

Science Lab Initiative
Nashoba Regional High School
Bolton, Massachusetts

SUBMITTED BY

SMMA | SYMMES MAINI & MCKEE ASSOCIATES

DRAFT

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SMMA NO. 12060.00

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INTRODUCTION

SECTION ONE INTRODUCTION

1.1 STATEMENT OF INTEREST SUMMARY

The existing 51 year old Nashoba Regional High School is located at 12 Green Street in Bolton MA.

On January 6, 2012, the Nashoba Regional School District submitted a Statement of Interest (SOI) to the Massachusetts School Building Authority (MSBA) for the Nashoba Regional High School. The SOI was for the MSBA's Science Lab Initiative.

The original building opened in September 1961. There was an academic wing built in 1970 that also added a gymnasium and library area. In 2002 gym space was reconfigured and an auditorium was added, along with administrative offices and a new facade. Some of the infrastructure was also updated such as boilers, hot water system and air handling equipment.

Five of the science labs were built in 1970. The remaining labs are original to the 1961 wing. A few of the science labs have exhaust fans but not all. The labs are not interchangeable for the different labs needed.

In addition to the conventional: Biology, Chemistry, Physics and Earth Science curriculum, the school also has curriculum offerings in Biotechnology, Advanced Chemistry and Engineering Design that need to be supported by the science labs. The current 10 labs do not provide the quantity and flexibility to support these offerings. An 11th lab is required for curriculum fulfillment.

Included in Section 3 of this report is a spreadsheet that demonstrates the need for 11 labs.

Additional existing conditions information is included in Section 4 and the complete SOI is included in Appendix 7.1.

1.2 INVITATION TO FEASIBILITY STUDY

In June 2012, the Regional School District was invited to participate in the Science Lab Initiative program.

1.3 DESIGN ENROLLMENT

The District and the MSBA agreed to a student enrollment population of 1016 students for the Nashoba Regional High School, housing grades 9 – 12.

1.4 CAPITAL BUDGET STATEMENT

It is premature to identify an anticipated project cost.

The local share of debt service is planned to be allocated through the regional assessment, and funded via debt exclusions supported by the tax levy of member towns.

1.5 PROJECT DIRECTORY

The project directory with contact information of the project's key stakeholders is as follows:

	Contact and Address	Telephone	Fax
District	<p>Nashoba Regional School District 50 Mechanic Street Bolton, MA 01740</p> <p>Michael Wood, Supt. Of Schools mwood@nrsd.net</p> <p>Parry Graham, Principal pgraham@nrhs.net</p> <p>Brian Cote, Asst. Principal bcote@nrsd.net</p>	<p>978-779-0539</p> <p>Ext. 3002</p>	978-779-5537
MSBA	<p>Massachusetts School Building Authority 40 Broad Street, Suite 500 Boston, MA 02109 Karl Brown, Project Manager karl.brown@massschoolbuildings.org</p>	617-720-4466	617-720-5260
NRSD School Committee	<p>Nancy Federspiel, Chair nancyfed@aol.com</p>		

	<p>Reta Rupich, Member rrupich@gmail.com</p> <p>Julie Fay, Member juliefay524@yahoo.com</p> <p>Kathleen Owen, Member kdownfamily@comcast.net</p> <p>Kara Keith, Member karakeith2@gmail.com</p> <p>Maureen Busch, Member maureen.busch@comcast.net</p> <p>Lynn Colletti, Member lynncolletti@gmail.com</p> <p>Jeff Odell, Member JeffOdell_Stow@me.com</p> <p>Louise Bennett, Ex-Officio</p>		
Architect/ Engineer	<p>Symmes, Maini & McKee Associates, Inc. (SMMA) 1000 Massachusetts Ave. Cambridge, MA 02138</p> <p>Philip Poinelli, FAIA ppoinelli@smma.com</p> <p>Jessica Smith jsmith@smma.com</p> <p>Kathryn Lillich klillich@smma.com</p>	<p>617-547-5400</p> <p>617-520-9219</p> <p>617-575-0330</p> <p>617-520-9295</p>	800-648-4920
Owner's Project Manager	<p>Strategic Building Solutions 67 Hunt Street Agawam Corporate Center, Suite 119 Agawam, MA 01001</p> <p>Alan Minkus, AIA aminkus@go-sbs.com</p>	<p>978-499-2999</p> <p>860-965-6818</p>	978-499-2944

	Jon Winikur jwinikur@go-sbs.com		
MEP/ Tel-Data Engineer	García, Galuska & DeSousa, Inc. (GGD) 370 Faunce Corner Rd. Dartmouth, MA 01747-1217 David Pereira, PE david_pereira@g-g-d.com	508-998-5700	508-998-0883
Hazardous Materials Consultant	CDW 40 Speen Street, Suite 301 Framingham, MA 01701 Kathleen Campbell kcampbell@cdwconsultants.com	508-875-2657	508-875-6617
FF&E Consultant	Stefura Associates, Inc. 77 North Washington St. 7 th Floor Boston, MA 02114 Marcy Stefura marcy@stefura.com	617-723-5164	
Cost Estimating Consultant	A.M Fogarty Associates, Inc. 175 Derby St. Suite 5 Hingham, MA 02043 Peter Timothy ptim@amfogarty.com	781-749-7272	781-740-2652

1.6 PROJECT SCHEDULE

See attached preliminary schedule.

1.6 PROJECT SCHEDULE

Nashoba Regional School

Science Lab Initiative Project

Feasibility, Design, Bidding & Construction Phases Milestone schedule

June 14, 2012

I. Feasibility / Schematic Design Phase

June 13, 2012 thru November 26, 2012

- 1 Award of Contract
- 2 Preliminary SMMA Feasibility Investigation Study
- 3 Hazardous Materials Testing- Asbestos / PCB's
- 4 Preliminary Design Program (PDP)
- 5 Preferred Schematic Report (PSR)
- 6 Facilities Assessment Subcommittee (FAS) Meeting
- 7 Feasibility Study & Schematic Design Submission w/ Cost Estimate to MSBA
- 8 Schematic Design / Project Scope & Budget (PSB) Review
- 9 MSBA November Board Mtg to Fund
- 10 Project Funding Agreement (PFA)

Meet with MSBA and present preferred option and alternates for comment - sometime in August before the 29th

5 months

~~June 22, 2012~~ July 11, 2012
~~June 29, 2012~~ July 19, 2012
 July 6, 2012
~~July 22, 2012~~ July 23, 2012
~~August 27, 2012~~ combine items 5 and 7 and submit Mods 3 & 4 in a binder on September 27
 August 29, 2012
 September 27, 2012
 November 14, 2012
 November 14, 2012
 November 26, 2012
 November 26, 2012

11 Complete SD Reviews; NTP to DD

II. Design Development Phase

November 26, 2012 thru December 11, 2012

- 1 Start DD Documents
- 2 Start DD Design Review

3 Complete DD Reviews; NTP to CD

2 weeks

November 26, 2012
 December 7, 2012
 December 11, 2012

III. Construction Documentation Phase

December 12, 2012 thru February 15, 2013

- 1 Start CD Documents
- 2 Send 75% CD set to Estimator
- 3 Start 75% CD Design Review
- 4 CD Estimates due from Estimator
- 5 CD Reconciliation meeting
- 6 CD VE Effort Completed (if necessary)

7 Complete Contract Documents; NTP to Bid

2 months

December 12, 2012
 January 7, 2013
 January 7, 2013
 January 21, 2013
 January 25, 2013
 February 1, 2013
 February 15, 2013

IV. Bid Phase

February 18, 2013 thru March 29, 2013

- 1 Central Register - Invitation to Bid
- 2 Distribute Bid Documents
- 3 Filed Sub Bids Due
- 4 General Bids Due
- 5 Contractor References Check
- 6 Contractor Bonds & Insurance
- 7 Award of Bid and Contract - NTP

6 Weeks

February 12, 2013
 February 18, 2013
 March 8, 2013
 March 15, 2013
 March 19, 2013
 March 25, 2013
 March 29, 2013

V. Building Construction Phase

April 1, 2013 thru September 13, 2013

- 1 Start Construction of new Classrooms
- 2 Contractor substantial completion of Classrooms
- 3 FF&E/Move-In
- 4 Occupy new Classrooms

5 mos.
 1 wk.

April 1, 2012
 September 6, 2013
 September 9 thru September 13, 2013
 September 16, 2013

VI. Project Closeout

August thru September 2013

EDUCATIONAL PROGRAM

SECTION TWO EDUCATIONAL PROGRAM

Educational programming was a component of the feasibility study for a proposed Science Lab the Nashoba Regional School District. The Superintendent of Schools, high school principal and assistant principal, and multiple science teachers met with members of the architectural team of Symmes Maini and McKee Associates including SMMA's Educational Programmer, Philip Poinelli, to develop the space summary for this proposed project.

Nashoba Regional High School (NRHS) is a high achieving school that serves approximately 1030 students in grades 9-12 for the towns of Bolton, Lancaster, and Stow. Our science program has long been an area of pride and success within our school and community, but we have struggled for years to accommodate a comprehensive science curriculum within our aging science lab environment.

Within our science classes, we incorporate experiential, hands-on learning with a heavy emphasis on labs. Many of our science courses carry extra credits and face-time to allow students the opportunity to participate in additional laboratory experiences, ensuring that students are able to connect conceptual knowledge to practical application, but requiring substantial and flexible lab space.

Nashoba students are well prepared for college and the workplace after graduation; as one example, 80.2% of the students in the class of 2012 planned to attend a four-year college and 9.5% planned to attend a two-year college. For the 2010-11 school year, 87% of our students demonstrated proficiency on the STE MCAS (20 percentage points above the state average), with 34% demonstrating advanced mastery. While the quality of our science personnel and student outcomes are high, our science facilities do not support the high level of teaching and learning of which our staff and students are capable. Nashoba currently offers ten science lab classrooms, with only one room meeting the national standards for square footage, and none using the national recommendations for resource layout. Because of our heavy emphasis on science education, and the number of additional credits associated with most of our science courses, lab space is particularly tight, with at least one science teacher needing to "travel" each year from room to room.

The intent of this initiative is to improve our learning environment and educational facilities, and to improve lab safety. Our proposal will align our lab spaces with national standards for square footage per student, will ensure a more appropriate resource configuration, will offer a more flexible and effective learning environment, and will create a safer environment through the appropriate storage and use of lab equipment and resources.

2.1 GRADE AND SCHOOL CONFIGURATION POLICY

Nashoba Regional High School (NRHS) serves approximately 1030 students in grades 9-12 for the towns of Bolton, Lancaster, and Stow. Within our science classes, we incorporate experiential, hands-on learning with a heavy emphasis on labs. Most of our science courses carry additional credits and face-time to allow students the opportunity to participate in labs, ensuring that students are able to connect conceptual knowledge to practical application. Nashoba students are well prepared for college and the workplace after graduation; for example, 80.2% of the students in the class of 2012 planned to attend a four-year college and 9.5% planned to attend a two-year college. In addition, science outcomes are consistently high: for the 2010-11 school year, 87% of our students demonstrated proficiency on the STE MCAS, and we have averaged 89% mastery of the STE MCAS over the last four years.

While the quality of our science programs is high, our science facilities do not adequately support continued rigorous teaching and learning. Nashoba currently offers ten science lab classrooms, with only one room meeting the national standards for square footage and none using the national recommendations for resource layout. Furthermore, one science teacher is required to “travel” between rooms due to the existing configuration of science classrooms and number of science teachers. As a result, the intent of this initiative is to renovate our current science lab space to improve our learning environment and educational facilities, and to add a science classroom to ensure adequate teaching and learning space. According to architectural calculations of educational space, our science program requires a minimum of 10.28 “stations” available. By using existing space within the building to create an eleventh lab, we will ensure that all science teachers have adequate space for teaching and all students have adequate space for learning. Through the improvement of our science classrooms, through the addition of an eleventh classroom, and by bringing them into alignment with national standards for square footage per student and resource configuration, we will significantly improve the science educational space for all of our students.

2.2 CLASS SIZE POLICY

Recommendations for class size at Nashoba are 24 students per class for science courses, but we consistently have sections that go as high as 26 students per class. Teacher assignments, per the agreement of the Nashoba Regional School Committee and the Nashoba Regional Education Association, indicate that: “High School teachers shall be assigned a maximum of 25 teaching periods per week and shall be provided with at least 25% unassigned time in the course of a defined rotation of the schedule.” Students are scheduled into seven periods, over an eight-day cycle.

2.3 SCHEDULING METHODOLOGY

Nashoba runs a two-semester schedule, with some year-long courses and some semester-long courses. Students are scheduled seven periods (A-G) per day over eight days. The periods rotate fully, with the first period of the day becoming the last period the following day. Classes are 46 minutes long. The daily rotation schedule includes a "long" block of 90 minutes, which each class funnels into throughout the eight-day cycle. The long-block serves as our lunch block with four 22-minute periods. The high school day starts at 7:40 AM and ends at 2:20 PM.

Students are expected to be enrolled in 25 credits yearly. While some science classes meet daily and are worth 4 credits, many science classes constitute 5, 6, or 8 credits because of additional lab periods scheduled over the eight day cycle. These higher-credit classes reflect the emphasis that NRHS, and the larger Nashoba community, place on science education.

NRHS has a consistently high science enrollment. In a typical year, we have 100% enrollment for grades nine through eleven in science classes. For this past graduating senior class of 222 students, we had 209 students in fourth year science classes (94%). Of the 209 students, 29 students were in two science classes their senior year.

Graduation Requirements:

There are certain required courses as well as required overall credit total that must be earned.

	<u>Courses Required</u>
English	4yrs
Foreign Language	2yrs
Math	3yrs
Social Studies	3yrs (U.S. History required)
Science	3yrs
Wellness	Required each year
Fine & Performing Arts	1 yr
Applied Computer Technology	1yr

Minimum Credits Required for Graduation

90 Credits

2.4 TEACHING METHODOLOGY

Mission Statement

The Nashoba Regional High School Community works together to achieve high intellectual and ethical standards while discovering and developing the gifts and talents of all. Each member of our school community recognizes his or her role and responsibility in creating a learning environment based upon Respect, Trust, Teamwork, and Enthusiasm.

Academic Expectations for Learning

All Nashoba courses are aligned with our Mission Stand and Academic/Civil/Social Expectations for Learning.

Acquire, integrate, and apply essential knowledge;

1. Adapt skills appropriate to subject matter and situations
2. Apply knowledge to new situations
3. Recognize the relevance of what is learned in school to real life

Read, write, and communicate effectively;

1. Read and listen carefully for information, understanding, and enjoyment
2. Write and speak clearly, factually, persuasively, and creatively in standard English
3. Distinguish fact from opinion, identify stereotyping, and recognize bias
4. Read, write, and converse in at least one language in addition to English

Define, analyze, and solve complex problems;

1. Make careful observations and ask pertinent questions
2. Seek, select, organize, and present information from a variety of sources
3. Analyze, interpret, and evaluate information
4. Make reasoned inferences and construct logical arguments
5. Develop, test, and evaluate hypothesis
6. Develop and present conclusions through speaking, writing, artistic, and other means of expression

Study and work effectively;

1. Set goals and achieve them by organizing time, work, space and resources effectively
2. Monitor progress and learn from both success and mistakes
3. Work both independently and in groups

Civic and Social Expectations

All students upon graduating from NRHS will demonstrate personal, social, and civic responsibility: They will;

1. Treat other and oneself with respect and appreciate the uniqueness and value of other people and cultures;
2. Understand, accept, and demonstrate one's role as a responsible and active member of the community or school;
3. Participate in meaningful community and/or school activities that promote service to others;
4. Cultivate and develop positive social skills in order to minimize conflicts within the community and/or school.

2.5 TEACHER PLANNING AND ROOM ASSIGNMENT POLICY

Nashoba Regional High School teachers are assigned to departments. Educational space is tight, especially as enrollments have grown over the last several years. This is particularly true in the science department, given that some science classes typically meet twice per day because of additional lab opportunities. Most teachers are assigned to one classroom; however, some teachers in the building (including one science teacher) are required to travel between various rooms because of limited space. This is especially problematic for our science classes because of the time required for lab set up and safety.

Teachers are assigned five instructional periods per day. They have two preparation periods per day; one used for professional responsibilities. As stated earlier, per the agreement between the Nashoba Regional School District Committee and the Nashoba Regional Educational Association, NRHS teachers have a maximum of 25 teaching periods per week and are provided with at least 25% unassigned time in the course of a defined rotation of the schedule.

2.6 LUNCH PROGRAMS (N/A)

2.7 TECHNOLOGY INSTRUCTION POLICY (N/A)

2.8 SPECIAL EDUCATION (N/A)

2.9 FUNCTIONAL AND SPATIAL RELATIONSHIPS AND ADJACENCIES

Several issues impede the flexibility of the science learning spaces. First, many of the science laboratories lack the following safety equipment: dishwashers, UV goggle sanitizers, fume hoods, proper ventilation, fire blanket storage, as well as locked storage for chemicals (e.g. acids, bases, flammables). Including this equipment in science labs would expand experimental offerings, save time, and ease preparation and clean up.

Secondly, the current science laboratory does not provide a conducive learning environment. The current space configuration and the location of the casework make it difficult for students and the teacher to move within and around the lab area. In some rooms, lighting is not sufficient to illuminate the work space. In other rooms, there is electrical wiring near water sources. Much of our laboratory furniture is old and falling apart. It requires periodic and frequent maintenance. Moreover, the inconsistency of the heating/cooling system causes issues when dealing with live specimens, as many specimens are temperature specific. Overall, improving the layout and condition of classrooms would enable teachers to focus solely on student outcomes.

Finally, due to a steady increase in enrollment, a teacher will be required to travel among rooms, which creates additional safety concerns beyond the ones listed above. In addition, this teacher will have to split his/her lab period between two different rooms. Consequently, instructional time is wasted to ensure the preparation and safe transportation of lab materials. By adding an eleventh lab, we will be able to address this challenge.

Another concern that impedes instruction is access to technology. As of this writing, science teachers can access technology in one of two ways: reserve computer lab space or utilize the mobile lab. Several issues arise with both options. First, the computer labs are often booked for other content areas and guidance seminars. Secondly, the mobile lab computers are not up-to-date or timely. The ideal scenario would allow access to technology in every science classroom. By doing so, science teachers would be able to analyze data from experiments quickly and effectively. Furthermore, teachers would be able to create additional cross-curricular and multi-media activities and assessments. Undoubtedly, the incorporation of technology enables teachers to foster 21st century skills.

INITIAL SPACE SUMMARY

SECTION THREE

INITIAL SPACE SUMMARY

The Initial Space Summary addresses Core Academic space only and was developed to address the goals and vision for the science curriculum.

A number of deficiencies were also identified with respect to the ability of the existing facility to support the Educational Program and curriculum. The Initial Space Summary addresses these deficiencies.

- All current science rooms are smaller than the MSBA's current guidelines of 1,440 sf.
- The school is lacking in science rooms to accommodate the existing curriculum.
- The math department is remote from science which has some limiting interaction of the STEM program.

The Initial Summary of Spaces addresses the needs of the Educational Program, for the science curriculum, and reflects maximizing the use of the existing building.

Included in this Section 3, is a spreadsheet that analyzes the science curriculum and identifies the need for 11 science labs.

Basic Educational Space
for Planned Program

SCIENCE

1016 STUDENTS
24 max / class

# of Credits	Course No.	A Subject	Current Students, per Subject	B Projected Students, per Subject	C Class Size	D Sections	E Sessions Per Week	F Total Sessions	G Periods Per Week	H Total Stations Required	Comments
		Biology									
8	S2001F	AP Biology	57	57	24	3	10	30.0	35	0.86	
5	S2101F	ACC Biology / Lab	46	46	24	2	6	12.0	35	0.34	
5	S2101L	ACC Biology w/Lab	79	79	24	4	5	20.0	35	0.57	
5	S2201F	CP Biology / Lab	0	0	24	0	6	0.0	35	0.00	
4	S2201L	CP Biology w/ Lab	32	32	24	2	5	10.0	35	0.29	
5	S2210F	CP Biology and the Human Body	46	46	24	2	6	12.0	35	0.34	
2	S3101S	ACC Bio- Computing: Genes & Disease	0	0	24	0	0	0.0	35	0.00	
5	S3104F	ACC Anatomy & Physiology / Lab	0	0	24	0	6	0.0	35	0.00	
4	S3104L	ACC Anatomy & Physiology w/ Lab	58	58	24	3	5	15.0	35	0.43	
5	S3202F	CP Anatomy & Physiology / Lab	0	0	24	0	6	0.0	35	0.00	
4	S3204L	CP Anatomy & Physiology w / Lab	49	49	24	2	5	10.0	35	0.29	
2	S3207S	CP Introd. to Entomology / Lab	0	0	24	0	2.5	0.0	35	0.00	
								3.11		3.11	
								3.11	.85 =	3.7	say 4
		Physics									
6	S1002F	Hon Physics w Engineering Apps Lab	15	15	24	1	9	9	35	0.26	
6	S1102F	ACC Physics w Engineering Apps Lab	22	22	24	1	9	9	35	0.26	
2	S3213S	CP PBPS: Physics I Lab	7	7	24	1	2.5	2.5	35	0.07	
2	S3214S	CP PBPS: Physics II Lab	0	0	24	0	2.5	0	35	0.00	
6	S4014F	AP Physics C: Mechanics	16	16	24	1	9	9	35	0.26	
5	S4113F	ACC Physics / Lab	0	0	24	0	6	0	35	0.00	
4	S4113L	ACC Physics w / Lab	61	61	24	3	5	15	35	0.43	
6	S4213F	CP Conceptual Physics / Lab	0	0	24	0	6	0	35	0.00	
5	S4213L	CP Conceptual Physics w / Lab	53	53	24	3	5	15	35	0.43	
								1.70		1.70	
								1.70	.85 =	2.0	say 2
8	S3003F	Chemistry AP Chemistry	44	44	24	2	10	20	35	0.57	

Basic Educational Space
for Planned Program

SCIENCE

1016 STUDENTS
24 max / class

# of Credits	Course No.	A Subject	Current Students, per Subject	B Projected Students, per Subject	C Class Size	D Sections	E Sessions Per Week	F Total Sessions	G Periods Per Week	H Total Stations Required	
5	S3102F	ACC Chemistry / Lab	34	34	24	2	6	12	35	0.34	
4	S3102L	ACC Chemistry w/ Lab	64	64	24	3	5	15	35	0.43	
5	S3200F	CP College Chemistry / Lab	12	12	24	1	6	6	35	0.17	
4	S3202L	CP College Chemistry w / Lab	68	68	24	3	5	15	35	0.43	
2	S3215S	CP PBPS: Chemistry I Lab	0	0	24	0	2.5	0	35	0.00	
2	S3216S	CP PBPS: Chemistry II Lab	0	0	24	0	2.5	0	35	0.00	
4	S1000L	Hon Environmental Science / Lab	45	45	24	2	5	10	35	0.29	
4	S1100L	ACC Environmental Science Lab	138	138	24	6	5	30	35	0.86	
4	S1201F	CP Environmental Science Lab	29	29	24	2	5	10	35	0.29	
										3.37	
								3.37	.85 =	3.97	Say 4
		Technology / Engineering									
2	S3200S	CP Projects in Biotechnology / Lab	0	0	24	0	2.5	0.0	35	0.00	
5	T1100F	ACC Engineering the Future	0	0	24	0	6	0.0	35	0.00	
2	T1101S	ACC Engineering Drawing 1, Part 1	35	35	24	2	2.5	5.0	35	0.14	
2	T1102S	ACC Engineering Drawing 1, Part 2	15	15	24	1	2.5	2.5	35	0.07	
5	T1200F	CP Engineering the Future	38	38	24	2	6	12.0	35	0.34	
?	T1509F	NL Robotics	0	0	24	0	0	0.0	35	0.00	
										0.56	
								0.56	.85 =	0.66	Say 1
		SCIENCE SUBTOTAL	1063	1063							

Interchangeable labs
 Biology 3.11
 Physics 1.7
 Chemistry 3.37
 Technology / Engineering 0.56
8.74

NOTE: All science courses are to be taught in a lecture / lab

10.28 Say 11 ASSUME 11 SCIENCE LECTURE / LABS

EVALUATION OF EXITING CONDITIONS

SECTION FOUR**EVALUATION OF EXISTING CONDITIONS****4.1 BUILDING CODE COMPLIANCE SUMMARY (N/A)****4.2 ADA ACCESSIBILITY SUMMARY (N/A)****4.3 EXISTING BUILDING CONDITION**

The following information is based on walk through performed on July 19, 2012. One set of existing drawings were reviewed prior to the walk through reflecting a renovation project in 1999.

PROJECT SCOPE DESCRIPTION

146,000 GSF built in 1962

Use Group: Education

Type of Construction: IIA – fully sprinklered

Two stories, one on the ground level and one level on the second story.

Masonry and precast panels constitute the envelope and aluminum single pane glass constitutes the window and entrances.

EXTERIOR WALLS

The exterior walls are a mix of masonry wall and pre-cast panels. The masonry construction appears to be constructed of 4" brick veneer with 8" masonry backup. Considering the time of construction, cavity wall construction was not a very common practice. Therefore we believe there is no insulation or very little insulation present in the walls. The masonry is in generally good condition inside and out. The pre-cast panels are 5" thick with 1" of rigid insulation in the core. The foundation wall where exposed to view appears to be in good condition.



EXTERIOR WINDOWS

The windows are single glazed strip windows with operable vertical sliding window units. The windows are generally fair to poor in condition and do not comply with current energy code and will require replacement with thermally broken insulated units. Windows sills are aluminum.



INTERIOR PARTITIONS

The interior partitions are generally painted 6" or 8" masonry units.

Most classroom partitions are generally covered with casework, marker boards or tack boards. The visible portions of the partitions appear to be in good condition. The partitions in some of the labs and utility areas have painted plaster/masonry walls. The walls are in fair condition.

Generally, all masonry walls are in good condition and don't show any cracks or signs of structural movement.

FLOORING

Classrooms have resilient floor tiles (VCT) and are in fair condition.

**SIGNAGE**

Signage is obsolete and should be replaced to comply with current ADA/MAAB accessibility standards and requirements.

CASEWORK

Science room casework is original and does not meet accessibility standards or current lab needs. It shall be replaced as part of this project and brought up to ADA/MAAB accessibility standards and requirements.

**MEANS OF EGRESS AND DOORS**

The configuration of the corridor egress system and capacity of the egress doors appears to meet egress code requirements to allow the calculated population of the various building wings to safely exit the building. However there are several conditions existing in the system. A large number of doors do not have accessible type hardware, to allow use by a disabled person.

GENERAL ACCESSIBILITY ISSUES

Many of the classroom entrance doors are without the necessary side maneuvering clearances required to meet accessibility code. Door operators were installed but were not functioning at most locations. In some instances the closer arms were severed and at others the operators were not powered.

**CEILINGS**

Classrooms in the 'junior wing' have no ceilings and are exposed to the structure with acoustic panels applied to the underside of structure. Classrooms in the 'senior wing' have an acoustical ceiling, 2x4, at 9'-6" above finished floor.





INTERIOR FINISHES

Overall, interior finishes have been maintained but are worn and dated. There are no cracks in the interior masonry.

STRUCTURAL SYSTEM

The following information is based on a walk-through of the Nashoba Regional High School on July 19, 2012, and from review of the construction documents for renovation by Turner Group dated 9/17/99.

The structure appears to be in relatively sound condition with no visual signs of structural distress in the area to be renovated, nor are there any visible signs either interior or exterior of excessive settlement. The interior floor slabs, showed very little cracking. The structure is essentially a one or two story steel framed building founded on isolated concrete spread footings at the interior building columns, and at continuous wall footings at the perimeter of the building. There is seismic cross bracing at both exterior and interior walls in the portion of the building originally constructed in the 1960's.

The proposed renovation to the building will occur under the International Existing Building Code, IEBC 2009, and the amendments to the 2009 IEBC as defined in 780 CMR Eighth Edition of the Massachusetts State Building Code. The proposed extensive renovation to the building is defined as Level 3 work in Chapter 4 of the IEBC, and as such, requires that a full gravity and lateral analysis of building be undertaken. Whereas, there is no existing lateral force resisting system in the building, i.e. shear walls, braced frames, or moment frames, the renovation will most likely require a full lateral upgrade of the building. Typically diagonal braced frames will have to be selectively constructed in demising walls between spaces, corridor walls, and/or exterior walls throughout the building.

PLUMBING/FIRE PROTECTION SYSTEMS

The following evaluation is based upon a site visit walk- thru on July 19, 2012 and review of original drawings.

The Condition Key Criteria is as follows:

- 0 – Poor – Not serviceable or failed
- 1 – Poor/Fair – Failure Expected
- 2 – Fair – Serviceable, maintenance required
- 3 – Fair/Good – Functioning, maintained
- 4 – Good – Fully functional, new
- N/A – Not applicable/Not available
- M – Missing

PLUMBING

System	Pipe Material / Condition	Type Insulation / Condition	Miscellaneous
Domestic Cold Water:	Copper, type L/3	Fiberglass/2	Piping is copper with soldered joints. Majority of piping above finish ceilings is insulated. Insulation is in fair condition. In recent renovated classroom copper is exposed at ceiling and un-insulated. Existing piping in trenches is un-insulated.
Domestic Hot Water:	Copper, type L/3	Fiberglass/2	Piping is copper with soldered joints. Majority of piping above finish ceilings is insulated. Insulation is in fair condition. In recent renovated classroom copper is exposed at ceiling and un-insulated. Existing piping in trenches is un-insulated.
Sanitary Waste & Vent:			
Storm Drainage:			
Gas:			
Non-Potable (Lab) CW:			
Non-Potable (Lab) HW:			
Acid (Lab) Waste & Vent:			
Kitchen Waste:			
Tempered Water:	Copper, type L	Fiberglass/2	Mixing valve located in adjacent storage room. Tempered water supplied to emergency shower/eyewash fixtures. Valve is in

		good condition.
--	--	-----------------

Equipment	Type/Fuel	Age	Condition	Miscellaneous
Domestic Water Heater:	Storage tank type heater/oil-fired		3	There are two PVI model 500N400A-TPO oil fired tank type water heaters. Heaters have 400 gallons storage capacity each; total of 800 gallons.
Sanitary Ejector Pump:				
Storm Ejector Pump:				
Domestic Water Booster Pump:				
Interior Kitchen Grease Trap:				

Plumbing Fixtures	Type/Installation	Low Consump /Metering	Accessible	Condition	Miscellaneous
Water Closet:					
Urinal:					
Lavatory:					
Drinking Fountain/Water Cooler:					
Classroom Sink	Science sinks resin type sinks to match countertops	No	No	2	Sinks are in fair conditions. Some science faucets are equipped with vacuum breakers, however not all are. Teacher demo sinks are fed with both hot and cold water. Typically, student sinks are fed with cold water only.
Classroom Bubbler / Drinking Fountain					
Mop Sink:					
Showers:					

Miscellaneous Fixtures	Miscellaneous
Hose Bibb:	Vacuum Breaker -
Wall Hydrant:	Vacuum Breaker -
Floor Drain:	Trap Primer -
Emergency Shower / Eyewash:	Location - Stay Open - yes Floor Drain - no Science Classroom

Emergency Eyewash:	Location -	Stay Open -	Piped Drain -
Lab Faucets:	Vacuum Breaker – 50%		Accessible - No
Lab Gas Cocks:	Science classrooms are fed with natural gas. Each classroom has a lockable master gas valve adjacent to Teacher's demonstration desk.		

FIRE PROTECTION

Water Service	Size	Backflow Preventer / Type	Pipe Material	Pressure	Condition	Miscellaneous
On site storage tank & fire pump.		N/A	Black steel		3	System can be modified to new architectural layouts to protect building.

MECHANICAL SYSTEMS

The following evaluation is based upon a site visit walk- thru on July 19, 2012 and review of original drawings.

HEATING & VENTILATING SYSTEMS:

Centralized Systems	Energy Source	Type	Manufacturer	Date of Installation	Conditions
Heating Equipment #1:	Cast Iron Boilers	Hot Water Fuel Oil Fired	Weil McLain	Unknown at this time	3
Cooling Equipment #1:	Direct Expansion Condensing Units	Air Cooled	Trane	Unknown at this time	3
Exhaust Equipment #1:	Typical Roof Mounted Exhaust Fans	Mushroom Style and Inline Type	Unknown At this time	Unknown at this time	2
Distribution Systems	Type	Manufacturer	Date of Installation	Conditions	
Heating Distribution Equipment:	End Suction Pumps associated with Fintube Radiation	Bell and Gosset	Unknown at this time	2	
Cooling Distribution Equipment:	Direct Expansion Coils in Air Handling Units	Trane	Unknown at this time	3	
Air Distribution Equipment:	Air Handling Units	Trane	Unknown	3	

Terminal Equipment	Type	Manufacturer	Controls	at this time Date of Installation	Conditions
Science Classrooms	Fintube radiation and Displacement Diffusers	Unknown at this time	Control Valves	Unknown at this time	Fintube – 1 Diffusers - 3
HVAC Controls	Type	Manufacturer	Controls	Date of Installation	Conditions
	Direct Digital Controls	Yankee		Unknown at this time	1

ELECTRICAL SYSTEMS

The following evaluation is based upon a site visit walk- thru on July 19, 2012 and review of original drawings.

ELECTRICAL:

Service:	Rating	Voltage	Phase/Wiring	Date of Installation Estimate(90 's)	Conditions
	1200A frame/1000A trip	277/480V	3 phase/4 wire		2
Transformer:	Type	Location	Date of Installation	Conditions	
Emergency Generator:	Rating	Energy Source	Manufacturer	Date of Installation Estimate(20 00)	Conditions
	(1) 60KW, (1) 200KW	Diesel	Olympian		3
Distribution System:	Type	Voltage	Phase/Wiring	Date of Installation	Conditions
	Panelboards with circuit breakers	277/480V and 120/208V	3 phase/4 wire	Varies from original to 90's	2
Devices – Typical Classrooms:	Grounded/Non Grounded	Conditions			
	Reviewed science classrooms only	Most receptacles have been added some are not GFI and located within 6' of water source which is a code violation.	Generally there is enough receptacles however is some labs they are not in ideal locations based on the rooms layout.	Most of the Devices are surface mounted .	1

Offices:					
	Fixture/Lamp Type	Mounting	Date of Installation	Conditions	
Lighting - Typical Classrooms:	Reviewed Science Labs only: generally pendant fluorescent linear up/down with baffle. (2) lamp T-8 with electronic ballast. One lab contained 2X4 recessed troffer with parabolic louver.	Pendant/recessed		Generally 2, however lab with recessed troffers is 0	
Offices:					
Gym					
Cafeteria:					
Corridor:	Recessed 2X4 acrylic lens troffer with T-8 lamps and electronic ballast			2	
Lighting Controls:	Occupancy sensors in classrooms	ceiling		1	
	Fixture Type	Mounting	Date of Installation	Conditions	
Site Lighting -					
Parking:					
Walkways:					
	Type	Manufacturer	Date of Installation	Conditions	
Security Systems - CCTV:					
Door Access Controls:					
Security System:					
Motion Detectors:					
Master Clock		Rauland Telecenter		2 but obsolete	
Bell		Rauland Telecenter		2 but obsolete	
P.A. System - Typical Classrooms:		Rauland Telecenter		2 but obsolete	
Corridors					
Console					
	Quantity/Type	Manufacturer	CATV	Date of Installation	Conditions
Data -					
Library:					
Classroom	Reviewed science labs only Cat 5e generally located at teacher station and around the		Two drops one up high and one at the teachers station		1

Telephone System - Admin. Classroom	room approximatel y 8 per lab.				
	Type	Manufacturer	Controls	Date of Installation	Conditions
Local Sound Systems - Gym/Café					
	Type	Manufacturer	Mounted	Date of Installation	Conditions
Emergency Lighting:					
Exit Lighting:					
	Type	Manufacturer	Notifications	Date of Installation	Conditions
Fire Alarm System:					
	Detector Type	Alarm Signal Type	Pull Station	Date of Installation	Conditions
Devices - Typical Classrooms:	Missing Fire alarm devices	none	none		
Offices:					
Library:					
Gym/Cafeteria:					
Lobby/Corridor:	Smoke photoelectric	Speaker/stro be	compliant	Estimate (2000)	3
Kitchen:					
Toilets:					
Basement:					

4.4 HAZARDOUS MATERIALS REPORT

The Asbestos Hazard Emergency Response Act (AHERA) three year re-inspection of the Nashoba Regional High School The Preliminary Hazardous Materials Investigation was completed on May 7, 2012. A copy of that report follows.

4.4 HAZARDOUS MATERIALS REPORT

23-0952-1
June 6, 2012



Mr. Bill Cleary
Nashoba Regional School District
50 Mechanic Street
Bolton, MA 01740

Re: **AHERA Management, Three Year Re-Inspection – Nashoba High School**

Dear Mr. Cleary:

On May 7, 2012 Tighe & Bond's licensed Massachusetts Asbestos Inspector, Jason Hayward, performed an Asbestos Hazard Emergency Response Act (AHERA) three year re-inspection of the following school located in the Nashoba Regional School District (NRSD):

- Nashoba High School – 12 Green Road, Bolton, MA 01740

As required by the U.S. Environmental Protection Agency's (EPA) AHERA regulations, 40 CFR 763.85(b), the Local Education Agency's (LEA) asbestos inspector must perform a visual examination of all known Asbestos Containing Material (ACM) in the school every three (3) years. All re-inspections were performed and reports were developed in accordance with the Environmental Protection Agency (EPA) AHERA regulations, 40 CFR 763.85. This inspection was performed using the AHERA 3-year inspection performed by Tighe & Bond in May 2008.

1.0 Discussion

1.1 Inspection – The inspector must note the date the inspection was made and the condition of the asbestos inspected. The AHERA 3-Year Inspection Inventory in Appendix A details the type, location and condition of the known and presumed ACM (PACM) in the Emerson School. Additional comments, including the quantity of material and recommended action may supplement this information. Previously assessed, non-ACM that has been abated or analytically proven non-ACM is also included in the spreadsheet.

Due to the renovations that have taken place in the school, we recommend that any additional materials that have not been noted in this AHERA report be sampled for ACMs. It is likely that most suspect materials will test negative for asbestos content, thus eliminating the need for material inspection in the future. This will NOT allow the school to avoid AHERA inspections entirely, but will reduce time and expense regarding school inspections.

A letter from the Architect in charge of the renovations stating the all materials used in the renovations were non-ACM would also be a suitable method of classifying the materials.

1.2 Past Assessments – In accordance with an EPA publication dated May 1991 titled "Answers to Most Frequently Asked Question About Re-inspections", reassessments are not required for materials which have not changed since previous inspections or which were not identified in previous inspections. For materials not assessed as part of this inspection, Tighe & Bond refers readers to the past inspections.



1.3 Accessibility – Reasonable efforts were made to access every area of the facility. However, some portions of the facility may contain asbestos materials but were not accessible due to the following reasons:

- Materials were located in inaccessible areas such as walls, above ceilings and in pipe chases.

1.4 Additional Work – Although the three year re-inspections were performed in accordance with regulatory standards, Tighe & Bond recommends that a more thorough AHERA inspection be performed at the school. This should include additional bulk sample collection and confirmation analysis of previously Presumed Asbestos Containing Materials (PACM). This more intrusive inspection confirms or denies the presence of asbestos in assumed materials that have been identified throughout the school. Furthermore, we recommend that asbestos be repaired, abated or enclosed with a suitable protective covering as indicated in the AHERA Inspection Report in Appendix A.

Some of the materials noted in the inspection report that are currently considered ACM, should be sampled as it is likely that sampling will eliminate them from that category. This will reduce AHERA survey efforts and will eliminate the need for written maintenance procedures for these materials. Sampling may be done discreetly so as to not affect the appearance of the materials.

2.0 Recommendations

2.1 Inspection Summary – During the May 7, 2012 three year re-inspection, some additional materials that had not been previously noted were observed during this survey. The following materials were identified as suspect ACM:

- 1' x 1' ceiling panel, dot pattern and associated glue daubs – First floor Science labs
- Sprayed on insulation – Observed at open ceiling panel near Media Area

During the three year re-inspection, the following items were observed that need to be addressed.

- To minimize disturbance of ACM, care should be taken when storing items in sink cabinets or near pipe insulation
- To minimize disturbance of ACM, care should be taken when working on lab countertops
- Pipe insulation with potential for high contact should be protected (e.g., aluminum shell, built out enclosure, etc.) or abated
- Perform a detailed assessment of the sprayed on insulation to include but not limited to the following:
 - Material assessment, quantification, sample collection and analysis

- If the sprayed on insulation is found to be ACM the Asbestos Operations and Maintenance (O&M) Program should be updated to reflect how to properly maintain the material
- Contract a state licensed abatement contractor to make "spot" repairs, as needed, to damaged areas and to clean any residual surface contamination
- All other areas of ACM and/or PACM should be properly maintained in-place as part of the Asbestos O&M Program

The entire school was renovated in 2000/2001. A majority of the ACM was reportedly removed during the renovations. A letter should be obtained from the Architect stating that, to the best of their knowledge, only non-ACM materials were used in the renovation process. The materials such as, newer vinyl floor tile, vinyl covebase, ceiling panels should be assessed and sampled to verify that they are non-ACM in lieu of an Architects letter.

2.2 Additional Requirements - The NRSD is also responsible for, but not limited to, complying with other regulatory requirements.

- Perform and document periodic surveillance of the asbestos materials at least once every 6 months by a trained maintenance personnel or a state licensed asbestos inspector and have a state licensed asbestos inspector perform the 3-year re-inspections.
- Concurrent with the preceding tasks, follow all recommendations in the NRSD Asbestos Management Plan.
- All asbestos areas should be labeled with warnings that will alert building occupants to the nature of the asbestos material and its hazard in accordance with OSHA / EPA regulations.
- Any subcontractors, contractors or tenants who work in the facility should be notified that asbestos containing materials are present in the facility. This could be done by disclosing the presence of asbestos on purchase order forms or developing a control or permit system.
- Provide training to affected employees on the general hazards associated with asbestos through your hazard communication training. This will include notifying employees that they should not disturb material which is labeled as asbestos.
- If workers must disturb asbestos containing material, then we recommend that 1) employees be trained in the safe and proper handling procedures, 2) a licensed asbestos contractor perform all abatement activities. At a minimum, this should include training and licensure requirements as set forth in the Massachusetts Executive Office of Labor and Workforce Development - Department of Labor Standards, 453 CMR 6.00 and Occupational Safety & Health Administration (OSHA) regulations, 29 CFR 1910.1001. A copy of the Massachusetts and OSHA regulations are included in Appendix B. Depending on the amount of material disturbed, a licensed contractor may be required under the state regulations.

- Whenever floor tiles, cove base, or any multilayered type of material is present, the mastic below should be presumed to contain asbestos or tested
- In areas where asbestos damage occurs, repair or remove the materials in their entirety and replace with non-asbestos materials. The repair or removal of these areas should first focus on areas of the facility that are subject to high occupancy and/or high traffic.
- The various regulatory agencies should be notified of any asbestos removal, repair or encapsulation work. In general, any asbestos work in Massachusetts requires notification.
- Employees who work with asbestos should be provided proper personal protective equipment as well as the appropriate asbestos removal equipment, training and licensure if applicable.
- All asbestos material should be disposed of in accordance with applicable regulations.
- Asbestos removal should be monitored to ensure that no asbestos fibers are released into the air. During enclosed asbestos removals, Massachusetts regulations require that an independent consultant perform clearance air testing prior to the removal of the enclosure barriers. We recommend that air monitoring be performed in accordance with applicable regulations and that affected employees are notified of asbestos abatement work.
- A standardized Scope of Work/Specification is required for the removal/repair of asbestos containing materials at the facility. We recommend that the specification be developed by a licensed asbestos designer and it should address such important issues as regulatory requirements, insurance requirements, notification procedures, air sampling requirements and other pertinent information.
- One individual from the school should be chosen to coordinate all asbestos related activities at the facility. This person should have adequate knowledge and training of the proper removal and repair of asbestos containing materials.
- Ensure that workers, building occupants, or their legal guardians are informed about inspections, response actions, post-response activities, periodic re-inspections and surveillance activities at least once per year.
- Accurate records should be maintained for all asbestos work at the facility. This should include the notification to employees, training procedures, appropriate licensure, asbestos removal and repair activities, and other asbestos-related information. This should be kept in a central location at the facility.
- Perform additional analysis and evaluation for any materials encountered that were inaccessible during the inspection in walls, ceilings, floors, etc. that would be affected by potential future renovations, regardless of building age.

- All work should comply with applicable state and Federal regulations including but not limited to those shown in the NRSD Management Plan and Appendix B.
- The 3-year re-inspection results should be recorded and submitted to the LEA designated person for inclusion in the management plan in accordance with 40 CFR part 763.92(b).

The Asbestos Management Plans should be updated with the information contained in our three year re-inspection report. Please contact me at 508-471-9614 if you have any questions regarding our assessment. Thank you for selecting Tighe & Bond to provide these services and we look forward to working with you again in the future.

Very truly yours,

TIGHE & BOND, INC.



Jason Hayward
EH&S Compliance Specialist
Asbestos Inspector (#AI 073502)



Ray Gorham
Project Compliance Specialist
Asbestos Management Planner (#AP 073060)

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AHERA INSPECTION INVENTORY

School: Nashoba High School Job #: W-3621-2-265 Signature: Jason Hayward **Tighe&Bond**
 446 Main Street
 Worcester, MA
 Page: 1 of 4 Date: 5/7/12 License #: AI 073502

Material	Location	Damage	Damage Potential	Access	Quantity	Classification	Comments
Boiler insulation, Boiler breeching, elbows and fittings, hot water tank insulation, heat exchanger insulation, gaskets	Boiler room	NA	NA	NA	NA	NA	Removed during the 2000/2001 renovations performed in the school. New boilers were installed and the old ones removed.
Exhaust insulation	Generator room	NA	NA	NA	NA	NA	The exhaust insulation was removed during the 2000/2001 renovations.
Pipe TSI and fittings	Crawl Space	NA	NA	NA	NA	NA	The pipe TSI and fittings were removed and replaced with non-ACM materials during the 2000/2001 renovations.
Roof drain insulation and fittings	Upper Gym	Damage < 10 SF >	Potential for significant damage	Faculty and students	250 LF	Class I	The roof drain insulation and fittings are in fair condition and had some noticeable damage, presumably from sports ball impact. The insulation and fittings should be bulk sampled to confirm or deny the presence of asbestos and if ACM, be replaced with non-ACM.
HVAC water pipe insulation	Upper gym	None	Potential for significant damage	Faculty and students	200 LF	Class VI	The HVAC insulation and fittings are in good condition and did not have any noticeable damage. The insulation and fittings should be bulk sampled to confirm or deny the presence of asbestos.

AHERA INSPECTION INVENTORY

Material	Location	Damage	Damage Potential	Access	Quantity	Classification	Comments
9"x9" floor tile and mastic	Music room	NA	NA	NA	NA	NA	Removed during the 2000/2001 renovations.
Sink undercoat	Room 205	None	Low potential for damage	Faculty and students	1 sink	Class VII	The sinks were installed during the 2000/2001 renovations. Sinks should be tested to verify they are not ACM.
Pipe TSI and fitting	Hallway outside media center	None	Potential for damage	Faculty and students	2 LF 2 Fittings	Class V	The material is in good condition. It is located under a heating system cover and partially protected. The pipe coverings are fiberglass. The fittings should be bulk sampled to confirm or deny the presence of asbestos.
Laboratory countertops	Room 166 and attached Prep room	Damaged <1 SF>	Potential for significant damage	Faculty and students	200 SF	Class IV	The countertops are in good overall condition. No significant damage that would warrant repairs was observed.
Laboratory countertops	Room 171 and attached Prep room	Damaged <1 SF>	Potential for significant damage	Faculty and students	200 SF	Class IV	The countertops are in good overall condition. No significant damage that would warrant repairs was observed.
Black chalk board	Room 171	None	Potential for damage	Faculty and students	1 count	Class V	The chalk board is in good condition and is well maintained. A white board has been installed over the chalk board.
Black chalk board	Room 166	None	Potential for damage	Faculty and students	1 count	Class V	The chalk board is in good condition and is well maintained. A white board has been installed over the chalk board.
Laboratory countertops	Room 169 and attached Prep room	Damaged <4 SF>	Potential for significant damage	Faculty and students	240 SF	Class IV	One countertop has a deep split in the middle of the panel. This panel should be removed and replaced.
Laboratory countertops	Room 167 and attached Prep room	Damaged <1 SF>	Potential for significant damage	Faculty and students	240 SF	Class IV	Some minor cuts and scrapes were observed, but the countertops are in good overall condition.

AHERA INSPECTION INVENTORY

Material	Location	Damage	Damage Potential	Access	Quantity	Classification	Comments
Black chalk board	Room 167	None	Potential for damage	Faculty and students	1 count	Class V	The chalk board is in good condition and is well maintained. A white board has been installed over the chalk board.
Laboratory countertops	Room 168	None	Potential for damage	Faculty	75 SF	Class V	The countertops are in good condition. The room is no longer used as a classroom and is a copy room instead.
Black chalk board	Room 168	None	Potential for damage	Faculty and students	1 count	Class V	The chalk board is in good condition and is well maintained. A white board has been installed over the chalk board.
Laboratory countertops	Room 172	Damaged <1 SF>	Potential for significant damage	Faculty and students	240 SF	Class IV	Some minor cuts and scrapes were observed, but the countertops are in good overall condition.
Black chalk board	Room 172	None	Potential for damage	Faculty and students	1 count	Class V	The chalk board is in good condition and is well maintained. A white board has been installed over the chalk board.
Laboratory countertops	Rooms 107, 111 and 113	Damaged <5 SF>	Potential for significant damage	Faculty and students	600 SF	Class IV	Bulk samples (C-01, C-02, C-03) were collected as part of this 2008 re-inspection and confirmed that the countertops are ACM. Some of the countertops have some cracks and splits in them. These panels should be removed and replaced or the cracks sealed.
Fitting insulation	Room 111 prep room	None	Potential for damage	Faculty	6 LF	Class V	The fitting insulation is in good condition.

AHERA INSPECTION INVENTORY

Notes		Material Classification Definitions	
1. TSI -	Thermal System Insulation	Class I -	Damaged or significantly damaged thermal system insulation ACM.
2. LF -	Linear Feet	Class II -	Damaged friable surfacing ACM.
3. SF -	Square Feet	Class III -	Significantly damaged friable surfacing ACM.
4. NA -	Not Applicable	Class IV -	Damaged or significantly damaged friable miscellaneous ACM.
5. HEPA -	High Efficiency Particulate Air	Class V -	ACBM with potential for damage.
6. ACM -	Asbestos Containing Material	Class VI -	ACBM with potential for significant damage.
7. ACBM -	Asbestos Containing Building Material	Class VII -	Any remaining friable ACBM or friable suspected ACBM.
8. <X> -	Damaged Asbestos Quantity		

PRELIMINARY EVALUATION OF ALTERNATIVES

SECTION FIVE

PRELIMINARY EVALUATION OF ALTERNATIVES

5.1 CONSTRUCTION ALTERNATES INCLUDING COST ESTIMATE AND SCHEDULES

New Construction Alternative: (N/A)

Renovation - Option 1 Description

This option calls for the existing science labs in the 1970 building to be renovated largely within the current partitions.

Science classrooms in the original 1960 building will be enlarged to near meet or exceed the MSBA area guidelines for labs and prep rooms. Two math classrooms will be reconfigured to become one science lab. There is a location elsewhere in the building where the two academic classrooms can be accommodated.

Included with this option is to reassign the typical academic classrooms located in this area (current Foreign Language) to Math classrooms. This brings the majority of STEM classrooms into the same geographic area of the school. The only scope attached to this change is: room signage and some new marker boards with math grids.

It is anticipated that some degree of building re-fenestration will be required in the 1970 building. Also some degree of roof work will be required in both the 1960 & 1970 buildings.

Pros

- Minimal demolition required
- 5 of the 11 proposed science lecture / labs will come very close to the MSBA area guidelines
- It is anticipated that the scope of this option can be constructed over the 2013 summer break
- The math department will be relocated closer to the science labs allowing for the development of a STEM area within the school

Cons

- 6 of the 11 lecture labs will remain their current size which is smaller than the MSBA area guidelines

Renovation - Option 2 Description

This option calls for 5 of the 6 existing science labs in the 1970 building to be reconfigured from 5 undersized labs to 4 oversized labs

Similar to Option 1, the science classrooms in the original 1960 building will be enlarged to near meet or exceed the MSBA area guidelines for labs and prep rooms. Two math classrooms will be reconfigured to become one science lab. There is a location elsewhere in the building where the two academic classrooms can be accommodated.

Included with this option is to reassign the typical academic classrooms located in this area (current Foreign Language) to Math classrooms. This brings the majority of STEM classrooms into the same geographic area of the school. The only scope attached to this change is: room signage and some new marker boards with math grids.

It is anticipated that some degree of building re-fenestration will be required in the 1970 building. Also some degree of roof work will be required in both the 1960 & 1970 buildings.

Pros

- Most of the proposed science lecture/ labs will meet or exceed the MSBA area guidelines

Cons

- This option does not provide the needed 11 lecture labs needed to meet the science curriculum
- The scope of the work on the 1970 building is significantly larger (and more costly) than the scope identified in Option 1.
- The math department will be relocated closer to the science labs allowing for the development of a STEM area within the school
- It is anticipated that the scope of this option **cannot** be constructed over the 2013 summer break

Schedule Overview

At this time, the District, OPM and design team believe the MSBA Science Lab Initiative schedule can be met. This includes the bidding of the project in winter 2013, construction start in early June 2013 and project completion for the start of the 2013 – 2014 school year.

Cost Overview (future)

5.2 DRAWINGS

- Option 1 Floor Plan
- Option 2 Floor Plan
- Existing Condition (Part Plan)
- First Floor Existing Condition (Overall Plan)
- Second Floor Existing Condition (Overall Plan)

Proposed Space Summary - High Schools

Nashoba Regional High School		Existing Conditions		
	ROOM			
	NFA ¹	# OF RMS	area totals	
ROOM TYPE				
CORE ACADEMIC SPACES				39,822
(List classrooms of different sizes separately)				
Classroom - General		0		0
Social Studies #1	735	1		735
Social Studies #2	755	1		755
Social Studies #3	730	1		730
Social Studies #4	750	1		750
Social Studies #5	740	1		740
Social Studies #6	755	1		755
Social Studies #7	800	1		800
Social Studies #8	800	1		800
English #1	780	1		780
English #2	760	1		760
English #3	750	1		750
English #4	755	1		755
English #5	835	1		835
English #6	955	1		955
English #7	795	1		795
English #8	800	1		800
Math #3	830	1		830
Math #4	830	1		830
Math #5	800	1		800
Math #6	800	1		800
Math #7	810	1		810
Math #8	835	1		835
Health	835	1		835
Foreign Language #1	750	1		750
Foreign Language #2	765	1		765
Foreign Language #3	740	1		740
Foreign Language #4	765	1		765
Foreign Language #5	770	1		770
Foreign Language #6	735	1		735
Foreign Language #7	735	1		735
Teacher Work Room #1	375	1		375
Teacher Work Room #2	375	1		375
Teacher Work Room #3	800	1		800
Teacher Work Room #4	550	1		550
Small Group Seminar (20-30 seats)		0		0
Science Classroom / Lab #1	1,275	1		1,275
Science Classroom / Lab #2	1,180	1		1,180
Science Classroom / Lab #3	1,235	1		1,235
Science Classroom / Lab #4	1,290	1		1,290
Science Classroom / Lab #5	1,325	1		1,325
Science Classroom / Lab #6	1,180	1		1,180
Science Classroom / Lab #7	1,410	1		1,410
Science Classroom / Lab #8	1,020	1		1,020
Science Classroom / Lab #9	1,125	1		1,125
Science Classroom / Lab #10	1,147	1		1,147
Science Classroom / Lab #11				
Prep Room #1	210	1		210
Prep Room #2	200	1		200
Prep Room #3	250	1		250
Prep Room #4&5	345	1		345
Prep Room #6	160	1		160
Prep Room #7	205	1		205
Prep Room #8	410	1		410
Prep Room #9	260	1		260
Prep Room #10				
Central Chemical Storage Rm		0		0
SPECIAL EDUCATION				0
(List classrooms of different sizes separately)				
Self-Contained SPED				
Self-Contained SPED Toilet				
Resource Room				
Small Group Room				
ART & MUSIC				0
Art Classroom - 25 seats				
Art Workroom w/ Storage & kiln				
Band - 50 - 100 seats				
Chorus - 50 - 100 seats				
Ensemble				
Music Practice				
Music Storage				
VOCATIONS & TECHNOLOGY				0
Tech Clm. - (E.G. Drafting, Business)				
Tech Shop - (E.G. Consumer, Wood)				
HEALTH & PHYSICAL EDUCATION				0
Gymnasium				
PE Alternatives				
Gym Storeroom				
Locker Rooms - Boys / Girls w/ Toilets				
Phys. Ed. Storage				
Athletic Director's Office				
Health Instructor's Office w/ Shower & Toilet				
MEDIA CENTER				0
Media Center / Reading Room				
Computer Lab				
AUDITORIUM / DRAMA				0
Auditorium				
Stage				
Auditorium Storage				
Make-up / Dressing Rooms				
Controls / Lighting / Projection				

[illegible][illegible]

Proposed Space Summary - High Schools

Nashoba Regional High School		Existing Conditions	
ROOM TYPE	ROOM NFA ¹	# OF RMS	area totals
DINING & FOOD SERVICE			0
Cafeteria / Student Lounge / Break-out			
Chair / Table Storage			
Scramble Serving Area			
Kitchen			
Staff Lunch Room			
MEDICAL			0
Medical Suite Toilet			
Nurses' Office / Waiting Room			
Interview Room			
Examination Room / Resting			
ADMINISTRATION & GUIDANCE			0
General Office / Waiting Room / Toilet			
Teachers' Mail and Time Room			
Duplicating Room			
Records Room			
Principal's Office w/ Conference Area			
Principal's Secretary / Waiting			
Assistant Principal's Office - AP1			
Assistant Principal's Office - AP2			
Supervisory / Spare Office			
Conference Room			
Guidance Office			
Guidance Waiting Room			
Guidance Storeroom			
Career Center			
Records Room			
Teachers' Work Room			
CUSTODIAL & MAINTENANCE			0
Custodian's Office			
Custodian's Workshop			
Custodian's Storage			
Recycling Room / Trash			
Receiving and General Supply			
Storeroom			
Network / Telecom Room			
OTHER			0
Other (specify)			
Total Building Net Floor Area (NFA)			39,822
Proposed Student Capacity / Enrollment			
Total Building Gross Floor Area (GFA) ²			
Grossing factor (GFA/NFA)			0.00

[illegible]

MSBA Guidelines (refer to MSBA Educational Program & Space Standard Guidelines)			
ROOM NFA ¹	# OF RMS	area totals	Comments
		8,904	
5,080	1	5,080	3 seatings - 165F per class
404	1	404	
800	1	800	
2,316	1	2,316	1600 SF for first 300 + 1 SF/student Add'l
504	1	504	70 SF/occupant
		1,019	
60	1	60	
250	1	250	
100	2	200	
100	5	500	
		4,542	
508	1	508	
100	1	100	
200	1	200	
200	1	200	
375	1	375	
125	1	125	
150	1	150	
150	1	150	
120	1	120	
450	1	450	
150	6	900	
100	1	100	
100	1	100	
404	1	404	
152	1	152	
508	1	508	
		2,387	
150	1	150	
250	1	250	
375	1	375	
400	1	400	
404	1	404	
608	1	608	
200	1	200	
		0	
		131,815	
		1,016	185
		198,120	
		1,50	

¹ Individual Room Net Floor Area (NFA)

used from the inside face of the perimeter walls and includes all specific spaces assigned to a particular program area including such spaces as non-communal toilets and storage rooms

² Total Building Gross Floor Area (GFA)


Includes the entire building gross square footage measured from the outside face of exterior walls.

Architect Certification

I hereby certify that all of the information provided in this "Proposed Space Summary" is true, complete and accurate and, except as agreed to in writing by the Massachusetts School Building Authority, in accordance with the guidelines, rules, regulations and policies of the Massachusetts School Building Authority to the best of my knowledge and belief. A true statement, made under the penalties of perjury.

Name of Architect Firm: Symmes Maini & McKee Associates

Name of Principal Architect: Philip J. Poinelli, FAIA

Signature of Principal Architect: 

Date: Monday, July 23, 2012