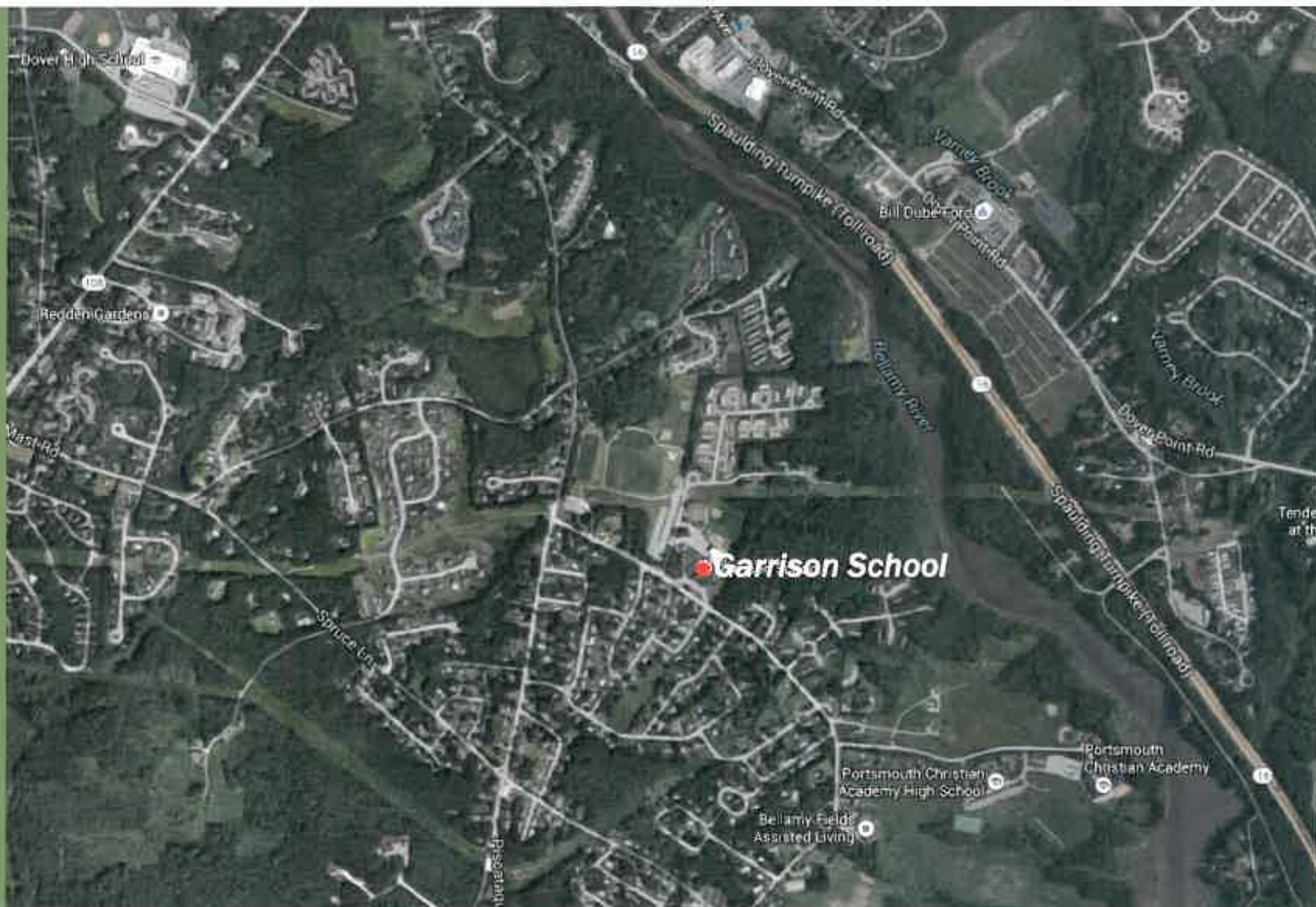




HARRIMAN



***Garrison Elementary School Facilities Study for  
Dover School District, SAU 11***

# Meet the Team – Full Service A/E Firm



**Clifton Greim, P.E.**  
President



**Mark D. Lee, AIA, LEED AP BD+C**  
Principal



**Dan Bisson, AIA**  
Project Manager, Associate



**Nery Bordas**  
Project Designer



**John Tarr, P.E.**  
Sr. Electrical Engineer, Principal



**Richard Miles, LEED AP BD+C**  
Sr. Mechanical Designer, Associate



**Keith Brenner, P.E.**  
Sr. Structural Engineer, Associate



**John Kuchinski, P.E.**  
Sr. Civil Engineer



# HARRIMAN Architects + Engineers

- We never forget that it's your school, your community, your money and you are in charge.
- Full service, integrated A/E firm with all disciplines in-house.
- Extensive K-12 education design team experience.
- A process that is thorough, hands-on, and transparent.
- We will be there for you after the project is complete.
- Working with communities throughout northern New England.





# What the Dover School District Needs:



## *Garrison Elementary*

- **Grades: K-4**
- **1-Story**
- **474 Students**
- **65,938 SF**

# What the Dover School District Needs:

## Overall Goal

"The overall goal is to have the Garrison Elementary School facility **properly maintained, safe, energy and resource efficient**, and supports **educational excellence** by providing an adequate (or better) physical experience"

## Project Goals

- Improve operational efficiency
- Prioritize most important project with preliminary design package with options and budget cost
- Provide realistic plan and timeline for project
- Support educational excellence in grades Kindergarten through 4



# Facilities Study Method

## Educational Studies

- Educational Inventory – How well is each facility serving your programs?
- Inventory every space in the school.
- Educational Program Inventory – current and future
- Technology Inventory.
- Is the facility being used as efficiently as possible?
- What additions, renovations, repairs, equipment, technologies are needed?
- Does the school have room to grow?

### NOTE:

*Yellow boxes designate space not meeting DOE standards.*

|                                                                       | Blue Point Primary School                 | Eight Corners Primary School              | Pleasant Hill Primary School                                   | Wentworth Int. School           | Scarborough Middle School                  | Scarborough High School                       | Totals and Notes                                                                                                                                                     |
|-----------------------------------------------------------------------|-------------------------------------------|-------------------------------------------|----------------------------------------------------------------|---------------------------------|--------------------------------------------|-----------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 6 Number of Regular Classrooms Currently                              | 12                                        | 12                                        | 6                                                              | 40                              | 43                                         | 52                                            |                                                                                                                                                                      |
| 7 Regular Classrooms Size Range, DOE Std is 800 sf                    | 740-780, Average- 751                     | 680-756 Average- 717                      | 628-784 Average- 650                                           | Average- 800                    | 708-805 Average- 728                       | 824-1,026 Average- 781 Science Lab Avg- 1,178 | DOE Recommended- Kindergarten, 1,000 sf. 1-12, 800 sf Science Lab- 900-1,200                                                                                         |
| 9 Library Square Footage                                              | 1,290                                     | 1,299                                     | 987                                                            | 5,480                           | 3,823                                      | 6,369                                         |                                                                                                                                                                      |
| 10 Library Size DOE Std                                               | 1,328                                     | 1,325                                     | 1,225                                                          | 3,450                           | 4,475                                      | 6,150                                         |                                                                                                                                                                      |
| 11 Cafeteria Square Footage                                           | 2,983 Combined Gym/Caf                    | 2,400 Combined Gym/Caf                    | 2,400 Combined Gym/Caf                                         | 8,500                           | 2,552                                      | 7,961                                         |                                                                                                                                                                      |
| 12 Cafeteria Capacity DOE Std is 18 sf/seat                           | 170                                       | 160                                       | 160                                                            | 430                             | 179                                        | 530                                           | The DOE standard of 15 sf/seat is on the small side as a practical matter. Most cafeterias lay out at about 17-18 sf/seat when you include stakes and serving lines. |
| 13 Current Number of Lunch Servings with Current Population and Space | 2                                         | 2                                         | 2                                                              | 4                               | 5                                          | 3                                             |                                                                                                                                                                      |
| 14 Kitchen Square Footage                                             | 480                                       | 372                                       | 378                                                            | 3,400                           | 2,450                                      | 3,510                                         |                                                                                                                                                                      |
| 15 Kitchen Size DOE Std                                               | 950                                       | 950                                       | 950                                                            | 2,240                           | 2,683                                      | 3,558                                         |                                                                                                                                                                      |
| 17 Art                                                                | 750                                       | 718                                       | 721                                                            | 1 @ 1,272, 1 @ 1,339            | 2,053                                      | 1 @ 1,290, 1 @ 1,477, 1 @ 1,403               |                                                                                                                                                                      |
| 18 Art Room Size DOE Std                                              | 1,200-1,400 (including storage)           | 1,200-1,400 (including storage)           | 1,200-1,400 (including storage)                                | 1,200-1,400 (including storage) | 1,200-1,400 (including storage)            | 1,200-1,400 (including storage)               |                                                                                                                                                                      |
| 19 Music/Band/Chorus                                                  | 758                                       | 744                                       | 751                                                            | Chorus @ 1,140, Band @ 2,150    | Band- 1 @ 1,132, 1 @ 744, Stage/Band @ 880 | Band @ 2,753, Chorus @ 1,323                  |                                                                                                                                                                      |
| 20 Music Size DOE Std                                                 | 800                                       | 800                                       | 800                                                            | 1,200                           | 1,600                                      | 1,800-2,400                                   |                                                                                                                                                                      |
| 21 Computer Lab                                                       | None                                      | None                                      | None                                                           | 840                             | 1 @ 400, 1 @ 594                           | 2 @ 745                                       |                                                                                                                                                                      |
| 22 Computer Lab Size DOE Std                                          | 500-800                                   | 500-800                                   | 500-800                                                        | 500-800                         | 500-800                                    | 500-800                                       |                                                                                                                                                                      |
| 23 STEM                                                               | None                                      | None                                      | None                                                           | 1 @ 1,095, 2 @ 1,115            | 2 @ 1,168                                  |                                               |                                                                                                                                                                      |
| 24 Shared Spaces                                                      | Multi-Purpose room used for Cafeteria/Gym | Multi-Purpose room used for Cafeteria/Gym | Multi-Purpose room used for Cafeteria/Gym Music/Art share room |                                 |                                            |                                               |                                                                                                                                                                      |

Example: Classroom and Core Space Comparisons for six schools

# Facilities Study Method

## Develop Options and Estimates

### OPTION 3 - Close Sea Road, KES Becomes K-5

Keeps one K-5 school in each of the three Towns.

04-27-10 DRAFT

#### Existing Configuration - 2010

Buildings In Use - 5

Square Feet In Use - 508,646

2010 Students - 2,521

Note: Not Incl. 312 students in schools outside the RSU.

Sq Ft/Student = 201.7

RSU Capacity - 3,064 w/ mod.

#### Mildred L. Day

Grades K-5  
Square feet - 40,821

Current Students - 262

Capacity - 297

Under Capacity - 35 students

(Grades K-41, 1-46, 2-45, 3-39, 4-37, 5-54)

14 Regular Classrooms  
2010 Sq Ft/Student = 155.8

#### Kennebunk Elementary

Grades K-5  
Square feet - 104,865

Current Students - 482

Capacity - 612

Under Capacity - 130 students

(Grades K-110, 1-131, 2-111, 3-130)

30 Regular Classrooms  
2010 Sq Ft/Student = 217.5

#### Sea Road

Grades 4-5  
Square feet - 58,230

Current Students - 247

Capacity - 362

Under Capacity - 115 students

(Grades 4-132, 5-115)

16 Regular Classrooms  
2010 Sq Ft/Student = 235.7

#### Consolidated

Grades K-5  
Square feet - 39,164

Current Students - 190

Capacity - 225

Under Capacity - 35 students

(Grades K-33, 1-34, 2-38, 3-24, 4-35, 5-28)

11 Regular Classrooms  
2010 Sq Ft/Student = 206.1

#### Middle School

Grades 6-8  
Square feet - 131,611

Current Students - 531  
(Not including TAMS in 2010)

Capacity - 688

Under Capacity - 149 students

(Grades 6-176, 7-185, 8-170)

30 Regular Classrooms  
2010 Sq Ft/Student = 247.8

#### Kennebunk High School

Grades 9-12  
Square feet - 133,954  
Current Students - 809

2010 Capacity - 888 with modulars  
Under Capacity w/mod - 114  
2010 Capacity - 789 without modulars  
Over Capacity w/mod - 10

(Grades 9-194, 10-181, 11-202, 12-232)  
51 Teaching Stations  
2010 Sq Ft/Student = 165.3 w/ mod  
2010 Sq Ft/Student = 158.7 w/o mod

#### Proposed Config. - 2010 & 2020

Buildings In Use - 5

Square Feet In Use - 450,415

2020 Students - 2,380

Note: Assumes all students in schools inside the RSU.

Sq Ft/Student = 189.2

#### Mildred L. Day

Grades K-5  
Square feet - 40,821

2010 Proposed Students - 237  
2020 Proposed Students - 270  
2020 + 10 % = 297

Capacity - 297

2010 Under Capacity - 0  
2020 Under Capacity - 27  
2020 + 10 % Und. Cap. = 17

2020 Sq Ft/Student = 151.1

#### Kennebunk Elementary

(Plus Sea Road)  
Grades K-5  
Square feet - 104,865

2010 Proposed Students - 662  
2020 Proposed Students - 547  
2020 + 10 % = 603

Capacity - 612

2010 Over Capacity - 50  
2020 Under Capacity - 65  
2020 + 10 % Und. Cap. = 4

2020 Sq Ft/Student = 191.7

#### Sea Road

School goes off-line

#### Consolidated

(Plus Sea Road)  
Grades K-5  
Square feet - 39,164

2010 Proposed Students - 222  
2020 Proposed Students - 190  
2020 + 10 % = 209

Capacity - 225

2010 Under Capacity - 3  
2020 Under Capacity - 35  
2020 + 10 % Und. Cap. = 5

2020 Sq Ft/Student = 206.1

#### Middle School

(Plus all TAMS)  
Grades 6-8  
Square feet - 131,611

2010 Current Students - 531  
(Not including TAMS in 2010)

2020 Proposed Students - 571  
(Including all TAMS in 2020)  
2020 + 10 % = 627

Capacity - 688

2010 Under Capacity - 149  
2020 Under Capacity - 109  
2020 + 10 % Und. Cap. = 53

2020 Sq Ft/Student = 230.4

#### Kennebunk High School

(Plus all other HS)  
Grades 9-12  
Square feet - 133,954

2010 Current Students - 809  
(Not including Other HS in 2010)

2020 Proposed Students - 616  
(Including all Other HS in 2020)  
2020 + 10 % = 678

2020 Capacity - 789 without modulars

2010 Over Capacity without modulars - 29  
2020 Over Capacity without modulars - 38

2020 + 10% Over Capacity without modulars - 118

2020 Sq Ft/Student = 157.3 w/o mod.

2010 K-5 Needed 262 + 482 + 247 + 190 = 1,181

Capacity 297 + 612 + 225 = 1,134 (Capacity slightly under need. Redistricting would balance students with individual building capacity)

2020 K-5 Needed 1,007

Needed + 10 % = 1,108

Capacity 1,134 (Capacity exceeds need.)



# Facilities Study Method

## Facilities and Financial Studies

- Inventory the condition of all systems including site
- What are you spending to operate the school?
- What can be done to lower your O&M costs? Can improvements pay for themselves over time?

|                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                                                                             |
|----------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------|
| <b>DRAFT 02/11/10</b>            | <b>Special Education, Electric, etc.</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | <b>Mildred L. Day, Jersey - Prepared by the RJC 21 Operations and Management Team and Harrison Architects and Engineers</b> |
| <b>Updated 2/10/2010 3:44 PM</b> | <b>Mildred L. Day School – Electrical &amp; Technology</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                                                                                                             |
| <b>Systems</b>                   | The following list of existing conditions and deficiencies is the basis for the Maintenance and Capital Improvements Plans. The list was developed by Harrison Architects and Engineers and the RSU 21 Operations and Maintenance Team.                                                                                                                                                                                                                                                                                                           |                                                                                                                             |
| <b>Electrical Systems</b>        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                                                                             |
| <b>Service Pad Transformer</b>   |  <ul style="list-style-type: none"> <li>• Electrical Service pad mounted transformer is a small single phase 120/240 volt unit which is showing signs of leakage. No nameplate on enclosure.</li> <li>• <b>Recommendation:</b> Verify if oil is PCB contaminated. Since the transformer is leaking and the main service disconnect is fused at 1200A (approximately 300 kva), this pad transformer appears to be undersized and should be replaced.</li> </ul> |                                                                                                                             |

### Facilities Inventory

| <b>Table 1.04 - Existing Financial Profiles – O &amp; M Costs in the 2013-2014 School Year</b> |                    |                    |                    |                         |                     |                              |                        |             |
|------------------------------------------------------------------------------------------------|--------------------|--------------------|--------------------|-------------------------|---------------------|------------------------------|------------------------|-------------|
|                                                                                                | Blue Point K-2     | Eight Corners K-2  | Pleasant Hill K-2  | Wentworth Intermed. 3-5 | Scarbor. Middle 6-8 | Scarbor. High Incl. District | Scarbor. Schools Total | % of Total  |
| Square Feet                                                                                    | 29,870             | 25,891             | 23,294             | 104,823                 | 128,856             | 300,097                      | 612,631                |             |
| All Physical Plant Costs, O & M, CIP, Supplies, etc.                                           | \$340,586          | \$339,206          | \$325,876          | \$466,051               | \$1,136,565         | \$797,814                    | \$3,406,098            | 14.1%       |
| Staff Salaries & Benefits only                                                                 | \$1,514,071        | \$1,348,779        | \$1,143,121        | \$4,276,179             | \$4,724,420         | \$7,804,929                  | \$20,811,489           | 85.9%       |
| <b>Total 2013-14</b>                                                                           | <b>\$1,854,657</b> | <b>\$1,687,985</b> | <b>\$1,468,997</b> | <b>\$4,742,230</b>      | <b>\$5,860,985</b>  | <b>\$8,602,743</b>           | <b>\$24,217,587</b>    | <b>100%</b> |
| Square feet                                                                                    | 29,870             | 25,891             | 23,294             | 104,823                 | 128,856             | 300,097                      | 612,631                |             |
| \$/square foot                                                                                 | \$62.09            | \$65.20            | \$63.06            | \$45.33                 | \$45.48             | \$28.67                      | \$39.53                |             |
| Actual Students                                                                                | 229                | 232                | 166                | 732                     | 791                 | 1,038                        | 3,158                  |             |
| \$/student                                                                                     | \$8,098.93         | \$7,275.79         | \$8,849.37         | \$6,755.31              | \$7,409.58          | \$8,287.80                   | \$7,668.85             |             |
| All Physical Plant Costs, \$/square foot                                                       | \$11.40            | \$13.10            | \$13.98            | \$4.45                  | \$8.82              | \$2.65                       | \$5.55                 |             |
| All Utilities                                                                                  | \$66,780           | \$51,840           | \$48,620           | \$174,520               | \$215,500           | \$312,600                    | \$869,860              |             |
| \$/square foot                                                                                 | \$2.23             | \$2.00             | \$2.09             | \$1.66                  | \$1.67              | \$1.04                       | \$1.41                 |             |
| Staff Salaries & Benefits                                                                      | \$1,514,071        | \$1,348,779        | \$1,143,121        | \$4,276,179             | \$4,724,420         | \$7,804,929                  | \$20,811,489           |             |
| \$/square foot                                                                                 | \$50.68            | \$52.09            | \$49.07            | \$40.67                 | \$36.66             | \$26.00                      | \$33.97                |             |
| \$/student                                                                                     | \$6,611.66         | \$5,813.70         | \$6,886.27         | \$5,841.42              | \$5,927.71          | \$7,519.19                   | \$6,590.08             |             |

#### NOTE:

Yellow boxes designate schools with excessively high \$/SF and \$/student costs.

### Model O & M Costs

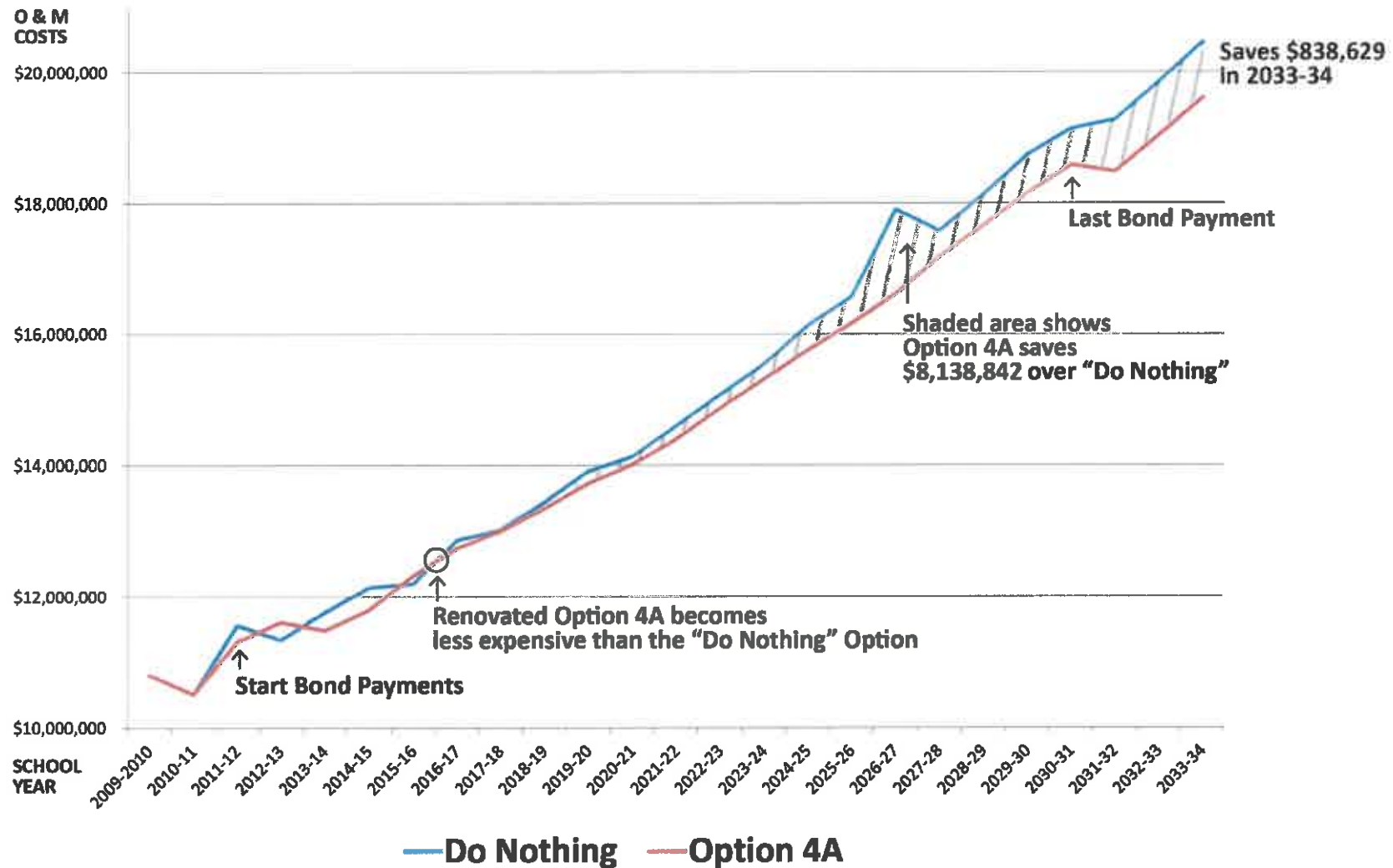


# Facilities Study Method

## Facilities and Financial Studies

**ASK THIS QUESTION:**

*Will addition, renovations and restructuring pay for themselves over time from reduced O&M costs?*



# Educational Design

*"Greenest School in New Hampshire" – Ed Murdough, NH Department of Education at the Grand Opening*



**Idlehurst Elementary School**  
New 530-Student School  
Somersworth, NH





# Educational Design



**Kennebunk Elementary School**  
**New 480-Student School**  
**Kennebunk, ME**





# Educational Design

*Barrington Middle School  
Barrington, NH*

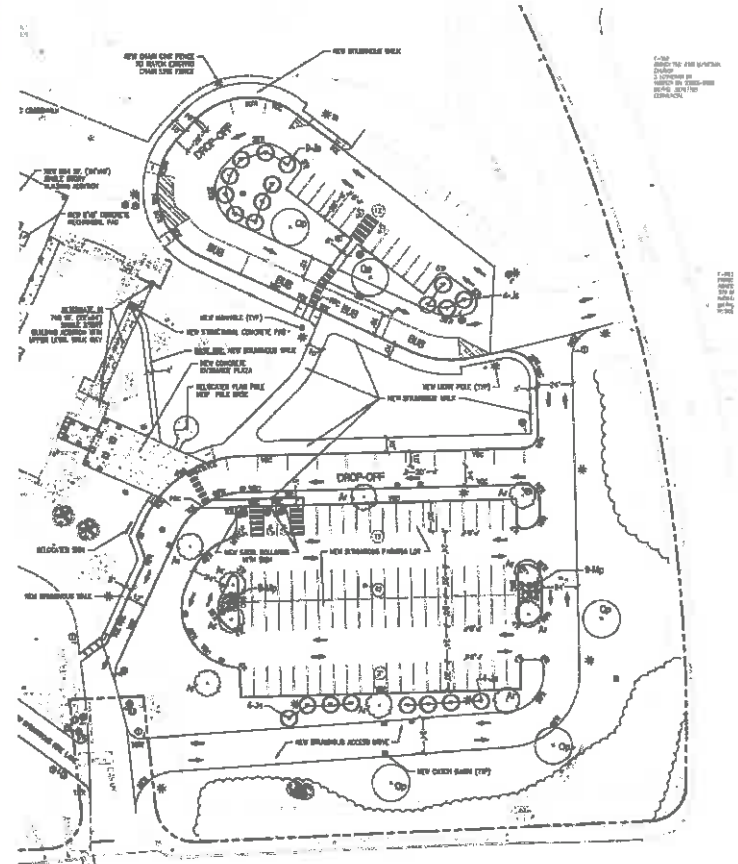


*Weare Middle School  
Weare, NH*



*Dover Middle School  
Dover, NH*







# Educational Design

**Exeter Coop Middle School**  
Exeter, NH



**OPTION 1A**



**OPTION 2A**



**OPTION 2B**





# Educational Design





# Educational Design



Idlehurst Elementary School



Idlehurst Elementary School



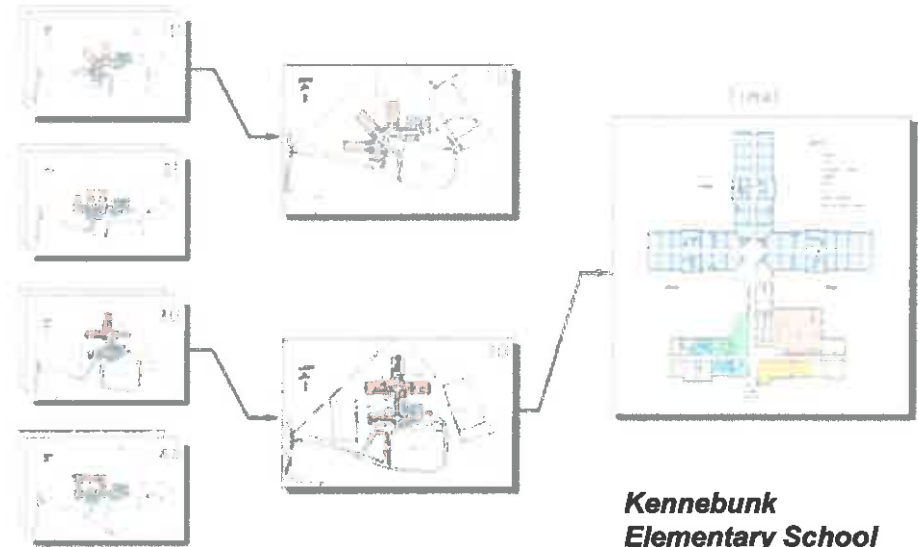
Exeter High School



Wentworth Intermediate School

# What Will The Solution Be?

- It will be your decision.
- Harriman will provide many conceptual design alternatives to consider under your direction.
- Extensive use of 3D modeling tools to help you decide where to put scarce financial resources to educate your children.



**Kennebunk  
Elementary School  
22 options studied**



**Wentworth Intermediate School  
3-D Computer Model**



**Construction Photo**



# Track Record On Fiscal Responsibility

- **Quality Control of the Drawing and Specs**
  - We have a full-time, 30+ year veteran responsible for reviewing all projects line-by-line before they go out
- **Bids vs. Estimates**
  - Harriman does in-house estimating first then hires a 3<sup>rd</sup> party estimator to give an idea independent number, always on budget.
- **Change Order Rate**
  - Industry standard for change orders 3-5%
  - Harriman typically at less than 1%
  - Wentworth School 0.4%, opened September 2014



**Dan Fournier**  
**Quality Control Manager**



# Building Performance And Healthy Environments

- Idlehurst Elementary School – 31.7% more efficient than ASHRAE 90.1 – 2007
- UNH Durham Master Plan – uses waste gas from a nearby landfill to heat, cool and power the campus
- Pittsfield School District Energy Audit, 2010
- Exeter High School – Peer review for solar panels with co-generation installation
- Sanborn School District Energy Audit, 2008
- Durham Community School – 50% more efficient than ASHRAE 90.1 - 2001
- Southern Maine Community College Lighthouse Building – uses seawater coupled with a geothermal heating and cooling system that is 200% more energy efficient than conventional systems
- UMFK, MSAD 27 High School and Elementary School – District Biomass Heating Plant to serve 14 buildings on both campuses. Project payback reduced from 12 to 7 years.





# Sustainable Design

## LEED and CHPS PROJECTS

### CHPS



**Idlehurst Elementary School**

**LEED Silver**



**Bowdoin College, Coffin St. Dorms**

**LEED Certified**



**Woodard & Curran Office Building**

### LEED Platinum



**USM Residence Hall**

**LEED Silver**



**USM, Osher Map Library**

**LEED Certified**



**Whole Foods Market,  
Glastonbury, CT**

### LEED Gold



**Portsmouth Naval Shipyard  
P282 Building**

**LEED Silver**



**L.L. Bean Hunt-Fish Store**

**LEED Certified**



**USM, L/A Campus Addition**

### LEED Gold



**USM Residence Hall**

**LEED Registered**



**South Portland High School**

**LEED Certified**



**Buxton Elementary School**

### LEED Gold



**USM Wishcamper Center**

**LEED Registered**



**Colby College, Miller Library**

**LEED Certified**



**USM John Mitchell Center**

# Earning Community Support

- Establish a realistic budget
- An open and inclusive design process
- Engage all stakeholders in the process
- Communicate, communicate, communicate
- Attend building committee meetings, school board meetings, etc.
- Host public information meetings to present findings and recommendations
- Assist the school district in promoting the project for public support.





# Earning Community Support

## WHY WARRANTS FAIL

The cost/funding requested represents a lack of understanding of the tax burden the tax payer can bear.

A lack of knowledge and acceptance of the stated needs.

All options have not been thoroughly explored.

The coalition of the reasons for a "no" vote is larger than the single group of "yes" voters. There are more reasons to vote "no" than "yes".

The public does not believe the information presented.

The proposal is perceived to be too expensive in terms of the need. It is not an efficient use of resources.

The public does not feel they own the solutions and the decisions that have led to it. Lack of public involvement.

The proposed solution does not meet the announced needs or goes too far beyond them.

The users "teachers, staff, students, custodians, etc." Have not been involved with the solutions which can lead to lack of support.

The funding proposal is not simplified and explained in terms of actual dollar cost to a taxpayer on yearly basis.

Lack of school board unanimity.

The funding proposal would strain the taxpayers to the point that they could not fund other community needs for many years.

## WHY WARRANTS PASS

Design solution that is equal or less \$ than the tolerance of the taxpayer.

Hold public informational meetings sponsored by non school board affiliations.

Documentation made available to the public.

Eliminate the potential negative reasons of a "no" vote.

Retain credible professional with back up documentation.

Balance the proposed project cost with the needs. "Value engineering during conceptual design".

Open public informational meetings. Inviting questions and options. If good ideas are brought up, incorporate them into the design.

Proposed solutions must match needs. If other needs are requested, provide a "wish list" that can be reviewed if bids come in below budget.

Get teachers, staff, students, custodians, etc. Involved and respect their comments and needs.

Relate the added cost in simple terms. "An assessed property of \$xyz would pay an additional \$xyz on their property tax in year 2016".

The school board needs to review all options and may need compromise. They must present one unified proposal.

The project funding requirements do not tap the taxpayers means and are formed with an awareness of other community priorities.



# List of School Projects in Towns/Cities that we Passed a Successful Warrant or Referendum

Harriman has an excellent record of work over many years with the school districts show below. We have worked well with school administrators, staff, and city and town officials in preparing necessary documents for School District Meetings.

Andover, NH - 1992  
 Auburn, NH - 2006  
 Barnstead, NH - 1995, 1996, 2004  
 Barrington, NH - 2002  
 Biddeford, ME - 2005, 2010  
 Buxton, ME - 2009  
 Chester, NH - 2013  
 Corinth, ME - 2013  
 Dover, NH - 2002  
 Durham, ME - 2009  
 Exeter, NH - 1989, 1991, 1992, 2004  
 Fall Mountain Regional, NH - 1995  
 Goshen/Lempster, NH - 1988  
 Hampton Falls, NH - 2004  
 Henniker, NH - 1996, 2011, 2013  
 Hiram, ME - 2005  
 Hooksett, NH - 1989, 2002  
 Hopkinton, NH - 2016  
 Kennebunk, ME - 2003, 2016  
 Lewiston, ME - 1991, 2008, 2011  
 Merrimack Valley, NH - 1994, 2001

Milford, NH - 2000, 2002  
 Nashua, NH - 2013, 2014  
 Newmarket, NH - 2011, 2012, 2013, 2014  
 Newton, NH - 1997  
 North Berwick, ME - 1999  
 North Hampton, NH - 1997  
 Nottingham, NH - 1995  
 Oyster River Cooperative, NH - 2003  
 Pelham, NH - 2001  
 Pembroke, NH - 1991, 1993  
 Pittsfield, NH - 2009, 2012  
 Portsmouth, NH - 2002, 2004  
 Sanborn Regional, NH - 2010, 2011, 2012  
 Scarborough, ME - 2004  
 Somersworth, NH - 1991, 1995, 1997, 2009  
 South Portland, ME - 2011  
 Wakefield, NH - 2006  
 Weare, NH - 2005, 2009  
 Westbrook, ME - 2009  
 Wilton, NH - 2009  
 York, ME - 2015

