Reading Memorial High School Feasibility Study

A Study Proposing Physical Improvements to Support the Educational Goals of the Town of Reading, Massachusetts

February 21, 1997

D·R·A

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DRA would like to express its appreciation to the following people who contributed their time, expertise and guuidance to this Feasibility Study.

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Introduction

Much of the success of the Town of Reading in the past few decades can be illustrated by examining demographic and economic statistics. The population in Reading has been fairly constant since 1970 at about 22,500 persons, with a population of about 23,000 near saturation. While the number of citizens over 65 has increased 28% since 1980, the number of school age children has remained fairly constant. However, there has been an increase of 12 1/2% in pre-school and elementary school age children.

Among adults, there are 46% more college graduates living in Reading than there were 10 years ago, and the median income per capita has also gone up 139%. The value of residential property has gone up 8.8%, and the town ranks 38th in the State for average residential tax rate.

By 1950, 44% of the housing units in Reading were constructed, and by 1980, 90% were built. Most units are single-family or occupied by the owner. According to the educational consultant, the rise in college graduates, income and housing profile usually correlates highly with better educational opportunities. The simultaneous decrease in Precision Craft/Repairs and Operators/Laborers jobs illustrates clearly that a student can no longer drop out of school and obtain well paying employment. See the Town Demographics section for supporting exhibits.

Because of the increase in pre-K-5 students, the school district saw fit to enlarge and upgrade the Joshua Eaton Elementary School. This population "ripple" will soon enter the Walter S. Parker Middle School, which is in the process of expanding and adding technology.

Reading Memorial High School, built in 1952, was enlarged in 1969 in response to a huge increase in students, when 155,983 square feet were added. The resulting 340,000 square foot school served a student population of 2000 students, and added updated program spaces.

Twenty-seven years have passed since this expansion and population surge. The number of students attending RMHS has essentially leveled out at about 1000 students. The approaching population tide currently in the elementary school will affect the high school in the next 5 years, for a total of 1284 students in the year 2000. After this time, the population is expected to settle at about 1175 students. Again, this increase will be caused by students already attending Reading schools in 1996, who are now being educated in more modern elementary and middle school facilities.

In 44 years since the original construction of the High School, available building systems have modernized and become more efficient, making buildings more comfortable, cheaper to operate and more conducive to the assigned human tasks inside. Even the "modern" additions made to the high school twenty-seven years ago are now outdated and contribute to the image of the school as a behemoth, needing both physical and programmatic updates throughout to accommodate the increasingly sophisticated student population and demands of their future workplace.

Considering these statistics, many relevant issues have surfaced through inspections and discussions with teachers, administrators and students regarding the direction, degree and tenor of changes needed at RMHS. The aim of this feasibility study is to identitfy the pertinent questions, set goals, and create a framework for action within which parents, teachers, administrators and the city of Reading can continue the tradition of excellence in education.

GOALS OF THE STUDY

This Feasibility Study was designed to provide a decision-making path for the renewal of Reading Memorial High School. It includes implementation of the 1996 Educational Specifications as outlined by the School Building Assistance Board. Elements of several investigations have been edited and formatted to provide the user with an easy-to-use report.

1. The demographic investigation illustrates trends in population, economics and employment in Reading.

2. The educational report profiles births and school enrollment, concluding with a preliminary educational specification which incorporates these projections.

3. The physical condition and capacity of the school was scrutinized to determine long-term sustainability, suitability to full renovation and long-term service, and equity with recently upgraded elementary and middle schools.

The next phase of this project will be to examine the parallel missions and mutual interests of parents, taxpayers, and the Town of Reading, with the goal of scheduling efficient use of resources and time, and attracting reimbursable funds to complete the planned work. This report includes preliminary cost estimates and project priorities to provide a mechanism for decision-making.

The goals of this study were as follows:

1. Inspect the building and grounds to document the existing architectural and site conditions.

2. Inspect the building to document existing mechanical, electrical and plumbing conditions.

3. Research and create a report of enrollment projections.

4. Complete preliminary educational specifications for the State of Mass. School Board Assistance Program.

   -Include in this report an explanation of how the educational recommendations meet the State Guidelines.

   -Describe how a DRA proposal will qualify for a School Building Assistance Construction Cost Grant.

5. Prepare a preliminary schedule of events for design and construction. Prepare a preliminary cost estimate.

6. Prepare documents and graphic support to assist the Building Committee when meeting with Town committees and interested parties in preparation for the Town Meeting.

SPECIAL ISSUES RAISED IN THIS FEASIBILITY STUDY

Among the many issues facing Reading Memorial High School, from curriculum to physical plant, some topics surfaced as more comprehensive and urgent for the school. There are many more issues dealing with specific problem areas or specialty equipment which will be addressed in the inspection reports and the cost estimate. This list illustrates the general parameters on which the study focused.

1. Enlargement of classrooms to bring up to to current educational standards and to allow room for technology stations (computers). Consolidate departments and reduce faculty office/ planning areas.

2. Creation of a real "front office", with an identifiable front door.
   -Cluster student services in this area also, such as Career Center, Guidance Center, Nurse's Suite, etc.

3. Upgrade air quality and replace the old heating system. Generally, the building mechanical and electrical systems are at the end of their life expectancy, and replacement systems would make the school more comfortable and energy efficient.

4. Add computers to each classroom. Ultimately, both a data and video network should be installed to serve every teaching space.

5. Upgrade accessibility to current standards. This includes door widths and door hardware, ramps, elevators, toilet fixtures, auditorium seating, etc.

7. The building finishes - paint, ceilings, floor tile, chalkboards, etc, - most require replacement.

8. Upgrade the fire protection system, such as adding a sprinkler system throughout the building.

9. Repair deteriorating materials, such as the cracked concrete casing around the columns of the Science Building and connecting bridges.

10. Address issues of asbestos and lead abatement, present in the school primarily as pipe insulation, floor tile and paint.

11. On the exterior, improve traffic/ pedestrian circulation around the school, and the informal parking scheme. There is also a lack of special event parking at the auditorium.

12. Consider the impact of future code requirements for earthquake resistance on the cost of renovation of the building.

Executive Summary

Reading Memorial High School

Year Built: 1952
Additions and Renovations: 1969
Program Summary: Every classroom needs new finishes, heating, ventilation, and computer network. Most classrooms need to be enlarged up to 25%.
Gross Building Area: 340,000 s.f.
Current Enrollment: 1,031
Current Capacity: 1,680
Grades: 9-12
Renovation/Addition: $24M
Schedule: Complete work by 2001

A) Educational Analysis

This school does not comply with state standards for classroom size, except in the Science Building, Building "C". The school is currently underpopulated, and extra space has been haphazardly assigned and occupied by faculty offices, storage, or sits under-utilized. Enrollment projections show an approximate 20% increase for the next five years to 1,280 students, then dropping slightly before leveling off at about 1,175. Because this population number is somewhat steady, it makes it easier to envision a long-term plan with a more efficient room layout that meets state classroom size standards and improves circulation. It is possible that the Industrial Arts wing of the 1952 building may not be needed for program spaces, and will be available to rent out to a community group or for early childhood care/classes.

B) Building Conditions

1. Site - The steep topography immediately surrounding the school creates difficult vehicle and pedestrian circulation. Parking areas are somewhat isolated and remote, considering the sprawl of the school campus. Generally, sporting fields need rejuvenation and adequate night lighting.

2. Architectural/Structural - The building is structurally sound. Ninety percent of the roofs are fairly new, and none exhibit leaking. There is some serious cracking of the concrete casing around the steel columns of the Science Wing, Building "C". The structure is not compromised, only the weather protection of the columns and wall intersection. The interior finishes and window systems of the whole school need replacing.

3. Mechanical/Electrical/Plumbing - Most systems and components have come to the end of their life expectancy. Generally, the heating/ventilation, plumbing fixtures and lighting systems should all be replaced. Air conditioning should be added to selected spaces, such as the auditorium, library, lecture hall, administrative areas and computer labs.

4. Other - The building is not protected by a sprinkler system. There are areas containing asbestos, both friable and non-friable, throughout the school.

C) Building Accessibility

Although many entrances into the 1952 building are accessible. No entrances into the Science Building, Building "C", are accessible from the exterior. Many interior ramps are too steep to meet current standards. There is no access to the second or ground floors of the Library Building, Building "B". Additional accessible toilet fixtures and accessories are needed throughout.

D) Recommendations

1. Enlarge classrooms of the 1952 building, Building "A". Renovate all finishes.
2. Replace the heating/ventilation and electrical systems and plumbing fixtures.
3. Add air conditioning to selected areas.
4. Upgrade accessibility.
5. Install a school-wide telecommunications network with computer network outlets in every classroom and teacher planning room.
6. Create an asbestos abatement plan.
7. Improve circulation by building additional access to Building "C", Science Building.
8. Implement site improvements and rejuvenate athletic fields.

E) Cost

Scheme A: Provide maintenance improvements to the building, replacing aging systems within 10 years. Repair/ install items related to accesibility and life safety, e.g., fire sprinklers.
Cost: $10M.

No State reimbursement, therefore the net cost to Reading is $10M.

Scheme B: Renovation/Addition. Implement recommendations 1-8.
Cost: $30M.

@ 66% State reimbursement through the SBA, therefore the net cost to Reading is $10M.

F) Schedule

It is recommended that Scheme B be implemented as soon as possible, to prepare for the enrollment increase expected 2001-2005. Waiting to apply for an SBA grant beyond June 1, 1997 will increase the wait for reimbursement two years for every one year of delay.

Town Demographics

Demographic / Economic Characteristics
Reading, Massachusetts

Characteristics	1980	1990	Change	Percent
Age				
Over 65	2245	2882	637	28.37%
Sch Attend Children		3704	3704	
0-5	1274	1506	232	18.21%
Median Age	32.099999:	36.099999:	4.0399999:	12.59%
Educ Attainment				
0-8	689	375	-314	-45.57%
High School Graduate	5226	4363	-863	-16.51%
College Graduate	3825	5590	1765	46.14%
Income				
Per Capita	$8,805	$21,074	$12,269	139.34%
Median Household	$25,796	$52,783	$26,987	104.62%
Median Family	$28,160	$60,921	$32,761	116.34%
Persons in Poverty	659	470	-189	-28.68%
Taxes				
Property Valuation	$1,300	$1,396.40	$96.40	7.4%
Residential Property	1159	1,260.50	101.5	8.7%
Comm./Industrial	129	123.7	-5.3	-4.10%
Average Value Unit	$173.60	$155.50	-0.18100	-10.43%
Average Single Family	1995	$181,483		
Average Tax Bill	1995	$3,147		
Rank in State	1995	38		

Note: Increases between 1980 and 1990 occurred in most of the demographic and economic characteristics. About 50 percent of the increases in income can be attributed to inflation. The large increase in graduates from college was significant and the decreases in lesser attainments are also beneficial. Property valuation is primarily from residential units.

Housing Units & Permits
Reading, Massachusetts

	Year	Units	Change	Change %
Before	1950	3631	3631	--
	1980	7486	3855	106.17%
	1990	8104	618	8.26%
Permits				
	1991	65	65	
	1992	58	58	
	1993	68	68	
	1994			
	1991-1994			
	Total	**8295**		**100.00%**
Single Famil		6162		74.29%
Owner Occupied		6453		77.79%
Renter		1479		17.83%

	Year	Median Value	Change	
	1990	$204,100		
	1995	$181,483	($22,617)	-11.08%

Note: About 44 percent of the housing units in Reading were constructed before 1950, and by 1980, 90 percent of the units were constructed. Most units are single-family or occupied by the owner which usually correlates highly with better education opportunities.

Civilian Labor Force
Reading, Massachusetts

Civilian Labor Force	1980	1990	Change	Percent
Total Employees	11968	12958	990	8.27%
1. Managers / Professionals	3905	4983	1078	27.61%
2. Tech / Admin Support / Sales	4030	4287	257	6.38%
3. Service Occupations	974	987	13	1.33%
4. Farming / Fishing / Forestry	54	71	17	31.48%
5. Precision Crafts / Repairs	1290	1032	- 258	-20.00%
6. Operator / Laborers	1331	921	-410	-30.8%
	11584	12281	697	6.02%
7. Unemployed	384	677	293	76.30%
Percent	3.21%	5.22%	2.02%	62.83%
State Percent	6.70%	6.70%		
Self Employed	713	946	233	32.68%

Note: The large increases in Managers / Professionals as well as Tech / Admin Support / Sales are similar to the increase in graduates from college. The decreases in Precision Crafts / Repairs as well as Operators / Laborers is similar to Massachusetts as a whole which lost more than 1 million jobs in those categories of employment.

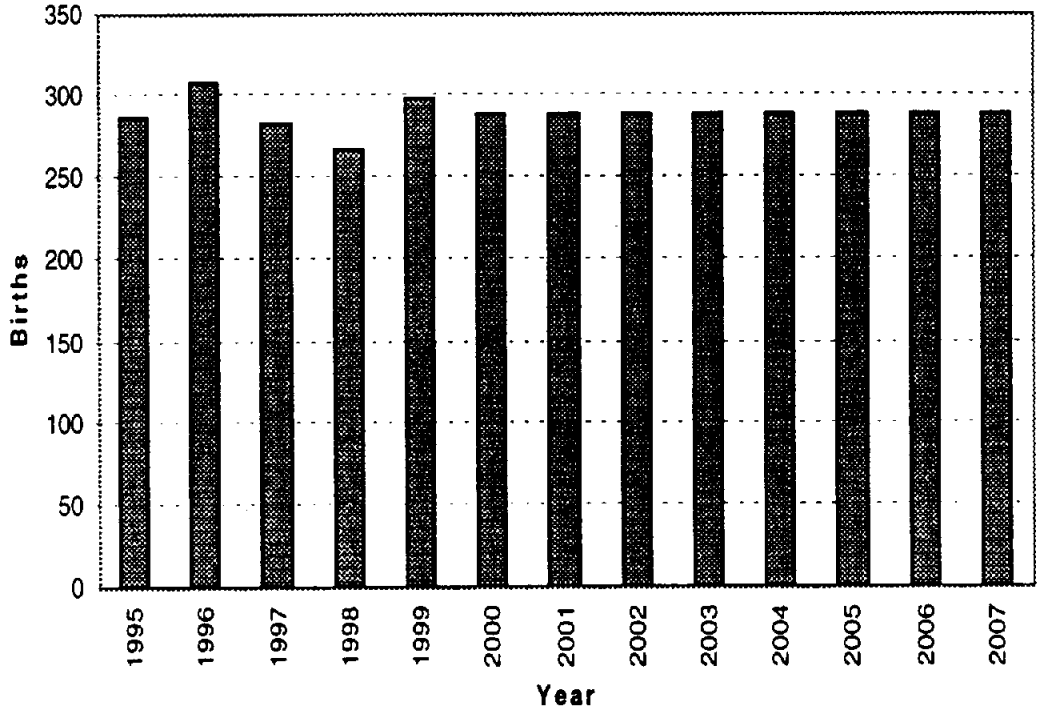
Recent History of Population
Reading, Massachusetts

Year	Persons	Change	Percent
1970	22,539		
1980	22,678	139	0.6
1990	22,539	-139	-0.6
Miser			
1995	22,488	-51	-0.2
2000	22,437	-51	-0.2
Built Out			
	23,000	563	2.5

Note: Population in Reading has been fairly consistent at about 22,500 persons with a population of about 23,000 near saturation.

Projected Births
Reading, Massachusetts

		YEAR												
	Factor	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
Births	1.034	287	307	283	267	298	289	289	289	289	289	289	289	289



Enrollment Projections

Projected Enrollment From Birth
Reading, Massachusetts

GRADES	FACTOR	1995		READING AVERAGES	
			267	289	300
B-K	1.034				
PK					
K	1.11	323	276	299	310
1	1.00	321	306	332	344
2	1.01	347	306	332	344
3	1.01	352	310	335	348
4	1.01	340	313	338	351
5	0.98	335	316	342	355
Sped.		27	27	27	27
K-5		***2045***	***1854***	***2004***	***2080***
6	1.00	307	309	335	348
7	0.99	281	309	335	348
8	0.96	290	306	332	344
Sped.		3	3	3	3
6-8		***881***	***928***	***1004***	***1043***
9	0.98	262	294	318	330
10	0.95	274	288	312	324
11	0.95	236	274	296	308
12		241	268	290	301
Sped.		18	18	18	18
9-12		***1031***	***1142***	***1235***	***1281***
PK-12		**3957**	**3924**	**4244**	**4403**

Comparison of Births to Kindergarten
Reading, Massachusetts

Year	Births	Year	Kinder.	Percent
1986	296	1991	303	1.02%
1987	317	1992	291	0.92%
1988	303	1993	309	1.02%
1989	266	1994	314	1.18%
1990	297	1995	292	0.98%
Average	***296***		***302***	***1.02%***
1991	307	1996	313	
1992	283	1997	289	
1993	267	1998	272	
1994	298	1999	304	
1995				
Average	***289***		***295***	***1.02%***

Note: Births have decreased slightly for the average of the last four years, (296 to 289). Although the percentage of students in kindergarten has increased by as many as 18 percent, the average has been 2 percent for the last 5 years.

Comparison of Births to Enrollment
Reading, Massachusetts

YEAR	BIRTHS	GRADES	ENROLLED	PERCENT
1990	297	K	323	109%
1989	266	1	321	121%
1988	303	2	347	115%
1987	317	3	352	111%
1986	296	4	340	115%
1985	311	5	335	108%
		Sped.	27	
1985-1990	***1790***	***K-5***	***2045***	***114%***
1984	304	6	307	101%
1983	257	7	281	109%
1982	248	8	290	117%
		Sped.	3	
1982-1985	***809***	***6-8***	***881***	***109%***
1981	271	9	262	97%
1980	259	10	274	106%
1979	260	11	236	91%
1978	238	12	241	101%
		Sped.	18	
1978-1981	***1028***	***9-12***	***1031***	***100%***
1978-1990	**3627**	**K-12**	**3957**	**109%**

History of Enrollment
Reading, Massachusetts

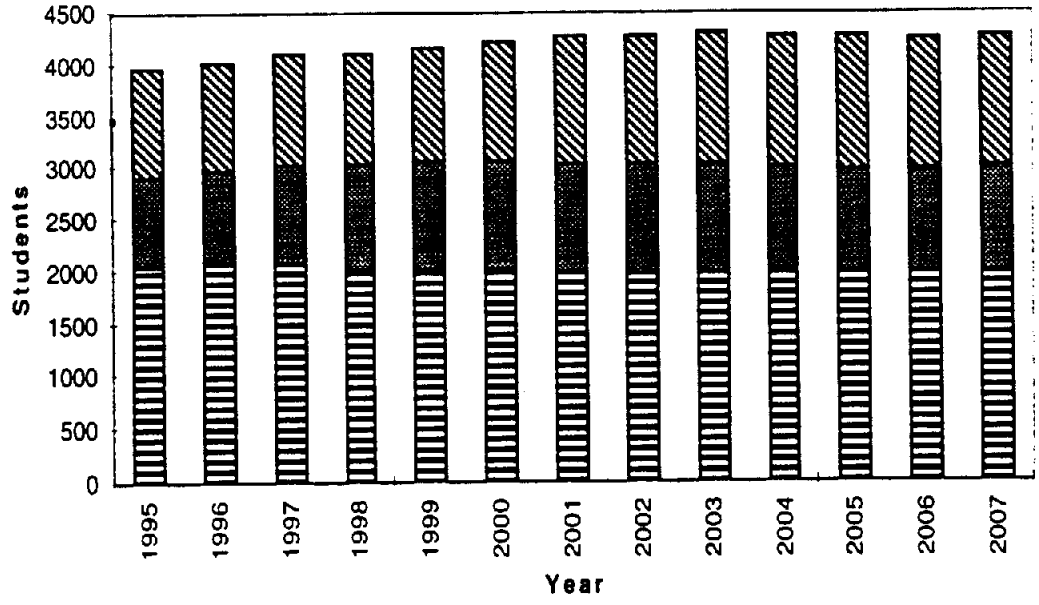
Grades	1991	1992	1993	1994	1995	91-94	92-95	Percent
PK								
K	291	309	314	292	323	1206	1304	1.11%
1	336	333	350	336	321	1355	1361	1.00%
2	299	328	334	352	347	1313	1324	1.01%
3	285	299	334	339	352	1257	1272	1.01%
4	280	293	304	335	340	1212	1223	1.01%
5	285	285	291	312	335	1173	1148	0.98%
SPED	26	32	23	15	27			
K-5	**1802**	**1879**	**1950**	**1981**	**2045**			
6	281	273	282	286	307	1122	1117	1.00%
7	276	285	266	285	281	1112	1102	0.99%
8	263	256	288	268	290	1075	1035	0.96%
SPED					3			
6-8	**820**	**814**	**836**	**839**	**881**			
9	277	252	244	277	262	1050	1032	0.98%
10	230	261	253	244	274	988	939	0.95%
11	259	210	256	237	236	962	247	0.98%
12	236	261	198	247	241			
SPED	16	17	20	18	18			
9-12	**1018**	**1001**	**971**	**1023**	**1031**			
PK-12	**3640**	**3694**	**3757**	**3843**	**3957**			
Change		54	63	86	114			
Percent		1.48%	1.71%	2.29%	2.97%			
Change 1991 - 1995							**317**	
Percent							**8.71%**	

Projected Enrollments
Reading, Massachusetts

PROJECTED ENROLLMENTS

Grades		1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
PK														
K	1.11	323	317	352	276	308	299	299	299	299	299	299	299	299
1	1	321	359	359	325	306	342	332	332	332	332	332	332	332
2	1.01	347	321	324	352	325	306	342	332	332	332	332	332	332
3	1.01	352	350	354	362	356	328	310	345	335	335	335	335	335
4	1.01	340	356	359	327	366	359	331	313	349	338	338	338	338
5	.98	335	343	293	358	331	369	363	335	316	352	342	342	342
Sped		27	27	27	27	27	27	27	27	27	27	27	27	27
Grades K-5		***2045***	***2073***	***2068***	***2027***	***2019***	***2030***	***2004***	***1983***	***1980***	***2015***	***2005***	***2005***	***2005***
6	1	307	328	337	352	350	324	362	356	328	309	345	335	335
7	.99	281	307	328	337	352	350	324	362	356	328	309	345	335
8	.96	290	278	304	325	333	348	347	321	358	352	325	306	342
Sped		3	3	3	3	3	3	3	3	3	3	3	3	3
Grades 6-8		***881***	***916***	***972***	***1017***	***1038***	***1025***	***1036***	***1042***	***1045***	***992***	***982***	***989***	***1015***
9	.98	262	278	267	292	312	320	334	333	308	344	338	312	294
10	.95	274	257	273	262	286	306	313	328	326	302	337	331	305
11	.98	236	260	244	259	249	272	290	298	311	310	287	320	315
12		241	231	255	239	254	244	266	285	292	305	304	281	314
Sped		18	18	18	18	18	18	18	18	18	18	18	18	18
Grades 9-12		***1031***	***1044***	***1057***	***1070***	***1119***	***1160***	***1221***	***1262***	***1255***	***1279***	***1284***	***1262***	***1248***
Totals		**3957**	**4033**	**4097**	**4114**	**4176**	**4215**	**4261**	**4287**	**4290**	**4286**	**4271**	**4256**	**4268**

Enrollment Projections



Educational Specifications

The following report outlines a programming option for Reading Memorial High School. The criteria for establishing the program falls into two categories: programming to meet the guidelines for State funding, and programming to deliver outstanding education, incorporating technology and special activity spaces. The first category mandates minimum spaces required for Math, Science, English, Languages, Social Science, Physical Education, Music and Art - so called "core" classes. One goal of this study is to blend the two categories into a realistic estimate of scope, cost and schedule. Following exhibit is a sample preliminary education specification form 645-53 for Reading Memorial High School.

Description of Educational Spec. Form.

Subject:
The list is broken up into two parts. The first half lists recommended curriculum, using the State Education Department vernacular. The second half includes specialized and miscellaneous spaces, such as Auditorium and shower/locker rooms. These divisions correspond to the State form 645-53, the official educational specification form filed with the State with each project application.

Projected Students:
These are the students enrolled in each subject. This Ed. Spec. is using the maximum projected school enrollment, 1284.

Class Size:
Is the recommended number of students in each classroom, for each subject.

Sections:
Is the number of sections needed, determined by dividing the class size into the total enrollment.

Sessions or Blocks:
Is the number of standard time slots in which the class meets per week.

Total Sessions:
Is the number of sections needed multiplied by the sessions per week. If we provided a classroom for each section taught, we would need hundreds of classrooms, and they would only be used during six sessions per week.

Periods per Week.
This number breaks the school day into equal segments. If we divide the recommended periods per week into the total sessions, we arrive at a more manageable number of classrooms, here called Teaching Stations.

New Stations Required:
This is the recommended number of classrooms which should be dedicated to each discipline to accomodate the projected students. This number takes into account a typical room scheduling efficiency of approximately 85%.

The next column lists classroom area minimum sizes. The State recommends 750-850 s.f. per average classroom (not a lab or art room) for a high school. This exhibit uses 850 s.f. to accommodate computer stations in each room.

Description of Form 645-5M/S

This form takes the numbers from the prepared educational specification and inserts them into the formulas used by the State to compare new area needed, building efficiency, educational-to-non-educational areas, etc. This assists the SBAB in categorizing and prioritizing the applicants for reimbursement grants.

The following preliminary form was completed for this report to show two things: 1) the type of information requested by the SBAB, and 2) to illustrate the unique circumstances of Reading Memorial High School - namely, an abundance of space, most of which is undersized for classroom use. This can be seen in the column J "Square feet each station", where many rooms average less than the minimum 750 s.f. recommended by the State, and in the column N, "Total new area", where negative numbers indicate excess space.
It should be noted that page 8 of this form shows - 126,900 square feet for gross new square footage, indicating that this is excess space. Much of this excess exists in spaces which are used by the community-at-large, such as the Auditorium, Cafeteria, Field House and Library, and can be justified as such. The remaining excess space is located in various departments and in the "non-educational" category.

The first preliminary educational specification was prepared by the educational consultant to illustrate a hypothetical program for 1284 students, grade 9-12. This study loosly follows the SBAB format. A comparison is made to allowable square footage on the second page.

The second preliminary educational specification was completed to illustrate the existing conditions at RMHS. The purpose is to show the type of information and format requested by the SBAB, and to show the current use of space at RMHS. Enrollment numbers used are for the year 2005. The new stations required are determined either because of a desirable class size or to satisfy space size recommendations as set by the SBAB.

STATE FORM **EDUCTIONAL SPECIFICATIONS**

Reading **1284** **Students** **Grade** **9-12** **WITH** **850 SQ FT**

Subject	Projected Students Each Class	Class Size	Sections	Session or Blocks	Total Sessions	Periods Per Week	Total Stations Required	Sq.ft Each Station	Total Area New
1. Art	436	15	29	6	174	35	5	1200	6,000
2. Business	540	22	25	6	150	35	5	850	4,250
3. English	1548	22	70	6	420	35	12	850	10,200
4. Fam/Cons/Sci									
5. Ind Tech.	193	15	13	6	78	35	3	1600	4,800
6. Languages	1199	22	55	6	330	35	10	850	8,500
7. Math	1595	22	73	6	438	35	13	850	11,050
8. Music	209	16	13	3	39	35	1	1200	1,200
Prac/Storage							1	800	800
9. Phys Ed	1128	19	59	3	178	35	5	3000	15,000
Health	591	25	24	3	71	35	2	850	1,700
10 Science	1493	22	68	7	476	35	14	1200	16,800
Prep/Storage							3	1000	3,000
11. Soc Science	1683	22	77	6	462	35	14	850	11,900
12. Spec Ed							2	850	1,700
Small Grp							9	300	2,700
Reading	34	8	4	3	13	35	1	850	850
13. Computers	184	16	12	6	69	35	2	1200	2,400
Study	1605	22	73	3	219	35	7	850	5,950
14. Commun.							1	4000	4,000
Total Basic Sf									112,800
1. Admin.							1	1500	1,500
Comm Center							1	800	800
2 Auditorium	450						1	4000	4,000
Stage							1	1200	1,200
Stagecraft							1	1000	1,000
Dressing							4	300	1,200
Storage							2	500	1,000
3. Cafeteria							428	15	6,420
Teachers							1	800	800
4. Platform							1	800	800
5. Guidance							1	800	800
ESL							2	300	600
Speech							1	300	300
Spec. Ed. Office							2	300	600
OT / PT							1	300	300
6. Health							1	800	800
7. Library/IMC							1	7720	7,720

8. Lock/Shower	2	1600	3.200
Offices/Storage	4	300	1.200
9. Kitchen	1	2400	2.400
10. Teachers Plan	6	300	1.800
Teachers Room	4	250	1.000
Total Miscellaneous			39,440
Total Net Area (sf)			153.440
Other Noninstructional (sf)			61,376
Gross Area 1.4 x net			21,4816

The maximum allowable gross square footage is calculated by multiplying the projected enrollment for the building by the square footage per-pupil allowance for secondary schools (155 s.f.) and then adding the gross square footage of all spaces allowable in excess of the base gross. These spaces are calculated below:

Spaces in Excess

1. Spec Educ.	2,400
2. TBE / ESL	600
3. Reading	850
4. Remedial	2,700
5. Community	4,800
6. Guidance	800
7. Speech	300
Total Allowed	12,450

Students	1,284
Allow Sq. Ft per pupil.	155
Max. Gross S.F.	199,020
Total Approvable Excess	12,450
Max Gross Area	211,470
Required Gross (from above)	213,136
Gross Area Over Allowable	1666
Net Area Over Allowable	1190

Existing : 340,000 gross sf
Required: 213,000 gross sf
Excess : 126,900 gross sf

Commonwealth of Massachusetts
Department of Education
School Governance, Environmental and Structural Support Services

11/95
Preliminary: X
Revised:
Final:

Middle/High School Education Specifications

School District: Reading Public Schools

School Name: Reading Memorial High School

Completed by: DRA Architects

Date: 12/1/96

Type of Project:
New School for _____ Students
Addition of _____ Seats & Core
Renovation of _____ Spaces
Acquisition / Renovation of 1284 Seats and Related Core Facilities

ENROLLMENT INFORMATION

Grades	Current Enrollments as of '95	Projected Enrollments as of '05
9	267	343
10	279	342
11	240	291
12	245	308
TOTAL	1031	1284

In order to determine the teaching stations for the projected enrollment, the following information is needed to complete the Tables in this form.

1) Projected students in each class: the total number of students who will be taking each subject.
2) Class size: the maximum proposed class size for each subject.
3) Sections: the number of sections of each course needed to serve the projected enrollment. Divide the total projected enrollment by the class size.
4) Sessions per week: the number of times the class meets each week (usually 3 or 5).
5) Periods per week: the number of periods each day times 5.
6) Teaching stations required for program: multiply the number of sections by the sessions per week that each subject is taught.

In order to determine the number of NEW teaching stations needed for projected enrollments, the following information is needed:

1) After you determine the total number of teaching stations required, subtract the number of teaching stations currently available from the teaching stations required to support your educational program, to determine the number of new stations that will be needed to serve the projected enrollment (only needed for additions).
2) Determine the net area of each station, both new and existing (proposed renovations). Include storage space.

Subtotal the net basic educational space, the net miscellaneous space and the gross square footage; these figures will be used in the space computations on the last page and are necessary to evaluate the efficiency of the structure.

The following column designations and calculations will determine the net educational space to be renovated and/or newly constucted:

A	B	C	D	E	F	G	H	I	J	K	L	M	N
Subject	Projected Students Each Class	Class Size	Sections	Sessions or Blocks	Total Sessions	Periods Per Week	Total Stations Required	Stations Available	Sq.Ft. Each Station	Total Area Available	New Stations Required	Sq.Ft. Each Station	Total Area New

Calculations

Step 1: Sections $\frac{B}{C} = D$

Step 2: Total Sessions $D \times E = F$

Step 3: Stations Required $\frac{F}{G} = H$

Step 4: New Stations Needed $H - I = L$

Step 5: Total Area Available $I \times J = K$

Step 6: Total New Area to be built $L \times M = N$

TABLE I BASIC EDUCATIONAL SPACE FOR PLANNED PROGRAM

A	B	C	D	E	F	G	H	I	J	K	L	M	N
Subject	Projected Students Each Class	Class Size	Sections	Sessions or Blocks	Total Sessions	Periods Per Week	Total Stations Required	Stations Available	Sq.Ft. Each Station	Total Area Available	New Stations Required	Sq.Ft. Each Station	Total Area New
GENERAL CLASSROOMS													
Gen. Clsrm.		22	0	6	0	35	0	16	793	12695	-16	793	-12695
English	1548	22	70	6	420	35	12	11	713	7843	1	850	2357
Math	1595	22	73	6	438	35	12	11	814	8962	1	850	1238
Language	1199	22	55	6	330	35	9.4	8	624	4994	1	850	2656
Social Study	1683	22	77	6	462	35	13.2	5	782	3914	8	850	7136
Storage													
Offices													
ART													
General Art	174	15	12	6	72	35	2	1	909	909	1	900	900
Studio	262	15	17	6	102	35	3	2	1238	2476	1	1200	1200
Storage													
Office													
COMMERCIAL ED													
Keyboarding	41	22	2	6	12	35	1	1	1571	1571	0	850	0
Business	540	22	25	6	150	35	4	3	580	1739	1	850	1661
Bus. Tech.	92	22	4	6	24	35	1	1	854	854	0	0	0
Storage													
Office													
CONSUMER & FAMILY													
Fam Living			0		0		0	1	573	573	-1	573	-573
Child Devel			0		0		0			0	0	0	0
Storage													
Child Care			0		0		0			0	0	0	0

TABLE I BASIC EDUCATIONAL SPACE FOR PLANNED PROGRAM

A	B	C	D	E	F	G	H	I	J	K	L	M	N
Subject	Projected Students Each Class	Class Size	Sections	Sessions or Blocks	Total Sessions	Periods Per Week	Total Stations Required	Stations Available	Sq.Ft. Each Station	Total Area Available	New Stations Required	Sq.Ft. Each Station	Total Area New
INDUSTRIAL ARTS													
Graphic Arts	88	15	6	6	36	35	1	1	2015	2015	0	0	-415
Mat'ls. Lab	29	15	2	6	12	35	1	3	1709	5127	-2	1709	-3527
Drafting/CAD	56	15	4	6	24	35	1	2	565	1131	-1	0	469
Prod'n. Lab										0	0	0	0
Tech Lab	20	15	1	6	6	35	1	1	1114	1114	0	0	486
Classroom													
Storage													
Office													
MUSIC													
Chorus	34	34					1	1	1200	1481	0	0	-281
Theory	98	22	4	3	12	35	1	0		0	1	850	850
Band/Orchest	77	17					1	0		0	1	1200	1200
Practice							3	2	178	357	1	400	400
Recordings													
Storage													
Office													
SCIENCE													
General Sci	243	22	11	7	77	35	2	4	1200	4800	-2	1200	-2400
Chemistry	529	22	24	7	168	35	5	3	1200	3600	2	1200	2400
Biology	379	22	17	7	119	35	3	2	1200	2400	1	1200	1200
Physics	228	22	10	7	70	35	2	2	1200	2400	0	0	0
Anat/Physiol	114	22	5	7	35	35	1	2	1200	2400	-1	1200	-1200
Earth Sci							0			0	0	0	0
Vivarium			0		0		1	1	1200	1333	0	0	-133
Science Prep			0		0		9	7	324	2267	2	324	648
Storage													
Office													
Special Lab.								3	132	395	0	0	0

30 120

TABLE I Continued

A	B	C	D	E	F	G	H	I	J	K	L	M	N
Subject	Projected Students Each Class	Class Size	Sections	Sessions or Blocks	Total Sessions	Periods Per Week	Total Stations Required	Stations Available	Sq.Ft. Each Station	Total Area Available	New Stations Required	Sq.Ft. Each Station	Total Area New
PHYSICAL EDUCATION													
PE Stations	1128	19	59	3	177	35	5	6	6400	38400	-1	6400	-6400
Indoor Track			0		0		0	1		0	0		0
Wts/Aerobics			0		0		0	1	1438	1438	0	0	0
Misc. Offices							0	8	173	1383	0	0	0
Coaches			0		0		0	0	0	0	0	0	0
Officials			0		0		0	0	0	0	0	0	0
Phy.Therapy			0		0		0	0	0	0	0	0	0
Health	591	25	24	3	72	35	2	3	811	2433	-1	811	-811
AD Office			0		0		0	1	179	179	0	0	0
SPECIAL EDUCATION													
Special Needs:													
Sp Ed Conference			0		0		1	1	458	458	0	0	0
Sp Ed Remedial	26	8	3	3	10	36	3	3	498	1494	7	425	2756
Small Group			0		0		2	2	327	655	0	0	196
Counselors			0		0		2	2	67	134	0	0	0
Testing			0		0		0	0	0	0	0	0	0
Bilingual 1			0		0		0	0	0	0	0	0	0
Bilingual 2			0		0		0	0	0	0	0	0	0
Collaborative Classes			0		0		0	0	0	0	0	0	0
SPED Office			0		0		1	1	985	985	0	0	0
OTHER													
Computer Lal	140	16	9	6	53	36	2	2	696	1392	0	1200	1008
Computer Ed.													

TABLE II SPACE NEEDS SUMMARY

Total columns H, I, K, L & N from Table I for all regular classroom curriculum including only those business and science courses that do NOT require specialized spaces; total all specialized teaching stations needed for basic educational use; then total all miscellaneous educational space and fill out the table below.

Teaching Station	Number Needed	Sq. Ft. Area	Number Available	Sq.Ft. Area	Number New Stations Needed	Sq.Ft. Area
GENERAL CLASSROOMS						
Gen. Classrooms	0	0	16	12695	-16	-12695
Commercial	6	5,100	5	4,164	1	1,661
English	12	10,200	11	7,843	1	2,357
Language	9	7,650	8	4,994	1	2,656
Math	12	10,200	11	8,962	1	1,238
Social Studies	13	11,050	5	3,914	8	7,136
Consumer & Family	0	0	1	573	-1	-573
Health	2	850	3	2,433	-1	-811
Music Classroom	1	1,200	1	1,481	0	0
Gen. Science Classrms.	2	2,400	4	4,684	-2	-2,400
Subtotal General Instruction:	58	48,650	65	51,743	-8	-1,431
SPECIALIZED TEACHING STATIONS						
Art	5	6,000	3	3,386	2	2,100
Commercial	0	0	0	0	0	0
Consumer & Family	0	-573	0	0	0	-573
Industrial Arts Shops	4	6,400	7	9,387	-3	-2,987
Language Lab	0	0	1	1,180	0	0
Music/Rehearsal	1	1,200	0	0	1	1,200
Music Choral	1	1,200	1	1,481	0	-281
Music/Practice	3	400	2	357	1	134
Physical Education	5	15,000	6	38,400	-1	-6,400
Science Labs	11	13,200	9	10,800	2	2,400
Science Prep	9	2,916	7	2,268	2	648
Greenhouse	0	0	1	1,333	0	-133
TV Studio	0	0	0	0	0	0
Large Group	0	0	0	0	0	0
Computer Labs	2	2,400	2	1,392	0	1,008
Special Needs	12	5,100	5	2,148	7	2,952
Subtotal Specialized	53	53,243	44	72,132	11	68

TABLE II Continued

MISCELLANEOUS EDUCATIONAL SPACE

Station / Space	Sq.Ft. Required	-	Sq.Ft. Available	=	New Area Needed	Comments
Administration	1,500	-	1,635	=	-135	
Theater / Stage	5,200	-	11,313	=	-6,113	Community Use
Cafeteria	6,150	-	11,563	=	-5,413	Community Use
Dressing - Theatre	1,200		382		818	
Guidance	800	-	2,991	=	-2,191	
Health Suite	800	-	760	=	40	
Library / IMC	6,000	-	10,215	=	-4,215	All spaces are used.
Locker / Shower Rooms	3,200	-	18,005	=	-14,805	All Rooms are used.
Gym Storage	1,200	-	2,758	=	-1,558	
Kitchen	2,400	-	5,861	=	-3,461	
Teachers' Dining	1,000	-	625	=	375	
Teachers' Planning	1,800	-	9,132	=	-7,332	
School Storage	10,000	-	5,000	=	5,000	Estimate
Student Activity	3,000	-	3,000	=	0	Estimate
Book Storage Areas	5,000	-	2,000	=	3,000	Estimate
Bank	0	-	0	=	0	
Subtotal Miscellaneous Space:	49,250	-	85,240	=	-35,990	

OTHER SPACE (Non-Educational) 131,053 Sq.Ft.

Other space includes lavatories, hallways & circulation, mechanical spaces, non-educational material storage and wall thickness. This can be calculated by

subtracting the total of the basic and miscellaneous educational space from the anticipated gross square footage of the facility. Other spaces should be approximately 20-25% of the educational space for new construction and must not exceed 30% for approved school construction projects. This percentage is called the loading factor and is determined by dividing non-educational space by educational space and multiply by 100:

$$\frac{\text{Sq. Ft. Non-Educational Space}}{\text{Sq. Ft. Educational Space}} \times 100 = \% \text{ Loading Factor}$$

This efficiency factor is the relationship of the educational space to the gross square footage and is typically 75-85%. This factor reflects the overall efficiency of structural design and is proportional to the loading factor. A building with a loading factor of 20% will have an efficiency of approximately 80%.

TABLE III COST AND EFFICIENCY ANALYSIS

This table summarizes the square footage of the different spaces for the purpose of determining the maximum allowable cost for the proposed school project.

Renovation costs vary widely due to the age and overall condition of the building. Renovation costs should not, under normal circumstances, exceed 50% of the cost of new construction on a per square foot basis. All proposals for which the renovation costs are estimated to exceed half of the allowable cost for new construction will be reviewed by DOE staff on an individual basis before the project is recommended to the Board for approval. Please be prepared to provide support documentation for greater than average renovation costs.

Description of Space			Existing Sq. Ft.	New Sq. Ft.	Total Sq. Ft.
Regular	Classrooms		51,743	-1,431	50,312
	+				
Spec.	Classrooms		72,132	68	72,200
Basic	Educ'l	Space	123,875	-1,363	122,512
	+				
Misc.	Educ'l	Space	85,240	-35,990	49,250
Total	Educ'l	Space	209,115	-37,353	171,762
	+				
Other	(Non-	Educ'l)	131,053	-91,645	39,408
Gross	Square	Footage	340,168	-128,998	211,170

The maximum allowable gross square footage is calculated by multiplying the projected enrollment for the building by the square footage per pupil allowance for middle schools (135 Sq.Ft.) or secondary schools (155 Sq.Ft.) and then adding the gross square footage of all spaces allowable in excess of the base gross.

These spaces should be included in Table II.

Spaces in Excess of Base

SPED:	2,400	Sq.Ft.	Maximum Gross Sq.Ft.:	(Projected enrollment x 135/155)		+	Total Approvable Excess		
TBE:	600	Sq.Ft.							
Remedial:	2,700	Sq.Ft.	211,170	Sq.Ft.=(	1,284	x 155	)+	12,150	Sq.Ft.
Collaborative:	0	Sq.Ft.							
Community:	4,050	Sq.Ft.							
Computers:	2,400	Sq.Ft.	Max. Allowable Cost	= Gross Sq.Ft. New		x	Maximum Cost per Sq.Ft. Allowable		
Total Allowed	12,150	Sq.Ft.				PLUS			
				Gross Sq.Ft. Reno.		x	Maximum Cost per Sq.Ft.		

Maximum Allowable Cost $28,404,028 : (Gross _____ Sq.Ft. New x $167.00)+ (Gross 340,168 Sq.Ft. Reno x $83.50)

645 - 5S, Attachment

MIDDLE / HIGH SCHOOL PROGRAM STANDARDS

School Building Assistance Regulations: 603:CMR 30.04, Page 18

Description of Teaching Station	Recommended Square Footages	Comments
Regular Interchangeable Classrooms	750 - 850 square feet	Recommendation based on class size of 20-30 pupils
Small Group Seminar	300 - 500 square feet	
Large Group Instruction	1500 - 2000 square feet	Recommendation based on class size of 80-125 pupils
General Art	1200 - 1400 square feet	Not including storage
Specialized Art Areas	600 - 1000 square feet	Not including storage
Commercial/Business Classroom	750 - 850 square feet	
Commercial/Business Laboratory	750 - 1100 square feet	
Homemaking: Food Areas	1200 - 1400 square feet	
Home Management	2400 - 2600 square feet	Programmatic variations may require only regular CR
Homemaking: Clothing Areas	1200 - 1400 square feet	Recommendation based on class size of 16-24 pupils
Industrial Arts Shops	Up to 100 square feet per pupil	
Mechanical Drawing	900 - 1000 square feet	Recommendation based on class size of 25-30 pupils
Music Rehearsal Area	1400 - 1600 square feet	
Music Theory/Choral Areas	750 - 1200 square feet	
Practice Rooms	75 - 130 square feet	
Ensemble Rooms	Up to 200 square feet	
Science Lecture/Laboratory	1000 - 1200 square feet	
Science Demonstration Areas	900 - 1000 square feet	
Physical Education Teaching Stations	6200 - 7500 square feet	Gymnasium containing 2 teaching stations
Additional Teaching Stations	1200 - 3500 square feet each	
Cafeteria	15 square feet per pupil computed to accommodate not more than 1/2 nor less than 1/3 of the planned enrollment (2 or 3 seatings)	
Kitchen	1300 square feet for the first 300 students; add one square foot for each additional meal	
Library (Instructional Materials Center):	The Reading Room may be calculated to serve up to 15% of the planned enrollment, each seat to be 40 square feet maximum. Other areas, such as conference rooms, offices, etc. are to be planned as needed.	
Auditorium:	Seating for not more than the planned enrollment up to 1000 persons, not to exceed 7 square feet per person maximum.	

MIDDLE / HIGH SCHOOL PROGRAM STANDARDS

Description of Teaching Station	Recommended Square Footages	Comments
Administration	Up to 1500 square feet	Do not include any space that may be planned for the Superintendent of Schools
Guidance	800 - 1000 square feet	
Health Suite	500 - 1000 square feet	

Special Classrooms for special needs, collaborative programs, guidance, transitional bilingual education, remedial studies and community use shall not be included in the base for the gross square footage allowance. The recommended room sizes in the preceding table are net square footages. A 5% variation to program spaces may be granted by the Board of Education under special circumstances.

School Building Assistance Funding

The Massachusetts Department of Education administers a school building assistance program through a body which is commonly called the SBAB, although their official name has been revised over the years. Lately the SBAB has been receiving new applications at the rate of 60 to 80 each year. Their deadline for all applications in Massachusetts is June 1 of each year.

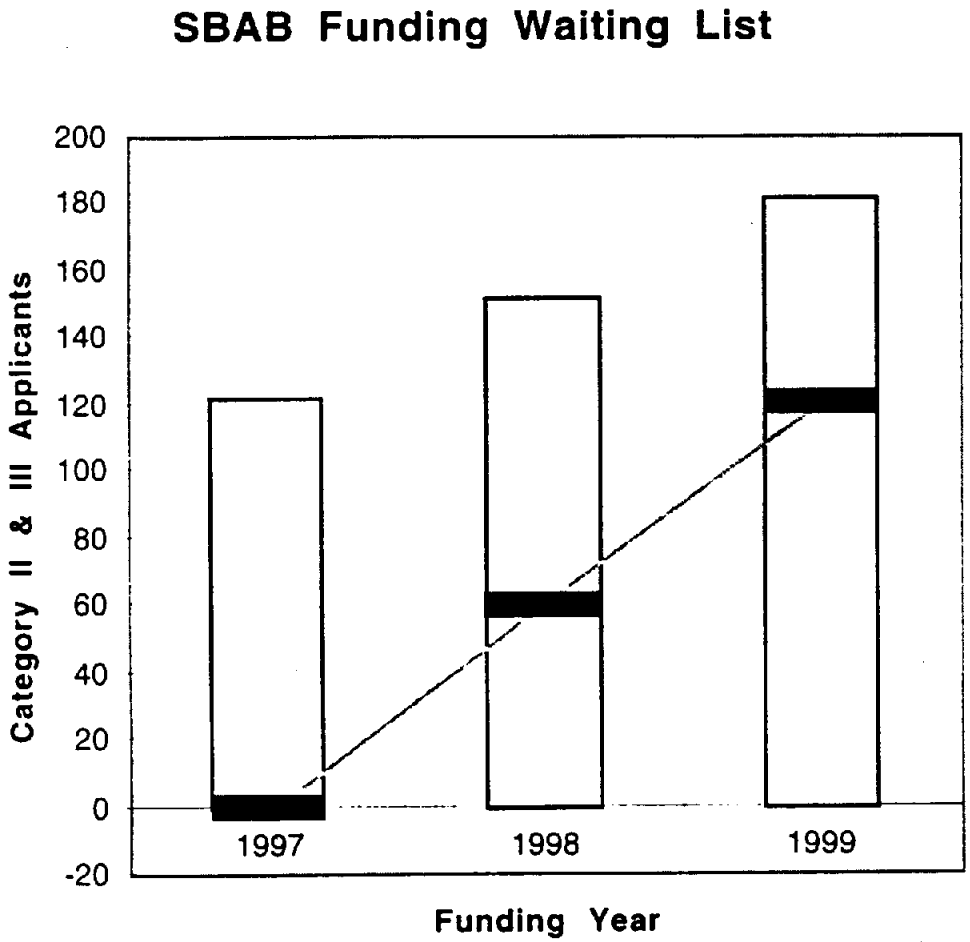
The SBAB reviews the applications, and issues a ranked list which adds the new applications below the left over list from the previous year. The State Legislature, in effect, draws a line across the list by budgeting a certain amount of money each year to support the school building assistance program. Those projects above the line will be funded in the coming fiscal year. Currently, the State has been awarding grants the rate of about 30 projects a year. The rest of the list, those below the line, still in their same ranked positions, become the top of next year's list. At that rate, a one-year delay in applying for a project can mean a 2-3 year delay in being awarded state funds.

Further complicating the picture, the SBAB ranking puts priority on desegregation projects, which are labeled "Category 1". (This category also includes projects to meet "extreme facilities needs", such as a structurally unsound building, which must be corrected for the safety of children.) Category 2 are those projects needing to fulfill projected enrollments, and to provide for specialized programs. Category 3 are all remaining projects. The SBAB currently maintains a separate list for category 1 projects, but lumps both category 2 and 3 projects into a single list.

School Building Assistance Grant Awards

Funding Waiting List For Capital Construction

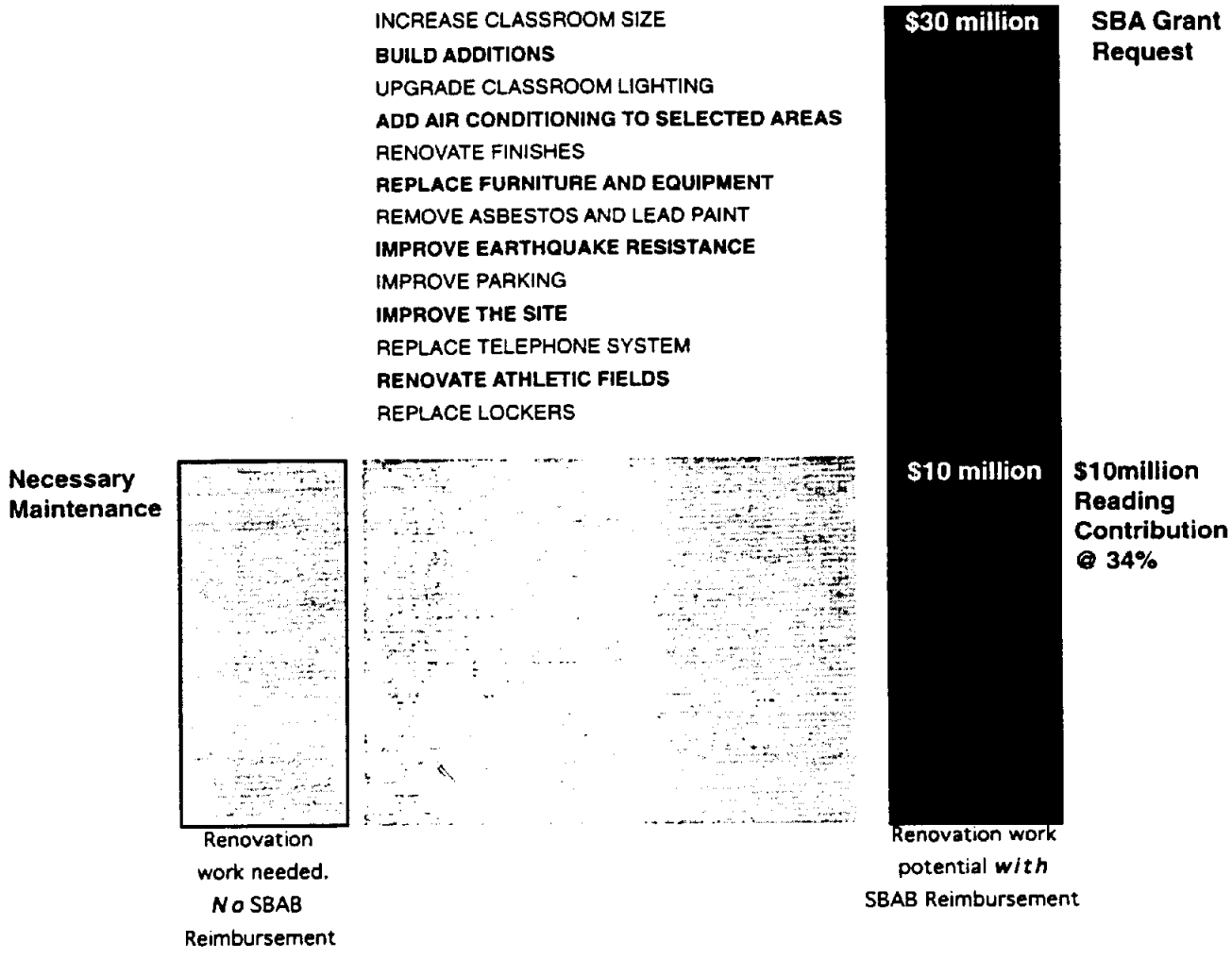
- The state of Massachusetts has been awarding grants to roughly 30 Category 2 and 3 school projects in recent years.
- 60 -80 schools apply for assistance each year.
- This means that for each year a project is delayed, it will most likely sit in the funding queue for 2years*, if it is not ranked as a Category 1 project.
- Once a project is ranked, it keeps its place in the queue relative to the other projects.



Dark gray bar illustrates how a project's ranking changes over time.

Reading Memorial High School

Cost/Benefit Comparison



Technology in the Schools

Within the Feasibility Study is a discussion of educational standards. One focus of these standards is the inclusion of technology in the classroom. While those standards may translate directly into curriculum, they are represented in this study as program spaces and associated electrical and mechanical support.

The second phase of this study should analyze the technical needs of Reading Memorial High School by recommending an infrastructure for computer labs, and technology classrooms including video and data capabilities. There should be technology stations in the Information Resource Center, augmenting the electronic library. The infrastructure needed to provide multimedia and an integrated telecommunication network should also be part of a school renovation.

Included in this Feasibility Study are the costs of retrofitting the school, including technology centers and costs for network wiring into classrooms. The current trend in schools appears to favor an integrated system which includes an interface between computer networking system, the audiovisual communication system, the security system, fire alarm and energy management system. The school should develop power points, network outlets, and wire management furnishings that will alleviate the clutter that occurs with most computer installations. Each classroom, teacher room and large assembly area should have full access to the computer facilities. The system should be designed with reasonable flexibility to accommodate changing K-12 educational needs and new technology. Equipment can be added as funds become available.

Carefully designed programmatic, architectural, structural, mechanical and electrical systems will allow future flexibility to adapt to technological advances. For example, using drywall partitions rather than masonry partitions can ease refiguring as technology changes. Flexible suspended ceilings allow placement of power/data "drops" into any area of a room. Surface-mounted perimeter raceways can also accommodate wiring.

The Changing Curriculum

Libraries are becoming broader Information Resource Centers. The IRC should be the technology center in each school. Here, or in the nearby or adjacent computer lab, resides the hub of the local network. All hardware, software and cable implementations are typically initiated here. The direct route to off-campus connections and district-wide interfaces also start here.

In addition, another special room the "Magnet Activity" room or Technology Lab with a theme unique to the school, is recommended. Although the emphasis on program will vary between schools in Reading, the technology lab in each school requires similar hardware and wiring.

The typical classroom has evolved to incorporate the information age. A communication console should be installed in each room, which contains a telephone, speaker, digital clock and connections for video, giving access to campus-wide video, public address, telephone, security and fire alarm systems. All classrooms and assembly areas should have a VCR, video, data and voice connections, computers, a printer and power for all the equipment.

Other accommodations will need to be incorporated as well. Indirect lighting will eliminate computer glare. Anti-static carpeting is required in computer areas. White marker boards

have replaced chalkboards to eliminate chalk dust. TV and VCR use requires room darkening shades. Storage is needed for software manuals and personal disks. Even computer table design should be considered for height, flexibility and wire-management, and accessibility. Ergonomically correct seating should be considered for high computer-use areas like the Computer and Technology Lab.

Additionally, connections to the local Cable Television Company should be considered to provide access to all schools and buildings, with the possible addition of a channel for school-wide use.

There is typically a strong commitment from the teachers to learn the technology. The above improvements will help the curriculum most when the faculty is trained to use technology as a teaching and learning tool.

When the technology infrastructure is in place, students will have the opportunity to take advantage of a curriculum that will help then realize their goals for high school, and beyond.

Existing Conditions Reports

-Site & Landscaping

-Architectural & Structural

-Mechanical, Plumbing, Electrical, & Fire Protection

Site & Landscaping Report

THE EXISTING SITE

The existing Reading Memorial High School site plan reflects the various additions made over the years to the original building. Each successive building program added more parking areas, walkways and service zones; these site improvements appear to have always been additive in nature, only addressing the individual expansion program. The resultant site was never developed as a coherent whole but rather as a series of unrelated spaces defined by the various building components.

The school is campus like in nature; the individual building components which step down the hillside cordon off a series of green spaces which wind their way through the complex. The school is accessible from three sides. The main entrance is along Oakland Street; this area serves as the main bus drop off area, visitor drop off and visitor parking zone. There is insufficient parking to the east of this entry. Oakland Street is used for parking. The major parking zones are to the north and south of the building complex. The south parking area lies above the auditorium and cafeteria areas. This parking lot is under used. The night lighting is poor and there are no stairs to traverse the slopes leading down to the building. The toe of the slope weeps ground water which is causing the pavement to fail.

The north parking lot surrounds and is adjacent to the field house. The parking area could be better organized and a system of walks developed to better link the parking with the school. Access to this lot is through the shop area and the students have to cross the parking area to access the field house from the main buildings. The school department offices are also accessed from the south parking area. The school department does not have a site identity of its own.

Currently service and day care vehicles are allowed to drive through the building complex. This driveway is very narrow and is on a steep incline. These vehicles share the pavement with students walking outside to connect to classes.

The steep topography and existing outdoor pool complex preclude development of an access drive on the east side of the building complex.

Site Recommendations (See Existing Site Plan for Locations)

A. Develop a new front entry/drop-off area. Ideally the school bus drop-off zone should be isolated from other vehicular traffic. Improvements at the front entry should include new curbing, sidewalks, better night lighting, site furniture, signage and landscaping; a budget of $75,000 to $100,000 should be sufficient to cover these suggested

improvements.

B. Redesign and rebuild the 80 car parking area south of the building complex, including new curbing, night lighting, under drainage, and a set of stairs connecting to the school; estimated cost for these improvements is $100,000 to $120,000.

C. Oakland Street has nearly a 50 feet paved width; the travel way could be narrowed to 30 feet and head in parking implemented along the east curb-line. This would add approximately 50 parking spaces along the east side of the site — an area which is short of parking. A budget of $25,000 should be adequate to make these site improvements.

D. Reconfigure the access drive between the school and the field house to include a new drop-off loop and parking zone dedicated to the school department offices and the day care center. In addition, there is room to expand the parking around the field house without impacting the play field. It is recommended that the driveways and parking areas be better articulated with curbing. Night lighting should be upgraded. A budget of $100,000 to $150,000 should be sufficient for this work.

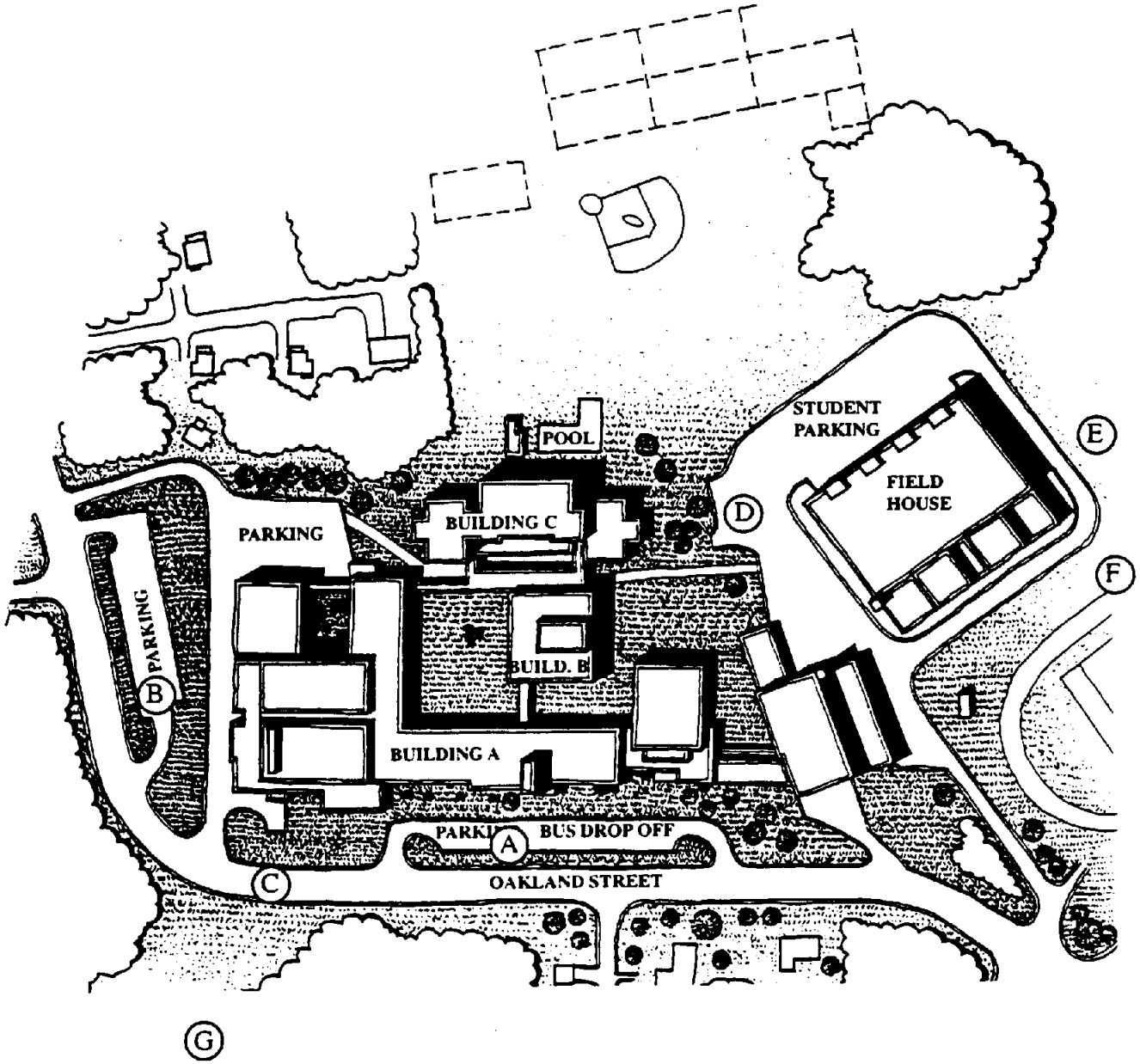
E. A budget of $50,000 should be considered for implementing miscellaneous site improvements including a paved walk connecting the field house with Birch Meadow School, site signage, repair of chain link fence, and general landscape work.

F. The Reading Parks and Recreation Department has an ongoing improvement program for the adjacent athletic fields. However, the current improvement program does not include the following items:

1. Resurface track
2. Rejuvenate football field lawn
3. Refurbish or replace bleachers
4. New fence around field
5. Light football stadium
6. Regrade, sod and irrigate practice field immediately west of field house
7. Playground ballfield - new back stop
8. Street ballfield - new back stop
9. Lighted ballfield - new outfield fence, rejuvenate lawns
10. Castine field - fill low area and build new field (NOTE: this area may be subject to wetland regulations)
11. Morton ballfield - new dugout shelters
12. New spectator bleachers for tennis courts

The estimated cost of these improvements (not including item #10 above) is $350,000 - $400,000 (add $50,000 to fill and rebuild Castine field).

G. There is a parcel of land owned by the Town east of Oakland Street which has been considered for school use. The site has very steep topography and the sub-surface condition appears to be composed of ledge and large boulders. It would be very costly on a per car basis to develop this land for parking.



Existing Site Plan

No Scale

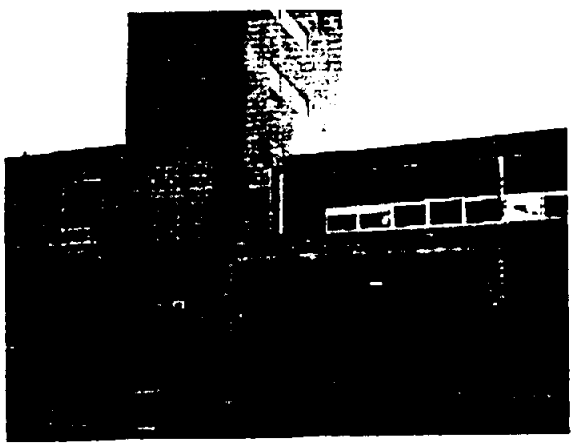
Architectural and Structural Report

READING HIGH SCHOOL
Constructed: 1952
Additions and Renovations: 1969
Building Area: 340,000 s.f.
Inspection performed: March, April, 1996

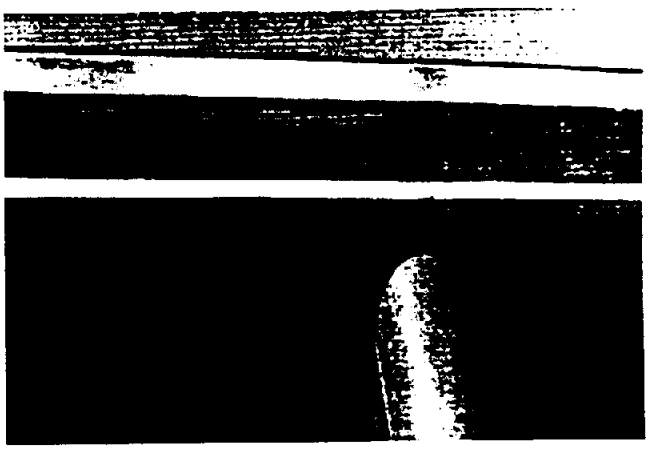
The purpose of this report is to inventory the materials, layout and condition of the building. Many conditions are simply observed and noted, with preliminary speculation as to cause. Issues involving building codes and life safety are particularly noted. Because these are preliminary observations, some areas will need more in-depth inspection, depending on the scope of the renovation work.

Roofs:
65% of the roofs, mostly over the 1952 school, are two year old fully adhered PVC on tapered insulation, with all new flashing and coping. The Cafeteria, Girl's Gym and Gym Lobby have a 1985 Carlisle fully adhered membrane roof. The Science Building has an older, perhaps original, tar and gravel roof. The Field House has a Firestone fully adhered rubber roof, installed in 1989.

The Girl's Gym entrance canopy and lobby roof and the main entry canopy roof all hold water. This was observed after a week of rain and melting snow. While no interior damage was observed, there was some deterioration of the concrete cap and fascia at the main entry.

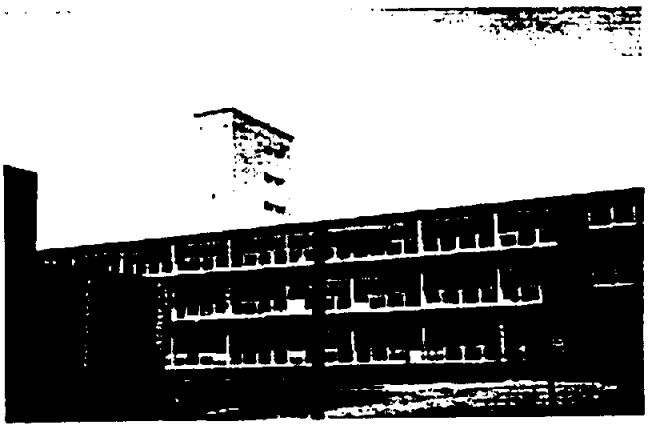


Main Entrance



Canopy at Main Entrance

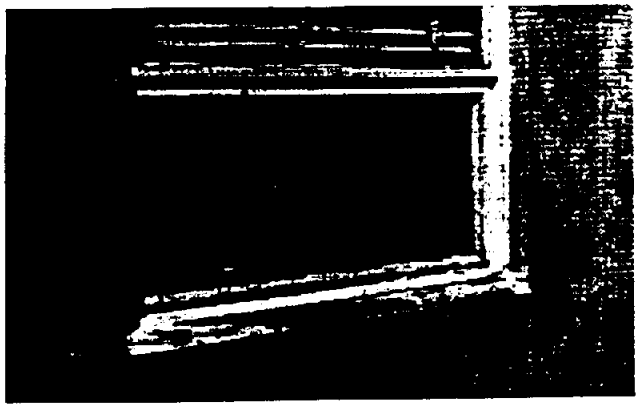
Exterior: The brick, windows, glass block, sills, foundation, and coping are all in generally good condition, although many areas have aged and need attention.



Exterior Elevation

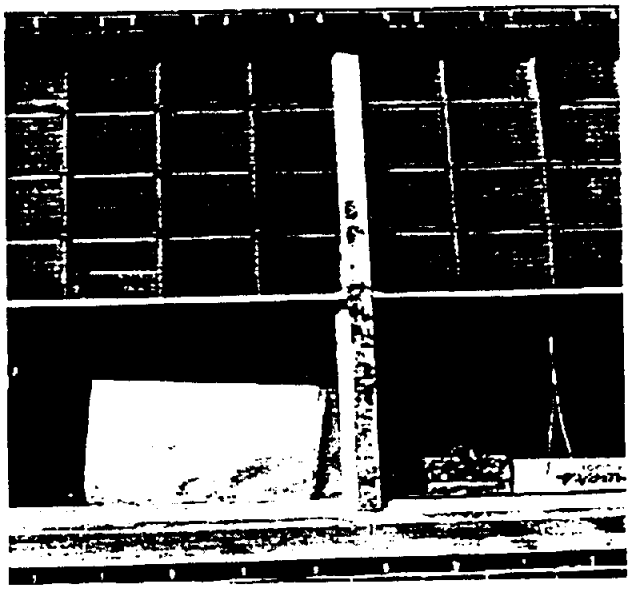
The window system is a combination of steel sash with outward-projecting windows, and glass block. The windows are single glazed and are not energy efficient. The windows at the Pupil Personnel offices and the Kitchen director's office are badly rusted and the steel sash is deteriorating.

This is also true of the windows and the metal panels in the window system of the Science Building, (Building C). The sealant is weathered and cracked. It is recommended that the entire window system be replaced with double-glazed



Rusting Window Sill

windows in all buildings except the Field House. This would not only cut down on the maintenance,but, in combination with an overhaul of the heating system, would save energy and make the environment in the rooms more comfortable. The peeling paint on the lintels and columns between windows probably contains lead, and should be abated when the windows are replaced.



Deteriorating Window Sill and Jamb

The concrete eave which surrounds most of the building has exposed, rusted reinforcing bar. It needs to be determined whether the past roof leakage is to blame (most likely) or a design flaw of the eave which must be addressed. Regardless, the eave should be repaired to prevent further deterioration. As was mentioned earlier, water dripping off the two front entrance canopies is causing deterioration of the concrete fascia. This appears to be because of a negative slope to the roof drain.

Concrete fascia showing rusting reinforcing

There is considerable mortar missing from the brick wall adjacent to the back Kitchen entry. It looks like old damage which was halted when the roof was replaced. However, the bricks must be repointed. Also, many control joints are missing sealant and backer rods. There are no apparent weep holes in the brick-face walls of the 1952 school.

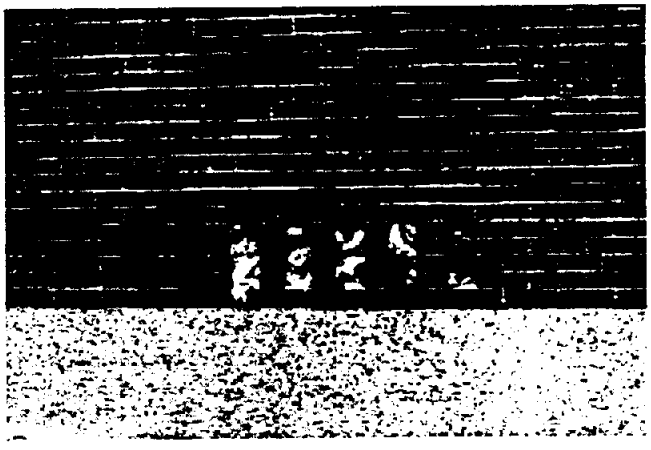
Masonry in need of repair.

The handicap ramp at the rear of the 1952 school is asphalt poured over tree roots, which continue to grow and heave the asphalt. The guardrail at this ramp does not meet code. It is the wrong height and does not have a handrail attached.

Handicap ramp.

The driveway to the upper Industrial Arts building (at the weight room) needs repaving. A guardrail is needed at the edge, where there is up to an 8' drop-off.

At the Science Building (Building C) the first story unit ventilator grilles brickwork are stuffed with insulation. It is unknown why these vents were causing problems, although it is most likely an attempt to manually improve the ventilation.

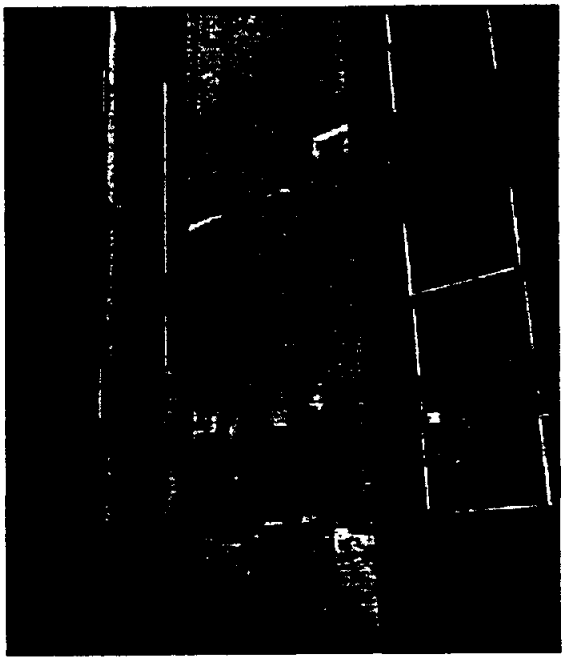


Unit ventilator grilles stuffed with insulation.

The steel-and-concrete columns here and at the Orange Lockers are cracking and missing bits of concrete. The structural engineer has offered three preliminary theories as to why this is happening:

1. The extreme temperature differential between the inside and outside surfaces of the columns is causing the steel columns to expand and contract. The concrete casing around the columns cannot expand and contract to such extremes.

2. The steel columns are surrounded by massive amounts of concrete - up to four feet. This is confining the steel and forcing the concrete to do some structural "work", which it was not designed to do.



Steel and concrete columns of the Science Bldg.

3. These columns may have been poured in the winter. An "accelerator" may have been added to the concrete to speed up curing time. This accelerator may be leaching through the concrete,

Steel and concrete columns of a corridor bridge.

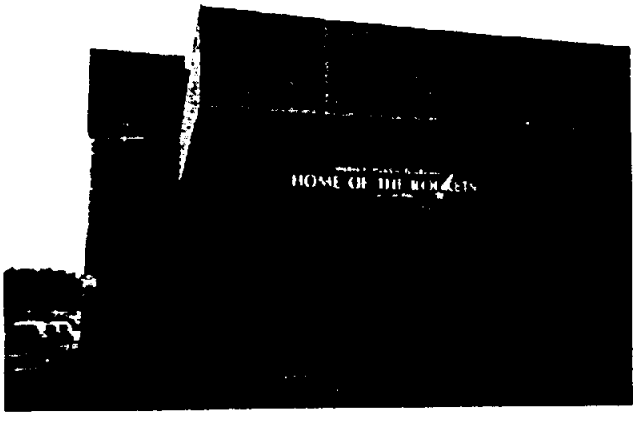
showing up as efflorescence on the exterior. As the salts and minerals migrate through the concrete they attack the steel reinforcing, weakening it.

The exterior of the Information Resources Building is in generally good shape. The horizontal control joints need replacing.

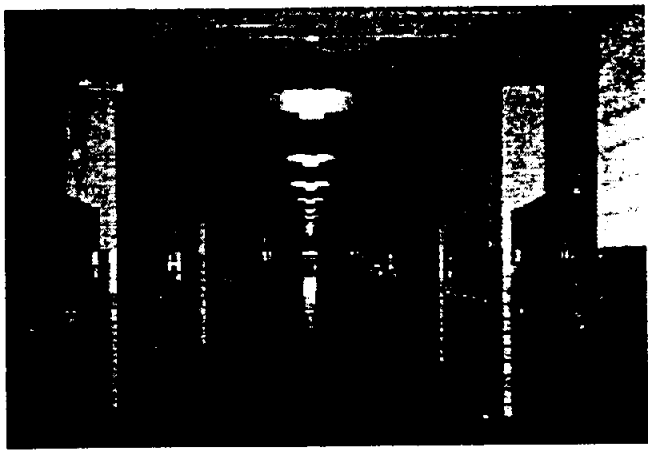
Likewise, the Field House is in good condition. The brick appears sound, except where graffiti was removed with a harsh chemical, making individual bricks vulnerable to the weather. There is some concern that the small spot of exposed rebar on the side of the elevator shaft may develop into a larger problem if not repaired. The bottom of the high projecting windows have minor rust.

Interior: The interior of the school is also in generally good condition, considering it is a forty-five year old high school. Clearly, the school has been well maintained. However, finishes and materials do eventually wear out, and the life expectancy of the interior of this school has nearly been reached. The floors are covered with vinyl tile, most likely asbestos-containing in Building A. The walls of the corridors are glazed and painted concrete block. The walls of the clasrooms are plaster-covered concrete block, which is painted. The ceilings are all acoustic tile. The tile is suspended in Buildings B & C. The tile is glued to the concrete slab in Building A.

The first impression one gets when touring the basement and ground floors of the school is that it is dark and cavernous. Many of the ceiling tiles adhered to the structural slab above are stained, chipped and/or dislodged. All are dingy.
The lighting levels are low, suffering in part from a lack of natural light at these lower levels.



Entrance to field house.

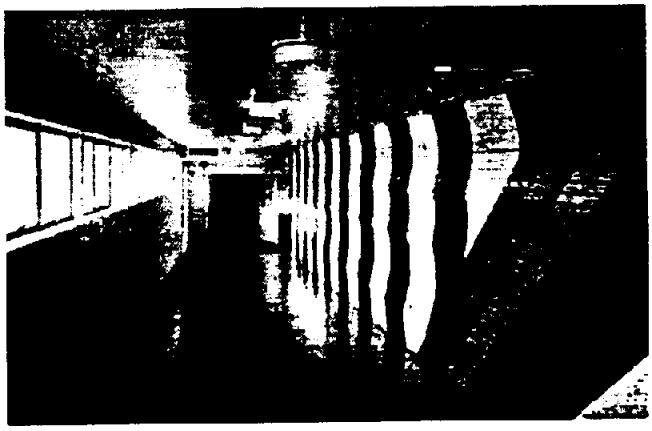


Dark corridors.

Cadd stations in the CADD Annex.

each classroom, an 850 square foot classroom would be needed for most core curriculum classes. The music room, while satisfactory in size, has a low ceiling. It is recommended that an additional music room be built with a high ceiling for instrumental classes. There is one Health/Wellness classroom which has egress only through other rooms, which is not allowed by code.

Art Studio / Industrial Arts.



"Echo Hall", Health and Wellness classroom behind wall.

The Industrial Arts Building layout is confusing, with dead-end corridors and lots of tiny, locked rooms. The art rooms, while spacious, are at the end of a maze of "dead-end" hallways and small rooms, making emergency egress potentially dangerous. The CADD classroom has spilled out into what should be a corridor, creating a narrow, dark CADD annex. (By code, a hallway cannot be longer than 20' without a direct means of egress such as doors to the outside, or a stair which leads to an exit. Although end rooms in this wing have exterior doors, these can only be used by students in these rooms. Students in adjacent rooms or hallways are thus in a "dead-end", requiring back-tracking to an approved exit or exit corridor.)

The typical classrooms of the 1952 building are undersized and need new finishes. The State recommends between 750 and 850 square feet of classroom space, and many of these are less than 700 square feet. If computer stations are added to

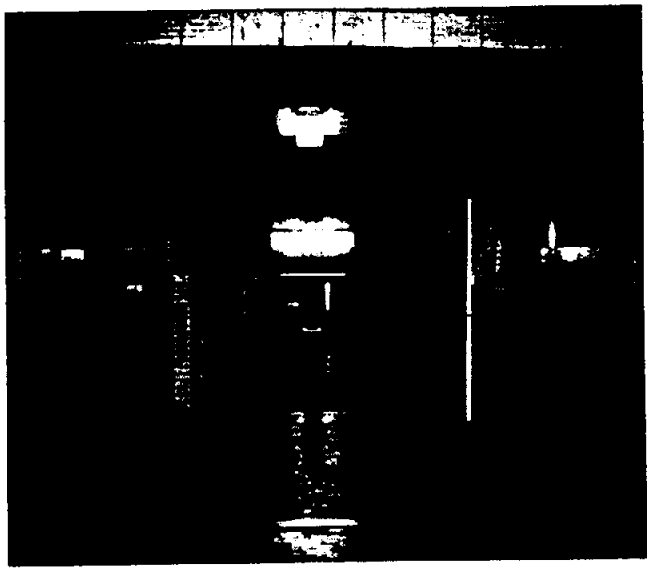
There appears to be vinyl asbestos tile throughout the 1952 building. This tile is non-friable, or "not readily crumbled". This does not present the same hazard as, say asbestos pipe insulation which has loose fibers. The tile may be left in place as long as it is maintained.

The corridor double doors are 30" pairs. Each door should measure 36" to achieve a minimum width of 32" when the door is opened to 90 degrees. This is an ADA requirement. The hardware on all the doors does not meet current accessibility codes, which requires lever hardware. The recessed porcelain drinking fountains in the hallways are not handicap accessible.

The Girl's Gym floor needs refinishing, and the bleachers need to be replaced. The gym in general seems to be in good condition, and is heavily used.

Interior of Girl's Gym

The Girl's Gym Lobby ceiling is in terrible condition, with dislodged, chipped and stained tiles throughout. It is unknown whether this is because of the vibrating exhaust equipment immediately above in the Gym mezzanine, or because of a leaking roof. All the ceiling tiles need replacing.



Corridor leading to Girl's Gym.

The locker room below the Girl's Gym is in poor condition, is cavernous and is underutilized. It needs to be reorganized and refurbished to provide boy's and girl's locker rooms, and perhaps a fitness room.

The design of the Main Office and Health Suite is poor. The office is hidden behind the lobby display case, allowing supervision of students and visitors only through the case. Work areas are cramped. The Vice Principals work out of offices that are too small. The Health Suite toilet rooms are undersized by 50%. The area should be remodeled to provide discreet, adequately sized work areas, and to be more welcoming.

Located at the intersection of the 1952 building, the Library, a corridor to the Cafeteria and the only interior entrance to the Science Building are "The Orange Lockers." This twenty-seven foot wide zone contains lockers for the underclassmen, and contributes to serious traffic and noise problems in the area between classes. It is essentially unsupervised, with no classrooms or offices adjacent to the space.

"Orange Lockers"

There is a corridor connecting the Orange Lockers and the Commons which is cold, drafty and unsupervisable. If not used as a service dock, it should be removed.

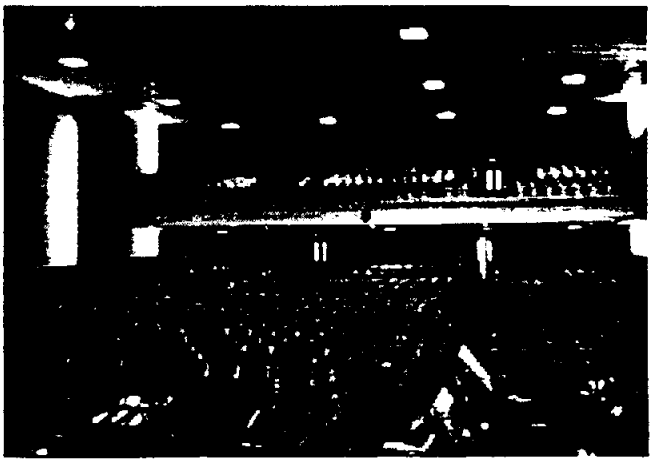
To function as a means of egress both from the Commons and from the school, the connector should be re-designed, perhaps allowing exiting at the same level as these spaces.

Connector between corridor and Cafeteria Commons

The Cafeteria is in good condition, although it is underutilized. Perhaps a vending machine zone or lounge could be inserted to "zone" the space and encourage more efficient use. If the connecting corridor at the back of the Commons is redesigned, perhaps it can provide a view out of the cafeteria and through the courtyard.

Cafeteria

The Auditorium has been well maintained, although the hard, austere surfaces create poor acoustics. The low-ceiling area below the balcony also contributes to very poor acoustics. Because this 1200 seat facility is used by both the students and the community, it is recommended that most finishes and seating be replaced with better quality, more contemporary materials.



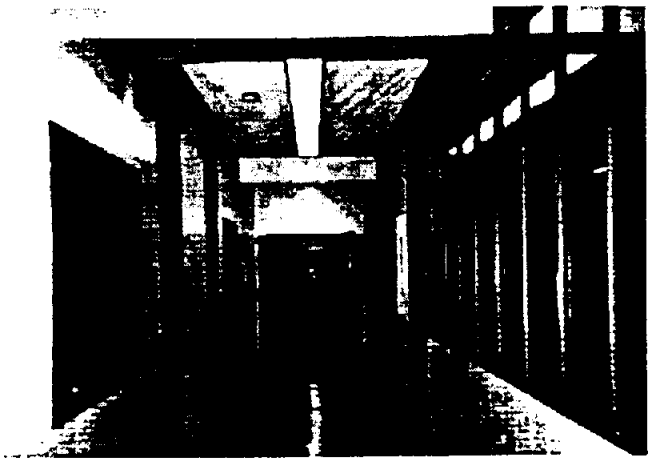
Auditorium

The Information Resource Center has some nice qualities, such as the openness and the quality of light. However, the layout is not conducive to supervision of students on the upper level, and a

Information Resource Center.

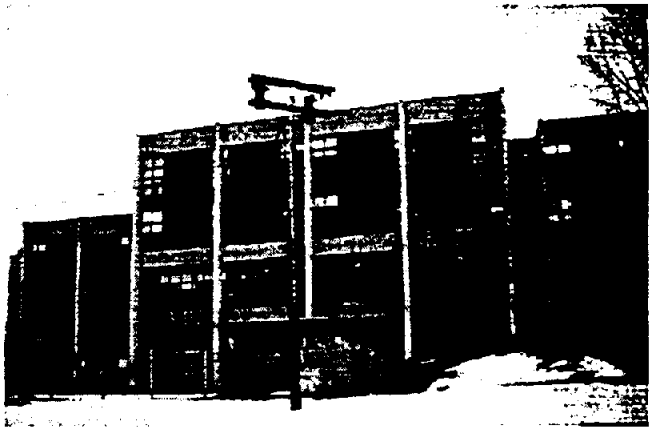
large amount of space is wasted. Consequently, the second floor is rarely used. Compounding the problem is the lack of accessibility to the second floor. While restricted access does help with vandalism, there is no connection from here to the rest of the school. It is recommended that an elevator be installed to make the second and ground floors of Building B accessible. It is also recommended that the classrooms on the second floor be remodeled to meet classroom size standards, and be utilized to assist with supervision to this floor.

The IRC stair handrail and the balcony guardrail are all too short. The Lecture Hall below the library is also isolated from the rest of the school. It was reported that it is rarely used because of the poor ventilation and the lack of adequate writing surfaces and awkward accessibility.



Corridor leading to Science labs.

The Science Building has undergone several renovations since it was built in the 1960's. The result is large lab rooms and adequately sized classrooms. However, there are also an extravagant amount of teacher planning spaces and specialized labs. The west-facing classrooms also have an uncomfortable amountof solar gain. The acrylic single-glazed windows offer no energy resistance and have yellowed. These should be replaced with a double-glazed thermo-pane system.



West-facing elevation of Science Building.

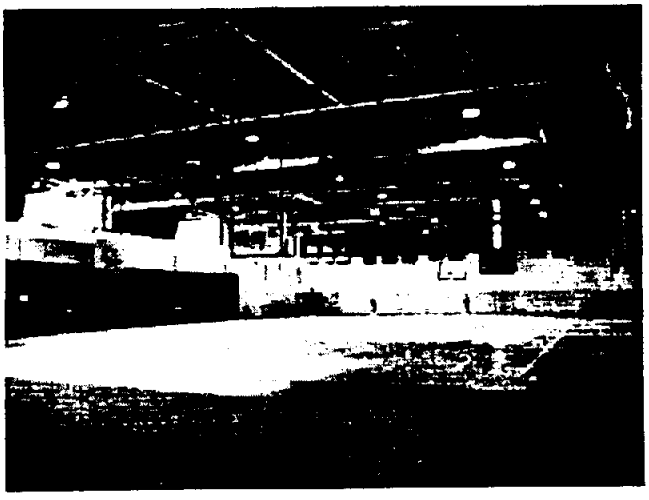
The desks and lab tables all need to be refurbished. Safety and Lab equipment should be inventoried and updated. Refer to the Furniture and Equipment Report for more details.

Typical General Science classroom.

The concrete and steel columns are cracking inside the building. See the exterior notes for some ideas on the cause. The ramp connecting the Orange Lockers to the Science Building does not meet code for slope. It needs to be extended to provide a more gentle incline of 1:12, as stated in the ADA code. Greater access into the Science Building from the "Orange Locker" corridor would help alleviate traffic congestion in this area.

The layout of the Science Rooms, corridors and labs are unsatisfactory and inefficient. The ratio of teacher offices and storage to classrooms is high. The Vivarium needs an upgraded ventilation system and some sun protection.

Vivarium



Field House

Field House:

The synthetic sports floor is splitting and bubbling in a few places. Perhaps a total refurbishment is likely needed to extend the life of the floor. The bleachers also need refurbishing. If not maintained, the manually operated bleachers could begin to deteriorate.

Other surfaces in the field House need updating. Most are worn out because of age. All metal lockers in the boy's and girl's locker rooms are rusting. The vinyl tile at the stairs is badly worn. The ceiling of the balcony is wet and stained. It is unknown if this is caused by a leaking roof or pipes. Also, the railing at the balcony is too low to meet current code. Glare from the high windows should be controlled by installing translucent blinds.

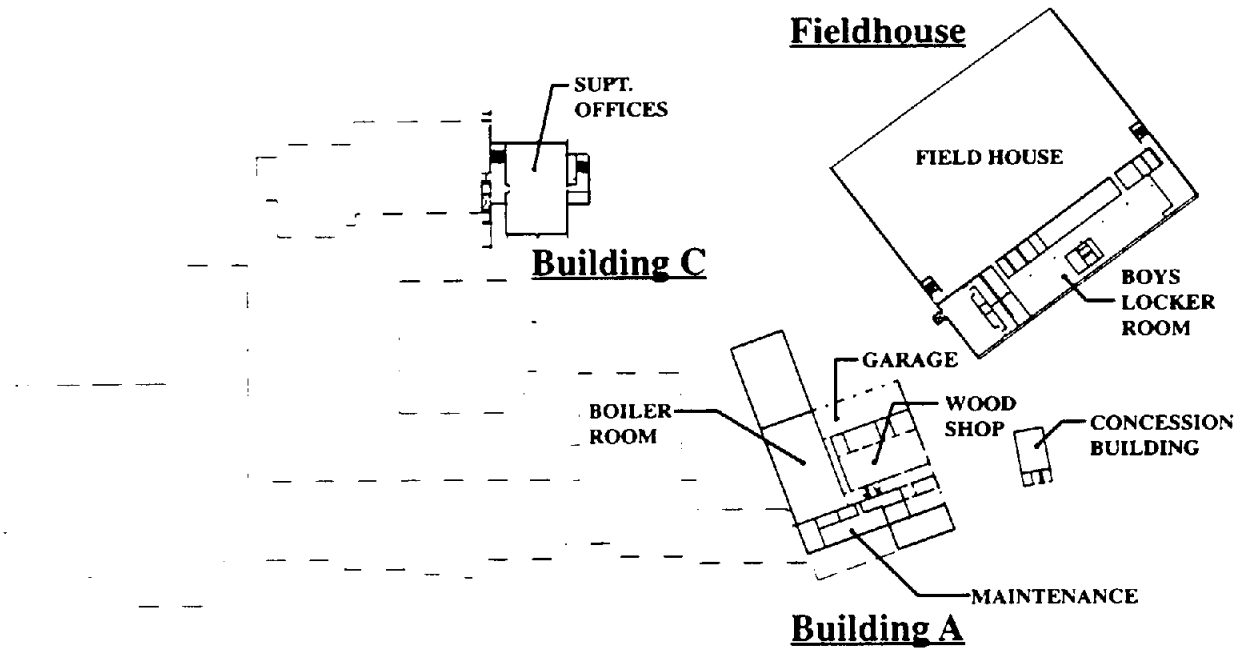
The girls' locker room is small and contains no team rooms. It is recommended that the girl's be given additional team locker space in the field house, and that a boys' locker room be fitted into the old "Girl's Gym" locker room in the old building. This way, fewer students would have to cross to either building in their gym clothes.

Earthquake Resistance: The buildings are supported by structural steel and concrete. If changes are made to the primary or secondary bearing components, the original, designed structural integrity will be compromised and the entire structural system must be upgraded to current earthquake resistance code standards. The scope of this work is dependent on the location of the renovation work.

As of July, 1996, the School Building Assistance Board, which offers a percentage of reimbursement money to schools for renovation and new construction, has stated in the regulations (38.03(2)) that "the design specifications for all projects, including those for the expansion and renovation of an existing builting , shall meet all current building code requirements for new construction."

In other words, if reimbursement funds for renovation are sought, the building must meet codes for new construction, which includes current seismic design. Determining the scope of this work would involve much more study, involving physically investigating and testing the structure. However, is it assumed that a seismic upgrade could range from bracing of critical walls to a complete parallel structural system. If any walls are moved in the building, a redesign of parts of the structural system would need to be done.

Existing Floor Plans



Existing Basement Floor Plan

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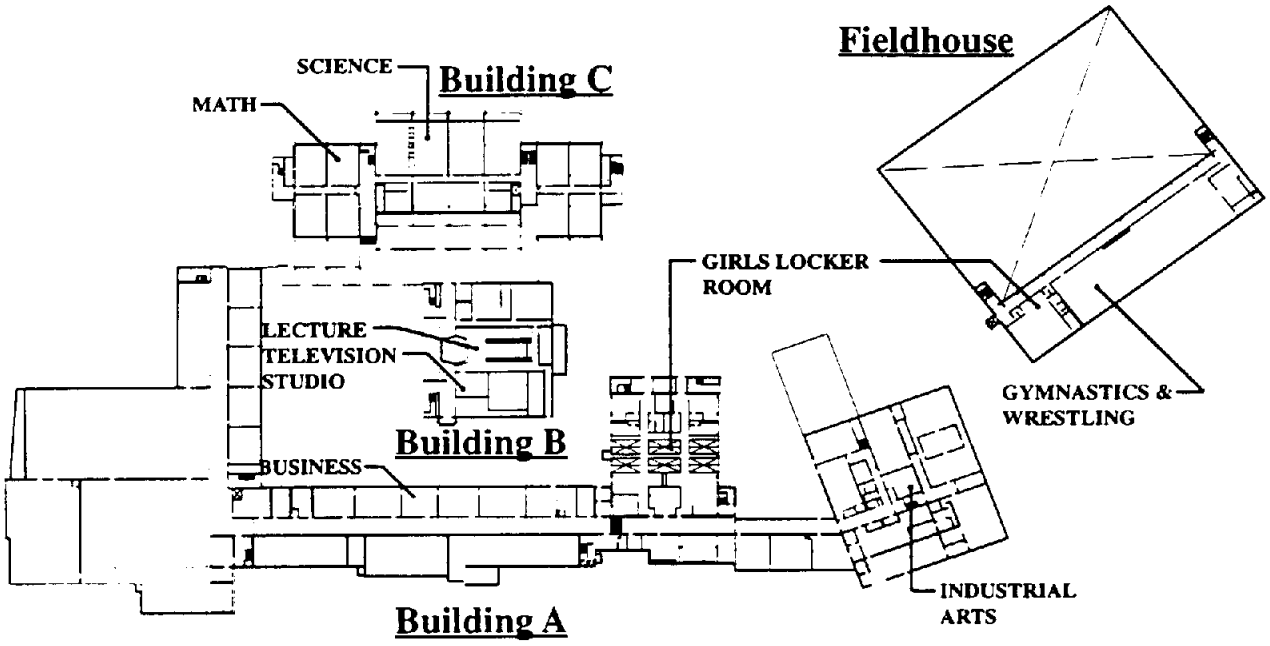

Existing Ground Floor Plan

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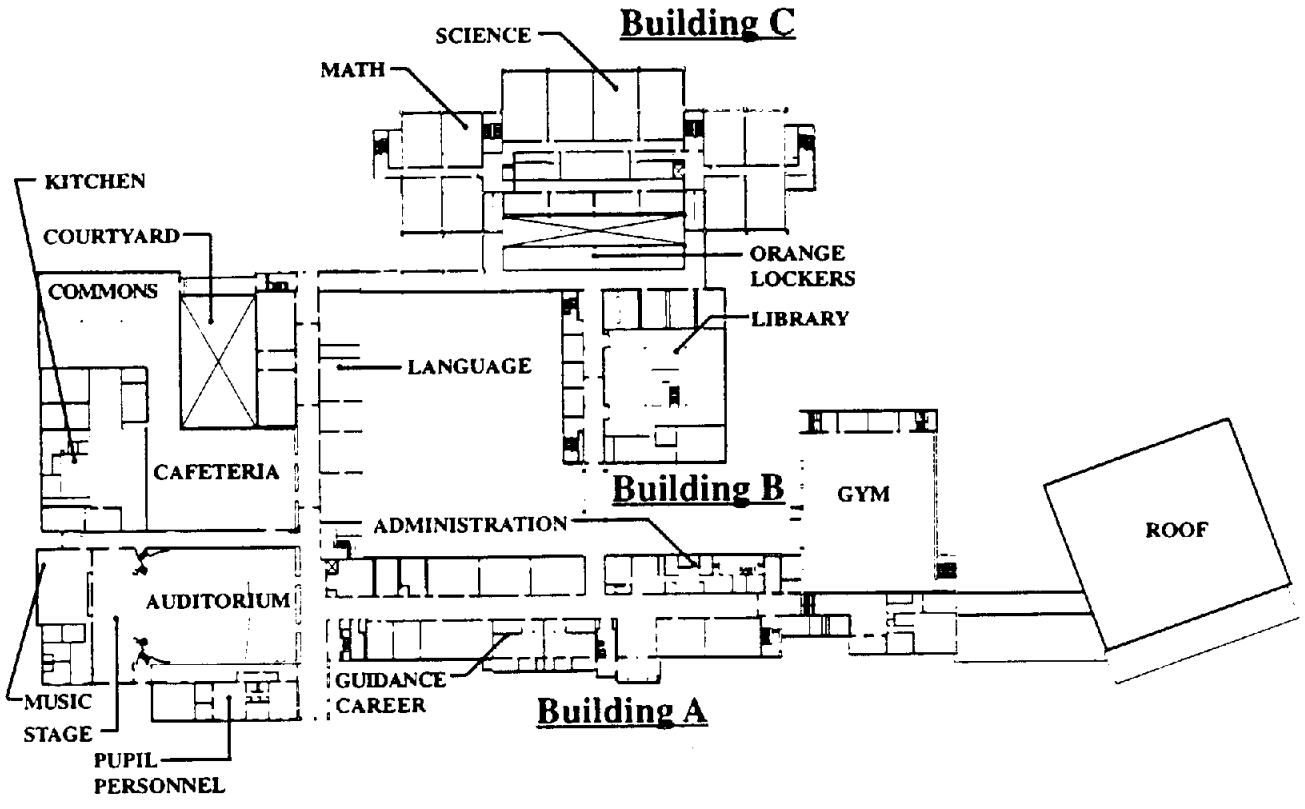

Existing First Floor Plan

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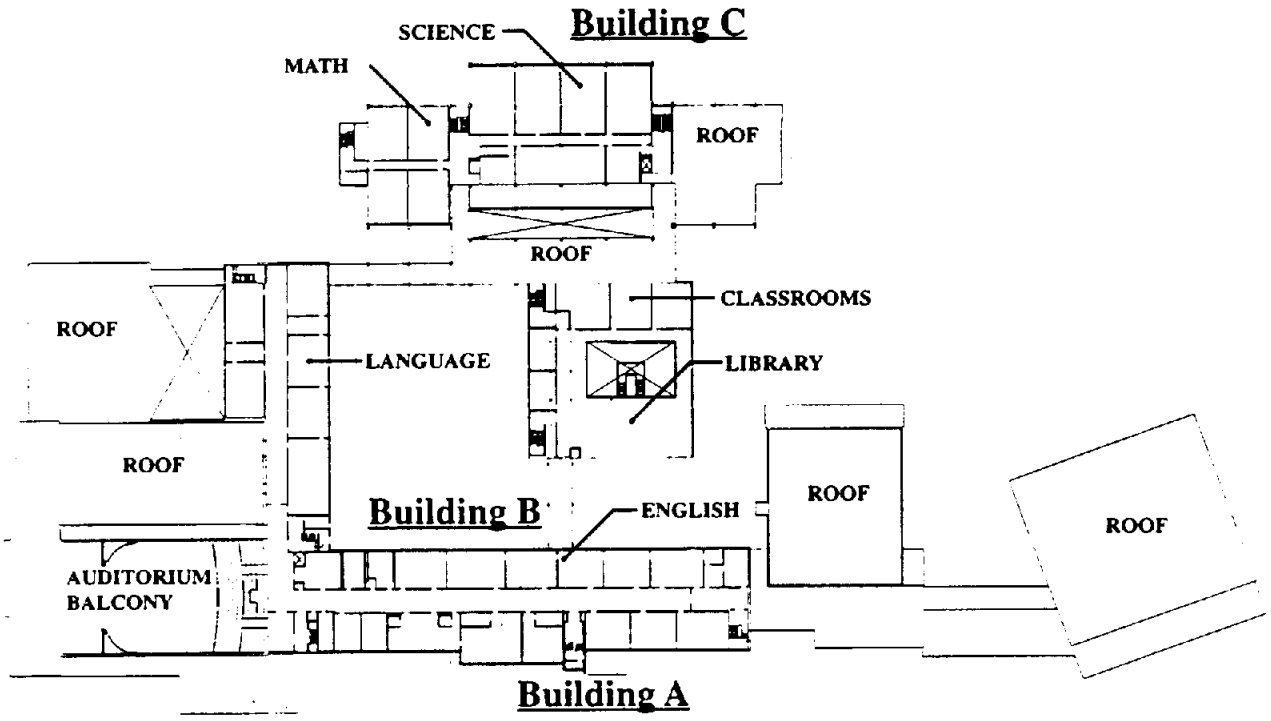

Existing Second Floor Plan

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Mechanical Systems Report

On March 27th Representatives of Shooshanian Engineering visited the High School and spent four hours walking through the facility with Mike Lombardo and a member of his staff. Given the age of the systems and the difficulties of finding replacement parts (specifically the original portion of the complex) the systems have been well maintained. We have attempted to break down the issues into short and long term issues.

Short term issues are those which the School department could undertake outside of a major renovation.

Long term issues are those which would be better addressed as part of a larger project.

The following is a list of those short and log term issues we have identified thus far:

Heating Ventilation & Air Conditioning

Short term Issues:

Replace all the steam traps on the steam system in the1954 building.
Check and replace as needed all control valves (both steam & hot water) at all Unit Ventilators, check thermostats, calibrate and replace as required.
Replace central HVAC controller with new unit. The existing unit is original and cannot be upgraded.
Check, adjust, and repair existing Air Compressors, Air Dryers, and pressure controls serving the pneumatic control system.
Inspect pneumatic tubing for leaks. Repair and clean tubing as required.
Check the operation of all sensors and controllers, relays, switches and actuators; calibrate, repair and replace as required.
Inspect, clean, repair/replace all existing Unit Ventilators (specifically outside air dampers, filters, motors, and fans to insure maximum air exchange).
Inspect and service ventilation system, including thermostats, in the existing science building.
Remove underground fuel oil storage tanks and replace with code-compliant double wall tanks with monitors. This is required by the State on or before December 22, 1998.
Repair existing hot water pumps (re-pack glands and seals).

Long Term Issues:

Replace all unit ventilators.
Provide stand-alone cooling system for the Auditorium.
Provide stand-alone cooling system for the Library and Lecture Hall.
Provide stand-alone cooling system for the Administrative Offices.
Provide stand-alone cooling system for the Computer Areas located on the Basement level of the 1954 building.
Investigate providing cooling for the Science/ Mathematics wing.

Electrical Systems

Short Term Issues:

Existing Main Fire Alarm Control Panel is located in the Basement in the same room as and across from the Unit Substation. A fault in the substation would compromise the Fire Alarm System for the entire school. The Main Fire Alarm Panel should be relocated.
The existing Generator in the boiler room adjacent to the Unit Substation is non-functional and should be removed. The existing hood over the Substation should be ventilated.

Long Term Issues:

The quantiy of electrical receptacles throughout the building is inadequate and should be increased to better facilitate today's educational standards.
Unit Substation and generator adjacent to the 1970 Boiler Room have working clearance and personnel escape restrictions. Both rooms should be expanded to accommodate second means of egress from both spaces as well as reasonable working clearances around the equipment.
The existing fire alarm system does not comply with ADA requirements and should be upgraded or replaced. Power distribution to computer rooms should be provided with dedicated transformers and distribution panels.
The existing "Dukane" clock/speaker system needs upgrading and maintenance.
Corridor lighting needs improvements. We recommend replacing the lighting as part of any renovation project.

Plumbing Systems

Short Term Issues:

The plumbing piping appears to be in good condition, however, all fixtures should be inspected with concern for water conservation.
The Science Building Acid Waste System requires cleaning and inspection of pipe joints.
Install new water saving fixtures (toilets, urinals, faucets).

Long Term Issues:

Install dedicated domestic gas-fired water heaters rather than generating hot water via the boilers.
Investigate using the steam condensate for pre-heating the domestic hot water.
The quantity and type of fixtures may need do to to be revised due to changes in the building code.

Fire Protection

The Town has adopted article 26G of the State Fire Protection Regulations. This requires that any renovation and/or modification in excess of 7500 square feet, a system of automatic sprinklers is required. We would expect that the Fire Department will require the installation of sprinklers throughout the building.

Furniture & Equipment

This report outlines a preliminary Furniture and Equipment budget for proposed additions and renovations to the Reading Memorial High School. This preliminary budget report is based on the revised educational program presented on August 15, 1996. This budget has been prepared without the benefit of specific Owner input relative to program curriculum requirements, and without established evaluation criteria relative to the re-use of existing furnishings and equipment.

In preparing this report, certain assumptions have been made regarding the continued use and/or replacement of existing furnishings and equipment by programmed space. Allowances have been established under certain categories, such as for the Industrial Technical Education Programs without the knowledge of the specific needs of the program and the condition of the existing equipment, and with the understanding that all existing programs will continue to be offered.

Section #	Furniture and Equipment	Cost Estimate
11400	Food Service Equipment to upgrade existing full-service kitchen	$55,000
11600	Fixed Casework & Equipment to provide casework and related equipment throughout the building. This figure assumes all new laboratory facilities in the Science areas to accommodate accessibility requirements and the use of computers	$1,016,000
11484	Basketball Backstops to provide 6 fold-up backstops	$18,000
12700	Gymnasium Bleachers - folding, seating for 600	$48,000
11486	Gymnasium Curtain - 1 fold-up divider	$8,000
11062	Stage Curtains and Rigging - to refurbish existing	$55,000
12710	Auditorium Seating - to replace 1200 seats	$210,000
101	Misc. Classroom Furniture & Equipment	$320,600
102	Office/Teacher Furniture - throughout school	$195,800
103	Library/Conference Furniture - to provide new furniture	$127,700
104	Metal Storage Shelving - industrial style, in all storage areas	$40,000
105	Cafeteria Furniture - to replace all furniture	$48,000

Section #	Furniture and Equipment	Cost Estimate
106	Wired Language Lab System - to provide new system	$102,000
107	Industrial Technical Education Shop Equipment - provide technical education module lab. - allowance to upgrade and supplement existing equipment, and to provide one Technical Module Lab	$400,000
108	Gymnasium/fitness Equipment - allowance to upgrade and supplement existing equipment	$110,000
109	Business Machines - copiers, typewriters, fax machines, calculators, etc. for admininstrators and teachers	$102,000
110	Custodial & Grounds Equipment - allowance to upgrade and supplement existing equipment	$150,000
111	Audio-Visual Equipment - allowance to upgrade and supplement existing equipment	$137,000
112	Television Equipment - allowance to provide wall-mounted 31" television monitor/receivers in 118 locations	$123,900
113	Health Equipment - for the Health Suite and Trainer's Room equipment	$22,000
114	Misc. Teaching Aids - for programmed department areas not covered elsewhere in this budget	$65,000
115	Music Department Equipment - allowance to upgrade and supplement existing equipment	$75,000
116	Art Department Equipment - allowance to upgrade and supplement existing equipment	$64,000
117	Science Department Equipment - 2 new labs, upgrade existing laboratories	$235,000
118	Industrial Technology Shop Equipment (Hand Tools) - allowance to upgrade and supplement existing equipment	$12,000
119	Kitchen Smallwares - allowance to upgrade and supplement existing equipment	$5,000

Section #	Furniture and Equipment	Cost Estimate
120	Computer Equipment - to provide computers printers for all teaching and administrative facilities (582 stations)	$1,164,000
121	Library Books - 10,000 volumes and/or software	$250,000
122	Library Book Security System - new book security system	$18,000
Total of all above Furniture and Equipment		$5,177,000

Although the value of the existing equipment may be asessed at $400,000 to $500,000, there are several years of use of such equipment before the renovation project is complete. Please note that this budget does not include moneys for central communication systems, television distribution sytems computer networking systems, markerboards, tackboards or lockers.

Options

1. Do Nothing, or more accurately, plan to do nothing.

This option requires the least commitment to spend money up front, although it may not be the least expensive. Over the next ten years, Reading Memorial High School will be facing the need to repair or replace each of the existing building systems as each reaches the end of its useful life. The oldest sections of the school were built in the early 1950's, over 40 years ago. The mechanical engineers' report lists repairs and replacements which will be required both short and long term, to maintain the school and bring it up to today's standards. In addition, air conditioning will be needed in certain areas to extend those spaces to year-round use, or to handle the increased heat generated by concentrations of computer equipment.

Parents and educators are urging schools to teach using computer technology, to catch up to the "real world." To accommodate more computers, the school must upgrade power systems, install more outlets and circuits, replace lighting with glare-free fixtures, and install computer networks reaching to every teaching space.

Some of this work will uncover hazardous materials and handicap accessibility shortfalls, requiring asbestos abatement and accessibility upgrades. Hazardous materials costs are particularly difficult to predict before doing the actual engineering and design for renovations, so an allowance is being carried in the estimate.

2. Phased Maintenance.

Option 2 resembles Option 1 in its scope of work. It differs in that the anticipated maintenance and replacement work is undertaken on a planned, systematic schedule.

The advantages are many: 1) We believe there is a well-defined scope of work that needs to be undertaken, which can be accurately identified and priced. 2) This allows more careful scheduling within the school year. 3) This allows a long-range view of the scope to assure competitive bidding in place of costly piecemeal "emergency" repairs. 4) This allows the possibility of "piggy-backing" other desirable work, made convenient by the maintenance construction, e.g., adding computer network wiring when the electrical system is replaced.

At its most austere, we believe that this option may be less expensive than Option 1, because everything that is on the planned maintenance schedule will most likely fail on its own and need emergency replacement under Option 1.

As long as the estimated price of the work is not above the minimum set by the State for public bidding, it may be performed by in-house maintenance or privately contracted workers. Construction cost also determines whether handicap accessibility will need to be upgraded. The current accessibility code states that any renovation costing 30% or more of the full replacement cost of the building must comply fully with its mandates.

3. Full Building Renovation

This option combines programmatic and physical plant renovations in a comprehensive building overhaul. This would bring every component of the school up to current academic and building code standards. Because programmatic changes such as classroom enlargement and curriculum redesign are included in this option, 66% of the total cost of construction would be eligible for reimbursement through the State School Building Assistance program.

This Feasibility Study outlines the scope and implications of such an option, including preliminary cost estimates.

Scheme 1

This scheme illustrates the scope of the third option, full building renovation. Using the building and site reports and the educational specification, this schematic design improves circulation and hanicapped access throughout the school, creates a more efficient floor plan, and meets current educational standards. Specifically, the following changes are proposed:

1) Circulation/Access:

-A new link is added between Building A and Building C relieving the Orange Locker area of congestion.

-The connector between the Commons and the Building A lockers has been replaced.

-A new stair has been added at this intersection to serve Building A and serve as an exit.

-An elevator has been added to Building B to serve the IRC and Lecture Hall.

-The Orange Lockers have been elimi nated to alleviate congestion and lack of supervision. In their place is a student store and gallery.

2) More efficient floor plan:

-The Building C layout has been rede signed to eliminate some excess teacher planning areas and add classrooms.

-The classrooms on the second floor of Building B have been enlarged to current standards to encourage utilization and increase supervision of the IRC.

-The administration area has been re-designed to be more welcoming and accesible to visitors. Additionally, the offices have been re-arranged to provide both access and adequate work space. It was suggested that one or both Vice Principals be located remotely from the Main Office to increase supervision and accessibility. One location for a satellite office may be the student office area adjacent to the current Orance Lockers.

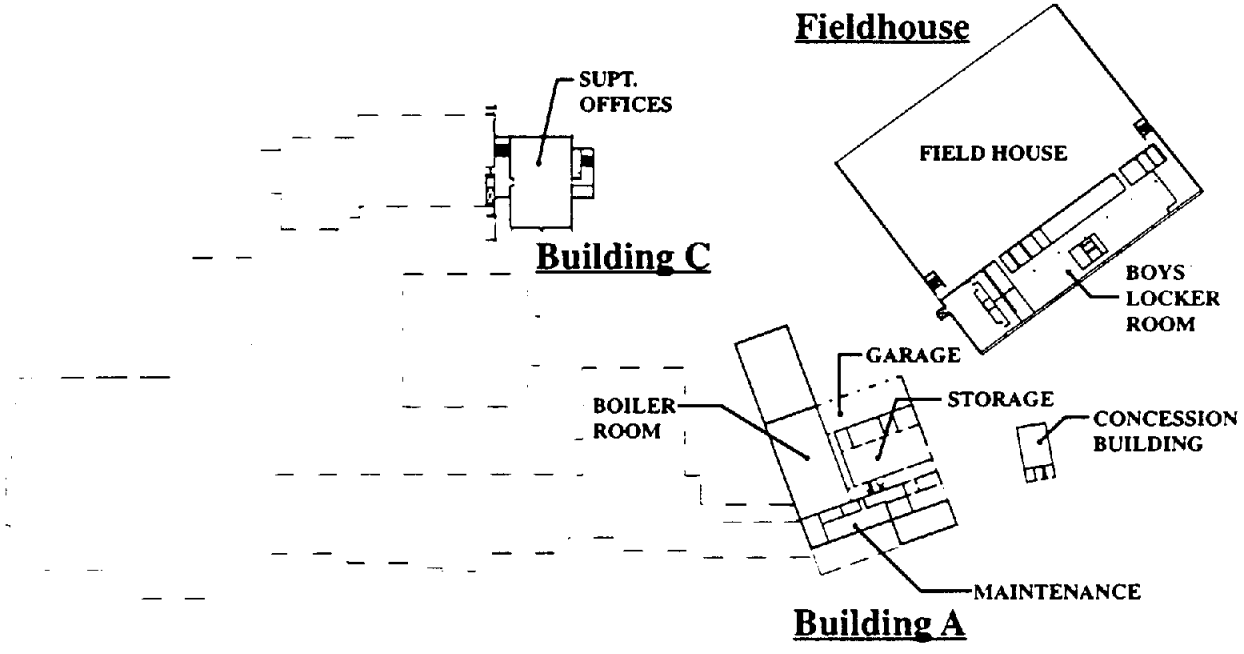
-Classrooms have been identified in departmental clusters, increasing each discipline's identity and eliminating the current faculty office glut.

3) Meeting Current Educational Standards:

-Most classrooms have been enlarged to a standard 850 s.f. This allows space for some computer stations in each room. The State recommended classroom size for secondary schools is 750-850 s.f. Each computer station takes approximately 30 s.f. Additionally, two computer labs have been added - one in Building C first floor and one in Building B second floor. Some classrooms/labs have been enlarged to a standard 1200 or 1600 s.f. See the Education Specification for specific information.

It is recommended in this scheme that the Industrial Arts wing of Building A be taken off-line for educational uses. At the basement level, this means converting the wood shop area to storage.

Also, the large boy's locker room in the Field House should be remodelled to accommodate female athletes, too.z



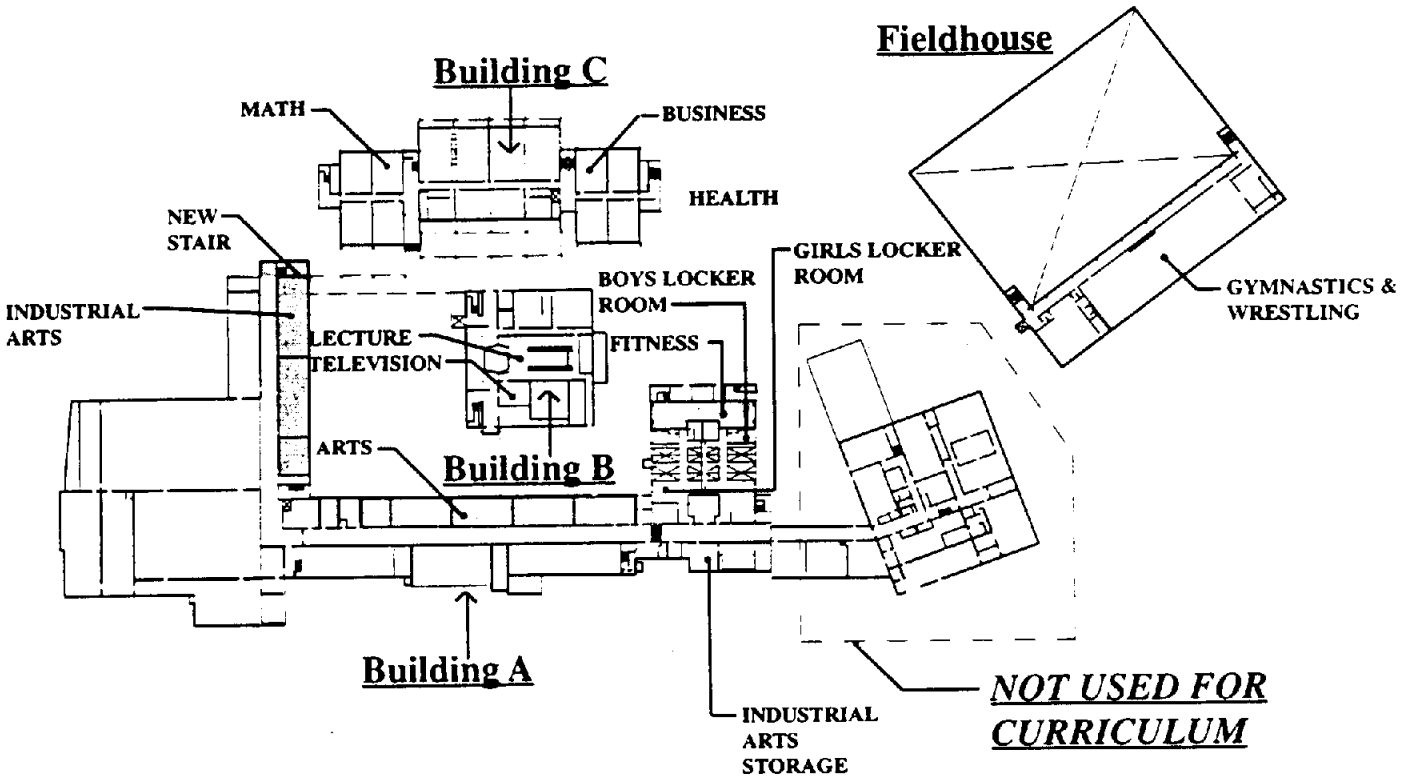
Proposed Basement Floor Plan

No Scale

Architecturally, changes at this level include moving walls in the classroom wings of Building A to accommodate Art studios (at 1200 s.f. each) and Industrial Arts labs (at 1600 s.f. each).

Also, the girl's locker room should be remodelled to accommodate a boy's locker room and a fitness/weight room.

An elevator should be added to Building B, shown here as an ⊠. The academic departments have been organized into distinct areas to establish departmental zones.



Architecturally, some walls have been moved in the shaded areas to provide standard minimum room sizes of 850 s.f. A new music room has been added adjacent to the Auditorium.

Planning and Prep areas in theScience Wing, Building C, have been reworked to provide a computer lab and a science lab.

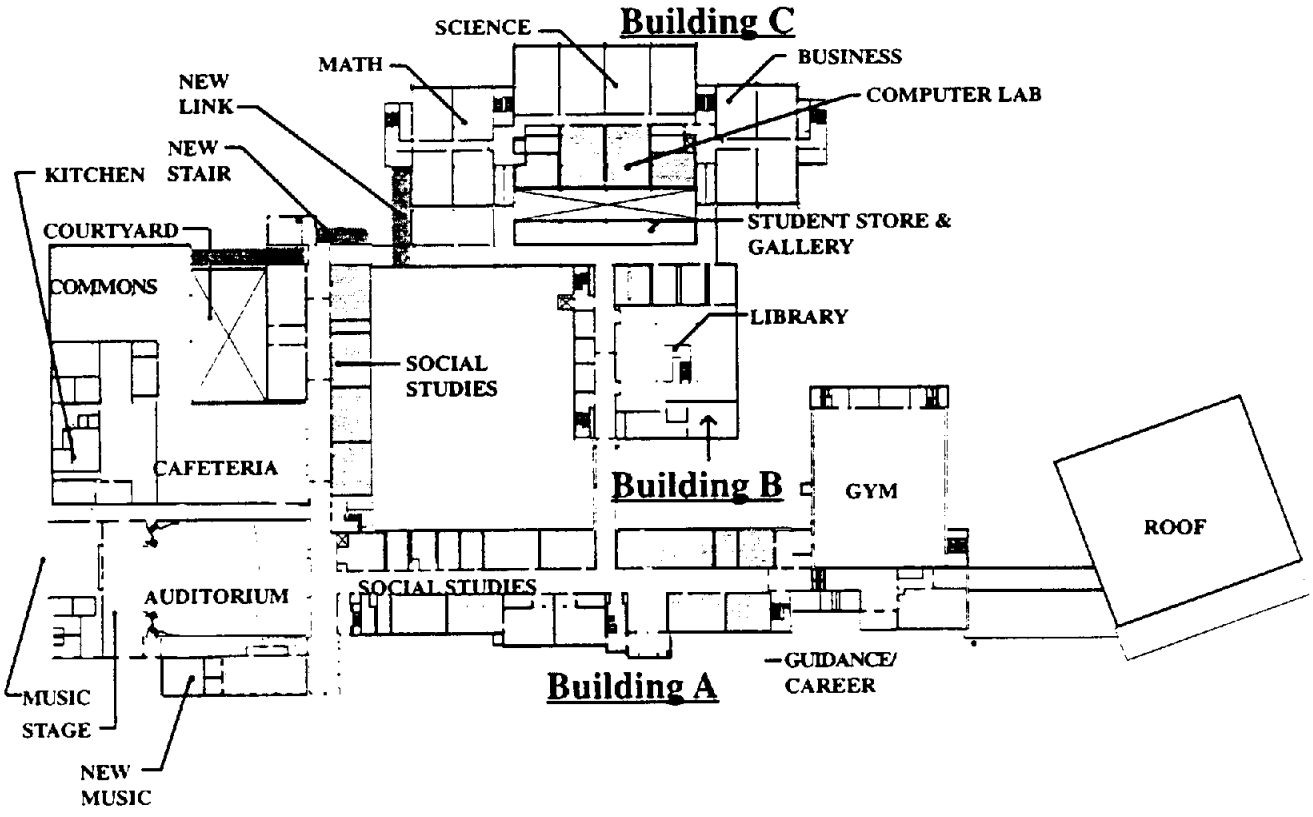
The Orange Lockers have been replaced by a student store and student gallery.

An elevator, shown as ⊠ has been added to Building B.

There is a new stair in the zone between the Orange Lockers and Commons, and a new link to Building C, leading to the Math Department.

The new stair allows the existing link between the Orange Lockers and Commons to be rebuilt at the floor level and the courtyard to be redesigned.

The Administration area has been redesigned to provide a more welcoming, accessible "front door" and to give administrators a better working environment.

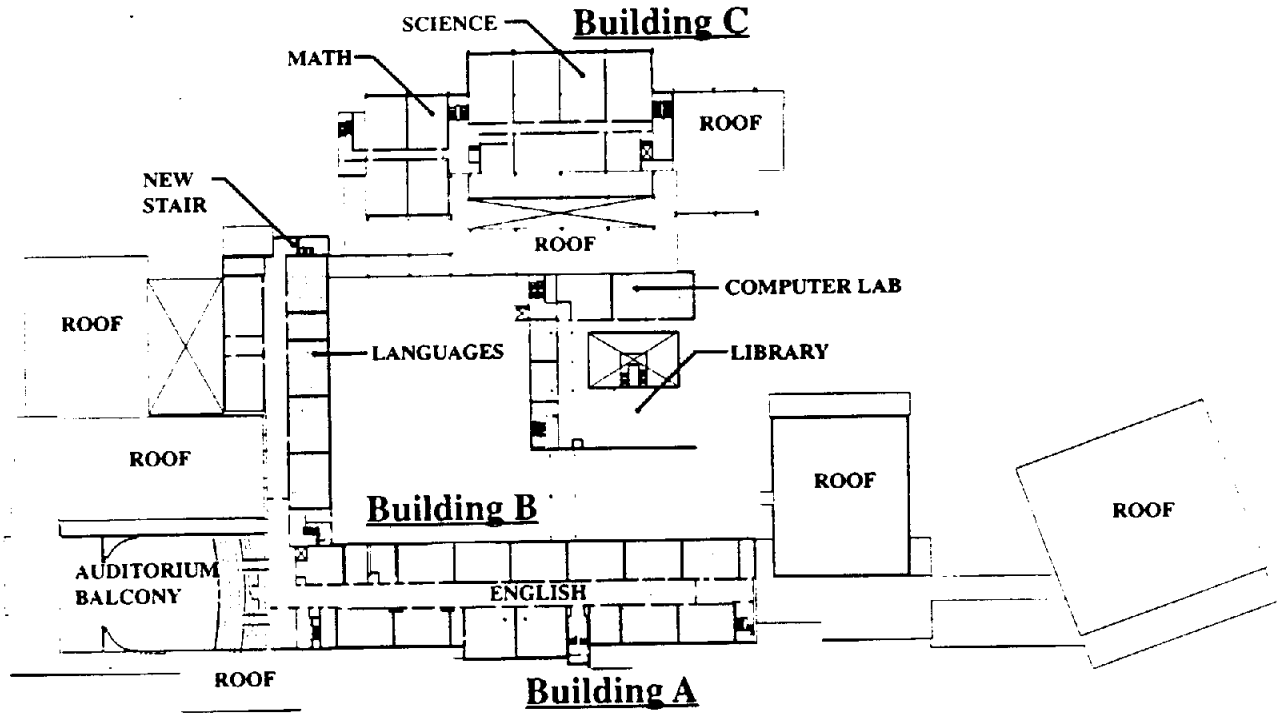


Proposed First Floor Plan

No Scale

Architecturally, walls have been moved in the English and Language wings of Building A to provide standard minimum classrooms of 850 s.f. A computer lab of 1200 s.f. is located in Building B, and an elevator has been added to this wing.

Again, the academic departments have been consolidated to establish identity. This means a reduction from the current number and size of teacher planning/office areas, which were considered extravagent.



Proposed Second Floor Plan

No Scale

Recommendations

As discussed in the **Options** section, there are several approaches which can be adopted to address repair and renovation of the High School. **Scheme 1** illustrates Option 3, "Full Building Renovation." The **Menu of Options** on the next page lists the project costs associated with this option. Additionally, these costs have been categorized as "Must Do", "Should Do", and "Optional" so that the costs associated with Options 1 and 2 can also be illustrated.

The following is a brief description of some of the line items on the next page.

Life Safety
These items are discussed in the Mechanical, Fire Protection, Electrical and Architectural reports. If not noted for a specific building, it is assumed that the work is slated for the entire school. "Replace corridor lighting" includes improving the lighting levels, perhaps with additional fixtures.

Accessibility
These items are mentioned throughout the Architectural Report. Ramps involve existing ramps that are not at the correct slope of 1:12. Many corridor doors do not measure 32" when open to 90 degrees, which is the minimum for ADA. Hardware refers mostly to adding lever door handles. Slip-resistant flooring is installed at ramps. Bathroom fixtures include toilets, sinks and accessories.

Aging Systems/Comfort/Technology
Heating & ventilating refers to replacement. A plumbing upgrade involves all new fixtures. "Upgrade remaining lighting" refers to classrooms and other academic and administrative areaas. This means improving lighting levels as well as energy efficient fixtures.

"Renovate finishes" includes plaster, paint, casework finishes, ceilings and other acoustic treatment and floor coverings.

See the Architectural Report for a discussion of Earthquake Standards.

Outdated Program/Space Needs
The scope of the classroom remodelling is illustrated in the Scheme 1 floor plans.

Menu of Options with Costs

	PROJECT COST	ASBESTOS/LEAD	PRIORITY
LIFE SAFETY			
Sprinkle entire building	$952,000		Must do
Install new fire alarm	493,000		Must do
Replace corridor lighting, replace ballasts	250,000	20,000	Must do
Repair concrete columns on Bldg. C and bridges	100,000		Must do
	$1,815,000		
ACCESSIBILITY			
Ramps			Must do
Door width			Must do
Hardware			Must do
Install slip-resistant flooring			Must do
Bathroom fixtures			Must do
	$500,000	(Allowance)	
AGING SYSTEMS/COMFORT/TECHNOLOGY			
Heating and ventilation, replace pipe insulation	$1,398,000	$138,000	Must do
Upgrade electrical	1,190,000		Must do
Replace windows & remove lead paint	689,000	86,000	Must do
Upgrade plumbing	1,398,000		Must do
Install computer network & video network	1,568,000		Must do
Furniture and Equipment - Computers	1,164,000		Must do
	$7,631,000		
Subtotal, work that must be done	***$9,946,000***		
Replace telephone system	$319,000		Should do
Air conditioning to main office, library, auditorium, lecture hall, computer areas	199,000		Should do
Upgrade remaining lighting, replace ballasts	737,000	58,000	Should do
Renovate finishes & remove asbestos & lead paint	5,800,000	271,000	Should do
Furniture and Equipment (See next page)	1,122,000		Should do
Upgrade bldg. structure to meet earthquake standards	3,000,000	(Allowance)	Should do
	$11,506,000		
OUTDATED PROGRAM/SPACE NEEDS			
Remodel to increase classroom size, increase efficiency and remove asbestos & lead paint	$1,385,000	$68,000	Should do
Build addition(s) and Band Room	744,000		Should do
Improve parking	145,000		Should do
Add connector to Bldg. C	120,000		Should do
Furniture and Equipment (see next page)	930,000		Should do
	$3,342,000		
Subtotal , work that should be done	***$14,898,000***		
TOTAL RECOMMENDED WORK	**$24,334,000**		
OTHER			
Site improvements	$200,000		Optional
Renovate athletic fields	375,000		Optional
Replace lockers	84,000		Optional
Furniture and Equipment (see next page)	1,960,000		Optional
Subtotal, work that is optional	***$2,619,000***		
TOTAL ALL WORK	**$27,463,000**		
Contingency @ 10%	**$2,746,000**		
PRELIMINARY PROJECT COST ESTIMATE	**$30,209,000**		

Furniture and Equipment Cost Estimate

Menu of Priorities

Must Do:	
Computer Equipment - 582 stations	**1,164,000**
Should do: Aging Systems/Comfort/Technology	
Gymnasium Bleachers, 600 seats - Girl's Gym	48,000
Auditorium Seating, 1200 seats	210,000
Wired Language Lab System	102,000
Industrial Technology Educational Modular Lab	150,000
Industrial Technology Education, equipment updgrades	250,000
Business Machines, Administrative and Staff	102,000
Audio-Visual Equipment	137,000
TV Equipment - 118 locations	123,000
	1,122,000
Should do: Outdated Program/Space Needs	
Fixed Casework & Equipment @ 25% for Science Labs	254,000
Health Department Equipment	22,000
Music Department Equipment	75,000
Art Department Equipment	64,000
Science Department Equipment	235,000
Industrial Arts Hand Tools	12,000
Library Books and Software	250,000
Library Security System Update	18,000
	930,000
Options	
Food Service Equipment	55,000
Stage Curtains and Rigging	55,000
Basketball Backstops	18,000
Gymnasium Curtain, Girl's Gym	8,000
Gym Fitness Equipment	110,000
Miscellaneous Teaching Aids	65,000
Fixed Casework & Equip. for Gen. Classrooms @ 75%	762,000
Miscellaneous Classroom Furniture	320,600
Office/Teacher's Furniture	195,800
Library/Conference Furniture	127,700
Metal Storage Shelving	40,000
Cafeteria Furniture	48,000
Custodial & Grounds Equipment	150,000
Kitchen Smallwares	5,000
	1,960,100
Total, Furniture and Equipment	**5,176,000**

Although the value of the existing equipment may be assessed at $400,000 to $500,000, there are several years of use of such equipment before the renovation project is complete. Please note that this budget does not include monies for central communication systems, television distribution systems, computer networking systems, chalkboards, markerboards, tackboards & lockers.

Project Cost

The basis for this cost estimate is the architects and engineers' field observations and review of the available construction documents. No further investigative, testing or evaluations were completed at this time. Therefore this list should not be interpreted as an exhaustive one. Further detail explorations would typically be a part of design services. We have given a brief explanation of the condition of the High School, and a summary sheet outlining the cost totals.

Items from the Existing Conditions Analysis were taken individually, quantities were measured from the available contract documents and unit prices were applied to render a line item total. Unit prices are derived primarily from DRA's extensive data base of previously bid school projects and/or from direct conversations with qualified subcontractors. Unit prices include all labor, materials, removal of existing and subcontractor's overhead and profit. DRA has extensive experience in estimating schools and our data base is constantly updated and revised according to market conditions, geography and material prices. In some cases where the scope of work cannot be adequately defined we have assigned a lump sum "allowance" which would be adequate for planning purposes.

All individual line items are added together resulting in a subtotal. A design and pricing contingency of 10%, and the general conditions, overhead and profit of 15% are then added resulting in an estimate of the construction cost (hard cost). To this, the project soft costs are carried at 30% which include design fees and other costs such as furniture and moveable equipment, geotechnical investigation, topographical survey, field testing, advertising, printing, Clerk-of-the-Work and project contingency.

New construction and/or additional project costs are calculated based on the FY 1996 SBA Grant Cost Standards. These Standards suggest that the project cost may be computed at not more than the following amounts per square foot for new construction begun between July 1, 1996 and June 30, 1997.

Elementary School	$143.00/sf
Middle / Junior High	$152.00/sf
High School	$161.00/sf
Vocational School	$173.00/sf

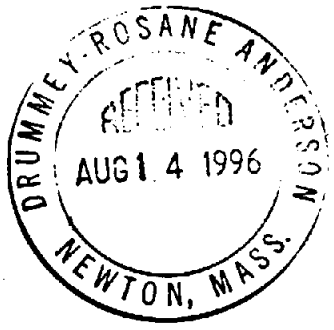
Renovation projects may be evaluated by the SBAB on an individual basis. The maximum allowable renovation costs are usually computed at approximately 50% of the above costs. The square foot costs for both new construction and renovation include the cost of the general building contract, fees, all equipment, allowable site preparation, site improvement, insurance, contingency amount, and miscellaneous costs.

Note that the project costs are prepared in September 1996 dollars. It does not include inflation for the construction cost increases that may occur after 1996 or the items typically associated with the owner's project expenditure such as bond cost and/or interest cost or land acquisition. We have also assumed that the projects would be competitively bid in accordance with MGL Ch. 149 and other Massachusetts statutes pertaining to the construction industry.

Appendix

Hazardous Materials Report

Diversified Environmental Corp.



August 9, 1996

Drummey Rosane Anderson, Inc.
141 Herrick Road
P.O. Box 299
Newton Centre, MA 02159

Attention: Paul Moore, Design Architect

Reference: Reading High School - Lead Determination Report
Diversified Environmental Corporation, Project #96-25.01

Dear Mr. Moore:

This report presents the results of the Lead Determination performed at the Reading High School on July 30, 1996. Lead testing was performed by Massachusetts Licensed Master Lead Inspector, Mel Blackman (M#1377). Diversified was requested to test various surfaces throughout the school for lead content.

Under Massachusetts regulations, a dangerous level of lead when present in paint, plaster or other accessible substance in a residential dwelling is defined to be more than 1.2 milligrams lead per square centimeter of surface as measured on site by a mobile x-ray fluorescence analyzer or comparable equipment.

Lead paint concentrations were analyzed using a RMD x-ray fluorescence analyzer. The RMD measures the amount of lead within a given area of a painted surface using the principle of x-ray fluorescence (XRF). All surfaces tested and their associated results are provided in the attached Lead Paint Determination Report.

Based on the testing results, lead paint was found throughout the building on such surfaces as windows & doors as well as associated casings & trim. Other materials such as ceremic tile and stairwell components also were found to contain lead. Most of the surfaces found to contain elevated levels of lead have a metal substrate and if windows and doors are to be disposed of, contractors can take metal to recycling facility that will remove lead. As lead issue is more related to exposure and disposal/recycling issues, it is not possible to determine a cost for removal and/or compliance. However, you may consider adding 10-15% to the demolition costs and that should address any costs associated with lead paint.

It is required that if a building is to be renovated/demolished, that the contractor follow OSHA requirements concerning exposure to lead paint as well as EPA & DEP requirements for protection of public & environment and disposal.

If you have any questions concerning this report, or if we can be of further assistance, please feel free to contact me.

Sincerely,
DIVERSIFIED ENVIRONMENTAL CORPORATION

Michael Oriola

Michael Oriola
Manager, Technical Services

Enclosures

cc: M. Tibert, Diversified Environmental Corp.

ABBREVIATION KEY

Substrate
M- metal
B- brick
CB-cinder block
SR-sheet rock
P- plaster
C- concrete
W- wood
CT- ceramic tile
S- steel

Color
T-Tan
B- Blue
G- Green
Y- Yellow
BL- Black
BR- Brown
BE- Beige
P- Pink
O- Orange
Gy- Grey
TU/TQ- Turquoise
W- White

BUILDING/ROOM		SURFACE	SUBSTRATE	COLOR	READING
A	122	Door casing & jamb	M	T	0.4
A	122	Wall	CB	T	0.0
A	123	Radiator	M	M	-0.3
A	123	Wall	CB	B	0.0
A	Cor	Wall	B	B	0.1
A	Cor	door	M	G	0.0
A	Cor	Door casing & jamb	M	G	0.2
A	Cor	Wall	CB	Y	0.0
A	120	Door casing & jamb	M	B	0.1
A	116	Window	M	B	0.2
A	Cor	Wall	B	Y	0.4
A	M-3	Door casing & jamb	M	T	0.3
A	Cor	Rail	M	T	0.4
A	C-1	Door casing & jamb	M	G	0.1
A	110	Window trim	M	T	0.3
A	109	Wall trim	W	T	0.0
A	Cor	Lockers	M	T	0.3
A	Cor	Door	M	G	0.0
A	stairs #2	Baseboard	M	T	4.2
A	stairs #2	Window	M	T	0.0
A	stairs #2	Newell Posts	M	T	3.8
A	stairs #2	Baluster	M	T	4.0
A	stairs #2	Stinger	M	T	3.9
A	stairs #2	Baluster cover	M	T	1.8
A	202	Window	M	T	0.0
A	stairs #1	Baluster	M	T	5.0
A	stairs #1	Stringer	M	T	4.6
A	Cafe dining	Door casing & jamb	M	Y	0.1
A	Cafe	Lally columns	M	T	0.1
A	Cor	Door	M	Bk	0.5
A	music	Radiator	M	T	0.4
A	music	Window sill	W	T	0.0
A	AUD	Walls	P	T	0.0
A	AUD	Walls	P	Be	0.2
A	210	Door casing & jamb	M	T	0.5
A	210	Wall trim	W	T	0.0
A	210	Window	M	T	0.1
A	Lobby	Walls	C	P	0.0
A	Lobby	Tiles	Cer	T	5.8
A	Hall	Tiles	Cer	T	6.0

B	Hall	Window	M	Bl	0.2
B	Hall	Tiles	Cer	W	0.1
B	Hall	Window bars	M	Bl	0.0
B	Hall	Door C&J	M	Br	0.2
B	Hall	Door	M	Br	0.1
B	Bath	Bathroom stall div.	M	B	0.3
B	Stair #2	Baseboard	M	Br	1.4
B	Stair #2	Stringer	M	Br	0.8
B	Stair #2	Riser	M	Br	0.0
B	Locker	Lockers	M	O	0.3
C	Hall	Door	M	Br	0.2
C	Hall	Door C&J	M	Br	0.1
C	Hall	Door C&J elevator	M	G	0.3
C	Hall	Door elevator	M	G	0.6
C	3rd fl.	Door C&J	M	Br	0.2
C	3rd fl.	Tile	C	W	0.1
C	307	Radiator	M	T	0.5
C	307	Window	M	Bl	0.2
C	307	Window trim	M	Bl	0.0
C	307	Walls	CB	Bl	-0.1
C	307	Walls	SR	Y	0.0
C	Ground fl.	Door	M	Tu	0.2
C	1st fl.	Rails	M	T	0.7
B	Library	Support column	S	Br	0.3
B	Library	Walls	CB	O	0.3
B	Library	Walls	CB	Br	0.0
B	Library	Walls	CB	T	0.1
A	2FL hall	Door C&J	M	B	0.3
A	2FL hall	Door	M	B	0.6
A	2FL hall	Wall	CT	T	5.1
A	320	Window trim	M	Br	0.3
A	320	Walls	P	P	0.0
A	320	Ext.window	M	T	2.0
A	Hall	Radiator	M	T	0.0
A	309	Radiator	M	T	0.1
A	309	Radiator	M	T	0.1
A	309	Support columns	P	T	0.0
A	309	Ext. window	M	T	1.7
A	309	Window	M	T	1.7
A	309	Door C&J	M	T	0.3

B	stair #2	Baseboard	M	Br	0.8
B	REAP	Walls	CB	G	0.0
B	REAP	Walls	CB	W	0.2
B	REAP	Walls	CB	P	0.0
B	REAP	Door C&J	M	B	0.4
B	REAP	Door	M	B	0.5
B	Boiler rm	Door C&J	M	Bl	0.3
B	Boiler rm	Door	M	Gy	0.1
B	Boiler rm	Walls	B	W	0.1
B	Boiler rm	Railings	M	Gy	0.1
FA		Support columns	M	Gy	0.4
FA		Door C&J	M	Gy	0.3
FA		Door	M	Gy	0.5
FA		Walls	B	Gy	0.2
FA		Walls	CB	Gy	0.0
FH		Door C&J	M	Gy	0.7
FH		Door	M	Gy	-0.2
FH		Walls	CB	T	0.1
FH		Walls	CB	W	0.0
FH		Radiator	M	Gy	0.3
EXTERIOR					
C		Rail	M	Bl	0.0
C		Door	M	B	0.2
C		Door C&J	M	Bl	0.1
C		Lally Col.	M	B	0.6
C		Overhead door	M	B	-0.2
A		Door trim	M	T	1.7
A		Side window	M	T	1.4
A		Window trim	M	T	1.6
A		Door C&J	W	T	3.4
A		Front Door C&J	M	Br	1.5
A		Window sills	M	T	1.6
A		Lally Col.	M	T	1.1
A		Door	M	Tq	0.6
A		Door C&J	M	Tq	0.3
A	B side	Windows	M	Bl	0.0
A	B side	Window trim	W	Bl	-0.1
A	C side	Windows	M	Gy	0.0
A	C side	Window trim	M	Gy	0.1
A	C side	Door C&J	M	Gy	0.1
A	C side	Door	M	Gy	0.0
A	C side	Windows	M	Bl	0.2

ADM office	Window trim	M	Bl	0.5
ADM office	Window	M	BL	0.2
ADM office	Window trim	M	BL	0.0
ADM office	Railings	M	B	0.1
Courtyard	Window	M	T	1.4
Courtyard	Window trim	M	T	1.3
Courtyard	Door C&J	M	Bl	0.1
Courtyard	Door	M	B	0.1
Courtyard	Railings	M	Gy	0.2
FA Bldg	Door C&J	M	B	0.3
FA Bldg	Door	M	B	0.5
FA Bldg	Window	M	Bl	0.3
FA Bldg	Window trim	M	Bl	0.4
Field house	Door	M	B	0.3
Field house	Door C&J	M	Bl	0.5

Diversified Environmental Corp.

August 10, 1996

Drummey, Rosane, Anderson, Inc.
Colby Hall, 141 Herrick Road
Newton Centre, MA 02159-0299

Attn: Mr. Paul Moore, Senior Designer

RE: Reading Memorial High School Renovation and Addition
Record Review and Cost Estimates for Asbestos and PCB Removal

Dear Mr. Moore:

As per our proposal, Diversified has conducted a record review of the AHERA Asbestos Re-inspection, the original AHERA Management Plan was not available, for Reading Memorial High School and an inspection of the facilities to confirm the types of asbestos-containing materials (ACM) present. Through previous sampling and analysis of materials the Re-inspection identified the following distinct ACM:

Pipe Insulation & Associated Fitting Insulation
Boiler Breech Insulation
Breeching Insulation
Tank Insulation
Floor Tiles & Associated Mastic

In order to minimize costs the Management Plan assumes that many other materials also contain asbestos. This is acceptable for the purposes of managing ACM "in place". Diversified agrees with these assumptions for some materials that have a high probability of containing asbestos. However, for renovation/demolition activities, treating materials as ACM that may not actually contain asbestos is expensive. Diversified has identified several different types of floor tiles and associated mastic which should be sampled as separate homogeneous areas to determine which floor tiles contain asbestos.

During our inspection of Reading Memorial High School, Diversified has identified several distinct materials suspected of containing asbestos that are not addressed in the Re-inspection. Samples of these materials should be collected and analyzed for asbestos content as part of the design process. We are, therefore, recommending that samples be collected of the following newly identified suspect materials. Due to limited sampling, these materials could not be sampled. The original AHERA Management Plan may identify these materials and have sampling results.

Glue Dots on 1'x 1' acoustical ceiling tiles
Pipe Fittings in Field House
Roof Drain Fittings in Girls Gym
Interior Window Caulking
Insulation inside of new boiler
Gasket Material inside of door of new boiler
Fire brick inside of new boilers

This report also presents the results of analyses performed on bulk samples which were collected by Michael Oriola on July 30,1996. The sampling included roofing materials and exterior window caulking at Reading Memorial High School. A total of twenty two bulk samples were collected and analyzed. Please see Appendix A for results. The roof flashing along the perimeter expansion joints and vents above the science wing, and exterior window caulking from the science wing and the rear of the fine arts wing were found to contain asbestos. The roofing material above the science wing, roofing material and flashing material above the boiler room, and three exterior window caulking from the existing building and two other exterior window caulkings from the fine arts building were found not to contain asbestos.

The bulk sample results attached were analyzed by Hygeia Environmental, Inc. of Dedham, MA using Polarized Light Microscopy as described in 40 CFR 763. Each bulk sample was analyzed in accordance with U.S. Environmental Protection Agency (EPA) 600/M4-82-020 recommended protocol using polarized light microscopy (PLM).

Hygeia Environmental, Inc. is accredited through the National Voluntary Laboratory Accreditation Program (#2068) and is a Massachusetts certified analytical laboratory (AA000126). Appendix A contains copies of asbestos results.

Diversified also reports that after random inspections, light ballasts throughout Reading Memorial High School contain PCB dielectric fluid. There is an estimated 7,800 ballasts throughout the school. The cost of removal is approximately $10.00/light. The total cost is estimated at $78,000.00. Also, recent regulations now require certain handling and disposal procedures for Non-PCB ballasts.

Based on Diversified's review of asbestos containing material and results of limited sampling an estimate of cost of all ACM is $485,840.00 . A breakdown of the cost estimates for abatement of all identified asbestos containing materials is provided in Appendix B. Also Appendix C contains copy of AHERA Re Inspection findings.

If you have any questions regarding the information provided, please do not hesitate to contact us.

Sincerely,
Diversified Environmental Corp.

Michael Oriola

Michael Oriola
Manager Technical Services

Enclosures

cc: M. Tibert

APPENDIX A
BULK SAMPLE RESULTS

DIVERSIFIED ENVIRONMENTAL CORPORATION

BULK SAMPLE LOG FORM

PROJECT NAME: Reading Memorial High School

PROJECT NUMBER: 96-25.01 | DATE COLLECTED: 7-30-96 | PAGE 1 OF 3

CLIENT: DRA | INSPECTOR: M. Drake

BUILDING	FLOOR	ROOM	DESCRIPTION	FIELD #	LAB #	COMMENTS
High School	Roof	—	Roofing Material over standing seam	073A 01A ✓		
	Roof	—	Roofing Material over standing seam	01B ✓		
	Roof	—	Flashing from expansion joint	02A ✓		
	Roof	—	Flashing from parapet	02B ✓		
	exterior	original Bldg	white window caulking I	03A ✓		
		"	"	03B ✓		
			rubber window caulking I	04A ✓		
			"	04B ✓		

CHAIN OF CUSTODY

DELIVERED BY	DATE	TIME	# SAMPLES	RECEIVED BY	DATE	TIME	# SAMPLES
M Drake	7-31-96	5pm	22	M. C. Xanney	8/1/96	1500	

DIVERSIFIED ENVIRONMENTAL CORPORATION

BULK SAMPLE LOG FORM

PROJECT NAME: Reading Memorial High School

PROJECT NUMBER: 96-25.01 | DATE COLLECTED: 7-30-96 | PAGE 2 OF 3

CLIENT: DRA | INSPECTOR: M. Drake

BUILDING	FLOOR	ROOM	DESCRIPTION	FIELD #	LAB #	COMMENTS
High School	exterior	Original Bldg	gray window caulking I	059		
		"	"	05b		
		Extension Bldg	off white window caulking II	06a		
		"	"	06b		
		"	rubber window caulking II	07c		
		"	"	07b		
		"	gray window caulking II	03c		
		"	"	08b		

CHAIN OF CUSTODY

DELIVERED BY	DATE	TIME	# SAMPLES	RECEIVED BY	DATE	TIME	# SAMPLES
M Drake	7-31-96	5:00 pm	22				

DIVERSIFIED ENVIRONMENTAL CORPORATION

BULK SAMPLE LOG FORM

PROJECT NAME: Reading Memorial High School

PROJECT NUMBER: 96-35.01 | DATE COLLECTED: 7-30-96 | PAGE 3 OF 3

CLIENT: VRA | INSPECTOR: M. Drake

BUILDING	FLOOR	ROOM	DESCRIPTION	FIELD #	LAB #	COMMENTS
High School	Exterior		White window caulking III	0729 096		
↓	↓		"	096		
		Roof	roofing material	10a		
		Roof	flashing, closing, parapet	11a		
		Roof Mech. Bldg.	caulking between bricks	12a		
↓	↓	"	"	12b		

CHAIN OF CUSTODY

DELIVERED BY	DATE	TIME	# SAMPLES	RECIEVED BY	DATE	TIME	# SAMPLES
M Drake	7-31-96	6pm	22				

HEI JOB # 002 A | CLIENT: DIVERSIFIED ENVIRONMENTAL Corp. | ANALYST(S): [signature] | ANALYSIS DATE: 8-8-96

PROJECT # 96-25.01 | PROJECT: READING MEMORIAL HIGH School | LOCATION: READING, MA.

HEI I.D. NUMBER HB-	CLIENT I.D. NUMBER	Gross Visual: Homogeneity	Texture	Color	Stereoscopic %	Optical Properties: Morphology	Extinction	Optical Sign	Birefringence	Color	Pleochroism	Refractive Indices: Oil	Fiber ∥	Fiber ⊥	% Asbestos Fiber Present: Chrysotile	Amosite	Crocidolite	Tremolite Asbestiform ☐ Actinolite ☐	% Non-Asbestos Fiber: Cellulose	Fibrous Glass	Synthetic	Other HAIR	% Non-Fibrous Material: Mineral Filler	Organic Binders	Opaques	Other
42385 A	0729-01A	Y	NF	BK	-							1.550							20	30		5	10	35		
												1.700														
Comments:	2ND SLIDE: NO MM																								Q.C.	
42386 A	0729-01B	Y	NF	BK	-	WP	+	L	CW			1.550	1.554	1.557	<1				30	25			20	25		
												1.700														
Comments:	2ND SLIDE: <1% CHRYSOTILE MM																								Q.C.	
42387 A	0729-02A	Y	NF	BK	-	WP	+	L	CW			1.550	1.558	1.569	10				40				10	40		
												1.700														
Comments:																									Q.C.	
42388 A	0729-02B											1.550														
												1.700														
Comments:	DNM																								Q.C.	
42389 A	0729-03A	Y	F	W/GY	5	WP	+	L	CW			1.550	1.553	1.565	<1				5				25	10	10	
												1.700														
Comments:	2ND SLIDE: <1% CHRYSOTILE MM																								Q.C.	

BULK SAMPLE ANALYSIS SHEET

HEI JOB # 002 A | CLIENT: Diversified Environmental Corp | ANALYST(S): [signature] | ANALYSIS DATE: 8-8-96

PROJECT # 96-25.01 | PROJECT: Reading Memorial High School | LOCATION: Reading, MA.

HEI I.D. NUMBER HB-	CLIENT I.D. NUMBER	Gross Visual: Homogeneity	Texture	Color	Structure %	Optical Properties: Morphology	Extinction	Optical Sign	Birefringence	Color	Pleochroism	Refractive Indices: Oil	Fiber ∥	Fiber ⊥	% Asbestos Fiber Present: Chrysotile	Amosite	Crocidolite	Tremolite Asbestiform / Actinolite Asbestiform	% Non-Asbestos Fiber: Cellulose	Fibrous Glass	Synthetic	Other	% Non-Fibrous Material: Mineral Filler	Organic Binders	Opaques	Other
1 042390 A	0729-038	Y	F	BN/GY	5	WP	+	L	CN			1.550	1.554	1.545	<1				5				65	20	10	
Comments:																										Q.C. X
2 042391 A	0729-04A	Y	NF	BN/BY	—							1.550	1.700	1.700					5				30	65		
Comments:																										Q.C.
3 042392 A	0729-04B	Y	NF	BN/BY	—							1.550	1.700	1.700					5				40	55		
Comments:																										Q.C.
4 042393 A	0729-05A	Y	F	GY	5	WP	+	L	CN			1.550	1.556	1.547	<1				TR				75	20	5	
Comments:	2nd SLIDE: <1% CHRYSOTILE NB																									Q.C. X
5 042394 A	0729-05B	Y	F	GY	5	WP	+	L	CN			1.550	1.555	1.547	<1				5				75	10	10	
Comments:																										Q.C.

BULK SAMPLE ANALYSIS SHEET

HEI JOB #	CLIENT	ANALYST(S)	ANALYSIS DATE
002 A	DIVERSIFIED ENVIRONMENTAL CORP		8-8-96
PROJECT #	**PROJECT**	**LOCATION**	
96-25.01	READING MEMORIAL HIGH SCHOOL	READING, MA.	

HEI I.D. NUMBER HB-	CLIENT I.D. NUMBER	Gross Visual: Homogeneity	Texture	Color	Stereoscopic %	Optical Properties: Morphology	Extinction	Optical Sign	Birefringence	Color	Pleochroism	Refractive Indices: Oil	Fiber ∥	Fiber ⊥	% Asbestos Fiber Present: Chrysotile	Amosite	Crocidolite	Tremolite Anthophyllite Actinolite	% Non-Asbestos Fiber: Cellulose	Fibrous Glass	Synthetic	Other	% Non-Fibrous Matrix: Mineral Filler	Organic Binders	Opaques	Other
1	0729-					W	P	+	L	C	N	1.550	1.553	1.585	3											
042395 A	01A	Y	F	W	S							1.700							2				75	10	10	
												1.624														
Comments:																									Q.C.	
2	0729-											1.550														
042396 A	02A											1.700														
												1.700														
												1.624														
Comments: DNR																									Q.C.	
3	0729-											1.550														
042397 A	03A	Y	NF	GY								1.700							5				35	60		
												1.700														
												1.624														
Comments:																									Q.C.	
4	0729-											1.550														
042398 A	04A	Y	NF	GY								1.700							5				40	55		
												1.700														
												1.624														
Comments:																									Q.C.	
5	0729-					W	P	+	L	C	N	1.550	1.555	1.584	<											
042399 A	05A	Y	F	GY	S							1.700							5				75	10	10	
												1.700														
												1.624														
Comments:																									Q.C.	

BULK SAMPLE ANALYSIS SHEET

HEI JOB #	CLIENT	ANALYST(S)	ANALYSIS DATE
002 A	DIVERSIFIED ENVIRONMENTAL CORP		8-8-96

PROJECT #	PROJECT	LOCATION
96-25-01	REDDING MEMORIAL HIGH SCHOOL	REDDING, MA.

HEI I.D. NUMBER HB-	CLIENT I.D. NUMBER	Gross Visual: Homogeneity	Texture	Color	Stereoscopic %	Optical Properties: Morphology	Extinction	Optical Sign	Birefringence	Color	Pleochroism	Refractive Indices: Oil	Fiber ∥	Fiber ⊥	% Asbestos Fiber Present: Chrysotile	Amosite	Crocidolite	Tremolite Asbestiform / Actinolite Asbestiform	% Non-Asbestos Fiber: Cellulose	Fibrous Glass	Synthetic	Other	% Non-Fibrous Material: Mineral Filler	Organic Binders	Opaques	Other
1	0729-					WP	PL	CN				1.550	1.554	1.546	2											
	042400 A	08	Y	F	W	S													5				70	10	15	
Comments:																									Q.C.	
2	0729-					WP	PL	CN				1.550	1.557	1.569	5											
	042401 A	09A	Y	F	W	S													5				55	30	5	
Comments:																									Q.C.	
3	0729-											1.550														
	042402 A	09B																								
Comments:		DUP																							Q.C.	
4	0729-											1.550														
	042403 A	10A	Y	NF	BK	-													80	TR			10	40		
Comments:																									Q.C.	
5	0729-											1.550														
	042404 A	11A	Y	NF	BK/Y	-													80	20			5	45		
Comments:																									Q.C.	

BULK SAMPLE ANALYSIS SHEET

HEI JOB # 002 A | CLIENT: DIVERSIFIED ENVIRONMENTAL CORP | ANALYST(S): [signature] | ANALYSIS DATE: 8-8-96

PROJECT # 96-25-01 | PROJECT: READING MEMORIAL HIGH SCHOOL | LOCATION: READING, MA.

HEI I.D. NUMBER HB-	CLIENT I.D. NUMBER	Gross Visual: Homogeneity	Texture	Color	Stereoscopic %	Optical Properties: Morphology	Extinction	Optical Sign	Birefringence	Color	Pleochroism	Refractive Indices: Oil	Fiber ∥	Fiber ⊥	% Asbestos Fiber Present: Chrysotile	Amosite	Crocidolite	Tremolite Asbestos / Actinolite Asbestos	% Non-Asbestos Fiber: Cellulose	Fibrous Glass	Synthetic	Other	% Non-Fibrous Material: Mineral Filler	Organic Binders	Opaques	Other
1	0729-											1.550														
042405 A	12A	Y	NF	Brn	-							1.700											40	60		
												1.700														
Comments:																									Q.C.	
2	0729-											1.550														
042406 A	12B	Y	NF	Brn	-							1.700											40	60		
												1.700														
												1.624													Q.C.	
Comments:																										
3												1.550														
A												1.700														
												1.700														
												1.624													Q.C.	
Comments:																										
4												1.550														
A												1.700														
												1.700														
												1.624													Q.C.	
Comments:																										
5												1.550														
A												1.700														
												1.700														
												1.624													Q.C.	
Comments:																										

APPENDIX B
COST ESTIMATES FOR ASBESTOS ABATEMENT

Appendix B

Cost for Recommended Abatement of Asbestos-Containing Materials

Reading High School

August 1996

Location	Description	Amount	Condition	Removal Costs
Sub Ground Floor				
Old Boiler Room	Pipe Insulation	2000 lf	Good	20000.00
	Pipe Insulation	1900 lf	Good	19000.00
	Pipe Insulation	70 lf	Good	700.00
	Boiler Insulation	700 sf	Good	7000.00
	Tank Insulation	200 sf	Good	2000.00
	Breeching Insulation	1200 sf	Good	12000.00
New Boiler Room	Breeching Insulation	50 sf	Good	500.00
Crawlspace To	Pipe Insulation	4500 lf	Damaged	45000.00
Boiler Room	Pipe Insulation	3200 lf	Damaged	32000.00
Crawlspace, Civil	Pipe Insulation	2900 lf	Good	29000.00
Defense Area	Pipe Insulation	900 lf	Damaged	9000.00
	Contaminated Soil	1 in	Throughout	
Maintenance Office	Vinyl Asbestos Floor Tile	25 sf	Good	50.00
Room 48	Pipe Insulation	80 lf	Fair	800.00
Maintenance	Pipe Insulation	65 lf	Fair	650.00
Storage Closet In	Pipe Insulation	180 lf	Fair	1800.00
Room 48	Pipe Insulation	25 lf	Fair	250.00
Back Storage Room	Pipe Insulation	35 lf	Fair	350.00
In Room 48	Pipe Insulation	35 lf	Fair	350.00
Second Storage	Pipe Insulation	100 lf	Fair	1000.00
Closet In Room 48	Pipe Insulation	20 lf	Fair	200.00
Hall Between Wood Shop & Maintenance Area	Vinyl Asbestos Floor Tile	300 sf	Good	600.00
Wood Shop	Transite (duct)	30 sf	Good	240.00
Hall Outside Superintendents Office (formerly focus area)	Vinyl Asbestos Floor Tile	400 sf	Good	800.00

Appendix B

Cost for Recommended Abatement of Asbestos-Containing Materials

Reading High School

August 1996

Location	Description	Amount	Condition	Removal Costs
Ground Floor				
Business Hallway	Vinyl Asbestos Floor Tile	6500 sf	Good	13000.00
Girls Bathroom In Business Hallway	Pipe Insulation	20 lf	Fair	200.00
Closet Between Bathrooms and Next To Room 105	Pipe Insulation	4 lf	Good	40.00
Stairwell Outside	Pipe Insulation	6 lf	Good	60.00
Room 101	Vinyl Asbestos Floor Tile	100 sf	Good	200.00
Room 101	Vinyl Asbestos Floor Tile	500 sf	Good	1000.00
Room 102	Vinyl Asbestos Floor Tile	900 sf	Good	1800.00
Room 103	Vinyl Asbestos Floor Tile	1100 sf	Good	2200.00
Room 104	Vinyl Asbestos Floor Tile	1100 sf	Good	2200.00
Room 105	Pipe Insulation	15 lf	Fair	150.00
	Vinyl Asbestos Floor Tile	700 sf	Good	1400.00
Room 106	Pipe Insulation	15 lf	Good	150.00
	Pipe Insulation	20 lf	Good	200.00
Room 107	Pipe Insulation	12 lf	Good	120.00
	Vinyl Asbestos Floor Tile	700 sf	Good	1400.00
Room 108	Pipe Insulation	45 lf	Good	450.00
	Pipe Insulation	12 lf	Good	120.00
	Vinyl Asbestos Floor Tile	1200 sf	Good	2400.00
Room 109	Vinyl Asbestos Floor Tile	1100 sf	Good	2200.00
Room 110 (formerly 109A)	Vinyl Asbestos Floor Tile	400 sf	Good	800.00
C-1 (next to Room 110)	Vinyl Asbestos Floor Tile	400 sf	Good	800.00

Appendix B

Cost for Recommended Abatement of Asbestos-Containing Materials

Reading High School

August 1996

Location	Description	Amount	Condition	Removal Costs
Ground Floor (cont.)				
Incinerator Room (next to C-1)	Pipe Insulation Vent Plaster	20 lf 40 sf	Damaged Good	200.00 320.00
Custodians Office & Bath (near 110)	Pipe Insulation	120 lf	Good	1200.00
Hallway Outside Room 111 (girls bathroom)	Vinyl Asbestos Floor Tile	2000 sf	Good	4000.00
Room 112	Vinyl Asbestos Floor Tile	600 sf	Good	1200.00
Room 113	Vinyl Asbestos Floor Tile	750 sf	Good	1500.00
Custodial Room (M-3)	Pipe Insulation	40 lf	Fair	400.00
Room 21	Vinyl Asbestos Floor Tile	700 sf	Good	1400.00
Room 22 & Storage Closet	Vinyl Asbestos Floor Tile	1000 sf	Good	2000.00
Lecture Hall	Vinyl Asbestos Floor Tile	1100 sf	Good	2200.00
Hallway Outside Room 301-305	Vinyl Asbestos Floor Tile	300 sf	Good	600.00
Room C-101 (formerly 301)	Vinyl Asbestos Floor Tile	800 sf	Good	1600.00
Room 303	Vinyl Asbestos Floor Tile	600 sf	Good	1200.00
Rooms 304 & 305	Vinyl Asbestos Floor Tile	1700 sf	Good	3400.00
Hallway Outside Rooms C-105 -C-111 (formerly 306-309)	Vinyl Asbestos Floor Tile	700 sf	Good	1400.00

Appendix B

Cost for Recommended Abatement of Asbestos-Containing Materials

Reading High School

August 1996

Location	Description	Amount	Condition	Removal Costs
Ground Floor (cont.)				
Room C-105 (formerly 306)	Transite (hood)	50 sf	Good	250.00
	Vinyl Asbestos Floor Tile	1200 sf	Good	2400.00
Room C-107. (formerly 307)	Transite (hood)	50 sf	Good	250.00
	Vinyl Asbestos Floor Tile	1200 sf	Good	2400.00
Room C-108 (formerly 308)	Transite (hood)	50 sf	Good	250.00
	Vinyl Asbestos Floor Tile	1200 sf	Good	2400.00
Room C-111 (formerly 309)	Transite (hood)	35 sf	Good	175.00
	Vinyl Asbestos Floor Tile	1200 sf	Good	2400.00
Room C-109 (formerly 310)	Vinyl Asbestos Floor Tile	1200 sf	Good	2400.00
Storage Room Off C-109	Transite (hood)	25 sf	Good	125.00
	Vinyl Asbestos Floor Tile	250 sf	Good	500.00
Room C-106 (formerly 310B) & Room Off C-106	Vinyl Asbestos Floor Tile	600 sf	Good	1200.00
Hallway & Stairwell Next To Foreign Language Wing	Vinyl Asbestos Floor Tile	500 sf	Good	1000.00
Hallway From Rooms 311-312	Vinyl Asbestos Floor Tile	375 sf	Good	750.00
Rooms 311 & 312, Used For Storage	Vinyl Asbestos Floor Tile	1700 sf	Good	3400.00
Rooms 313 & 314, Art Director	Vinyl Asbestos Floor Tile	1700 sf	Good	3400.00
Hall & Stairwell In Foreign Lang. Wing	Vinyl Asbestos Floor Tile	300 sf	Good	600.00
Industrial Arts Hallways	Vinyl Asbestos Floor Tile	1000 sf	Good	2000.00

Appendix B

Cost for Recommended Abatement of Asbestos-Containing Materials

Reading High School

August 1996

Location	Description	Amount	Condition	Removal Costs
Ground Floor (cont.)				
Bathrooms In Industrial Arts Hallways	Vinyl Asbestos Floor Tile	150 sf	Good	300.00
Room A-118, Testing Lab	Pipe Insulation	25 lf	Fair	250.00
	Vinyl Asbestos Floor Tile	600 sf	Good	1200.00
Room A-116, Electrical Classroom (formerly room 40)	Pipe Insulation	30 lf	Fair	300.00
	Vinyl Asbestos Floor Tile	1100 sf	Good	2200.00
Office By Electrical Classroom	Vinyl Asbestos Floor Tile	300 sf	Good	600.00
Room A-120, Graphics and Storage, (inc. small room to rear) (formerly 41)	Vinyl Asbestos Floor Tile	1000 sf	Good	2000.00
Room A-119, Graphics & Office (formerly 42) (formerly 42)	Vinyl Asbestos Floor Tile	1200 sf	Good	2400.00
Storage Between Rooms A-119- & A-121	Vinyl Asbestos Floor Tile	250 sf	Good	500.00
Room A-121 (formerly 43)	Vinyl Asbestos Floor Tile	1200 sf	Good	2400.00
Office Between Rooms 43 & 44	Vinyl Asbestos Floor Tile	400 sf	Good	800.00
Dark Room In Room 45	Vinyl Asbestos Floor Tile	300 sf	Good	600.00
Back Storage Room In Room 45	Vinyl Asbestos Floor Tile	150 sf	Good	300.00

Appendix B

Cost for Recommended Abatement of Asbestos-Containing Materials

Reading High School

August 1996

Location	Description	Amount	Condition	Removal Costs
Ground Floor (cont.)				
Room A-123, Print Shop (formerly room 45)	Vinyl Asbestos Floor Tile	1300 sf	Good	2600.00
First Floor				
Hall Outside Stairwell Leading To New Wing	Pipe Insulation	12 lf	Fair	120.00
	Vinyl Asbestos Floor Tile	400 sf	Good	800.00
Orange Locker Area	Vinyl Asbestos Floor Tile	4300 sf	Good	8600.00
Commons	Vinyl Asbestos Floor Tile	4900 sf	Good	9800.00
Teachers D.C.	Vinyl Asbestos Floor Tile	600 sf	Good	1200.00
Room A-206, Music Room & Office	Vinyl asbestos Floor Tile (under carpet)	1600 sf	Good	3200.00
Music Room Storage	Vinyl Asbestos Floor Tile	150 sf	Good	300.00
Music Storage	Vinyl Asbestos Floor Tile	400 sf	Good	800.00
Employees Dining Room Next To Music Storage	Vinyl Asbestos Floor Tile	400 sf	Good	800.00
Hallway Outside Faculty Bathrooms	Vinyl Asbestos Floor Tile	2000 sf	Good	4000.00
Cafeteria	Vinyl Asbestos Floor Tile	5400 sf	Good	10800.00
Stairwell Outside Social Studies Office	Vinyl Asbestos Floor Tile	300 sf	Good	600.00
Room A-223, Core Coordinator	Pipe Insulation	3 lf	Good	30.00
	Vinyl Asbestos Floor Tile	250 sf	Good	500.00

Appendix B

Cost for Recommended Abatement of Asbestos-Containing Materials

Reading High School

August 1996

Location	Description	Amount	Condition	Removal Costs
First Floor (cont.)				
Room A-221, Health Office	Vinyl Asbestos Floor Tile	600 sf	Good	1200.00
Access Panel In	Pipe Insulation	70 lf	Good	700.00
Main Corridor	Pipe Insulation	70 lf	Good	700.00
Room A-218, Guidance Office (right & left closets)	Vinyl Asbestos Floor Tile	300 sf	Good	600.00
Electrical Closet	Pipe Insulation	12 lf	Fair	120.00
Behind School Administration	Vinyl Asbestos Floor Tile	60 sf	Good	120.00
Room A-213 (formerly 133)	Vinyl Asbestos Floor Tile	700 sf	Good	1400.00
Room A-215,	Pipe Insulation	10 lf	Fair	100.00
Scheduling Room (formerly 134)	Vinyl Asbestos Floor Tile	400 sf	Good	800.00
Room A-219, Assistant Principals Office & Conference Room	Vinyl Asbestos Floor Tile	1000 sf	Good	2000.00
Assistant Principals Left Office	Vinyl Asbestos Floor Tile	100 sf	Good	200.00
Assistant Principals Middle Office	Vinyl Asbestos Floor Tile	100 sf	Good	200.00
Assistant Principals	Pipe Insulation	2 lf	Fair	20.00
Right Office	Vinyl Asbestos Floor Tile	100 sf	Good	200.00
Assistant Principals Main Office	Vinyl Asbestos Floor Tile	200 sf	Good	400.00

Appendix B

Cost for Recommended Abatement of Asbestos-Containing Materials

Reading High School

August 1996

Location	Description	Amount	Condition	Removal Costs
First Floor (cont.)				
Room A-220, Computer Room (formerly 140)	Vinyl Asbestos Floor Tile	700 sf	Good	1400.00
Room A-222 (formerly 142)	Vinyl Asbestos Floor Tile	800 sf	Good	1600.00
Room 144, Computer/Storage	Vinyl Asbestos Floor Tile	600 sf	Good	1200.00
Room A-224, METCO (formerly 116)	Vinyl Asbestos Floor Tile	200 sf	Good	400.00
Hall From Main Office To Girls Gym	Vinyl Asbestos Floor Tile	1500 sf	Good	3000.00
Physical Education Hallway	Vinyl Asbestos Floor Tile	150 sf	Good	300.00
Room A-209 (formerly 129)	Vinyl Asbestos Floor Tile	70 sf	Good	140.00
Custodial Room Near Room 129	Vinyl Asbestos Floor Tile	450 sf	Good	900.00
Girls & Boys Bathrooms Near Room A-209 (formerly 129)	Pipe Insulation	45 lf	Good	450.00
Room A-210 (formerly 130)	Pipe Insulation Vinyl Asbestos Floor Tile	30 lf 500 sf	Fair Good	300.00 1000.00
Room A-211 (formerly 131)	Vinyl Asbestos Floor Tile	800 sf	Good	1600.00
Room A-212 (formerly 132)	Vinyl Asbestos Floor Tile	400 sf	Good	800.00

Appendix B

Cost for Recommended Abatement of Asbestos-Containing Materials

Reading High School

August 1996

Location	Description	Amount	Condition	Removal Costs
First Floor (cont.)				
Room A-208, Pupil Personnel Rooms And Baths	Vinyl Asbestos Floor Tile (some under rugs)	2500 sf	Good	5000.00
Ticket Room	Vinyl Asbestos Floor Tile	40 sf	Good	80.00
Womens Bathroom Across From Auditorium	Vinyl Asbestos Floor Tile	120 sf	Good	240.00
Stairwell Outside Storage Closet At End Of Social Studies Corridor	Vinyl Asbestos Floor Tile	200 sf	Good	400.00
Room A-202 & Adjoining Office (formerly 120)	Vinyl Asbestos Floor Tile	1100 sf	Good	2200.00
Room A-201 (double room, formerly 121 & 123)	Pipe Insulation Vinyl Asbestos Floor Tile (under rug)	65 lf 1600 sf	Fair Good	650.00 3200.00
Room A-204 (formerly 122)	Vinyl Asbestos Floor Tile	800 sf	Good	1600.00
Rooms A-205 & A-207 (formerly 125 & 127)	Vinyl Asbestos Floor Tile	1700 sf	Good	3400.00
Hall Outside Room A-201 (formerly 121 & 123)	Vinyl Asbestos Floor Tile	1000 sf	Good	2000.00
School Administration Main Office & Conference Room	Vinyl Asbestos Floor Tile	800 sf	Good	1600.00

Appendix B

Cost for Recommended Abatement of Asbestos-Containing Materials

Reading High School

August 1996

Location	Description	Amount	Condition	Removal Costs
First Floor (cont.)				
Administration Office & Side Room	Vinyl Asbestos Floor Tile	300 sf	Good	600.00
Rooms C-203 & C-204 (formerly rooms 323 & 324)	Vinyl Asbestos Floor Tile	1500 sf	Good	3000.00
Room C-201, Math Office	Vinyl Asbestos Floor Tile	900 sf	Good	1800.00
Room C-202 (formerly 322)	Vinyl Asbestos Floor Tile	900 sf	Good	1800.00
Hallway Outside Rooms C-209 to C-205 (formerly 327 -325)	Vinyl Asbestos Floor Tile	700 sf	Good	1400.00
Room C-208 (formerly 330)	Vinyl Asbestos Floor Tile	400 sf	Good	800.00
Hallway Outside Room C-215 To C-218 (formerly 335-333)	Vinyl Asbestos Floor Tile	500 sf	Good	1000.00
Rooms C-219, C-218, C-217 & C-216 (formerly 332, 333, 334 & 335)	Vinyl Asbestos Floor Tile	1800 sf	Good	3600.00
Rooms C-210 & C-206 (formerly 331 & 329)	Vinyl Asbestos Floor Tile	1000 sf	Good	2000.00
Hallway Outside Rooms C-214 to C-212 (formerly 338-336)	Vinyl Asbestos Floor Tile	400 sf	Good	800.00
Stairwell Hall Outside Rooms 327-328	Vinyl Asbestos Floor Tile	500 sf	Good	1000.00

Appendix B

Cost for Recommended Abatement of Asbestos-Containing Materials

Reading High School

August 1996

Location	Description	Amount	Condition	Removal Costs
First Floor (cont.)				
Rooms C-205, C-207 & C-209 (formerly 325, 326, 327 and office)	Vinyl Asbestos Floor Tile	3200 sf	Good	6400.00
Rooms C-212, C213, C-214 and C-215 (formerly 336, 337 and 338 and office)	Vinyl Asbestos Floor Tile	3300 sf	Good	6600.00
Second Floor				
Closet Across From Balcony (3)	Vinyl Asbestos Floor Tile	120 sf	Good	240.00
Corner Storage Room Across From Balcony	Vinyl Asbestos Floor Tile	700 sf	Good	1400.00
Air Handling Room Near Balcony	Pipe Insulation Pipe Insulation	25 lf 3 lf	Fair Good	250.00 30.00
Hallway From Rooms A-310 To A-327 (formerly 160-175)	Vinyl Asbestos Floor Tile	3500 sf	Good	7000.00
Room A-310 (formerly 160)	Vinyl Asbestos Floor Tile	600 sf	Good	1200.00
Rooms A-313, A-315 and A-317 (formerly 161, 163 and 165)	Vinyl Asbestos Floor Tile	2250 sf	Good	4500.00
Girls & Boys Bathrooms Near Room A-313 (formerly 161)	Pipe Insulation	120 lf	Good	1200.00

Appendix B

Cost for Recommended Abatement of Asbestos-Containing Materials

Reading High School

August 1996

Location	Description	Amount	Condition	Removal Costs
Second Floor (cont.)				
Room A-312 (formerly 162)	Pipe Insulation	25 lf	Good	250.00
	Vinyl Asbestos Floor Tile	500 sf	Good	1000.00
Room A-314, English Office (inc. bath)	Vinyl Asbestos Floor Tile	1000 sf	Good	2000.00
Room A-316 Inc. Closet (formerly 164)	Vinyl Asbestos Floor Tile	1000 sf	Good	2000.00
Room A-318 Inc. Closet (formerly 166)	Vinyl Asbestos Floor Tile	700 sf	Good	1400.00
Room A-320, A-322 and A-324 (formerly 168, 170 and 172)	Pipe Insulation	90 lf	Good	900.00
	Vinyl Asbestos Floor Tile	2000 sf	Good	4000.00
Rooms A-319, A-321, A-323, A-325 and A-327 (formerly 167, 169 and 171)	Pipe Insulation	120 lf	Good	1200.00
	Vinyl Asbestos Floor Tile	3000 sf	Good	6000.00
Room A-302 (formerly 150)	Vinyl Asbestos Floor Tile	750 sf	Good	1500.00
Room A-304 (formerly 154) and Storage Next To A-304	Pipe Insulation	65 lf	Good	650.00
	Vinyl Asbestos Floor Tile	1200 sf	Good	2400.00
Hallway From Room A-301, Fire Door (formerly 151)	Vinyl Asbestos Floor Tile	2000 sf	Good	4000.00

Appendix B

Cost for Recommended Abatement of Asbestos-Containing Materials

Reading High School

August 1996

Location	Description	Amount	Condition	Removal Costs
Second Floor (cont.)				
Rooms A-301, A-303, A-305, A-307, A-309 and A-311 (formerly 151, 153 155, 157, 159 and 159A)	Pipe Insulation Vinyl Asbestos Floor Tile	300 lf 3000 sf	Good Good	3000.00 6000.00
Rooms 28& 28 (2nd floor of library)	Vinyl Asbestos Floor Tile	1000 sf	Good	2000.00
Rooms C-301, C-302, C-303 and C-304 (formerly 341, 342, 343, 344 345) (342 and 343 were combined and are now C-302)	Vinyl Asbestos Floor Tile	3600 sf	Good	7200.00
Hallway Outside Room C-306, Stairs And Landing (formerly 353 prep)	Vinyl Asbestos Floor Tile	600 sf	Good	1200.00
Rooms C-305, C-307, C-309, C-311, C-306, C-308 and C-310 (formerly 346, 347, 348, 349, 350, and 2 preps)	Vinyl Asbestos Floor Tile	8000 sf	Good	16000.00
Field House First Floor				
Back Stairwells (2)	Vinyl Asbestos Floor Tile	700 sf	Good	1400.00
Field House Second Floor				
Loft Hallway	Vinyl Asbestos Floor Tile	1600 sf	Good	3200.00

Appendix B

Cost for Recommended Abatement of Asbestos-Containing Materials

Reading High School

August 1996

Location	Description	Amount	Condition	Removal Costs
Field House Second Floor (cont.)				
Electrical Room	Vinyl Asbestos Floor Tile	150 sf	Good	300.00
Custodial Storage & Storage Room	Vinyl Asbestos Floor Tile	300 sf	Good	600.00
Science Wing				
Roof	Flashing Material along pereimeter expansion joints and vents	4500 sf	Good	9000.00
Exterior	Window Caulking	TBD	Good	$50.00/window
Fine Arts Wing				
Exterior (rear of bldg.)	Window Caulking	TBD	Good	$50.00/window
Total Cost:				**$485,840.00***

* Not incuding cost for removal of window caulking.

APPENDIX C
COPY OF AHERA RE-INSPECTION

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NOTE: Asbestos-containing Pipe and Pipe Joint Insulation is assumed above ceilings and behind walls associated with the plumbing and heating system.

Reading High School Quantities from Diagnostic Engineers Re-inspection Report

Sub-Ground Floor

Old Boiler Room
- Pipe Insulation, <4 in. dia., 2000 lf, Good
- Pipe Insulation, 4-8 in. dia., 1900 lf, Good
- Pipe Insulation, 8-12 in. dia., 70 lf, Good
- Boiler Insulation, 700 sf, Good
- Tank Insulation, 200 sf, Good
- Breeching Insulation, 1200 sf, Good

New Boiler Room
- Breeching Insulation, 500 sf, Good

Crawlspace to Boiler Room
- Pipe Insulation, <4-in. dia., 4500 lf, Damaged
- Pipe Insulation, 4-8 in. dia., 3200 lf, Damaged

Crawlspace, Civil Defense Area
- Pipe Insulation, <4 in. dia., 2900 lf, Good
- Pipe Insulation, 4-8 in. dia., 900 lf, Damaged
- Asbestos Debris in Crawlspace

Maintenance Office
- Vinyl Asbestos Floor Tile, 250 sf, Good

Room 48, Maintenance
- Pipe Insulation, <4 in. dia., 80 lf, Good with potential for damage
- Pipe Insulation, 4-8 in. dia., 65 lf, Good with potential for damage

Storage Closet in Room 48
- Pipe Insulation, <4 in. dia., 180 lf, Good with potential for damage
- Pipe Insulation, 4-8 in. dia., 25 lf, Good with potential for damage

Back Storage Room in Room 48
- Pipe Insulation, <4 in. dia., 35 lf, Good with potential for damage
- Pipe Insulation, 4-8 in. dia., 35 lf, Good with potential for damage

Second Storage Closet in Room 48
- Pipe Insulation, <4 in. dia., 100 lf, Good with potential for damage
- Pipe Insulation, 4-8 in. dia., 20 lf, Good with potential for damage

Hall Between Wood Shop & Maintenance Area
- Vinyl Asbestos Floor Tile, 300 sf, Good

Wood Shop
- Transite (Duct), 30 sf, Good

Hall Outside Superintendent's Offices (formerly Focus Area)
- Vinyl Asbestos Floor Tile, 400 sf, Good

Reading High School, continued
Ground Floor

Business Hallway
Vinyl Asbestos Floor Tile, 6500 sf, Good

Girls' Bathroom in Business Hallway
Pipe Insulation, <4 in. dia., 20 lf, Good with potential for damage

Closet Between Bathrooms and next to Room 105
Pipe Insulation, <4 in. dia., 4 lf, Good

Stairwell Outside Room 101
Pipe Insulation, 4-8 in. dia., 6 lf, Good
Vinyl Asbestos Floor Tile, 100 sf, Good

Room 101
Vinyl Asbestos Floor Tile, 500 sf, good

Room 102
Vinyl Asbestos Floor Tile, 900 sf, Good

Room 103
Vinyl Asbestos Floor Tile, 1100 sf, Good

Room 104
Vinyl Asbestos Floor Tile, 1100 sf, Good

Room 105
Pipe Insulation, <4 in. dia., 15 lf, Good with potential for damage
Vinyl Asbestos Floor Tile, 700 sf, Good

Room 106
Pipe Insulation, <4 in. dia., 15 lf, Good
Pipe Insulation, 4-8 in. dia., 20 lf, Good
Vinyl Asbestos Floor Tile, 800 sf, Good

Room 107
Pipe Insulation, <4 in. dia., 12 lf, Good
Vinyl Asbestos Floor Tile, 700 sf, Good

Room 108
Pipe Insulation, <4 in. dia., 45 lf, Good
Pipe Insulation, 4-8 in. dia., 12 lf, Good
Vinyl Asbestos Floor Tile, 1200 sf, Good

Room 109
Vinyl Asbestos Floor Tile, 1100 sf, Good

Room 110 (formerly 109A)
Vinyl Asbestos Floor Tile, 400 sf, Good

C-1 (Next to Room 110)
Vinyl Asbestos Floor Tile, 400 sf, Good

Reading High School, continued

Incinerator Room (Next to C-1)
Pipe Insulation, <4 in. dia., 20 lf, Damaged with potential for significant damage
Vent Plaster, 40 sf, Good

Custodian's Office and Bath (Near 110)
Pipe Insulation, <4 in. dia., 120 lf, Good

Hallway Outside Room 111 (Girls' Bathroom)
Vinyl Asbestos Floor Tile, 2000 sf, Good

Room 112
Vinyl Asbestos Floor Tile, 600 sf, Good

Room 113
Vinyl Asbestos Floor Tile, 750 sf, Good

Custodial Room (M-3)
Pipe Insulation, <4 in. dia., 40 lf, Damaged with potential for significant damage

Room 21
Vinyl Asbestos Floor Tile, 700 sf, Good

Room 22 and Storage Closet
Vinyl Asbestos Floor Tile, 1000 sf, Good

Lecture Hall
Vinyl Asbestos Floor Tile, 1100 sf, Good

Hallway Outside Room 301-305
Vinyl Asbestos Floor Tile, 300 sf, Good

Room C-101 (formerly 301)
Vinyl Asbestos Floor Tile, 800 sf, Good

Room 303
Vinyl Asbestos Floor Tile, 600 sf, Good

Rooms 304 and 305
Vinyl Asbestos Floor Tile, 1700 sf, Good

Hallway Outside Rooms C-105 - C-111 (formerly 306-309)
Vinyl Asbestos Floor Tile, 700 sf, Good

Room C-105 (formerly 306)
Transite (hood), 50 sf, Good
Vinyl Asbestos Floor Tile, 1200 sf, Good

Room C-107 (formerly 307)
Transite (hood), 50 sf, Good
Vinyl Asbestos Floor Tile, 1200 sf, Good

Reading High School, continued

Room C-108 (formerly 308)
Transite (hood), 50 sf, good
Vinyl Asbestos Floor Tile, 1200 sf, Good

Room C-111 (formerly 309)
Transite (hood), 35 sf, Good
Vinyl Asbestos Floor Tile, 1200 sf, Good

Room C-109 (formerly 310)
Vinyl Asbestos Floor Tile, 1200 sf, Good

Storage Room off C-109
Transite (hood), 25 sf, Good
Vinyl Asbestos Floor Tile, 250 sf, Good

Room C-106 (formerly 310B) and Room Off C-106
Vinyl Asbestos Floor Tile, 600 sf, Good

Hallway and Stairwell next to Foreign Language Wing
Vinyl Asbestos Floor Tile, 500 sf, Good

Hallway From Rooms 311-312
Vinyl Asbestos Floor Tile, 375 sf, Good

Rooms 311 and 312, used for storage
Vinyl Asbestos Floor Tile, 1700 sf, Good

Rooms 313 and 314, Art Director
Vinyl Asbestos Floor Tile, 1700 sf, Good

Hall and Stairwell in Foreign Language Wing
Vinyl Asbestos Floor Tile, 300 sf, Good

Industrial Arts Hallways
Vinyl Asbestos Floor Tile, 1000 sf, Good

Bathrooms in Industrial Arts Hallways
Vinyl Asbestos Floor Tile, 150 sf, Good

Room A-118, Testing Lab
Pipe Insulation, <4 in. dia., 25 lf, Good with potential for damage
Vinyl Asbestos Floor Tile, 600 sf, Good

Room A-116 (formerly Room 40), Electrical Classroom
Pipe Insulation, 4-8 in. dia., 30 lf, Good with potential for damage
Vinyl Asbestos Floor Tile, 1100 sf, Good

Office by Electrical Classroom
Vinyl Asbestos Floor Tile, 300 sf, Good

Room A-120 (formerly 41), Graphics and Storage, including small room to rear
Vinyl Asbestos Floor Tile, 1000 sf, Good

Reading High School, continued

Room A-119 (formerly 42), Graphics and Office
Vinyl Asbestos Floor Tile, 1200 sf, Good

Storage Between Rooms A-119 and A-121
Vinyl Asbestos Floor Tile, 250 sf, Good

Room A-121 (formerly Room 43)
Vinyl Asbestos Floor Tile, 1200 sf, Good

Office Between Rooms 43 and 44
Vinyl Asbestos Floor Tile, 400 sf, Good

Dark Room in Room 45
Vinyl Asbestos Floor Tile, 300 sf, Good

Back Storage Room in Room 45
Vinyl Asbestos Floor Tile, 150 sf, Good

Room A-123 (formerly Room 45), Print Shop
Vinyl Asbestos Floor Tile, 1300 sf, Good

First Floor

Hall Outside Stairwell Leading to New Wing
Pipe Insulation, <4 in. dia., 12 lf, Good with potential for damage
Vinyl Asbestos Floor Tile, 400 sf, Good

Orange Locker Area
Vinyl Asbestos Floor Tile, 4300 sf, Good

Commons
Vinyl Asbestos Floor Tile, 4900 sf, Good

Teachers D.C.
Vinyl Asbestos Floor Tile, 600 sf, Good

Room A-206, Music Room and Office
Vinyl Asbestos Floor Tile under carpet, 1600 sf, Good

Music Room Storage
Vinyl Asbestos Floor Tile, 150 sf, Good

Music Storage
Vinyl Asbestos Floor Tile, 400 sf, Good

Employees Dining Room Next to Music Storage
Vinyl Asbestos Floor Tile, 400 sf, Good

Hallway Outside Faculty Bathrooms
Vinyl Asbestos Floor Tile, 2000 sf, Good

Cafeteria
Vinyl Asbestos Floor Tile, 5400 sf, Good

Reading High School, continued

Stairwell Outside Social Studies Office
- Vinyl Asbestos Floor Tile, 300 sf, Good

Room A-223, Core Coordinator
- Pipe Insulation, <4 in. dia., 3 lf, Good
- Vinyl Asbestos Floor Tile, 250 sf, Good

Room A-221, Health Office
- Vinyl Asbestos Floor Tile, 600 sf, Good

Access Panel in Main Corridor
- Pipe Insulation, <4 in. dia., 70 lf, Good
- Pipe Insulation, 4-8 in. dia., 70 lf, Good

Room A-218, Guidance Office (right and left closets)
- Vinyl Asbestos Floor Tile, 300 sf, Good

Electrical Closet Behind School Administration
- Pipe Insulation, <4 in. dia., 12 lf, Good with potential for damage
- Vinyl Asbestos Floor Tile, 60 sf, Good

Room A-213 (formerly Room 133)
- Vinyl Asbestos Floor Tile, 700 sf, Good

Room A-215 (formerly Room 134) Scheduling Room
- Pipe Insulation, <4 in. dia., 10 lf, Good with potential for damage
- Vinyl Asbestos Floor Tile, 400 sf, Good

Room A-219, Assistant Principal's Office and Conference Room
- Vinyl Asbestos Floor Tile, 1000 sf, Good

Assistant Principal's Left Office
- Vinyl Asbestos Floor Tile, 100 sf, Good

Assistant Principal's Middle Office
- Vinyl Asbestos Floor Tile, 100 sf, Good

Assistant Principal's Right Office
- Pipe Insulation, <4 in. dia., 2 lf, Good with potential for damage
- Vinyl Asbestos Floor Tile, 100 sf, Good

Assistant Principal's Main Office
- Vinyl Asbestos Floor Tile, 200 sf, Good

Room A-220 (formerly Room 140), Computer Room
- Vinyl Asbestos Floor Tile, 700 sf, Good

Room A-222 (formerly Room 142)
- Vinyl Asbestos Floor Tile, 800 sf, Good

Room 144, Computer/Storage
- Vinyl Asbestos Floor Tile, 600 sf, Good

Reading High School, continued

Room A-224 (formerly Room 116), METCO
Vinyl Asbestos Floor Tile, 200 sf, Good

Hall From Main Office to Girls' Gym
Vinyl Asbestos Floor Tile, 1500 sf, Good

Physical Education Hallway
Vinyl Asbestos Floor Tile, 150 sf, Good

Room A-209 (formerly Room 129)
Vinyl Asbestos Floor Tile, 700 sf, Good

Custodial Room Near Room 129
Vinyl Asbestos Floor Tile, 450 sf, Good

Girls' and Boys' Bathrooms Near Room A-209 (formerly Room 129)
Pipe Insulation, <4 in. dia., 45, lf, Good

Room A-210 (formerly Room 130)
Pipe Insulation, <4 in. dia., 30 lf, Damaged with potential for significant damage
Vinyl Asbestos Floor Tile, 500 sf, Good

Room A-211 (formerly Room 131)
Vinyl Asbestos Floor Tile, 800 sf, Good

Room A-212 (formerly Room 132)
Vinyl Asbestos Floor Tile, 400 sf, Good

Room A-208, Pupil Personnel Rooms and Baths
Vinyl Asbestos Floor Tile (some under rugs), 2500 sf, Good

Ticket Room
Vinyl Asbestos Floor Tile, 40 sf, Good

Women's' Bathroom Across From Auditorium
Vinyl Asbestos Floor Tile, 120 sf, Good

Stairwell Outside Storage Closet at End of Social Studies Corridor
Vinyl Asbestos Floor Tile, 200 sf, Good

Room A-202 (formerly Room 120) and Adjoining Office
Vinyl Asbestos Floor Tile, 1100 sf, Good

Room A-201 (double room, formerly Rooms 121 and 123)
Pipe Insulation, <4 in. dia., 65 lf, Good with potential for damage
Vinyl Asbestos Floor Tile under rug, 1600 sf, Good

Room A-204 (formerly Room 122)
Vinyl Asbestos Floor Tile, 800 sf, Good

Rooms A-205 and A-207 (formerly Rooms 125 and 127)
Vinyl Asbestos Floor Tile, 1700 sf, Good

Reading High School, continued

Hall Outside Room A-201 (formerly Rooms 121 and 123)
Vinyl Asbestos Floor Tile, 1000 sf, Good

School Administration Main Office and Conference Room
Vinyl Asbestos Floor Tile, 800 sf, Good

Administration Office and Side Room
Vinyl Asbestos Floor Tile, 300 sf, Good

Rooms C-203 and C-204 (formerly Rooms 323 and 324)
Vinyl Asbestos Floor Tile, 1500 sf total, Good

Room C-201, Math Office
Vinyl Asbestos Floor Tile, 900 sf, Good

Room C-202 (formerly Room 322)
Vinyl Asbestos Floor Tile, 900 sf, Good

Hallway Outside Rooms C-209 to C-205 (formerly Rooms 327-325)
Vinyl Asbestos Floor Tile, 700 sf, Good

Room C-208 (formerly Room 330)
Vinyl Asbestos Floor Tile, 400 sf, Good

Hallway Outside Room C-215 to C-218 (formerly Rooms 335-333)
Vinyl Asbestos Floor Tile, 500 sf, Good

Rooms C-219, C-218, C-217 and C-216 (formerly Rooms 332, 333, 334 and 335)
Vinyl Asbestos Floor Tile, 1800 sf, Good

Rooms C-210 and C-206 (formerly Rooms 331 and 329)
Vinyl Asbestos Floor Tile, 1000 sf, Good

Hallway Outside Rooms C-214 to C-212 (formerly Rooms 338-336)
Vinyl Asbestos Floor Tile, 400 sf, Good

Stairwell Hall Outside Rooms 327-328
Vinyl Asbestos Floor Tile, 500 sf, Good

Rooms C-205, C-207 and C-209 (formerly Rooms 325, 326 and 327, and Office)
Vinyl Asbestos Floor Tile, 3200 sf, Good

Rooms C-212, C-213, C-214 and C-215 (formerly Rooms 336, 337 and 338, and Office)
Vinyl Asbestos Floor Tile, 3300 sf, Good

Second Floor

Closet Across from Balcony (3)
Vinyl Asbestos Floor Tile, 120 sf, Good

Corner Storage Room Across From Balcony
Vinyl Asbestos Floor Tile, 700 sf, Good

Reading High School, continued

Air Handling Room Near Balcony
Pipe Insulation, <4 in. dia., 25 lf, Damaged with potential for significant damage
Pipe Insulation, 4-8 in. dia., 3 lf, Good

Hallway from Rooms A-310 to A-327 (formerly Rooms 160-175)
Vinyl Asbestos Floor Tile, 3500 sf, Good

Room A-310 (formerly Room 160)
Vinyl Asbestos Floor Tile, 600 sf, Good

Rooms A-313, A-315, and A-317 (formerly Rooms 161, 163 and 165)
Vinyl Asbestos Floor Tile, 2250 sf, Good

Girls' and Boys' Bathrooms near Room A-313 (formerly Room 161)
Pipe Insulation, <4 in. dia., 120 lf, enclosed in walls, assumed Good

Room A-312 (formerly Room 162)
Pipe Insulation, <4 in. dia., 25 lf, enclosed in walls, assumed Good
Vinyl Asbestos Floor Tile, 500 sf, Good

Room A-314, English Office (including bath)
Vinyl Asbestos Floor Tile, 1000 sf, Good

Room A-316 (formerly Room 164), including closet
Vinyl Asbestos Floor Tile, 1000 sf, Good

Room A-318 (formerly Room 166), including closet
Vinyl Asbestos Floor Tile, 700 sf, Good

Room A-320, A-322 and A-324 (formerly Rooms 168, 170 and 172)
Pipe Insulation, <4 in. dia., 90 lf, enclosed in walls, assumed Good
Vinyl Asbestos Floor Tile, 2000 sf, Good

Rooms A-319, A-321, A-323, A-325 and A-327, (formerly Rooms 167, 169, 171, 173 and 175)
Pipe Insulation, <4 in. dia., 120 lf, enclosed in walls, assumed Good
Vinyl Asbestos Floor Tile, 3000 sf, Good

Room A-302 (formerly Room 150)
Vinyl Asbestos Floor Tile, 750 sf, Good

Room A-304 (formerly Room 154) and Storage Next to A-304
Pipe Insulation, <4 in. dia., 65 lf, enclosed
Vinyl Asbestos Floor Tile, 1200 sf, Good

Hallway from Room A-301 (formerly Room 151), Fire door
Vinyl Asbestos Floor Tile, 2000 sf, Good

Rooms A-301, A-303, A-305, A-307, A-309 and A-311 (formerly Rooms 151, 153, 155, 157, 159 and 159A)
Pipe Insulation, <4 in. dia., 300 lf, enclosed, assumed good
Vinyl Asbestos Floor Tile, 3000 sf, Good

Reading High School, continued

Rooms 28 and 28 (2nd Floor of Library)
Vinyl Asbestos Floor Tile, 1000 sf, Good

Rooms C-301, C-302, C-303 and C-304 (formerly Rooms 341, 342, 343, 344, 345), (342 and 343 were combined and are now C-302)
Vinyl Asbestos Floor Tile, 3600 sf, Good

Hallway Outside Room C-306 (formerly Room 353 Prep.), stairs and landing
Vinyl Asbestos Floor Tile, 600 sf, Good

Rooms C-305, C-307, C-309, C-311, C-306, C-308 and C-310 (formerly Rooms 346, 347, 348, 349, 350 and 2 Preps.)
Vinyl Asbestos Floor Tile, 8000 sf, Good

Field House
First Floor

Back Stairwells (2)
Vinyl Asbestos Floor Tile, 700 sf total, Good

Second Floor

Loft Hallway
Vinyl Asbestos Floor Tile, 1600 sf, Good

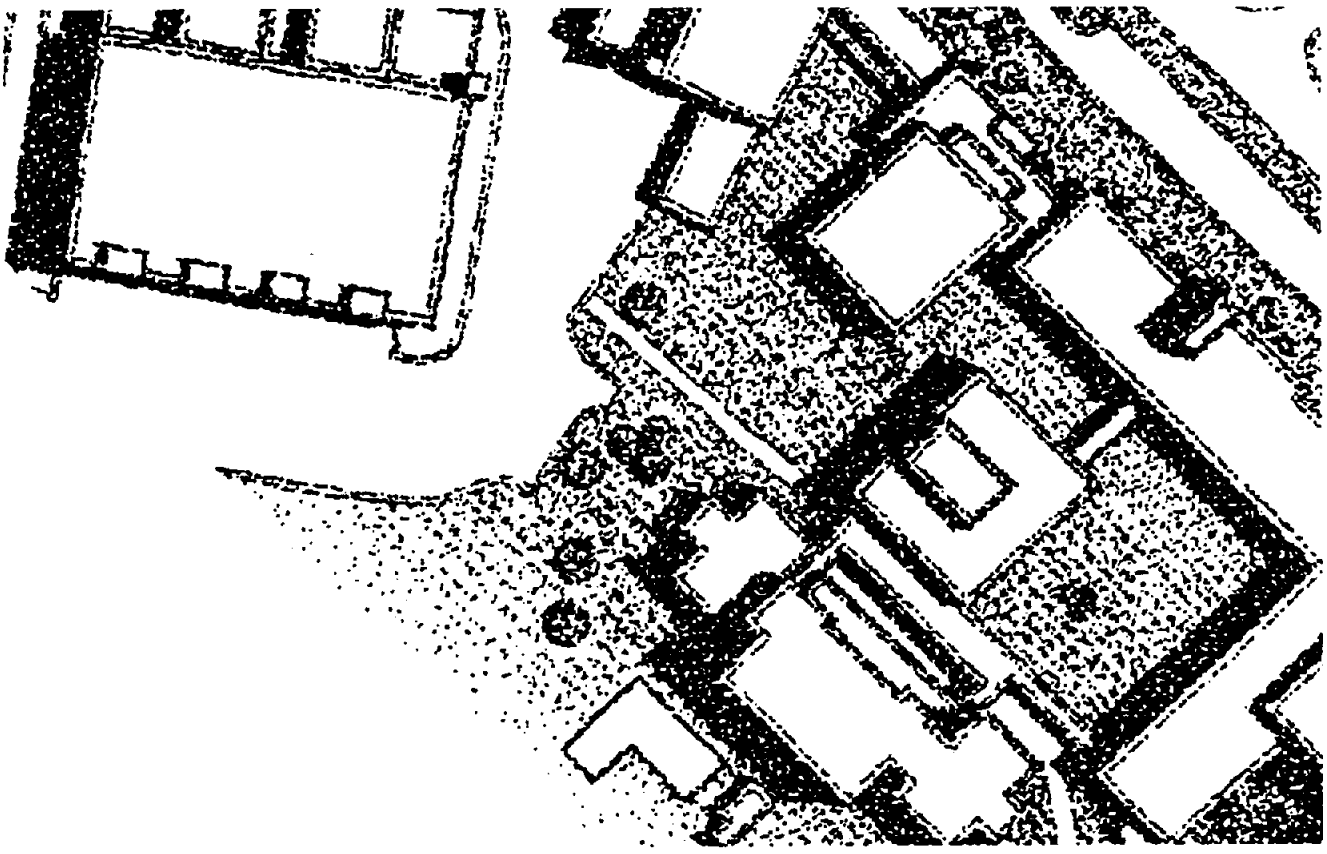
Electrical Room
Vinyl Asbestos Floor Tile, 150 sf, Good

Custodial Storage and Storage Room
Vinyl Asbestos Floor Tile, 300 sf, Good

Reading Memorial High School

Feasibility Study

A Study Proposing Physical Improvements to Support the Educational Goals of the Town of Reading, Massachusetts



February 21, 1997

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