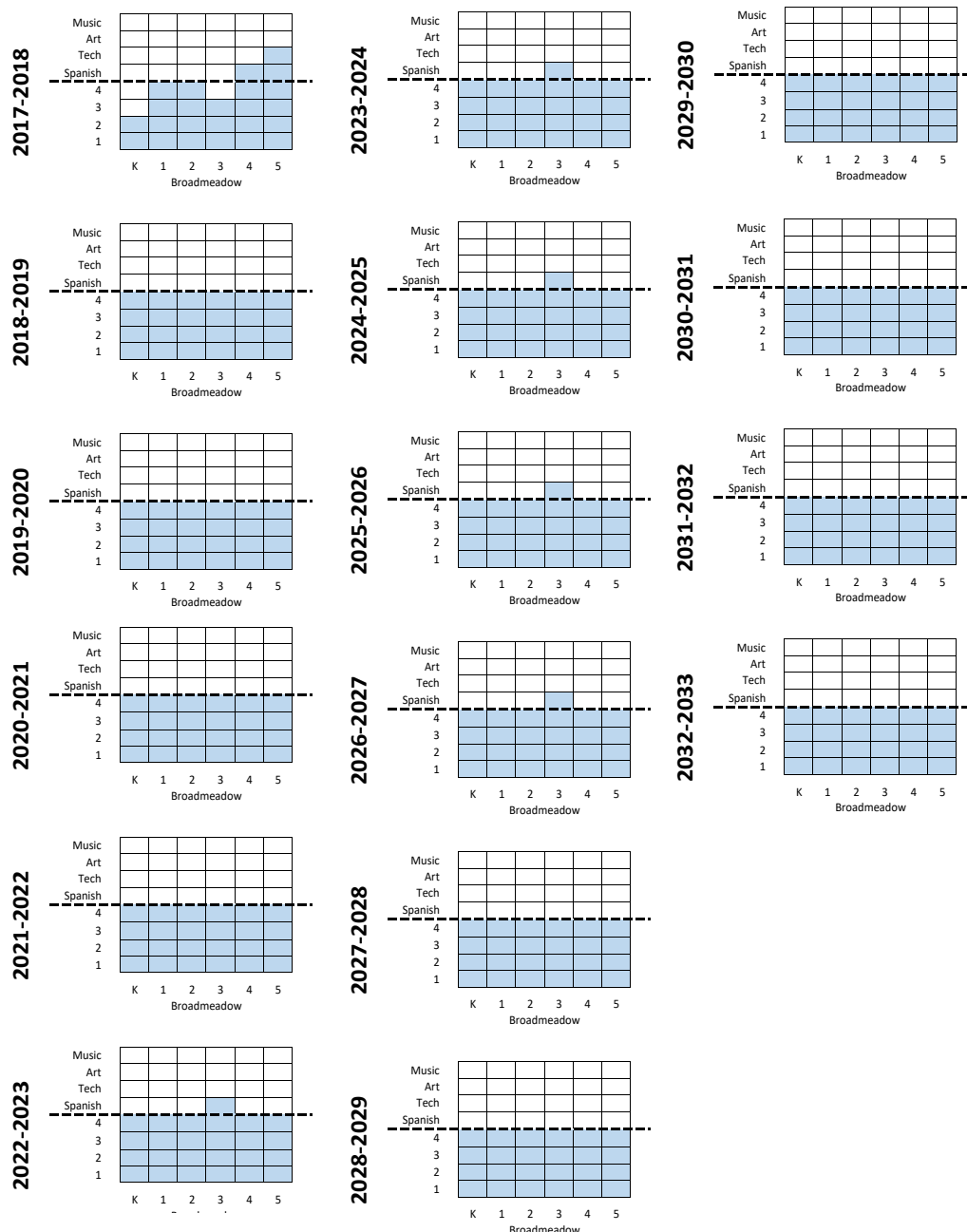
1st = Spanish, 2nd = Music, 3rd = Technology, and 4th Art

Broadmeadow is one of two schools with dedicated Spanish space. It is the easiest to deliver in a grade level classroom. Music could be delivered in the Performance Center, although that would put pressure on STEAM and professional development. Technology could be delivered on Chrome carts, but may require minor renovation to convert that space. Art would be last because it has the most storage and infrastructure needs of the specials. It is important to note, that the space needs analysis reveals a potential need to convert only one of these dedicated specials to a grade level classroom.



Broadmeadow**Space Needs Analysis**

The graphics below illustrate Broadmeadow's classroom need over the course of the enrollment forecast assuming maximum class sizes of 23 students per section for grades K through 3rd and 25 for grades 4th and 5th. Each box represents a potential classroom section. Colored boxes represent when a classroom section is needed. The dashed line represents the capacity of the building without re-purposing space. The dedicated specials boxes above the dashed line represent spaces available for potential conversion to grade level classrooms. For Broadmeadow this analysis revealed a need to have five sections of 3rd grade for a span of five years near the middle of the forecast, which could be accommodated by allowing Spanish to be delivered in grade level classrooms and without dedicated space.



Broadmeadow School

In addition to analyzing space needs for general classrooms, Dore & Whittier examined spatial needs for the specials and for the capacity of the cafeteria, kitchen, and playgrounds. The table below examines how many rooms are necessary to deliver each of the specials in the peak enrollment condition. Our analysis reveals that one dedicated space for Art, Music, Spanish and Media are necessary - which currently exist. As discussed previously, Spanish may need to be delivered on cart in order to be converted to a grade level classroom. In addition, the analysis reveals the Chorus and STEAM require less than one dedicated classroom combined, which can be accommodated by the technology space and the Performance Center as is currently the practice. Finally, the analysis reveals a need for two full PE stations, which can be accommodated by the current gymnasium.

Sections of Specials by Grade Level							
	ART	MUSIC	CHORUS	SPANISH	MEDIA	STEAM	PE
K	8	8	0	0	0	0	8
1st	4	4	0	4	4	4	8
2nd	4	4	0	4	4	4	8
3rd	5	5	0	10	5	5	10
4th	4	4	2	8	4	0	8
5th	4	4	2	8	4	0	8
Need	0.97	0.97	0.13	1.13	0.70	0.43	1.67
Existing	1	1	0.5	1	1	0.5	2

In addition to analyzing space needs for general classrooms, Dore & Whittier examined spatial needs for the specials and for the capacity of the cafeteria, kitchen, and playgrounds. Based on conversations with the school principal and the District's director of food service, the cafeteria, kitchen, and playgrounds appear to be capable of supporting the implementation of full-day kindergarten and the enrollment forecast.

Additions/Renovations and Modularity Under Consideration

Broadmeadow is unlikely to require any renovations or modularity to implement full-day kindergarten and absorb the expected enrollment increase. Dore & Whittier has, however, prepared a preliminary cost estimate associated with converting the existing Technology classroom to a grade level classroom. The estimate is shown in total project costs and includes escalation. Additional details about this estimate are provided as an appendix.

Existing Technology Lab Renovations = \$165,000

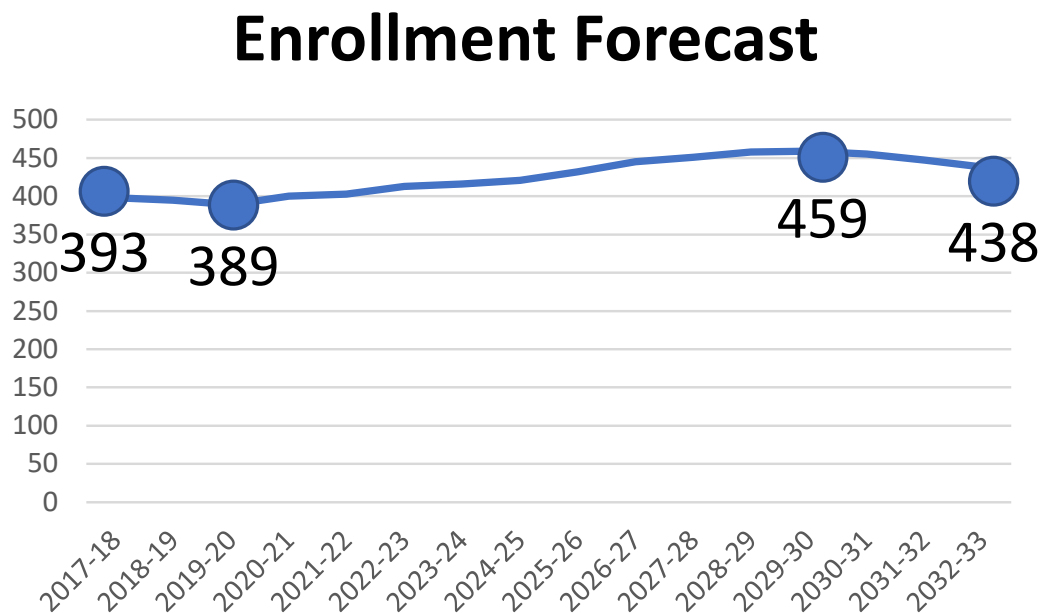
Eliot School

Overview

- Eliot has 17 general classrooms currently, but one dedicated space to the KASE program.
- Eliot appears to be well positioned to both implement Full-Day Kindergarten and accommodate the enrollment forecast in 2019-2020.
- Eliot will require a combination of three and four sections per grade level to maintain the District's class size guidelines - with several years of all six grades needing four sections without any redistricting.
- Enrollment forecast data suggests Eliot will require four sections of Kindergarten beginning in 2023-2024 and fully 4 section school by 2029-2030 without redistricting.
- The spatial deficiency created by the need for six additional sections, one per grade level, can be partially addressed by re-purposing the existing KASE classroom as a general classroom. The remaining deficiencies would require additional space in the form of modular classrooms or redistricting or both.
- Spatial deficiencies at Eliot may also be addressed by a potential major project at Mitchell depending on the timing of that project and assuming participation by the MSBA.
- A holistic view of the District reveals that there may be a possibility to leverage redistricting toward Mitchell to help address some of these deficiencies, but additional analysis is needed.
- Dore & Whittier has prepared a preliminary cost estimate to place six modulars on the Eliot site.
- Should the District chose to convert the Technology Lab to a general classroom, the conceptual cost would be \$165,000.

Enrollment Forecast

The enrollment chart below represents the K-5 enrollment forecast as prepared by McKibben Demographics with one exception, the Kindergarten forecast has been increased by 7.5% to reflect the likely return of students to Needham Public Schools once its Full Day Kindergarten program goes into effect. Class size calculations and classroom count calculations were based on this adjusted forecast. The McKibben forecast is provided as an appendix. Similarly, the year-by-year and grade level by grade level calculations are provided as another appendix. Please refer to those for more information.



Building Capacity

For elementary schools, the building capacity algorithm is based on the number of grade level classrooms. Eliot has typically been a three section school. As such, it has a typical capacity of 3 sections per grade level or 18 sections total or a capacity of 408 students, including the one room currently occupied by KASE. This capacity could be increased slightly by converting dedicated spaces for Technology, Art, and Music to grade level classrooms. It is important to note, however, that Eliot is incapable of functioning as fully four section per grade level school without additional spaces.

$$\begin{aligned}
 &3 \text{ Sections Per Grade Level} \times 4 \text{ Grade Levels} \times 22 \text{ students} = 264 \text{ Students} \\
 &+ 3 \text{ Sections Per Grade Level} \times 2 \text{ Grade Levels} \times 24 \text{ students} = 144 \text{ Students} \\
 &\hline
 &408 \text{ Students}
 \end{aligned}$$

Class Size Calculations

The chart below communicates information about class sizes across the enrollment forecast. Reported are the District's class size guidelines, data for Eliot as a three or four section school, and the minimum, average, and maximum class sizes experienced over the enrollment forecast. A red shading indicates a data point where the District's class size guidelines are exceeded. The darker the shade of red, the further beyond the guideline. In general, the data suggests that Eliot cannot function as a predominately 3 section school and keep its class sizes within its guidelines. Four sections are needed at all grade levels at some point in the enrollment forecast. In fact, as a three section school, the average class sizes over the enrollment forecast exceed the District's guidelines for all grade levels.

Class Size Calculations

	Class Size Guideline	Number of Sections	Min	AVG	MAX
K	18-22	3	22.58	24.14	26.52
		4	16.93	18.10	19.89
1 st	18-22	3	22.00	23.36	25.33
		4	16.50	17.52	19.00
2 nd	18-22	3	22.33	23.79	26.00
		4	16.75	17.84	19.50
3 rd	18-22	3	20.00	23.98	26.67
		4	15.00	17.98	20.00
4 th	20-24	3	20.33	24.17	27.00
		4	15.25	18.13	20.25
5 th	20-24	3	19.67	24.07	27.33
		4	14.75	18.05	20.50

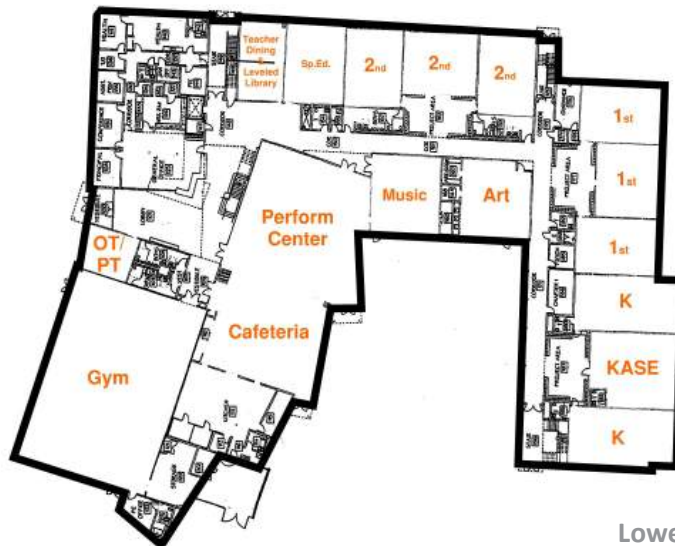
At Or Below Guideline

8 student or more Above Guideline

Study To Implement Full Day Kindergarten – Needham Public Schools
Eliot School

Existing Space Use Floor Plans

The images below depict the current use for each space.



Lower Level



Upper Level

Existing Grade Level Classroom Locations

The shaded areas below depict the current location of grade level classrooms. In total, 17 spaces are occupied by grade level classrooms.



Lower Level



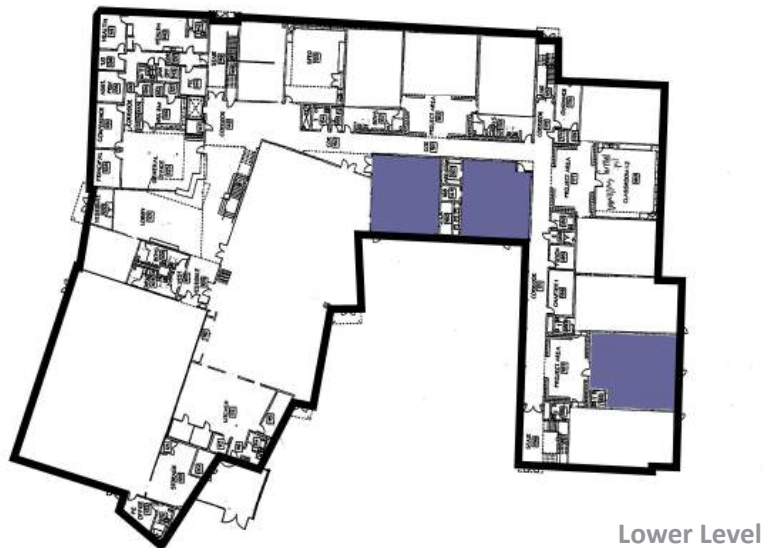
Upper Level

Existing Dedicated Specials, Candidates for Conversion to Grade Level Classrooms

The shaded areas below depict the current location of spaces dedicated to specials like Art, Music, and Technology with the potential to be converted to grade level classrooms if the special no longer had dedicated space. In total, 4 spaces demonstrate potential to be converted to grade level classrooms. Should conversion become necessary, the likely sequence of conversion would be:

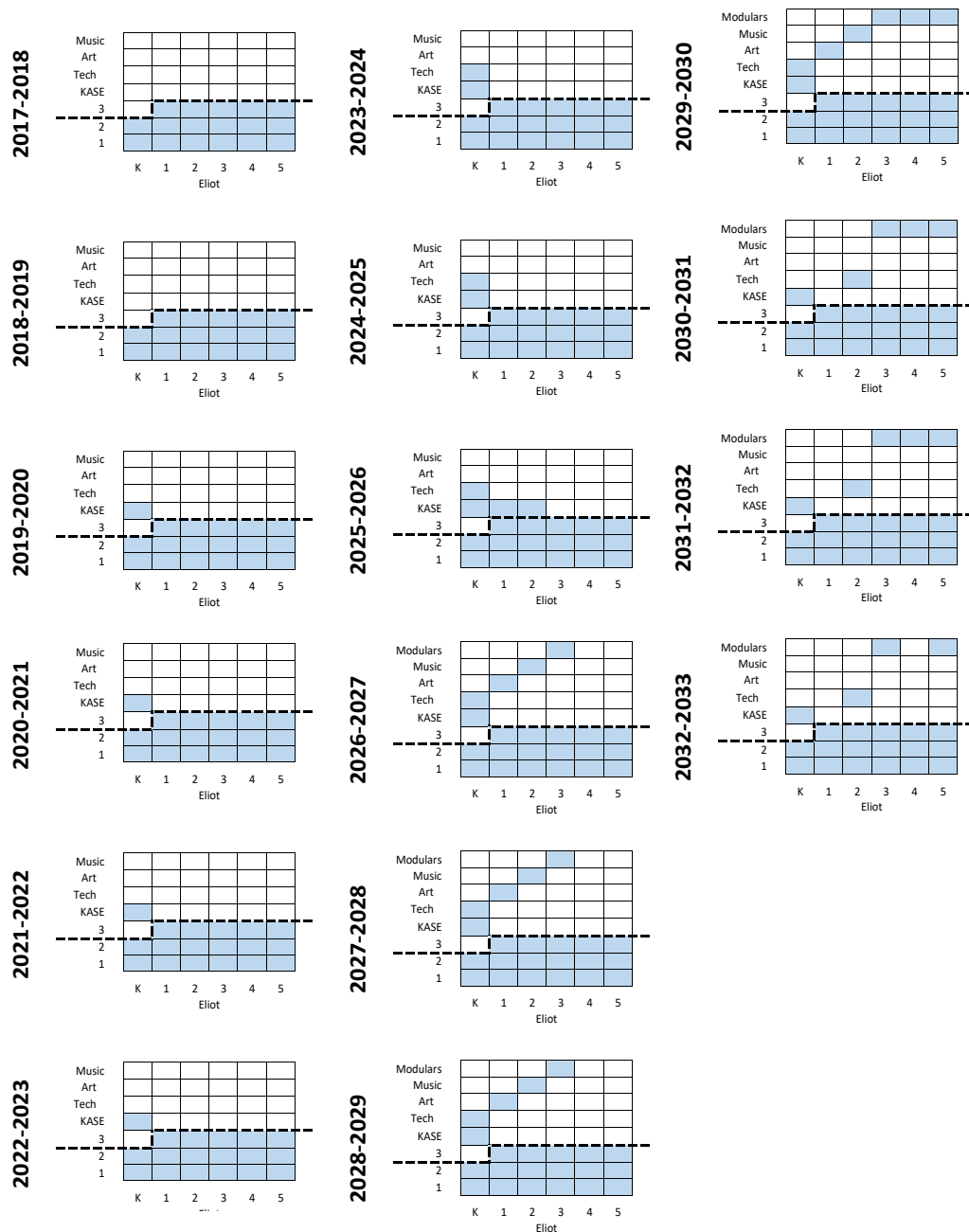
1st = KASE, 2nd = Music, 3rd = Technology, and 4th Art

Eliot is one of three schools with dedicated KASE space. It is the easiest to convert to a grade level classroom because the program would be discontinued. Music could be delivered in the Performance Center, although that would put pressure on STEAM and professional development. Technology could be delivered on Chrome carts, but may require minor renovation to convert that space. Art would be last because it has the most storage and infrastructure needs of the specials. While converting all four of these spaces to grade level classrooms is a potential solution for the expected spatial deficiency, it would leave an entire school without any dedicated space for specials. A more appropriate solution would be to add space via modular classrooms or through redistricting.



Space Needs Analysis

The graphics below illustrate Eliot's classroom need over the course of the enrollment forecast assuming maximum class sizes of 23 students per section for grades K through 3rd and 25 for grades 4th and 5th. Each box represents a potential classroom section. Colored boxes represent when a classroom section is needed. The dashed line represents the capacity of the building without re-purposing space. The dedicated specials boxes above the dashed line represent spaces available for potential conversion to grade level classrooms. For Eliot, this analysis revealed a need to have four sections of kindergarten beginning in 2023-24 and a need to accommodate four sections per grade level at all grades beginning in 2029-2030.



Eliot School

In addition to analyzing space needs for general classrooms, Dore & Whittier examined spatial needs for the specials and for the capacity of the cafeteria, kitchen, and playgrounds. The table below examines how many rooms are necessary to deliver each of the specials in the peak enrollment condition. Our analysis reveals that one dedicated space for Art, Music, Spanish and Media are necessary - which currently exist for Art and Music. Spanish may need to continue to be delivered on cart. In addition, the analysis reveals the Chorus and STEAM require less than one dedicated classroom combined, which can be accommodated by the technology space and the Performance Center as is currently the practice. Finally, the analysis reveals a need for two full PE stations, which can be accommodated by the current gymnasium.

Sections of Specials by Grade Level							
	ART	MUSIC	CHORUS	SPANISH	MEDIA	STEAM	PE
K	8	8	0	0	0	0	8
1st	4	4	0	4	4	4	8
2nd	4	4	0	4	4	4	8
3rd	4	4	0	8	4	4	8
4th	4	4	2	8	4	0	8
5th	4	4	2	8	4	0	8
Need	0.93	0.93	0.13	1.07	0.67	0.40	1.60
Existing	1	1	0.5	0	1	0.5	2

In addition to analyzing space needs for general classrooms, Dore & Whittier examined spatial needs for the specials and for the capacity of the cafeteria, kitchen, and playgrounds. Based on conversations with the school principal and the District's director of food service, the cafeteria and kitchen appear to be capable of supporting the implementation of full-day kindergarten and the enrollment forecast, but there may be a need to expand the Cafeteria seating area into the Performance Center using the folding partition. Due to an already tight site, there may be challenges related to the play grounds. The area currently dedicated for younger students may not be capable of supporting two additional sections of kindergarten at the same time.

Additions/Renovations and Modulares Under Consideration

A number of potential solutions exist to address Eliot's anticipated space needs. Dore & Whittier has prepared preliminary cost estimates associated with converting the existing Technology classroom to a grade level classroom and to place six modular classrooms on the site, assuming redistricting cannot occur. The estimates are shown in total project costs and include escalation. Additional details about these estimates are provided as an appendix.

- Existing Technology Lab Renovations = \$165,000
- Six 1200 SF Modular Classrooms = \$3.73 M

The site plan below depicts approximately where six modulares, stacked two stories high could go. Additional study is required to confirm this as a viable location and to refine a cost estimate.



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Mitchell School

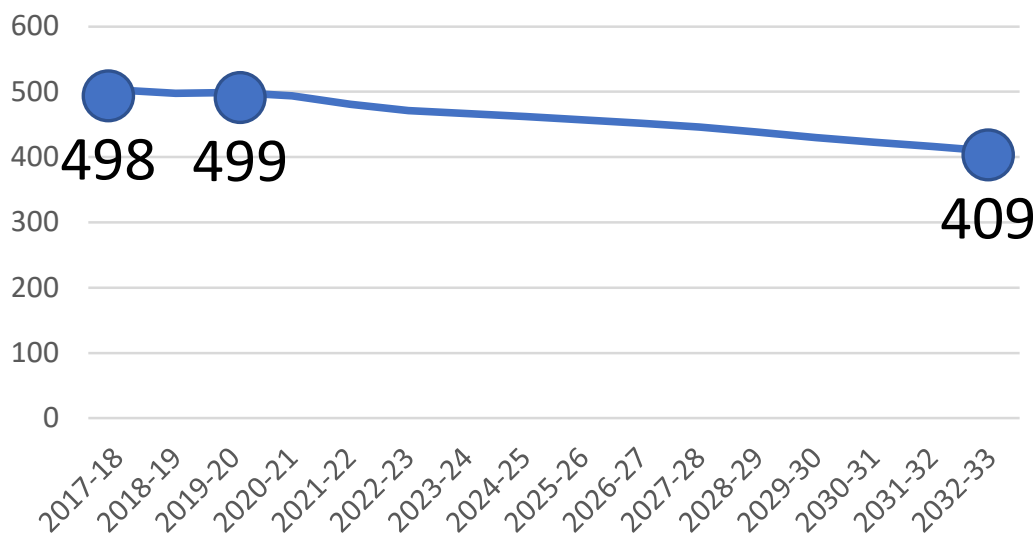
Overview

- Mitchell has 22 general classrooms currently, but two are housed in temporary modular space.
- Mitchell possesses spatial deficiencies in PE and Special Education would remain and would not be addressed without additional space.
- Other than the deficiencies related to PE and Special Education, Mitchell appears to be well positioned to both implement Full-Day Kindergarten and accommodate the enrollment forecast in 2019-2020, but Art will likely be displaced and without dedicated space beginning in 2019-2020.
- Enrollment forecast data suggests Mitchell will require four sections grade level for the bulk of the enrollment forecast, but appears to transition to a fully three section per grade school beginning in 2030-2031m, which may permit some redistricting to occur to address the spatial deficiencies expect at Eliot around the same time.
- Spatial deficiencies at Mitchell may also be addressed by a potential major project at Mitchell depending on the timing of that project and assuming participation by the MSBA.
- A holistic view of the District reveals that there may be a possibility to leverage redistricting toward Mitchell to help address some of these deficiencies, but additional analysis is needed.
- Dore & Whittier has prepared a preliminary cost estimate to address the spatial deficiencies:
 - Place two modulares on the Mitchell site to address the Art and Special Education deficiencies.
 - Place a pre-engineered building to address the PE deficiencies and renovate the existing gym to address the Art and special education deficiencies.
 - Place a sprung structure building to address the PE deficiencies and renovate the existing gym to address the Art and special education deficiencies.
 - Renovate a lower level storage space and place a small elevator/stair addition to address Art deficiencies.

Enrollment Forecast

The enrollment chart below represents the K-5 enrollment forecast as prepared by McKibben Demographics with one exception, the Kindergarten forecast has been increased by 7.5% to reflect the likely return of students to Needham Public Schools once its Full Day Kindergarten program goes into effect. Class size calculations and classroom count calculations were based on this adjusted forecast. The McKibben forecast is provided as an appendix. Similarly, the year-by-year and grade level by grade level calculations are provided as another appendix. Please refer to those for more information.

Enrollment Forecast



Building Capacity

For elementary schools, the building capacity algorithm is based on the number of grade level classrooms. Mitchell has typically been a four section school. As such, it has a capacity for 22 total sections. Two of those sections are currently in modulars or a capacity of 500 students. This capacity could be increased slightly by converting dedicated spaces for KASE, Art, and Music to grade level classrooms. McKibben's enrollment forecast suggests that Art will be without dedicated space beginning in 2019-2020, but no other losses of dedicated spaces will be necessary. In fact, a potential existing to regain a dedicated Art space beginning in 2026-2027 and additional dedicated special education space beginning in 2028-2029.

$$\begin{aligned}
 &2 \text{ Sections Per Grade Level} \times 1 \text{ Grade Levels} \times 22 \text{ students} = 44 \text{ Students} \\
 &4 \text{ Sections Per Grade Level} \times 3 \text{ Grade Levels} \times 22 \text{ students} = 264 \text{ Students} \\
 &\underline{+ 4 \text{ Sections Per Grade Level} \times 2 \text{ Grade Levels} \times 24 \text{ students} = 192 \text{ Students}} \\
 &500 \text{ Students}
 \end{aligned}$$

Class Size Calculations

The chart below communicates information about class sizes across the enrollment forecast. Reported are the District's class size guidelines, data for Mitchell as a three or four section school, and the minimum, average, and maximum class sizes experienced over the enrollment forecast. A red shading indicates a data point where the District's class size guidelines are exceeded. The darker the shade of red, the further beyond the guideline. In general, the data suggests that Mitchell can function as a predominately four section school and keep its class sizes within its guidelines. Due to its declining enrollment forecast, Mitchell may become a fully three section per grade school in 2030-31 making it possible to recapture dedicated space for Art, special education, and with the potential to redistrict from Eliot to address spatial needs there expected about the same time.

Class Size Calculations

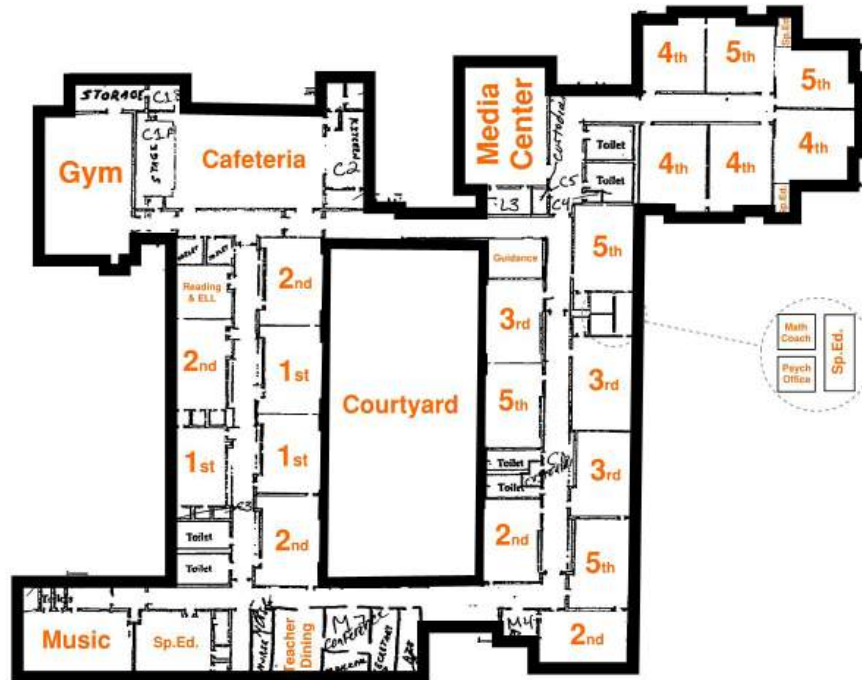
	Class Size Guideline	Number of Sections	Min	AVG	MAX
K	18-22	3	21.50	23.78	25.44
		4	16.13	17.83	19.08
1 st	18-22	3	21.33	23.67	25.67
		4	16.00	17.75	19.25
2 nd	18-22	3	22.33	24.67	26.67
		4	16.75	18.50	20.00
3 rd	18-22	3	23.00	25.62	29.33
		4	17.25	19.21	22.00
4 th	20-24	3	23.67	26.52	31.33
		4	17.75	19.89	23.50
5 th	20-24	3	24.33	26.81	31.00
		4	18.25	20.11	23.25

At Or Below Guideline

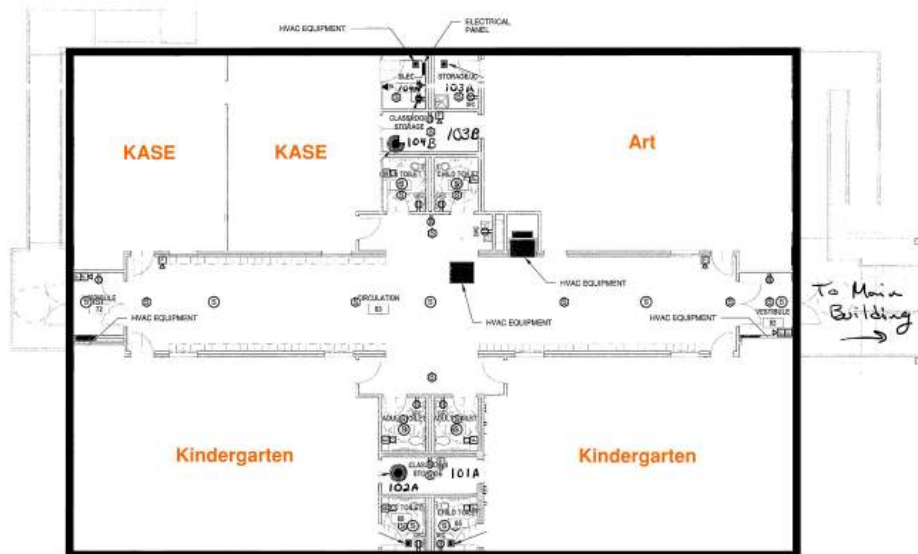
8 student or more Above Guideline

Existing Space Use Floor Plans

The images below depict the current use for each space.



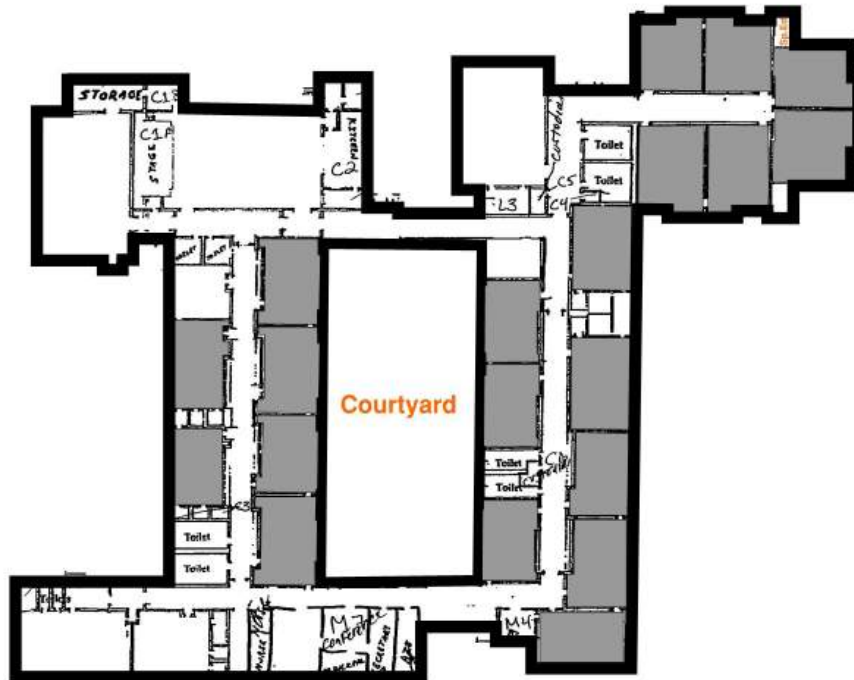
Main Building



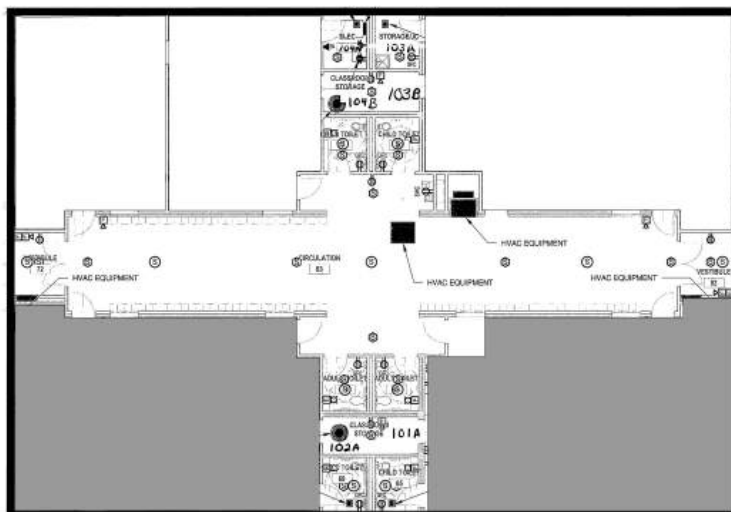
Modular Building

Existing Grade Level Classroom Locations

The shaded areas below depict the current location of grade level classrooms. In total, 22 spaces are occupied by grade level classrooms. Two of which are located in the modular classroom building. Once KASE and Art are repurposed for kindergarten, the building will have 24 spaces dedicated to grade level classrooms.



Main Building



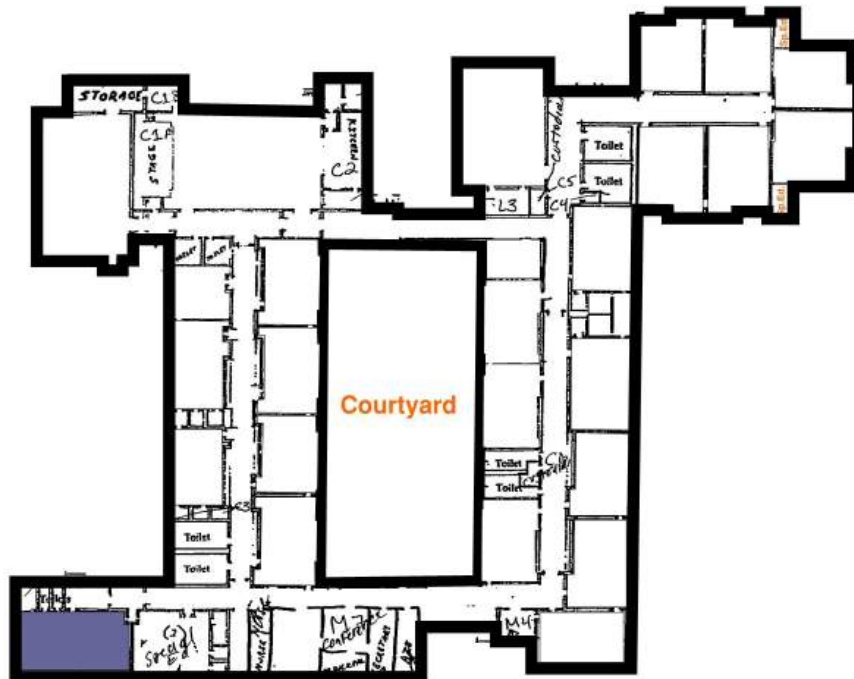
Modular Building

Existing Dedicated Specials, Candidates for Conversion to Grade Level Classrooms

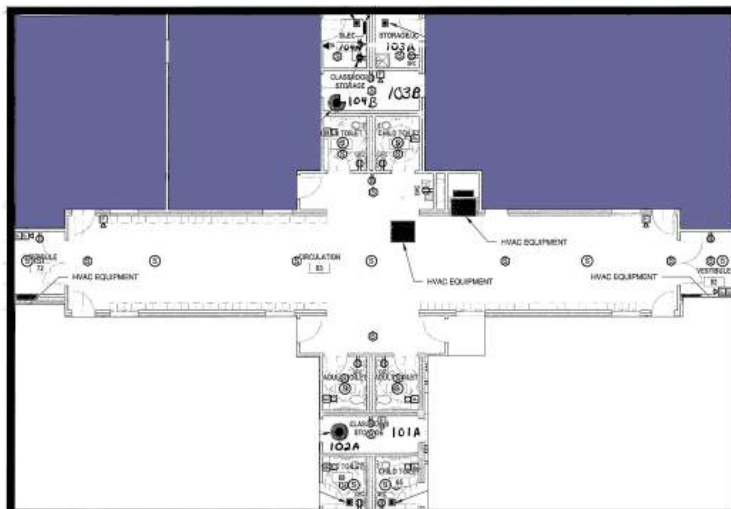
The shaded areas below depict the current location of spaces dedicated to specials like Art, Music, and KASE with the potential to be converted to grade level classrooms if the special no longer had dedicated space. In total, 3 spaces demonstrate potential to be converted to grade level classrooms. Should conversion become necessary, the likely sequence of conversion would be:

1st = KASE, 2nd = Art, 3rd = Music

Unlike some of the other facilities, the fourth section of Kindergarten should be located in the modular building, which would displace Art before music despite it requiring more infrastructure and storage needs.



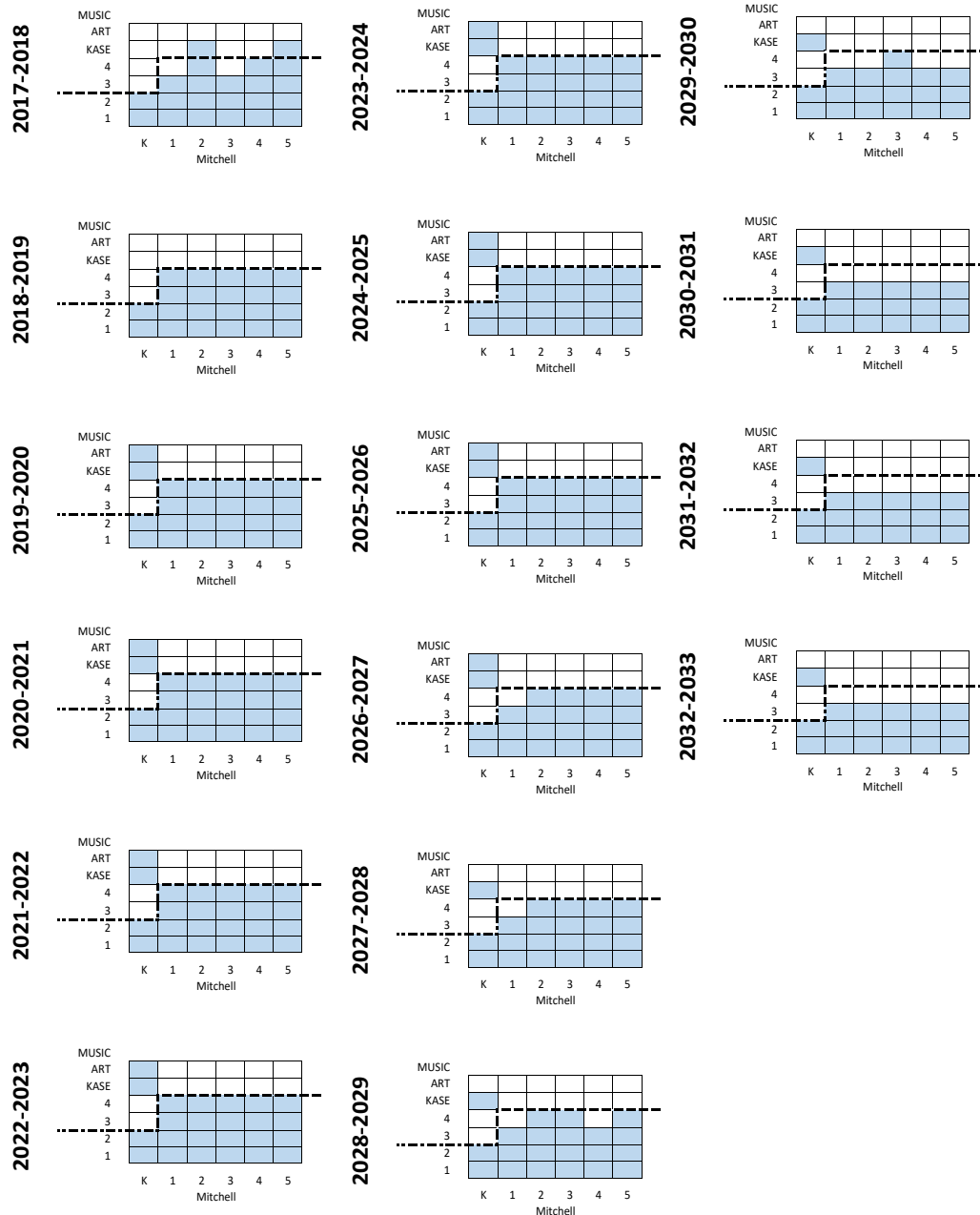
Main Building



Modular Building

Space Needs Analysis

The graphics below illustrate Mitchell's classroom need over the course of the enrollment forecast assuming maximum class sizes of 23 students per section for grades K through 3rd and 25 for grades 4th and 5th. Each box represents a potential classroom section. Colored boxes represent when a classroom section is needed. The dashed line represents the capacity of the building without re-purposing space. The dedicated specials boxes above the dashed line represent spaces available for potential conversion to grade level classrooms. For Mitchell, this analysis revealed a need to have four sections of kindergarten beginning in 2019-2020 but a shift to three sections per grade level at all grades beginning in 2030-2031.



Mitchell School

In addition to analyzing space needs for general classrooms, Dore & Whittier examined spatial needs for the specials and for the capacity of the cafeteria, kitchen, and playgrounds. The table below examines how many rooms are necessary to deliver each of the specials in the peak enrollment condition. Our analysis reveals that one dedicated space for Art, Music, Spanish and Media are necessary - which currently exist for Art and Music. Spanish may need to continue to be delivered on cart. In addition, the analysis reveals the Chorus and STEAM require less than one dedicated classroom combined, which can be accommodated by the existing Music space and the Media Center as is currently the practice. Finally, the analysis reveals a need for two full PE stations, which cannot be accommodated by the current gymnasium.

Sections of Specials by Grade Level							
	ART	MUSIC	CHORUS	SPANISH	MEDIA	STEAM	PE
K	8	8	0	0	0	0	8
1st	4	4	0	4	4	4	8
2nd	4	4	0	4	4	4	8
3rd	4	4	0	8	4	4	8
4th	4	4	2	8	4	0	8
5th	4	4	2	8	4	0	8
Need	0.93	0.93	0.13	1.07	0.67	0.40	1.60
Existing	1	1	0	0	1	0	1

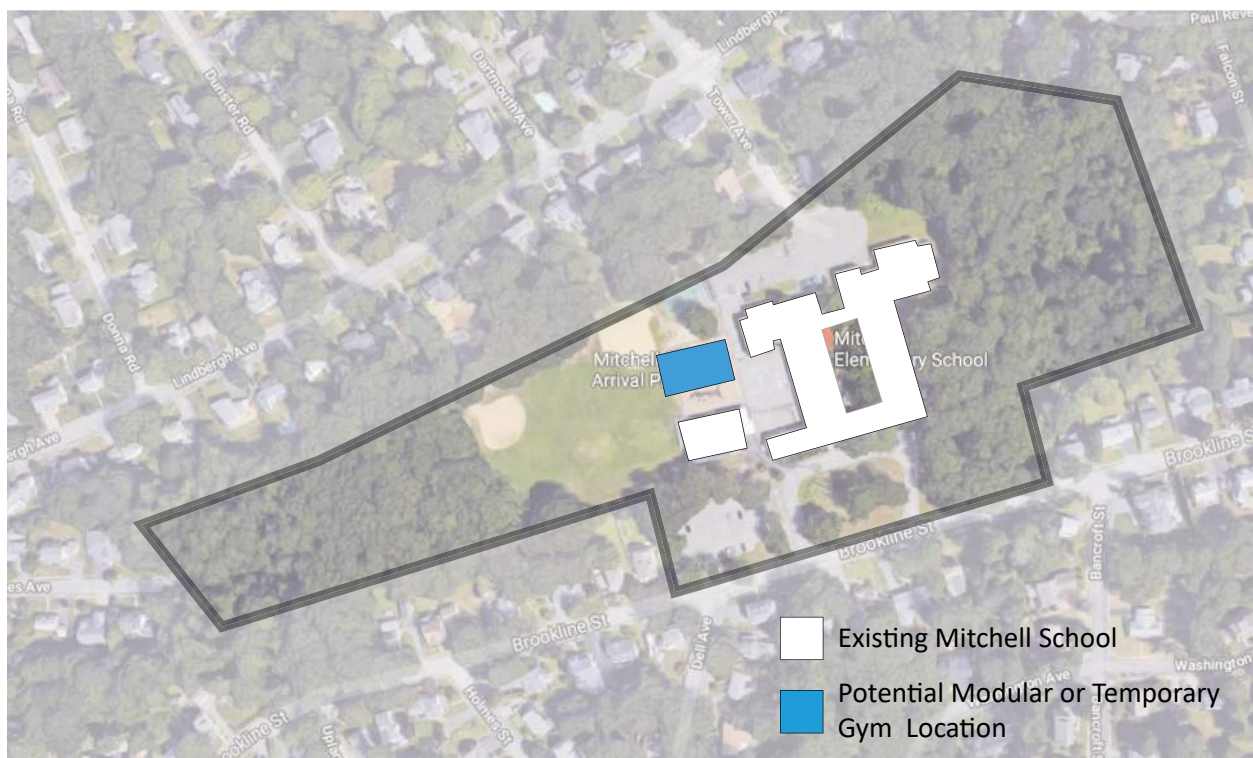
In addition to analyzing space needs for general classrooms, Dore & Whittier examined spatial needs for the specials, for special education, and for the capacity of the cafeteria, kitchen, and playgrounds. Based on conversations with the school principal and the District's director of food service, the cafeteria and kitchen appear to be capable of supporting the implementation of full-day kindergarten and the enrollment forecast. Some special education functions are housed in former student toilet rooms with no direct connection to a circulation path. Special education programs could benefit from additional dedicated space within the main building. Placing two modulars to serve Art and Music respectively may allow the existing Music classroom to be re-purposed to house special education programs.

Mitchell School**Additions/Renovations and Modulares Under Consideration**

A number of potential solutions exist to address Mitchell's anticipated space needs. Dore & Whittier has prepared the following preliminary cost estimates to address Mitchell's spatial deficiencies. The estimates are shown in total project costs and include escalation. Additional details about these estimates are provided as an appendix.

- Fabric Structure Gymnasium and Renovation of Existing Gym into Art and Music = \$2.07 M
- Pre-engineered Gymnasium and Renovation of Existing Gym into Art and Music = \$2.40 M
- Renovate Storage Space to serve Art and Place an Addition for Elevator and Stair = \$1.35M
- Two 1200 SF Modular Classrooms = \$1.25 M
- Renovate Existing KASE Classrooms = \$125,000

The site plan below depicts approximately where two modulares or a temporary gym could go. Additional study is required to confirm this as a viable location and to refine a cost estimate. The existing KASE space requires renovation during the summer of 2019 to remove the demising wall and convert it to kindergarten use. Also the furniture in the Art Classroom will need to be moved into storage to make way for the fourth Kindergarten.



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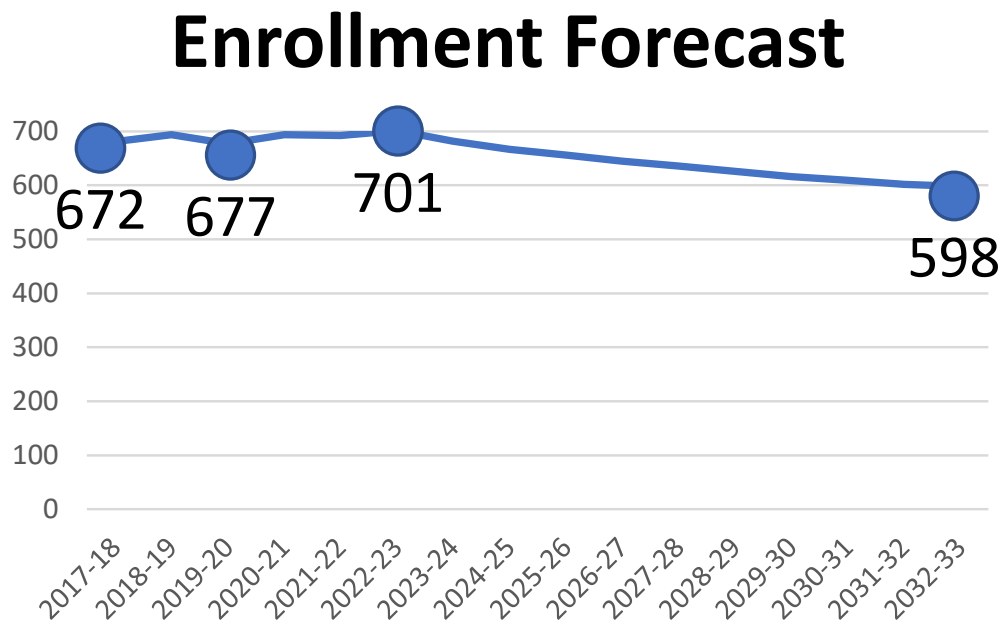
Newman School

Overview

- Newman has 30 general classrooms currently and houses the District's Pre-K program, which is assumed to continue.
- Newman appears to be well positioned to both implement Full-Day Kindergarten and accommodate the enrollment forecast in 2019-2020.
- Enrollment forecast data suggests Newman will require five and six sections grade level for the bulk of the enrollment forecast.
- Spatial deficiencies at Newman may also be addressed by re-purposing existing KASE classrooms, Art, and two additional classroom-sized spaces identified by the school Principal as not needing full sized classroom space.
- No renovations, additions, or modulares appear to be needed over the span of the enrollment forecast.

Enrollment Forecast

The enrollment chart below represents the K-5 enrollment forecast as prepared by McKibben Demographics with one exception, the Kindergarten forecast has been increased by 7.5% to reflect the likely return of students to Needham Public Schools once its Full Day Kindergarten program goes into effect. Class size calculations and classroom count calculations were based on this adjusted forecast. The McKibben forecast is provided as an appendix. Similarly, the year-by-year and grade level by grade level calculations are provided as another appendix. Please refer to those for more information.



Building Capacity

For elementary schools, the building capacity algorithm is based on the number of grade level classrooms. Newman has typically been a five and six section school. As such, it has a capacity for 30 total sections or a capacity of 682 students. This capacity could be increased slightly by converting dedicated spaces for KASE, Art, and two classroom spaces housing special education function which do not require full sized classrooms to grade level classrooms. McKibben's enrollment forecast suggests that the two classroom spaces and the two other classroom sized spaces will be necessary beginning in 2020-2021. but no other losses of dedicated spaces will be necessary. In fact, a potential existing to regain a those spaces beginning in 2023-2024.

$$\begin{aligned}
 &4 \text{ Sections Per Grade Level} \times 1 \text{ Grade Levels} \times 22 \text{ Students} = 88 \text{ Students} \\
 &5 \text{ Sections Per Grade Level} \times 3 \text{ Grade Levels} \times 22 \text{ Students} = 330 \text{ Students} \\
 &6 \text{ Sections Per Grade Level} \times 1 \text{ Grade Levels} \times 24 \text{ Students} = 144 \text{ Students} \\
 &+ 5 \text{ Sections Per Grade Level} \times 1 \text{ Grade Levels} \times 24 \text{ Students} = 120 \text{ Students} \\
 &\hline
 &682 \text{ Students}
 \end{aligned}$$

Class Size Calculations

The chart below communicates information about class sizes across the enrollment forecast. Reported are the District's class size guidelines, data for Newman as a five or six section school, and the minimum, average, and maximum class sizes experienced over the enrollment forecast. A red shading indicates a data point where the District's class size guidelines are exceeded. The darker the shade of red, the further beyond the guideline. In general, the data suggests that Newman can function as a predominately five section school and keep its class sizes within its guidelines.

Class Size Calculations

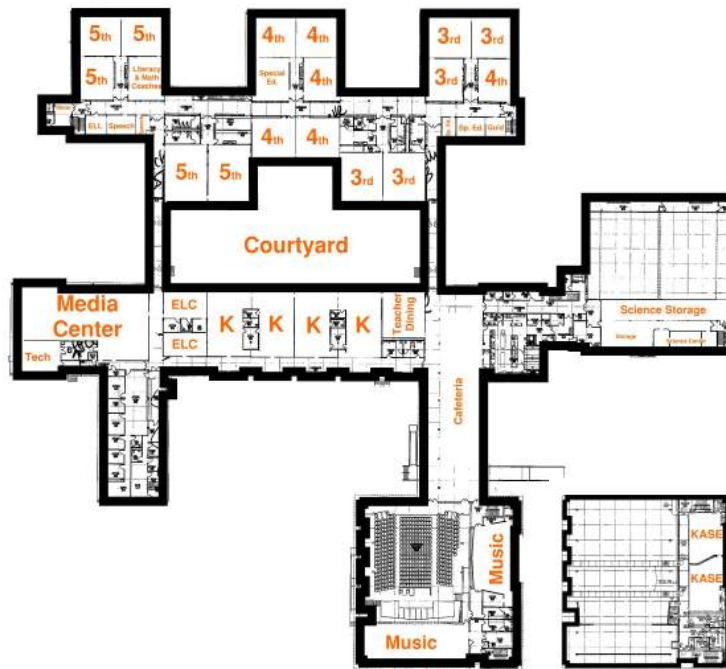
	Class Size Guideline	Number of Sections	Min	AVG	MAX
K	18-22	5	19.35	20.96	22.79
		6	16.13	17.47	18.99
1 st	18-22	5	19.00	20.99	23.40
		6	15.83	17.49	19.50
2 nd	18-22	5	19.60	21.76	25.40
		6	16.33	18.13	21.17
3 rd	18-22	5	20.00	21.73	25.20
		6	16.67	18.11	21.00
4 th	20-24	5	20.40	22.14	25.40
		6	17.00	18.45	21.17
5 th	20-24	5	20.00	22.43	26.00
		6	16.67	18.69	21.67

At Or Below Guideline

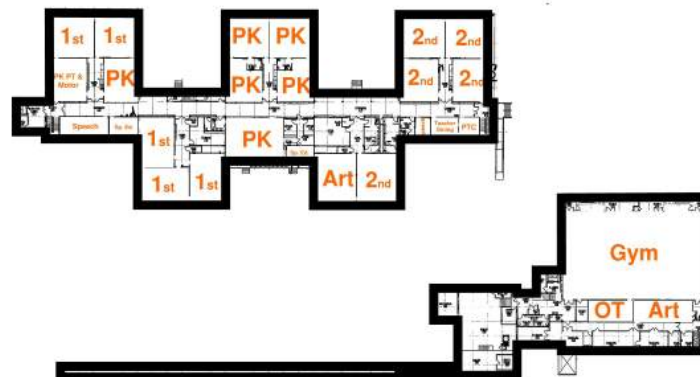
8 student or more Above Guideline

Existing Space Use Floor Plans

The images below depict the current use for each space.



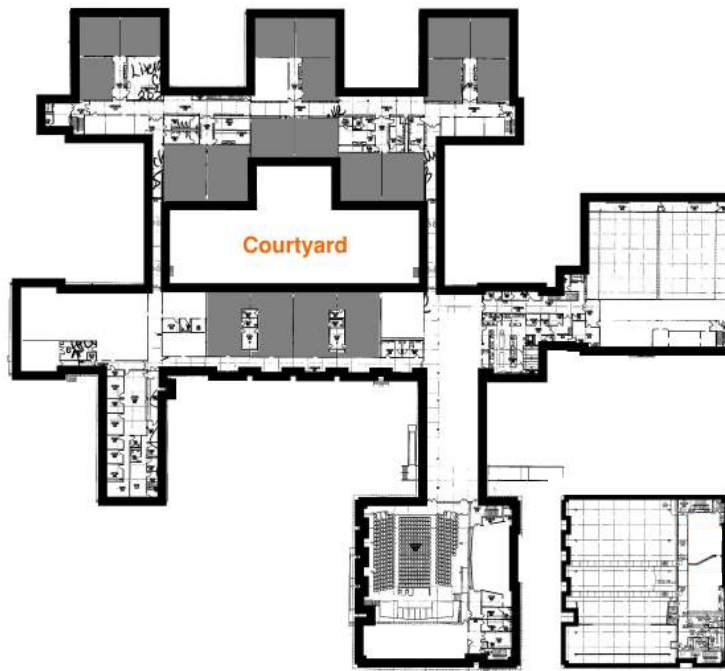
Main Level w/ Upper Level



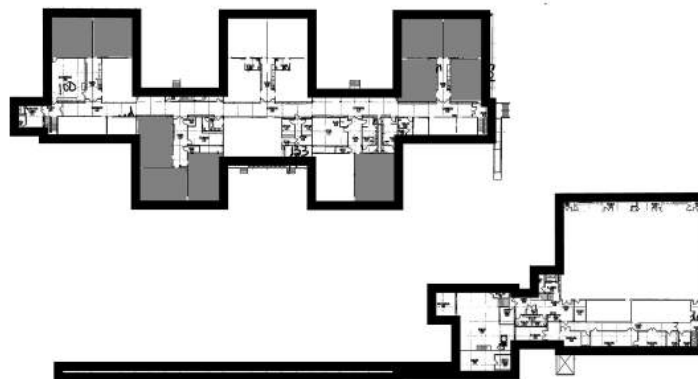
Lower Level

Existing Grade Level Classroom Locations

The shaded areas below depict the current location of grade level classrooms. In total, 30 spaces are occupied by grade level classrooms.



Main Level w/ Upper Level



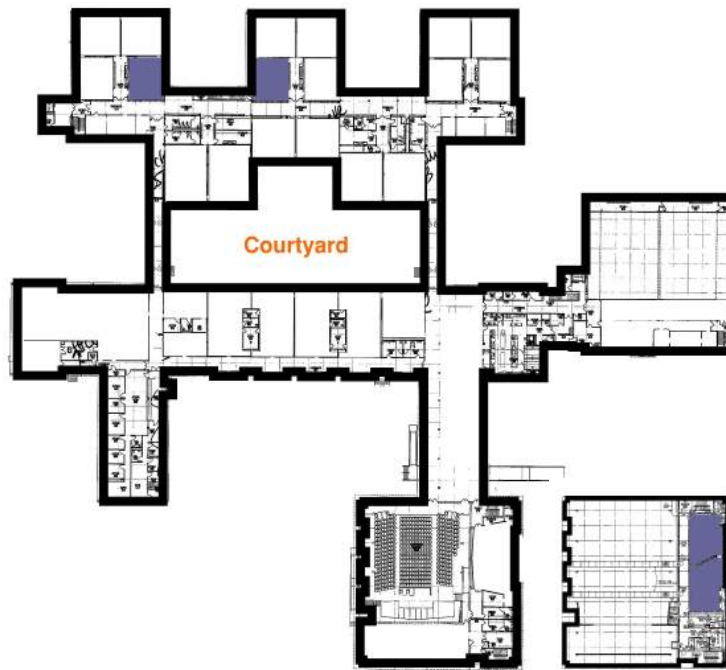
Lower Level

Existing Dedicated Specials, Candidates for Conversion to Grade Level Classrooms

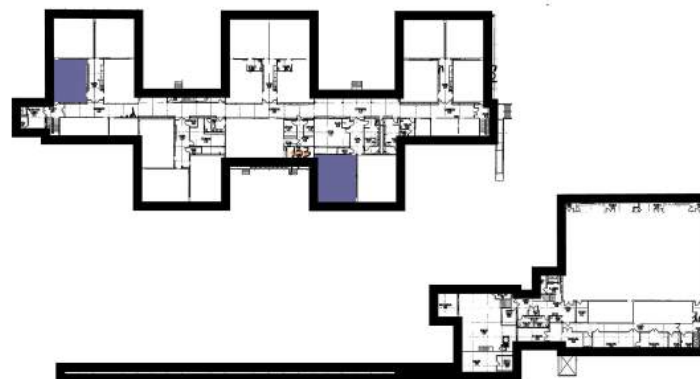
The shaded areas below depict the current location of spaces dedicated to specials like Art, KASE, and two classroom-sized special education spaces with the potential to be converted to grade level classrooms if the special no longer had dedicated space and if the special education functions moved into more size appropriate (smaller) space. In total, 6 spaces demonstrate potential to be converted to grade level classrooms. Should conversion become necessary, the likely sequence of conversion would be:

1st = KASE, 2nd = Special Education, 3rd = Art

Dore & Whittier also explored the possibility of converting the Science Center to Art Classrooms, but deemed there was no location within the District capable of housing the program.



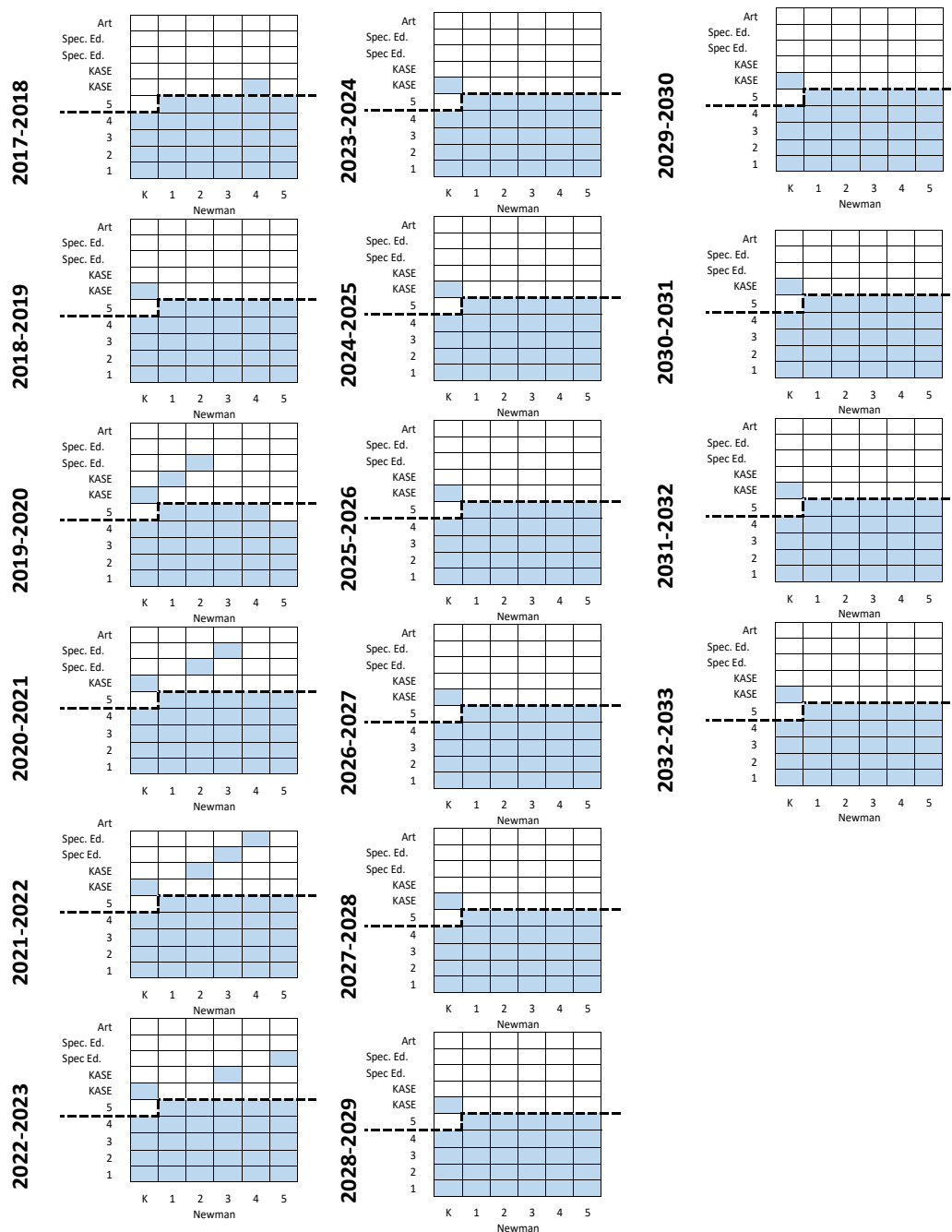
Main Level w/ Upper Level



Lower Level

Space Needs Analysis

The graphics below illustrate Newman's classroom need over the course of the enrollment forecast assuming maximum class sizes of 23 students per section for grades K through 3rd and 25 for grades 4th and 5th. Each box represents a potential classroom section. Colored boxes represent when a classroom section is needed. The dashed line represents the capacity of the building without re-purposing space. The dedicated specials boxes above the dashed line represent spaces available for potential conversion to grade level classrooms. For Newman, this analysis revealed a need to have five sections of kindergarten beginning in 2019-2020 and an occasional need for six sections at some grade levels in some years.



Newman School

In addition to analyzing space needs for general classrooms, Dore & Whittier examined spatial needs for the specials and for the capacity of the cafeteria, kitchen, and playgrounds. The table below examines how many rooms are necessary to deliver each of the specials in the peak enrollment condition. Our analysis reveals that a little more than one dedicated space for Art, Music, Spanish and Media are necessary - which currently exist for Art and Music. Spanish may need to continue to be delivered on cart. In addition, the analysis reveals the Chorus and STEAM require less than one dedicated classroom each, which can be accommodated by the existing stage space and the Technology Center as is currently the practice. Finally, the analysis reveals a need for slightly more than two full PE stations, which can be accommodated by the current gymnasium.

Sections of Specials by Grade Level							
	ART	MUSIC	CHORUS	SPANISH	MEDIA	STEAM	PE
K	10	10	0	0	0	0	10
1st	5	5	5	5	5	5	10
2nd	6	6	6	6	6	6	12
3rd	6	6	6	12	6	6	12
4th	6	6	3	12	6	0	12
5th	5	5	3	10	5	0	10
Need	1.27	1.27	0.77	1.50	0.93	0.57	2.20
Existing	1	1	0	0	1	1	2

In addition to analyzing space needs for general classrooms, Dore & Whittier examined the capacity of the cafeteria, kitchen, and playgrounds. Based on conversations with the school principal and the District's director of food service, the cafeteria and kitchen appear to be capable of supporting the implementation of full-day kindergarten and the enrollment forecast.

Additions/Renovations and Modularity Under Consideration

Newman is unlikely to require any renovations or modulars to implement full-day kindergarten and absorb the expected enrollment increase.

Sunita L. Williams School

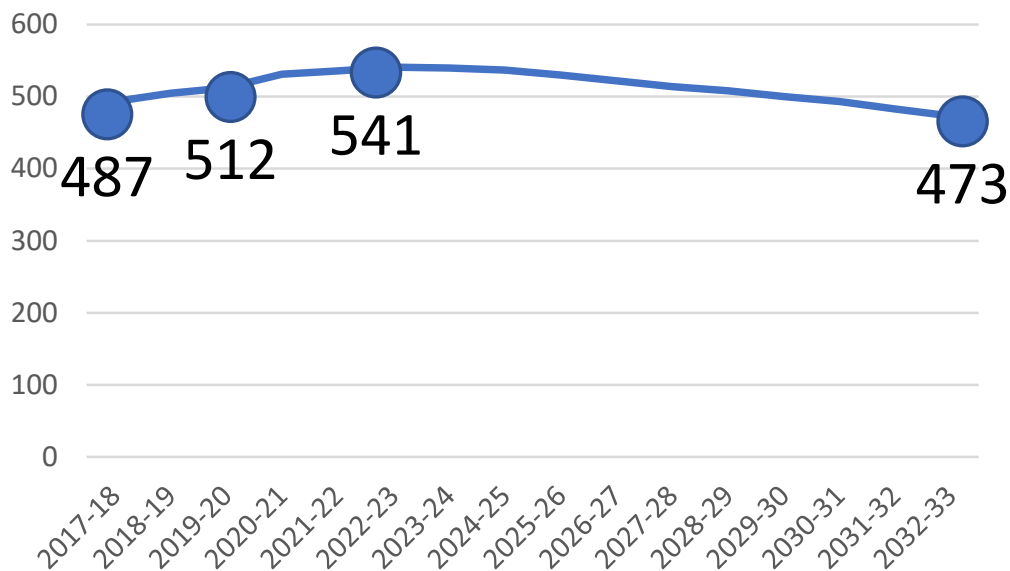
Overview

- Sunita L. Williams, once completed, will have 24 general classrooms.
- Sunita L. Williams appears to be well positioned to both implement Full-Day Kindergarten and accommodate the enrollment forecast in 2019-2020.
- Enrollment forecast data suggests Sunita L. Williams will require four sections per grade level for the entirety of the enrollment forecast.
- Sunita L. Williams, once completed will have dedicated space for Art, Music, Spanish, and STEAM. Should the District need to redistrict, Spanish and STEAM spaces may be candidates for conversion to grade level classrooms as many other schools do not have dedicated space for those programs.
- No renovations, additions, or modulars appear to be needed over the span of the enrollment forecast.

Enrollment Forecast

The enrollment chart below represents the K-5 enrollment forecast as prepared by McKibben Demographics with one exception, the Kindergarten forecast has been increased by 7.5% to reflect the likely return of students to Needham Public Schools once its Full Day Kindergarten program goes into effect. Class size calculations and classroom count calculations were based on this adjusted forecast. The McKibben forecast is provided as an appendix. Similarly, the year-by-year and grade level by grade level calculations are provided as another appendix. Please refer to those for more information.

Enrollment Forecast



Building Capacity

For elementary schools, the building capacity algorithm is based on the number of grade level classrooms. Sunita L. Williams has typically been a three and four section school. It has, however, been designed as a four section school for all grade levels. As such, it has a capacity for 4 sections per grade level or a capacity of 544 students. This capacity could be increased slightly by converting dedicated spaces for Spanish and STEAM should the District choose to redistrict. Otherwise, the new facility is sized appropriately to accommodate both the implementation of full-day kindergarten and the enrollment forecast.

$$\begin{aligned}
 &4 \text{ Sections Per Grade Level} \times 4 \text{ Grade Levels} \times 22 \text{ students} = 352 \text{ Students} \\
 &+ 4 \text{ Sections Per Grade Level} \times 2 \text{ Grade Levels} \times 24 \text{ students} = 192 \text{ Students} \\
 &\hline
 &544 \text{ Students}
 \end{aligned}$$

Class Size Calculations

The chart below communicates information about class sizes across the enrollment forecast. Reported are the District's class size guidelines, data for Sunita L. Williams as a three or four section school, and the minimum, average, and maximum class sizes experienced over the enrollment forecast. A red shading indicates a data point where the District's class size guidelines are exceeded. The darker the shade of red, the further beyond the guideline. In general, the data suggests that Sunita L. Williams can function as a predominately four section school and keep its class sizes within its guidelines, but could not function as a three section per grade school without severely exceeding the guidelines. The new school is appropriately sized as a four section school.

Class Size Calculations

	Class Size Guideline	Number of Sections	Min	AVG	MAX
K	18-22	3	24.01	27.16	29.74
		4	18.01	20.37	22.31
1 st	18-22	3	24.00	27.10	29.33
		4	18.00	20.32	22.00
2 nd	18-22	3	25.67	28.41	30.33
		4	19.25	21.30	22.75
3 rd	18-22	3	27.00	29.19	31.00
		4	20.25	21.89	23.25
4 th	20-24	3	28.00	29.88	31.33
		4	21.00	22.41	23.50
5 th	20-24	3	24.67	30.21	32.00
		4	18.50	22.66	24.00

At Or Below Guideline

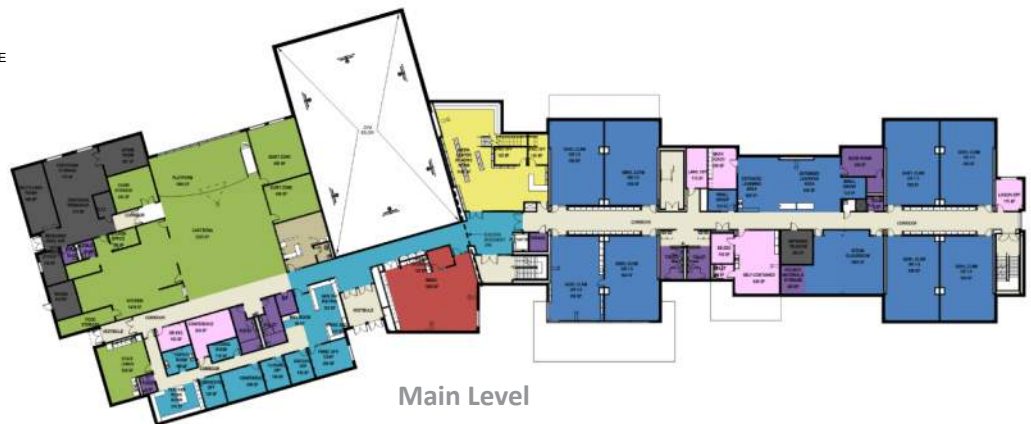
8 student or more Above Guideline

Existing Space Use Floor Plans

The images below depict the planned use for each space. As this facility is currently under construction, these are programmatic floor plans from the design phases of the project. There are no current plans to alter the space use of the facility.

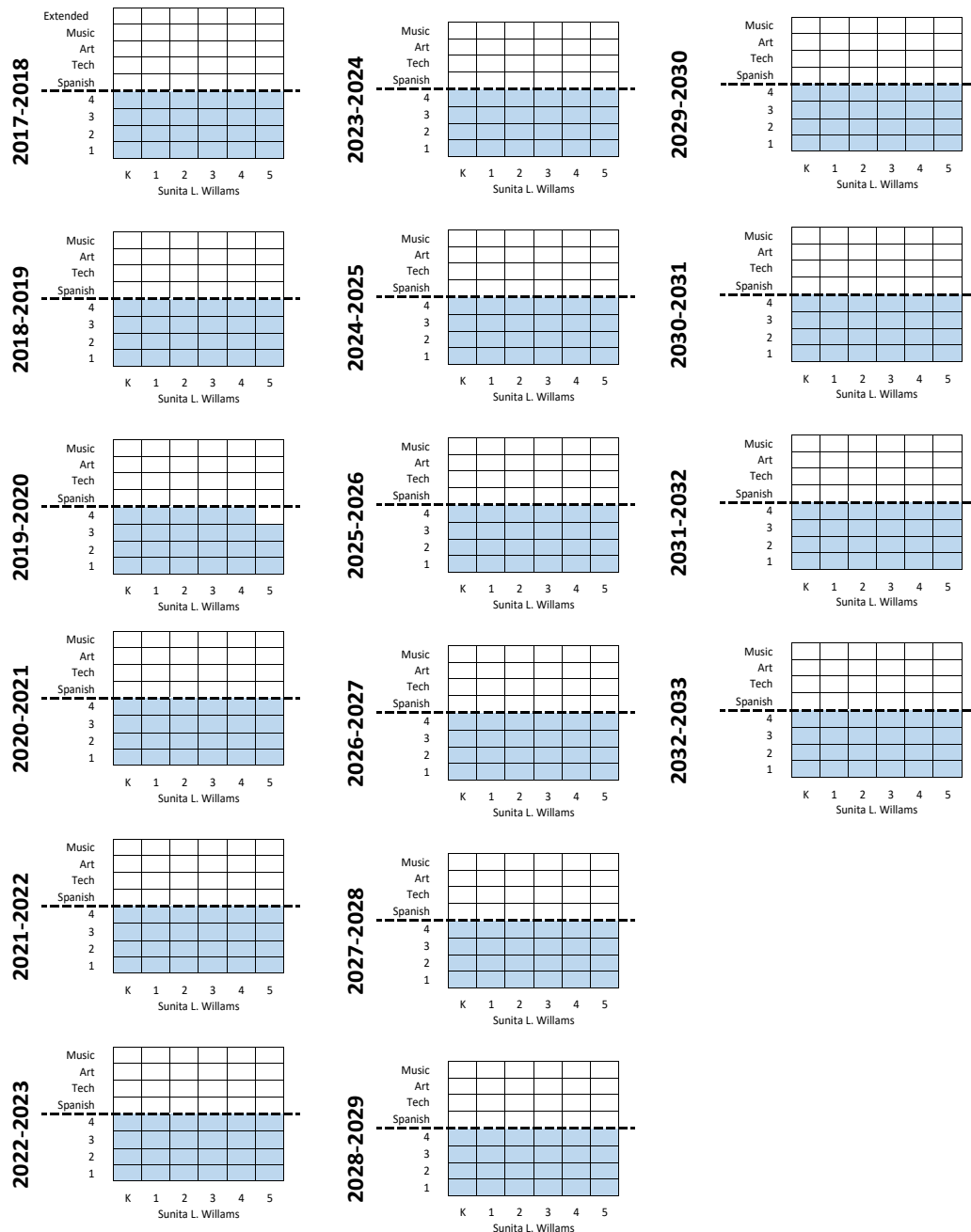
PROGRAMMING LEGEND

- ADMINISTRATION & GUIDANCE
- ARTS & MUSIC
- CORE ACADEMIC
- DINING & FOOD SERVICE
- HEALTH & PHYSICAL EDUCATION
- MEDICA CENTER
- MEDICAL
- SPECIAL EDUCATION
- VOCATIONS & TECHNOLOGY
- CUSTODIAL & MAINTENANCE



Space Needs Analysis

The graphics below illustrate Sunita L. Williams's classroom need over the course of the enrollment forecast assuming maximum class sizes of 23 students per section for grades K through 3rd and 25 for grades 4th and 5th. Each box represents a potential classroom section. Colored boxes represent when a classroom section is needed. The dashed line represents the capacity of the building without re-purposing space. The dedicated specials boxes above the dashed line represent spaces available for potential conversion to grade level classrooms. For Sunita L. Williams, this analysis revealed a need to have four sections of kindergarten beginning in 2019-2020.



Sunita L. Williams School

In addition to analyzing space needs for general classrooms, Dore & Whittier examined spatial needs for the specials and for the capacity of the cafeteria, kitchen, and playgrounds. The table below examines how many rooms are necessary to deliver each of the specials in the peak enrollment condition. Our analysis reveals one dedicated space for Art, Music, Spanish and Media are necessary - which will exist once completed. In addition, the analysis reveals the Chorus and STEAM require a little more than one dedicated classroom combined, which can be accommodated by the stage space and the STEAM classroom respectively. Finally, the analysis reveals a need for slightly less than two full PE stations, which can be accommodated by the gymnasium.

Sections of Specials by Grade Level							
	ART	MUSIC	CHORUS	SPANISH	MEDIA	STEAM	PE
K	8	8	0	0	0	0	8
1st	4	4	4	4	4	4	8
2nd	4	4	4	4	4	4	8
3rd	4	4	4	8	4	4	8
4th	4	4	2	8	4	0	8
5th	4	4	2	8	4	0	8
Need	0.93	0.93	0.53	1.07	0.67	0.40	1.60
Existing	1	1	0	1	1	1	2

In addition to analyzing space needs for general classrooms, Dore & Whittier examined the capacity of the cafeteria, kitchen, and playgrounds. Since Sunita L. Williams was planned to accommodate full-day kindergarten and the anticipated enrollment growth, the capacities of these features are appropriate and do not require modification.

Additions/Renovations and Modularity Under Consideration

Sunita L. Williams is unlikely to require any renovations or modularity to implement full-day kindergarten and absorb the expected enrollment increase.

Appendix X-01

Classroom and Class Size Calculations

Enrollment Forecast*

	2017-18	2018-19	2019-20	2020-21	2021-22	2022-23	2023-24	2024-25	2025-26	2026-27	2027-28	2028-29	2029-30	2030-31	2031-32	2032-33
K	76	85	86	87	87	87	87	86	85	84	84	83	82	82	81	80
1	85	86	87	88	89	89	88	88	87	86	85	84	83	82	81	80
2	90	88	89	90	91	92	92	91	91	90	89	88	87	86	85	84
3	85	92	90	91	93	94	95	95	94	94	93	92	91	90	89	88
4	106	83	90	88	89	92	93	94	94	93	93	92	91	90	89	88
5	106	105	82	89	87	87	90	91	92	92	91	91	90	89	88	87
Total K-5	548	539	524	533	536	541	545	545	543	539	535	530	524	519	513	507

Capacity Calculations

4 Sections Per Grade Level

4 Sections x 4 Grade Levels x 22 = 352

+ 4 Sections x 2 Grade Levels x 24 = 192

544

* Includes 7.5% increase over and above the McKibben projection for Kindergarten to account for the planned change to offer full-day kindergarten.

Classroom Size Calculations

	Proposed Sections	2017-18	2018-19	2019-20	2020-21	2021-22	2022-23	2023-24	2024-25	2025-26	2026-27	2027-28	2028-29	2029-30	2030-31	2031-32	2032-33
K	4	19.08	21.23	21.50	21.77	21.77	21.77	21.77	21.50	21.23	20.96	20.96	20.69	20.43	20.43	20.16	19.89
	5	15.27	16.99	17.20	17.42	17.42	17.42	17.42	17.20	16.99	16.77	16.77	16.56	16.34	16.34	16.13	15.91
1st	4	21.25	21.50	21.75	22.00	22.25	22.25	22.00	22.00	21.75	21.50	21.25	21.00	20.75	20.50	20.25	20.00
	5	17.00	17.20	17.40	17.60	17.80	17.80	17.60	17.60	17.40	17.20	17.00	16.80	16.60	16.40	16.20	16.00
2nd	4	22.50	22.00	22.25	22.50	22.75	23.00	23.00	22.75	22.75	22.50	22.25	22.00	21.75	21.50	21.25	21.00
	5	18.00	17.60	17.80	18.00	18.20	18.40	18.40	18.20	18.20	18.00	17.80	17.60	17.40	17.20	17.00	16.80
3rd	4	21.25	23.00	22.50	22.75	23.25	23.50	23.75	23.75	23.50	23.50	23.25	23.00	22.75	22.50	22.25	22.00
	5	17.00	18.40	18.00	18.20	18.60	18.80	19.00	19.00	18.80	18.80	18.60	18.40	18.20	18.00	17.80	17.60
4th	4	26.50	20.75	22.50	22.00	22.25	23.00	23.25	23.50	23.50	23.25	23.25	23.00	22.75	22.50	22.25	22.00
	5	21.20	16.60	18.00	17.60	17.80	18.40	18.60	18.80	18.80	18.60	18.60	18.40	18.20	18.00	17.80	17.60
5th	4	26.50	26.25	20.50	22.25	21.75	21.75	22.50	22.75	23.00	23.00	22.75	22.75	22.50	22.25	22.00	21.75
	5	21.20	21.00	16.40	17.80	17.40	17.40	18.00	18.20	18.40	18.40	18.20	18.20	18.00	17.80	17.60	17.40

Class Size Guideline	Min	AVG	MAX
18-22	19.89	21.06	21.77
18-22	15.91	16.85	17.42
18-22	20.00	21.38	22.25
18-22	16.00	17.10	17.80
18-22	21.00	22.23	23.00
18-22	16.80	17.79	18.40
18-22	22.00	23.02	23.75
18-22	17.60	18.41	19.00
20-24	22.00	22.79	23.50
20-24	17.60	18.23	18.80
20-24	20.50	22.25	23.00
20-24	16.40	17.80	18.40

At Or Below Guideline

8 student or more Above Guideline

Classroom Count Calculations

	2017-18	2018-19	2019-20	2020-21	2021-22	2022-23	2023-24	2024-25	2025-26	2026-27	2027-28	2028-29	2029-30	2030-31	2031-32	2032-33
K	18	4.24	4.72	4.78	4.84	4.84	4.84	4.78	4.72	4.66	4.66	4.60	4.54	4.54	4.48	4.42
	22	3.47	3.86	3.91	3.96	3.96	3.96	3.91	3.86	3.81	3.81	3.76	3.71	3.71	3.66	3.62
1st	18	4.72	4.78	4.83	4.89	4.94	4.94	4.89	4.83	4.78	4.72	4.67	4.61	4.56	4.50	4.44
	22	3.86	3.91	3.95	4.00	4.05	4.05	4.00	3.95	3.91	3.86	3.82	3.77	3.73	3.68	3.64
2nd	18	5.00	4.89	4.94	5.00	5.06	5.11	5.11	5.06	5.06	4.94	4.89	4.83	4.78	4.72	4.67
	22	4.09	4.00	4.05	4.09	4.14	4.18	4.18	4.14	4.09	4.05	4.00	3.95	3.91	3.86	3.82
3rd	18	4.72	5.11	5.00	5.06	5.17	5.22	5.28	5.22	5.22	5.17	5.11	5.06	5.00	4.94	4.89
	22	3.86	4.18	4.09	4.14	4.23	4.27	4.32	4.27	4.27	4.23	4.18	4.14	4.09	4.05	4.00
4th	20	5.30	4.15	4.50	4.40	4.45	4.60	4.70	4.70	4.65	4.65	4.60	4.55	4.50	4.45	4.40
	24	4.42	3.46	3.75	3.67	3.71	3.83	3.88	3.92	3.92	3.88	3.83	3.79	3.75	3.71	3.67
5th	20	5.30	5.25	4.10	4.45	4.35	4.35	4.50	4.55	4.60	4.55	4.55	4.50	4.45	4.40	4.35
	24	4.42	4.38	3.42	3.71	3.63	3.63	3.75	3.79	3.83	3.79	3.79	3.75	3.71	3.67	3.63

Class Size Guideline	Min	AVG	MAX
18-22	4.42	4.68	4.84
18-22	3.62	3.83	3.96
18-22	4.44	4.75	4.94
18-22	3.64	3.89	4.05
18-22	4.67	4.94	5.11
18-22	3.82	4.04	4.18
18-22	4.89	5.12	5.28
18-22	4.00	4.19	4.32
20-24	4.40	4.56	4.70
20-24	3.67	3.80	3.92
20-24	4.10	4.45	4.60
20-24	3.42	3.71	3.83

Enrollment Forecast*

	2017-18	2018-19	2019-20	2020-21	2021-22	2022-23	2023-24	2024-25	2025-26	2026-27	2027-28	2028-29	2029-30	2030-31	2031-32	2032-33
K	69	69	68	68	69	70	73	75	77	80	76	74	72	71	70	71
1	58	67	67	66	66	67	67	70	72	74	76	75	73	71	69	68
2	65	59	68	68	67	67	68	68	72	74	76	78	77	74	72	70
3	57	66	60	69	69	68	68	69	70	74	76	78	80	78	75	73
4	75	58	67	61	70	70	69	69	71	71	75	77	79	81	79	76
5	74	76	59	68	62	71	71	70	70	72	72	76	78	80	82	80
Total: K-5	398	395	389	400	403	413	416	421	432	445	451	458	459	455	447	438

Capacity Calculations

3 Sections Per Grade Level

3 Sections x 4 Grade Levels x 22 = 264

+ 3 Sections x 2 Grade Levels x 24 = 144

408

* Includes 7.5% increase over and above the McKibben projection for Kindergarten to account for the planned change to offer full-day kindergarten.

Classroom Size Calculations

	Proposed Sections	2017-18	2018-19	2019-20	2020-21	2021-22	2022-23	2023-24	2024-25	2025-26	2026-27	2027-28	2028-29	2029-30	2030-31	2031-32	2032-33
K	3	22.93	22.93	22.58	22.58	22.93	23.29	24.37	25.08	25.80	26.52	25.44	24.73	24.01	23.65	23.29	23.65
	4	17.20	17.20	16.93	16.93	17.20	17.47	18.28	18.81	19.35	19.89	19.08	18.54	18.01	17.74	17.47	17.74
1st	3	19.33	22.33	22.33	22.00	22.00	22.33	22.33	23.33	24.00	24.67	25.33	25.00	24.33	23.67	23.00	22.67
	4	14.50	16.75	16.75	16.50	16.50	16.75	16.75	17.50	18.00	18.50	19.00	18.75	18.25	17.75	17.25	17.00
2nd	3	21.67	19.67	22.67	22.67	22.33	22.33	22.67	22.67	24.00	24.67	25.33	26.00	25.67	24.67	24.00	23.33
	4	16.25	14.75	17.00	17.00	16.75	16.75	17.00	17.00	18.00	18.50	19.00	19.50	19.25	18.50	18.00	17.50
3rd	3	19.00	22.00	20.00	23.00	23.00	22.67	22.67	23.00	23.33	24.67	25.33	26.00	26.67	26.00	25.00	24.33
	4	14.25	16.50	15.00	17.25	17.25	17.00	17.00	17.25	17.50	18.50	19.00	19.50	20.00	19.50	18.75	18.25
4th	3	25.00	19.33	22.33	20.33	23.33	23.33	23.00	23.00	23.67	23.67	25.00	25.67	26.33	27.00	26.33	25.33
	4	18.75	14.50	16.75	15.25	17.50	17.50	17.25	17.25	17.75	17.75	18.75	19.25	19.75	20.25	19.75	19.00
5th	3	24.67	25.33	19.67	22.67	20.67	23.67	23.67	23.33	23.33	24.00	24.00	25.33	26.00	26.67	27.33	26.67
	4	18.50	19.00	14.75	17.00	15.50	17.75	17.75	17.50	17.50	18.00	18.00	19.00	19.50	20.00	20.50	20.00

Class Size Guideline	Min	AVG	MAX
18-22	22.58	24.14	26.52
18-22	16.93	18.10	19.89
18-22	22.00	23.36	25.33
18-22	16.50	17.52	19.00
18-22	22.33	23.79	26.00
18-22	16.75	17.84	19.50
18-22	20.00	23.98	26.67
18-22	15.00	17.98	20.00
20-24	20.33	24.17	27.00
20-24	15.25	18.13	20.25
20-24	19.67	24.07	27.33
20-24	14.75	18.05	20.50



Classroom Count Calculations

		2017-18	2018-19	2019-20	2020-21	2021-22	2022-23	2023-24	2024-25	2025-26	2026-27	2027-28	2028-29	2029-30	2030-31	2031-32	2032-33
K	18	3.82	3.82	3.76	3.76	3.82	3.88	4.06	4.18	4.30	4.42	4.24	4.12	4.00	3.94	3.88	3.94
	22	3.13	3.13	3.08	3.08	3.13	3.18	3.32	3.42	3.52	3.62	3.47	3.37	3.27	3.23	3.18	3.23
1st	18	3.22	3.72	3.72	3.67	3.67	3.72	3.72	3.89	4.00	4.11	4.22	4.17	4.06	3.94	3.83	3.78
	22	2.64	3.05	3.05	3.00	3.00	3.05	3.05	3.18	3.27	3.36	3.45	3.41	3.32	3.23	3.14	3.09
2nd	18	3.61	3.28	3.78	3.78	3.72	3.72	3.78	3.78	4.00	4.11	4.22	4.33	4.28	4.11	4.00	3.89
	22	2.95	2.68	3.09	3.09	3.05	3.05	3.09	3.09	3.27	3.36	3.45	3.55	3.50	3.36	3.27	3.18
3rd	18	3.17	3.67	3.33	3.83	3.83	3.78	3.78	3.83	3.89	4.11	4.22	4.33	4.44	4.33	4.17	4.06
	22	2.59	3.00	2.73	3.14	3.14	3.09	3.09	3.14	3.18	3.36	3.45	3.55	3.64	3.55	3.41	3.32
4th	20	3.75	2.90	3.35	3.05	3.50	3.50	3.45	3.45	3.55	3.55	3.75	3.85	3.95	4.05	3.95	3.80
	24	3.13	2.42	2.79	2.54	2.92	2.92	2.88	2.88	2.96	2.96	3.13	3.21	3.29	3.38	3.29	3.17
5th	20	3.70	3.80	2.95	3.40	3.10	3.55	3.55	3.50	3.50	3.60	3.60	3.80	3.90	4.00	4.10	4.00
	24	3.08	3.17	2.46	2.83	2.58	2.96	2.96	2.92	2.92	3.00	3.00	3.17	3.25	3.33	3.42	3.33

Class Size Guideline	Min	AVG	MAX
18-22	3.76	4.02	4.42
18-22	3.08	3.29	3.62
18-22	3.67	3.89	4.22
18-22	3.00	3.19	3.45
18-22	3.72	3.96	4.33
18-22	3.05	3.24	3.55
18-22	3.33	4.00	4.44
18-22	2.73	3.27	3.64
20-24	3.05	3.63	4.05
20-24	2.54	3.02	3.38
20-24	2.95	3.61	4.10
20-24	2.46	3.01	3.42

Enrollment Forecast*

	2017-18	2018-19	2019-20	2020-21	2021-22	2022-23	2023-24	2024-25	2025-26	2026-27	2027-28	2028-29	2029-30	2030-31	2031-32	2032-33
K	89	88	89	88	88	87	86	85	83	82	78	77	76	75	73	72
1	82	86	87	88	87	86	85	84	83	81	80	78	77	76	74	72
2	85	85	89	90	91	90	89	88	87	85	84	83	81	80	79	77
3	72	86	86	90	91	93	92	91	90	89	87	86	85	83	82	81
4	86	73	87	87	91	92	94	93	92	91	92	90	89	88	85	84
5	79	87	74	88	88	93	94	96	95	94	93	94	92	91	90	87
Total: K-5	493	505	512	531	536	541	540	537	530	522	514	508	500	493	483	473

Capacity Calculations

4 Sections Per Grade Level

4 Sections x 4 Grade Levels x 22 = 352

+ 4 Sections x 2 Grade Levels x 24 = 192

544

* Includes 7.5% increase over and above the McKibben projection for Kindergarten to account for the planned change to offer full-day kindergarten.

Classroom Size Calculations

	Proposed Sections	2017-18	2018-19	2019-20	2020-21	2021-22	2022-23	2023-24	2024-25	2025-26	2026-27	2027-28	2028-29	2029-30	2030-31	2031-32	2032-33
K	3	29.74	29.38	29.74	29.38	29.38	29.03	28.67	28.31	27.59	27.23	26.16	25.80	25.44	25.08	24.37	24.01
	4	22.31	22.04	22.31	22.04	22.04	21.77	21.50	21.23	20.69	20.43	19.62	19.35	19.08	18.81	18.28	18.01
1st	3	27.33	28.67	29.00	29.33	29.00	28.67	28.33	28.00	27.67	27.00	26.67	26.00	25.67	25.33	24.67	24.00
	4	20.50	21.50	21.75	22.00	21.75	21.50	21.25	21.00	20.75	20.25	20.00	19.50	19.25	19.00	18.50	18.00
2nd	3	28.45	28.33	29.67	30.00	30.33	30.00	29.67	29.33	29.00	28.33	28.00	27.67	27.00	26.67	26.33	25.67
	4	21.25	21.25	22.25	22.50	22.75	22.50	22.25	22.00	21.75	21.25	21.00	20.75	20.25	20.00	19.75	19.25
3rd	3	24.00	28.67	28.67	30.00	30.33	31.00	30.67	30.33	30.00	29.67	29.00	28.67	28.33	27.67	27.33	27.00
	4	18.00	21.50	21.50	22.50	22.75	23.25	23.00	22.75	22.50	22.25	21.75	21.50	21.25	20.75	20.50	20.25
4th	3	28.67	24.33	29.00	29.00	30.33	30.67	31.33	31.00	30.67	30.33	30.67	30.00	29.67	29.33	28.33	28.00
	4	21.50	18.25	21.75	21.75	22.75	23.00	23.50	23.25	23.00	22.75	23.00	22.50	22.25	22.00	21.25	21.00
5th	3	26.33	29.00	24.67	29.33	29.33	31.00	31.33	32.00	31.67	31.33	31.00	31.33	30.67	30.33	30.00	29.00
	4	19.75	21.75	18.50	22.00	22.00	23.25	23.50	24.00	23.75	23.50	23.25	23.50	23.00	22.75	22.50	21.75

Class Size Guideline	Min	AVG	MAX
18-22	24.01	27.16	29.74
18-22	18.01	20.37	22.31
18-22	24.00	27.10	29.33
18-22	18.00	20.32	22.00
18-22	25.67	28.41	30.33
18-22	19.25	21.30	22.75
18-22	27.00	29.19	31.00
18-22	20.25	21.89	23.25
20-24	28.00	29.88	31.33
20-24	21.00	22.41	23.50
20-24	24.67	30.21	32.00
20-24	18.50	22.66	24.00

At Or Below Guideline8 student or more Above Guideline

Classroom Count Calculations

		2017-18	2018-19	2019-20	2020-21	2021-22	2022-23	2023-24	2024-25	2025-26	2026-27	2027-28	2028-29	2029-30	2030-31	2031-32	2032-33
K	18	4.96	4.90	4.96	4.90	4.90	4.84	4.78	4.72	4.60	4.54	4.36	4.30	4.24	4.18	4.06	4.00
	22	4.06	4.01	4.06	4.01	4.01	3.96	3.91	3.86	3.76	3.71	3.57	3.52	3.47	3.42	3.32	3.27
1st	18	4.56	4.78	4.83	4.89	4.83	4.78	4.72	4.67	4.61	4.50	4.44	4.33	4.28	4.22	4.11	4.00
	22	3.73	3.91	3.95	4.00	3.95	3.91	3.86	3.82	3.77	3.68	3.64	3.55	3.50	3.45	3.36	3.27
2nd	18	4.72	4.72	4.94	5.00	5.06	5.00	4.94	4.89	4.83	4.72	4.67	4.61	4.50	4.44	4.39	4.28
	22	3.86	3.86	4.05	4.09	4.14	4.09	4.05	4.00	3.95	3.86	3.82	3.77	3.68	3.64	3.59	3.50
3rd	18	4.00	4.78	4.78	5.00	5.06	5.17	5.11	5.06	5.00	4.94	4.83	4.78	4.72	4.61	4.56	4.50
	22	3.27	3.91	3.91	4.09	4.14	4.23	4.18	4.14	4.09	4.05	3.95	3.91	3.86	3.77	3.73	3.68
4th	20	4.30	3.65	4.35	4.35	4.55	4.60	4.70	4.65	4.60	4.55	4.60	4.50	4.45	4.40	4.25	4.20
	24	3.58	3.04	3.63	3.63	3.79	3.83	3.92	3.88	3.83	3.79	3.83	3.75	3.71	3.67	3.54	3.50
5th	20	3.95	4.35	3.70	4.40	4.40	4.65	4.70	4.80	4.75	4.70	4.65	4.70	4.60	4.55	4.50	4.35
	24	3.29	3.63	3.08	3.67	3.67	3.88	3.92	4.00	3.96	3.92	3.88	3.92	3.83	3.79	3.75	3.63

Class Size Guideline	Min	AVG	MAX
18-22	4.00	4.53	4.96
18-22	3.27	3.70	4.06
18-22	4.00	4.52	4.89
18-22	3.27	3.69	4.00
18-22	4.28	4.73	5.06
18-22	3.50	3.87	4.14
18-22	4.50	4.87	5.17
18-22	3.68	3.98	4.23
20-24	4.20	4.48	4.70
20-24	3.50	3.74	3.92
20-24	3.70	4.53	4.80
20-24	3.08	3.78	4.00

Enrollment Forecast*

	2017-18	2018-19	2019-20	2020-21	2021-22	2022-23	2023-24	2024-25	2025-26	2026-27	2027-28	2028-29	2029-30	2030-31	2031-32	2032-33
K	73	77	76	76	76	75	74	73	72	72	70	69	68	67	66	65
1	85	78	77	76	76	75	74	73	72	71	70	68	67	66	65	64
2	92	87	80	79	78	78	77	76	75	74	73	72	70	69	68	67
3	84	93	88	81	81	80	80	79	78	77	75	74	73	71	70	69
4	79	85	94	89	82	82	81	81	80	79	78	76	75	74	72	71
5	90	78	84	93	88	81	81	80	80	79	80	79	77	76	75	73
Total K-5	503	498	499	494	481	471	467	462	457	452	446	438	430	423	416	409

Capacity Calculations

4 Sections Per Grade Level

2 Sections x 1 Grade Levels x 22 = 44

4 Sections x 3 Grade Levels x 22 = 264

+ 4 Sections x 2 Grade Levels x 24 = 192

500

* Includes 7.5% increase over and above the McKibben projection for Kindergarten to account for the planned change to offer full-day kindergarten.

Classroom Size Calculations

	Proposed Sections	2017-18	2018-19	2019-20	2020-21	2021-22	2022-23	2023-24	2024-25	2025-26	2026-27	2027-28	2028-29	2029-30	2030-31	2031-32	2032-33
K	3	24.37	25.80	25.44	25.44	25.44	25.08	24.73	24.37	24.01	24.01	23.29	22.93	22.58	22.22	21.86	21.50
	4	18.28	19.35	19.08	19.08	19.08	18.81	18.54	18.28	18.01	18.01	17.47	17.20	16.93	16.66	16.39	16.13
1st	3	26.33	26.00	25.67	25.33	25.33	25.00	24.67	24.33	24.00	23.67	23.33	22.67	22.33	22.00	21.67	21.33
	4	21.25	19.50	19.25	19.00	19.00	18.75	18.50	18.25	18.00	17.75	17.50	17.00	16.75	16.50	16.25	16.00
2nd	3	26.67	29.00	26.67	26.33	26.00	26.00	25.67	25.33	25.00	24.67	24.33	24.00	23.33	23.00	22.67	22.33
	4	23.00	21.75	20.00	19.75	19.50	19.50	19.25	19.00	18.75	18.50	18.25	18.00	17.50	17.25	17.00	16.75
3rd	3	28.00	31.00	29.33	27.00	27.00	26.67	26.67	26.33	26.00	25.67	25.00	24.67	24.33	23.67	23.33	23.00
	4	21.00	23.25	22.00	20.25	20.25	20.00	20.00	19.75	19.50	19.25	18.75	18.50	18.25	17.75	17.50	17.25
4th	3	26.33	28.33	31.33	29.67	27.33	27.33	27.00	27.00	26.67	26.33	26.00	25.33	25.00	24.67	24.00	23.67
	4	19.75	21.25	23.50	22.25	20.50	20.50	20.25	20.25	20.00	19.75	19.50	19.00	18.75	18.50	18.00	17.75
5th	3	30.00	26.00	28.00	31.00	29.33	27.00	27.00	26.67	26.67	26.33	26.67	26.33	25.67	25.33	25.00	24.33
	4	22.50	19.50	21.00	23.25	22.00	20.25	20.25	20.00	20.00	19.75	20.00	19.75	19.25	19.00	18.75	18.25

Class Size Guideline	Min	AVG	MAX
18-22	21.50	23.78	25.44
18-22	16.13	17.83	19.08
18-22	21.33	23.67	25.67
18-22	16.00	17.75	19.25
18-22	22.33	24.67	26.67
18-22	16.75	18.50	20.00
18-22	23.00	25.62	29.33
18-22	17.25	19.21	22.00
20-24	23.67	26.52	31.33
20-24	17.75	19.89	23.50
20-24	24.33	26.81	31.00
20-24	18.25	20.11	23.25

Classroom Count Calculations

		2017-18	2018-19	2019-20	2020-21	2021-22	2022-23	2023-24	2024-25	2025-26	2026-27	2027-28	2028-29	2029-30	2030-31	2031-32	2032-33
K	18	4.06	4.30	4.24	4.24	4.24	4.18	4.12	4.06	4.00	4.00	3.88	3.82	3.76	3.70	3.64	3.58
	22	3.32	3.52	3.47	3.47	3.47	3.42	3.37	3.32	3.27	3.27	3.18	3.13	3.08	3.03	2.98	2.93
1st	18	4.72	4.33	4.28	4.22	4.22	4.17	4.11	4.06	4.00	3.94	3.89	3.78	3.72	3.67	3.61	3.56
	22	3.86	3.55	3.50	3.45	3.45	3.41	3.36	3.32	3.27	3.23	3.18	3.09	3.05	3.00	2.95	2.91
2nd	18	5.11	4.83	4.44	4.39	4.33	4.33	4.28	4.22	4.17	4.11	4.06	4.00	3.89	3.83	3.78	3.72
	22	4.18	3.95	3.64	3.59	3.55	3.55	3.50	3.45	3.41	3.36	3.32	3.27	3.18	3.14	3.09	3.05
3rd	18	4.67	5.17	4.89	4.50	4.50	4.44	4.44	4.39	4.33	4.28	4.17	4.11	4.06	3.94	3.89	3.83
	22	3.82	4.23	4.00	3.68	3.68	3.64	3.64	3.59	3.55	3.50	3.41	3.36	3.32	3.23	3.18	3.14
4th	20	3.95	4.25	4.70	4.45	4.10	4.10	4.05	4.05	4.00	3.95	3.90	3.80	3.75	3.70	3.60	3.55
	24	3.29	3.54	3.92	3.71	3.42	3.42	3.38	3.38	3.33	3.29	3.25	3.17	3.13	3.08	3.00	2.96
5th	20	4.50	3.90	4.20	4.65	4.40	4.05	4.05	4.00	4.00	3.95	4.00	3.95	3.85	3.80	3.75	3.65
	24	3.75	3.25	3.50	3.88	3.67	3.38	3.38	3.33	3.33	3.29	3.33	3.29	3.21	3.17	3.13	3.04

Class Size Guideline	Min	AVG	MAX
18-22	3.58	3.96	4.24
18-22	2.93	3.24	3.47
18-22	3.56	3.95	4.28
18-22	2.91	3.23	3.50
18-22	3.72	4.11	4.44
18-22	3.05	3.36	3.64
18-22	3.83	4.27	4.89
18-22	3.14	3.49	4.00
20-24	3.55	3.98	4.70
20-24	2.96	3.32	3.92
20-24	3.65	4.02	4.65
20-24	3.04	3.35	3.88

Enrollment Forecast*

	2017-18	2018-19	2019-20	2020-21	2021-22	2022-23	2023-24	2024-25	2025-26	2026-27	2027-28	2028-29	2029-30	2030-31	2031-32	2032-33
K	127	117	114	112	111	110	109	106	105	103	103	101	100	99	97	98
1	101	123	117	114	112	110	108	107	105	104	102	101	99	98	97	95
2	116	104	127	121	117	114	112	110	109	106	105	103	102	100	99	98
3	98	115	103	126	120	116	113	111	109	108	105	104	102	103	101	100
4	135	99	116	104	127	121	117	114	112	110	109	106	105	103	104	102
5	104	136	100	117	105	130	123	119	116	114	112	111	108	106	104	105
Total K-5	681	694	677	694	692	701	682	667	656	645	636	626	616	609	602	598

Capacity Calculations

5 Sections Per Grade Level

4 Sections x 1 Grade Levels x 22 = 88

5 Sections x 3 Grade Levels x 22 = 330

6 Sections x 1 Grade Levels x 24 = 144

+ 5 Sections x 1 Grade Levels x 24 = 120

682

* Includes 7.5% increase over and above the McKibben projection for Kindergarten to account for the planned change to offer full-day kindergarten.

Classroom Size Calculations

	Proposed Sections	2017-18	2018-19	2019-20	2020-21	2021-22	2022-23	2023-24	2024-25	2025-26	2026-27	2027-28	2028-29	2029-30	2030-31	2031-32	2032-33
K	5	25.37	23.44	22.79	22.36	22.15	21.93	21.72	21.29	21.07	20.64	20.64	20.21	20.00	19.78	19.35	19.57
	6	21.14	19.53	18.99	18.63	18.45	18.28	18.10	17.74	17.56	17.20	17.20	16.84	16.66	16.48	16.13	16.30
1st	5	20.20	24.60	23.40	22.80	22.40	22.00	21.60	21.40	21.00	20.80	20.40	20.20	19.80	19.60	19.40	19.00
	6	16.83	20.50	19.50	19.00	18.67	18.33	18.00	17.83	17.50	17.33	17.00	16.83	16.50	16.33	16.17	15.83
2nd	5	23.20	20.80	25.40	24.20	23.40	22.80	22.40	22.00	21.80	21.20	21.00	20.60	20.40	20.00	19.80	19.60
	6	19.33	17.33	21.17	20.17	19.50	19.00	18.67	18.33	18.17	17.67	17.50	17.17	17.00	16.67	16.50	16.33
3rd	5	19.60	23.00	20.60	25.20	24.00	23.20	22.60	22.20	21.80	21.60	21.00	20.80	20.40	20.60	20.20	20.00
	6	16.33	19.17	17.17	21.00	20.00	19.33	18.83	18.50	18.17	18.00	17.50	17.33	17.00	17.17	16.83	16.67
4th	5	27.00	19.80	23.20	20.80	25.40	24.20	23.40	22.80	22.40	22.00	21.80	21.20	21.00	20.60	20.80	20.40
	6	22.50	16.50	19.33	17.33	21.17	20.17	19.50	19.00	18.67	18.33	18.17	17.67	17.50	17.17	17.33	17.00
5th	5	20.80	27.20	20.00	23.40	21.00	26.00	24.60	23.80	23.20	22.80	22.40	22.20	21.60	21.20	20.80	21.00
	6	17.33	22.67	16.67	19.50	17.50	21.67	20.50	19.83	19.33	19.00	18.67	18.50	18.00	17.67	17.33	17.50

Class Size Guideline	Min	AVG	MAX
18-22	19.35	20.96	22.79
18-22	16.13	17.47	18.99
18-22	19.00	20.99	23.40
18-22	15.83	17.49	19.50
18-22	19.60	21.76	25.40
18-22	16.33	18.13	21.17
18-22	20.00	21.73	25.20
18-22	16.67	18.11	21.00
20-24	20.40	22.14	25.40
20-24	17.00	18.45	21.17
20-24	20.00	22.43	26.00
20-24	16.67	18.69	21.67

Classroom Count Calculations

		2017-18	2018-19	2019-20	2020-21	2021-22	2022-23	2023-24	2024-25	2025-26	2026-27	2027-28	2028-29	2029-30	2030-31	2031-32	2032-33
K	18	7.05	6.51	6.33	6.21	6.15	6.09	6.03	5.91	5.85	5.73	5.73	5.61	5.55	5.49	5.38	5.43
	22	5.77	5.33	5.18	5.08	5.03	4.98	4.94	4.84	4.79	4.69	4.69	4.59	4.54	4.50	4.40	4.45
1st	18	5.61	6.83	6.50	6.33	6.22	6.11	6.00	5.94	5.83	5.78	5.67	5.61	5.50	5.44	5.39	5.28
	22	4.59	5.59	5.32	5.18	5.09	5.00	4.91	4.86	4.77	4.73	4.64	4.59	4.50	4.45	4.41	4.32
2nd	18	6.44	5.78	7.06	6.72	6.50	6.33	6.22	6.11	6.06	5.89	5.83	5.72	5.67	5.56	5.50	5.44
	22	5.27	4.73	5.77	5.50	5.32	5.18	5.09	5.00	4.95	4.82	4.77	4.68	4.64	4.55	4.50	4.45
3rd	18	5.44	6.39	5.72	7.00	6.67	6.44	6.28	6.17	6.06	6.00	5.83	5.78	5.67	5.72	5.61	5.56
	22	4.45	5.23	4.68	5.73	5.45	5.27	5.14	5.05	4.95	4.91	4.77	4.73	4.64	4.68	4.59	4.55
4th	20	6.75	4.95	5.80	5.20	6.35	6.05	5.85	5.70	5.60	5.50	5.45	5.30	5.25	5.15	5.20	5.10
	24	5.63	4.13	4.83	4.33	5.29	5.04	4.88	4.75	4.67	4.58	4.54	4.42	4.38	4.29	4.33	4.25
5th	20	5.20	6.80	5.00	5.85	5.25	6.50	6.15	5.95	5.80	5.70	5.60	5.55	5.40	5.30	5.20	5.25
	24	4.33	5.67	4.17	4.88	4.38	5.42	5.13	4.96	4.83	4.75	4.67	4.63	4.50	4.42	4.33	4.38

Class Size Guideline	Min	AVG	MAX
18-22	5.38	5.82	6.33
18-22	4.40	4.76	5.18
18-22	5.28	5.83	6.50
18-22	4.32	4.77	5.32
18-22	5.44	6.04	7.06
18-22	4.45	4.94	5.77
18-22	5.56	6.04	7.00
18-22	4.55	4.94	5.73
20-24	5.10	5.54	6.35
20-24	4.25	4.61	5.29
20-24	5.00	5.61	6.50
20-24	4.17	4.68	5.42

Appendix X-02

Conceptual Cost Estimates

Project Budgets Worksheet Summary		2/7/2018
Full Day Kindergarten Study		DRAFT
Needham, Massachusetts		
Project	Scope of Work	Est. Project Cost
Mitchell Elementary School Modular Classrooms	Two 1200 sf Modular Classrooms	\$ 1,251,000
Mitchell Basement Art Room	Existing Storage Room Renovation	\$ 1,348,500
Mitchell Pre-engineered Gymnasium	Temporary Pre-engineered Steel Gymnasium	\$ 2,404,450
Mitchell Fabric Structure Gymnasium	Temporary Pre-engineered Steel Gymnasium	\$ 2,069,500
Mitchell Elementary School Renovations Only	Renovate Existing KASE Classrooms	\$ 125,000
Eliot Elementary School Modular Classrooms	Six 1200 sf Modular Classrooms	\$ 3,728,750
Broadmeadow Elementary School Renovations	Existing Technology Lab Renovations	\$ 164,500

Project Budget Worksheet			DRAFT	2/1/2018
Mitchell Elementary School Modular Classrooms				
Needham, Massachusetts				
Two 1200 sf Modular Classrooms				
			Estimated Budget	Comments
Site, Modulares and Renovation Construction Cost			\$ 695,000	
(2) Modular Classrooms with toilet rooms		\$ 540,000		3600sf @ \$150/sf
Existing KASE Renovations		\$ 30,000		1200sf @ \$25/sf
Ramps, Stairs, Canopy		\$ 50,000		
Sitework		\$ 75,000		Budget
Estimated Contingencies and Escalation:			\$ 208,500	
	Escalation (5%)	\$ 34,750		1 year
	Design Contingency (10%)	\$ 69,500.0		
	Construction Contingency (10%)	\$ 69,500.0		
	Owner Contingency (5%)	\$ 34,750.0		
Estimated Soft Costs:				
	Fees		\$ 190,000	
	Modular Location Study	\$ 25,000		
	Arch, Site, MEP, Costs, FFE	\$ 165,000		
	Investigative Work		\$ 35,000	
	Survey	\$ 15,000		
	Geotechnical	\$ 10,000		
	Permitting	\$ 10,000		
Owner's Direct Costs:			\$ 122,500	
	Owner's Project Manager	\$ 25,000		
	Bid Document Printing	\$ 2,500		
	Construction Testing	\$ 10,000		
	FF&E	\$ 75,000		
	Misc Expenses	\$ 10,000		
Total Estimated Project Costs:			\$ 1,251,000	

Proposed Project Schedule	DRAFT	2/1/2018
Mitchell Elementary School Modular Classrooms		
Needham, Massachusetts		
Two 1200 sf Modular Classrooms		
		Comments
Spring Town Meeting - Study through Bidding Funding	May-18	
Modular Location Study	5/18 - 6/18	
Schematic Design	7/18 - 8/18	
Construction Documents/Cost Estimate	9/18 - 10/18	
Fall Town Meeting - Construction Funding	Oct-18	
Finalize Construction Bid Documents	10/18 - 11/18	
Bidding	12/18 - 1/19	
Construction Award	Feb-19	
Modular Prefabrication	2/19 - 5/19	Offsite construction
Site Development, Modular Installation, Renovations	6/19 - 8/19	Summer vacation
FF&E Installation	Aug-19	
Occupancy	Sep-19	

Project Budget Worksheet				DRAFT	2/1/2018
Mitchell Basement Art Room					
Needham, Massachusetts					
Existing Storage Room Renovation					
				Estimated Budget	Comments
Convert Exist Basement Storage to and Art Room				\$ 700,000	
Renovation			\$ 300,000		2,000sf @ \$150/sf
Two Stop Elevator			\$ 300,000		900sf @ \$50/sf
Second Egress Stair			\$ 100,000		
KASE Classroom Renovation Project Cost				\$ 125,000	Reno only costs
Estimated Contingencies and Escalation:				\$ 245,000	
	Escalation (5% per annum)		\$ 35,000		Estimated 1 year
	Design Contingency (10%)		\$ 70,000.0		
	Construction Contingency (10%)		\$ 70,000.0		
	Owner Contingency (10%)		\$ 70,000.0		
Estimated Soft Costs:				\$ 196,000	
	Fees				
		Arch, Site, MEP, Costs, FFE	\$ 161,000		
	Investigative Work				
		Survey	\$ 15,000		
		Geotechnical	\$ 10,000		
		Permitting	\$ 10,000		
Owner's Direct Costs:				\$ 82,500	
	Owner's Project Manager		\$ 25,000		
	Bid Document Printing		\$ 2,500		
	Construction Testing		\$ 10,000		
	FF&E		\$ 35,000		
	Misc Expenses		\$ 10,000		
Total Estimated Project Costs:				\$ 1,348,500	

Project Budget Worksheet			DRAFT	2/1/2018
Mitchell Pre-engineered Gymnasium				
Needham, Massachusetts				
Temporary Pre-engineered Steel Gymnasium				
			Estimated Budget	Comments
Temporary Gym and Existing Gym Renovation			\$ 1,420,000	
Building		\$ 700,000		7,000sf @ \$100/sf
Renovate Exist Gym into (2) classrooms		\$ 600,000		4,000sf @ \$150/sf
Hoops, curtain, seating, etc		\$ 50,000		900sf @ \$50/sf
Site (10%)		\$ 70,000		
KASE Classroom Renovation Project Cost			\$ 125,000	<i>Reno only costs</i>
Estimated Contingencies and Escalation:			\$ 497,000	<i>Estimated 1 year</i>
	Escalation (5% per annum)	\$ 71,000		
	Design Contingency (10%)	\$ 142,000.0		
	Construction Contingency (10%)	\$ 142,000.0		
	Owner Contingency (10%)	\$ 142,000.0		
Estimated Soft Costs:			\$ 279,950	
	Fees			
	Arch, Site, MEP, Costs, FFE	\$ 244,950		
	Investigative Work			
	Survey	\$ 15,000		
	Geotechnical	\$ 10,000		
	Permitting	\$ 10,000		
Owner's Direct Costs:			\$ 82,500	
	Owner's Project Manager	\$ 25,000		
	Bid Document Printing	\$ 2,500		
	Construction Testing	\$ 10,000		
	FF&E	\$ 35,000		
	Misc Expenses	\$ 10,000		

Project Budget Worksheet			DRAFT	2/1/2018
Mitchell Fabric Structure Gymnasium				
Needham, Massachusetts				
Temporary Pre-engineered Steel Gymnasium				
			Estimated Budget	Comments
Temporary Gym and Existing Gym Renovation			\$ 1,200,000	
Building		\$ 500,000		5 year lease
Renovate Exist Gym into (2) classrooms		\$ 600,000		4,000sf @ \$150/sf
Hoops, curtain, seating, etc		\$ 50,000		900sf @ \$50/sf
Site (10%)		\$ 50,000		
KASE Classroom Renovation Project Cost			\$ 125,000	Reno only costs
Estimated Contingencies and Escalation:			\$ 420,000	Estimated 1 year
	Escalation (5% per annum)	\$ 60,000		
	Design Contingency (10%)	\$ 120,000.0		
	Construction Contingency (10%)	\$ 120,000.0		
	Owner Contingency (10%)	\$ 120,000.0		
Estimated Soft Costs:			\$ 242,000	
	Fees			
	Arch, Site, MEP, Costs, FFE	\$ 207,000		
	Investigative Work			
	Survey	\$ 15,000		
	Geotechnical	\$ 10,000		
	Permitting	\$ 10,000		
Owner's Direct Costs:			\$ 82,500	
	Owner's Project Manager	\$ 25,000		
	Bid Document Printing	\$ 2,500		
	Construction Testing	\$ 10,000		
	FF&E	\$ 35,000		
	Misc Expenses	\$ 10,000		

Project Budget Worksheet		DRAFT	2/1/2018
Mitchell Elementary School Renovations Only			
Needham, Massachusetts			
Renovate Existing KASE Classrooms			
		Estimated Budget	Comments
Site, Modulares and Renovation Construction Cost		\$ 30,000	
Existing KASE Renovations	\$ 30,000		1200sf @ \$25/sf
Estimated Contingencies and Escalation:		\$ 9,000	
	Escalation (5%)	\$ 1,500	1 year
	Design Contingency (10%)	\$ 3,000.0	
	Construction Contingency (10%)	\$ 3,000.0	
	Owner Contingency (5%)	\$ 1,500.0	
Estimated Soft Costs:			
	Fees	\$ 25,000	
	Arch, Site, MEP, Costs, FFE	\$ 25,000	
Owner's Direct Costs:		\$ 61,000	
	Owner's Project Manager	\$ 25,000	
	Document Printing	\$ 1,000	
	FF&E	\$ 30,000	(2) Kindergartens, Art Cart and Storage
	Misc Expenses	\$ 5,000	
Total Estimated Project Costs:		\$ 125,000	

Project Budget Worksheet			DRAFT	2/1/2018
Eliot Elementary School Modular Classrooms				
Needham, Massachusetts				
Six 1200 sf Modular Classrooms				
			Estimated Budget	Comments
Site, Modulares and Renovation Construction Cost			\$ 1,935,000	
(6) Two Story Modular Classrooms		\$ 1,800,000		10,000sf @ \$180/sf
Renovate Existing Technology Lab		\$ 45,000		900sf @ \$50/sf
Sitework (5%)		\$ 90,000		
Estimated Contingencies and Escalation:			\$ 1,161,000	
	Escalation (5% per annum)	\$ 580,500		estimated 6 years
	Design Contingency (10%)	\$ 193,500.0		
	Construction Contingency (10%)	\$ 193,500.0		
	Owner Contingency (10%)	\$ 193,500.0		
Estimated Soft Costs:				
	Fees		\$ 320,250	
	Modular Location Study	\$ 30,000		
	Arch, Site, MEP, Costs, FFE	\$ 290,250		
	Investigative Work		\$ 55,000	
	Survey	\$ 30,000		
	Geotechnical	\$ 10,000		
	Permitting	\$ 15,000		
Owner's Direct Costs:			\$ 257,500	
	Owner's Project Manager	\$ 50,000		
	Bid Document Printing	\$ 2,500		
	Construction Testing	\$ 15,000		
	FF&E	\$ 180,000		
	Misc Expenses	\$ 10,000		
Total Estimated Project Costs:			\$ 3,728,750	

Project Budget Worksheet			DRAFT	2/1/2018
Broadmeadow Elementary School Renovations				
Needham, Massachusetts				
Existing Technology Lab Renovations				
			Estimated Budget	Comments
Site, Modulares and Renovation Construction Cost			\$ 45,000	
Renovate Existing Technology Lab		\$ 45,000		900sf @ \$50/sf
Estimated Contingencies and Escalation:			\$ 27,000	
	Escalation (5% per annum)	\$ 13,500		estimated 6 years
	Design Contingency (10%)	\$ 4,500.0		
	Construction Contingency (10%)	\$ 4,500.0		
	Owner Contingency (10%)	\$ 4,500.0		
Estimated Soft Costs:				
	Fees		\$ 30,000	
	Arch, MEP, Costs, FFE	\$ 30,000		
Owner's Direct Costs:			\$ 62,500	
	Owner's Project Manager	\$ 15,000		
	Bid Document Printing	\$ 2,500		
	Construction Testing	\$ 5,000		
	FF&E	\$ 30,000		
	Misc Expenses	\$ 10,000		
Total Estimated Project Costs:			\$ 164,500	