

NATICK PUBLIC SCHOOLS

SPACE USE & UTILIZATION STUDY

DECEMBER 21, 2020

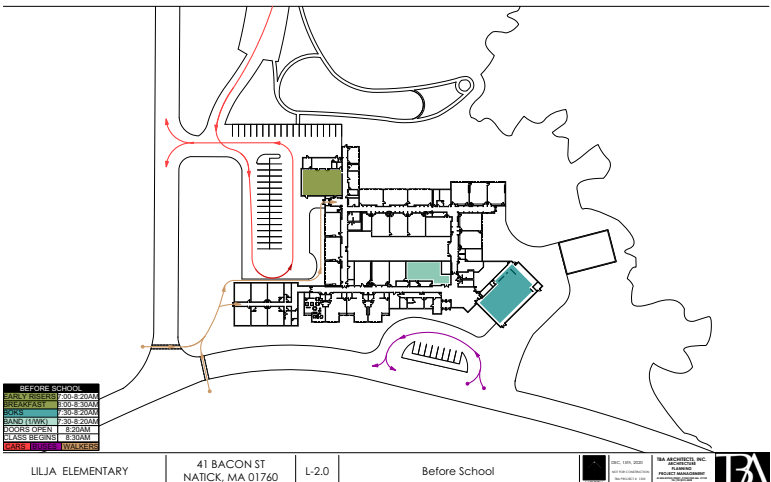
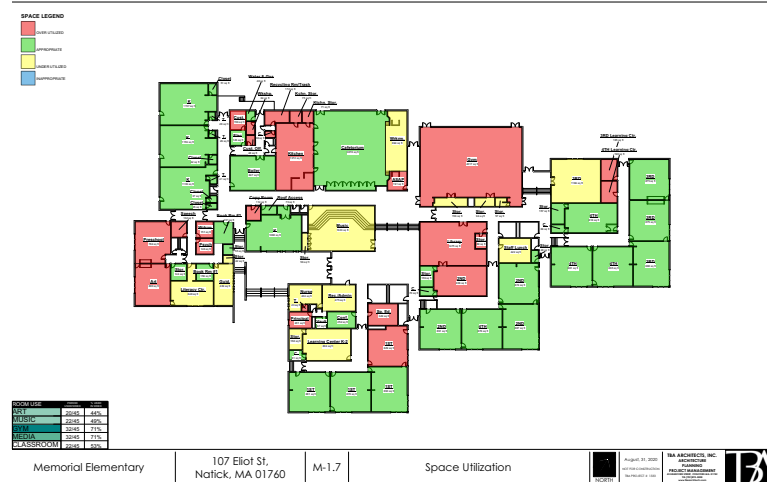


Study Scope

TBA Architects was retained to study the existing eight public schools (5 elementary, 2 middle, 1 high) studied as to their capacity, current space use and current and future space needs. Integral to this is to study is to review the enrollment projections, enrollment history and trends for each school as well as the district.

We reviewed and analyzed historical, current and future enrollment projections to provide a summary of past trends. We also performed a space use analysis; program review; space utilization and adequacy analysis for each of the seven schools.

(Kennedy Middle School is currently under construction and the old building slated for demolition as part of that scope.)



Use & Utilization

This use and utilization study provides analysis of how space is allocated, how the space is used and identifies where changes to program or process can be planned for. Utilization metrics include both time and space: the actual percentage of time a room is in use and the space allocation for the intended use. The Massachusetts School Building Authority recommendations as to space allotment for use types were used as the basis for spatial utilization analysis. The number of periods a week a space or room was used by the schools' inhabitants as a percentage of periods available during the school week is the basis for time utilization analysis.



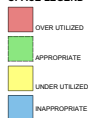
Proposed Student Capacity / Enrollment	1,600					
MSBA Category	# of Rms	Area Totals	Assessment	% of Model Area	# of Rms	Area Totals
CORE ACADEMIC SPACES	91	63,903	Over Utilized	83%	143	77,410 (13,507)
SPECIAL EDUCATION	34	8,830	Over Utilized	55%	32	16,110 (7,280)
ART & MUSIC	10	7,125	Over Utilized	86%	16	8,275 (1,150)
VOCATIONS & TECHNOLOGY	11	7,689	Over Utilized	48%	10	16,000 (8,312)
HEALTH & PHYSICAL EDUCATION	26	26,732	Under Utilized	106%	7	25,160 (1,572)
MEDIA CENTER	4	8,315	Over Utilized	84%	1	9,900 (1,585)
AUDITORIUM / DRAMA	7	13,879	Under Utilized	133%	6	10,400 (3,479)
DINING & FOOD SERVICE	12	11,194	Over Utilized	88%	5	12,700 (1,506)
MEDICAL	9	1,055	Over Utilized	75%	13	1,410 (355)
ADMINISTRATION & GUIDANCE	24	4,854	Over Utilized	84%	24	5,795 (941)
CUSTODIAL & MAINTENANCE	9	2,580	Over Utilized	91%	7	2,825 (245)
OTHER	16	9,701				
Total Building Net Floor Area (NFA)		165,857	Over Utilized	89%		185,985 (20,129)
NON-PROGRAMMED SPACES	84	52,517				

ROOM USE	PERIODS USED PER WEEK	% USED IN WEEK
ART	37/45	82%
MUSIC	37/45	82%
GYM	40/45	89%
MEDIA	37/45	82%
CLASSROOM	30/45	65%

Utilization Coding

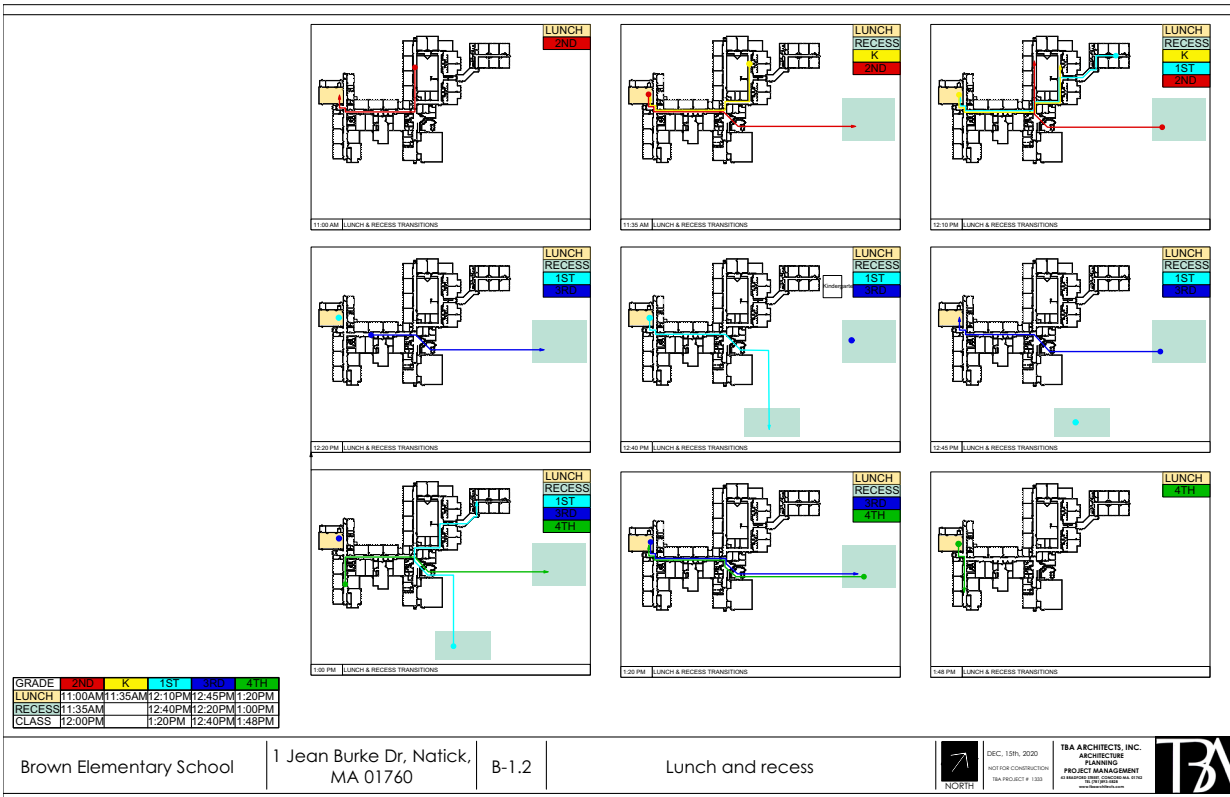
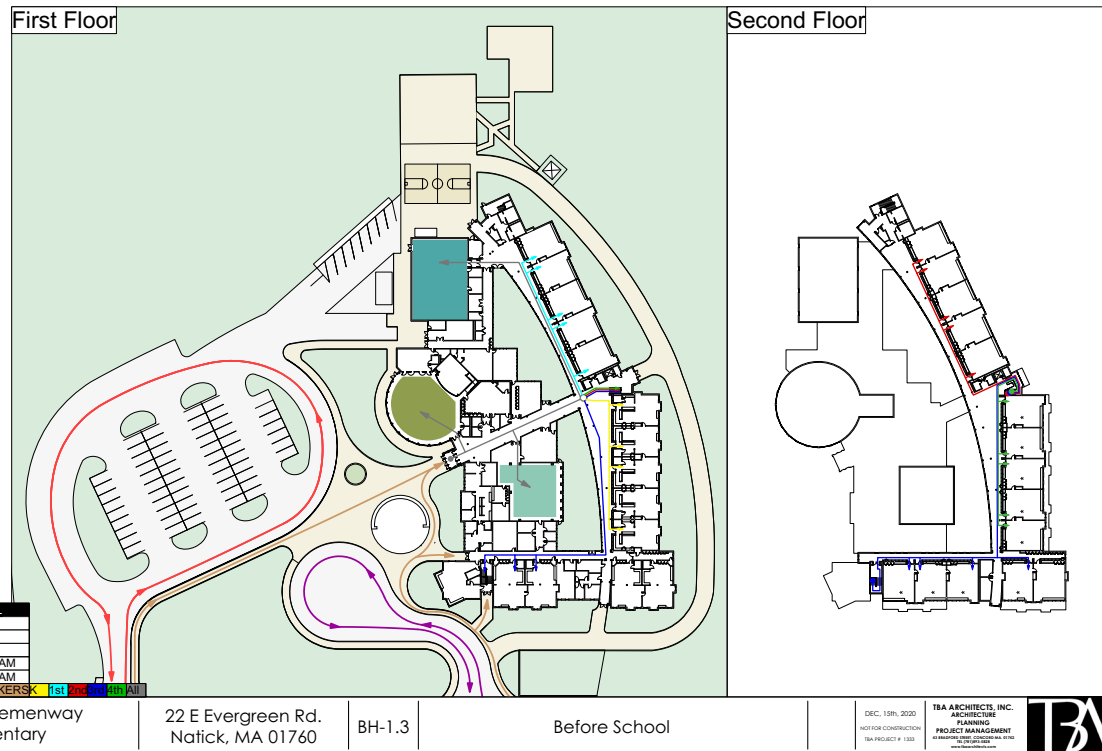
- Green - Utilized fully for time (approximately 75 to 95 % of the time for their intended use) and/or within 90 to 105% of their recommended MSBA size.
- Red - Undersized by MSBA standards or have additional uses outside of the intended use which interfere with the efficient use of the space.
- Yellow - Underutilized either by time or space allocation.

SPACE LEGEND



Circulation & Transition

Schools are well choreographed for the full day by staff managing students through various before and after school programs; drop off and pick up of students via bus, van, car, and walking; and throughout the key transition points of lunch, recess, and specials. Diagrams are provided showing the before and after school, and lunch and recess movements.



SUMMARY FINDINGS

- Sites all have constraints, though very localized and individual, that require careful consideration of movement and offer little room for change that is not whole-system redevelopment.
- All schools are choreographed for the full day by staff managing students through various before and after school programs; drop off and pick up of students via bus, van, car, and walking; and throughout the key transition points of lunch, recess, and specials.
- All schools have a day that starts long before and ends long after regular school hours. Systems and spaces for early drop-off, breakfast, ASAP, BOKS, dismissal to on and offsite after school programs, and pick-up have all been considered and adapted to individual schools.

SUMMARY FINDINGS

- Classrooms at most elementary schools are either less than 95% the size recommended by MSBA or have a few classrooms meeting the standard. There are more classrooms provided than the standard.
- Workrooms and offices have been made out of available spaces - especially storage, corridor, and music practice spaces.
- Special education space differs greatly from the MSBA standard because the program models differ and require alternate types of learning spaces.
- Storage space is at a premium at all schools.
- Corridors have been made into teaching spaces.

SUMMARY FINDINGS

- Johnson Elementary School is the smallest and most deficient elementary school when compared with the MSBA guidelines.
- Wilson Middle School is the closest school to the MSBA guidelines but does have site concerns.
- Natick High School is overcrowded and over-utilized. It appears designed for about 3/4ths of its current enrollment
- The preschool occupies 9 classrooms and associated office spaces at four schools; most at NHS
- Memorial Elementary has not had work or expansion to it and is the least constrained to do so.

JOHNSON ELEMENTARY

Johnson Elementary School							
Proposed Student Capacity / Enrollment	232						
	As-built		Utilization		MSBA Model		
MSBA Category	# Rms	Area Totals	Assessment	% of Model Area	# of Rms	Area Totals	Delta
CORE ACADEMIC SPACES	11	9,473	Appropriate	92%	10	10,250	(777)
SPECIAL EDUCATION	6	1,665	Over Utilized	55%	6	3,020	(1,355)
ART & MUSIC	2	1,714	Over Utilized	69%	5	2,500	(786)
HEALTH & PHYSICAL EDUCATION	1	2,068	Over Utilized	33%	3	6,300	(4,232)
MEDIA CENTER	2	1,189	Over Utilized	59%	1	2,020	(831)
DINING & FOOD SERVICE	4	611	Over Utilized	13%	5	4,740	(4,129)
MEDICAL	2	162	Over Utilized	40%	3	410	(248)
ADMINISTRATION & GUIDANCE	7	1,043	Over Utilized	52%	11	2,015	(972)
CUSTODIAL & MAINTENANCE	1	1,447	Over Utilized	76%	7	1,900	(453)
OTHER		-				-	
Total Building Net Floor Area (NFA)		19,372	Over Utilized	58%		33,155	(13,783)
NON-PROGRAMMED SPACES	20	8,048					
Total Building Gross Floor Area (GFA)2		29,593	Over Utilized	71%		41,760	(12,167)
Grossing factor (GFA/NFA)		1.53				1.26	



Johnson Elementary School is 58% of Total Building Net Floor Area (NFA) per MSBA Standard for a 232 student elementary school. This puts the current building as a whole severely undersized, or in our red category. Half of the classrooms are adequately sized, though below the standard. The remaining classrooms and all other spaces are undersized and overutilized. One room functions as the gymnasium, cafeteria and auditorium and library is smaller than a modern kindergarten classroom. The building is not accessible. The gross square footage is only 71% of the MSBA standards



BENNETT-HEMENWAY ELEMENTARY

Bennett Hemenway Elementary School							
Proposed Student Capacity / Enrollment	550						
	As-built		Utilization		MSBA Model		
MSBA Category	# of Rms	Area Totals	Assessment	% of Model Area	# of Rms	Area Totals	Delta
CORE ACADEMIC SPACES	32	28,996	Under Utilized	119%	24	24,300	4,696
SPECIAL EDUCATION	21	6,107	Appropriate	101%	12	6,040	67
ART & MUSIC	5	2,430	Over Utilized	64%	9	3,800	(1,370)
HEALTH & PHYSICAL EDUCATION	5	4,531	Over Utilized	72%	2	6,300	(1,769)
MEDIA CENTER	1	2,853	Appropriate	91%	1	3,145	(292)
DINING & FOOD SERVICE	7	5,856	Over Utilized	77%	5	7,596	(1,740)
MEDICAL	4	645	Appropriate	106%	5	610	35
ADMINISTRATION & GUIDANCE	8	2,723	Under Utilized	113%	12	2,415	308
CUSTODIAL & MAINTENANCE	3	192	Over Utilized	9%	7	2,150	(1,958)
OTHER	1	98				-	
Total Building Net Floor Area (NFA)		54,431	Appropriate	97%		56,356	(1,925)
NON-PROGRAMMED SPACES	24	23,546					
Total Building Gross Floor Area (GFA)2		84,399	Appropriate	102%		82,958	1,441
Grossing factor (GFA/NFA)		1.55				1.47	

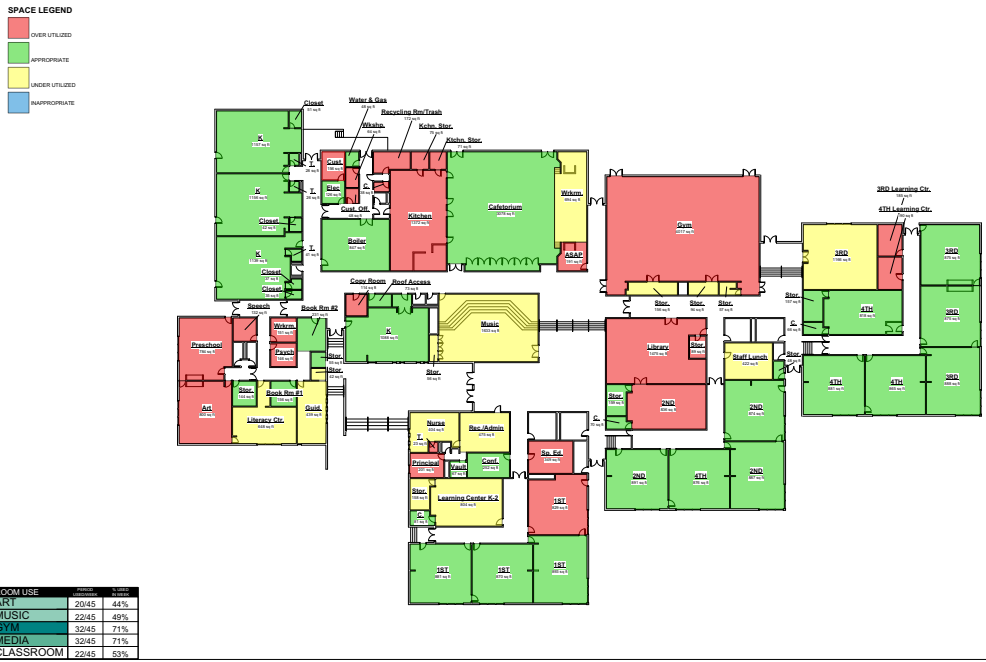


Bennett Hemenway Elementary School is 97% of Total Building Net Floor Area (NFA) per MSBA Standard for a 550 student elementary school. This puts the current building as adequately sized and utilized, or in our green category. Classrooms are adequately sized. The cafeteria and gymnasium are undersized but managed by scheduling that differs from that assumed by the standard. Most deficiencies are in the storage area provided. The gross square footage is 102% of the MSBA standards mostly attributed to the amount of corridor space and building form.



MEMORIAL ELEMENTARY

Memorial Elementary School							
Proposed Student Capacity / Enrollment	403						
	As-built		Utilization		MSBA Model		
MSBA Category	# of Rms	Area Totals	Assessment	% of Model Area	# of Rms	Area Totals	Delta
CORE ACADEMIC SPACES	21	19,946	Under Utilized	110%	18	18,100	1,846
SPECIAL EDUCATION	10	2,803	Over Utilized	62%	9	4,530	(1,727)
ART & MUSIC	2	2,489	Appropriate	97%	6	2,575	(86)
HEALTH & PHYSICAL EDUCATION	4	4,324	Over Utilized	69%		6,300	(1,976)
MEDIA CENTER	1	1,565	Over Utilized	63%	1	2,484	(919)
DINING & FOOD SERVICE	5	5,018	Over Utilized	80%	5	6,261	(1,243)
MEDICAL	2	427	Over Utilized	84%	4	510	(83)
ADMINISTRATION & GUIDANCE	9	2,391	Under Utilized	113%	11	2,118	273
CUSTODIAL & MAINTENANCE	5	478	Over Utilized	24%	7	2,003	(1,525)
OTHER		-				-	
Total Building Net Floor Area (NFA)		39,441	Over Utilized	88%		44,880	(5,439)
NON-PROGRAMMED SPACES	26	17,024					
Total Building Gross Floor Area (GFA)2		59,971	Over Utilized	89%		67,697	(7,726)
Grossing factor (GFA/NFA)		1.52				1.51	

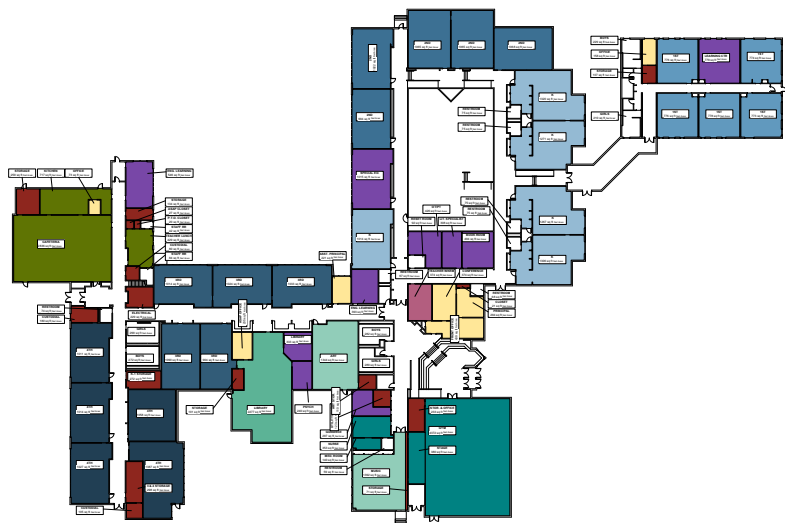


Memorial Elementary School is 88% of Total Building Net Floor Area (NFA) per MSBA Standard for a 400 student elementary school. This puts the current building as inadequately sized at just under our threshold, or in our red category. Classrooms are adequately sized. The cafeteria and gymnasium are undersized but managed by scheduling that differs from that assumed by the standard. Most deficiencies are in the storage area and repurposing of flexible space into classrooms. The gross square footage is 89% of the MSBA standards mostly attributed to the amount of corridor space and building form.



BROWN ELEMENTARY

Brown Elementary School							
Proposed Student Capacity / Enrollment	489						
MSBA Category	As-built		Utilization		MSBA Model		Delta
	# of Rms	Area Totals	Assessment	% of Model Area	# of Rms	Area Totals	
CORE ACADEMIC SPACES	25	26,172	Under Utilized	123%	21	21,200	4,972
SPECIAL EDUCATION	12	4,414	Over Utilized	80%	11	5,540	(1,126)
ART & MUSIC	3	2,985	Under Utilized	116%	6	2,575	410
HEALTH & PHYSICAL EDUCATION	3	4,985	Over Utilized	68%	3	7,300	(2,315)
MEDIA CENTER	2	2,378	Over Utilized	83%	1	2,871	(493)
DINING & FOOD SERVICE	7	4,440	Over Utilized	73%	4	6,042	(1,602)
MEDICAL	3	552	Under Utilized	108%	4	510	42
ADMINISTRATION & GUIDANCE	9	2,494	Under Utilized	106%	12	2,354	140
CUSTODIAL & MAINTENANCE		365	Over Utilized	17%		2,089	(1,724)
OTHER		-				-	
Total Building Net Floor Area (NFA)		48,785	Appropriate	97%		50,480	(1,695)
NON-PROGRAMMED SPACES	20	18,234					
Total Building Gross Floor Area (GFA)2		71,797	Appropriate	93%		77,238	(5,441)
Grossing factor (GFA/NFA)		1.47				1.53	



Brown Elementary School is 97% of Total Building Net Floor Area (NFA) per MSBA Standard for a 489 student elementary school. This puts the current building as adequately sized, or in our green category. Classrooms are a mix of adequately and undersized however there are four more than the standard anticipates. The cafeteria and gymnasium are undersized but managed by scheduling that differs from that assumed by the standard. Special education space is undersized mostly due to a different service model than anticipated by the standard. The gross square footage is 89% of the MSBA standards.



LILJA ELEMENTARY

Lilja Elementary School							
Proposed Student Capacity / Enrollment	431						
	As-built		Utilization		MSBA Model		
MSBA Category	# of Rms	Area Totals	Assessment	% of Model Area	# of Rms	Area Totals	Delta
CORE ACADEMIC SPACES	21	18,078	Appropriate	94%	19	19,300	(1,222)
SPECIAL EDUCATION	12	6,739	Under Utilized	149%	9	4,530	2,209
ART & MUSIC	3	2,404	Appropriate	93%		2,575	(171)
HEALTH & PHYSICAL EDUCATION	3	4,743	Over Utilized	75%	3	6,300	(1,557)
MEDIA CENTER	5	2,505	Appropriate	96%	1	2,610	(105)
DINING & FOOD SERVICE	7	3,852	Over Utilized	59%	5	6,515	(2,663)
MEDICAL	3	543	Under Utilized	106%	4	510	33
ADMINISTRATION & GUIDANCE	5	1,500	Over Utilized	70%		2,146	(646)
CUSTODIAL & MAINTENANCE	2	246	Over Utilized	12%	7	2,031	(1,785)
OTHER		-				-	
Total Building Net Floor Area (NFA)		40,610	Over Utilized	87%		46,516	(5,906)
NON-PROGRAMMED SPACES		12,617					
Total Building Gross Floor Area (GFA)2		57,882	Over Utilized	82%		70,993	(13,111)
Grossing factor (GFA/NFA)		1.43				1.53	



Lilja Elementary School is 87% of Total Building Net Floor Area (NFA) per MSBA Standard for a 431 student elementary school. This puts the current building as inadequately sized, or in our red category. Classrooms are a mix of adequately and undersized. The cafeteria and gymnasium are undersized but managed by scheduling that differs from that assumed by the standard. Special education space is undersized mostly due to a different service model than anticipated by the standard. The gross square footage is 82% of the MSBA standards.



WILSON MIDDLE SCHOOL

Wilson Middle School							
Proposed Student Capacity / Enrollment	942						
MSBA Category	As-built		Utilization		MSBA Model		Delta
	# of Rms	Area Totals	Assessment	% of Model Area	# of Rms	Area Totals	
CORE ACADEMIC SPACES	53	43,652	Appropriate	97%	54	44,820	(1,168)
SPECIAL EDUCATION	13	6,432	Over Utilized	61%	21	10,570	(4,138)
ART & MUSIC	8	5,923	Under Utilized	123%	8	4,800	1,123
VOCATIONS & TECHNOLOGY	2	1,926	Over Utilized	30%	4	6,400	(4,474)
HEALTH & PHYSICAL EDUCATION	6	10,709	Under Utilized	127%	5	8,400	2,309
MEDIA CENTER	3	6,307	Under Utilized	109%	1	5,797	511
DINING & FOOD SERVICE	9	7,069	Over Utilized	70%	4	10,156	(3,087)
STAGE/AUDITORIUM	4	6,867	Under Utilized	429%	1	1,600	5,267
MEDICAL	6	757	Under Utilized	107%	6	710	47
ADMINISTRATION & GUIDANCE	21	3,901	Appropriate	100%	18	3,892	9
CUSTODIAL & MAINTENANCE	5	1,439	Over Utilized	60%	7	2,417	(978)
OTHER	1	361	NA			-	
Total Building Net Floor Area (NFA)		95,343	Appropriate	96%		99,562	(4,219)
NON-PROGRAMMED SPACES	41	33,181					
Total Building Gross Floor Area (GFA)2		140,190	Appropriate	93%		150,720	(10,530)
Grossing factor (GFA/NFA)		1.47				1.51	



Wilson Middle School is 96% of Total Building Net Floor Area (NFA) per MSBA Standard for a 942 student middle school. This puts the current building as a whole adequately sized, or in our green category. Most of the spaces are adequately sized and there are a few classrooms of swing space. Undersized spaces such as the cafeteria and technology are managed by scheduling differing from that assumed by the standard. A full sized auditorium is included which is not part of the MSBA model. The gross square footage is 93% of the MSBA standards but much of that space is in the circulation space - corridors, stairs, elevators – due to the building geometry and it being two storeys



NATICK HIGH SCHOOL

Natick High School							
Proposed Student Capacity / Enrollment	1,600						
MSBA Category	As-built		Utilization		MSBA Model		Delta
	# of Rms	Area Totals	Assessment	% of Model Area	# of Rms	Area Totals	
CORE ACADEMIC SPACES	91	63,903	Over Utilized	83%	143	77,410	(13,507)
SPECIAL EDUCATION	34	8,830	Over Utilized	55%	32	16,110	(7,280)
ART & MUSIC	10	7,125	Over Utilized	86%	16	8,275	(1,150)
VOCATIONS & TECHNOLOGY	11	7,689	Over Utilized	48%	10	16,000	(8,312)
HEALTH & PHYSICAL EDUCATION	26	26,732	Under Utilized	106%	7	25,160	1,572
MEDIA CENTER	4	8,315	Over Utilized	84%	1	9,900	(1,585)
AUDITORIUM / DRAMA	7	13,879	Under Utilized	133%	6	10,400	3,479
DINING & FOOD SERVICE	12	11,194	Over Utilized	88%	5	12,700	(1,506)
MEDICAL	9	1,055	Over Utilized	75%	13	1,410	(355)
ADMINISTRATION & GUIDANCE	24	4,854	Over Utilized	84%	24	5,795	(941)
CUSTODIAL & MAINTENANCE	9	2,580	Over Utilized	91%	7	2,825	(245)
OTHER	16	9,701				-	
Total Building Net Floor Area (NFA)		165,857	Over Utilized	89%		185,985	(20,129)
NON-PROGRAMMED SPACES	84	52,517					
Total Building Gross Floor Area (GFA)2		260,512	Appropriate	101%		259,200	1,312
Grossing factor (GFA/NFA)		1.57				1.39	



Natick High School is 89% of Total Building Net Floor Area (NFA) per MSBA Standard for a 1,600 student high school. This puts the current building as a whole is inadequately sized, or in our red category. The analysis shows that due to individual room size and to scheduling, much of the general education space is over-utilized. Like the elementary schools the site is overprogrammed and is carefully choreographed to allow for the various modes of drop-off and pick-up along with students driving themselves. Timing and location of preschool drop off and access is also part of the calculus.

Natick High School is short 11 classrooms and two science classrooms in order to get the enrollment per classroom down to the MSBA standard of 23.



CONSIDERATIONS

- Our analysis prompted a few scenarios to assist in future planning. These could be considered independently or in combination(s).
 - Scenario 1: Incremental additions and renovations to all schools to restore converted spaces and flexibility. This should be mated with a comprehensive maintenance and capital improvement plan that allows planning for submissions to MSBA's accelerated repair program for systems improvements and possibly the core program depending on the size of renovations. Small renovations can be done outside of the MSBA offering the district more flexibility in time and cost.
 - Scenario 2: To alleviate the pressing need at the high school, move the preschool out into another building. If space is available to lease, then this could be done in time for the enrollment increase. Further space can be reclaimed if the district-wide IT program is relocated. New space for that department would need to be found. This scenario should be paired with Scenario 1.
 - Scenario 3: Building on Scenario 2, if the preschool were to move out then plan and construct a new early childhood center that could accommodate the preschool classrooms for the whole district. This would free up space at other elementary schools and reduce the work needed to keep them functioning acceptably. Further consideration could be given to relocating some of the kindergarten classrooms into an early childhood center, making a larger single project and fewer scattered projects. Currently the MSBA won't consider funding for a preschool only facility but will for a combined pre-K and K early education building.
 - Scenario 4: The Johnson School requires a great deal of work and money to bring up to date and keep pace with other facilities. The scope would require relocation of staff and students and would have considerable cost – likely \$3-5 million for accessibility and systems upgrades alone and several million more to tackle the space needs. Replacement of the school with a new of adequate size and functionality, along with site improvements would cost around \$35 million and take 7-9 years. This would be a scope that would fall under the MSBA's core program.
 - Scenario 5: Expand and renovate the Memorial School to accommodate the redistribution of students across the district. This would improve the Memorial, taking advantage of a site with capacity, a building that has not been renovated or expanded but is easily expanded, and allow for consideration of changes to the number of elementary schools. Reducing the number of schools, expanding one and redistricting could alleviate the need to expand other elementary schools.

THANK YOU