SMMA

December 18, 2015

Ms. Kathryn DeCristofaro
Capital Program Manager
Massachusetts School Building Authority
40 Broad Street
Boston, Massachusetts 02109

Re: Peebles Elementary School **Bourne, Massachusetts**
Preliminary Design Program Submission to the MSBA *SMMA No. 15041*

Dear Kathryn:

Attached please find the Module 3 Preliminary Design Program (PDP) package submission to the MSBA. The team has followed the guidelines set forth in Module 3 to develop this submission.

As Owner's Project Manager, we certify that we have reviewed and coordinated the materials, the submittal is complete and confirm that the District has approved the materials for submission to MSBA.

We look forward to reviewing the information contained in this submission with you and your team to move toward the Preferred Schematic Study submission.

Please contact me at 617-520-9403 if you have any questions, comments, or would like to schedule a meeting.

Thank you.

Very truly yours,

SMMA | Symmes Maini & McKee Associates

Joel G. Seeley, AIA
Principal

cc: James Potter, SBC Chair (MF)

enclosures: *Preliminary Design Program*

JGS/sat /P:\2015\15041\05-TRANS\L_Kathryndecristofaro@MSBA_Pdpsubmission_18December2015.Doc

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3.1.1 Introduction

A. Executive Summary
B. Overview of Statement of Interest (SOI)
C. Invitation to Conduct Feasibility Study/MSBA Board Action Letter
D. Agreed Upon Design Enrollment
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A. Executive Summary

A. EXECUTIVE SUMMARY

On September 22, 2015, Flansburgh Architects was hired to prepare a Feasibility Study and Schematic Design for the Town of Bourne according to Modules 3 and 4 of the MSBA guidelines. The first part of work consisted of reviewing the Statement of Interest, preparing an existing conditions report, and developing a needed space program that would fit within the MSBA space guidelines.

The existing conditions report which is in section 3.1.4 of this report expands on and verifies most of the items mentioned in the SOI and concludes that although the Peebles Elementary School has been well maintained, most of it is over 62 years old and is in need of significant work. Although structurally sound, the systems and finishes have reached the end of their useful life. Some of the more significant issues are; lack of a fire sprinkler system, no insulation or cavity in the exterior walls, numerous handicap accessibility problems, several code issues, and asbestos in several locations that will need to be abated. The seven year old Bournedale Elementary School is in comparatively good condition with minor envelope water infiltration issues, acoustical concerns and storage issues.

While the existing conditions study was being prepared, a series of “visioning” sessions were held to establish some of the key goals of the educational program as well as the space needs for the school. This was then followed by a series of interviews with key staff, teachers, and students to understand specific space needs and adjacency requirements. From these interviews, the space programs were developed that are in section 3.1.3 of this report. Four different grade configurations were studied with options for new or renovation/addition for each configuration for a total of seven options. All seven options show that there is a lack of space required for proper 21st Century education. This additional needed space can be resolved either with a new addition and renovation or a new building.

Functional relationship diagrams were then developed showing how the building could be organized from information developed at both the visioning sessions and interviews.

The desire to keep a small school “feel” suggests breaking the school into “neighborhoods” in the larger sized options.

This Preliminary Design Program Report concludes with a summary of seven proposed alternatives plus a “Base Repair” option, which have been narrowed down to the following four options in Section 3.1.6 H of this report:

1. Grades K-4 - 250 Students
2. Grades PK-4 - 725 Students
3. Grades PK-5 - 885 Students
4. Grades K-5 - 410 Students

Further study of these four options and costs will occur in the Preferred Schematic Study (PSR) phase.

B. Overview of Statement of Interest (SOI)

B. OVERVIEW OF STATEMENT OF INTEREST (SOI)

The original Peebles Elementary School Statement of Interest emphasized five key issues:

1. The school is in very poor physical condition;
2. There is overcrowding due to lack of proper educational spaces;
3. The school is not fully accessible;
4. HVAC and electrical systems are outdated and at the end of their useful life;
5. Need to provide educational spaces that will provide a full range of programs for 21st Century Education.

The Peebles Elementary School was built in 1953 with an addition in 1959. All of the infrastructure components consist of original equipment that has reached the end of its useful life. This is causing issues of imminent failures, poor interior air quality, code compliance issues, and an educational delivery system that is in poor condition.

In addition, there are several handicap accessibility issues, cracking of the exterior brick work, settlement of floor slabs and many more building and site problems.

Space needs were identified as follows:

- Undersized classrooms;
- Small, under-equipped media center
- Lack of Music and Band spaces

The original Statement of Interest (SOI) is attached in the Appendix of this report.

C. Invitation to Conduct Feasibility Study / MSBA Board Action Letter

January 14, 2015

Mr. Thomas M. Guerino, Town Administrator
Bourne Town Hall
24 Perry Avenue, Room 101
Buzzards Bay, MA 02532-3441

Re: Town of Bourne, James F. Peebles Elementary School

Dear Mr. Guerino:

I am pleased to report that the Board of the Massachusetts School Building Authority (the "MSBA") has voted to invite the Town of Bourne (the "Town") to collaborate with the MSBA in conducting a Feasibility Study for the James F. Peebles Elementary School. The Board's vote follows the Town's timely completion of all of the requirements of the MSBA's Eligibility Period.

I do want to emphasize that this invitation to collaborate on a Feasibility Study is ***not*** approval of a project, but is strictly an invitation to the Town to work with the MSBA to explore potential solutions to the problems that have been identified. Moving forward in the MSBA's process requires collaboration with the MSBA, and communities that "get ahead" of the MSBA without MSBA approval will not be eligible for grant funding. To qualify for any funding from the MSBA, local communities must follow the MSBA's statute, regulations, and policies which require MSBA collaboration and approval at each step of the process.

During the Feasibility Study phase, the Town and the MSBA will collaborate pursuant to the terms of the Feasibility Study Agreement to find the most fiscally responsible and educationally appropriate solution to the problems identified at the James F. Peebles Elementary School. The Feasibility Study, which will be conducted pursuant to the MSBA's regulations and policies, requires the Town to work with the MSBA on the procurement of an Owner's Project Manager and Designer, which will help bring the Town's Feasibility Study to fruition.

We will be contacting you soon to discuss these next steps in more detail. In the meantime, however, I wanted to share with you the Board's decision and provide a brief overview of what this means for the Town of Bourne.

I look forward to continuing to work with you as part of the MSBA's grant program. As always, feel free to contact me or my staff at (617) 720-4466 should you have any questions.

Sincerely,

John K. McCarthy
Executive Director

Cc: Legislative Delegation
Peter J. Meier, Chair, Bourne Board of Selectmen
Christopher Hyldburg, Chair, Bourne School Committee
Steven Lamarche, Superintendent, Bourne Public Schools
Edward Donoghue, Director of Business Services, Bourne Public Schools
File: 10.2 Letters (Region 6)

D. Agreed-upon Design Enrollment

MASSACHUSETTS SCHOOL BUILDING AUTHORITY

TOWN OF BOURNE
JAMES F. PEEBLES ELEMENTARY SCHOOL
STUDY ENROLLMENT CERTIFICATION

As a result of a collaborative analysis with the Massachusetts School Building Authority (the "MSBA") of enrollment projections and space capacity needs for the proposed project at the James F. Peebles Elementary School, the Town of Bourne hereby acknowledges and agrees that the design of preliminary options which may be evaluated as part of the feasibility study for the proposed project at the James F. Peebles Elementary School shall be based in accordance with the following:

Enrollment for Grades K-5 at a District-wide elementary school	Enrollment for Grades K-4 at a District-wide elementary school	Enrollment for Grades K-4 at the James F. Peebles Elementary School
885 students	725 students	250 students

The space allowance for each alternative evaluated shall assume no more than the enrollments as detailed in the table above. The Town of Bourne acknowledges and agrees that it has no right or entitlement to any particular study enrollment, square feet per student space allowance, or total square footage referenced in the table above for the preliminary options, and further acknowledges and agrees that it shall not bring any or action, legal or equitable, against the MSBA, or any of its officers or employees, for the purpose of obtaining an increase in the study enrollment of the James F. Peebles Elementary School that it has acknowledged and agreed herein. The Town of Bourne further acknowledges and agrees that the study enrollment presented herein is only applicable to the evaluation of preliminary options conducted as part of the feasibility study for the proposed James F. Peebles Elementary School project. Upon receipt of the District's recommendation of a Preferred Schematic Design for the proposed James F. Peebles Elementary School project, and subject to the MSBA's review of such recommendation, the MSBA shall forward a Design Enrollment Certification with a design enrollment specific to the recommended and approved Preferred Schematic Design, which shall supersede this certification.

The undersigned, for themselves and the Town of Bourne, hereby certify that they have read and understand the contents of this Study Enrollment Certification and that each of the above statements is true, complete and accurate. The undersigned hereby certify that they have been duly authorized by the appropriate governmental body to execute this Certification on behalf of the Town of Bourne and to bind the Town of Bourne to its terms.

Chief Executive Officer

12/16/14

Date

Superintendent of Schools

12.16.2014

Date

Duly Authorized Representative of School Committee

12-16-14

Date

MASSACHUSETTS SCHOOL BUILDING AUTHORITY

TOWN OF BOURNE
JAMES F. PEEBLES ELEMENTARY SCHOOL
STUDY ENROLLMENT CERTIFICATION

As a result of a collaborative analysis with the Massachusetts School Building Authority (the "MSBA") of enrollment projections and space capacity needs for the proposed project at the James F. Peebles Elementary School, the Town of Bourne hereby acknowledges and agrees that the design of preliminary options which may be evaluated as part of the feasibility study for the proposed project at the James F. Peebles Elementary School shall be based in accordance with the following:

Enrollment for Grades K-5 at a District-wide Elementary School	Enrollment for Grades K-4 at a District-wide Elementary School	Enrollment for Grades K-4 at the James F. Peebles Elementary School including District-wide Grade 5	Enrollment for Grades K-4 at the James F. Peebles Elementary School
885 students	725 students	410 students	250 students

The space allowance for each alternative evaluated shall assume no more than the enrollments as detailed in the table above. The Town of Bourne acknowledges and agrees that it has no right or entitlement to any particular study enrollment, square feet per student space allowance, or total square footage referenced in the table above for the preliminary options, and further acknowledges and agrees that it shall not bring any or action, legal or equitable, against the MSBA, or any of its officers or employees, for the purpose of obtaining an increase in the study enrollment of the James F. Peebles Elementary School that it has acknowledged and agreed herein. The Town of Bourne further acknowledges and agrees that the study enrollment presented herein is only applicable to the evaluation of preliminary options conducted as part of the feasibility study for the proposed James F. Peebles Elementary School project. Upon receipt of the District's recommendation of a Preferred Schematic Design for the proposed James F. Peebles Elementary School project, and subject to the MSBA's review of such recommendation, the MSBA shall forward a Design Enrollment Certification with a design enrollment specific to the recommended and approved Preferred Schematic Design, which shall supersede this certification.

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Chief Executive Officer

11/18/2015

Date

Superintendent of Schools

11.18.2015

Date

Duly Authorized Representative of School Committee

Nov 18, 2015

Date

E. Capital Budget Statement

E. CAPITAL BUDGET STATEMENT

The preliminary estimated project cost ranges from approximately $37.35 million to $46.12 million depending on the final preferred alternative chosen. The local share of debt service is planned to be funded via debt exclusions supported by the tax levy of the Town.

The base reimbursement share for this project from MSBA is 43.84% of eligible costs. The following are the incentive points that are being considered: Renovation (dependent upon which alternative chosen), High Efficiency Green School Program, Best Practices for Routine and Capital Maintenance, and Use of CM-at-Risk. The remaining percentage would be locally funded as explained above.

F. Project Directory

TOWN OF BOURNE
PEEBLES ELEMENTARY SCHOOL FEASIBILITY STUDY
PROJECT DIRECTORY
SMMA NO. 15041
Date: June 1, 2015
Updated: December 14, 2015

PROJECT MANAGEMENT | SMMA

	Contact and Address	Cell Number
School Building Committee	**James L. Potter,** SBC Chair onsetjp@juno.com	508-759-1630
	Peter L. Meier, Chair of Boston of Selectmen pmeier@townofbourne.com	508-274-7184
	Christopher Hyldburg, Chair of School Committee chrish@alpha-1.com	508-254-1715
	Laura Scena, School Committee Member laurascena@yahoo.com	508-759-3961
	Natasha Scarpato, *Member-At-Large* scarpato4@comcast.net	774-269-5014
	Richard A. Lavoie, *Member of Finance Committee* Richl.Lavoie@gmail.com	508-728-9094
	William Meier, *Building Trade Expert* dusty22752@aol.com	508-759-8237
	Mary Jo Coggeshall, *Member-At-Large* mjcoggeshall@gmail.com	508-776-5404
	Frederick H. Howe, *Board of Health* rickhowe9@gmail.com / howejr@aol.com	508-563-3616
	Steven M. Lamarche, *Superintendent of Schools, BPS* slamarche@bourneps.org	774-994-1434
	Edward S. Donoghue, *Director of Business Services, BPS* edonoghue@townofbourne.com	781-424-0467
	Thomas M. Guerino, *Town Administrator* tguerino@townofbourne.com	508-509-1377
	Jonathan Nelson, *Director of Facilities* jnelson@townofbourne.com	508-566-1349
	Elizabeth A. Carpenito, *Principal* ecarpenito@bourneps.org	508-369-9818
	Kathy Anderson, *Elementary/Special Education Secretary* kanderson@bourneps.org	508-317-3464

TOWN OF BOURNE
PEEBLES ELEMENTARY SCHOOL FEASIBILITY STUDY
PROJECT DIRECTORY
SMMA NO. 15041
Date: June 1, 2015
Updated: December 14, 2015

PROJECT MANAGEMENT | SMMA

	Contact and Address	Cell Number
School Committee	**Christopher Hyldburg**, *Chairperson* *chyldburg@bourneps.org* **Heather DiPaolo,** *Vice Chairperson* *hdipaolo@bourneps.org* **Anne-Marie Siroonian,** *Secretary* *asiroonian@bourneps.org* **Judith Froman** *jfroman@bourneps.org* **Mitch McClain** *mmcclain@bourneps.org* **Laura Scena** *lscena@bourneps.org* **Matthew Stuck** *mstuck@bourneps.org*	
Owner's Project Manager	**Symmes Maini & McKee Associates, Inc. (SMMA)** 1000 Massachusetts Avenue Cambridge, MA 02138 **Joel G. Seeley,** *Project Manager* *jseeley@smma.com* **Antone Dias, CS**, *Onsite Representative* *adias@smma.com* **Sarah A. Traniello**, *Reports Manager* *straniello@smma.com*	617-547-5400 x403 x660 x240
Architect	**Flansburgh Architects, Inc.** 77 North Washington Street Boston, MA 02114-1910 **Kent Kovacs,** AIA, LEED AP, *Principal-In-Charge* *kkovacs@flansburgh.com* **Jorge M. Cruz,** AIA, LEED AP, *Project Manager* *jcruz@flansburgh.com* **Betsy Farrell Garcia,** AIA, LEED AP BC+D, *Project Architect* *bgarcia@flansburgh.com*	617-367-3970 617-720-7873 x270 x290 x244
Site Survey/Civil Engineering/Traffic Engineering **Site Survey** **Civil** **Traffic**	**Nitsch Engineering, Inc.** 2 Center Plaza, Suite 430 Boston, MA 02108-1928 **Alexander D. Diotte, PLS** *Project Manager* **Aaron A. Gallagher, PE, CFM, LEED AP BD+C** *Project Manager* **Nijdeh Havan, PE, PTOE** *Traffic Engineering*	617-338-0063 617-338-6472
Landscape Architecture	**Waterman Design Associates, Inc.** 31 East Main Street Westborough, MA 01581 **Michael Dowhan,** *Senior Landscape Architect* *mjd@wvassoc.com*	508-366-6552 508-366-6506

	Contact and Address	Cell Number
Structural Engineering	**Boston Building Consultants** 241A Street, Suite 220 Boston, MA 02210 **James Balmer,** *Principal Structural Engineer* *jbalmer@bbcboston.com*	617-542-3933 617-426-8922
Fire Protection Engineering/ Plumbing Engineering/ HVAC Engineering/Electrical Engineering	**Garcia Galuska & DeSousa** 370 Faunce Corner Road North Dartmouth, MA 02747 **Carlos G. DeSousa, P.E.** *Principal, Electrical Engineering* *carlos_desousa@g-g-d.com* **Christopher M. Garcia, P.E., CFPS** *Principal, Plumbing & Fire Protection Engineer* *chris_garcia @g-g-d.com* **Dominick B. Puniello, PE, CEM, LEED AP** *Principal, HVAC Engineer* *dom_puniello@g-g-d.com*	508-998-5700 508-998-0883
Data/Communications/Technology/ Security Consultant	**Edvance Technology** 3 Summer Street Chelmsford, MA 01824 300 Brickstone Square, Suite 201 Andover, MA 01880 **Scott Goodrich** *sgoodrich@edvancetech.com*	978-256-9900 978-560-1711
Geotechnical and GeoEnvironmental Engineering	**Geotechnical Services Inc. (GSI)** 55 North Stark Highway Weare, NH 03281 **Harry K. Wetherbee, P.E.** *President / Principal Engineer* *hwetherbee@geotechserve.com* **Glen Zoladz, P.E.** *Senior Geotechnical Engineer*	603-529-7766
Hazardous Materials & Environmental Permitting	**Fuss & O'Neill EnviroScience, LLC.** 50 Redfield Street, Suite 100 Boston, MA 02122 **Robert L. May, Jr.,** *President* *rmay@fando.com* **Dustin A. Diedricksen,** *Project Manager/Scientist* *ddiedricksen@fando.com*	617-282-4675 800-286-2469
Cost Estimating	**Project Management & Cost (PM&C)** 59 South Street Hingham, MA 02043 **Peter Bradley** *peterbradley@pmc-ma.com*	781-740-8007 781-740-1012
Food Service Consultant/ Laboratory Consultant/ Furniture, Fixtures and Equipment Consultant	**Tavares Design Associates** 8 Winchester Place, Suite 301 Winchester, MA 01890 **Manuel J. Tavares,** *Principal* *mjt@tavaresdesign.com* **Robert Fogarty,** *CAD Designer* *rob@tavaresdesign.com*	781-729-5541

	Contact and Address	Cell Number
Acoustical Consultant	**Acentech** 33 Moulton Street Cambridge, MA 02138 **Nicole Cuff** *ncuff@acentech.com*	617-499-8000 617-499-8074
Educational Programming Consultant	**New Vista Designs for Learning** 32 Sheridan Street, Suite #2 Jamaica Plain, MA 02130 **David Stephen, M.ED.,** *Architect* *david@newvistadesign.net*	617-477-4660 617-477-4660 617-733-0847
Construction Specifications Consultant	**Lund Associates** 51 Monument Street Wenham, MA 01984-1310 **David Lund, CSI, CCS, AWI** *President* *david@lundassociates.com*	978-468-5141
Sustainability Consultant	**James Carr Architecture & Design** 1385 Cambridge Street Cambridge, MA 02139 **James Carr, AIA, LEED AP BD+C** *Architect & Owner* *jcarr@alum.mit.edu*	617-595-6351
Code / Accessibility Consultant	**R.W. Sullivan Engineering** The Schrafft Center 529 Main Street, Suite 203 Boston, MA 02129 **Kevin S. Hastings, P.E., LEED AP** *Principal / Sullivan Code Group Director*	617-523-8227 617-523-8016
Theatrical Consultant	**Theatre Projects Consultants** 47 Water Street South Norwalk, CT 06854 **Millie Dixon** *Principal, Connecticut office* *mdixon@theatreprojects.com*	203-299-0830 203-299-0835

G. Updated Project Schedule

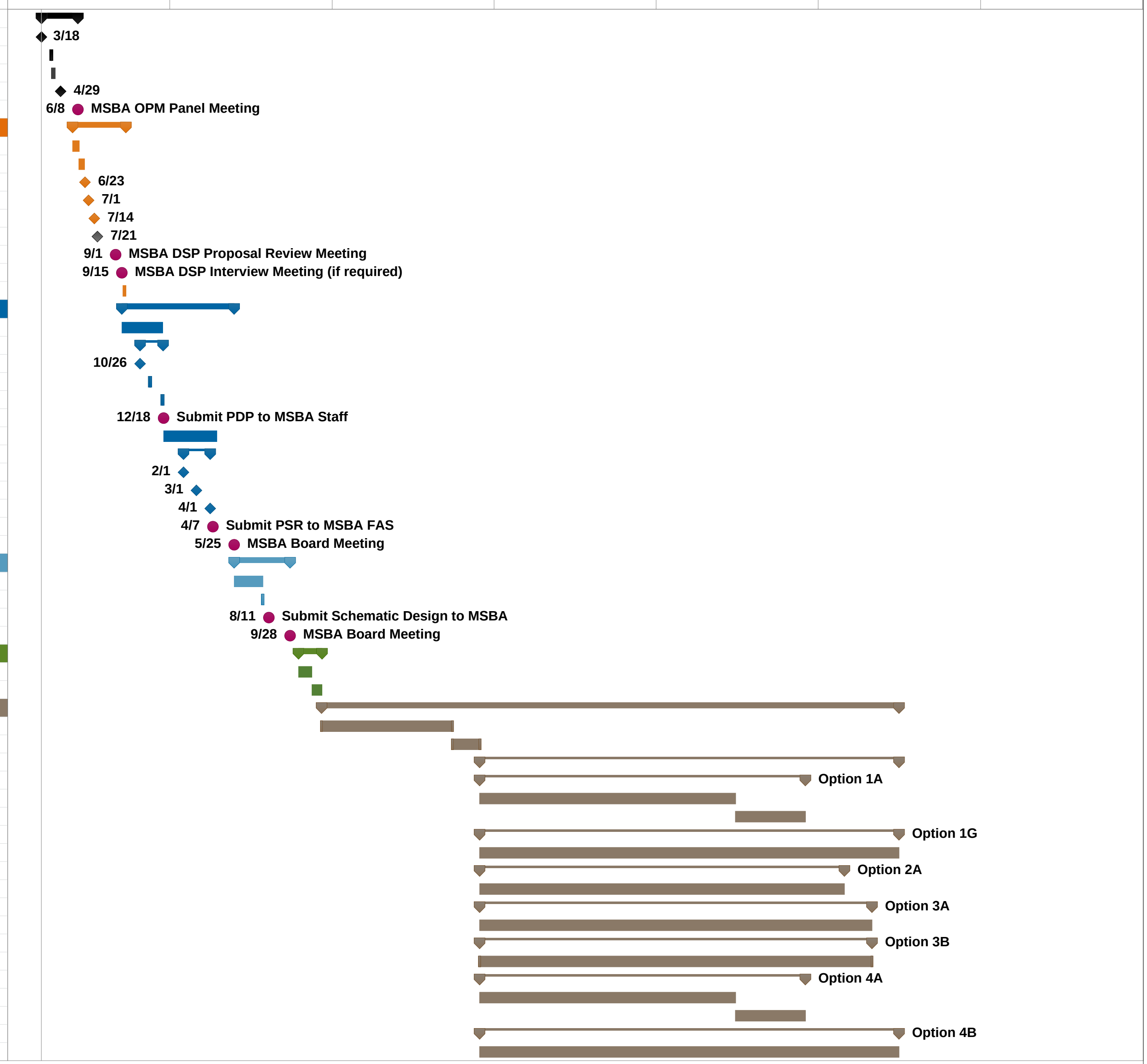
G. UPDATED PROJECT SCHEDULES

The Project Schedule anticipates MSBA Board of Director's approval to proceed into Schematic Design at their May 25, 2016 meeting and MSBA Board of Director's approval of the Project Scope and Budget Agreement at their September 28, 2016 meeting. District-wide appropriation voting will take place during the period of October and November 2016. The Project Schedule is appended to the end of this section.

Updated: June 25, 2015
Revised: December 4, 2015

TOWN OF BOURNE, MASSACHUSETTS
PEEBLES ELEMENTARY SCHOOL
PROJECT SCHEDULE

ID	Task Name	Duration	Start	Finish
1	**RETAIN OPM**	**58 days**	**3/18/2015**	**6/8/2015**
2	Submit OPM Proposals	0 days	3/18/2015	3/18/2015
3	OPM Interview	2 days	4/8/2015	4/9/2015
4	Negotiate OPM Contract	7 days	4/9/2015	4/17/2015
5	Submit Documents to MSBA OPM Panel	0 days	4/29/2015	4/29/2015
6	**MSBA OPM Panel Meeting**	**0 days**	**6/8/2015**	**6/8/2015**
7	**RETAIN DESIGNER**	**86 days**	**5/27/2015**	**9/23/2015**
8	Draft Designer RFS and Submit to MSBA	11 days	5/27/2015	6/10/2015
9	MSBA Approve Draft RFS	9 days	6/10/2015	6/22/2015
10	Submit to Central Register	0 days	6/23/2015	6/23/2015
11	Notice in Central Register	0 days	7/1/2015	7/1/2015
12	Briefing Session	0 days	7/14/2015	7/14/2015
13	Submit Designer Proposals	0 days	7/21/2015	7/21/2015
14	**MSBA DSP Proposal Review Meeting**	**0 days**	**9/1/2015**	**9/1/2015**
15	**MSBA DSP Interview Meeting (if required)**	**0 days**	**9/15/2015**	**9/15/2015**
16	Negotiate Designer Contract	5 days	9/17/2015	9/23/2015
17	**FEASIBILITY STUDY (FS)**	**178 days**	**9/15/2015**	**5/25/2016**
18	Develop Preliminary Design Program (PDP)	65 days	9/15/2015	12/15/2015
19	**Community Presentations**	37 days	10/26/2015	12/16/2015
20	Community Forum 1: Visioning	0 days	10/26/2015	10/26/2015
21	Community Forum 2: Existing Conditions	3 days	11/16/2015	11/18/2015
22	Community Forum 3: Options	3 days	12/14/2015	12/16/2015
23	**Submit PDP to MSBA Staff**	**0 days**	**12/18/2015**	**12/18/2015**
24	Develop Preferred Schematic Report (PSR)	84 days	12/18/2015	4/15/2016
25	**Community Presentations**	**44 days**	**2/1/2016**	**4/1/2016**
26	Community Forum 1	0 days	2/1/2016	2/1/2016
27	Community Forum 2	0 days	3/1/2016	3/1/2016
28	Community Forum 3	0 days	4/1/2016	4/1/2016
29	**Submit PSR to MSBA FAS**	**0 days**	**4/7/2016**	**4/7/2016**
30	**MSBA Board Meeting**	**0 days**	**5/25/2016**	**5/25/2016**
31	**SCHEMATIC DESIGN (SD)**	**90 days**	**5/25/2016**	**9/28/2016**
32	Develop Schematic Design	47 days	5/25/2016	7/28/2016
33	Submit Final Budget to MSBA	1 day	7/28/2016	7/28/2016
34	**Submit Schematic Design to MSBA**	**0 days**	**8/11/2016**	**8/11/2016**
35	**MSBA Board Meeting**	**0 days**	**9/28/2016**	**9/28/2016**
36	**LOCAL VOTES**	**39 days**	**10/17/2016**	**12/8/2016**
37	Local Voting	22 days	10/17/2016	11/15/2016
38	Debt Exclusion Votes	17 days	11/16/2016	12/8/2016
39	**DESIGN AND CONSTRUCTION (TBD)**	**929 days**	**12/8/2016**	**6/30/2020**
40	Design Documentation	211 days	12/8/2016	9/28/2017
41	Bidding and Award	44 days	9/29/2017	11/29/2017
42	**Construction**	**675 days**	**11/29/2017**	**6/30/2020**
43	**Option 1A**	**524 days**	**11/29/2017**	**12/2/2019**
44	Building	413 days	11/29/2017	6/28/2019
45	Demo / Site Work	112 days	6/28/2019	12/2/2019
46	**Option 1G**	**675 days**	**11/29/2017**	**6/30/2020**
47	Phased Renovation and Additions	675 days	11/29/2017	6/30/2020
48	**Option 2A**	**588 days**	**11/29/2017**	**2/28/2020**
49	Phased Renovation and Additions	588 days	11/29/2017	2/28/2020
50	**Option 3A**	**632 days**	**11/29/2017**	**4/30/2020**
51	Phased Renovation and Additions	632 days	11/29/2017	4/30/2020
52	**Option 3B**	**632 days**	**11/29/2017**	**4/30/2020**
53	Phased Renovation and Additions	632 days	11/29/2017	4/30/2020
54	**Option 4A**	**524 days**	**11/29/2017**	**12/2/2019**
55	Building	413 days	11/29/2017	6/28/2019
56	Demo / Site Work	112 days	6/28/2019	12/2/2019
57	**Option 4B**	**675 days**	**11/29/2017**	**6/30/2020**
58	Phased Renovation and Additions	675 days	11/29/2017	6/30/2020



3.1.2 Educational Program

A. Grade and School Configuration Policies
B. Class Size Policies
C. School Scheduling Method
D. Teaching Methodology and Structure
E. Teacher Planning and Room Assignment Policies
F. Lunch Programs
G. Technology Instruction Policies and Program Requirements
H. Art Program
I. Music/Performing Arts Program
J. Physical Education
K. Special Education
L. Vocational Education
M. Transportation Policies
N. Functional and Spatial Relationships and Adjacencies
O. Security and Visual Access Requirements
P. Educational Visioning

[redacted] A. Grade and School Configuration Policies

A. GRADE AND SCHOOL CONFIGURATION POLICIES

Bourne is a small rural community that is uniquely known as the access point to and from Cape Cod, MA by crisscrossing the Cape Cod Canal via the Bourne or Sagamore bridges. The Bourne Public Schools (BPS) have over 2,000 students attending Pre-Kindergarten through grade 12. There are two collaborating elementary schools, Peebles Elementary (K-4) and Bournedale Elementary (PreK-4), offering community-based experiences for our youngest students. The Bourne Middle School (5-8) is based on a middle school pedagogy and the Bourne High School (9-12) is rich in tradition with emerging innovative experiences and programs for our oldest students who then enter higher education or the workforce.

Elementary students are assigned to a respective elementary school as determined by the location of the student's residence. Students in grade 1-4 who reside on the north or mainland side of the Cape Cod Canal attend Bournedale Elementary School and students in grade 1-4 who reside on the south or cape side of the Cape Cod Canal attend Peebles Elementary School. This includes members of the armed forces who reside at Joint Base Cape Cod. We have recently opened four sections of full-day kindergarten, 2 at each elementary school and for those selected through our lottery system the aforementioned delineation location is the same. All integrated pre-kindergarten students and half-day kindergarten students attend the Bournedale Elementary School.

All town students in grades 5-8 attend the Bourne Middle School as is the same for high school students in grades 9-12.

BOURNE PUBLIC SCHOOLS

DISTRICT IMPROVEMENT PLAN

2015-2018

Bourne Public Schools
District Improvement Plan

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I. Introduction

Acknowledgements

The District Improvement Plan is a publication of the Bourne Public Schools under the following leadership:

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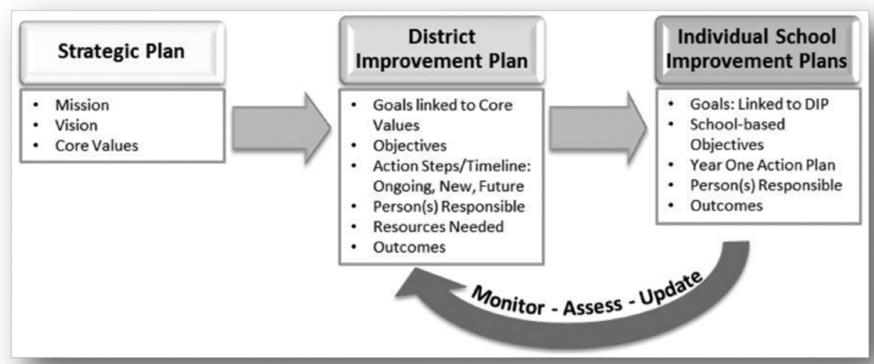
Acknowledgement also goes to the teachers and staff of the Bourne Public Schools who read drafts and offered comments and feedback; they helped plant the seed for a new systemic plan for continuous improvement.

Overview of the Strategic Planning Process

A Strategic Plan (SP) is a document developed through broad-based participation that expresses an organization's foundational beliefs and, through goals, objectives, and action plans, provides a "blueprint" for long-term decision-making. Typically, a Strategic Plan embodies a statement of core values, a mission, and a vision. In education, core values are a set of fundamental beliefs of a district and its personnel about children and learning that serve as guiding principles for behavior and action. Core values offer a sense of what is right and wrong and often generate a level of outrage when violated. A mission statement is a statement of a district's primary purpose and reason for existing. Often just a sentence or two, it communicates a sense of direction for the entire district and is intended to remain relatively unchanged over time. The vision is a description of the intended future for a district and its school community if the plan is realized.

The District Improvement Plan (DIP) builds upon the foundational principles of the Strategic Plan and expresses goals, objectives, and strategies that, if accomplished, lead to the achievement of the vision. The DIP, in turn, inspires initiatives in individual School Improvement Plans (SIP.) The SIPs define the efforts made at the school level to achieve district-wide goals, though independent school-based goals are also included. The graphic below depicts the relationship among the SP, DIP, and SIPs.



Goal and Purpose of the District Improvement Plan

The overall goal of the Strategic Plan, District Improvement Plan, and the individual School Improvement Plans is to build systemic and sustainable capacity to carry out data-supported planning going forward. Planning helps prioritize major initiatives and may impact far-reaching areas including curriculum development, teaching and learning, assessment, organization, facilities improvement, and data management.

The Bourne Public School District can improve student learning and system effectiveness by engaging in a cycle of continuous improvement to manage its performance. To support this purpose, we have developed a multi-year District Improvement Plan that includes processes to support schools, students, and staff in their performance management efforts. The DIP has been designed to meet local, state, federal, and program accountability requirements.

Our District Improvement Plan must be evaluated and revised annually based on a number of components including but not limited to:

- Correlating Core Values
- Initiative Titles
- Goals
- Objectives
- Action Steps
- Resources
- Description of staff responsible for overseeing accomplishment of initiatives
- Outcomes or Products
- Timelines for implementation/completion of strategies

District Core Values and Guiding Themes

The Core Values of the Bourne Public Schools that serve as the foundation for continued planning are offered below:

- All students can learn
- All decisions are made in the best interests of students
- All students learn best when actively involved in the learning process
- Learning will be more successful when school experiences have meaning for students

Guiding Themes that characterize the educational processes and culture in the Bourne Public Schools are articulated in the district Strategic Plan and include the following areas:

- Student Achievement
- Personal Growth
- School Climate
- Collaborations and Partnerships
- Resources

Maintaining the DIP

In the spring of each school year, the DIP should be reviewed in its entirety and the plan updated for the new school year. This should precede the development of School Improvement Plans, produced by the individual school's School Council, that are closely linked to the updated DIP. Goals and objectives that have been accomplished may be eliminated from the future plan. Those goals that have not been completed should be carried over into the new plan. Any new goals that will be acted upon in the new school year will be supported minimally by articulated objectives, strategies, and person(s) responsible. This planning cycle, when successfully and routinely adopted, will maintain focus and stability over time.

Conclusion

For purposes of clarity, this district improvement planning process starts as a series of separate initiatives intended to be congruent. While the initiatives generally should be sequentially intertwined, they will not necessarily always coincide but may overlap between the phases and steps to accomplish each. As such, identified persons responsible for implementation should not feel bound to strictly interpret action steps as sequentially listed. They should feel empowered to "tweak" the initiative to fit the specific as the work evolves.

Finally, all district and school staff should remember the purpose of the district improvement planning process: to focus and provide a plan of action that consistently reinforces student learning and achievement.

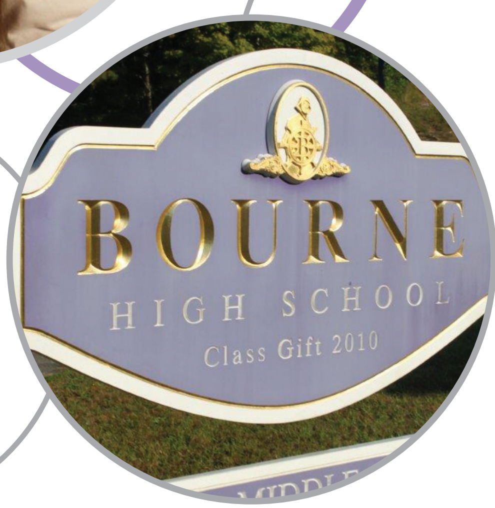
II. DIP Initiatives

Core Values: All students can learn; all decisions are made in the best interest of students; all students learn best when actively involved in the learning process; and learning will be more successful when school experiences have meaning for students

Guiding Theme: Student Achievement

Initiative Title: Curriculum Articulation and Improvement

Type: Ongoing



Goal	Ensure curriculum alignment with the 2011 MA Curriculum Frameworks in applicable subject areas.
Objectives	Develop curriculum maps using ATLAS mapping software. Share model lessons through the collaborative use of ATLAS software. Provide clarity about learning objectives and targets, and promote increased student engagement.
Action Steps	Complete Stages 1 and 2 of all courses posted to Atlas. Identify learning objectives and resources. Conduct annual review for adjustments. Promote the backwards design process through use of the Bourne Model of Instruction Lesson Planning templates.
Resources Needed	Common planning time Summer curriculum development time A clear structure for oversight of mapping contents and annual review
Person(s) Involved	All teachers and administrators Assistant Superintendent of Schools
Outcome(s) or Product(s)	Alignment of curriculum with the 2011 MA Curriculum /Frameworks A curriculum that is horizontally and vertically aligned with appropriate learning transitions from grade to grade and course to course Clarity about what students know, understand, are able to do, and can transfer An articulated process to reflect on and improve our curriculum each year Establishment of a teacher-driven sharing network through the effective use of ATLAS
Year(s) of Completion	Ongoing

Core Values: All students can learn; all decisions are made in the best interest of students; all students learn best when actively involved in the learning process; and learning will be more successful when school experiences have meaning for students

Guiding Theme: Personal Growth

Initiative Title: Assessment

Type: Ongoing

Goal	Establish components of the district's assessment system and procedures to ensure accurate measurement of student growth in specific areas in real time and longitudinally.
Objectives	Measure student growth in specific disciplines and grade levels periodically through time to inform curricular and instructional adjustments. Encourage real time measures of student growth that allow students to demonstrate and transfer understandings, knowledge, and skills.
Action Steps	Develop common assessments to be components of the mapping process in specific disciplines. Promote increased use of formative assessments to enable instructional adjustments and interventions as needed to meet the unique learning needs of individual students. Extract DDMs, as warranted, from the common assessments to support the educator evaluation process. Identify, acquire, or build a data repository and analysis application that can produce timely reports on student performance and also meet the requirements of the educator evaluation process. Establish a district-wide Data Team to help establish district-wide data collection and reporting priorities; oversee the processes for data input; and to provide a forum for discussion on all issues of data access and analysis.

Resources Needed	ATLAS software and professional development as needed to complete action steps Time commitment to develop common assessments where appropriate Data collection and analysis tool that integrates with the Student Information System
Person(s) Involved	All teachers and administrators Assistant Superintendent of Schools Data Team
Outcome(s) or Product(s)	A robust, appropriate, assessment program in place to measure student growth in specific disciplines across all grades Formative assessments developed and available for progress monitoring and real time measures of student growth to inform instruction A Data Team consisting of teachers, administrators, and curriculum leaders to oversee and provide easy access to, and direction for, the district's data gathering and analysis
Year(s) of Completion	Ongoing

Core Values: All students can learn; all decisions are made in the best interest of students; all students learn best when actively involved in the learning process; and learning will be more successful when school experiences have meaning for students.

Guiding Theme: Student Achievement

Initiative Title: Science/ Technology Engineering Program Update

Goal	Embed scientific inquiry and engineering design skills to support project-based learning PreK-12.
Objectives	Develop a plan for roll-out of the PreK–12 Science Standards. Provide professional development support and resources to initiate implementation of the MA Draft/ Revised Science Standards in each grade level.
Action Steps	Coordinate efforts of the Major Resource Team (MRT) and the STEAM Director to develop an MA Draft/ Revised Science Standards implementation plan with a focus on introducing those science strands at various grade levels that are not currently taught. Reorganize the schedules necessary in elementary schools to accommodate additional time needed for full implementation of MA Draft/Revised Science Standards. Support participation in the state science fair. Assign a project-based teaching/learning coach (Innovation Studio Teacher) to establish school-based teams that support K–12 science instruction. Based upon grade level science/ tech engineering units to be taught, develop an inventory of required resources. Maintain science equipment inventory information on a database. Identify a person in each school to maintain inventory information and to oversee annual replenishment and ordering. In the elementary level, allocate professional development time for grade level teams to collaboratively develop new units of study.
Resources Needed	Equipment and resources for teaching the identified science/ technology units identified in the planning effort
Person(s) Involved	Assistant Superintendent STEAM Director MRT
Outcome(s) or Product(s)	Curriculum map for Science/ Technology Engineering reflecting the new MA Standards (based on MA Draft/ Revised Science Standards) Effective building level schedules that provide adequate time for implementation of science standards Participation in the state science fair An inventory and annual ordering system for science resources in each building Increased student engagement and fostering of curiosity Increased student participation in the Elementary Science Expo Increased participation in local, regional, and state science fairs
Year(s) of Completion	2015 - 2018

Core Values: All students can learn; all decisions are made in the best interest of students; all students learn best when actively involved in the learning process; and learning will be more successful when school experiences have meaning for students

Guiding Theme: Student Achievement

Initiative Title: Math Professional Development

Type: New Initiative

Goal	Improve the capabilities of PreK-6 instructional staff to teach conceptual understanding in mathematics.
Objectives	Prepare PreK-5 teachers to use the Eureka math curriculum as aligned with the MA Curriculum Frameworks in Mathematics.
Action Steps	Ensure that elementary teachers are provided with Eureka math resources and are provided with a curriculum overview experience as soon as resources are available. Create a PreK-5 elementary math committee for developing a plan and action steps for effective implementation of Eureka math. Using the MA Curriculum Frameworks as a resource, develop a set of math Power Standards for each grade level that includes conceptual development skills to serve as the focus for professional development activities. Charge the Elementary Learning Coach with creation and implementation of a professional development model for PreK-5 teachers that focuses on conceptual development in math; PreK-5 learning coach models Eureka lessons. In grade five through eight, involve the STEAM and Humanities Director in identifying high priority, conceptual development skills Develop formative assessment strategies and test items for identified conceptual understanding of identified math Power Standards in grades 2-4 Establish the position of PreK-4 Elementary Curriculum Director to coordinate with 7-12 Director and to oversee the implementation of the new math curriculum and adoption of the MA Curriculum Frameworks for Science and Technology/Engineering. Consider best options for grade 6 in terms of math materials and professional development Ensure ATLAS curriculum maps reflect Eureka curriculum in addressing MA State Frameworks
Resources Needed	Access to the MA Curriculum Frameworks in Mathematics Teaching resources as identified through the curricular planning and implementation of Eureka mathematics, acquired in grades PreK-5
Person(s) Involved	PreK-5 Teachers Assistant Superintendent STEAM and Humanities Director Elementary Learning Coach PreK-4 Curriculum Director
Outcome(s) or Product(s)	A list of Power Standards by grade that help direct instruction in mathematics A professional development plan/model for training elementary instructional staff at each grade level to successfully teach conceptual development skills aligned to the MA Frameworks in math Common unit-based formative assessments in each grade level that support conceptual development skills
Year(s) of Completion	2015 – 2017

Core Values: All students can learn; all decisions are made in the best interest of students; all students learn best when actively involved in the learning process; and learning will be more successful when school experiences have meaning for students

Guiding Theme: Student Achievement

Initiative Title: RTI Implementation

Type: New Initiative

Goal	Develop an effective RTI model at elementary and secondary grade levels across major subject areas
Objectives	Build Tier One and Tier Two models of intervention in math and literacy in elementary grades, using AIMSWeb and PowerSchool for assessment and performance data maintenance. Use formative assessments as a tool for grouping strategies. (e.g. evolve flexible grouping) Continue to support Guided Reading as an approach to literacy instruction. Continue to use Reading Street in grades 3-4 as an intervention strategy. Identify a program for intervention in grades PreK-2.

Action Steps	Conduct RTI awareness sessions for teachers in subject areas/grade levels that have not previously participated. Identify RTI training consultant(s) to help the schools define an appropriate RTI model for each level and develop or identify effective formative assessments at selected grade levels with initial focus on literacy and math skills; continue to develop understanding and use of formative assessment. Provide ongoing training in Guided Reading approach at the elementary level as needed. Enhance flexible grouping options to address student needs. Ensure schedules support tiered instruction.
Resources Needed	RTI consultant AIMSWeb or other assessment and a performance data analysis and repository tool Time to conduct training in RTI and classroom management for intervention strategies.
Person(s) Involved	Teachers Building Principals Assistant Superintendent
Outcome(s) or Product(s)	Teachers develop an understanding of the RTI model and processes and how it impacts their particular teaching assignment Teachers participating in training that will assist them in identifying formative assessment strategies and implementing Tier One and Tier Two strategies in their classroom environments Software identified or developed for formative assessment and performance data maintenance at the elementary levels
Year(s) of Completion	2015 – 2018

Core Values: All students can learn; all decisions are made in the best interest of students; all students learn best when actively involved in the learning process; and learning will be more successful when school experiences have meaning for students

Guiding Theme: Student Achievement

Initiative Title: Teacher Induction and Mentoring Program

Type: New Initiative

Goal	To improve readiness, focus, and ongoing support of newly hired teachers as they are brought into the Bourne Public Schools.
Objectives	Develop and implement an updated teacher induction/ mentoring program to include appropriate training for both mentor and mentee roles.
Action Steps	Develop an action plan to guide the work. Develop a 10-hour training for mentors and post on ATLAS. Develop and use mentor application and surveys for new teachers to better match mentors/mentees. Focus induction and mentee experiences on learning and teaching; post this curriculum on ATLAS. Develop specific plans for 50 additional hours of mentee training in second year.
Resources Needed	Wong and Wong texts for beginning teachers Funds to support Induction Program breakfasts and lunches

Person(s) Involved	Assistant Superintendent Teacher Mentor Coordinators
Outcome(s) or Product(s)	Improved mentor skills Retention of beginning teachers Fully compliant and effective Induction and Mentoring Program for both mentors and mentees
Year(s) of Completion	2016-2017

Core Value: All decisions are made in the best interest of students

Guiding Theme: Collaborations and Partnerships

Initiative Title: Partnerships

Type: New Initiative

Goal	Expand relationships and partnerships with local businesses and community resources.
Objectives	Increase involvement with WHOI, Mass Maritime, and Joint Base Cape Cod. Explore opportunities to interface with the community at large.
Action Steps	Assign the role of building and expanding partnerships to a specific person or persons including a PreK-4 Director. Conduct on-site meetings with contacts from WHOI, Mass Maritime, and Joint Base Cape Cod to identify opportunities for expanded partnerships. Connect with the Council on Aging to jointly explore the Bridges Together inter-generational program.
Resources Needed	Time provided to district representative to meet and explore expanded relationships
Person(s) Involved	Building Principals and Superintendent
Outcome(s) or Product(s)	Partnership endeavors revived and/or expanded with WHOI, Mass Maritime, and Joint Base Cape Cod Consideration given to starting a Bridges Together program in Bourne in collaboration with the Council on Aging
Year of Completion	2017

Core Values: All students can learn; all decisions are made in the best interest of students; all students learn best when actively involved in the learning process; and learning will be more successful when school experiences have meaning for students

Initiative Title: Resources

Type: New Initiative

Goal	Identify resources needed to meet the demands of established curricula, professional growth, and general operations in schools and district-wide
Objectives	Ensure that science curriculum resources are available to support the upcoming adoption of the MA State Frameworks for Science and Technology/Engineering. Inventory all resources for literacy and ELA district-wide, organize the inventory by grade level, and coordinate the use of literature and texts at all levels; elementary literacy (leveled and guided readers) closets organized appropriately. Review available social studies resources as aligned to the grade level curricula, providing additional resources as needed. Consider the adoption of a dropout prevention program. Devise a schedule that provides some common planning time among high school staff by department. Appropriately discard materials not being used or needed.

Action Steps	Identify, through examination of the curriculum, the required resources in K -12 science, social studies and ELA, capturing data on a spreadsheet application. Assign building level personnel to inventory currently available resources within science, social studies, and ELA. Match results with requirements to identify gaps. Prioritize curriculum resource needs and develop a multi-year plan for refreshment. Engage secondary ELA staff in defining the single grade level in which various books/novels are to be assigned. Acquire sufficient copies of titles and develop a schedule so that sharing does not impede instruction. Ensure that elementary literacy closets are well organized with leveled reading resources and that new acquisitions are accurately stored. Establish team consisting of instructional staff, guidance staff, administration and other resource personnel to research effective dropout prevention programs. Ensure that this team contacts other districts in which programs of interest are being implemented. Ensure that staff involved with high school scheduling attempt to build in a parameter that ensures some common planning time among teachers within a department who teach similar or related courses.

Resources Needed	Development of spreadsheets or databases that can import data on required curriculum resources, including quantities and ordering information Sufficient budget allocations for refreshing and acquiring needed instructional and curriculum resources on an annual basis Dropout intervention/prevention program acquisition and training
Person(s) Involved	Persons identified in each building that are willing to work on inventory and ordering within a given subject area or department Major Resource Team (MRT)
Outcome(s) Product(s)	Required curriculum resources available in sufficient quantities for teaching staff Budgeting for curriculum resources accomplished based upon need rather than annual allocation Instructional resources organized in each building to accommodate sharing and to eliminate waste Guided reading adequately supported through school-based collections of leveled readers that are well organized and refreshed regularly A dropout program identified and implemented in an effort to reduce the dropout rate High school teachers and specialist staff within a discipline or across disciplines that have common courses or common students provided with some opportunity to meet during the school day
Year of Completion	2017

Guiding Theme: School Climate

Initiative Title: District Culture

Type: Future

Goal	Improve the culture in both in schools and at the district level.
Objectives	Identify sources of mistrust and dissatisfaction among staff where they exist. Reduce levels of personal mistrust and paranoia where they exist; reduce the “us vs. them” mentality.
Action Steps	Formulate a working definition of district culture; in particular, as culture impacts student learning. Form a working group with representatives of teachers, administrators, parents, other staff, and include the voices of students as appropriate. Consider the use of Doug Fisher’s Five Pillars as a common resource that considers the relationships with and among students as a foundation for building a culture of respect and achievement. Revisit how to measure quality of culture in schools. Review recent attempts to evaluate the culture and reassess, as the working group feels necessary. Consider the use of a reputable consultant who specializes in dealing with district/school culture issues. Establish research-based protocols and structures for supporting professional collaboration in endeavors such as looking at student work, teaching practices, and assessment issues.

Resources Needed	TBD
Person(s) Involved	Central and building-based administration Teaching staff
Outcome(s) or Product(s)	Improved school and district culture with diminished "us vs. them" mindset.
Year(s) of Completion	2016 – 2017

Core Value: All decisions are made in the best interest of students

Guiding Theme: Resources

Initiative Title: School Building Program

Type: Future

Goal	Build a new school to accommodate approximately 250 general education students.
Objectives	Provide additional facilities to relieve over crowdedness in existing buildings and to expand educational opportunities through improved flexibility of space.
Action Steps	Massachusetts School Building Authority Framework
Resources Needed	TBD
Person(s) Involved	Bourne School Building Committee, teachers, staff, School Committee, and the community
Outcome(s) or Product(s)	A new vision for elementary education in the Bourne community.
Year(s) of Completion	2020

TOWN OF BOURNE

INCORPORATED APRIL 2ND 1884

MANOMETT 1627

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Bournedale Elementary School
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BOURNE PUBLIC SCHOOLS

STRATEGIC PLAN

HOME OF THE
Innovation Studio
BOURNE PUBLIC SCHOOLS

ABOUT BOURNE SCHOOLS

Bourne is a small rural community that is uniquely known as the access point to and from Cape Cod, MA by crisscrossing the Cape Cod Canal via the Bourne or Sagamore bridges. The Bourne Public Schools (BPS) have over 2,000 students attending Pre-Kindergarten through grade 12. There are two collaborating elementary schools, Peebles Elementary (K-4) and Bournedale Elementary (PreK-4), offering community-based experiences for our youngest students. The Bourne Middle School (5-8) is presented as a middle school philosophy and the Bourne High School (9-12) is rich in tradition with emerging innovative experiences and programs for our oldest students who then enter higher education or the workforce.

OUR MISSION

The mission of the Bourne Public Schools is to connect individuals to their success; engage the community in new ways to facilitate student achievement; guarantee a relevant, viable curriculum; and assure universal accountability that supports the success of all students.

OUR VISION

We are a committed community where one hundred percent of Bourne Public School students graduate with the knowledge, habits and skills to compete and collaborate effectively as society evolves. The Town of Bourne is enthusiastically committed to empower students and staff to achieve personal goals and demonstrate life-long learning.

OUR CORE VALUES

- All students can learn
- All decisions are made in the best interest of students
- All students learn best when actively involved in the learning process
- Learning will be more successful when school experiences have meaning for students

GUIDING THEMES

- **Student Achievement:** Our community schools will provide challenging, engaging academic experiences to advance the individual student's aptitude and ensure his/her preparedness for future successes
- **Personal Growth:** We believe our students will contribute to their community and the world around them through reflective academic, social and emotional practices that complement their growth, responsibility and respect for the learning and teaching process
- **School Climate:** The community is reflected in our schools through accepted norms of behavior, interpersonal and social interactions of respect and an appreciation for organizational processes and expectations
- **Collaborations and Partnerships:** Our students' success is heightened with the awareness and recognition of responsive and collaborative partnerships with parents/caregivers and the community at-large
- **Resources:** Our community will be responsible investors in the advancement of student achievement, personal growth, school climate and collaborations/partnerships

SCHOOL COMMITTEE OBJECTIVES

- Increase opportunities that foster community engagement experiences for all students at all levels
- Support all students to demonstrate acquired knowledge, understandings, and skills reflected in PreK-12 curriculum maps in all disciplines
- Empower students to establish and practice reflective learning habits

SUPERINTENDENT'S MESSAGE

The future for our students, parents/caregivers, staff and the community will bring its own mix of successes and challenges, but our direction is clear and we know what we must do. We must have the courage to focus intently on placing students at the heart of everything we do. We must provide the best teaching service and most comprehensive learning solutions available to all of our students. We must commit ourselves to evolve with the changing needs of our students by determining what we can control as an educational community. Through a collaborative, deliberate effort in strategic and improvement planning we control the objectives and goals. As we then review and analyze our outcomes through reflective practices we will model the resolve to identify calculated adjustments and make a difference for every student in the Bourne Public Schools. Our students' successes in turn are our successes.

Steven M. Lamarche
Superintendent of Schools

We would like to thank the following supporters for providing guidance and resources during the development of the Innovation Studio:

Brandeis University Materials Research Science and Engineering Center

The Gateway Project Boston Museum of Science

Office of Ingenuity, and Newton Public Schools

Cape Cod Community College

Cape and Islands STEM Network

And many individual contributors interested in promoting and inspiring all Bourne students through hands-on project-based learning.

BOURNE
PUBLIC SCHOOLS
36 Sandwich Road
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Innovation Studio

BOURNE PUBLIC SCHOOLS

www.bourneps.org/iSTUDIO

WHAT IS THE INNOVATION STUDIO?

The Bourne Public Schools Innovation Studio is an educational environment that provides opportunities for students to engage in hands-on, interdisciplinary learning experiences. Students in all grades, kindergarten through high school, utilize the studio to explore and create across all subject areas. By designing solutions to problems linked to their courses of study, students develop, grow, acquire 21st century skills that are essential for today's high school graduates.

The Innovation Studio contains elements of computer science, textiles, crafts, electronics, robotics, art, music, science and woodworking. The Studio is designed to facilitate collaboration and provide opportunities for students to explore, create, analyze and problem-solve using a wide variety of resources. These resources spark student curiosity and creativity, allow students to connect to their individual interests, and inspire all students to be active learners.

Work in the Innovation Studio integrates the Engineering Design Process across the curriculum. Inherent components of the Design Process are: conceptualizing and communicating ideas, planning and creating a solution, risk-taking, reflection and analysis, and learning from mistakes by repeating and revising design. Each component of the design process engages students to reflect on their own learning.

HOW IS THE INNOVATION STUDIO UTILIZED?

- Content-integrated project based learning: K-12
- Independent and capstone projects: high school
- Introductory design challenges: elementary/middle school

Teacher professional development K-12:
- Curriculum-embedded co-planning and teaching
- Professional development workshops
- Student expositions and displays of student work
- Student, staff, and community project exhibits

How can you get involved?

Share your expertise:
- Provide subject specific knowledge and skills to teachers and students.
- Serve as a mentor for individual or small group projects
- Be available to answer questions or provide resources for teachers and students

Contribute materials and tools:
- Recycled household items - egg cartons, paper tubes, etc.
- Excess fabric/wood stock
- Craft supplies
- Legos, K'Nex, Erector sets, etc.

Please contact us before making donations as we have limited storage space.

Partnerships and Financial Support:
We are excited to partner with local businesses and organizations for materials, expertise, and financial support for the Innovation Studio.

Current Partners include:

Nye Enrichment Grant

Town of Bourne Capital Outlay Committee

AW Joyal Company

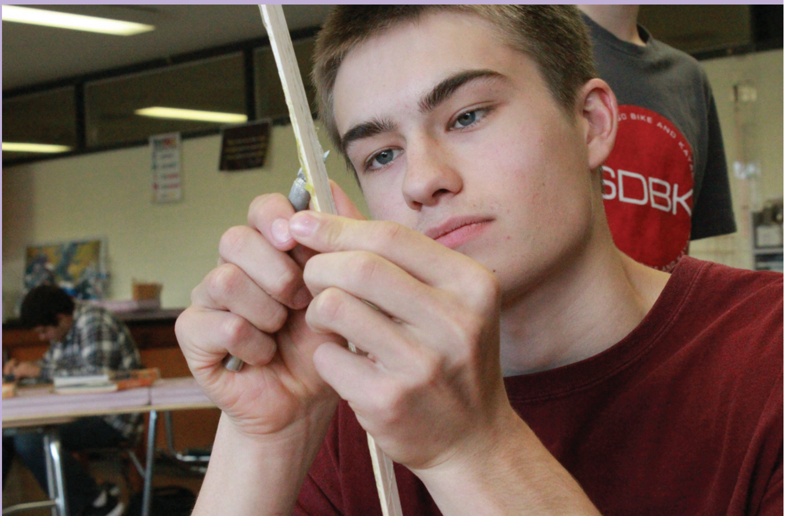
Citizens of Bourne

See how your organization can get involved in this exciting educational initiative, contact the Innovation Studio at 508.759.0670 x256.

www.bourneps.org/iSTUDIO

School *to* Career Internship Program Overview:

- Open to Juniors and Seniors
- Students earn 1 Elective credit: Internships can be paid or unpaid
- Duration is typically a semester; however, extensions are possible
- Students must have their own transportation to and from placement
- A student's commitment, academic progress, attendance, and discipline records are considered for participation
- Students follow the school calendar
- Internship site supervisors communicate with school faculty through an initial and an end-of-semester meeting, plus phone calls, emails, and mid-semester meetings, as needed –note that CORI forms are required as part of the initial orientation of supervisors
- Students submit weekly time sheets signed by their site supervisor to document their attendance and receive course credit
- Students work with the Internship Coordinator and site supervisor to establish specific project goals that benefit the organization and the student
- A Massachusetts Work-Based Learning Plan, provided by the MA Dept. of Elementary & Secondary Education, is used to assess student learning
- Students attend weekly class seminars and complete weekly journal prompts
- Students present a final project and/or PowerPoint presentation at the end of their internship



School *to* Career Program Options

Local businesses and organizations can help our youth engage in career training throughout the school year by participating in:

STC Job Shadow

One (3-6 hour) visit by a BHS student is arranged on an individual basis. Students will spend the day observing their mentor on the job and asking questions about their profession.

STC Internship

Approximately 8 hours per week during Fall and/or Spring semester. STC students must complete a project under the guidelines of the Massachusetts Work-Based Learning Plan and attend a weekly course seminar. To learn more visit: http://www.doe.mass.edu/connect

Role of the STC Program Office

Students work with the internship coordinator to establish employer/worksite matches based on their career goals. The coordinator approves the internship placement, creates academic requirements, and assigns grades, in addition to the following:

- Communicate with each site supervisor to solicit performance feedback
- Facilitate the implementation of the MA WBLP
- Serve as an advisor to interns throughout the semester
- Submit a final grade based on the quality of classwork, attendance and participation in the internship, and the site supervisor's MA WBLP evaluations

For more information contact

School *to* Career
INTERNSHIP PROGRAM

BOURNE HIGH SCHOOL
75 Waterhouse Rd, Bourne, MA 02532
internships@bourneps.org
(508) 759-0676 | www.bourneps.org/schooltocareer

BOURNE HIGH SCHOOL

School *to* Career
INTERNSHIP PROGRAM

PARTNERING EDUCATION WITH PRACTICE

What is an Internship?

An internship is a structured and supervised hands-on learning experience providing local students with practical work knowledge. Interns are motivated students who desire to learn new skills while expanding their knowledge of a chosen career.

Internships are beneficial to employers, students, schools and communities as a whole, therefore helping Cape Cod retain an educated and skilled workforce. An internship is jointly evaluated by school and worksite staff and concludes in a final project or presentation.

Internship Benefits

- Build connections between the classroom and the workplace
- Gain a positive experience with hands-on learning
- Increase self-esteem by assuming responsibilities in real work settings
- Earn a sense of accomplishment
- Graduate high school with the academic, technical and job skills needed for success in college & careers

How will my company or organization benefit?

As a participant in the School *to* Career program, you are investing in the future of young people in our area. You have the opportunity to assist with the development of tomorrow's productive workforce by providing cost-effective work without a long-term commitment.

By agreeing to participate in our program, you will:

- Make a positive contribution to the community
- Utilize the highest-rated recruiting strategy for employers (Gardner, Chao, and Hurst 2008)
- Make schools more responsive to the needs of business and industry
- Impact classroom curriculum and instructional practices
- Advance workforce skill levels by encouraging students to stay in the local community

What are the Intern's responsibilities?

- Attend all scheduled internship classes at school and internship sessions with employer
- Complete project assignments and internship-related school assignments on time
- Actively seek guidance and constructive feedback from the internship site supervisor
- Act professionally by adhering to the internship schedule, arriving on time, dressing appropriately, and following through on projects and tasks in a timely and diligent manner

Employer Responsibilities and Expectations

- Make the intern feel a part of the workplace and orient them to your specific professional environment
- Identify goals and activities to demonstrate progress and facilitate a student project or set of planned activities
- Help develop and monitor a MA Work-Based Learning Plan to evaluate the student's activities and performance
- Instruct and supervise the student, providing them with real-life work responsibilities
- Provide honest and constructive feedback on student progress
- Allow the student to express his or her thoughts and questions through regular meetings

Meaningful internships have the power to change the course of a young person's life.

B. Class Size Policies

B. CLASS SIZE POLICIES

The Bourne Public Schools continuously monitors class size at all levels. Starting at the middle level through high school, student/parent choice or course selection due to the availability of varied studies dictates oftentimes class size. Varied studies would include accelerated pathways, music, world languages and elective studies beginning in the middle school but more substantial at the high school level.

At the elementary level every effort is made to maintain class size at or around 20 students per classroom teacher. Absent school committee policy and with a complicated formula in our collective bargaining agreement, elementary class size up to and at 24 will engage discussions specific to deeper demographic projections and determining if an additional class section is necessary in the short term as well as long term scenario.

Collective Bargaining Agreement with the Bourne School Committee and the Bourne Educators Association Article XI Working Conditions Section 3. Class Size states the following.

The School Committee and the Association recognize that class size can be an important factor in good education and will strive, subject to educational, administrative, and budgetary considerations under the Committee's direction and control, to maintain classroom pupil/teacher ratios consistent with the parameters established by the Department of Education.

Elementary:	*Grades 1-8*	*40 classroom teachers per 1000 students*
Secondary:	*Grades 9-12*	*60 classroom teachers per 1000 students*

Any teacher who has a class wherein the pupil/teacher ratio exceeds the above parameters with the exception of physical education, home economics, shop, art, and other classes of a special nature shall have the right to discuss the situation with his/her immediate superiors.

Every effort will be made to place all students fairly and equitably across all grades, teams, caseloads, and subjects.

[redacted] C. School Scheduling Method

C. SCHOOL SCHEDULING METHOD

Elementary School Scheduling

Full-day or half day kindergarten (K) classes have motor group on a rotating schedule; Full Day K students attend music instruction twice in a calendar week. Additionally full-day kindergarten students attend art, Community Connections, You're a Writer, and computer instruction twice in a calendar month.

The following bullets outline details pertinent to scheduling all other elementary students grades 1- 4 at Peebles and Bournedale:

- Each class is scheduled for Physical Education and Music Instruction twice per calendar week for 45 minutes per class.
- You're A Writer!, Health/Wellness, art, and computer instruction are scheduled for 45 minutes twice per calendar month.
- Students also receive a 25 minute library block once per calendar week.
- Each grade level attends recess for 20 minutes prior to a 20 minute lunch block.
- Grade four teachers are piloting platooning and have been scheduled to provide equity of time in the morning and afternoon to support the platooning model.

Bourne Middle School Scheduling

The Bourne Middle School schedule is organized into seven periods of class each day. Students experience two rotations in their weekly schedule, a six-day/seven period rotation with a 1/2/3 class rotation. All students have five classes that meet every day (math, English language arts, science, social studies, and seminar). The sixth class period for students in grades 5-7 is a Unified Arts class. Unified Arts classes meet every day for a quarter and include art, digital literacy, coding, and engineering technology. Students in grade 8 are scheduled for either a world language (French or Spanish) or seminar for their sixth class period. The seventh class period for all students will be health/music/physical education, meeting every third day.

Bourne High School Scheduling

1. Each year every student is required to take a minimum of six subjects per semester. Of these six required subjects a minimum of three must be academic courses. An academic course is defined as any subject taken in the following departments: English, mathematics, science, social studies, and world languages
2. Students are required to take English, mathematics, and physical education all four years.

Students may not take two required English courses in one year. Exceptions may be granted for extenuating circumstances, and require prior administrative approval. In order for a student to be promoted to the next grade, he/she must successfully complete the appropriate level English class.

It is highly recommended that students planning to attend a four-year college take the following number of high school courses in each subject at the academic, honors and/or AP levels:

- 4 Credits of English
- 4 Credits of Math
- 4 Credits of Social Studies
- 4 Credits of World Language

Students are encouraged to work with their guidance counselors to select the most appropriate and challenging academic level suited for them. Below are a number of elective offerings at Bourne High School.

2-D/3-D Design
Advanced Mathematical Decision Making
Anatomy and Physiology
Creative Mixed Media
Criminal Law
Drawing

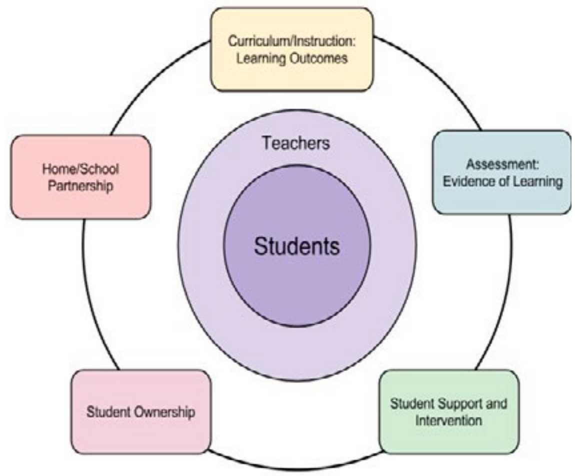
AP Biology
AP European History
AP Physics
AP Psychology/Psychology
AP Statistics
AP Studio Art
Art I, II, III, IV
Astronomy
Band
Broadcast Journalism
Chorus
Civil Law
Coastal Studies
Music Theory
Oceanography
Peer Leadership
Personal Finance
Physics
Piano Keyboarding
Print Journalism
Robotics I & II
Economics
Engineering Technology
Environmental Science
Film & Digital Photography
First Aid & CPR
Forensic Science
French
Graphics I & II
Guitar I & II
Healthy Lifestyles
International Studies
Introduction to Dance and Movement
Meteorology & Global Climate Change
Spanish
Statistics
Theater Arts
United Nations I & II
Web Design Using HTML and Java Script
Web Design using WordPress
Wellness

D. Teaching Methodology and Structure

D. TEACHING METHODOLOGY AND STRUCTURE

Instruction in the Bourne Public Schools is based on the practices of backwards design as advocated by Wiggins and McTighe in their Understanding by Design research and teaching/learning paradigm. Units of instruction based on the Massachusetts State Frameworks in all disciplines are mapped PreK-12 and a variety of learning experiences and assessments (formative and summative) are based on what students should know, understand, be able to do, and transfer as indicated in the maps. Various student-centered instructional strategies are used to meet the needs of all learners, most notably flexible grouping and problem-based learning. We have deliberately infused the principles of engineering design and inquiry-based learning into many of our learning activities to ensure engagement and relevance for 21st century learners. Included in learning activities are opportunities for our students to learn and apply the habits of mind and skills needed for working in teams, persisting, and becoming self-reflective life-long learners.

Research show that embedded professional development has a significant impact on student growth and achievement. Bourne Public Schools is committed to ensuring all teachers have adequate time for meaningful collaboration linked to curriculum and learning targets, and for self-reflection to continually improve their practice. Additionally, on site instructional coaches at all schools facilitate collaborative professional learning in the classrooms, laboratories, and innovative learning environments such as our iStudio, Aquaponics Lab, and emerging Learning Commons areas.



E. Teacher Planning and Room Assignment Policies

E. TEACHER PLANNING AND ROOM ASSIGNMENT POLICIES

Elementary pre-kindergarten through middle school have grade clusters for classroom assignments. As you are aware each facility is not able to create perfect clustering, therefore there are outliers, i.e.; around a corner or ground floor vs. second floor. Grade level clusters change in section size with the ebb and flow of school age demographics.

High School grades 9-12 room assignments are specific to disciplines with the exception of special areas like drama, music, physical education and more recently learning lab environments. A traditional woodshop was converted to a problem based learning Innovation Studio. A general education classroom has been converted to an Aquaponics Lab through a grant from BioGen. A general education classroom was converted to a music keyboarding lab for our fine arts students. Lastly, a double classroom environment was reconstructed and converted in to Robotics Lab.

In addition, through prior and most recent school construction at Bournedale Elementary (2007/09) and Bourne Middle School (1999/00) unique spaces and adjacencies were constructed for special studies, i.e.; art, music, library/media centers, computer laboratories, family and consumer science, large teacher workrooms, and to provide students with disabilities related services as well as intensive services. We recently received a grant from Extron Electronics to assist us with plans to convert some of the Bourne Middle School Library/Media Center into a learning commons as a wireless collaboration gateway through a digital sources control system.

Bourne Middle School (1999/00) was constructed with foresight to accommodate a middle school pedagogy by creating favorable grade clusters/teaming on the second floor, however special areas and adjacencies are all on the first floor. Additionally, due to limited, equitable instructional space for students with special needs and related services, we are cited corrective action planning from the Department of Elementary Quality Program Review process. We have been granted waivers due to our limitations.

Throughout the ebb and flow of middle school demographics classroom teachers have been placed on itinerary carts traveling from room to room for classroom instruction. In more recent years, teachers have been assigned to unique repurposed spaces for instruction. For example, a constructed large team room with a partitioned wall has become the permanent home of two instructional health and wellness classes. An art room was converted to a pre-engineering room due to the room size and amenable features to support problem-based/engineering design processes with collaborative work stations water utilities (sinks) and area for student exhibitions.

Every attempt is made for all classroom teachers to have an assigned classroom. Currently at the elementary level in the Bournedale Elementary School and Peebles Elementary School our applications extension course teachers for all students grade 1-4 (You’re a Writer!) do not have a classroom and provide their instruction to students in various unscheduled/open classrooms.

Most teachers are able to prepare and provision for instruction in their assigned classroom. We do have itinerary teachers at the elementary level that share space outside of the classroom for said purpose.

[redacted] F. Lunch Programs

F. LUNCH PROGRAMS

All Bourne Public Schools are part of the National School Lunch Program and offer breakfast and lunch. Peebles and Bournedale Elementary schools offer Breakfast in the Classroom which is a bag breakfast that students take to the classroom to eat in the first 10 minutes of school. All schools follow an “offer vs. serve” policy whereby all five meal components are offered; students have the option of making three choices, one of which must be a fruit or vegetable. All schools have a daily, self-serve “fruit and vegetable bar” at breakfast and lunch that offers a variety of fresh fruits, vegetables, legumes, salads and canned/frozen fruits.

Breakfast at all Bourne Schools offer daily: one hot entrée (all whole grain pancakes, waffles, French toast, and breakfast sandwiches) and “continental breakfast” items (all whole grain muffins, bagel, cereals, string cheese, yogurt, juice). There is also a fruit bar and two types of milk available.

Peebles and Bournedale Elementary Schools offers daily: one hot entrée/main meal, two alternate sandwiches/salads (turkey, ham, chicken Caesar salad, PB&J). Á la carte items sold include bottled water, fresh baked cookies and baked/reduced fat chips. All Á la carte items are on the Massachusetts “A List” of approved Á la carte items put out by the John Stalker Institute.

Bourne Middle School offers daily: hot entrée/main meal, “grab and go” grill sandwiches, entrée salads and wraps that are packaged “to go” and 3 types of pizza. A la carte items include: bottled water, bottled seltzer water, fresh baked cookies, baked/reduced fat chips, crackers, yogurts and parfaits. All Á la carte items are on the Massachusetts “A List” of approved ala carte items put out by the John Stalker Institute.

Bourne High School offers daily: hot entrée/main meal, “grab & go” premium meals, 3 types of pizza, deli bar and salad bar. Ala Carte items include: bottled water, bottled seltzer water, fresh baked cookies, baked/reduced fat chips, crackers, yogurts and parfaits. All Á la carte items are on the Massachusetts “A List” of approved ala carte items put out by the John Stalker Institute.

- Elementary lunches are scheduled as follows:
    - ◊ At Bournedale Elementary School there are five lunches that run 20 minutes each.
    - ◊ At Peebles Elementary School there are four lunches that run 20 minutes each.
- There are two lunch periods of 30 minutes at Bourne Middle School for grades seven and eight. Students in grades five and six have 20 minutes for lunch and 20 minutes for recess.
- At Bourne High School there are two lunch periods of 30 minutes

G. Technology Instruction Policies and Program Requirements

G. TECHNOLOGY INSTRUCTION POLICIES AND PROGRAM REQUIREMENTS

The Bourne Public Schools has been overhauling established belief systems and systemic practices for the use and support of instructional technology. At the heart of our efforts are three guiding principles: 1. Increase automation without adding staff, 2. Eliminate ineffective/feckless redundancies, and 3. Identify proven technologies with no or limited recurring costs. The Bourne Public Schools has established the following priorities:

1. Infrastructure
2. Bandwidth/accessibility
3. Instructional technology blended with all instruction, [not something unique]
4. Instructional equity to hardware
5. Pilot/experiment vs. all-in approach
6. Identification of public domain efficiencies
7. Shared best practices
8. Movement to the cloud.

All of our schools have district owned fiber LAN and WAN providing high speed internet access with a coax backup. Bourne High School, Bourne Middle School and Bournedale Elementary school are full Wi-Fi environments. Peebles Elementary School is a pocket and portability Wi-Fi environment. Classroom teachers at all schools and across all levels have LCD projectors, document cameras, desktop computers, and access to portable personal devices such as Chromebooks or iPads.

[redacted] H. Art Program

H. ART PROGRAM

The Bourne Public Schools offers a comprehensive art program Kindergarten through 12th grade with instruction in all elements of art: line, shape, form and texture. Bourne High School students are offered an array of art electives (see section C).

I. Music/Performing Arts Program

I. MUSIC/PERFORMING ARTS PROGRAM

The Bourne Public Schools offers a comprehensive music program Kindergarten through their high school experience. As students' progress through the middle years, more options for specific music interest is available to students including the ability to select a musical instrument or participate in a choral program. As student enter the high school more varied music opportunities spider out from initial opportunities at the middle school as evidenced by the list of music electives (see section C.)

Bourne Public Schools provides an incredible opportunity for our students of all ages to participate and learn in the dramatic performing arts. Our elementary students in grades three and four are able to participate in an annual drama musical program titled "All-Star Revue". Well over one hundred third and fourth grade students participate in the annual event. Our middle school students have access to an annual drama performance and our high school students have access to an award winning drama program.

[redacted] J. Physical Education

J. PHYSICAL EDUCATION

All students have access to physical education at every level and our district has put forth a concerted effort to establish a wellness program for students elementary through high school. The Bourne Public Schools School Committee acknowledges the direct correlation between health and academic success as indicated in research conducted by the Center for Disease Control. Therefore, we provide the necessary resources in nutrition, health and physical education, school based activities and food services to promote healthy lifestyles and maximize student performance.

[redacted] K. Special Education

K. SPECIAL EDUCATION (Specialized Instruction)

Bourne Public Schools does not discriminate on the basis of race, color, sex, gender identity, religion, national origin, sexual orientation, disability, or homelessness.

The Department of Student and Special Education Services facilitates full access to the general education curriculum and the school/community learning environment for every student based on student potential and identified special needs. The district's goal is to provide support services in the least restrictive environment which, for the majority of students, is the regular education classroom. Eligibility is reevaluated every three years and a review of current services is conducted annually. Teachers, special education providers, and parents/guardians/caregivers are integral members of the team process. Placement in special education is based on the Individualized Education Program (IEP) as written for each student identified as eligible within the IEP team process. The goal of the Special Education Department at Bourne Public School is that all students are educated in classrooms that meet their diverse learning needs, styles, and abilities.

For our youngest students with identifiable disabilities, ages three and four, our preschool program offers a safe and nurturing environment based on developmentally appropriate practices. It is an environment that encourages social development and teaches our children to be respectful. Our integrated setting offers students a chance to learn things from one another, no matter what challenges they face. We teach our students to be self-reliant and self-confident, sensitive to others, and respectful of peers and adults. We strive to challenge all students to improve in the areas of communication skills, manipulation of objects, conceptualization and representation of ideas, movement skills, and to think of learning as fun. Our students leave our preschool well prepared for kindergarten and their community with the ability to act positively with others and a desire to be lifelong learners.

The preschool is a four day program which runs Monday-Thursday. There are three classrooms, two are half-day programs and one is a full-day program. The half-day programs are designed to offer an integrated preschool setting for students with and without Individual Education Plans. Morning sessions are from 9:00-11:30. Afternoon sessions are from 12:30-3:00. The full-day program is a substantially separate program for children on Individual Education Plans and runs from 9:00-3:00.

Related Service is provided in class and in adjacencies grades pre-kindergarten through twelfth grade.

- Speech K-4
- Speech PK
- OT
- Adapted PE
- PT
- Social Worker: Social Skills Groups

Intensive Learning Centers (ILC)

The Bourne Public Schools provided an Intensive Learning Center (ILC) Program for students in pre-kindergarten through twelfth grade. Students who begin in the pre-kindergarten ILC are in an integrated setting where peers come into their classroom. Modeling is done in a familiar space throughout the morning with our students with intensive needs. In the afternoon, the peers attend a half-day session of pre-kindergarten in another classroom while students in the ILC receive discrete trials to best fit their individual academic and behavioral needs.

In Kindergarten, students who are able to work in a kindergarten classroom attend a morning half day program with typically developing peers. In the afternoon, the students go to the ILC classroom to receive discrete trials and smaller group instruction, again based on their academic and behavioral needs.

In first through fourth grade, students who are able to be mainstreamed into the general education classroom are placed there with any supports for success deemed necessary by the IEP team. If a student is not ready or is only able to integrate during certain times of the day, these arrangements are also made. Each year the program evolves and changes as it is always based on the needs of the students. At any time with students who are in the ILC, data is gathered and students have been successfully mainstreamed into general education classrooms which is the ultimate goal.

For students in grades five through twelve who demonstrate deficits in the moderate to severe range of intellectual abilities we have established highly specialized instruction in order to access the curriculum at their instructional level. Curriculum is designed to meet the needs of each individual student's current academic performance level and emphasizes academic content, communication skills, behavioral strategies, social skills and activities of daily living. Students and staff work to develop the skills necessary to foster ongoing academic growth and promote school-specific social awareness. Student services (occupational therapy, physical therapy, adapted physical education, and speech/language services) are determined by the IEP team and may include services in the general education classroom as well as in a special education setting.

In-Class Services

This program serves students (grades k-12) with identified disabilities whose formal and informal assessments show discrepancies in achievement as determined by the IEP team. These students are provided academic skills reinforcement, organization, and study skill strategies in the general education classroom and during seminar. The goal of this program is to ensure the greatest possible acquisition of age-appropriate academic skills; to internalize strategies that reduce the impact of the disability on learning and to foster emotional/social/academic independence.

Alternative Learning Center

This program serves students in grades five through twelve and focuses interventions on the social, emotional, and behavioral needs of students with qualifying disabilities while providing instruction to support students' participation and progress in the general curriculum. Individualized behavior intervention plans are developed and maintained to meet the needs of each student. Students are integrated into the general education classrooms whenever possible while working towards mastery of general content standards as measured by state assessments. Social Skills instruction is used to develop and improve students' social and behavioral skills.

Title I

Title One services are provided for students in two of our four school based on need and qualifying demographics. The schools are Peebles and Bourne Middle School.

The Title 1 reading curriculum is designed to address the five critical reading skill areas (Phonemic Awareness, Phonics, Vocabulary, Fluency, and Comprehension) which are identified by the National Reading Panel (2007). Specific areas of targeted reading instruction are determined for students on an individual basis through analysis of individual student performance on school-wide standardized reading assessments.

Students in this reading program are taught life-long learning strategies to facilitate reading comprehension and language organization. Special emphasis is placed upon the development of active reading strategies that can be applied to both narrative and expository text. Students learn to apply these strategies directly to their content area materials, texts, and project.

The Title 1 math program provides extended learning opportunities, individualized support, and alternative instructional strategies in math for qualifying students. Concepts and skills based on grade level and student ability are retaught and reviewed. Title 1 instruction challenges students to make connections with prior knowledge and to real world situations. It assists learners to create and use multiple problem solving pathways, and engage them in mathematical tasks that reflect grade-level and cognitive demands. Students work in groups, partners, and independently based on class size and learning activities.

The Bourne Public Schools offers an extensive summer program for students with disabilities who are at risk of regression during the summer break. Summer programs include summer tutoring sessions to meet qualifying needs.

- Data is collected on students throughout the year in all grades to determine eligibility for summer school programs. Regression during school vacations is often one of the indicators.
- Bournedale Elementary School currently houses all summer programs and most of the summer tutoring for students pre-kindergarten through twelfth grade.
- In addition, the Bourne Public Schools works with the Bourne Recreation Department to provide a “Slide Into Learning” as a community-run academic program that our students have access too.

English Language Learners

The goal of our English Language Education Program is to provide students with instruction that is inclusive and honors the various language and cultures found within our student population. Bourne Public Schools has followed all federal and state laws and guidelines in developing the program, and continues to adhere to federal and state laws and guidelines in implementing the program.

We offer Sheltered English Immersion, an inclusionary instructional program in which English Language Learners are placed in classes with native English speakers. Classroom teachers are trained to implement a variety of effective strategies to meet the unique needs of our English Language Learners. ELL students also benefit from direct instruction provided by a certified ESL teacher that is scheduled according to need and to ensure no instructional time in the SEI classroom is missed.

Section 504 of the Rehabilitation Act

Section 504 is a federal statute that prohibits discrimination based upon a handicap. Obligations for school districts start when federal funds are received.

Section 504 covers eligible students, employees, and other individuals with handicapping impairments by providing necessary accommodations that enable them to work, learn or participate in school programs. Student accommodations go beyond those outlined in our district Curriculum Accommodation Plan (CAP) which are available to all students. A team, knowledgeable of the person, gathers information to determine if the individual meets eligibility criteria. This law applies to our school district as receive Federal financial aid therefore it covers all programs and activities that we offer. The responsibility of our district is to identify, evaluate, and provide appropriate services to those individuals who meet the criteria set forth by the Act.

[redacted] L. Vocational Education

L. VOCATIONAL EDUCATION

The Bourne Public Schools is a member town of the independent LEA Chapter 74 Upper Cape Cod Technical High School located in the community of Bourne. Other member towns include Sandwich, Marion, Falmouth and Wareham. There are no plans to create or duplicate Chapter 74 programs in the Bourne Public Schools.

Innovation Studio

As the 2014-2015 school year commenced we opened our district Innovation Studio at Bourne High School. The Studio is an educational environment that provides opportunities for students to engage in hands-on, interdisciplinary problem-based learning experiences. Students in all grades, kindergarten through high school, utilize the studio to explore and create across all subject areas. By designing solutions to problems linked to their courses of study, students develop, grow, and acquire 21st century skills that are essential for today's high school graduates.

The Innovation Studio contains elements of computer science, textiles, crafts, electronics, robotics, art, music, science and woodworking. The Studio is designed to facilitate collaboration and provide opportunities for students to explore, create, analyze and problem-solve using a wide variety of resources. These resources spark student curiosity and creativity, allow students to connect to their individual interests, and inspire all students to be active learners.

Work in the Innovation Studio integrates the Engineering Design Process across the curriculum. Inherent components of the Design Process are: conceptualizing and communicating ideas, planning and creating a solution, risk-taking, reflection and analysis, and learning from mistakes by repeating and revising design. Each component of the design process engages students to reflect on their own learning.

How is the Innovation Studio utilized?

- Content-integrated project based learning K-12
- Independent and capstone projects for high school students
- Introductory design challenges for elementary/middle school students
- Teacher professional development K-12 including workshops
- Curriculum-embedded co-planning and co- teaching
- Student expositions and displays of student work
- Student, staff, and community project exhibits

Early College Experience Program (ECEP)

In the summer of 2013 Bourne Public Schools established an Early College Experience Program (ECEP) in partnership with Cape Cod Community College.

The Early College Experience Program (ECEP) was developed for motivated students who would like to get a jump start on college. The goal of ECEP is to provide high school students the opportunity to earn their high school diploma and an Associate's Degree while completing their junior and senior year at CCCC. Admission into this program is a competitive and students take all courses at CCCC. The primary goals of this program are:

- To address the needs of motivated students who would like to enroll in college courses prior to high school graduation.
- To graduate students with a high school diploma and an Associate degree.
- To allow students the opportunity to fulfill their educational dreams.

Students satisfy all state and educational requirements to obtain a high school diploma and an Associate's Degree, which includes passing the MCAS. All ECEP students are considered Cape Cod Community

College students and have access to CCCC services including counseling, advising, career services, fitness center, and leadership activities offered by Student Life.

Financial Obligation and Eligibility

The ECEP program covers the cost of course tuition and fees for enrolled students. Students are responsible for their books and school supplies. Current high school students are ineligible to receive Federal financial aid, but financial assistance may be provided by the Bourne Public Schools.

Students must reside in Massachusetts, possess a minimum high school GPA of 3.0 (cumulative, based on a 4.0 scale), be at least 16 years old and entering Grade 11 by the start of the fall semester, be recommended by the high school and complete the ECEP application process and attend an information session. Students who have not passed the MCAS will be scheduled to take the appropriate test at Bourne High School. Students must be willing to enroll in classes during all available CCCC semesters, including Fall, Intersession, Spring, and Summer sessions, in order to complete diploma and Associate degree requirements.

School to Career Program (Internships)

As the 2013-2014 School Year commenced, we reestablished a School to Career Internship program through a grant from the Grace Swift Nye Foundation. The program is a structured and supervised hands-on learning experience providing local students with practical career field experience. We sought motivated students who desire to learn new skills while expanding their knowledge of a chosen career.

For students seeking an internship, a BHS Guidance Counselor will guide them towards the best career exposure to meet their interest. Students submit a completed application with attached resume and personal essay prior to course registration. Students are then required to outline a planned internship based upon the criteria identified in the application. Once students complete the application, a School to Career Internship placement will be established by meeting with the Internship Coordinator and the students Guidance Counselor.

Internships are beneficial to employers, students, schools and communities as a whole, therefore helping Cape Cod retain an educated and skilled workforce. An internship is jointly evaluated by school and worksite staff and concludes in a final project or presentation.

An overview of this district program is below;

- Open to Juniors and Seniors
- Students earn one elective credit and internships can be paid or unpaid
- Duration is typically a semester; however, extensions are possible
- Internships are approximately 8 hours per week plus a weekly seminar
- Students must have their own transportation to and from placement: carpooling is not permitted
- A student's commitment, academic progress, attendance, and discipline records are considered for participation: application and permission forms must be received in time for course registration
- Students follow the school calendar
- Internship site supervisors communicate with school staff through an initial and an end-of-semester meeting, telephone calls, emails and mid-semester meetings, as needed - note that a CORI form is required as part of the initial orientation of supervisors
- Students submit weekly time sheets signed by their site supervisor to document their attendance and receive course credit
- Students work with the Internship Coordinator and site supervisor to establish intentional learning goals and specific project goals that benefit the organization and the student
- A Massachusetts Work-Based Learning Plan, provided by the Massachusetts Department of Elementary & Secondary Education, is used to assess student learning

- Students attend weekly class seminars and complete weekly journal prompts designed for the student to ask reflective and practical business questions of their supervisor
- Students present a final project and/or PowerPoint presentation at the end of their internship to advisor and classmates.

M. Transportation Policies

M. TRANSPORTATION POLICIES

For our in district transportation we use a 3 tier system (HS, MS and Elementary) consisting of 18 buses. We have half day Kindergarten with full day as an option for a modest fee. We charge a fee ($150 per student/$300 cap per family) for our HS (9-12) transportation. We transport all our in district special needs students (PreK -12) with our 5 mini buses.

The district uses a computer generated route optimization software package to assist in developing a safe, efficient and cost effective plan for bus routing. In computing the distance for transportation eligibility the most direct route used by the school bus is used by the district's computer software. Modifications to the bus assignments, routes and bus stops may change from year to year based on enrollment.

The Bourne Public Schools has a number of policies specific to transportation of students as follows:

Student Transportation Services

Policy # EEA

FILE: EEA

STUDENT TRANSPORTATION SERVICES

The major purpose of the school system's transportation services is to aid students in getting to and from school in an efficient, safe, and economical manner.

The school system will contract for transportation services. Contracts will be awarded on a competitive bid basis by the School Committee. Bus contractors, who will be held responsible for the safe operation of school buses, will comply with all applicable state laws and regulation, including but not limited to:

1. *Specifications for school bus design and equipment*
2. *Inspection of buses*
3. *Qualifications and examinations of bus drivers*
4. *Driving regulations*
5. *Small vehicle requirements, if applicable*
6. *Insurance coverage*
7. *Adherence to local regulations and directives as specified in bid contracts*

The Superintendent, working with the bus contractor and other appropriate administrators, will be responsible for establishing bus schedules, routes, stops, and all other matters relative to the transportation program.

Policy References:

M.G.L. 40:5; 71:7A, B and C; 71:37D; 71:48A; 71:68; 71:71A; 71B:4; 71B:5; 71B:8, 74:8A; 76:1; 76:12Bi; 76:14

School Bus Scheduling and Routing

Policy # EEAB

FILE: EEAB

SCHOOL BUS SCHEDULING AND ROUTING

Routes and time schedules shall be determined by the transportation Coordinator or Superintendent's designee and any change shall be in accordance with the attached guidelines.

Every reasonable effort shall be made to locate bus stops at points where pupils can be loaded and discharged with a reasonable degree of safety and convenience with consideration for the age of the pupil.

A parent or guardian who feels that the safety of their child is unreasonably endangered and who cannot reach an accord with the Transportation Coordinator will have the right to file a written appeal to the Business Manager of the Bourne Public Schools and the Transportation Issues Committee, and subsequently, to the Superintendent whose determination will be final.

School Bus Scheduling and Routing Regulations

Policy # EEAB-R

FILE: EEAB-R

SCHOOL BUS SCHEDULING AND ROUTING REGULATIONS

1. *The Transportation Coordinator or Superintendent's designee shall be responsible for designating bus route and stops that are consistent with Bourne School Committee policy.*
2. *Where pupils live within a reasonable distance of each other, they may be required to go to certain designated bus stops at intervals along the route.*
3. *In congested or high traffic areas, routes should be designed, within reasonable limits, to prevent students crossing those roads unnecessarily.*
4. *Stops should be planned away from busy intersections whenever possible to avoid a distracted motorist from passing a bus while it is loading or discharging passengers.*
5. *When unavoidable obstacles or dangers exist, the Transportation Coordinator must make an effort to have them removed.*
6. *The recommended distance that stops may be established from the students' homes are as follows:*
   a. *Kindergarten through grade 4 — up to ½ mile*
   b. *Grades 5 through 8 — up to ¾ mile*
   c. *Grades 9 through 12 — up to 1½ miles*
7. *Routes and stops shall be published prior to the first day of school in a newspaper with local circulation to include notice to the parents or guardians that they have the responsibility to see that their child gets to the published stop safely and on time.*
8. *When such dangers are unavoidable, as determined by the Transportation Coordinator and the Police Department, stops may be extended but should be located at the closest reasonable location, and parents shall be responsible to see that their child gets to that stop safely and on time.*
9. *The parent or guardian of a student residing on private or unimproved ways, or on ways that present hazards that the Transportation Coordinator cannot reasonably overcome, is required to see that their child gets to the designated stop safely and on time.*

Bus Driver Examination and Training

Policy # EEAEA

FILE: EEAE

BUS DRIVER EXAMINATION AND TRAINING

The School Committee will reserve the right to approve or disapprove persons employed by the bus contractor to drive school transportation vehicles.

1. *Courteous and careful drivers will be required.*
2. *Each driver will file with school officials a medical certificate and proof of freedom from tuberculosis.*
3. *No person under 18 years and only persons of high character will be allowed to operate school buses.*
4. *Only persons who are properly licensed by the state and have completed the driver training program will be permitted to drive school buses.*
5. *The contractor will furnish the School Committee with a list of names of drivers and their safety records for the last three years.*

6. *In case of any permanent change of bus drivers, the contractor will notify school officials as soon as possible.*
7. *Each driver will be required to comply with the Department of Transportation regulations for drug and alcohol testing.*

Policy References:

Highway Safety Program Standard No. 17

M.G.L. 90:7B; 90:8A; 90:8A ½

N. Functional and Spatial Relationships and Adjacencies

N. FUNCTIONAL AND SPATIAL RELATIONSHIPS AND ADJACENCIES

(Refer to attached organizational diagrams in this section.)

[redacted] O. Security and Visual Access Requirements

O. SECURITY AND VISUAL ACCESS REQUIREMENTS

The Bourne Public Schools has established practices that ensure the highest level of safety and security for students and staff during the school day and for community use of our facilities after school hours.

All doors are locked upon the commencement of school. Visitors must buzz at the front door of each school, buzz and visitors are monitored via closed video systems. If awareness is heightened due to a number of causes, individuals must verbally identify themselves and state their business.

With the exception of the Peebles Elementary School all, schools have visibility of individuals who enter the school after being permitted entrance via the aforementioned process. At the Peebles Elementary School an entering party must turn down an adjacent hallway to engage with office personnel.

After hours community access at Bourne High School and Bourne Middle School can be and is limited to the area utilized. Access is restricted to hallways that lead to classrooms. At the Bournedale Elementary School access is limited to individual classrooms on the first floor and stairwell access to the second floor. There is access to hallways on the first floor.

[redacted] P. Educational Visioning

P. EDUCATIONAL VISIONING

The visioning process involved meeting with a variety of stakeholders and synthesizing information from all parties, including an Educational Working Group from the school district comprised of the Superintendent, Principals, directors, and key staff; faculty and staff of Bournedale and Peebles; the School Building Committee; and the public in attendance at community forums.

Workshops with Educational Working Group
Oct 16, Nov 6

The project team held two visioning sessions with the Educational Working Group during the PDP study period, reviewing and refining district goals for teaching and learning, understanding program and space needs, and exploring design patterns that will best serve the district's goals in a new facility.

In the first workshop, the participants shared space and program goals for a new facility, highlighting physical and abstract aspects desired for successful spaces. Key programs and initiatives currently in place were documented as a baseline for future development. The participants evaluated district strengths, challenges, opportunities, and goals for leadership, programming, facilities, and involvement. New Vista presented characteristics of 21st century learning, and participants responded with goals that guide program and curriculum development. New Vista introduced imagery of design patterns utilized in a variety of school facilities, surveying participants regarding appropriateness and desirability for a Bourne facility.

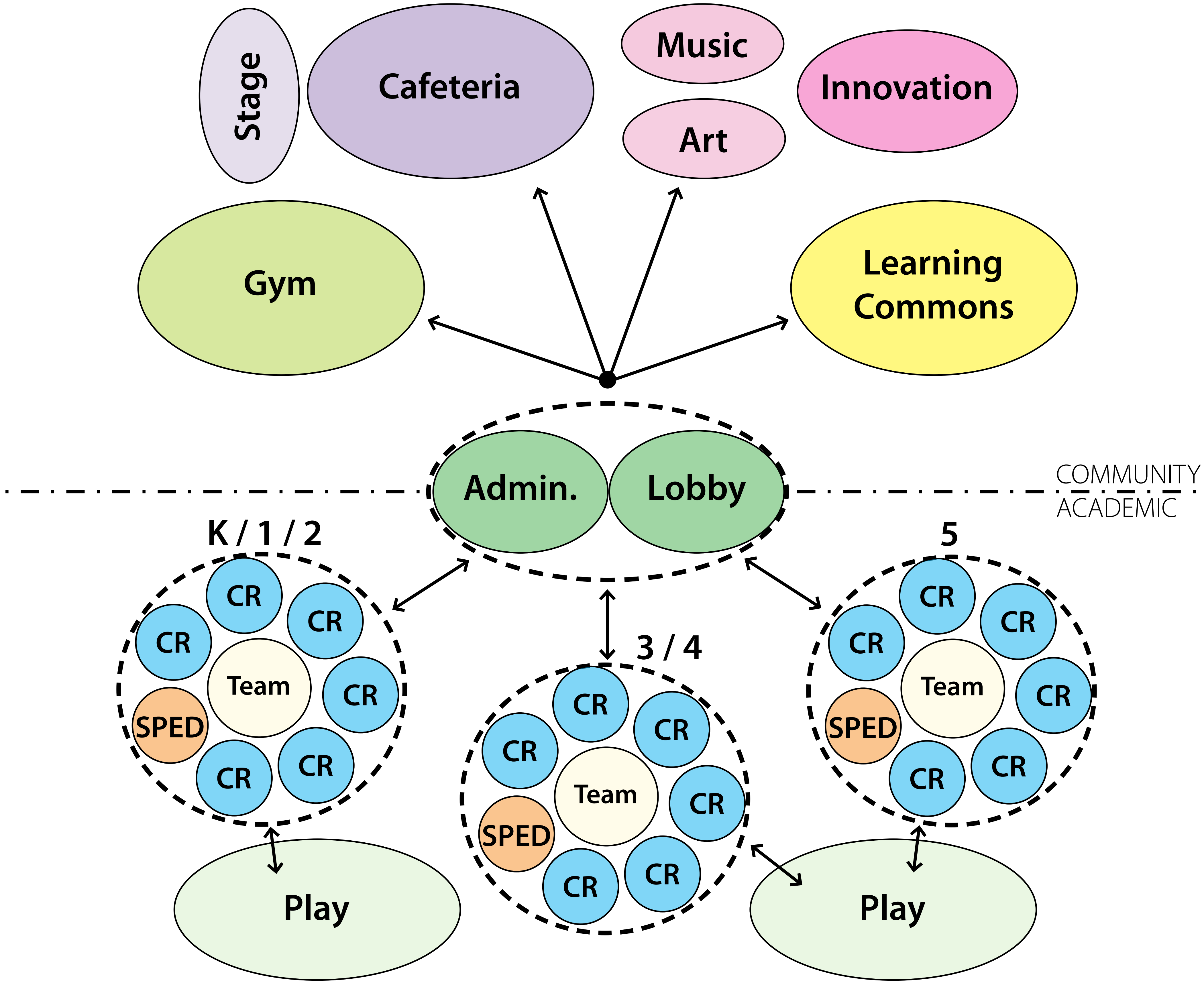
The second workshop focused on prioritizing design patterns and guiding principles most appropriate for Bourne. Participants expanded on successful aspects of current facilities and highlighted areas for improvement, noting specific space requirements that informed refinement of the template. Precedents illustrating specific design patterns were reviewed, and those resonating with participants were noted. Through group discussion, FAI developed bubble diagrams illustrating space adjacencies and grade groupings, which served as the basis for preliminary planning exercises.

Interviews with faculty and staff
Oct 21

Flansburgh and New Vista met with a range of faculty and staff to evaluate existing space uses and explore opportunities for improvement. Teachers, administrators, and support staff described advantages and limitations of the Bournedale and Peebles facilities; identified programming, teaching, and learning goals; and explained key adjacencies. Responses informed space requirements and preliminary design studies.

Community Forums
Oct 26, Nov 17, Dec 8

The project team conducted three community forums to inform the community and invite public input on a variety of issues. Topics included review of project scope, MSBA process, results of visioning workshops, existing conditions findings, and preliminary design options. Community members were presented incremental updates at each forum and invited to respond with questions and concerns. New Vista presented 21st Century learning goals, guiding design principles, and design patterns to audiences in the elementary school cafeterias, sparking discussion on the future of education in Bourne.


Stage
Cafeteria
Music
Art
Innovation
Gym
Learning Commons
Admin.
Lobby
COMMUNITY
ACADEMIC
K / 1 / 2
CR
CR
CR
Team
CR
SPED
CR
CR
3 / 4
CR
CR
CR
Team
CR
SPED
CR
CR
5
CR
CR
CR
Team
CR
SPED
CR
CR
Play
Play

3.1.3 Initial Space Summary

A. Itemization of Program - MSBA Templates
B. Variance between Program and MSBA Guidelines
C. Existing Floor Plans

A. Itemization of Program - MSBA Templates

3.1.3 Initial Space Summary

A. ITEMIZATION OF PROGRAM - MSBA TEMPLATES

The Feasibility Study for this proposed project will examine the following four options:

Option 1: Maintain the current James F. Peebles Elementary School grade configuration of grades K-4, which for the purposes of the design shall be based on no more than 250 students.

Option 2: Consolidate the District's grades K-4 population at a District-wide elementary school, which for purposes of the design shall be based on no more than 725 students;

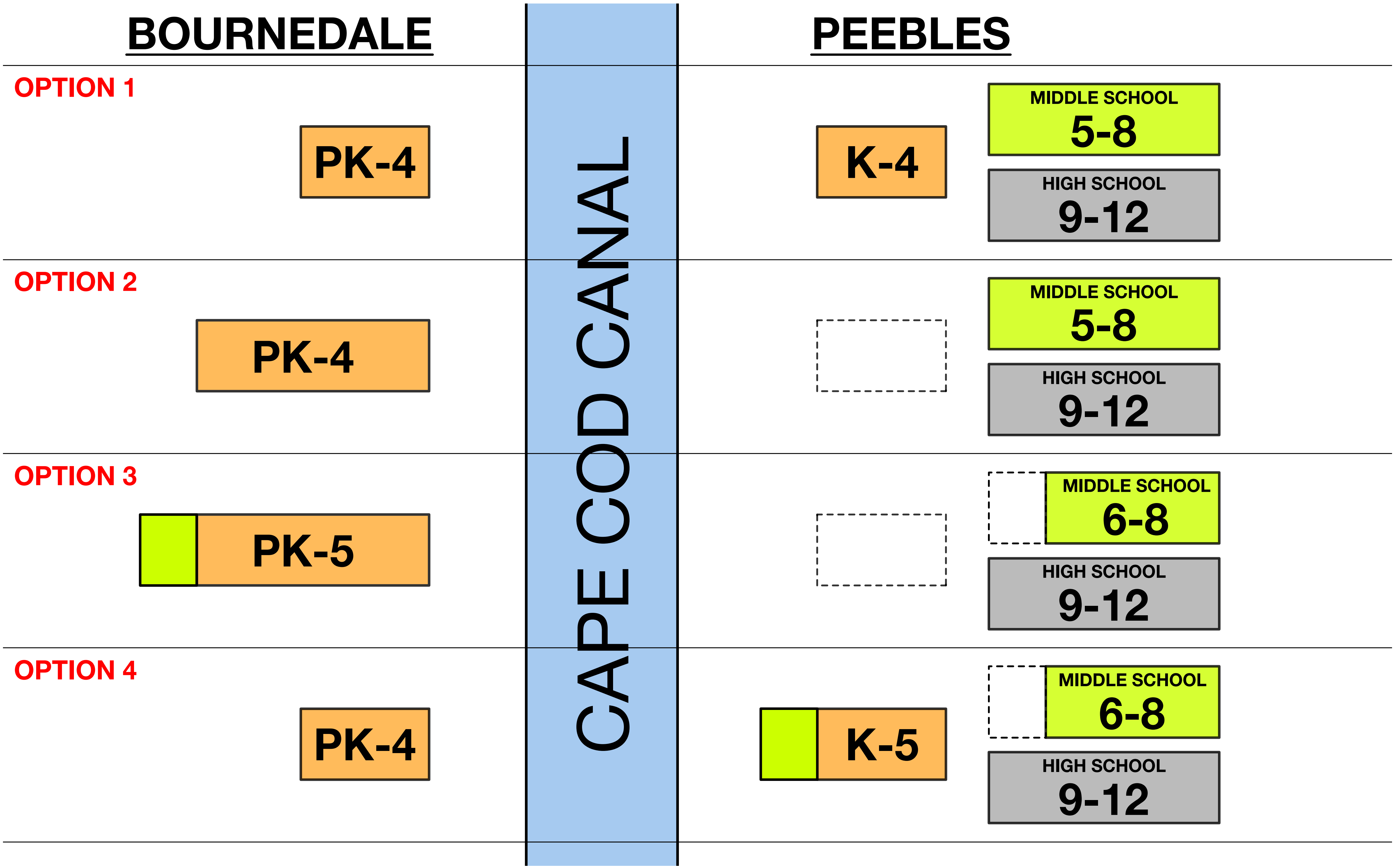
Option 3: Consolidate the District's grades K-5 population at a District-wide elementary school, which for purposes of the design shall be based on no more than a total of 885 students;

Option 4: Consolidate the District's grade 5 population at the James F. Peebles Elementary School and maintain the current facility's grades K-4 population, which for purposes of the design shall be based on no more than a total of 410 students

The following MSBA space templates are based on the study scope noted above and reflect existing building findings and programmatic needs requested by the district.

MSBA Study Scope

Option 1	Option 2	Option 3	Option 4
Grades K to 4	Grades PreK to 4	Grades PreK to 5	Grades K to 5
Neighborhood Elementary School	District-wide Elementary School	District-wide Elementary School	Neighborhood Elem. School with District-wide 5th grade
250 students	**725 students**	**885 students**	**410 students**


BOURNEDALE
CAPE COD CANAL
PEEBLES
OPTION 1
PK-4
K-4
MIDDLE SCHOOL
5-8
HIGH SCHOOL
9-12
OPTION 2
PK-4
MIDDLE SCHOOL
5-8
HIGH SCHOOL
9-12
OPTION 3
PK-5
MIDDLE SCHOOL
6-8
HIGH SCHOOL
9-12
OPTION 4
PK-4
K-5
MIDDLE SCHOOL
6-8
HIGH SCHOOL
9-12

Proposed Space Summary- Elementary School (K-4)

DRAFT 1

Option 1- Peebles

Bourne K-4	Existing Conditions			PROPOSED: Existing to Remain/Renovated			PROPOSED: New			PROPOSED: Total			MSBA Guidelines (refer to MSBA Educational Program & Space Standard Guidelines)			
ROOM TYPE	ROOM NFA[1]	# OF RMS	area totals	ROOM NFA[1]	# OF RMS	area totals	ROOM NFA[1]	# OF RMS	area totals	ROOM NFA[1]	# OF RMS	area totals	ROOM NFA[1]	# OF RMS	area totals	Comments
CORE ACADEMIC SPACES			**20,300**			**0**			**14,400**			**14,400**		**11**	**10,950**	
(List classrooms of different sizes separately)																
Pre-Kindergarten w/ toilet													1,200		-	1,100 SF min - 1,300 SF max
Kindergarten w/ toilet	950	2	1,900				1,200	3	3,600	1,200	3	3,600 A	1,200	2	2,400	1,100 SF min - 1,300 SF max
General Classrooms - Grade 1-4	VARIES	20	18,400				900	12	10,800	900	12	10,800 B	950	9	8,550	900 SF min - 1,000 SF max
SPECIAL EDUCATION			**1,805**			**0**			**3,020**			**3,020**			**3,020**	
(List rooms of different sizes separately)																
Self-Contained SPED	935	1	935				950	2	1,900	950	2	1,900	950	2	1,900	8% of pop. in self-contained SPED
Self-Contained SPED - toilet							60	2	120	60	2	120	60	2	120	
Resource Room	870	1	870				500	1	500	500	1	500	500	1	500	1/2 size Genl. Clrm.
Small Group Room / Reading							500	1	500	500	1	500	500	1	500	1/2 size Genl. Clrm.
ART & MUSIC			**1,325**			**0**			**2,225**			**2,225**			**2,500**	
Art Classroom - 25 seats	800	1	800				1,000	1	1,000	1,000	1	1,000	1,000	1	1,000	assumed schedule 2 times / week / student
Art Workroom w/ Storage & kiln							150	1	150	150	1	150	150	1	150	
Music Classroom / Large Group - 25-50 seats	525	1	525				1,000	1	1,000	1,000	1	1,000 C	1,200	1	1,200	assumed schedule 2 times / week / student
Music Practice / Ensemble							75	1	75	75	1	75 D	75	2	150	
HEALTH & PHYSICAL EDUCATION			**3,100**			**0**			**6,300**			**6,300**			**6,300**	
Gymnasium	3,100	1	3,100				6,000	1	6,000	6,000	1	6,000	6,000	1	6,000	6000 SF Min. Size
Gym Storeroom							300	1	300	300	1	300	150	1	150	
Health Instructor's Office w/ Shower & Toilet									0			0	150	1	150	
MEDIA CENTER			**730**			**0**			**2,020**			**2,020**			**2,020**	
Media Center / Reading Room	730	1	730				2,020	1	2,020	2,020	1	2,020	2,020	1	2,020	
DINING & FOOD SERVICE			**5,550**			**0**			**4,875**			**4,875**			**4,875**	
Cafeteria / Dining	4,100	1	4,100				1,875	1	1,875	1,875	1	1,875	1,875	1	1,875	2 seatings - 15SF per seat
Stage							1,000	1	1,000	1,000	1	1,000	1,000	1	1,000	
Chair / Table / Equipment Storage							200	1	200	200	1	200	200	1	200	
Kitchen	1,100	1	1,100				1,600	1	1,600	1,600	1	1,600	1,600	1	1,600	1600 SF for first 300 + 1 SF/student Add'l
Staff Lunch Room	350	1	350				200	1	200	200	1	200	200	1	200	20 SF/Occupant
MEDICAL			**260**			**0**			**410**			**410**			**410**	
Medical Suite Toilet							60	1	60	60	1	60	60	1	60	
Nurses' Office / Waiting Room	260	1	260				250	1	250	250	1	250	250	1	250	
Examination Room / Resting							100	1	100	100	1	100	100	1	100	
ADMINISTRATION & GUIDANCE			**1,195**			**0**			**2,015**			**2,015**			**2,015**	
General Office / Waiting Room / Toilet	270	1	270				300	1	300	300	1	300	300	1	300	
Teachers' Mail and Time Room							250	1	250	250	1	250	100	1	100	
Duplicating Room							0	1	0	0	1	0	150	1	150	
Records Room							110	1	110	110	1	110	110	1	110	
Principal's Office w/ Conference Area	600	VARIES	600				375	1	375	375	1	375	375	1	375	
Principal's Secretary / Waiting							125	1	125	125	1	125	125	1	125	
Assistant Principal's Office													120	0	-	
Supervisory / Spare Office							120	1	120	120	1	120	120	1	120	
Conference Room							250	1	250	250	1	250	250	1	250	
Guidance Office							150	1	150	150	1	150	150	1	150	
Guidance Storeroom							35	1	35	35	1	35	35	1	35	
Teachers' Work Room	325	1	325				300	1	300	300	1	300	300	1	300	
CUSTODIAL & MAINTENANCE			**795**			**0**			**1,900**			**1,900**			**1,900**	
Custodian's Office							150	1	150	150	1	150	150	1	150	
Custodian's Workshop							375	1	375	375	1	375	375	1	375	
Custodian's Storage							375	1	375	375	1	375	375	1	375	
Recycling Room / Trash							400	1	400	400	1	400	400	1	400	
Receiving and General Supply	130	1	130				200	1	200	200	1	200	200	1	200	
Storeroom	485	1	485				200	1	200	200	1	200	200	1	200	
Network / Telecom Room	45	4	180				200	1	200	200	1	200	200	1	200	
OTHER			**0**			**0**			**1,000**			**1,000**			**0**	
Innovation Lab (Tech/Sci/Art)							1,000	1	1,000	1,000	1	1,000 E				
Total Building Net Floor Area (NFA)			**35,060**			**0**			**38,165**			**38,165**			**33,990**	
Proposed Student Capacity / Enrollment												**250**			**250**	
Total Building Gross Floor Area (GFA)[2]			55,200									**57,248**			**45,000**	
Grossing factor (GFA/NFA)			**1.57**									**1.50** F			**1.32**	

[1] **Individual Room Net Floor Area (NFA)** Includes the net square footage measured from the inside face of the perimeter walls and includes all specific spaces assigned to a particular program area including such spaces as non-communal toilets and storage rooms.

[2] **Total Building Gross Floor Area (GFA)** Includes the entire building gross square footage measured from the outside face of exterior walls

Architect Certification

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

Name of Architect Firm: Flansburgh Architects

Name of Principal Architect: Kent D. Kovacs AIA

Signature of Principal Architect:

Date: 9-Dec-15

Proposed Space Summary- Elementary School (K-4)

DRAFT 1

Option 2-Bournedale

Bourne K-4	Existing Conditions			PROPOSED: Existing to Remain/Renovated			PROPOSED: New			PROPOSED: Total				MSBA Guidelines (refer to MSBA Educational Program & Space Standard Guidelines)			
ROOM TYPE	ROOM NFA[1]	# OF RMS	area totals	ROOM NFA[1]	# OF RMS	area totals	ROOM NFA[1]	# OF RMS	area totals	ROOM NFA[1]	# OF RMS	area totals		ROOM NFA[1]	# OF RMS	area totals	Comments
CORE ACADEMIC SPACES			**22,690**			**22,690**			**14,400**			**37,090**			**32**	**31,900**	
(List classrooms of different sizes separately)																	
Bournedale																	
Pre-Kindergarten w/ toilet	1,130	4	4,520	1,130	4	4,520				1,130	4	4,520	A	1,200		-	1,100 SF min - 1,300 SF max
Kindergarten w/ toilet	1,130	4	4,520	1,130	4	4,520	1,200	3	3,600		7	8,120	B	1,200	6	7,200	1,100 SF min - 1,300 SF max
General Classrooms - Grade 1-4	Varies	16	13,650	853	16	13,650	900	12	10,800		28	24,450	C	950	26	24,700	900 SF min - 1,000 SF max
SPECIAL EDUCATION			**2,950**			**0**			**8,050**			**8,050**				**8,050**	
(List rooms of different sizes separately)																	
Bournedale																	
Self-Contained SPED (one is a dedicated PK)	670	1	670				950	5	4,750	950	5	4,750		950	5	4,750	8% of pop. in self-contained SPED
Self-Contained SPED - toilet							60	5	300	60	5	300		60	5	300	
Resource Room	1,680	Varies	1,680				500	4	2,000	500	4	2,000		500	4	2,000	1/2 size Genl. Clrm.
Small Group Room / Reading	600	Varies	600				250	4	1,000	250	4	1,000		500	2	1,000	1/2 size Genl. Clrm.
ART & MUSIC			**2,258**			**1,215**			**3,250**			**4,465**				**5,075**	
Bournedale																	
Art Classroom - 25 seats	1,015	1	1,015	1,015	1	1,015	1,000	1	1,000		2	2,015		1,000	2	2,000	assumed schedule 2 times / week / student
Art Workroom w/ Storage & kiln	200	1	200	200	1	200	100	1	100		2	300		150	2	300	
Music Classroom / Large Group - 25-50 seats	918	1	918				1,000	2	2,000	1,000	2	2,000	D	1,200	2	2,400	assumed schedule 2 times / week / student
Music Practice / Ensemble	125	1	125				75	2	150	75	2	150	E	75	5	375	
HEALTH & PHYSICAL EDUCATION			**3,150**			**3,150**			**3,150**			**6,300**				**6,300**	
Bournedale																	
Gymnasium	2,980	1	2,980	2,980	1	2,980	3,020	1	3,020			6,000		6,000	1	6,000	6000 SF Min. Size
Gym Storeroom	170	1	170	170	1	170	130	1	130			300		150	1	150	
Health Instructor's Office w/ Shower & Toilet														150	1	150	
MEDIA CENTER			**3,775**			**0**			**3,933**			**3,933**				**3,933**	
Bournedale																	
Media Center / Reading Room	2,815	1	2,815				3,933	1	3,933	3,933	1	3,933		3,933	1	3,933	
Computer	960	1	960														
DINING & FOOD SERVICE			**4,950**			**4,950**			**4,961**			**9,911**				**9,185**	
Bournedale																	
Cafeteria / Dining	2,200	1	2,200	2,200	1	2,200	3238	1	3,238			5,438		5,438	1	5,438	2 seatings - 15SF per seat
Stage							1000	1	1,000	1,000	1	1,000		1,000	1	1,000	
Chair / Table / Equipment Storage							442	1	442	442	1	442		442	1	442	
Kitchen	2,750	1	2,750	2,750	1	2,750						2,750	F	2,025	1	2,025	1600 SF for first 300 + 1 SF/student Add'l
Staff Lunch Room							281	1	281	281	1	281		281	1	281	20 SF/Occupant
MEDICAL			**491**			**0**			**610**			**610**				**610**	
Bournedale																	
Medical Suite Toilet	56	1	56				60	1	60	60	1	60		60	1	60	
Nurses' Office / Waiting Room	245	1	245				250	1	250	250	1	250		250	1	250	
Examination Room / Resting	190	1	190				100	3	300	100	3	300		100	3	300	
ADMINISTRATION & GUIDANCE			**1,460**			**0**			**2,711**			**2,711**				**2,710**	
Bournedale																	
General Office / Waiting Room / Toilet	500	1	500				513	1	513	513	1	513		513	1	513	
Teachers' Mail and Time Room							250	1	250	250	1	250		100	1	100	
Duplicating Room **(w/ mail above)**	220	1	220					1	0	0				150	1	150	
Records Room							110	1	110	110	1	110		110	1	110	
Principal's Office w/ Conference Area							375	1	375	375	1	375		375	1	375	
Principal's Secretary / Waiting	150	1	150				125	1	125	125	1	125		125	1	125	
Assistant Principal's Office	150	1	150				120	1	120	120	1	120		120	1	120	
Supervisory / Spare Office							120	1	120	120	1	120		120	1	120	
Conference Room							250	1	250	250	1	250		250	1	250	
Guidance Office	120	2	240				150	2	300	150	2	300		150	2	300	
Guidance Storeroom							35	1	35	35	1	35		35	1	35	
Teachers' Work Room	200	1	200				513	1	513	513	1	513		513	1	513	
CUSTODIAL & MAINTENANCE			**1,158**			**0**			**0**			**2,325**				**2,325**	
Bournedale																	
Custodian's Office	130	1	130				150	1		150	1	150		150	1	150	
Custodian's Workshop							375	1		375	1	375		375	1	375	
Custodian's Storage	338	1	338				375	1		375	1	375		375	1	375	
Recycling Room / Trash							400	1		400	1	400		400	1	400	
Receiving and General Supply	200	1	200				342	1		342	1	342		342	1	342	
Storeroom	300	1	300				483	1		483	1	483		483	1	483	
Network / Telecom Room	190	1	190				200	1		200	1	200		200	1	200	
OTHER			**0**			**0**			**1,000**			**1,000**				**0**	
Innovation Lab (Tech/Sci/Art)							1,000	1	1,000	1,000	1	1,000	G				
Total Building Net Floor Area (NFA)			**42,882**			**32,005**			**42,065**			**76,395**				**70,088**	
Proposed Student Capacity / Enrollment												**725**				**725**	
Bournedale GFA			68,100														
			0														
Total Building Gross Floor Area (GFA)[2]			68,100									**114,593**				**105,125**	
Grossing factor (GFA/NFA)			**1.59**									**1.50**				**1.50**	

[1] **Individual Room Net Floor Area (NFA)** Includes the net square footage measured from the inside face of the perimeter walls and includes all specific spaces assigned to a particular program area including such spaces as non-communal toilets and storage rooms.

[2] **Total Building Gross Floor Area (GFA)** Includes the entire building gross square footage measured from the outside face of exterior walls

Architect Certification

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

Name of Architect Firm: Flansburgh Architects

Name of Principal Architect: Kent D. Kovacs AIA

Signature of Principal Architect:

Date: 12/9/15

Proposed Space Summary- Elementary School (K-5)

DRAFT 1

Option 3-Bournedale

Bourne K-5	Existing Conditions			PROPOSED: Existing to Remain/Renovated			PROPOSED: New			PROPOSED: Total				MSBA Guidelines (refer to MSBA Educational Program & Space Standard Guidelines)			
ROOM TYPE	ROOM NFA[1]	# OF RMS	area totals	ROOM NFA[1]	# OF RMS	area totals	ROOM NFA[1]	# OF RMS	area totals	ROOM NFA[1]	# OF RMS	area totals		ROOM NFA[1]	# OF RMS	area totals	Comments
CORE ACADEMIC SPACES			22,690			22,690			20,700			43,390			38	37,850	
(List classrooms of different sizes separately)																	
Bournedale																	
Pre-Kindergarten w/ toilet	1,130	4	4,520	1,130	4	4,520				1,130	4	4,520	A	1,200		-	1,100 SF min - 1,300 SF max
Kindergarten w/ toilet	1,130	4	4,520	1,130	4	4,520	1,200	3	3,600		7	8,120	B	1,200	7	8,400	1,100 SF min - 1,300 SF max
General Classrooms - Grade 1-4	Varies	16	13,650	853	16	13,650	900	19	17,100		35	30,750	C	950	31	29,450	900 SF min - 1,000 SF max
SPECIAL EDUCATION			2,950			0			9,060			9,060				9,060	
(List rooms of different sizes separately)																	
Bournedale																	
Self-Contained SPED (one is a dedicated PK)	670	1	670				950	6	5,700	950	6	5,700		950	6	5,700	8% of pop. in self-contained SPED
Self-Contained SPED - toilet							60	6	360	60	6	360		60	6	360	
Resource Room	1,680	Varies	1,680				500	4	2,000	500	4	2,000		500	4	2,000	1/2 size Genl. Clrm.
Small Group Room / Reading	600	Varies	600				250	4	1,000	250	4	1,000		500	2	1,000	1/2 size Genl. Clrm.
ART & MUSIC			2,258			1,215			4,475			5,690				6,300	
Bournedale																	
Art Classroom - 25 seats	1,015	1	1,015	1,015	1	1,015	1,000	2	2,000		3	3,015		1,000	3	3,000	assumed schedule 2 times / week / student
Art Workroom w/ Storage & kiln	200	1	200	200	1	200	125	2	250		3	450		150	3	450	
Music Classroom / Large Group - 25-50 seats	918	1	918				1,000	2	2,000	1,000	2	2,000	D	1,200	2	2,400	assumed schedule 2 times / week / student
Music Practice / Ensemble	125	1	125				75	3	225	75	3	225	E	75	6	450	
HEALTH & PHYSICAL EDUCATION			3,150			3,150			3,150			6,300				6,300	
Bournedale																	
Gymnasium	2,980	1	2,980	2,980	1	2,980	3,020	1	3,020			6,000		6,000	1	6,000	6000 SF Min. Size
Gym Storeroom	170	1	170	170	1	170	130	1	130		2	300		150	1	150	
Health Instructor's Office w/ Shower & Toilet														150	1	150	
MEDIA CENTER			3,775			0			4,653			4,653				4,653	
Bournedale																	
Media Center / Reading Room	2,815	1	2,815				4,653	1	4,653	4,653	1	4,653		4,653	1	4,653	
Computer	960	1	960														
DINING & FOOD SERVICE			4,950			4,950			6,254			11,204				10,639	
Bournedale																	
Cafeteria / Dining	2,200	1	2,200	2,200	1	2,200	4438	1	4,438		1	6,638		6,638	1	6,638	2 seatings - 15SF per seat
Stage							1000	1	1,000	1,000	1	1,000		1,000	1	1,000	
Chair / Table / Equipment Storage							495	1	495	495	1	495		495	1	495	
Kitchen	2,750	1	2,750	2,750	1	2,750						2,750	F	2,185	1	2,185	1600 SF for first 300 + 1 SF/student Add'l
Staff Lunch Room							321	1	321	321	1	321		321	1	321	20 SF/Occupant
MEDICAL			491			0			710			710				710	
Bournedale																	
Medical Suite Toilet	56	1	56				60	1	60	60	1	60		60	1	60	
Nurses' Office / Waiting Room	245	1	245				250	1	250	250	1	250		250	1	250	
Examination Room / Resting	190	1	190				100	4	400	100	4	400		100	4	400	
ADMINISTRATION & GUIDANCE			1,460			0			3,021			3,021				3,020	
Bournedale																	
General Office / Waiting Room / Toilet	500	1	500				593	1	593	593	1	593		593	1	593	
Teachers' Mail and Time Room							250	1	250	250	1	250		100	1	100	
Duplicating Room **(w/ mail above)**	220	1	220						0	0				150	1	150	
Records Room							110	1	110	110	1	110		110	1	110	
Principal's Office w/ Conference Area							375	1	375	375	1	375		375	1	375	
Principal's Secretary / Waiting	150	1	150				125	1	125	125	1	125		125	1	125	
Assistant Principal's Office	150	1	150				120	1	120	120	1	120		120	1	120	
Supervisory / Spare Office							120	1	120	120	1	120		120	1	120	
Conference Room							250	1	250	250	1	250		250	1	250	
Guidance Office	120	2	240				150	3	450	150	3	450		150	3	450	
Guidance Storeroom							35	1	35	35	1	35		35	1	35	
Teachers' Work Room	200	1	200				593	1	593	593	1	593		593	1	593	
CUSTODIAL & MAINTENANCE			1,158			0			2,485			2,485				2,485	
Bournedale																	
Custodian's Office	130	1	130				150	1	150	150	1	150		150	1	150	
Custodian's Workshop							375	1	375	375	1	375		375	1	375	
Custodian's Storage	338	1	338				375	1	375	375	1	375		375	1	375	
Recycling Room / Trash							400	1	400	400	1	400		400	1	400	
Receiving and General Supply	200	1	200				395	1	395	395	1	395		395	1	395	
Storeroom	300	1	300				590	1	590	590	1	590		590	1	590	
Network / Telecom Room	190	1	190				200	1	200	200	1	200		200	1	200	
OTHER			0			0			1,000			1,000				0	
Innovation Lab (Tech/Sci/Art)							1,000	1	1,000	1,000	1	1,000	G				
Total Building Net Floor Area (NFA)			42,882			32,005			55,508			87,513				81,016	
Proposed Student Capacity / Enrollment																885	
Bournedale GFA			68,100														
			0														
Total Building Gross Floor Area (GFA)[2]			68,100									131,382				128,325	
Grossing factor (GFA/NFA)			1.59									1.50	H			1.58	

[1] **Individual Room Net Floor Area (NFA)** Includes the net square footage measured from the inside face of the perimeter walls and includes all specific spaces assigned to a particular program area including such spaces as non-communal toilets and storage rooms.

[2] **Total Building Gross Floor Area (GFA)** Includes the entire building gross square footage measured from the outside face of exterior walls

Architect Certification

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

Name of Architect Firm: Flansburgh Architects

Name of Principal Architect: Kent D. Kovacs AIA

Signature of Principal Architect:

Date: 12/9/15

Proposed Space Summary- Elementary School (K-5)

DRAFT 1

Option 4- Peebles

Bourne K-5	Existing Conditions			PROPOSED: Existing to Remain/Renovated			PROPOSED: New			PROPOSED: Total				MSBA Guidelines (refer to MSBA Educational Program & Space Standard Guidelines)			
ROOM TYPE	ROOM NFA[1]	# OF RMS	area totals	ROOM NFA[1]	# OF RMS	area totals	ROOM NFA[1]	# OF RMS	area totals	ROOM NFA[1]	# OF RMS	area totals		ROOM NFA[1]	# OF RMS	area totals	Comments
CORE ACADEMIC SPACES			20,300			0			20,700			20,700			18	17,850	
(List classrooms of different sizes separately)																	
Pre-Kindergarten w/ toilet														1,200		-	1,100 SF min - 1,300 SF max
Kindergarten w/ toilet	950	2	1,900				1,200	3	3,600	1,200	3	3,600		1,200	3	3,600	1,100 SF min - 1,300 SF max
General Classrooms - Grade 1-4	VARIES	20	18,400				900	19	17,100	900	19	17,100	A	950	15	14,250	900 SF min - 1,000 SF max
SPECIAL EDUCATION			1,805			0			4,530			4,530				4,530	
(List rooms of different sizes separately)																	
Self-Contained SPED	935	1	935				950	3	2,850	950	3	2,850		950	3	2,850	8% of pop. in self-contained SPED
Self-Contained SPED - toilet							60	3	180	60	3	180		60	3	180	
Resource Room	870	1	870				500	2	1,000	500	2	1,000		500	2	1,000	1/2 size Genl. Clrm.
Small Group Room / Reading							500	1	500	500	1	500		500	1	500	1/2 size Genl. Clrm.
ART & MUSIC			1,325			0			2,300			2,300				2,575	
Art Classroom - 25 seats	800	1	800				1,000	1	1,000	1,000	1	1,000		1,000	1	1,000	assumed schedule 2 times / week / student
Art Workroom w/ Storage & kiln							150	1	150	150	1	150		150	1	150	
Music Classroom / Large Group - 25-50 seats	525	1	525				1,000	1	1,000	1,000	1	1,000	B	1,200	1	1,200	assumed schedule 2 times / week / student
Music Practice / Ensemble							75	2	150	75	2	150	C	75	3	225	
HEALTH & PHYSICAL EDUCATION			3,100			0			6,300			6,300				6,300	
Gymnasium	3,100	1	3,100				6,000	1	6,000	6,000	1	6,000		6,000	1	6,000	6000 SF Min. Size
Gym Storeroom							300	1	300	300	1	300		150	1	150	
Health Instructor's Office w/ Shower & Toilet									0			0		150	1	150	
MEDIA CENTER			730			0			2,515			2,515				2,515	
Media Center / Reading Room	730	1	730				2,515	1	2,515	2,515	1	2,515		2,515	1	2,515	
DINING & FOOD SERVICE			5,550			0			6,325			6,325				6,324	
Cafeteria / Dining	4,100	1	4,100				3,075	1	3,075	3,075	1	3,075		3,075	1	3,075	2 seatings - 15SF per seat
Stage							1,000	1	1,000	1,000	1	1,000		1,000	1	1,000	
Chair / Table / Equipment Storage							337	1	337	337	1	337		337	1	337	
Kitchen	1,100	1	1,100				1,710	1	1,710	1,710	1	1,710		1,710	1	1,710	1600 SF for first 300 + 1 SF/student Add'l
Staff Lunch Room	350	1	350				203	1	203	203	1	203		203	1	203	20 SF/Occupant
MEDICAL			260			0			510			510				510	
Medical Suite Toilet							60	1	60	60	1	60		60	1	60	
Nurses' Office / Waiting Room	260	1	260				250	1	250	250	1	250		250	1	250	
Examination Room / Resting							100	2	200	100	2	200		100	2	200	
ADMINISTRATION & GUIDANCE			1,195			0			2,125			2,125				2,125	
General Office / Waiting Room / Toilet	270	1	270				355	1	355	355	1	355		355	1	355	
Teachers' Mail and Time Room							250	1	250	250	1	250		100	1	100	
Duplicating Room							0	1	0	0	1	0		150	1	150	
Records Room							110	1	110	110	1	110		110	1	110	
Principal's Office w/ Conference Area	600	VARIES	600				375	1	375	375	1	375		375	1	375	
Principal's Secretary / Waiting							125	1	125	125	1	125		125	1	125	
Assistant Principal's Office														120	0	-	
Supervisory / Spare Office							120	1	120	120	1	120		120	1	120	
Conference Room							250	1	250	250	1	250		250	1	250	
Guidance Office							150	1	150	150	1	150		150	1	150	
Guidance Storeroom							35	1	35	35	1	35		35	1	35	
Teachers' Work Room	325	1	325				355	1	355	355	1	355		355	1	355	
CUSTODIAL & MAINTENANCE			795			0			2,010			2,010				2,010	
Custodian's Office							150	1	150	150	1	150		150	1	150	
Custodian's Workshop							375	1	375	375	1	375		375	1	375	
Custodian's Storage							375	1	375	375	1	375		375	1	375	
Recycling Room / Trash							400	1	400	400	1	400		400	1	400	
Receiving and General Supply	130	1	130				237	1	237	237	1	237		237	1	237	
Storeroom	485	1	485				273	1	273	273	1	273		273	1	273	
Network / Telecom Room	45	4	180				200	1	200	200	1	200		200	1	200	
OTHER			0			0			1,000			1,000				0	
Innovation Lab (Tech/Sci/Art)							1,000	1	1,000	1,000	1	1,000	D				
Total Building Net Floor Area (NFA)			35,060			0			48,315			48,315				44,739	
Proposed Student Capacity / Enrollment												410				410	
Total Building Gross Floor Area (GFA)[2]			55,200									72,473				68,538	
Grossing factor (GFA/NFA)			1.57									1.50	E			1.53	

[1] **Individual Room Net Floor Area (NFA)** Includes the net square footage measured from the inside face of the perimeter walls and includes all specific spaces assigned to a particular program area including such spaces as non-communal toilets and storage rooms.

[2] **Total Building Gross Floor Area (GFA)** Includes the entire building gross square footage measured from the outside face of exterior walls

Architect Certification

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

Name of Architect Firm: Flansburgh Architects

Name of Principal Architect: Kent D. Kovacs AIA

Signature of Principal Architect:

Date: 12/9/15

B. Variance between Program and MSBA Guidelines

B. NARRATIVE FOR VARIANCE BETWEEN PROGRAM AND MSBA GUIDELINES

Throughout the early PDP phase, the design team has conducted bi-weekly Educational Design meetings with district to advance the educational program. Discussions of best practice and optimal use with the Superintendent, Principals, directors, and school staff contributed to the understanding of program requirements and space allocation. The following proposed variations to the MSBA space template are a result of those conversations.

Please find attached the draft space templates for the 250 enrollment (Opt. 1), 725 enrollment (Opt. 2), 885 enrollment (Opt. 3), 410 enrollment (Opt. 4), with noted variations noted per option below.

Opt. 1 - K4 w/ 250 enrollment

A: Kindergarten - One additional classroom over the template. *This accommodates the required 3 classrooms to maintain balance with the upper grade student population*
B: General Classrooms - Three additional general classrooms are provided over the template. *This accommodates the required 3 classrooms per grade 1 through 4.*
C: Music Classroom – Reduce from 1,200 sf to 1,000sf
D: Music Practice – Reduce from two practice rooms to one practice room
E: Innovation Studio – One classroom at 1,000sf. *The innovation lab is a fully equipped MakerSpace where students in grades K-12 can explore, build, design, and innovate using low and high tech tools. This is a current elementary school program.*
F: Grossing Factor – A grossing factor of 1.50 has been applied to the net square footage. *This is a reasonable factor for this project to accommodate walls, building infrastructure, toilets, circulation, and other non-programed areas.*

Opt. 2 - K4 w/ 725 enrollment

A: Pre-Kindergarten – Four current classrooms to remain totaling 4,520 sf
B: Kindergarten - One additional over the template. *This accommodates the required 7 classrooms to maintain balance with the upper grade student population*
C: General Classrooms - two additional general classrooms over the template. *This accommodates the required 7 classrooms per grade 1 through 4.*
D: Music Classroom – Reduce both music classrooms from 1,200 sf to 1,000sf for a total reduction of 400 sf.
E: Music Practice – Reduce from five practice rooms to two practice room
F: Kitchen – The existing kitchen is 2,750 sf resulting in 725 sf over the template.
G: Innovation Studio - This a current elementary school program to be incorporated. *Refer to above for description*

Opt. 3 - K5 w/ 885 enrollment

A: Pre-Kindergarten - The 4 current classrooms to remain totaling 4,520 sf
B: Kindergarten – there is a reduction in square footage due to the constraints of the existing space
C: General Classrooms - four additional general classrooms over the template. *This accommodates the required 7 classrooms per grade 1 through 5.*
D: Music Classroom – Reduce both music classrooms from 1,200 sf to 1,000sf for a total reduction of 400 sf.
E: Music Practice – Reduce from six practice rooms to three practice rooms
F: Kitchen – The existing kitchen is 2,750 sf resulting in 725 sf over the template.
K: Innovation Studio - This a current elementary school program to be incorporated. *Refer to above for description*
F: Grossing Factor – A grossing factor of 1.50 has been applied to the net square footage. *This is a reasonable factor for this project to accommodate walls, building infrastructure, toilets, circulation, and other non-programed areas.*

B. NARRATIVE FOR VARIANCE BETWEEN PROGRAM AND MSBA GUIDELINES

<u>Opt. 4 – K5 w/ 410 enrollment</u>

A: General Classrooms - Four additional general classrooms are provided over the template. *This accommodates the required 3 classrooms per grade 1 through 4. Grade 5 accommodates the required 7 classrooms*

B: Music Classroom – Reduce from 1,200 sf to 1,000sf

C: Music Practice – Reduce from two practice rooms to one practice room

D: Innovation Studio – One classroom at 1,000sf. *The innovation lab is a fully equipped MakerSpace where students in grades K-12 can explore, build, design, and innovate using low and high tech tools. This is a current elementary school program.*

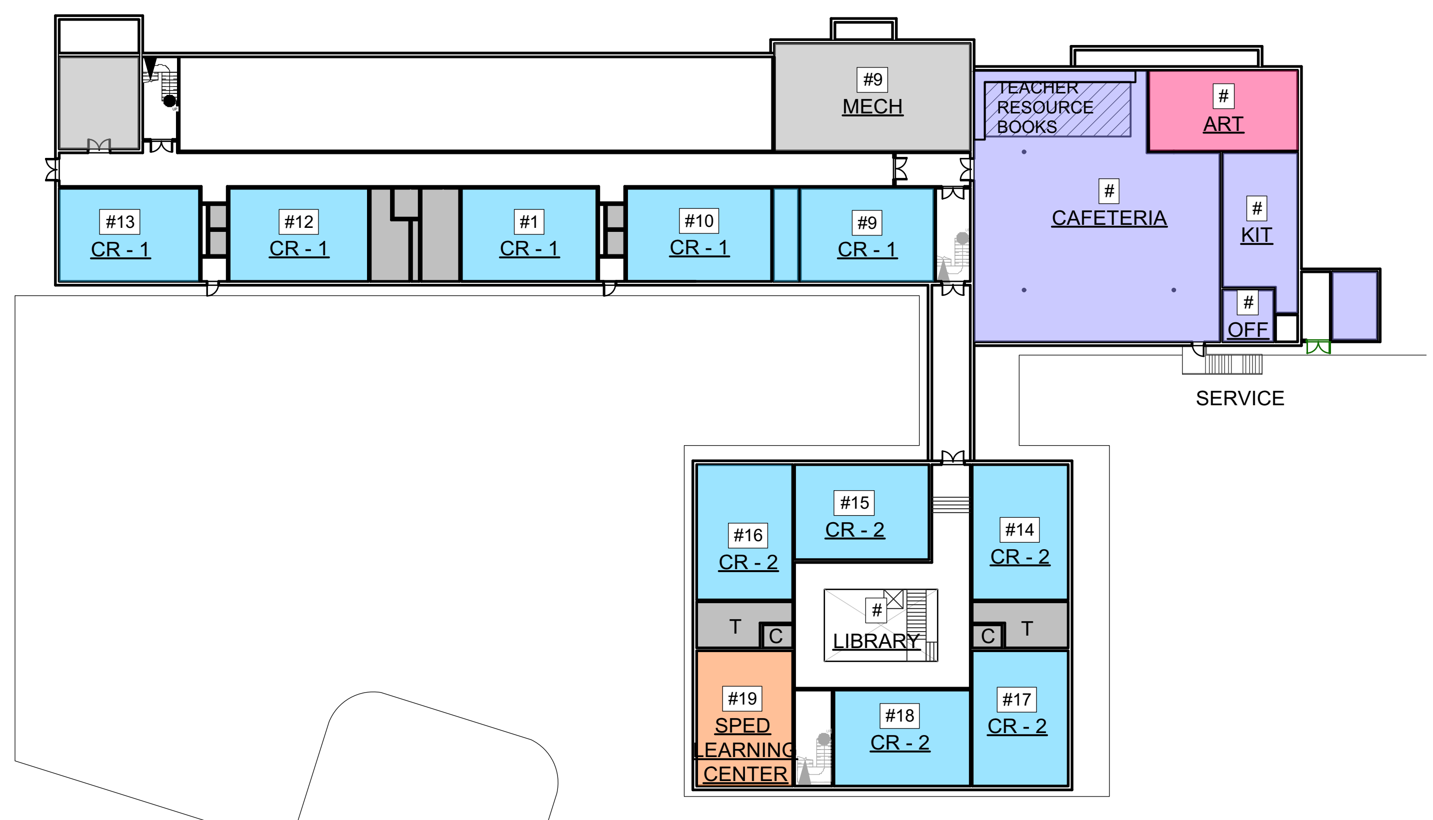
E: Grossing Factor – A grossing factor of 1.50 has been applied to the net square footage. *This is a reasonable factor for this project to accommodate walls, building infrastructure, toilets, circulation, and other non-programed areas.*

<u>General:</u> The preliminary programs are "idealized" at this stage. When various options for renovation/addition and new construction are designed, these square footages will vary according to the existing building configurations and grossing factor efficiency.

C. Existing Floor Plans

PEEBLES ELEMENTARY SCHOOL
EXISTING FLOOR PLANS

UPPER LEVEL PLAN



LOWER LEVEL PLAN

CORE ACADEMIC	20,300 SF
SPECIAL EDUCATION	935 SF
ART & MUSIC	1,325 SF
PHYSICAL EDUCATION	3,100 SF
MEDIA CENTER	730 SF
COMPUTER	975 SF
DINING	5,550 SF
MEDICAL	260 SF
ADMINISTRATION	1,195 SF
CUSTODIAL	795 SF
TOTAL BUILDING NET AREA:	35,165 SF
TOTAL BUILDING GROSS AREA:	**55,190 SF**

0' 25' 50' 100'

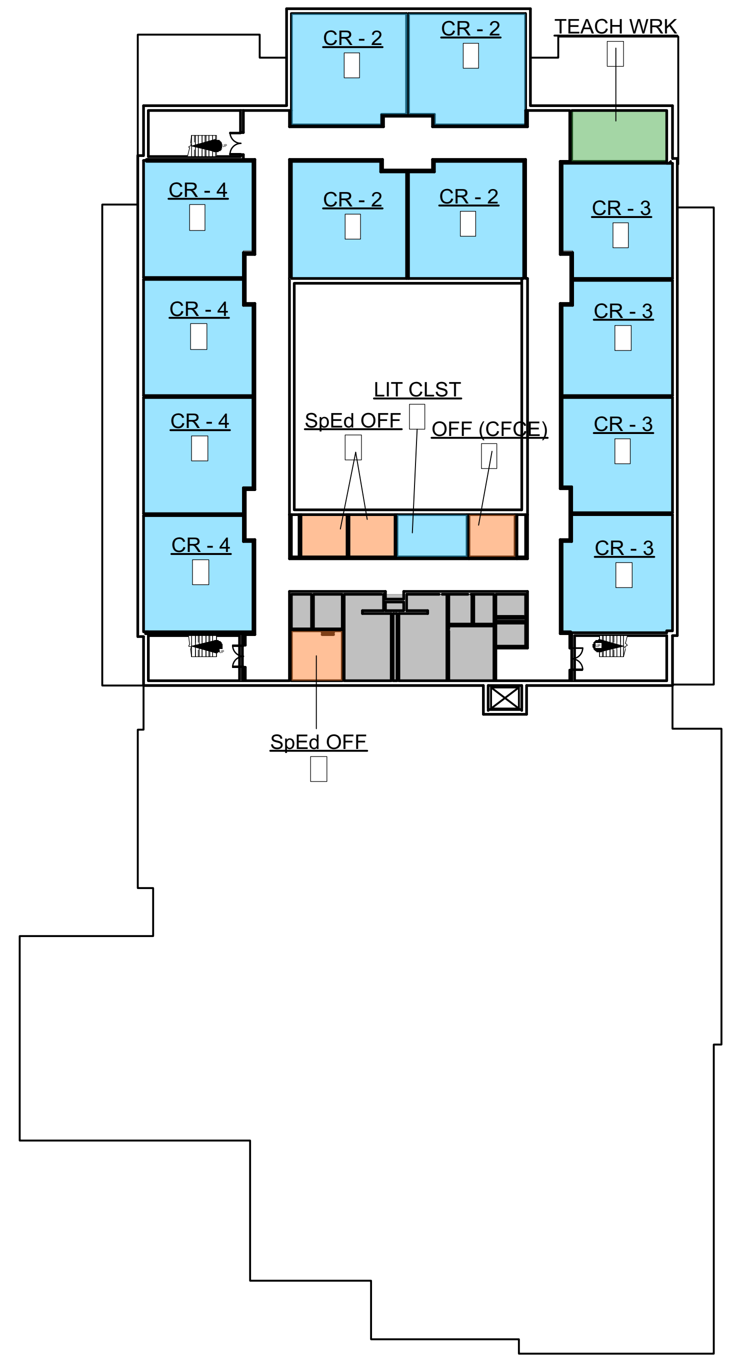
BOURNEDALE ELEMENTARY SCHOOL
EXISTING FLOOR PLANS

PRE-KINDERGARTEN	3,390 SF
CORE ACADEMIC	22,700 SF
SPECIAL EDUCATION	2,950 SF
ART & MUSIC	2,258 SF
PHYSICAL EDUCATION	3,150 SF
MEDIA CENTER	2,815 SF
COMPUTER	960 SF
DINING	5,015 SF
MEDICAL	491 SF
ADMINISTRATION	1,460 SF
CUSTODIAL	1,158 SF

TOTAL BUILDING NET AREA: 42,947 SF

TOTAL BUILDING GROSS AREA: **68,100 SF**

FIRST FLOOR PLAN



SECOND FLOOR PLAN

0' 25' 50' 100'

3.1.4 Evaluation of Existing Conditions

A. Property Title
B. Statement that Property can be Developed
C. Historical Impacts on Property
D. Determination of Development Restrictions
E. Existing Conditions Reports
F. Code Evaluation
G. MAAB/ADA Evaluation
H. Proposed Soils Exploration
I. Traffic Impact Study
J. Phase I ESA
K. Hazardous Materials Assessments

A. Property Title

Peebles

835

457

ORDERED by the Board of Selectmen of the Town of Bourne that there is taken by eminent domain on behalf of said town four parcels of land in that part of said town known as Bourne Village, bounded and described as follows:

(1) Beginning at a cement bound on the South easterly side of county way known as Trowbridge Road at a point where the southwesterly boundary of land of David O. Handy intersects the south-easterly boundary of said Trowbridge Road and thence running south 59°-58'-20" East to a point at the dividing line of land of said Handy and land of Richard B. and Georgetta Nye Waterhouse 329.99 feet; thence running south 59°-54'-20" east by land of said Waterhouse to the Westerly boundary of MacArthur Boulevard, also known as Route 28 and as the State Highway, 1630.31 feet; thence turning and running south 19°-06'-10" East by said MacArthur Boulevard to remaining land of Estate of Laurence B. Jackson by two bounds, 272.68 feet and 367.36 feet respectively; thence turning and running North 61°-21'-25" West by remaining land of said Jackson, 308.07 feet; thence turning and running South 28°-17'-10" West again by land of Jackson, 244.18 feet to land of Preston L and Katherine M. Blackwell; thence turning and running by the northerly boundary of land of Preston L. and Katherine M. Blackwell and Laura E. Young, North 61°-42'-50" West, 2116.44 feet; thence running north 58°-13'-20" West by said land of Young 476.55 feet to Cotuit Road; thence turning and running northeasterly and easterly by said Cotuit Road and said Trowbridge Road by three bounds 51.26 feet, 155.10 feet and 344.12 feet respectively to a cement bound; and thence running north 63°-56'-35" East by said Trowbridge Road 408.38 feet to the point of beginning. Being the parcels of land shown as 43 acres more or less and as "Estate of Laurence B. Jackson" on a plan entitled "Plan of Land To Be Acquired By The Town of Bourne in Bourne Village" dated October 15, 1952, Newell B. Snow, Engineer to be recorded herewith.

(2) Also, a certain parcel of land shown on said plan as a lot containing 2.44 acres more or less and being bounded and described as shown on said plan as follows

Northeasterly by land of said Richard B. and Georgetta Nye Waterhouse by a line running South 59°-58'-20" East 390.81 feet; Southerly by said Trowbridge Road by two bounds 354.60 feet and 143.01 feet respectively; Southwesterly by a curved line at the intersection of said Trowbridge Road and said Cotuit Road with an arc with a radius of 50 feet, 121.89 feet; Westerly by said Cotuit Road 225.74 feet; and Northwesterly by land of Harold L. and Marie P. Czarnetzki by three bounds running North 64°-56'-55" East, 43 feet, North 56°-44'-50" East 98.15 feet and North 34°-55'-05" East 58.38 feet.

(3) Also, a certain triangular parcel of land shown as lot "G" on said plan, situated on the Northerly side of said Trowbridge Road and bounded and described as shown on said plan as follows:

Southerly by said Trowbridge Road 82 feet more or less; Westerly by land of Heirs of Mercy E. McDermott 66 feet more or less; and Northeasterly by land marked on said plan "Ordello R. Swift to Town of Bourne-1920 Book 337, P. 139", 78 feet more or less.

(4) Also, a certain parcel of land shown as lot "H" on said plan, situated at the Westerly corner of said Cotuit Road and Trowbridge Road, and bounded and described as shown on said plan as follows:

(See Plan filed in Plan Book 108, Page 51)

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Easterly by a curved line at the junction of said roads with a radius of 36.46 feet, 86.47 feet; Southeasterly by said Cotuit Road 2.32 feet; Southwesterly by land of Bassett by a line running North 58°-13'-20" West 54.41 feet; and Northwesterly by land of said Bassett by a line running North 23°-17'-35" East 34.31 feet.

The interest taken insaid land is the fee simple; the purpose of the taking is to provide a location for a new school building and for open spaces and playgrounds incidental thereto.

Louise P. Walsh.............$400.00
Harold L. Colbeth............800.00
Margaret M. Swift.......... 2,000.00
Estate of Laurence B. Jackson 1.00

The trees and buildings, if any, on said parcels are included in the taking.

WITNESS the hands of the Selectmen and the seal of the Town of Bourne this 2nd day of March, 1953.

Augustus F. Wagner
William F. Camp
Philip T. Schofield
Selectmen of Bourne

Barnstable, ss., Received March 3, 1953, and is recorded.

ORDER OF TAKING AND AWARD OF DAMAGES

WHEREAS the Board of Selectmen of the Town of Bourne did on the 22nd day of October, 1952 lay out as Town ways the ways known as Balance of Tower Lane to Cowslip Lane and the way to shore off Cowslip Lane; Bay Drive from Tower Lane to Pier Road and also remainder of Pier Road; way to shore off Pier Road in said town, and

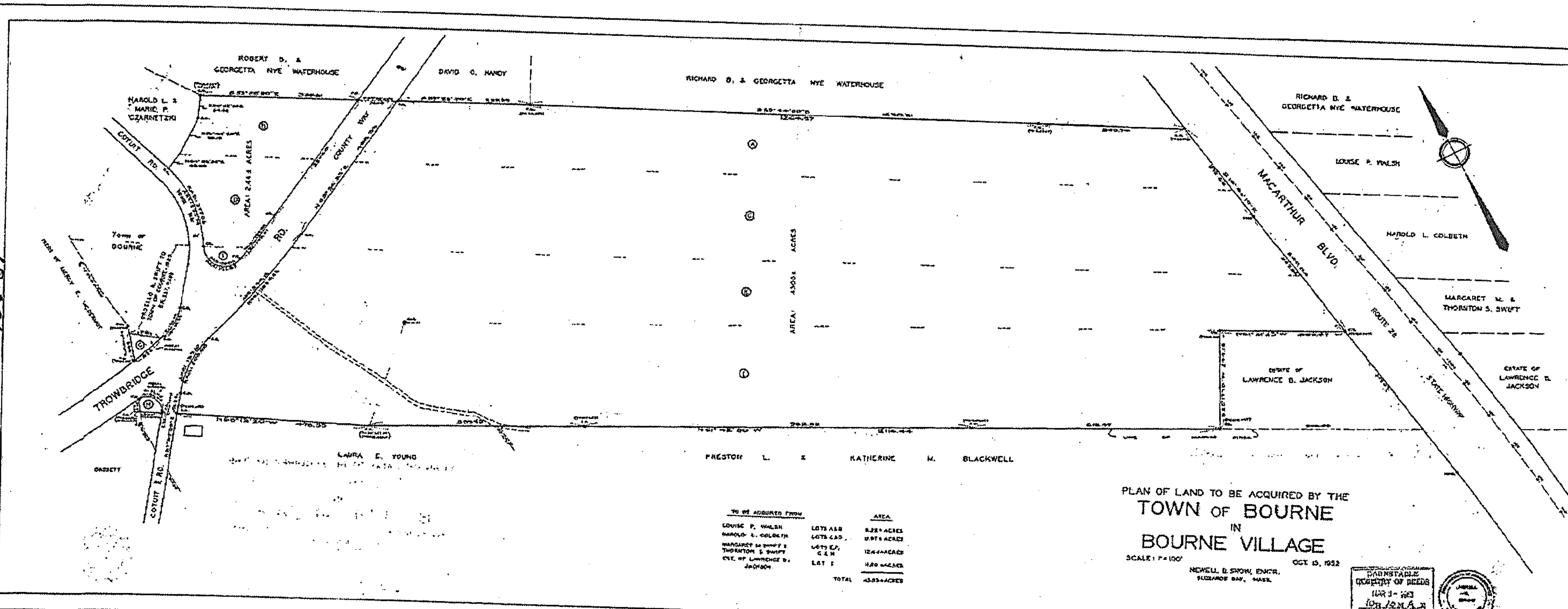
WHEREAS said Town of Bourne, at a meeting duly called and warned for the purpose held on the 9th day of February, 1953 did accept said laying out and did authorize the Selectmen of said Town to acquire by purchase or to take by eminent domain the land necessary for the location thereof, and did make an appropriation of money for the purpose of said purchase or taking, and did make provision for raising the same, and

WHEREAS all of the other preliminary requirements prescribed by law have been complied with, it is

ORDERED that there be, and there hereby is, taken by eminent domain on behalf of the Town of Bourne a parcel of land in said Town bounded and described as follows:

"Beginning at a point on the northwesterly line of Lot 233 as shown on a plan entitled "Town of Bourne, Roads in Taylors Point Shores, Buzzards Bay, Laid out as Town Ways By the Selectmen, one hundred feet to an inch, December 1952 James L. Tyson, Town Engineer", thence S 20°-13'-00" W, 213.96 feet; thence by a curve to the right of 224.46 feet radius, 171.27 feet; thence S 63°-55'-56" W, 70.00 feet; thence by a curve to the left of 291.61 feet radius, 150.97 feet; thence S 34°-16'-20" W, 150.63 feet; thence by a curve to the right of 260.58 feet radius, 220.37 feet; thence S 82°-43'-40" W, 420.00 feet; thence by a curve to the left of 171.57 feet radius, 100.78 feet; thence S 49°-04'-20" W, 37.21 feet; thence by a curve to the left of 45 feet radius, 70.69 feet; thence S 49°-04'-20" W, 40.00 feet; across Pier Road; thence N 40°-55'-40" W, 155.00 feet; thence N 10°-55'-40" W, along lots 184 and 183, 140.00 feet; thence by same course 240 feet more or less to mean low

108-51



108-51

Plan Book 108 Page 51

Bournedale Elem

BK: 10741-347 25379
05-09-1997 @ 11:31

(SEAL)

COMMONWEALTH OF MASSACHUSETTS

LAND COURT

DEPARTMENT OF THE TRIAL COURT

Case No. 106810 T.L.

FINAL JUDGMENT IN TAX LIEN CASE

Town of Bourne

vs.

George E. Williams, Jr. and John J. Williams, Trustees of the Canalscape Partnership Realty Trust

JUDGMENT

This case came on to be heard and was argued by counsel, and thereupon, upon consideration thereof, it is ADJUDGED and ORDERED that all rights of redemption are forever foreclosed and barred under the deed given by the Collector of Taxes for the Town of Bourne in the County of Barnstable and said Commonwealth, dated August 29, 1994 and duly recorded in Book 9340 Page 240

By the Court (Trombly, Recorder)

Attest:

Dated March 13, 1997

Jeanne M. Maloney
DEPUTY Recorder

dm

A TRUE COPY
ATTEST:
Jeanne M. Maloney
DEPUTY RECORDER

BARNSTABLE REGISTRY OF DEEDS

(SEAL)

Bk: 10529-295 71302

12-18-1996 @ 10:31

COMMONWEALTH OF MASSACHUSETTS

LAND COURT

DEPARTMENT OF THE TRIAL COURT

Case No. 104765 T.L.

FINAL JUDGMENT IN TAX LIEN CASE

Town of Bourne

vs.

T. N. Paul Inc.

JUDGMENT

This case came on to be heard and was argued by counsel, and thereupon, upon consideration thereof, it is

ADJUDGED and ORDERED that all rights of redemption are forever foreclosed and barred under the deed given by the Collector of Taxes for the Town

of Bourne in the County of Barnstable

and said Commonwealth, dated September 14, 1989 and duly recorded in

Book 6880 Page 47

By the Court (Trombly, Recorder)

Attest:

Dated November 8, 1996

Jeanne M. Maloney
DEPUTY Recorder

dm

A TRUE COPY
ATTEST:

Jeanne M. Maloney

DEPUTY RECORDER
BARNSTABLE REGISTRY OF DEEDS

B. Statement that Property can be Developed

B. STATEMENT THAT THE PROPERTY CAN BE DEVELOPED

Peebles Elementary School Site:

The Town of Bourne owns the land and school facilities known as Bourne High School at 75 Waterhouse Road, Bourne Middle School at 77 Waterhouse Road, Peebles Elementary School at 70 Trowbridge Road. The property is available for development of a renovated or new school since there would be no change in the existing use.

Bournedale Elementary School Site:

The Town of Bourne owns the land and school facilities known as Bournedale Elementary School at 41 Ernest Valeri Road. The property is available for development of a renovated or new school since there would be no change in the existing use.

C. Historical Impacts on Property

C. HISTORICAL IMPACTS ON THE PROPERTY

Peebles Elementary School Site:

The school site and existing school building have no known historic registrations. In addition, the areas surrounding the school's site along Trowbridge Road are not in a designated Historic District.

Refer to attached letter from the Massachusetts Historical Commission confirming no further review of this site is necessary.

Bournedale Elementary School Site:

The school site and existing school building have no historic registrations. In addition, the areas surrounding the school's site along Ernest Valeri Road are not in a designated Historic District.

Refer to attached letter from the Massachusetts Historical Commission confirming no further review of this site is necessary.

The Commonwealth of Massachusetts
William Francis Galvin, Secretary of the Commonwealth
Massachusetts Historical Commission

December 14, 2015

Kent Kovacs
Flansburgh Architects
77 North Washington Street, 6th Floor
Boston, MA 02114

RE: Peebles Elementary School, 70 Trowbridge Road, Bourne, MA; MHC# RC.59180

Dear Mr. Kovacs:

Thank you for submitting a Project Notification Form (PNF) for the project referenced above, which was received at this office on November 18, 2015. The staff of the Massachusetts Historical Commission (MHC) have reviewed the information submitted and have the following comments.

The proposed project consists of either the demolition or the rehabilitation of the existing James F. Peebles Elementary School at 70 Trowbridge Road in Bourne. The information provided indicates that the project will use funding from the Massachusetts School Building Authority (MSBA).

Review of MHC's files indicates that the Peebles Elementary School is not included in MHC's Inventory of Historic and Archaeological Assets of the Commonwealth, nor listed in the National and State Registers of Historic Places. No further review by the MHC is required for the MSBA-funded project.

These comments are offered to assist in compliance with Massachusetts General Laws, Chapter 9, Sections 26-27C, as amended by Chapter 254 of the Acts of 1988 (950 CMR 71.00). Please do not hesitate to contact Linda Santoro of my staff, should you have any questions.

Sincerely,

Brona Simon

Brona Simon
State Historic Preservation Officer
Executive Director
Massachusetts Historical Commission

The Commonwealth of Massachusetts

William Francis Galvin, Secretary of the Commonwealth
Massachusetts Historical Commission

December 14, 2015

Kent Kovacs
Flansburgh Architects
77 North Washington Street, 6^{th} Floor
Boston, MA 02114

RE: Peebles Elementary and Bournedale Elementary School Consolidation, 41 Ernest Valeri Road, Bourne, MA; MHC# RC.59181

Dear Mr. Kovacs:

Thank you for submitting a Project Notification Form (PNF) for the project referenced above, which was received at this office on November 18, 2015. The staff of the Massachusetts Historical Commission (MHC) have reviewed the information submitted and have the following comments.

The proposed project consists of the expansion of the existing Bournedale Elementary School at 41 Ernest Valeri Road in Bourne. The information provided indicates that the project will use funding from the Massachusetts School Building Authority (MSBA).

Review of MHC's files indicates that the Bournedale Elementary School is not included in MHC's Inventory of Historic and Archaeological Assets of the Commonwealth, nor listed in the National and State Registers of Historic Places. No further review by the MHC is required for the MSBA-funded project.

These comments are offered to assist in compliance with Massachusetts General Laws, Chapter 9, Sections 26-27C, as amended by Chapter 254 of the Acts of 1988 (950 CMR 71.00). Please do not hesitate to contact Linda Santoro of my staff, should you have any questions.

Sincerely,

Brona Simon

Brona Simon
State Historic Preservation Officer
Executive Director
Massachusetts Historical Commission

220 Morrissey Boulevard, Boston, Massachusetts 02125
(617) 727-8470 • Fax: (617) 727-5128
www.sec.state.ma.us/mhc

D. Determination of Development Restrictions

D. DETERMINATION OF DEVELOPMENT RESTRICTIONS

Peebles Elementary School:

The desired location for the proposed building is adjacent to the current school building. It has been determined wetlands and the floodplain locations are not in the areas of the proposed work. The buildable site is limited by topography. The building will have to conform to the relevant zoning and land use rules and regulations that currently exist on the property.

Bournedale Elementary School:

The desired location for the proposed building is adjacent to the current school building. It has been determined wetlands and the floodplain locations are not in the areas of the proposed work. The buildable site is limited by topography to the east and west and by the septic leaching field to the south. The building will have to conform to the relevant zoning and land use rules and regulations that currently exist on the property.

E. Existing Conditions Reports

Existing Conditions Report

Peebles Elementary School

A. *Executive Summary*
B. Detailed Report

1. Landscape
2. Civil
3. Architectural
4. Structural
5. HVAC
6. Electrical
7. Plumbing
8. Fire Protection
9. Furniture & Equipment
10. Technology
11. Hazardous Materials

A. Executive Summary: Peebles Elementary School

General Overview

Peebles Elementary School has been well maintained; however, most of it is over 62 years old and is in need of significant work. Although structurally sound, the systems and finishes have reached the end of their useful life. Some of the more significant issues are lack of a fire sprinkler system, no insulation or cavity in the exterior walls, numerous handicap accessibility problems, several code issues, and asbestos in several locations that will need to be abated. The requirements to meet current codes will impact all spaces and effectively require a full renovation of the school to achieve compliance.

Upon the selection of a preferred option, additional testing and investigations will be required to further evaluate the existing conditions of the building and site.

The following additional investigations are anticipated:

- Catch basin and drainage structure inspection
- Grease trap inspection
- Structural investigation/testing of 1959 building (as there are no sufficient drawings available)
- Hydrant flow test
- Interior drainage and pipe inspection
- Brick tie investigation
- Roof cuts to determine roofing components and thicknesses
- Infrared roof scan
- Additional destructive testing for hazardous materials
- Additional Geotechnical test pits/borings

Working in conjunction with the Town of Bourne, Flansburgh Architects has prepared this existing conditions report. This report considers the quality and anticipated life of the physical plant of the school, the building's interior and exterior building components, play areas and site features, structural systems, mechanical/electrical/plumbing systems, and technology infrastructure. The findings of this report will assist in finalizing the scope of the preferred option and assure that systems and materials left in place are sound and appropriate for the school's anticipated life. The process involved a physical survey of the buildings by the following qualified architects and engineers:

- Flansburgh Architects - Architectural
- Garcia, Galuksa & DeSousa - Mechanical, Plumbing, Electrical
- Boston Building Consultants - Structural Engineers
- Nitsch Engineering - Site/Civil
- Edvance - Technology Consultants
- Waterman Design - Landscape
- Tavares Design - Equipment and Food Service Consultant
- Fuss & O'Neill - Hazardous materials consultant

1. LANDSCAPE/ SITE DESIGN

The existing vehicular and pedestrian circulation systems will require redesign to accommodate the design intent of the new facility and to reduce existing bus and car traffic congestion. Pavement and walkways require replacement due to their condition and improvements are required for handicapped accessibility and parking.

Exterior lighting, courtyards, site furnishings, site vegetation, and athletic fields need further review and discussion of how they are used and what improvements will be needed.

2. CIVIL

Storm Water
The drainage system is minimal at best and water sheet flows into surrounding areas. A new storm water system is required to meet today's standards. Existing structures to remain will need to be inspected and any drain lines to remain should be cleaned.

Water
Existing exterior water lines for domestic use may remain, but this needs further review. A new water line for fire protection will be required to service the building.

Sewer
The existing waste water flows into the existing waste water treatment plant. Further investigation will be required to assure the combined flows are not exceeded.

Natural Gas
The recent moratorium on installing a new gas line into the school will be reviewed; confirmation will be necessary to ensure the pressure and flow will be adequate to accommodate a new facility from the existing gas line.

Permitting Considerations
Any expansion and renovation disturbing more than one acre will require a permit by the United States Environmental Protection Agency's National Pollution Discharge Elimination Systems Program.

3. ARCHITECTURAL

Overall the building systems are in fair to poor condition, and are nearing the end of their useful life. The requirements to meet current codes will impact all spaces and effectively require a full renovation of the school to achieve compliance.

Exterior Wall
The exterior envelope is in fair condition. Some cracking and spalling of masonry components are evident. Under the current energy standards, the R-Value of the exterior wall is very low. Options need to be explored to increase the R-Value to meet today's standards. Increasing the exterior wall R-Value will reduce the size of the HVAC system and save energy.

Windows
Many of the original windows still exist; these single glazed windows require replacement. Steel lintels above the windows are deteriorating and many need to be replaced.

Roof
The asphalt shingle roof on the 1953 building was replaced in the late 1990's. The original roof areas have roofs with low R-Value and will require replacement; the new roof system will accommodate new penetrations and new roof top equipment during a renovation. It will be reviewed if the existing insulation can be retained. A new roof system with additional insulation and a new membrane and trim will improve the R-Value, save energy, and provide a new 20-30 year warranty.

Interior
The existing finishes have been well maintained throughout but are showing their age. A renovation that will include structural upgrades, new mechanical, electrical, plumbing and fire protection system installations throughout will require the replacement of all or most finishes.

New ceilings will improve acoustics in classrooms and corridors. New flooring will replace asbestos tiles, satisfy ADA Standards, and eliminate the need to protect existing flooring during renovation work, which can be as expensive as new flooring. This approach also allows for full warranties throughout and the availability of “attic stock” for future repairs if necessary. It is anticipated that there will be a need to modify many spaces to include new walls and doors. As a result, all spaces should be repainted.

Building specialties, such as lockers, chalkboards, tack boards, casework, showers, toilets, etc. will be replaced to provide new components with full warranties and long life expectancies. Although many improvements have been made over the years for handicapped accessibility, it is anticipated that all required areas will need to be updated to meet today’s standards.

The current door hardware knobs do not meet handicap accessibility code regulations and need to be replaced with levers. Several other handicap accessibility issues exist at doorways throughout the school requiring code compliant doors and frames.

The kitchen has many difficulties related to prep space, cooking, servery, storage and cleanup. Items such as crowded prep areas, drainage for equipment, lack of space for the servery, old and inefficient equipment, small dry storage room, dishwasher controls will need to be resolved and updated.

4. STRUCTURAL

Since there will be no change in use, existing floors should be able to remain in use without any problems, unless a specific increase in loading is required.

Existing roofs will need to be reinforced for snow drift loading if adjacent additions have higher roofs, so for any portions of additions within about 10 feet of the existing building, we recommend limiting new roof heights to the height of the existing roof.

The most significant structural item is likely to be alterations to the lateral load-resisting system. We assume that the work area will exceed 50% of the building area. That will require existing unreinforced masonry walls to be tied into the floor and roof diaphragms.

The interior masonry partition walls, while generally not load-bearing, are part of the lateral load-resisting system. We understand that it may be necessary to rearrange these walls in order to increase classroom sizes. Removing these walls will clearly reduce the lateral load resistance, but it should be possible to add new walls to replace their effects.

If significant alterations are necessary to the original portion of the building, extensive structural investigation work, including selective demolition of finishes will be necessary to thoroughly evaluate the details of the existing framing system.

5. HVAC

The School has received adequate maintenance on the heating system and equipment over the years. The heating system presently installed is original to the building with existing pneumatic control system. Overall equipment is functioning, however, is reaching the end of its serviceable life. We recommend the entire heating and ventilation system, including pneumatic controls, unit ventilators and piping be completely upgraded to achieve higher efficiencies and reduce energy consumption.

6. ELECTRICAL

The existing electrical systems of this facility range from original vintage, approximately 60 years old, with upgrades/add-ons previously installed. While the facility is well maintained and clean, the systems do not reflect nor do they meet the needs of a modern day facility. Due to the incremental approach of having expanded these systems and the need to work around existing ongoing operations with budget constraints, there is an inadequate capacity for expansion of these systems. Also the code changes over the years have resulted in existing systems that do not meet today's electrical codes and are not suited for expansion due to the incompatibility of new technologies. This facility should be upgraded to a system voltage of 277/480, 3-phase, 4-wire for the overall facility's distribution system.

7. PLUMBING

The plumbing systems, while continuing to function, have served their useful life. The school plumbing systems could continue to be used with maintenance and replacement of failed components; however other non-dependent decisions will likely force the plumbing upgrade. Due to its age, a complete new water piping systems is recommended.

The plumbing fixtures are in fair condition. Attempts have been made to make bathroom fixtures accessible, however, the majority of fixtures do not meet current accessibility codes. In general, the fixtures appear to have served their useful life. All new fixtures are recommended.

Where visible, the cast iron pipe appears to be in fair condition. Smaller pipe sizes appear to be copper. In general, the drainage piping can be reused where adequately sized for the intended new use.

New domestic water heating systems with thermostatic mixing valves are recommended.

8. FIRE PROTECTION

Currently, only portions of the building are covered by an automatic sprinkler system. The systems are vintage and in fair condition.

In general, Massachusetts General Law M.G.L. c.148, s.26G requires that any existing building over 7,500 square feet that undergoes major alterations or modifications must be sprinklered.

The proposed scope of work is considered a major alteration therefore an automatic combined sprinkler/ standpipe system is required for the building

A hydrant flow test will be required to evaluate water supply capacities.

9. FURNITURE & EQUIPMENT

Furniture and equipment is older, outdated, and has sustained damage over the years. Library and Literacy spaces are housed in areas not intended for these uses. The kitchen layout is inefficient.

10. TECHNOLOGY

The technology systems appear adequate for current use. Projecting use for the future requires additional considerations, such as:

- Air conditioning the technology rooms and computer labs
- Increasing the size of the technology rooms
- Adding security systems and replacing the PA/Master clock systems
- Improving the data cable quality and installation
- Provide more power where needed for technology equipment.

11. HAZARDOUS MATERIALS

The hazardous materials report is appended to section 3.1.4 within section K.

B. Detailed Report

1. LANDSCAPE ARCHITECTURE - WATERMAN DESIGN ASSOCIATES

GENERAL

The Peebles Elementary School is located on Trowbridge Road, adjacent to single-family residential properties to the north (across Trowbridge Road), the Bourne High School to the southwest, and Bourne Middle School to the southeast playgrounds and a ball field to the north, and residential property to the east. The portion of the site populated by the existing building slopes up to the main entrance from Trowbridge Road, then slopes back down to the south east. The rear entrances of the building are accessed on the first floor level. The play areas to the north are elevated approximately 6' above the grade of the building. The site contains the original school building, along with the associated vehicular and pedestrian circulation systems, play areas, a lawn area to the northwest between the school and Trowbridge.

Road leading to Peebles Elementary

VEHICULAR ENTRANCES AND CIRCULATION

There exist one (1) curb cut accessing the site from Trowbridge Road. The circulation system accommodates bus and parent drop off at the main entrance at the west side of the building, and also accommodates faculty, staff and visitor access. No other vehicular access or egress routes exist on the site. Parent drop off and pick up occurs along the curb adjacent to the flag pole at the main entrance, then parents are to make a U-turn in order to exit the site. Buses follow a one way loop, pick up and drop off directly at the main entrance, then exit the site in the same fashion as parents. There is no formal vehicular connection to either the high school or the middle school, but a gravel maintenance drive exists at the east of the elementary school, and leads to the shared circulation system of the middle and high schools. The pavement condition of the vehicular entrances and interior circulation system ranges from good to fair throughout the site. There is little evidence of recent repairs or repaving operations.

Parent/Bus Drop Off

Parent/Bus Drop Off

PARKING LOCATION, ARRANGEMENT AND QUANTITY

Parking for faculty and staff is located to the north of the site, in close proximity to the main entrance, with additional parking to the rear of the building. Designated visitors parking exists along the access drive directly adjacent to the main entrance. There exist approximately 79 striped spaces throughout the property. It is our understanding that the existing quantity of parking spaces is sufficient for normal school hours. Accessible parking spaces do not appear to comply with current MAAB standards (see Section 5 for further detail). The pavement condition of the parking areas mirrors that of the vehicular entrances, ranging from good to fair throughout the site, with little evidence of recent repairs.

PEDESTRIAN ACCESSIBILITY AND MAAB COMPLIANCE

A total of two (2) accessible parking spaces are located on the site. One is located adjacent to the main entrance of the building. It is a parallel parking space that does not include an access aisle. The second space is located at the rear (east) of the building, somewhat proximate to the accessible entrance. The parking spaces, signage, access aisle and accessible route to the accessible building entrance all do not appear to comply with current MAAB standards. None of the existing doors leading into the building appear to be MAAB compliant. There exist one (1) cross walks Trowbridge Road, none of which is accompanied by a curb cut ramp, and does not comply with current MAAB Standards.

Front Parking

Rear Parking

Handicap Parking

Handicap Parking

PEDESTRIAN CIRCULATION

Pedestrian circulation for access to the west side of the school is accommodated by bluestone landing at the main entrance of the school, when then steps down directly into the vehicular circulation drive. A secondary entrance at the southwest corner of the building has a Portland cement concrete ramp, which also leads directly to the vehicular circulation route. There are no formal pedestrian circulation routes to the east side of the building, pedestrian circulation in that area is accommodated through the expansive paved free-play area, and vehicular circulation routes and through the existing parking areas. The entirety of the east side of the building is surrounded by pavement, and no specified pedestrian routes are marked. The condition of the pavement around the entirety of the building ranges from good to fair to poor throughout.

LOADING DOCKS AND SERVICE AREAS

There is no loading dock associated with Peebles Elementary School.

COURTYARDS AND OTHER EXTERIOR STUDENT CONGREGATION AREAS

The paved area at the rear (southeast) of the building is striped as a play area. There is also a tot lot located to the easternmost portion of the asphalt play area with part of the surface treatment finished with rubber mulch, and a newer addition finished with poured-in-place resilient rubber surfacing. The accessible route to the tot lot does not meet current MAAB universal accessibility standards. The tot lot and does not appear to comply with current MAAB universal accessibility standards. Furthermore, the larger play structure does not appear to meet fall zone height requirements. The tot lot surface treatment and play structures are all in fair condition. There is an open lawn area to the west of the access drive, between the building and Trowbridge Road that not appears to be used as a play area, but does not provide a compliant accessible route to and from the building.

Play Area

Paved Free Play Area

SITE LIGHTING FOR BUILDING, VEHICULAR AND PEDESTRIAN AREAS

Exterior wall-mounted or overhead-mounted lighting exists at select entrance doors to the building, and some flood-lights mounted in higher corners of the building which illuminate the rear play area. However, no other pedestrian scaled lighting was observed at the site or within the tot lot area.

SITE VEGETATION

There exists very little mature vegetation throughout the site, except in the lawn area to the west. The site is abutted to the north and west along Trowbridge Road. There are mature trees lining the south side of the access drive, and a recent planting effort on the north side. Most of these trees appear to be in good to fair condition, but some are reaching maturity and are close to the early stages of decline because of age.

2. CIVIL ENGINEERING - NITSCH ENGINEERING, Inc.

EXISTING SITE UTILITIES

The Peebles Elementary School is located on site that also houses Bourne Middle School and Bourne High School. Additionally there are shared athletic fields, driveways and pedestrian paths that connect the rest of the sites to the Peebles Elementary School site. The existing school is comprised of two stories and a two story connected wing off the back of the school. Based on record documents and site observations, the summary descriptions below represent the site utility conditions/assumptions as we understand them at this time.

STORM DRAINAGE

The existing Peebles Elementary School building sits at a high point on the site and area in front of the building generally slopes northwest towards Trowbridge Road. The area on the sides and behind the building generally slopes to the southeast towards the existing football field and track. The existing school roof run-off is collected in a gutter and downspout system and is discharged to the site surfaces around the building. Based on information gathered on the site visits and existing design plans there is a limited drainage collection system around the project site which is typical for schools constructed in this era. The runoff from paved areas generally flows overland towards grassed and landscaped areas. The soils in the area are mostly sandy soils which have highly infiltrative properties and it appears that once the runoff from the paved areas makes it to grassed and landscaped areas the majority of the runoff is infiltrated back into groundwater. The entry drive does have a catch basins at the confluence with Trowbridge Road. Visual inspection of the catch basins during the site visit did not identify sumps within the basins. It appears that the current drainage system is not in compliance with the current Department of Environmental Protection (DEP) Stormwater Regulations (2008).

Entryway Storm Drain

The building appears to be slab on grade, and based on the highly infiltrative nature of the site soils groundwater does not appear to be a substantial concern on this site.

Any renovation and/or new construction of the Peebles Elementary School site will require a new stormwater collection system with drainage inlets and structures that reduce or eliminate Total Suspended Solids (TSS), infiltrate run-off and reduce the overall rate and volume of stormwater traveling over the site. Any proposed work should include, at a minimum, the cleaning of the drainage system around the school site. However, Nitsch Engineering recommends that all existing catch basins and drainage structures should be inspected to determine if any structures need to be replaced.

WATER

Peebles Elementary School is connected to the same Municipal water system that also feeds the other schools (Middle and High Schools). An existing water line of unknown size and material appears to run north to south along the front of the existing school building. It eventually connects to an existing 6” CLDI water line that was installed as part of the Middle School construction. It is unknown if the existing water line is looped back to Trowbridge Road in the vicinity of the site driveway. No information was able to be obtained to determine where the water services to the existing building enter the school but it is assumed that it would be along either the west or north face of the building.

Currently, there are no indications that there are issues with the domestic water for the site. There is an existing fire department connection standpipe installed to the left of the main entrance to the building.

One fire hydrant was observed to be within 300 feet of the existing school near the top of the main driveway from Trowbridge Road.

SEWER

Sanitary sewer for the Peebles Elementary School is conveyed via underground piping to the wastewater treatment plant located on the adjacent Middle School/High School site. Two service laterals serve the school. The first is a 6” lateral that exits the school from the north elevation into a grease trap. The second exits the building along its east elevation just south of the connector hall to the building addition. These two services combine around the back of the buildings and flow to a large underground tank located just off the southeast corner of the rear playground. A sewer main continues out of the large tank and flows south and east eventually ending up at the wastewater treatment plant. No exterior pumps discovered during the site walk so it is assumed that all flow is via gravity. There are internal grease traps located in the kitchen but as described above there is an external grease trap north of the existing main building.

NATURAL GAS

The site appears to be serviced by natural gas main based on there being a gas regulator that was visible during Nitsch Engineering’s site visit (See Figure 5). The regulator is attached to the building just south of the building’s main entryway. However, no record drawings were provided to Nitsch that showed the location of the gas line or where it is serviced from. The assumption would be that it comes up to the site from Trowbridge Road because the Middle School record drawings do not show a connection from that site to the Peebles site for natural gas. Refer to the MEP narrative for more information about natural gas service.

UNDERGROUND/ABOVE GROUND FUEL TANKS

A pair of above ground propane tanks are located on the north side of the existing school building. According to record drawings there is also an existing underground fuel tank located slightly south of the main entrance to the school. Additionally there is what appears to be the top of an existing underground tank located in the landscape area opposite the main entrance to the building. It is unknown what this tank may be as it is not shown on any record drawings and Nitsch was unable to open it during our site visit.


Pole Mounted Transformer

ELECTRICAL

Based on observations made during Nitsch Engineering’s site visit the electric service for the existing school is fed via overhead service from Trowbridge Road to a pole mounted transformer located on the north side of the font parking lot (See Figure 8) The electric service then continues to another pole farther to the east and then runs overhead and enters the school building along its northern face. The transformer appears to be relatively old, and would likely require upgrade as part of this project. See MEP Narrative for more information about the electrical service.

TELEPHONE SERVICE

Based on observations made during Nitsch Engineering’s site visit telephone service appears to be fed from the same utility pole as the electrical service. See MEP Narrative for more information about the telephone service.

CABLE SERVICE

Based on observations made during Nitsch Engineering's site visit cable service appears to be fed from the same utility pole as the electrical service. See MEP Narrative for more information about the cable service.

SITE CONDITIONS AND OPERATIONS

SOILS

Based on the Natural Resources Conservation Service (NRCS) Web Soil Survey (2011), the majority of the soils for the Peebles Elementary school site is Udipsamments, smoothed with other areas of loamy sand. Udipsamments, smoothed is not classified with a Hydrologic Soil group but all the soils in this area tend be in the classification as an “A” rated soil. Hydrologic Group A soils are described as soils having a high infiltration rate (low runoff potential) when thoroughly wet. These consist mainly of deep, well drained to excessively drained sands or gravelly sands. These soils have a high rate of water transmission. Further investigation will be needed to determine groundwater elevations and in-situ infiltration capacities to support new stormwater infrastructure.

PAVEMENT

The asphalt pavement in the parking lots, service drives, and walkways adjacent to the school were observed to be in fairly good condition but were showing age in some places with cracking, crumbling and degradation in some areas. There was no curbing observed within the project site.

SNOW REMOVAL

Snow is plowed and stored on site.

PRELIMINARY PERMITTING CONSIDERATIONS

WETLANDS PROTECTION ACT (310 CMR 10.00)

The Wetlands Protection Act ensures the protection of Massachusetts' inland and coastal wetlands, tidelands, great ponds, rivers, and floodplains. It regulates activities in coastal and wetlands areas, and contributes to the protection of ground and surface water quality, the prevention of flooding and storm damage, and the protection of wildlife and aquatic habitat.

A review of the Massachusetts Department of Environmental Protection (DEP) wetland layers available on the Massachusetts Geographic Information System (MassGIS), dated April 2007, appear to indicate that the Peebles Elementary School site does not contain any wetlands in the immediate area surrounding the school. There is small potential resource area located at the far southern end of the site on the other side of the football field along Macarthur Boulevard but the Peebles school site but it is far enough way that it would not affect development on the site. Nitsch recommends that a wetland scientist be brought on board to confirm that no wetlands are present.

Work performed within resource areas or buffer zones would require a filing of a Notice of Intent (NOI) or a Request for Determination of Applicability (RDA) with the local Conservation Commission and the Massachusetts Department of Environmental Protection.

SURFACE WATER SUPPLY PROTECTION (310 CMR 22.20)

The Massachusetts Department of Environmental Protection (DEP) ensures the protection of surface waters used as sources of drinking water supply from contamination by regulating land use and activities within critical areas of surface water sources and tributaries and associated surface water bodies to these surface water sources.

A review of the Massachusetts DEP resource layers available on the MassGIS indicates the Peebles Elementary School site is not located within a Water Supply Protection Zone

NATURAL HERITAGE & ENDANGERED SPECIES PROGRAM

A review of the 13th Edition of the Massachusetts Natural Heritage Atlas prepared by the Natural Heritage and Endangered Species Program (NHESP), dated October 1, 2008, indicates that the High School site is NOT located within a Priority Habitat of Rare Species or an Estimated Habitat of Rare Wildlife and that there are no vernal pools on or adjacent to the site.

FLOOD PLAIN

Based on the Flood Insurance Rate Map (FIRM), Community Panel Number 255210 0502J, dated July 16, 2014, it appears that the project site falls within an Unshaded Zone X which is described as an area determined to be outside the 0.2% annual chance (500-year) floodplain.

ZONING

According to the Town of Bourne Zoning Map, the Peebles Elementary School is located in the R40 Zoning District. According to the Zoning Bylaw, Municipal Uses are allowed in R40 Zoning Districts but must be approved by the Planning Board as part of a Site Plan Review.

The Dimensional Requirements for the site under an R40 zoning are as follows:

Min. Lot Area of the first Dwelling Unit	40,000 square feet
Minimum Continuous Frontage	125 feet
Front Yard Setback	30 feet
Rear Yard Setback	15 feet
Side Yard Setback	15 feet
Building Height	35 feet
Maximum Building Lot Coverage	20%
Minimum Usable open space	20%

US EPA NPDES

Construction activities that disturb more than one acre are regulated under the United States Environmental Protection Agency's (EPA) National Pollution Discharge Elimination System (NPDES) Program. In Massachusetts, the USEPA issues NPDES permits to operators of regulated construction sites. Regulated projects are required to develop and implement stormwater pollution prevention plans in order to obtain permit coverage.

The project will disturb more than one (1) acre and is anticipated to require this permit.

SEWER CONNECTION PERMIT (314 CMR 7.00)

New connections to sanitary sewers, increases in flow to existing sanitary sewers, and discharges from businesses that are not considered to be "industrial wastewater" are subject to state requirements based on their expected discharge volume.

- Discharges ≤15,000 gallons per day (gpd) will need only local approvals (no approvals by MassDEP)
- Discharges >15,000 gpd but ≤50,000 gpd must file a one-time certification statement with MassDEP within 60 days after the connection starts to be used

- Discharges of > 50,000 gpd must obtain a MassDEP permit before construction

PERMITTING TABLE TIMELINE

Permit	Permitting Authority	Anticipated Filing Date	Anticipated Approval Date
Request for Determination of Applicability (RDA)	Town of Bourne Conservation Commission	After 100% DD	Approval in 1 to 3 months
Planning Board Site Plan Review	Town of Bourne Planning Board	From SD to DD	On-going - Up to 6 months+
National Pollutant Discharge Elimination System (NPDES) with EPA Notice of Intent (NOI)	Environmental Protection Agency (EPA)	After 100% CD	Once Submitted; Close NOI at end of Construction
Municipal Separate Storm Sewer System (MS4)	Environmental Protection Agency (EPA)	After 100% CD	Once Submitted, ongoing; yearly reports required

SUSTAINABLE SITE POSSIBILITIES

A new or reconstructed building provides opportunities to incorporate sustainable features which may help achieve Massachusetts Collaborative for High Performance Schools (MA-CHPS) points for funding.

Bio-Swales are grassed channels that capture runoff from parking lot and walkway that remove sediment from stormwater. Bio-swales can be used throughout the site, primarily along parking lot edges and access roads.

Rain Gardens use soils, plants, and microbes to treat stormwater before it is infiltrated and or discharged. Rain gardens are shallow depressions filled with sandy soil topped with a thick layer of mulch and planted with dense vegetation. Rain gardens can be utilized in parking islands and within the site to treat pavement run-off.

Porous Pavement is a paved surface with a higher than normal percentage of air voids to allow water to pass through it and infiltrate in the subsoil. Porous pavement, like all drainage systems, requires maintenance at least twice per year.

Subsurface Structures are underground systems that capture run-off (usually rooftop) and gradually infiltrate it into the groundwater. This method of infiltrating stormwater saves space by placing the system under parking lots or fields.

Based on the Natural Resources Conservation Service (NRCS) Web Soil Survey (2011) and record information, it appears that the site will provide opportunity for infiltration BMP’s which can be a cost effective solution for stormwater infiltration into the ground.

Opportunities for rainwater reuse are possible at a renovated or new Peebles Elementary School. However, the initial capital required for tanks, pumps and dual plumbing may be prohibitive in providing payback for water reuse.

TRAFFIC ASSESSMENT

As part of the Feasibility Study for the Peebles Elementary School project located in Bourne, Massachusetts, Nitsch Engineering worked with Flansburgh Architects (FA) to observe the existing traffic circulation and queue lengths on school campus and adjacent streets during drop-off and pick-up periods at two existing elementary schools in Bourne, and assess the site improvement options to be presented by FA. The 2 schools include:

- Peebles Elementary School, located at 70 Trowbridge Road, and
- Bournedale Elementary School, located at 41 Ernest Valeri Road

We have scheduled to collect Automatic Traffic Recorder (ATR) counts and Turning Movement Counts (TMC) for evaluation of roadway and intersection capacity analyses as part of the traffic study.

Figure 1 in the report is the Locus Map showing the proximity of each school and the surrounding roadway network.

TRAFFIC CIRCULATION

Nitsch Engineering conducted a site visit on Wednesday October 21, 2015 to observe the site circulation associated with the weekday morning drop-off, weekday afternoon pick-up and general queue lengths around each school site. The weekday morning drop-off observation occurred during partly cloudy conditions with a temperature of 48 degrees. The weekday afternoon pick-up activity occurred during partly cloudy conditions with a temperature of 58 degrees.

The following section includes figures that graphically depict the activity during the weekday morning and afternoon pick-up periods, and tables that quantify the parent and bus drop-off/pick-up totals for each school.

Table 1 – Peebles Pick-Up/Drop-Off Quantity

Type	Parent		Bus	
Time	**Drop-Off**	**Pick-Up**	**Drop-Off**	**Pick-Up**
8:30 - 8:45	13			
8:45 - 9:00	63		8	
9:00 - 9:15	12			
9:15- 9:30	5			
2:00 - 2:15		2		
2:15 - 2:30		6		
2:30 - 2:45		16		
2:45 - 3:00		29		8
3:00 - 3:15		17		
3:15 - 3:30		3		
Total	93	73	8	8

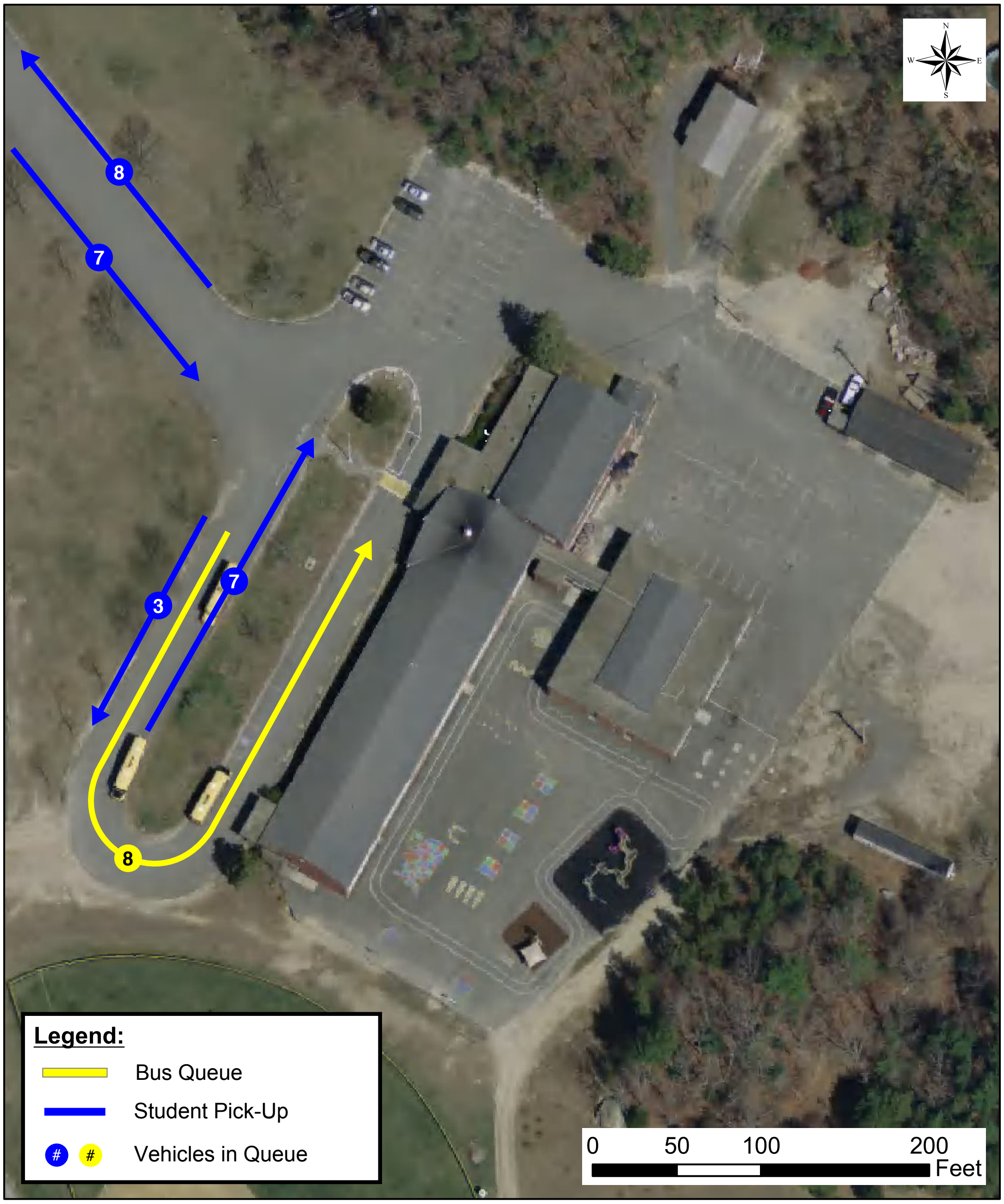


Figure 5: Peebles Elementary School Site Circulation
Peebles Elementary School
Bourne, Massachusetts

Data Source: MassGIS
Nitsch Project #11078

Nitsch Engineering

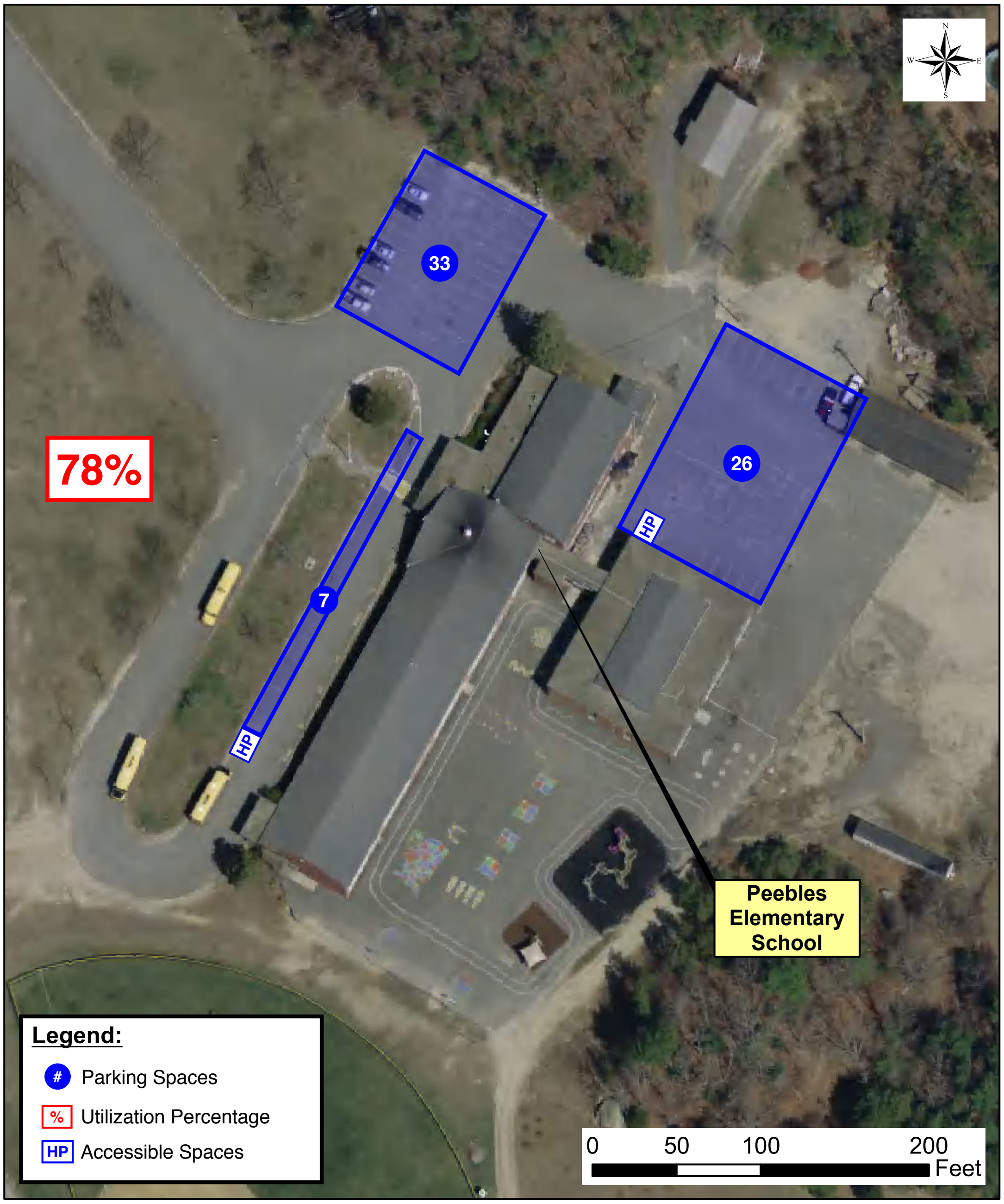


Figure 6: Peebles Elementary Parking Utilization
Peebles Elementary School
Bourne, Massachusetts

Data Source: MassGIS
Nitsch Project #11078

Nitsch Engineering

3. *ARCHITECTURAL - FLANSBURGH ARCHITECTS*

GENERAL DESCRIPTION

BUILDING

a. Organization: The original two-story school was constructed in 1953 with an addition constructed in 1959. The school is approximately 55,200 square feet and currently houses classrooms, a cafeteria, a kitchen, reception area, gymnasium, and offices.
b. Circulation: The building is a multi-story school in a "long bar" plan, a double-loaded corridor with classrooms on both sides, and the cafeteria and gymnasium at one end of the school.
c. Program and Space Issues: The Peebles Elementary School currently serves 391 students grades K through 4. The school's maximum class size goal is 24 students per classroom. Comparisons with current MSBA space standards indicate that classrooms and core academic spaces are undersized.

Room	MSBA Standards	Peebles Existing
Classrooms	850 - 950 s.f.	900 s.f.
Music	1,200 s.f.	525 s.f.
Library	2,020 s.f.	730 s.f.
Art	1,000 s.f.	800 s.f.
Gymnasium	6,000 s.f.	3,100 s.f.

d. Physical Conditions:

EXTERIOR ENVELOPE - WALLS

The thermal resistance of the exterior envelope is severely low compared to current codes:

Typical exterior wall assembly: exterior brick, air space, studs, and plaster

Representative R-Values	
4" Brick	0.44
3/8" Air Space	1.01
2x6 Studs	6.88
1/2" Plaster	0.32
TOTAL R-VALUE	**8.65**

Typical Exterior Walls - Current Minimum Requirements

Face Brick	0.39
Air Space	2.02
Air/Vapor Barriers	0.15
1/2" gypsum sheathing	0.45
Insulation	19.00
Vapor Barrier	0.15
Interior Gypsum Board	0.45
TOTAL R-VALUE	**22.46**


Cracked mortar under window sill

The school is faced with red brick in a running bond pattern with stone elements located at the main entrances. Several areas around the perimeter have loose mortar in the brick joints. This results in water sitting in the open joint, causing spalling of the brick and possible water infiltration deeper into the cavity. Visible cracking of the brick is evident at several locations throughout the façade. The brick façade on the 1959 addition failed and a portion was replaced with textured T-11 exterior plywood siding. Some brick spandrel panels on the 1953 building have been replaced with vinyl siding.

Further investigation into increasing the R-value of the exterior envelope is required. Full repointing of the exterior masonry is necessary to prevent further water infiltration and deterioration of the wall assembly.


Cracking masonry and foundation wall

WINDOWS AND DOORS

The school's window and door systems are original to the building. The windows are single paned, with aged caulking and sealant joints. The thermal performance of this system is poor and lacks proper weatherproofing, creating a possible breach for water and air pollution. Additionally, the glazing does not appear to be tempered in units at grade.

The steel lintels are rusting, have peeling paint, lack proper flashing, and are void of a thermal break between the exterior and interior. This condition creates a weak link in the energy performance of the entire system.

Removal and replacement of all exterior windows, doors, and storefront with energy-efficient units is recommended. Replacement of all sealant joints is recommended.

EXTERIOR ENVELOPE - ROOF

The asphalt shingle roofing is in good condition, but the attic space lacks insulation and no soffit or ridge vents exist. The built-up roofing appears to be original to the building and lacks insulation to be an effective energy system.

Existing Flat Roof Construction		*Roof Construction - Current Minimum Requirements*	
Building Up Roofing Membrane	0.34	Rubber/PVC	0.40
2" Fiberboard	5.56	4" Polyisocyanurate	24.00
Structure/Ceiling	5.00	Structure/Ceiling	5.00
TOTAL R-VALUE	10.90	TOTAL R-VALUE	29.40

The existing asphalt shingle roofing appears in good condition. No active roof leaks were observed, although extensive water staining was present at ceilings.

The roof of the 1953 building was replaced in the late 1990's. This roof system warranty is still valid and the roofing manufacture should be contacted for a roof inspection prior to any renovation.

The built-up roofing is in poor condition and should be replaced. In the event of a full restoration, all roofing systems and flashings should be replaced.

INTERIOR

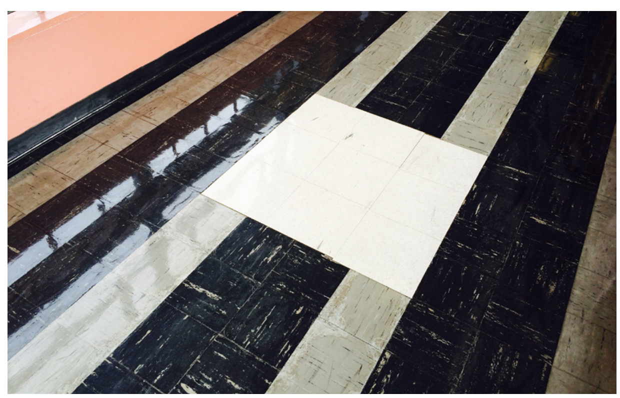
Finishes within the building have been reasonably maintained but are nearing the end of their useful life.

e. Interior Partitions: In general, interior partitions appear to be in relatively good condition. The type of interior partitions vary throughout as follows:
   - Painted plaster
   - Tile
   - Brick exposed and painted
   - Painted CMU

   In a renovation, various walls could be re-framed with steel studs and painted drywall to accommodate new electrical, plumbing and technology systems. If necessary, existing plaster and drywall walls to remain could be cut open to allow for new systems. All walls should have acoustical batt insulation installed wherever practical to improve acoustical performance.

f. Flooring: In general, all flooring is in fair condition. Although some new VCT tile has been installed, the vast majority of existing tile remains. It should be replaced if the school is renovated, abating any asbestos containing materials. It has been our experience that replacing existing VCT flooring costs as much as the cost to protect it in place during the renovation process. As a result, we recommend new VCT flooring to replace existing after the revocation process has completed. This will allow for a full warranty throughout the school, and attic stock could be made available for future replacement due to damage, if necessary. The type of flooring that exists is as follows:
   - Vinyl tile (9x9 and 12x12)
   - Ceramic tile
   - Painted concrete
   - Carpeting
   - Wood (gym)
   - Epoxy flooring (cafeteria)

Patched Flooring



12x12 VCT patch within 9x9 VAT

g. Wall Base: The wall base is mostly vinyl or rubber in various heights and in various conditions. At some walls the base is wood, at ceramic tile areas the base is ceramic. It is recommended that all base be removed and replaced with new base suitable for the flooring to be installed. This will provide for a warranty throughout and attic stock can be made available for future repairs as necessary.

h. Ceilings: In general, the ceiling types vary throughout. Significant water damage exists throughout the building. In some cases the existing ceilings were glued to the underside of the structure. New suspended ceilings have been installed below some existing ceilings. If the building is renovated, the work required for structural modifications, mechanical, electrical and plumbing upgrades as well as a new fire protection system will require new ceilings throughout.

- Glue up tile
- Suspended acoustical tile
- Painted plaster
- Exposed painted structure
- Exposed non-painted structure

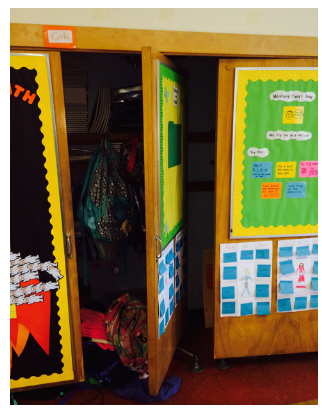
i. Doors and Frames: Doors and frames vary in size and type both metal and wood. They vary in condition from poor to good. The project renovations will require replacement of many doors due to condition, ADA requirements, hardware issues and a low R-value at exterior doors. It is recommended that all doors be replaced to allow for a full facility warranty, compliance with handicapped accessibility requirements, and replacement of hardware systems.

Finish hardware consists of a mix of knobs and levers, hinges, panic devices, and locksets. A master key system does not exist. New hardware is required to meet handicap requirements.

j. Fire Extinguishers: All existing fire extinguishers appear to be operational and certified. It appears that fire extinguishers are located in accordance with NFPA requirements.

k. Tack Boards and Marker Boards: Both types of boards exist in various sizes and conditions. The recent fire code regulations do not allow for tack boards to be within 5 feet of egress doorways; some of the existing tack boards may need to be moved as a result. Marker boards are in good condition.

l. Casework: Student storage in classrooms is not subdivided, and health issues have been a concern in the past, for instance, with the transmission of lice. Individual cubbies would be appropriate. Additionally, the sinks within classrooms lack knee space and are not ADA compliant.



Student Storage in classrooms

REGULATIONS

Refer to Code Evaluation appended to section 3.1.4 within Section F.

HANDICAP ACCESSIBILITY

Refer to MAAB/Accessibility Evaluation appended to section 3.1.4 within Section G.

4. STRUCTURAL - BOSTON BUILDING CONSULTANTS, Inc.

EXISTING CONDITIONS

The Peebles School is essentially a one story building, situated on sloping portion of the site. The first floor level is at grade along the front, north side, of the building, and the basement level is at grade along the rear, south side, of the building. There is a crawl space under four of the first floor classrooms at the front of the building. From the 1953 grading plan, the original building appears to have been founded on natural soil.

Eroding Masonry

The first floor is typically framed with open web steel joists, spaced at 24” on center, with a 3-1/2” concrete topping. These joist are supported on unreinforced CMU bearing walls at the corridor, and a line of continuous W12 steel beams along the rear wall. The beams are supported on pipe columns, spaced about 13 feet on center. The multipurpose room is framed with 2x12 wood joist, supported by W24 and W30 steel beams, and pipe columns down through the cafeteria.

The roof and attic are framed with 2x wood joists, supported by built up engineered wood trusses that span across the building from exterior walls. The trusses are space about 13 feet on center, and are supported by continuous W12 beams and pipe columns at both the north and south exterior wall. Typically, but not always, located under the ends of the roof trusses. The trusses generally looked in good condition, but we could not access the ends of the truss at their supports. This is where decay may be present from ice dams, roof leaks and gutter problems.

Exterior wall construction is shown consisting of brick veneer, a 1” cavity, 15# felt over wood sheathing, and 2x6 stud construction. The brick is shown anchored to the sheathing with bent, corrugated metal anchors, spaced about 24” on center. There is a supporting shelf angle to support the brick near the top flange of the beam, and also a hung shelf angle from the beam bottom flange. The steel angles are flashed, but the beam is not.

T-111 Replacing Brick on Both Sides of the Door

Eroding Masonry & Pavement

There appears to be a lot of distress in the exterior masonry, especially on the rear of the building. The shelf angles and lintels used were not galvanized, and they are exhibiting corrosion and causing some jacking of the masonry. Water entry has been a problem on the south elevation, and the brick spandrels have been covered with vinyl siding to minimize leakage. It is likely that the brick ties have disintegrated at this point. It is evident form the original caulking lines, that the brick work is moving outward away from their back up wall. As this is an active play area, this condition should be further investigated and stabilized, until a permanent solution is made.

PEEBLES ADDITION

The addition appears to have been constructed in the early 1950's. It appears to be constructed of reinforced concrete, with a central roof area over an inner core area, which is framed with rigid steel frames and wood decking. There is a two story corridor connecting the addition to the original building.

The exterior wall of this addition are mostly brick veneer on the east and west elevations, and mostly curtain wall on the north and south elevations. Again, the masonry exterior south wall has exhibited problems. The brick problems are likely related to brick growth, thermal movements, and hard joints at the top of the panels, below the concrete roof beams. The brick overhangs the foundation approximately 1-5/8", and is also proud of the concrete roof beam. With this eccentric support, brick growth and thermal expansion will result in outward bowing of the masonry panels, and likely contributed to the failure of the removed panels. The condition of the brick ties is unknown. This condition should be monitored.

While the foundation walls and masonry do not exhibit evidence of settlement, the interior ground floor has settled noticeably, especially along the south rear wall. The egress stair at the south west corner is a potential hazard due to settlement of the stair landing. From reviewing the original drawing from the 1953 Building, it appears that the addition was constructed over the former leaching field. At that time a substantial amount of regrading was done, and the leaching field was likely not well compacted for better percolation. Additional fill was added when the addition was constructed.

CODE REQUIREMENTS

The Peebles School and Addition were built at a time when design procedures, material requirements and Building Code regulations were less stringent. At the time these buildings were constructed, un-reinforced masonry was allowed for load bearing elements, and lateral load analysis for wind was commonly ignored for low rise buildings, assuming that masonry walls and partitions would provide sufficient resistance. Seismic provisions were not a requirement. Existing wall anchorage, and transitions between the concrete and wood floors at the Multipurpose Room are not adequate by today's standards.

Chapter 34 of the 8th Edition of the State Building Code has adopted the International Existing Building Code, IEBC. This will control the renovation and re-use of these buildings. Repair and Renovation of these buildings can be done under the Prescriptive Method, or under the Work Area Method of this Code.
Under both procedures, certain seismic improvements would be required, consistent with previous editions of the MA State Building Code. These include laterally bracing the tops of interior partitions, and anchoring exterior walls to roof and floor diaphragms.

Under the Prescriptive Method, alterations to masonry walls and partitions could be made, as long as the increase in Seismic demand for any existing element does not exceed 10%. This provision will require new interior seismic resisting systems to be installed only if there are changes to the current wall layout.

Under the Work Area Method, since the entire building would be involved in the renovation, the work would be considered a Level 3 renovation, per IEBC. Assuming minor structural alterations to the existing framing, any structural element with Seismic forces increased by less than 10%, are allowed. If more than 10%, the elements are allowed to comply with reduced Code Seismic forces.

Horizontal additions to these buildings is possible, but they will have to be isolated by an expansion joint. Vertical additions are not appropriate for the existing structures.

Given the total cost to renovate these simple buildings, the premium to make these structures fully comply with the Code Seismic provisions should be considered, given their occupancy.

5. HVAC - GARCIA, GALUSKA, DESOUSA, Inc.

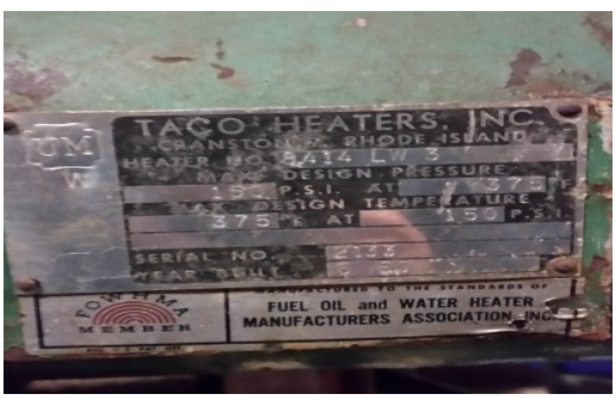
EXISTING CONDITIONS

Presently, the HVAC Systems serving the building are: a duel fuel-fired steam boiler plant serving steam radiators & unit ventilators, general purpose exhaust fans,& hot-water radiation via steam-to-water heat exchangers w/ hot water pumps.

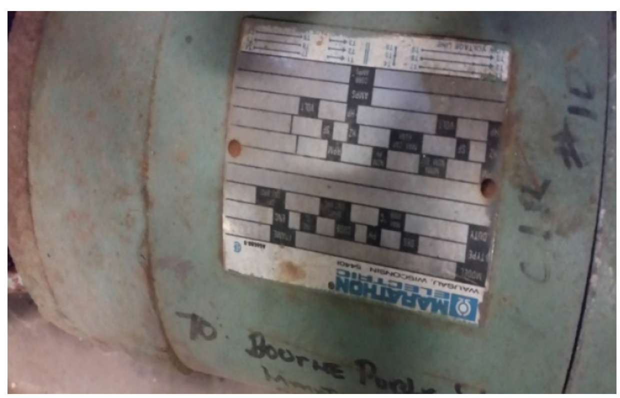
The majority of the HVAC systems are original to the building and its additions. Portions of the system have been updated as part of building renovation and upgrade projects. The HVAC systems, while continuing to function, have served their useful life. The school HVAC systems could continue to be used with maintenance and replacement of failed components; however the lack of controllability, the poor physical condition, and poor efficiency of the existing systems warrants a complete replacement of all the building HVAC systems.

BOILER PLANT

This boiler room is provided with two individual boilers. Boiler #1 is original to the building and approximately 60 years old and is an H. B. Smith cast iron sectional series 60 water tube boiler. This boiler is provided with a duel fuel burner and is also provided with all operating and safety controls and generates low pressure steam which distributes to a common overhead schedule 40 fiberglass insulated header. Boiler #2 is an H. B. Smith 450 mills cast iron sectional boiler installed approximately 20 years ago. This boiler is also provided with a duel-fuel burner and is also provided with all operating and safety controls and generates low pressure steam which ties into the same common header.
Boiler #1 was noted to have extensive surface corrosion on the boiler shell as well as each mud drum. Boiler #2 was also noted to have corrosion along the base of the boiler shell as well as on the mud drums. The overall condition of boiler #1 was noted to be poor and boiler #2 was considered average. No. 2 fuel oil is circulated to each burner through a schedule 40 uninsulated recirculating fuel oil distribution system & Natural gas is also piped to serve both boiler burners. Fuel oil is stored in a buried double wall fiberglass storage tank outside of the building which appears to have been installed during the boiler replacement of approximately 20 years ago. The maintenance staff indicated that fuel-oil use has been replaced by natural gas in recent years.



Heat Exchanger


Hot Water Pump

Also located within the Boiler Room is a leak containment monitoring system and duplex gear driven recirculating pumps. All piping and pumps appear to be original, however the leak monitoring system along with the tanks and the below ground piping appears to have been replaced approximately 20 years ago and does appear adequate at this time. Combustion air for the power plant is through a single horizontal discharge 100% outside air handling units located at the ceiling of the boiler room. This air handling unit is provided with a steam heating coil, supply fan, and a direct source of outside air through a wall mounted louver. Combustion air discharges from the air handling unit through a galvanized sheet metal duct terminating approximately 12 in. above the floor in front of each boiler. Although the entire system is extremely antiquated, it does operate and provide adequate combustion air.

Breeching from each boiler is through a welded steel insulated breeching system which travels from each boiler to a masonry chimney. Located at the rear of each boiler is an induced draft fan as well as a barometric damper. The masonry chimney does appear to be of adequate height and size for the power plant, however based on its age we are not clear of it's structural condition or if an interior liner is installed. The chimney was provided with a cleanout door and does appear adequate. Steam is generated at approximately 8 lbs of steam pressure and distributes out to the entire building through a below floor trench to the individual pieces of heating equipment throughout the entire original building. All steam piping is schedule 40 black steel and is insulated with fiberglass with an all service jacket. All existing steam piping should be tested internally to examine for corrosion, as it has exceeded its expected serviceable life.

Condensate is returned to the boiler room through what appears to be a schedule 80 black steel fiberglass-insulated piping system also located within a trench circulating throughout the original building. All condensate is returned to a condensate feedwater receiver located in a below floor trench within the boiler room. Much of the condensate and feed water piping within the boiler room is not insulated. It does appear that the condensate receiver has been upgraded recently however no information was available on this unit. The tunnel which is routed beneath the entire building to house the steam and condensate distribution system is not provided with a vapor barrier and presently exists with an exposed earth floor.

Located to the left of boiler #1 is a steam to hot water heat exchanger which was installed during the 1959 addition. This exchanger converts thermal energy from the steam heating system to the hot water system for distribution to the addition through a schedule 40 black steel fiberglass insulated distribution piping system. The exchanger was noted to be in average condition however, the base mounted end suction pumps under the heat exchanger were noted to have extensive surface contamination and appear to be in extremely poor condition. Automatic temperature controls are of the pneumatic type and are provided with a single air storage tank with single tank mounted compressor and motor. The tank appeared to be in poor condition & what appeared to be oil leaks from the compressor/motor were observed. Located on an adjacent wall is an automatic temperature control board which does not appear to operate. More-recently installed was a simple Honeywell direct digital control monitoring system which appears to "start and stop" overall building functions as well as monitor the boiler room. As we understand it, the system does operate however, does not control overall space temperatures and is purely intended for offsite monitoring only.

KITCHEN

The kitchen is provided with a single wall stainless steel exhaust hood located over the entire cooking area which appears to be of adequate height over the cooking equipment. The kitchen hood is provided with fire protection heads, removable cartridge filters, and incandescent vapor tight lighting. The entire hood is considered clean and operating in good condition. The hood is vented through a single painted black steel duct which travels exposed within the space and up through the building to a roof mounted exhaust fan.

Kitchen Hood Exhaust Duct

Cafeteria Unit Ventilator

Also connected to this main duct is a branch duct which feeds over to an adjacent dishwasher. This branch duct is not code compliant as the dishwasher must be vented separately from the main kitchen exhaust hood. Heating of the kitchen is through a single horizontal unit heater exposed within the space which ties into the low pressure steam distribution system. Make-up air for the kitchen hood is provided through openings between the cafeteria and kitchen wall as there is no direct supply of make-up air or ventilation for the kitchen. This lack of ventilation within the kitchen is not code-compliant.

CAFETERIA

The cafeteria is provided with three vertical discharge classroom unit ventilators located along the exterior wall of the space. Each unit ventilator is provided with supply fans, a steam heating coil which ties into the steam distribution system below the slab, filters, return air drawn at the base of the unit, and a direct source of outside ventilation air drawn in through an exterior wall mounted louver. All unit ventilators are original to the building and have extensive surface contamination and slight damage. On the opposite wall is a central exhaust register located approximately 6 in. above the floor which communicates through a galvanized sheetmetal exhaust system to a roof mounted exhaust fan. Based on the size and the overall population of the space it does appear that the unit ventilators are undersized for the application. It would also appear that the outside air introduced at the cafeteria is intended as a source of make-up air for the kitchen; the cafeteria HVAC system is also undersized for this application.

AUDITORIUM/GYMNASIUM

This area is provided with two individual vertical discharge air-handling units located on each side of the stage. Each unit is typical in design and includes a supply fan, filters, low pressure steam heating coil with valve control, return air drawn directly back at the base of the air handling unit, and a direct source of outside ventilation air through a wall mounted louver. Supply air discharges vertically through an uninsulated galvanized sheet metal distribution system routed to two individual supply grilles located over the stage. Adjacent to the stage on each side are return air grilles which act as a transfer from the space to the stage area to allow return air flow when the curtains are closed. The supply registers were noted to be slightly soiled and all equipment does appear to be in excess of 60 years of age and has reached its maximum expected serviceable life. The stage area was not provided with any supply or exhaust ventilation air, leaving this area non-code compliant. The open area was provided with convectors recessed within the exterior wall which tie into the low pressure steam system below the slab. All convectors were original to the building and extremely antiquated. Located on the rear wall of the space is a central exhaust register which appears to communicate through a galvanized sheetmetal exhaust system to a roof mounted exhaust fan. Also located at the ceiling were very small exhaust registers which appear to tie into the same exhaust system. All systems are noted to have surface corrosion and appear to be in excess of their maximum serviceable life. The air-handling units appear to be undersized based on the population and size of the overall space.

ORIGINAL LOCKER AREAS

These areas are adjacent to the gymnasium and are presently used as a teacher’s workroom, music room, and a computer classroom. The teachers’ room was provided with a single wall mounted classroom unit ventilator which is provided with a supply fan, low pressure steam heating coil, filters, return air drawn directly back to the base of the unit, and a direct source of outside ventilation air through an exterior wall mounted louver. The music room and the computer classroom were provided with convection heat however, they were not provided with any source of ventilation air and based on the size and population of the space would be considered non-code compliant. The computer classroom has also not been provided with air conditioning, which is recommended for any space containing this amount of electrical equipment. All of the existing ventilation ductwork which at one time served the locker areas has been abandoned in place and should be removed.

PUBLIC TOILET AREAS

The public toilet areas all contain individual wall mounted exhaust registers generally adjacent to the plumbing fixtures. All registers communicate through galvanized sheetmetal exhaust system to various roof mounted exhaust fans. All systems appear original to the building and in excess of 50 years old and were noted to have extensive surface contamination and are extremely antiquated. Make-up air for the spaces is through a combination of operable windows in the rooms as well as louvers in the communicating doors between the corridors and the toilet rooms. The lack of make-up air provided for the communicating corridors is reducing the overall exhaust within the toilet spaces. Heating of the toilet rooms is through various sections of wall mounted convectors and fin tube radiation which ties into the low pressure steam distribution system within the original building and tie into the recirculating hot water system in the 1959 addition. We did not note any control of the fin tube radiation and it does appear to run wild and the possibly overheat the spaces.

Typical Toilet Exhaust Grille

Typical Toilet Exhaust Grille

ADMINISTRATION AREA

The administration area is not provided with any means of either supply or exhaust ventilation air. It does appear that the entire area is ventilated through the use of operable windows located along the exterior wall. Although this design does meet the minimum requirements of the building code it is generally ineffective during winter months when windows are not utilized. Heating of the individual spaces is through the use of wall mounted fin tube radiation which ties into the low pressure steam distribution system. All radiation was provided with individual control valves with pneumatic wall mounted thermostats, all of which appears original and in excess of 60 years old and extremely antiquated.

FRONT LOBBY AND SECONDARY EXITS

The front lobby contains two individual wall-mounted convectors located within the vestibule as well as two additional convectors located within the main lobby just inside of the vestibule. Considering the frequent and rapid use of this exit passage it would appear that the convectors are undersized for a rapid recovery of heat during peak passage times. The secondary entrances throughout the building were also provided with wall mounted convectors for heat, however these convectors also appear to be undersized during rapid use of the exit doorways. The convectors in the original building tie into the low pressure steam distribution system and convectors in the addition building tie into the recirculating hot water system. Considering their age, all equipment was noted to be in fair condition.

CLASSROOMS

The original building classrooms are provided with vertical discharge classroom unit ventilators located along the exterior wall of the building. Each unit ventilator is located to the side of each space and considering the size of the actual space does promote uneven and inconsistent ventilation distribution patterns throughout the space. Each unit ventilator is provided with a supply fan, low pressure steam heating coil with valve control, filters, return air drawn back at the base of the unit and a direct source of outside ventilation air through an exterior wall mounted louver. It was noted that this wall louver is undersized to meet the standard ASHRAE II control cycle. Exhaust air for each classroom is through a ceiling exhaust register located within the closet in each classroom. These registers combine through common galvanized sheetmetal exhaust systems communicated to individual roof-mounted exhaust fans located throughout the building. Located adjacent to the unit ventilators is a continuous draft barrier which allows return air to flow through the top of the case work back to the unit ventilator to assist in offsetting any through-window draft. All unit ventilators, draft barrier, and exhaust registers was noted to have extensive surface & internal corrosion and appear to be original to the building in excess of 60 years old, exceeding their expected maximum serviceable life. The unit ventilators are controlled by a single pneumatic wall mounted thermostat also original to the building and in excess of 60 years old.

The addition building classrooms are provided with vertical discharge classroom unit ventilators generally located within the center of each classroom space. Each unit ventilator is provided with a supply fan, heating hot water coil with valve control, filters, return air drawn back at the base of the unit and a direct source of outside ventilation air through an exterior wall mounted louver. Adjacent to the unit ventilators is fin tube radiation which also ties into the hot water distribution system. It does appear that the unit ventilators are capable of operating in accordance with the ASHRAE II cycle. Exhaust air for each classroom is through a ceiling exhaust register located within the closet in each classroom. These registers connect to a common galvanized sheetmetal exhaust system and individual roof mounted exhaust fans located throughout the building. All systems were noted to have slight surface corrosion however do appear to operate. The unit ventilators and fin tube radiation are controlled by pneumatic wall mounted thermostats all of which appear to be antiquated.


Student Lockers in Rear of Classroom


Vertical Discharge Air-Handling Unit

MEDIA CENTER

The media center is provided with a single horizontal discharge air handling unit located in an adjacent storage room. This air handling unit is provided with a supply fan, heating hot water coil with valve control, filters, return air drawn through a single wall mounted grille directly below the supply grilles, and a direct source of outside air through a duct which travels to the roof. Supply air is provided through a galvanized sheetmetal uninsulated supply system which connects to two individual supply registers at one side of the room directly above the return. The supply and return grille locations suggest very poor air distribution patterns and poor heating, cooling, and ventilation effectiveness. All supply and return registers were noted to have slight surface corrosion and the entire air handling system appears to be original and approximately 50 years old, exceeding its expected maximum serviceable life.

RECOMMENDATIONS

We recommend the following HVAC system repairs and/or renovations:

- Provide new means air-distribution for all spaces via Rooftop Air-handling Unit(s) with high-efficiency direct expansion cooling section(s) & gas-fired furnace(s) to maintain code-required ventilation rates and level of occupant comfort compliant with ASHRAE Standard 55.

- Provide new high-efficiency gas-fired heating plant to replace the existing in its entirety.
- Provide new Insulated hot-water distribution system to replace the existing steam and hot-water distribution systems in their entirety.
- Provide Building Management System for optimum control and monitoring of all building energy usage & HVAC systems.
- Provide new supplemental cooling systems for all computer classrooms.
- Provide new or upgrade existing building envelope to maintain desired interior environmental conditions.

6. ELECTRICAL - GARCIA, GALUSKA, DESOUSA, Inc.

EXECUTIVE SUMMARY

Most of the general power equipment (wiring, panelboards, switches, and receptacles) is original to the building. Although there have been some upgrades to the lighting and emergency lighting, most of the equipment is not up to current industry standards, nor current energy efficiency or code requirements. Most panelboards are full and have no room for expansion. Lighting levels are poor in some locations although upgrades have been made to some select areas. The fire alarm system is addressable, but does not meet ADA requirements and is lacking coverage in some areas.


Classroom Unit Ventilator

ELECTRICAL DISTRIBUTION SYSTEM

The existing electrical service consists of a 600 AMP, 120/208 volt, 3Ø, 4 wire main disconnect switch manufactured by Square D. The service is fed underground from a utility pole.

The existing 600 amp service is located in the boiler room. Service consists of main disconnect switch and one (1) distribution fused switch panelboard.


Circuit Breaker Panelboard


Circuit Breaker Panelboard

Existing lighting and power panels are circuit breaker type and are rated at 120/208 volt, 3Ø, 4wire. Fuse type and circuit breaker panelboards are located throughout the school.

INTERIOR LIGHTING SYSTEMS

Existing classroom, corridor, kitchen, cafeteria and office lighting consists of 1’ x 4’ surface mounted prismatic fluorescent fixtures. Lighting in the boiler room consists of surface fluorescent fixtures. Toilet rooms have fluorescent surface mounted fixtures.

Lighting in the gym consists of pendant mount 2’x4’ prismatic fluorescent fixtures. Computer classroom lighting consists of pendant mounted louvered fluorescent fixtures. Upper media center/library consists of pendant mounted prismatic fluorescent fixtures.

EMERGENCY LIGHTING SYSTEM

Emergency battery units and remote emergency lighting heads are located throughout the building.

Additional self-contained emergency lighting units are provided throughout the building.

SITE LIGHTING SYSTEM

Existing site lighting is by pole mounted lighting fixtures on utility poles and building mounted flood lights. Lighting fixtures are recessed and surface mounted in the canopy at the main entrance.

WIRING DEVICES

Existing classrooms have duplex outlets sparsely located throughout the rooms. Receptacle coverage in most office spaces is inadequate with cords typically running across the floor in these rooms.

Duplex Outlet

Duplex Outlet

FIRE ALARM SYSTEM

The building is equipped with an automatic addressable fire alarm system throughout the building. Existing strobes do not meet ADA for intensity. The fire alarm control panel is manufactured by Honeywell and located in the administration area. Notification to the fire department is by a surface master box located outdoors at the main entrance. Classrooms and toilet rooms do not have ADA horn/strobe units.

Corridors have smoke detectors, horn/strobes and pull stations throughout the building.

Fire Alarm System

Exterior Site Lighting

DEFICIENCIES/RECOMMENDATIONS:

Electrical Distribution System:
The existing 600 amp main disconnect switch and fused distribution panel should be replaced. The original older panelboards throughout the building should be replaced. These panels are in poor condition and at

the end of their useful life.

Interior Lighting System:
Existing lighting throughout the building is in fair condition. All fixtures throughout the building should be replaced with new efficient LED lighting fixtures and the building equipped with an automated lighting control system.

Emergency Lighting System:
All existing exit signs should be replaced with new more efficient LED type. Additional exit signs will be required throughout the building.

A new generator should be used to provide the emergency power needs of the school. Additional emergency self-contained battery units should be provided throughout the building if a generator is not used.

Site Lighting System:
New pole mounted fixtures should be provided in parking area to replace the existing fixtures on utility poles. Incandescent fixtures at entrances should be replaced with new more efficient fixtures.

Wiring Devices:
Each classroom should have a minimum of (2) duplex receptacles per wall and (2) double duplex receptacles at classroom computer workstations.

Fire Alarm

Fire Alarm System:
A new fire alarm system will be required to meet the latest codes. The system will be an automatic addressable system with ADA strobe units, smoke detectors, pull stations and horn/strobe units throughout the building. A LCD annunciator will be located at the main entrance with the fire alarm control panel at the administration area.

7. PLUMBING - GARCIA, GALUSKA, DESOUSA, Inc.

EXECUTIVE SUMMARY

Presently, the Plumbing Systems serving the building are cold water, hot water, sanitary, waste and vent system, storm drain piping, LPgas, and natural gas. Municipal water and on-site wastewater treatment system services the Building.

The majority of the plumbing systems are original to the building and its additions. Portions of the system have been updated as part of building renovation and upgrade projects. The plumbing systems, while continuing to function, have served their useful life. The school plumbing systems could continue to be used with maintenance and replacement of failed components; however other non-dependent decisions will likely force the plumbing upgrade. Due to its age, a complete new water piping system is recommended. The copper piping has served its useful life.

The plumbing fixtures are in fair condition. The fixtures do not meet current accessibility codes. In general, the fixtures appear to have served their useful life. Current Access Code requires accessible fixtures wherever plumbing is provided. In terms of the water conservation fixtures, their use is governed by the provisions of the Plumbing and Building Code. The existing plumbing fixtures do not meet current water conservation requirements. Essentially, the code does not require these fixtures to be upgraded, but where new fixtures are installed, as may be required by other codes or concerns, the new fixtures need to be water conserving type fixtures. All new fixtures are recommended.

Cast iron is used for sanitary and storm drainage. Where visible, the cast iron pipe appears to be in fair condition. Smaller pipe sizes appear to be copper. In general, the drainage piping can be reused where adequately sized for the intended new use.

Kindergarten classroom toilet fixture

Urinals with exposed flush valves

FIXTURES

Water closets are both wall hung and floor mounted vitreous china, flush valve type.

Urinals are wall hung vitreous china, with either fully recessed or exposed manual flush valves.

Lavatories are wall hung vitreous china, with separate hot and cold water faucets. Lavatories in the student gang toilet rooms are molded stone wash fountains, with foot operation.

Janitor’s sinks are cast-iron enameled, with stainless steel rim. Faucets in the original building have no vacuum breakers. Faucets on the sinks in the 1959 building addition have vacuum breakers.

Classroom sinks are self rimming with hot and cold water controls.

Drinking fountains are generally wall hung, stainless steel and vitreous china.

WATER SYSTEMS

The domestic water service enters the building through the wall of the boiler room. The domestic water service entering the building is 3 in., which then splits into two separate water meters. There is also a 2 inch water line with meter, which is dedicated to the domestic water for the building. There is a 2 inch water meter for outbuildings. There is no backflow preventer on the systems.

Domestic water piping is copper tubing with sweat joints. Majority of water piping is insulated. Piping is located within pipe trenches and crawl spaces, with limited access. The building water system has significant water hammer issues.

The domestic hot water system is generated through a high efficiency gas-fired water heater. Water heater was installed in 2011. The heater has a natural gas input of 199,000 BTUH and storage capacity of 100 gallons of water. The heater is direct vented to the exterior. The hot water systems is recirculated.

Wall hydrants on exterior of building are original and are in poor condition.

DRAINAGE SYSTEMS

The sanitary drainage system is piped with cast-iron. The visible sanitary drainage piping is in fair condition. Sanitary system is discharged to the on-site wastewater treatment facility.

The storm water drainage system is comprised of pitched roofs with gutter and downspout systems. The down spouts run down the exterior face of the building and discharge to grade.
There is a simplex sump pump in the boiler room which collects all of the indirect waste piping from the equipment in the boiler room. The waste is then pumped up to the gravity drainage system

GAS SYSTEMS

The LP gas system is supplied by an exterior above-grade storage tank which is located outside of the kitchen. The LP gas system is dedicated to the kitchen cooking equipment. The piping runs below ground and enters the building from under the kitchen floor and is piped directly to the equipment. There is an emergency shut-off inline for the kitchen equipment that is connected to the fire suppression system in the kitchen hood.

The natural gas systems supplies the heating boilers and domestic water heater. Gas meter is located on the exterior of the building.

Gas piping is black steel with welded or threaded joints depending on pipe size.

KITCHEN

The kitchen at this facility is all original and indicates its vintage. All the equipment is in fair to good condition and is working properly.

The two pot sink and the dishwasher are piped above the floor to a recessed grease receptor. The grease trap seems undersized for the load.

The dishwasher is original but is in good condition. There is a pre-rinse station with a hose spray which is also in good condition.

RECOMMENDATIONS

Provide new plumbing fixtures throughout. Fixtures should be high efficiency water conserving type.

Provide new domestic water piping throughout the building.

Provide water hammer arresters at all plumbing fixtures with quick closing devices.

Provide natural gas to cooking equipments. Provide manually reset gas valve interlocked with carbon monoxide detectors to confirm hood exhaust as required by current code.

8. FIRE PROTECTION - GARCIA, GALUSKA, DESOUSA, Inc.

EXECUTIVE SUMMARY

Portions of the school are protected by automatic sprinkler systems, the building is not fully sprinklered. In general, the original building is fully sprinklered and the 1959 building addition is not. The majority of the equipment and systems is vintage and in fair condition.

Massachusetts General Law requires any existing commercial building which undergoes a major renovation or building addition which results in a gross floor area of greater than 7,500 square feet must be sprinklered throughout. Massachusetts code requires that any new school building greater than 12,000 square feet gross floor area must be sprinklered. Should the existing building undergo a major renovation the building will require upgrades to the existing sprinkler system to provide complete protection of all spaces, existing and new.

EXISTING CONDITIONS

The original building is protected with an automatic sprinkler system. The 1959 building addition is not protected with automatic sprinklers. The refrigeration addition to Kitchen is not protected with automatic sprinklers.

There is a 6” fire service which enters the main Mechanical Room. The service does not have a backflow prevention device.

The service has a 6 inch OS&Y gate valve and an alarm check valve. The gate valve is not supervised by the fire alarm system.

The main riser has a flow switch connected to the fire alarm system.

Sprinkler piping is black steel with threaded and grooved coupling joints.

The lower level sprinkler system is generally exposed.

Fire Service & Alarm Valve

Sprinklers in exposed areas are upright type. Sprinklers in ceiling areas are pendent type. Sprinklers are solder type.

Fire department connection is a Siamese type, 2-1/2” x 2-1/2” x 4” connection. There is a water motor gong above the connection.

RECOMMENDATIONS

Provide backflow preventer on fire service to meet current codes.

Provide automatic sprinkler system throughout the existing building and any addition.

Replace existing automatic sprinklers with quick response type sprinklers.

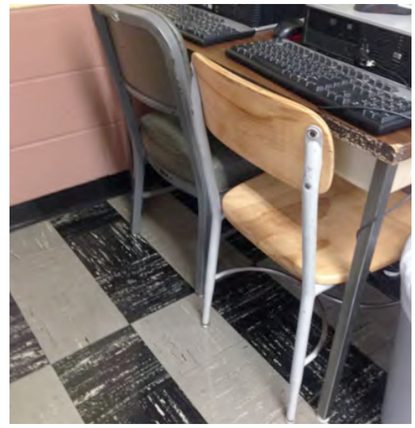
Replace existing system in the Original Building.

9. FURNITURE & EQUIPMENT - TAVARES DESIGN ASSOCIATES, INC.

General Casework:

Description/Assessment:

- Sink locations are not Handicap Accessible
- Exterior shelving is exposed wood and with panels coming off
- Drawers on cabinets are broken and/or do not slide easily
- Furniture is of older styles with damage.
- Typically the student desk is combination chair/desk unit. This is a smaller work space than typically used in new schools.
- Teacher chairs are not uniform throughout the school. Several different styles are present.
- Metal teacher desks are in older conditions.
- Literacy area and library are in open spaces.
- Lack of Storage space.
- Nurses area small and old.



Mismatched Furniture

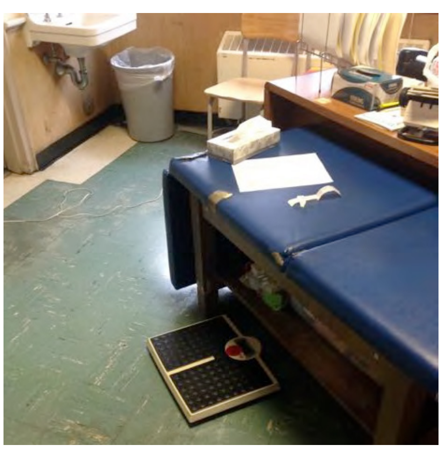
Kitchen:

The current configuration of the kitchen is traditional with a straight line configuration. The amount of space creates congestion with too many students trying to get through the line. They must line up and this slows down the line.

The storage is spread out between multiple areas, including the receiving area and general storage area. The Cooler and Freezer storage areas are deep in the kitchen. The shipments must be carried through the prep spaces to get into the Storage.

Description/Assessment:

- Older equipment, including double convection oven.
- Wood worktables.
- Wood shelving in storage room
- Rusted shelving
- Equipment too big for the population, range



Nurse's Office

Classroom Sink Cabinet

Kitchen Storage Shelving

10. TECHNOLOGY - EDVANCE

TECHNOLOGY INFRASTRUCTURE

- MDF and one IDF which share space in a storage room
- No environmental control in equipment rooms
- Category 5 and 5e cabling with some in wall and mostly surface mount raceway
- School is connected to MS via dedicated Fiber
- Spline Ceiling in Office Area, accessibility issues
- There was exposed network cabling in some areas

COMMUNICATIONS SYSTEM

- PA system is a Rauland Borg Telecenter, which is in working order and currently maintained by Signet. System could be expanded to support additional speakers
- Older Wall Speakers throughout
- Older Simplex Master Clock System
- Call Buttons in the rooms

TELEPHONE

- Older Nortel Telephone System with handsets in classrooms and office spaces and integrated with PA system

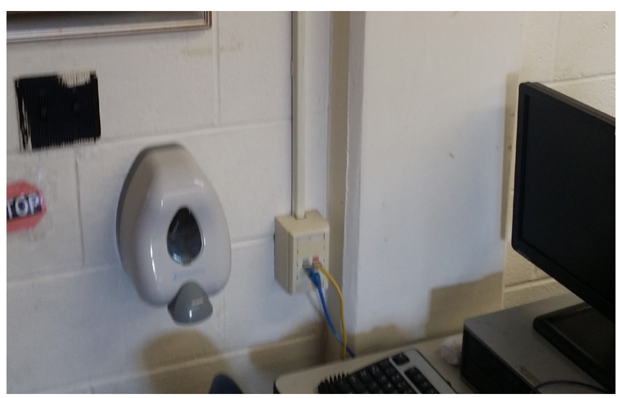
SECURITY

- Limited security, with one CCTV camera at front door with monitor in main office, and some older motion sensors in the hallways
- Video monitor of front door camera is located in the main office
- Video intercom system with remote control of electric door latch

CLASSROOM INSTRUCTIONAL TECHNOLOGY

- SMART Technology Smart Boards with ultrashort projectors in some rooms and eInstruction boards with short throw NEC projectors in other rooms. Wall mount speakers for sound were also observed. All classroom appear to contain this technology
- HP Desktop Computers for teachers and students
- 4-5 computers in classrooms for students
- Mobile Chromebook carts were observed

Smartboard and Projector



Surface Mounted Cabling

NETWORK

- Older and obsolete Procurve HP switch chassis in the closet for networking. Switch equipment is still supported by HP
- Some UPS equipment supporting network switches
- 3-4 Enterasys wireless access points throughout

LARGE VENUE AV SYSTEM

- Older speakers and large venue AV system on stage area

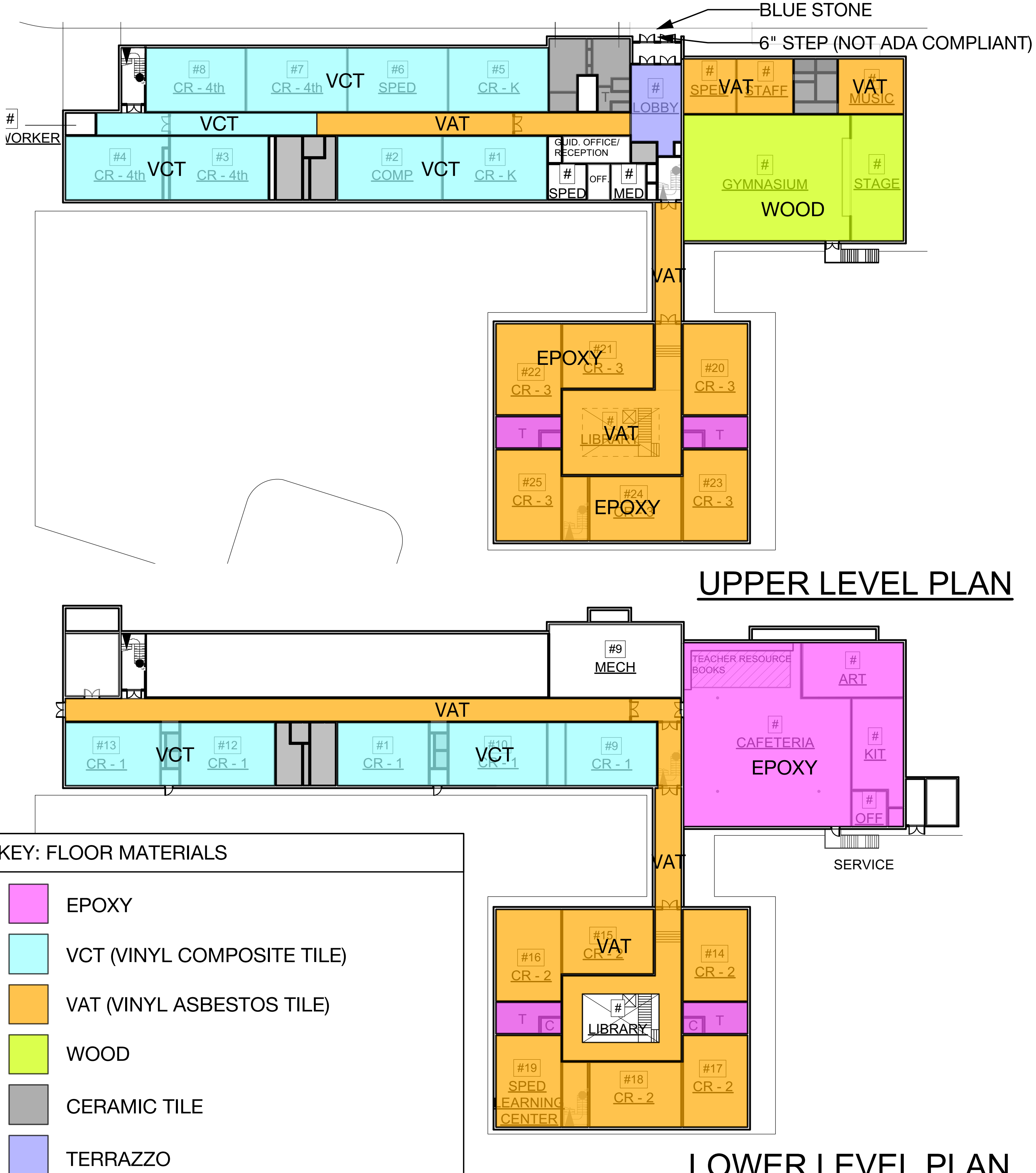
RECOMMENDATIONS AS PART OF A RENOVATION PROJECT

- Increase level of security equipment to include surveillance, intrusion and access control
- Update clock system
- Update network cabling and equipment
- Expand wireless coverage and density
- Update telephone system
- Update technology equipment rooms as dedicated spaces that can be secured and conditioned
- Update AV equipment in large venue spaces like Cafeteria and Gym

11. HAZARDOUS MATERIALS - FUSS & O'NEILL

The hazardous materials report is appended to section 3.1.4 within section K.

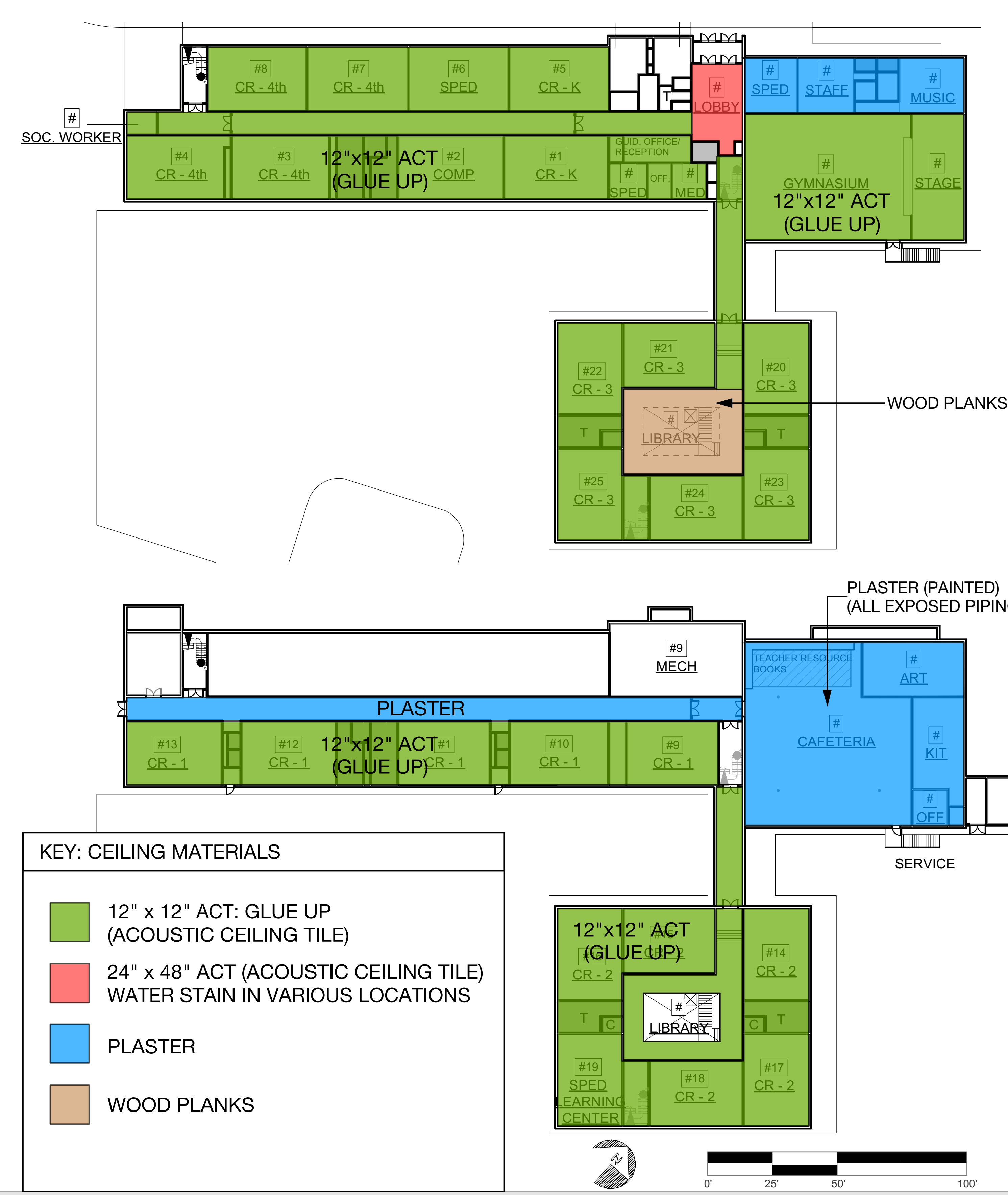
PEEBLES EXISTING FLOOR MATERIALS



KEY: FLOOR MATERIALS

- EPOXY
- VCT (VINYL COMPOSITE TILE)
- VAT (VINYL ASBESTOS TILE)
- WOOD
- CERAMIC TILE
- TERRAZZO

PEEBLES EXISTING CEILING MATERIALS



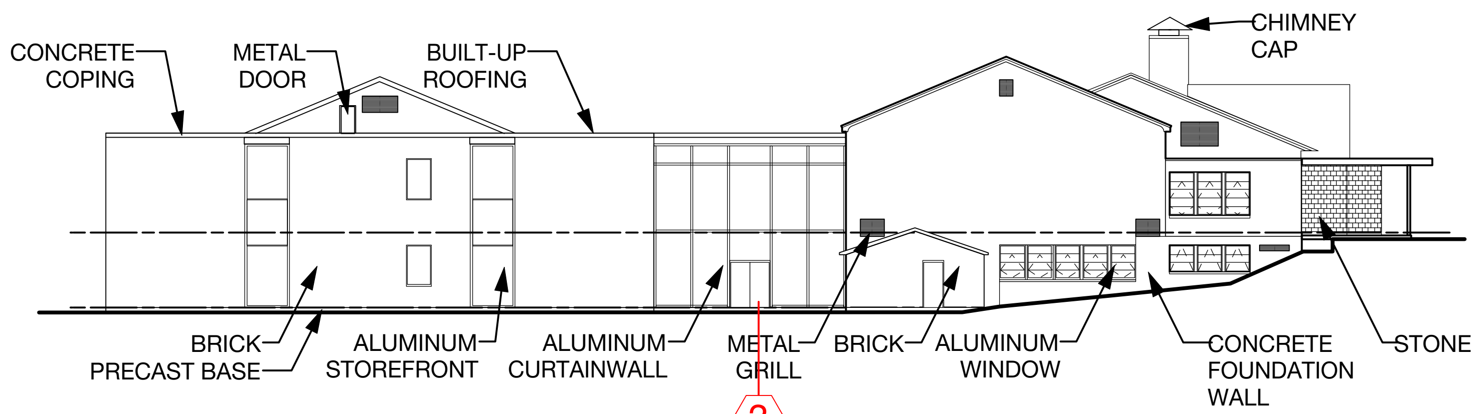
KEY: CEILING MATERIALS

- 12" x 12" ACT: GLUE UP (ACOUSTIC CEILING TILE)
- 24" x 48" ACT (ACOUSTIC CEILING TILE) WATER STAIN IN VARIOUS LOCATIONS
- PLASTER
- WOOD PLANKS

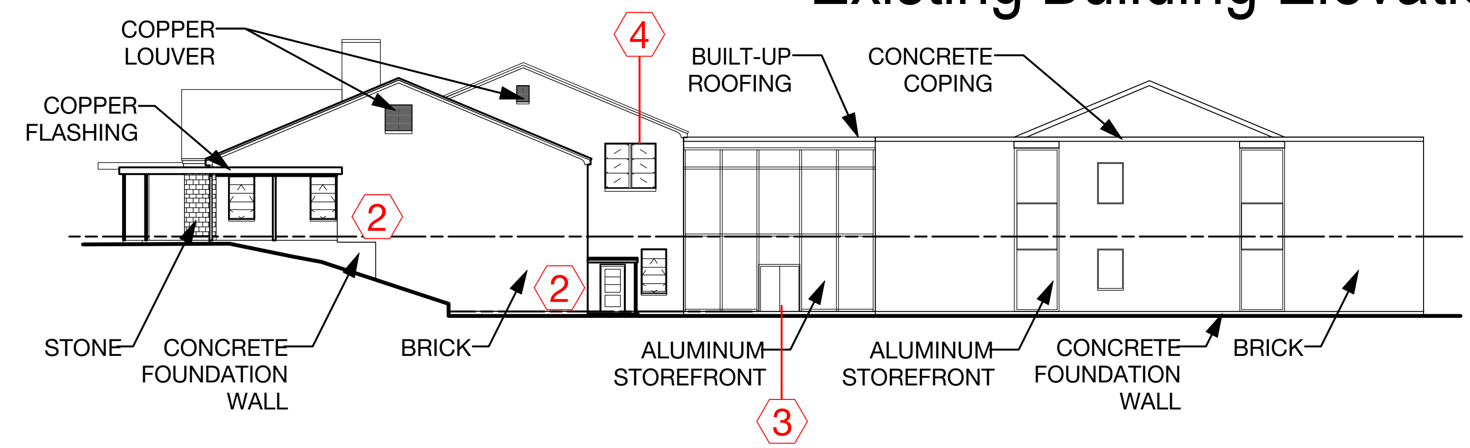
Peebles Elementary School
Bourne, Massachusetts

Flansburgh Architects

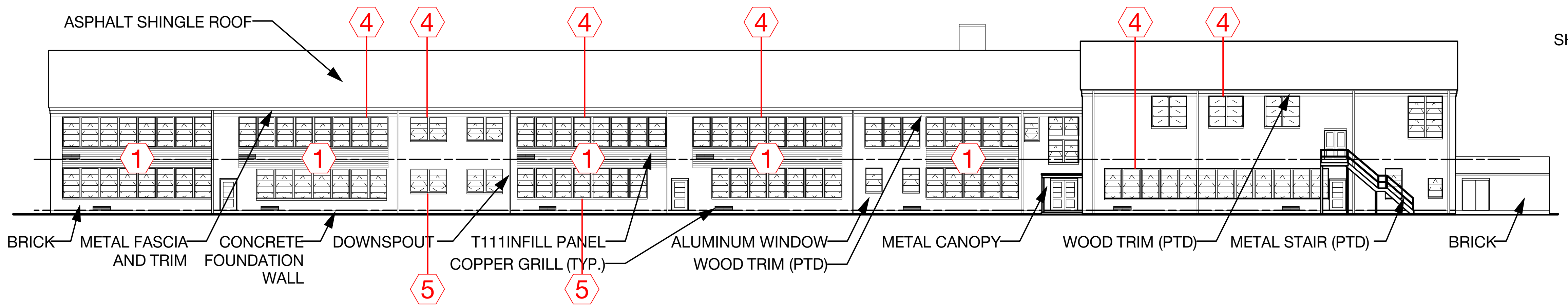
Peebles Elementary
Existing Building Elevations



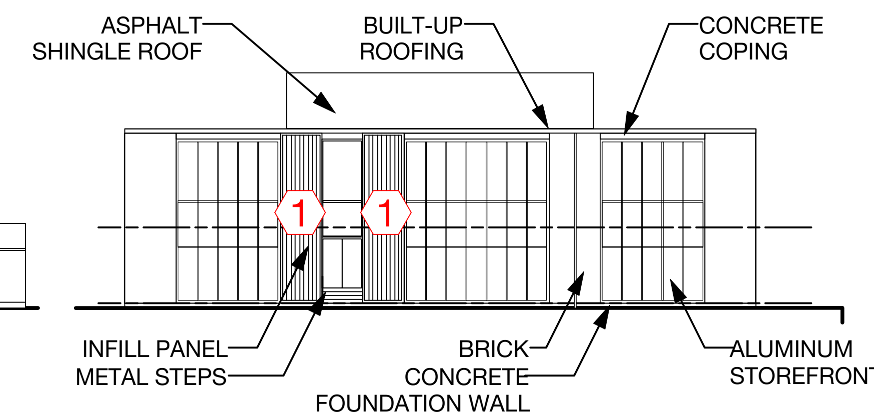
EAST ELEVATION



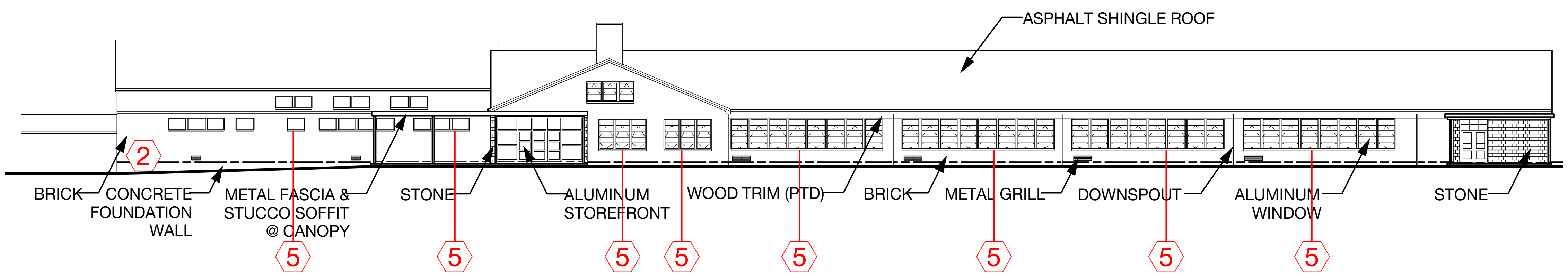
WEST ELEVATION



SOUTH ELEVATION



SOUTH ELEVATION ANNEX BUILDING



NORTH ELEVATION

KEY: ELEVATION

1 T111: EXISTING REPLACEMENT PANELS
2 MAJOR MASONRY CRACK
3 WATER INFILTRATION
4 SUPPORT LINTEL- COROSSION TYPICAL
5 ROW LOCK BRICK SILLS - LOOSE TYP.

* MAJORITY OF WINDOWS ARE SINGLE GLAZED

*CONCRETE COPING AT ROOF EDGE IS CRACKED AND CHIPED

*OVERALL MORTAR AND BRICK SHOULD BE REPOINTED

0' 15' 60' 60'

Existing Conditions Report

Bournedale Elementary School

A. *Executive Summary*
B. Detailed Report
1. Landscape
2. Civil
3. Architectural
4. Structural
5. HVAC
6. Electrical
7. Plumbing
8. Fire Protection
9. Furniture & Equipment
10. Technology
11. Hazardous Materials

A. Executive Summary: Bournedale Elementary School

Bournedale Elementary School is relatively new construction, completed in 2009, and has been well maintained. With certain exceptions, the spaces are well-suited for programmatic requirements. The building could be enlarged with minimal renovation necessary to the majority of existing spaces.

Upon the selection of a preferred option, additional testing and investigations will be required to evaluate further the existing conditions of the building and site.

The following additional investigations are anticipated:

- Catch basin and drainage structure inspection
- Grease trap inspection
- Hydrant flow test
- Infrared roof scan
- Geotechnical test pits/borings
- Masonry removal to review wall flashings at base of wall to roof intersection

Working in conjunction with the Town of Bourne, Flansburgh Architects has prepared this existing conditions report in the Fall of 2016. This report considers the quality and anticipated life of the physical plant of the school, the building's interior and exterior building components, play fields and site features, structural systems, mechanical/electrical/plumbing systems, and technology infrastructure. The findings of this report will assist in finalizing the scope of the preferred option and assure that systems and materials left in place are sound and appropriate for the school's anticipated life. The process involved a physical survey of the buildings by the following qualified architects and engineers:

- Flansburgh Architects - Architectural
- Garcia, Galuksa & DeSousa - Mechanical, Plumbing, Electrical
- Boston Building Consultants - Structural Engineers
- Nitsch Engineering - Site/Civil
- Edvance - Technology Consultants
- Waterman Design - Landscape
- Tavares Design - Equipment and Food Service Consultant
- Fuss & O'Neill - Hazardous materials consultant

1. LANDSCAPE/SITE DESIGN

The existing vehicular and pedestrian circulation systems will require redesign to accommodate the new facility's design intent and to reduce existing bus and car traffic congestion.

Exterior lighting, courtyards, site furnishings, site vegetation and play areas need further review and discussion of how they are used and what improvements will be needed.

2. CIVIL

Storm Water

The storm water system meets today's standards. Existing structures to remain will need to be inspected and any drain lines should be cleaned.

Water

Existing exterior water lines for domestic use may remain, but this needs further review. A new water line for fire protection will be required to service the building.

Sewer

The existing shared septic field will require expansion to accommodate increase flow from design options being considered.

Natural Gas

The existing gas line into the school will be reviewed further to confirm that the pressure and flow will be adequate to accommodate any new addition. Anticipated loads for the design options being considered have been forwarded to the utility company for review.

Permitting Considerations

Any expansion and renovation disturbing more than 1 acre will require a permit by the United States Environmental Protection Agency's National Pollution Discharge Elimination Systems Program.

3. ARCHITECTURAL

Overall the building systems are in good to very good condition. The requirements to meet current codes will have minimal impact on all spaces and effectively require only minor renovation of the school to achieve compliance.

Exterior Wall

The exterior envelope is in good condition. Some minor cracking and spalling of masonry components are evident. Under the current energy standards the exterior wall's R-Value in line with current code and should meet today's standards. Increasing the exterior walls R-Value will reduce the size of the HVAC system and save energy.

Windows

Many of the original windows consist of double pane glazing. Steel lintels above the windows are in good condition.

Roof

The roof system was installed with a EDPM membrane and high R-value insulation throughout the school. It may be prudent to test the roof with an infrared camera to determine if moisture has infiltrated the roofing system.

Interior

The existing finishes have been well maintained throughout. A renovation that may include some upgrades throughout will require the protection of many finishes.

4. STRUCTURAL

Since there will be no change in use, existing floors should be able to remain in use without any problems, unless a specific increase in loading is required.

5. HVAC

The School has received good maintenance on the heating system and equipment over the years. The heating system presently installed is original to the building with a digital control system. Overall equipment is functioning correctly. We recommend the entire heating and ventilation system be evaluated and commissioned to ensure it is running at peak performance.

6. ELECTRICAL

The existing electrical system of this facility meets the needs of a modern day facility. System should be tested and commissioned to ensure adequate performance.

7. PLUMBING

The school plumbing systems can continue to be used with maintenance and replacement of failed components. Commissioning of the existing plumbing system is recommended.

8. FIRE PROTECTION

Currently the building contains an automatic sprinkler system.

In general, Massachusetts General Law M.G.L. c.148, s.26G requires that any existing building over 7,500 square feet that undergoes major alterations or modifications must be sprinklered.

The proposed scope of work is considered a major alteration therefore an automatic combined sprinkler/ standpipe system is required for the building

A hydrant flow test will be required to evaluate water supply capacities.

9. FURNITURE & EQUIPMENT

Generally the school is in very good shape as it was recently built. The school space is close to capacity.

10. TECHNOLOGY

The technology systems appear adequate for current use. Projecting use for the future requires additional considerations, such as:

- Increasing the size of the technology rooms
- Adding security systems
- Improving the data cable quality and installation
- Provide more power where needed for technology equipment.

11. HAZARDOUS MATERIALS

The hazardous materials report is appended to section 3.1.4 within section K.

B. Detailed Report

1. LANDSCAPE ARCHITECTURE - WATERMAN DESIGN ASSOCIATES

GENERAL

The Bournedale Elementary School is located on Ernest Valeri Road, directly west of the new Department of Public Works building. The site is immediately surrounded by native woodlands in all other directions. Residential properties exist further to the northwest and west, with Route 6 and the Cape Cod Canal further to the southeast. The portion of the site populated by the existing building is relatively flat, with little topographical relief in any direction. An open play field and tot lot at the south of the site sit at an elevation approximately 5’ higher than the school building. The site contains the school building, along with the associated vehicular and pedestrian circulation systems and recreation facilities.

VEHICULAR ENTRANCES AND CIRCULATION

There exists three primary means of vehicular access and egress for the site from Ernest Valeri Road. The first, easternmost entrance is marked with a building identification sign. This is the main vehicular entrance for buses, passenger vehicles, and deliveries. Buses entering here proceed to the rear (west) of the building to the designated bus drop off/pick up area- a covered entrance at the northwest corner of the building. Upon drop off/pick up, buses exit the site by the third, westernmost curb cut along Ernest Valeri Road, then proceed right (east) back towards Route 6. Passenger vehicles for parent drop off/pick up proceed to the front (east) of the building to the designated student drop off area. Parents then loop around to exit at the same point of ingress, then proceed right (east) back towards Route 6. Faculty, staff and visitors also follow the same circulation loop as the parents. Delivery trucks proceed to the designated loading area at the south of the building, then exit in the same manner as the buses- at the third, westernmost curb cut along Ernest Valeri Road, then proceed right (east) back towards Route 6. The second (middle) entrance services Pre-K parent drop off/pick up and a smaller parking area for Pre-K faculty and visitors. Passenger vehicles for parent drop off/pick up proceed to the designated entrance, then loop around to exit at the same point of ingress, then proceed right (east) back towards Route 6. The predominantly one-way circulation route attempts to minimize traffic conflicts. The pavement condition of the vehicular entrances and interior circulation system can be characterized as good throughout the site.


Parent/Bus Drop-Off


Parking Circulation

PARKING LOCATION, ARRANGEMENT AND QUANTITY

Existing parking for faculty, staff and visitors is interspersed throughout the site. The majority of the parking is located at the front (east) of the building, adjacent to the main entrance. Additional parking exists along the edges of the access drives, with a separate lot accessed by the Pre-K entrance. There exist approximately 175 striped spaces throughout the entire site. It is our understanding that the existing quantity of parking spaces is sufficient for normal school hours and for events involving after school functions or athletic activities. Accessible parking spaces all appear to comply with current MAAB standards (see Section 5 for further detail). The pavement condition of the parking areas mirrors that of the vehicular entrances, and shall also be characterized as good throughout the site.

PEDESTRIAN CIRCULATION

Due to the school's remote location, few students walk to school; however, a bituminous concrete walkway exists along Ernest Valeri Road, which connects the school grounds to Heather Hill Road. Once on school property, the bituminous concrete walkway connects to a series of internal walkways leading to different entrances to the school. A Portland cement concrete walk extends along the entire front (east) of the school at the student drop off area, spanning from the Pre-K play area to the main entrance. From the main entrance, a newly constructed bituminous concrete sidewalk leads to the south towards the free-play and tot-lot area. Another Portland cement concrete walkway extends along the entire rear (west) side of the school, from the bus drop off to the asphalt play area at the southwest corner of the building. The condition of the pedestrian circulation pavement on the site can be characterized as good throughout.

PEDESTRIAN ACCESSIBILITY AND MAAB COMPLIANCE

A total of seven (7) accessible parking spaces were identified within the property. Four (4) accessible parking spaces are located at the faculty/staff and visitor parking directly across from the main building entrance. These accessible spaces lead to the building by a combination bituminous concrete and Portland cement concrete walkways. The parking spaces, signage, access aisle and accessible route all appear to comply with current MAAB standards. However, a drainage issue within the accessible route has caused a significant buildup of sediment. One (1) accessible space is located at the south side of the building, servicing the free-play and tot-lot areas. The parking space, signage, access aisle and accessible route all appear to comply with current MAAB standards. One (1) accessible space is located at the rear (west) side of the building, servicing the rear entrance of the building. The parking space, signage, access aisle and accessible route all appear to comply with current MAAB standards. Lastly, one (1) accessible space is located at the Pre-K entrance to the building. The parking space, signage, access aisle and accessible route all appear to comply with current MAAB standards. All of the existing doors leading into the building appear to be MAAB compliant. There are a series of cross walks with accompanying curb cuts and ramps,

Handicap Parking

Handicap Parking

as well as flush curbing conditions throughout the site. All of the curb cuts and crosswalks appear to comply with current MAAB Standards.

LOADING DOCKS AND SERVICE AREAS

There is one (1) loading area located at the southernmost end of the school building that services the cafeteria. Loading is handled by a single swing door, and a bay door at ground level. Its overall size appears sufficient for large deliveries.

COURTYARDS AND OTHER EXTERIOR STUDENT CONGREGATION AREAS

There exists an exterior courtyard for formal exterior student congregation that is located at the center of the academic wing, accessed only from the interior of the building. This courtyard has no site furnishings, but features a planting area filled with maturing perennials and ornamental grasses. There appears to be drainage issues at one of the entrances to the courtyard, where ponding occurs and water enters the building. There is another small asphalt free play area at the southwest corner of the building with painted pavement activities. The condition of the surfacing in this area appears to be good. A large expanse of lawn along with a tot lot, exist at the southern portion of the site. The tot lot contains modern play structures, and resilient rubber tile surfacing, which appear to be in good condition.

SITE LIGHTING FOR BUILDING, VEHICULAR AND PEDESTRIAN AREAS

Exterior wall-mounted or overhead-mounted lighting exists at all entrance doors to the building. The parking areas and vehicular circulation routes are predominantly illuminated by ornamental pole-mounted lighting or spotlight lighting secured to the facade of the building. Pedestrian lighting is handled by wall-mounted lighting.

SITE FURNISHINGS

There is a flagpole within a parking island area adjacent to the main building entrance. The flagpole is surrounded by lawn, and does not appear to have an MAAB compliant accessible route. There is a concrete and brick building identification sign at the primary access route along Ernest Valeri Road. Several benches are found along the sidewalk on either side of the main entrance and near the Pre-K playground. Trash receptacles are located throughout the site proximate to building entrances. No bicycle racks exist on the site.

SITE VEGETATION

There exists very little existing mature vegetation throughout the site. The site is abutted to the west and south by existing mature vegetation. There are a series of small deciduous and evergreen trees and shrubs interspersed around the building perimeter, which soften the architecture. All are in fair condition.

2. CIVIL ARCHITECTURE - NITSCH ENGINEERING, Inc.

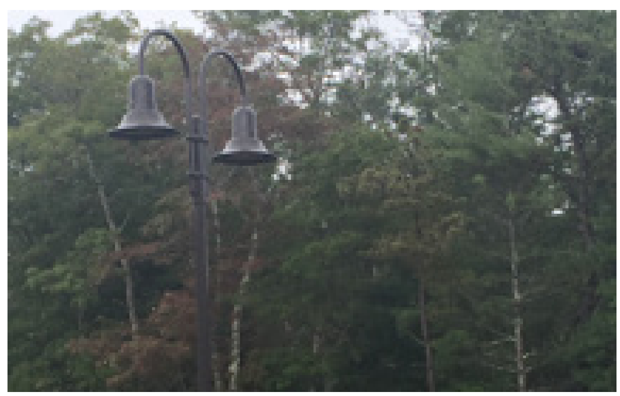
EXISTING SITE UTILITIES

The Bournedale Elementary School was built in 2007 and is located on a site with driveways, sidewalks, parking lots, athletic fields and playgrounds. The existing school is slab on grade with two stories and a two story connected wing off the back of the school. Based on record documents and site observations, the summary descriptions below represent the site utility conditions/assumptions as we understand them at this time.

STORM DRAINAGE

The existing Bournedale Elementary School building sits at a midpoint elevation on the site and area in front of the building includes the parking lots and driveways and generally slopes west towards the existing building. The topography to the south rises up to the athletic fields. The area to the north slopes to the west and the area behind the school slope to the west towards the wooded area on the west side of the site driveway. The school roof run-off is collected in internal roof drain system and is discharged to the site drainage system at various points around the building. Based on information gathered on the site visits and existing design plans there appears to be an extensive closed drainage system installed around the project site which includes catch basin inlets, drain manholes, water quality treatment structures, water quality swales, and a large retention pond located south east of the school building. Runoff from a large portion of the east side of the site is conveyed to this detention pond where it is stored and infiltrated back to groundwater. The runoff from the portion of the site behind the school building is collected in drywells and overflows via drainage outlets to the west of the site driveway. Visual inspection of the catch basins during the site visit identified that most of the drainage inlets did contain sumps within the basins. It appears that the current drainage system was designed to be in compliance with the Department of Environmental Protection (DEP) Stormwater Regulations in place at the time of the construction. Further investigation would be needed to insure that the drainage collection system would meet Current DEP Stormwater Standards but at first glance it appear that it would.

Storm Drain



Site Lighting

The building appears to be slab on grade, and based on the highly infiltrative nature of the site soils groundwater does not appear to be a substantial concern on this site.

Any addition to the existing building and/or new construction on this site will require updates to the existing stormwater collection system to insure that any new impervious area created would be treated and infiltrated to mitigate the overall rate and volume of stormwater traveling over the site under post development conditions. Any proposed work should include, at a minimum, the cleaning of the drainage system around the school site. However, Nitsch Engineering recommends that all existing catch basins and drainage structures should be inspected to determine if any structures need to be replaced or repaired.

WATER

Bournedale Elementary School is connected to the Municipal water system located under the front parking lot of the school. An existing 16” water main runs north/south there and the 8” CLDI loop for the school site connects to this 16” main on the north and south sides of the school building. A 12” water service also originating in the parking lot area in front of the existing school building runs northeast up Ernest Valeri Road where it connects farther east to the municipal system. The existing domestic water service for the school building is a 4-inch diameter CLDI pipe and the existing fire protection service line is an 8” CLDI pipe that both enter the existing building on its south face in the loading dock area and are fed off of the 8” service loop running around the building.

Multiple fire hydrants were observed within 300 feet of the School and appear to be tied into the 8” service loop that runs around the building.

Fire Hydrant flow tests would be recommended to determine if the pressures and volumes of flow in the water lines could support an addition to the existing school footprint.

SEWER

Sanitary sewer for the Bournedale Elementary School is serviced by a private onsite Sewerage Disposal System. Two 6-inch service laterals serve the school. The first exists the school near the main entrance and the second exits the school along the south face of the building in the loading dock area. These two services combine at a sewer manhole located just south of the school. A single 8-inch sanitary sewer pipe connects to a septic tank and then to a sewer lift station. The lift station sends flows south through a 6” PVC force main to the 90’X90’ sewer disposal area located within the limits of the athletic fields.

A grease trap is also present on the site which collects sewerage from the kitchen areas prior to them entering the septic tank. The grease trap is located in the lawn area just south of the school building.

NATURAL GAS

The existing Bournedale School building is serviced by natural gas line of unknown size for the kitchen, water heater, and boiler. The existing gas service enters the site at the northwest end under the rear entrance drive to the site. It runs north/south behind the building under the access driveway and enters the school building on its south face in the area of the loading dock and connecting to the main gas regulator and meter. Gas is then distributed internally to the building.

A gas fired generator is located in the landscape area just south of the existing building. The gas runs to the generator from the south side of the school building.

UNDERGROUND/ABOVE GROUND FUEL TANKS

No underground or above ground fuel tanks were observed during Nitsch Engineering’s site visit or on existing plans.

ELECTRICAL

According to record drawings, underground electric conduit enter the site from Ernest Valeri Road at the north east end of the site. The underground conduit then runs south along the edge of the access driveway to the transformer located in the landscape area just south of the existing school building. The service enters the building north of the transformer.

Site lighting conduit runs throughout the site to serve the multitude of sight lights in the parking areas, driveways and sidewalks. The site lighting is serviced from the existing school building. The location of the service entry is unknown but likely exists the building in the area where the loading dock is along the south face of the building.

TELEPHONE/COMMUNICATION SERVICES

Underground Telephone/Cable service is fed to the site from the same general location as the electrical service. However instead of running to the south side of the building the Telecom lines run west and enters the building on the northern edge of its west face.

SITE CONDITIONS AND OPERATIONS

SOILS

Based on the Natural Resources Conservation Service (NRCS) Web Soil Survey (2011), the majority of the soils on the Bournedale Elementary School site is Merrimac and Barnstable Sandy loam of varying slopes. These soils are classified as a Hydrologic Soil Group (HSG) Type A and is described Soils having a high infiltration rate (low runoff potential) when thoroughly wet. These consist mainly of deep, well drained to excessively drained sands or gravelly sands. These soils have a high rate of water transmission. Further investigation will be needed to determine groundwater elevations and in-situ infiltration capacities to support new stormwater infrastructure.

PAVEMENT

The asphalt pavement in the parking lots, service drives, and walkways adjacent to the school were observed to be in good condition. The vertical granite curb is also good condition around the site with some minimal cracking and breaking observed.

SNOW REMOVAL

Snow is plowed and stored on site.

PRELIMINARY PERMITTING CONSIDERATIONS

WETLANDS PROTECTION ACT (310 CMR 10.00)

The Wetlands Protection Act ensures the protection of Massachusetts' inland and coastal wetlands, tidelands, great ponds, rivers, and floodplains. It regulates activities in coastal and wetlands areas, and contributes to the protection of ground and surface water quality, the prevention of flooding and storm damage, and the protection of wildlife and aquatic habitat.

A review of the Massachusetts Department of Environmental Protection (DEP) wetland layers available on the Massachusetts Geographic Information System (MassGIS), dated April 2007, appear to indicate that the Bournedale School site does not contain any wetlands on the property. There is small wetland area located just north of the school site but it is far enough way that it would not affect development on the school site. Nitsch recommends that a wetland scientist be brought on board to confirm that no wetlands are present.

Work performed within resource areas or buffer zones would require a filing of a Notice of Intent (NOI) or a Request for Determination of Applicability (RDA) with the local Conservation Commission and the Massachusetts Department of Environmental Protection.

SURFACE WATER SUPPLY PROTECTION (310 CMR 22.20)

The Massachusetts Department of Environmental Protection (DEP) ensures the protection of surface waters used as sources of drinking water supply from contamination by regulating land use and activities within critical areas of surface water sources and tributaries and associated surface water bodies to these surface water sources.

A review of the Massachusetts DEP resource layers available on the MassGIS indicates the Bournedale School is not located within a Water Supply Protection Zone but is located very close to a medium and high yield aquifer area.

NATURAL HERITAGE & ENDANGERED SPECIES PROGRAM

A review of the 13th Edition of the Massachusetts Natural Heritage Atlas prepared by the Natural Heritage and Endangered Species Program (NHESP), dated October 1, 2008, indicates that the Bournedale School site is located within a Priority Habitat of Rare Species or an Estimated Habitat of Rare Wildlife however there are no vernal pools on or adjacent to the site.

FLOOD PLAIN

Based on the Flood Insurance Rate Map (FIRM), Community Panel Number 255210 0314J, dated July 16, 2014, it appears that the project site falls within an Unshaded Zone X which is described as an area determined to be outside the 0.2% annual chance (500-year) floodplain.

ZONING

According to the Zoning Map, the Bournedale Elementary School site is located in the SDD Zoning Overlay District. According to the Zoning Bylaw any use permitted in the R40 Zoning District is allowed in the SDD Overlay District. Municipal Uses are allowed in R40 Zoning Districts but must be approved by the Planning Board as part of a Site Plan Review.

The Dimensional Requirements for the site under an SDD zoning are as follows:

Minimum Lot Area of the First Dwelling Unit	40,000 square feet
Minimum Continuous Frontage	150 feet
Front Yard Setback	40 feet
Rear Yard Setback	25 feet
Side Yard Setback	25 feet
Building Height	40 feet
Maximum Building Lot Coverage	10%
Minimum Usable Open Space	40%

US EPA NPDES

Construction activities that disturb more than one acre are regulated under the United States Environmental Protection Agency's (EPA) National Pollution Discharge Elimination System (NPDES) Program. In Massachusetts, the USEPA issues NPDES permits to operators of regulated construction sites. Regulated projects are required to develop and implement stormwater pollution prevention plans in order to obtain permit coverage.

If the project will disturb more than one (1) acre this permit will be required.

SEWER CONNECTION PERMIT (314 CMR 7.00)

New connections to sanitary sewers, increases in flow to existing sanitary sewers, and discharges from businesses that are not considered to be "industrial wastewater" are subject to state requirements based on their expected discharge volume:

- Discharges ≤15,000 gallons per day (gpd) will need only local approvals (no approvals by MassDEP)
- Discharges >15,000 gpd but ≤50,000 gpd must file a one-time certification statement with MassDEP within 60 days after the connection starts to be used
- Discharges of > 50,000 gpd must obtain a MassDEP permit before construction

PERMITTING TABLE TIMELINE

Permit	Permitting Authority	Anticipated Filing Date	Anticipated Approval Date
Request for Determination of Applicability (RDA)	Town of Bourne Conservation Commission	After 100% DD	Approval in 1 to 3 months
Planning Board Site Plan Review	Town of Bourne Planning Board	From SD to DD	On-going - Up to 6 months+
National Pollutant Discharge Elimination System (NPDES) with EPA Notice of Intent (NOI)	Environmental Protection Agency (EPA)	After 100% CD	Once Submitted; Close NOI at end of Construction
Municipal Separate Storm Sewer System (MS4)	Environmental Protection Agency (EPA)	After 100% CD	Once Submitted, ongoing; yearly reports required

SUSTAINABLE SITE POSSIBILITIES

A new or reconstructed building provides opportunities to incorporate sustainable features which may help achieve Massachusetts Collaborative for High Performance Schools (MA-CHPS) points for funding.

Bio-Swales are grassed channels that capture runoff from parking lot and walkway that remove sediment from stormwater. Bio-swales can be used throughout the site, primarily along parking lot edges and access roads.

Rain Gardens use soils, plants, and microbes to treat stormwater before it is infiltrated and or discharged. Rain gardens are shallow depressions filled with sandy soil topped with a thick layer of mulch and planted with dense vegetation. Rain gardens can be utilized in parking islands and within the site to treat pavement run-off.

Porous Pavement is a paved surface with a higher than normal percentage of air voids to allow water to pass through it and infiltrate in the subsoil. Porous pavement, like all drainage systems, requires maintenance at least twice per year.

Subsurface Structures are underground systems that capture run-off (usually rooftop) and gradually infiltrate it into the groundwater. This method of infiltrating stormwater saves space by placing the system under parking lots or fields.

Based on the Natural Resources Conservation Service (NRCS) Web Soil Survey (2011) and record information, it appears that the site should have no issues providing for stormwater infiltration into the ground.

Opportunities for rainwater reuse are possible at a new or renovated Peebles Elementary School. However, the initial capital required for tanks, pumps and dual plumbing may be prohibitive in providing payback for water reuse.

TRAFFIC ASSESSMENT

As part of the Feasibility Study for the Peebles Elementary School project located in Bourne, Massachusetts, Nitsch Engineering worked with Flansburgh Architects (FA) to observe the existing traffic circulation and queue lengths on school campus and adjacent streets during drop-off and pick-up periods at two existing elementary schools in Bourne, and assess the site improvement options to be presented by FA. The 2 schools include:

- Peebles Elementary School, located at 70 Trowbridge Road, and
- Bournedale Elementary School, located at 41 Ernest Valerie Road

We have scheduled to collect Automatic Traffic Recorder (ATR) counts and Turning Movement Counts (TMC) for evaluation of roadway and intersection capacity analyses as part of the traffic study.

Figure 1 within the report is the Locus Map showing the proximity of each school and the surrounding roadway network.

TRAFFIC CIRCULATION

Nitsch Engineering conducted a site visit on Wednesday October 21, 2015 to observe the site circulation associated with the weekday morning drop-off, weekday afternoon pick-up and general queue lengths around each school site. The weekday morning drop-off observation occurred during partly cloudy conditions with a temperature of 48 degrees. The weekday afternoon pick-up activity occurred during partly cloudy conditions with a temperature of 58 degrees.

The following section includes figures that graphically depict the activity during the weekday morning and afternoon pick-up periods, and tables that quantify the parent and bus drop-off/pick-up totals for each school.

Table 2 – Bournedale Pick-Up/Drop-Off Quantity

Type		Parent		Bus	
Time		Drop-Off	Pick-Up	Drop-Off	Pick-Up
8:15 - 8:30		1			
8:30 - 8:45		3		4	
8:45 - 9:00		48		7	
9:00 - 9:15		17		2	
9:15- 9:30					
1:45 – 2:00			2		
2:00 - 2:15					
2:15 - 2:30			1		
2:30 - 2:45			7		
2:45 - 3:00			20		4
3:00 – 3:15			23		9
3:15 - 3:30					
Total		69	53	13	13

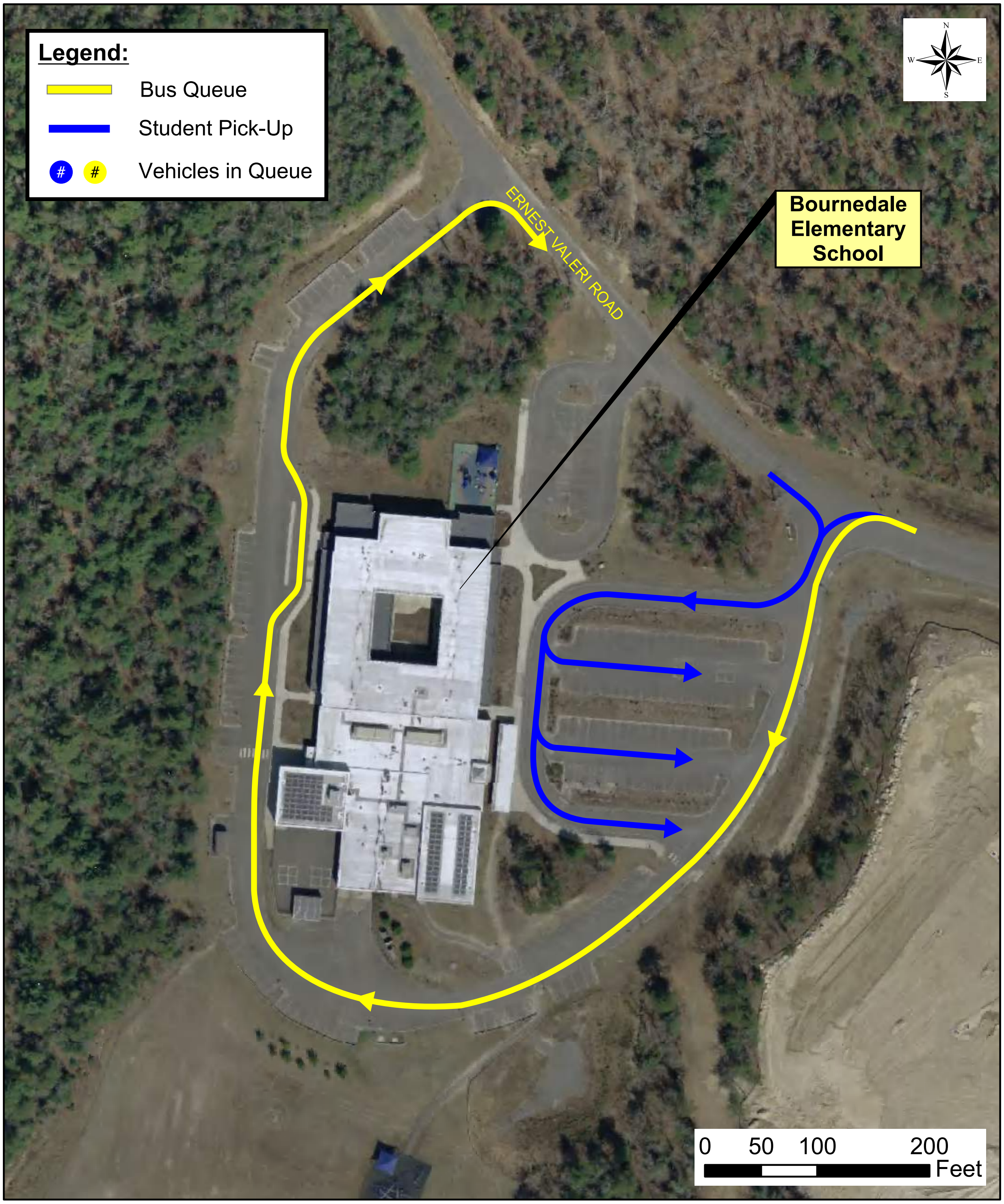


Figure 7: Bournedale Elementary School Site Circulation
Peebles Elementary School
Bourne, Massachusetts

Data Source: MassGIS
Nitsch Project #11078

Nitsch Engineering

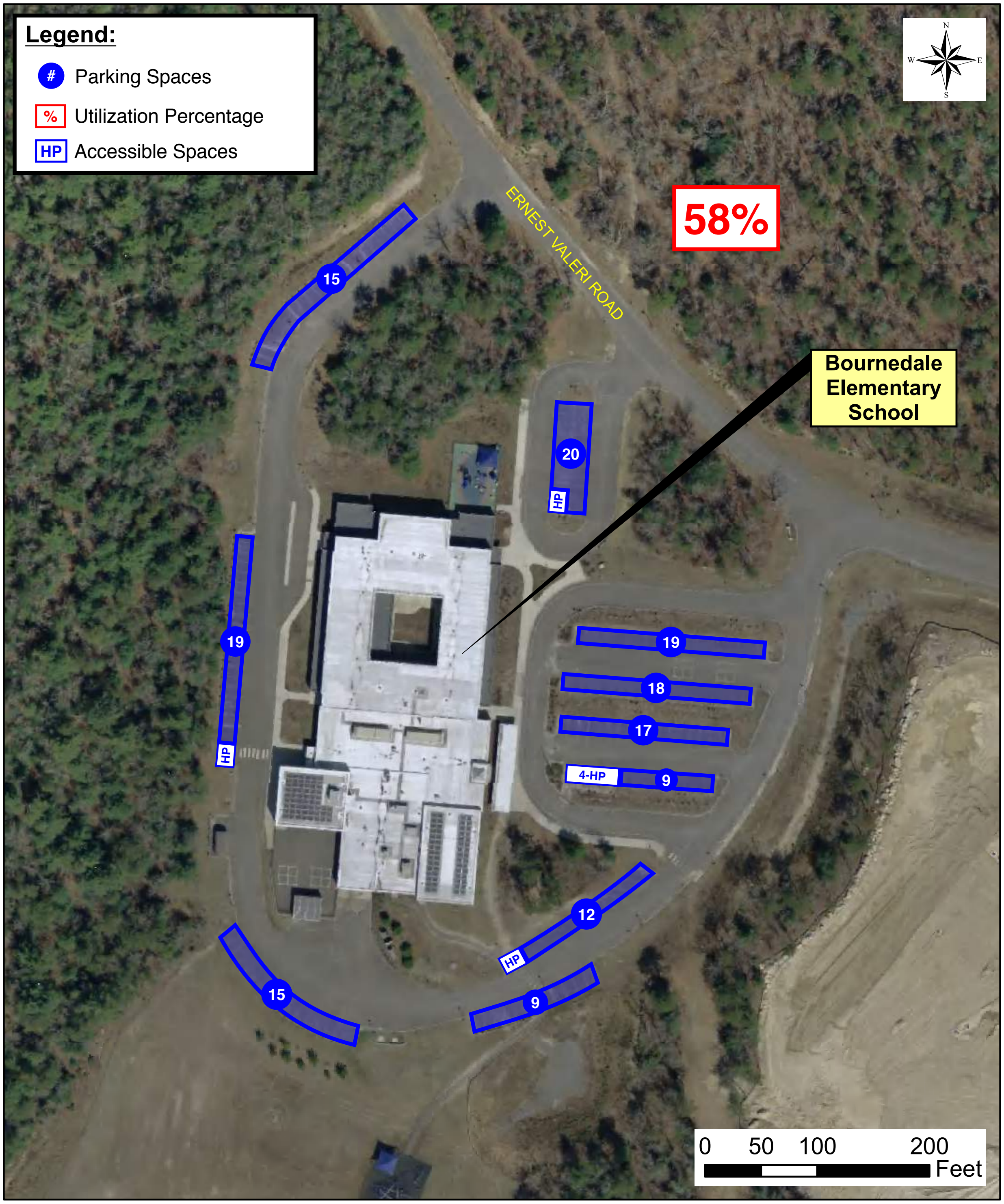


Figure 8: Bournedale Elementary Parking Utilization
Peebles Elementary School
Bourne, Massachusetts

Data Source: MassGIS
Nitsch Project #11078

Nitsch Engineering

3. ARCHITECTURE - FLANSBURGH ARCHITECTS

GENERAL DESCRIPTION

BUILDING

a. Organization: The 2009 School is approximately 68,120 square feet. This space currently houses classrooms, a cafeteria, a kitchen, reception area, gymnasium, and offices.
b. Circulation: The building is a two-story school in a rectangular plan with classrooms along the exterior perimeter, the cafeteria at the southwest corner, gym at the northwest corner, and media center centrally located in the facility.
c. Program and Space Issues: The Bournedale Elementary School currently serves 435 students grades PreK through 4. The school's maximum class size goal is 24 students per classroom.

   Comparisons with current MSBA space standards indicate that classrooms and core academic spaces are undersized.

Room	MSBA Standards	Bournedale Existing
Classrooms	850 - 950 s.f.	850 s.f.
Music	1,200 s.f.	920 s.f.
Cafeteria	3,260 s.f.	2,200 s.f.
Gymnasium	6,000 s.f.	2,980 s.f.

d. Physical Conditions:

EXTERIOR ENVELOPE - WALLS

2009: 4" exterior brick, air space and 6" metal stud wall.

Representative R-Values (2009 walls)		
4" Brick		0.39
2" Air Space		2.02
Air/Vapor Barrier		0.85
1/2" Gypsum Sheathing		0.45
Insulation		15.00
Vapor Barrier		0.15
Interior Gypsum Board		0.45
TOTAL R-VALUE	------	19.76

Window: Double Pane R-VALUE = 2.04

Typical Exterior Walls - Current Minimum Requirements

Face Brick		0.39
Air Space		2.02
Air/Vapor Barriers		0.85
1/2" gypsum sheathing		0.45
Insulation		22.00
Vapor Barrier		0.15
Interior Gypsum Board		0.45
TOTAL R-VALUE	------	26.16

Window: Triple Pane R-VALUE = 5.00

EXTERIOR ENVELOPE - EXTERIOR BRICK AND PRECAST PANELS

Cavity Wall Flashing at Roof

The school is faced with split face CMU in a running bond pattern with ground face CMU accents. There are minor areas around the perimeter that have some sealant issues. The overall masonry is in good conditions, the sealant control joints are beginning to harden and may need to be replaced in the next few years. The precast sills at the windows are discolored and need to be cleaned and sealed. The roof-to-masonry connection has been problematic with cavity wall flashing creating leaks. Though some repairs have been attempted, leaks continue. We recommend removing the masonry and repairing or replacing the cavity wall flashing. The precast caps around the main entrance should be removed, reset, and resealed.

WALLS AND DOORS

The windows are double paned and are in good condition. The thermal performance of this system is average compared to current standards. The exterior doors are average for current thermal performance.

The doors and windows should undergo general maintenance to ensure they are performing properly. Water infiltration at courtyard doors has damaged the flooring. Exterior door thresholds should be replaced and a suitable threshold to minimize water infiltration should be installed.

EXTERIOR ENVELOPE - ROOF

Roofing on the building is PVC membrane roofing and rigid insulation, is approximately 7 years old, and is still under warranty.

Existing Flat Roof Construction		Roof Construction - Current Minimum Requirements	
PVC Membrane	0.40	Rubber/PVC	0.40
4” Rigid Insulation (avg)	20.00	4” Polyisocyanurate	24.00
Structure/Ceiling	5.00	Structure/Ceiling	5.00
TOTAL R-VALUE -----	25.40	TOTAL R-VALUE -----	29.40

Algae on Roof

The original membrane roofing appears in good condition. No active roof leaks were observed. This roof system warranty is still valid and the roofing manufacture should be contacted for a roof inspection prior to any renovation.

The roof is covered with a black substance similar to algae on the surface. Although it does not affect the roof membrane, it is slippery and may contribute to a slip and fall condition.

The roof should be washed to remove the substance.

INTERIOR

Finishes within the building are well-suited for school use and have been well maintained.

e. Interior Partitions: In general, all interior partitions appear to be in good condition. The type of interior partitions vary throughout as follows:
   - Concrete masonry walls
   - Painted gypsum board
   - Ceramic tile

   Existing gypsum board walls are in good to fair condition; minor denting and scrapes were observed. The wall between the music room and nurse's suite will require additional sound proofing. The corridor walls at the cafeteria need repairs and repainting.

f. Flooring: In general, all flooring is in good condition. Some lifting of the VCT flooring has occurred at exterior doorways due to water infiltration. The type of flooring that exists is as follows:
   - Vinyl composition tile (12x12)
   - Ceramic tile
   - Rubber flooring
   - Carpeting
   - Wood flooring

Corridor Flooring

Marker Board

Wall Base

g. Wall Base: The wall base is mostly vinyl in various heights and in good conditions. At ceramic tile areas, the base is ceramic. Ten percent of the base needs replacement due to damage.

h. Ceilings: In general, the ceiling types are suspended ceilings or drywall soffits. The ceilings are in good condition and only need replacement due to damage or if new systems above the ceilings are contemplated.

- Painted gypsum board
- Suspended acoustical tile
- Exposed structure

i. Doors and Frames: Doors and frames vary in size and type, both metal and wood. They are in good condition. Gym door seals need replacement, exterior door thresholds need replacement, and acoustical seals at all music room and vestibule doors should be replaced to improve acoustical separation between music and administrative/nurse suites.

Finish hardware consists of levers, hinges, panic devices, and lock sets keyed to a master keying system. Maintenance of door hardware should be considered to extend its useful life.

j. Fire Extinguishers: All existing fire extinguishers appear to be operational and certified. It appears that fire extinguishers are located in accordance with NFPA requirements.

k. Tack Boards and Markers Boards: Both types of boards exist in various sizes and conditions. The recent fire code regulations do not allow for tack boards to be within 5 feet of egress doorways, some of the existing tack boards may need to be moved as a result. Marker boards are in good condition.

REGULATIONS

Refer to Code Evaluation appended to section 3.1.4 within Section F.

HANDICAP ACCESSIBILITY

Refer to MAAB/Accessibility Evaluation appended to section 3.1.4 within Section G.

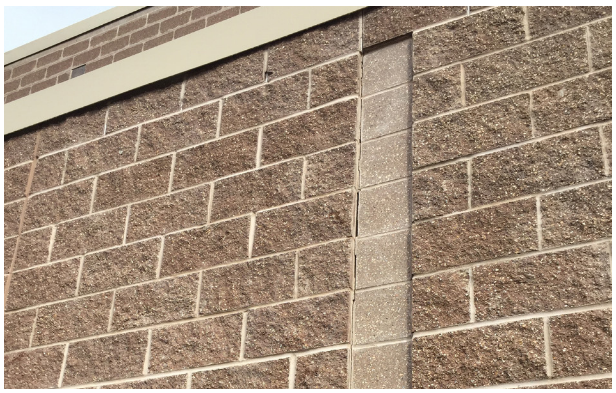
4. STRUCTURAL - BOSTON BUILDING CONSULTANTS, Inc.

EXISTING CONDITIONS

This school is a fairly new school, and was dedicated in 2009. The southerly portion is one story, and contains the gym, cafeteria and administrative areas. The northerly portion is two stories, and contains mostly classrooms. There is an open courtyard in the middle of the north wing. The design was based on the Sixth Edition of State Building Code.

The building is constructed of composite structural steel framing, open web steel joists, steel columns and many masonry bearing walls. The building appears in good structural condition.

On the exterior, the veneer is largely concrete masonry units, with some brick masonry. There are some locations 8” architectural recessed units were mortared to the adjacent units. These joints are cracking and acting as control joints. The mortar should be removed and replaced with sealant.



Exterior Masonry

Exterior Masonry

5. HVAC - GARCIA, GALUSKA, DESOUSA, Inc.

EXECUTIVE SUMMARY

Presently, the HVAC Systems serving the building are: a gas-fired hot water boiler plant serving perimeter fin-tube radiation, fan-coil units, terminal induction units, and terminal unit heaters. Tempered ventilation is provided to all occupied spaces via (3) Rooftop-mounted air-handling units containing gas-fired furnaces and direct expansion cooling sections.

The majority of the HVAC systems are original to the building which was built in 2009. All of the HVAC systems are considered to be in very good condition.

BOILER PLANT

The building is heated by a gas-fired hot water boiler plant. Hot water pumps with VFD drives, expansion tanks air separator and DDC (direct digital control) boiler plant controls are also installed.

There are (2) Viessmann (Model VD2A-195) gas-fired sectional cast iron hot water boilers. Each boiler has a capacity of 792 MBH input, 673 MBH output and are approximately 85% efficient. The boilers are equipped with Riello gas burners (Model RS45/M) with input capacity of 792 MBH each. Each boiler is vented via an individual steel breeching that terminates above the roof to building exterior.

There are two (2) hot water heating pumps (Bell & Gossett manufacture, 115 GPM, 65 Ft Head, 5 HP). Each pump is equipped with a VFD drive. The hot water pumps operate in a primary, standby fashion and serve the building hot water heating equipment via a hot water steel and copper insulated two-pipe distribution system.

Combustion air is provided for the boiler plant by a ceiling-suspended combustion air fan that is located in the Boiler Room & ducted to the outdoors through the roof. The combustion air fan was manufactured by Tjernlund and has a capacity of 625 CFM. The unit appears to be in good condition.

Boiler & Water Heater Breeching

CHILLER PLANT

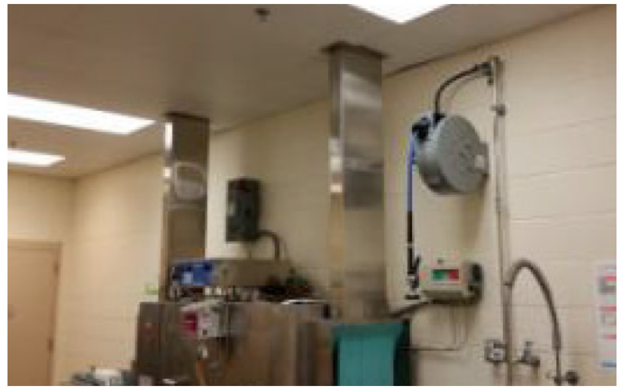
The building is provided with a roof-mounted air-cooled Chiller with a cooling capacity of 15 Tons (180 MBH). Chilled water pumps (Bell & Gossett manufacture, 35GPM, 50 Ft Head, 1.5 HP) with VFD drives, expansion tanks air separator and DDC (direct digital control) Chiller plant controls are also installed.

KITCHEN

The kitchen and servery are heated and ventilated by a gas-fired rooftop heating and ventilation unit. HV-1 serves the kitchen & servery areas (Greenheck Model IG-112-H30, Capacity of 3,600 CFM). There is also a gas-fired make-up rooftop air handling unit that provides make-up air for the kitchen exhaust hood. The make-up air unit, MAU-1, was manufactured by Greenheck (Model IG-109-H10) with a capacity of 2,000 CFM). The H&V and MUA units appear to be in good condition.

The kitchen hood and dishwasher are provided with exhaust air fan systems. EF-2 serves the kitchen hood; the fan was manufactured by Greenheck (Model CUBE-240HP-20 – 5,000 CFM). EF-4 serves the dishwasher; the fan was manufactured by Greenheck (Model GB-101-4 – 600 CFM).

EF-6



Dishwasher Ductwork

CAFETORIUM

The cafeteria is heated, ventilated and air conditioned by a packaged rooftop gas-fired heating and DX cooling air handling unit, RTU-3. The RTU was manufactured by Trane and has a capacity of 7,000 CFM, and 182 MBH cooling. The unit appears to be in good condition. The RTU is connected to overhead supply air ductwork and diffusers & low wall return ductwork & grilles.

GYMNASIUM

The gymnasium is heated and ventilated by a rooftop energy recovery ventilation unit with gas-fired heating. The unit was manufactured by Greenheck (ERH-90H-30). The unit has a capacity of 6,000 CFM Supply air and is equipped with a total energy recovery wheel. The units appears to be in good condition. The ERV unit is connected to overhead supply air ductwork and diffusers and return ductwork that is routed to low wall return grilles.

RESTROOMS

The majority of restrooms are heated by hot water convectors that appear to be in good condition. The restrooms are typically exhausted by rooftop exhaust air fan systems.

ADMINISTRATION AREA

The administration, guidance and teaching office areas located throughout the building are typically heated, cooled, and ventilated by ceiling-mounted induction units connected to RTU-1 & RTU-2 by a concealed supply air duct system. Each induction unit also contains chilled water and hot water coils for spatial heating and cooling connected to the Chiller & Boiler plants via (two-pipe) insulated piping systems. Each space also contains a ceiling-mounted return grille connected to the associated RTU via a concealed return air duct system. All induction units, RTU's, and return grilles appear to be in good condition.

ENTRYWAYS & CORRIDORS

All entryways and are heated by hot water cabinet unit heaters, either ceiling or wall-mounted. Corridors are generally provided with code-required ventilation via ceiling supply diffuser grilles connected to an RTU by a supply air ductwork system. This supply air also serves as make-up air for adjacent bathrooms & custodial storage spaces. All of the associated heating equipment appears to be in good condition.

CLASSROOMS

All classrooms are served by RTU-1 & RTU-2 with displacement ventilation systems consisting of low-wall displacement (low-velocity) air diffusers & ceiling-mounted return grilles connected to their associated

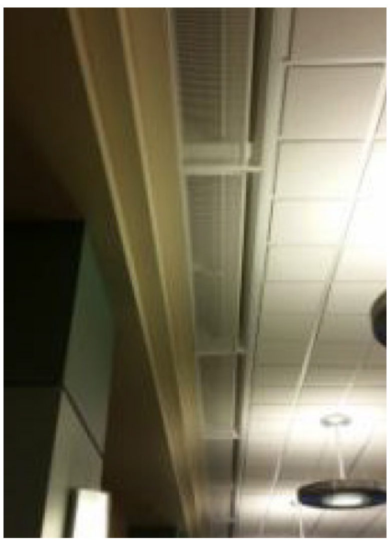
RTU’s by supply & return duct systems. Classrooms also contained hot water fin-tube radiation for heating of the spaces.

COMPUTER CLASSROOMS

The Computer Classrooms are typically heated and ventilated by ceiling-mounted Supply & return air grilles connected to either of the RTU’s via supply & return duct systems. Computer Classrooms are air conditioned by wall-mounted ductless cooling AC units. There are typically (2) wall mounted AC units installed in each of the Computer Classrooms. The AC units are connected with refrigerant piping to roof mounted air-cooled condensing units. The indoor and rooftop units were manufactured by Sanyo and appear to be in good condition

MEDIA CENTER

The media center is heated, cooled, and ventilated by ceiling-mounted induction units & active chilled beams connected to RTU-1 & RTU-2 by a concealed supply air duct system. Each active chilled beam also contains a dual-temperature water coils for spatial heating and cooling connected to the Chiller & Boiler plants via (two-pipe) insulated piping systems. Each space also contains a ceiling-mounted return grille connected to the associated RTU via a concealed return air duct system. All induction units, RTU’s, and return grilles appear to be in good condition


Active Chilled Beams


Classroom Temperature Controller


Faculty Space Temperature Controller

CONTROLS

The building HVAC systems are controlled by a DDC (direct digital control) system that was installed in 2009. A Front-End workstation was provided or interface & control of the DDC control system. It is our understanding that the existing controls system is operating satisfactorily and is in good condition

RECOMMENDATIONS

We recommend the following HVAC system repairs and/or renovations:

- The existing hot water heating equipment, including classroom unit ventilators, fan coil units, fin tube radiation, convectors and unit heaters should continue to be maintained per manufacturer’s recommendations.
- The existing rooftop air handling equipment including packaged rooftop units, H&V units, ERV

units and exhaust air fans should be maintained per manufacturer's recommendations. RTU with DX cooling should be checked for proper refrigerant charge, compressor and condensing section operation.

- The majority of exhaust air fans should be serviced.
- Terminal heating equipment equipped with fans (i.e. fan coil units, unit ventilators and cabinet unit heaters) should be serviced.
- Split system AC units should be checked for proper refrigerant charge.

6. ELECTRICAL - GARCIA, GALUSKA, DESOUSA, Inc.

ELECTRICAL SERVICE

The existing electrical service is in good condition and rated at 1600 Amps, 277/480V, 3 Phase, 4 Wire. The service is underground to the building and there is one secondary meter. There is a pad mounted transformer located outside. The main switchboard was manufactured by Square D. The switchboard is in good condition and has space for expansion.

DISTRIBUTION SYSTEM

The electrical distribution system is in good condition. Existing panelboards are adequate and they are located within dedicated electrical/mechanical spaces.

INTERIOR LIGHTING

Lighting is in good condition and mainly consists of fluorescent fixtures with electronic ballasts.

EXTERIOR LIGHTING

Exterior lighting is in good condition and consists of pole mounted metal halide in the parking/driveway areas and building mounted fluorescent lighting for walkways and surrounding area.

Classroom with Pendant Lighting

EMERGENCY POWER SYSTEM

There is an existing 125 KW natural gas Olympian generator. The generator is in good condition and is code compliant. The life safety automatic transfer switch is adequately located in a dedicated emergency electric closet. The generator is adequate for an addition project.

FIRE ALARM SYSTEM

The existing fire alarm system is in good condition, however there are system notification devices that are not compliant with current codes. The fire alarm control panel is a GE EST-3.

RECOMMENDATIONS

For an addition project we would recommend a new distribution panel to serve the addition and keep the existing main switchboard as it is in good condition. The existing generator could be re-used as it is in good condition. New transfer switches would be required to serve the new addition. We would recommend keeping the existing fire alarm system and adding new current code compliant notification devices throughout.

7. PLUMBING - GARCIA, GALUSKA, DESOUSA, Inc.

EXECUTIVE SUMMARY

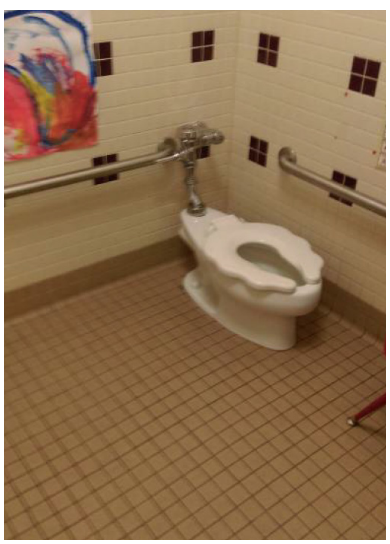
Presently, the Plumbing Systems serving the building are cold water, hot water, sanitary, waste and vent system, Kitchen waste and vent system, storm drain piping, and natural gas. A septic sewer system and municipal water service the Building.

The Building was constructed in 2008 and the plumbing systems are original to the building. The plumbing systems, in general, have been well maintained and are in good condition. The school plumbing systems could continue to be used with maintenance and replacement of failed components; however other non-dependent decisions will likely force the plumbing upgrade. The plumbing systems infrastructure is adequate for a major renovation or addition.

The plumbing fixtures are in good condition. Bathroom fixtures are accessible and compliant per current regulations. Essentially, the code does not require these fixtures to be upgraded, but where new fixtures are installed, as may be required by other codes or concerns, the new fixtures may be low flow, water conserving type fixtures.

Cast iron is used for sanitary, Kitchen waste and storm drainage. The Kitchen waste system is directed to an exterior grease trap, with point of use interceptors at various pieces of Kitchen equipment. Rainwater from roof areas is collected by interior rain leaders which appear to discharge to a below grade site drainage system. Where visible, the cast iron pipe appears to be in good condition. Smaller pipe sizes appear to be copper. In general, the drainage piping can be reused where adequately sized for the intended new use.

Domestic water is copper with soldered fittings and is in good condition. In general, the domestic water piping can be reused where adequately sized for the intended new use. The domestic water heater is in good condition, but any additional hot water load for a major renovation or addition will require recalculation to determine is system is sufficiently sized.



Child Toilet

FIXTURES

The water closets are predominately wall hung vitreous china with manually operated, 1.6 gallon per flush - flush valves. The early childhood fixtures are set at a lower height to accommodate younger children.

Urinals are wall hung vitreous china with manually operated, 1.0 gallon per flush - flush valves.

Lavatories are wall hung vitreous china. The majority of lavatories include sensor faucets with mixing valves. Accessible lavatories are fitted with protective insulation below fixture. There are wash-fountain type lavatories in the core Boys and Girls Toilet Rooms.

Drinking fountains consist of wall hung, stainless steel, accessible, electric water coolers.

Janitor's sinks are generally floor mounted, 24" X 24" X 12" terrazzo basins. Faucets are equipped with vacuum breakers.

Art Room sinks are stainless steel, drop-in fixtures with gooseneck faucets and wrist blade handles. Each Art Room sink is equipped with a solids interceptor.

Staff Sinks and classroom sinks are stainless steel, drop-in fixtures with gooseneck faucets and wrist blade handles. The classroom sinks include a bubbler. Nurses Exam Sink includes an eyewash.

Classroom Sink

Kitchen area fixtures are in good condition. There are a total of two (3) interior grease interceptors. The dishwasher, pot wash sink, and kettle each are directed to an interceptor.

WATER SYSTEMS

The main domestic water service is located in the Custodial Storage Room. The service is 4” in size and includes a 3” water meter and a 4” reduced pressure backflow preventer. The main domestic cold-water distribution is 4” in size.

The domestic water is in good condition. Piping, where exposed, appears to be insulated copper with sweat joints. Ball valves are utilized for isolation purposes and are tagged and charted.

The main domestic hot water for the School is generated through gas fired water heater and storage tank. The hot water systems are recirculated. There is a thermostatic mixing valve on the systems to prevent scalding. An expansion tank is installed on the cold water make-up line. The water heater has a natural gas input of 715,000 BTUH and 250 gallon storage capacity. The kitchen is serviced with 140 degree F. hot water. The domestic hot water system is in good condition.

DRAINAGE SYSTEMS

Cast iron is used for sanitary, Kitchen waste and storm drainage. Where visible, the cast iron pipe appears to be in good condition. Smaller pipe sizes appear to be copper. The Building sanitary drainage is directed to a site septic system. The Kitchen waste system is directed to an exterior grease trap. The pot wash sink, dishwasher and kettle are each equipped with a local m-ground grease interceptor. The storm system exits to a site storm system at multiple locations.

In general, the cast iron drainage piping can be reused even in a major renovation or addition where adequately sized for the intended new use.

GAS

An elevated pressure natural gas is supplied to the building. The exterior gas meter is located just outside of the Kitchen Storage Room. The natural gas includes a regulator to serve the building heating system, the domestic hot water heater, and the Kitchen equipment. At the meter there is also a dedicated line with a regulator to serve the emergency generator.

Gas piping is black steel with a combination of screwed and welded joints and fittings depending on the size of the pipe.

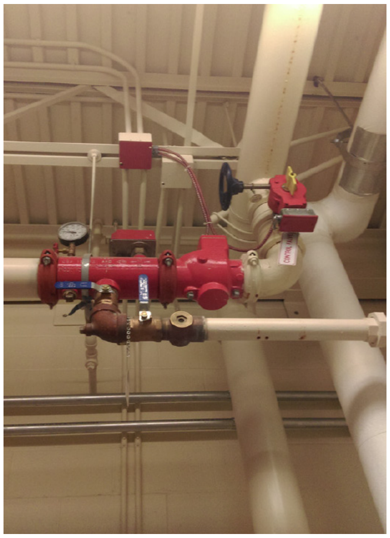
Natural gas is provided for kitchen cooking equipment. Kitchen supply is equipped with an automatic shutoff valve.

RECOMMENDATIONS

In general, the building Plumbing systems are in good condition and appear to be code compliant. The plumbing systems infrastructure is adequate for a major renovation or addition.

We recommend that the plumbing systems continue to receive preventative maintenance.

8. FIRE PROTECTION - GARCIA, GALUSKA, DESOUSA, Inc.



Sprinkler Zone Control Valve

EXECUTIVE SUMMARY

The entire school is fully protected by an automatic sprinkler system. The Fire Protection system was installed in 2008. The majority of the equipment and systems installed appear to have been well maintained and are generally in good condition.

Should the existing School undergo a major renovation or addition, the building will require upgrades to the existing sprinkler system to provide complete protection of all spaces, but the system infrastructure is adequate to support such an upgrade. In general, the sprinkler piping can be modified to suit new architectural and ceiling layouts.

EXISTING CONDITIONS

There is an 8” fire water service that enters the building in the Custodial Storage Room. This service includes a 6” Watts double check valve assembly with 4” wet alarm valve, a 4” dry alarm valve and a wall mounted Fire Department Connection. The sprinkler distribution main is 4” after the alarm valves. The system includes a Sprinkler zone control valve assemblies at the Custodial Storage Room ceiling to isolate the South section of First Floor sprinklers. The North Section of the school is isolated from the Sprinkler zone control valve located in Stair 3. The Second Floor sprinklers are isolated by the Sprinkler zone control valve assembly at the Second Floor of Stair 3. Exposed Sprinkler piping is painted off white.

The existing Stage is equipped with (2) two Fire hose cabinets on either side. Each Stair landing includes a Fire Department valve. The Roof includes a Roof Hydrant with an OS&Y indicating valve operable from the Roof level.

The sprinkler heads throughout rooms without ceilings are upright type sprinkler heads with exposed piping. In rooms with finished ceilings the sprinkler heads are semi recessed pendent type with chrome escutcheons.

RECOMMENDATIONS

In general, the building Fire Protection system appears to be in good condition and has been well maintained and can be modified for major renovation or addition.

9. FURNITURE & EQUIPMENT - TAVARES DESIGN ASSOCIATES, INC.

Generally the school is in very good shape as it was recently built. The school space is close to capacity.

GENERAL FURNITURE:

Description/Assessment:
- Cafeteria is at capacity.
- Media center has no more space for additional books.
- Gym climbing wall is in hallway.

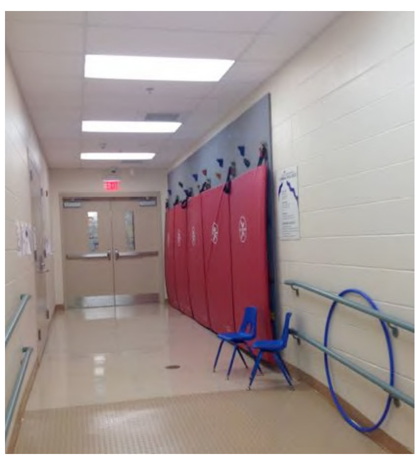
KITCHEN:

Description/Assessment:
- Extra unused space in dish room.
- Lack of adequate storage.
- No room for expansion of cooking battery in current location.
- Lack of expansion space for serving line in current location.

Cafeteria

Dish room

Media Center



Climbing Wall

Dry Storage

10. TECHNOLOGY - EDVANCE TECHNOLOGY DESIGN

TECHNOLOGY INFRASTRUCTURE

- Dedicated MDF and one IDF with sufficient power and environmental conditioning;
- Category 6 data cabling;
- Comcast for internet and connectivity
- Drop Ceilings with above ceiling accessibility

COMMUNICATIONS SYSTEM

- PA system is a Rauland Borg Telecenter, which is appears to be in good working order and currently maintained by Signet. System could be expanded to support additional speakers and clocks;
- Newer integrated master clock system;
- Newer room and hallway speakers and secondary clocks throughout;
- Digital signage displays were observed

TELEPHONE

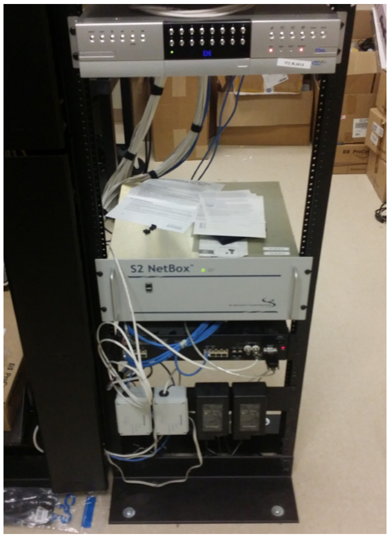
- Newer Vertical VoIP Telephone System with integrated voicemail server and handsets at teacher's desk in classrooms and office spaces;
- Integration with PA system is lacking but could be corrected

SECURITY

- Modern access control, Intrusion control and video surveillance equipment that is expandable;
- Cameras were observed in hallways and exterior of building;
- Video monitor of cameras is located in the main office;
- Video intercom "AIphones" with remote control of door locks. System is expandable

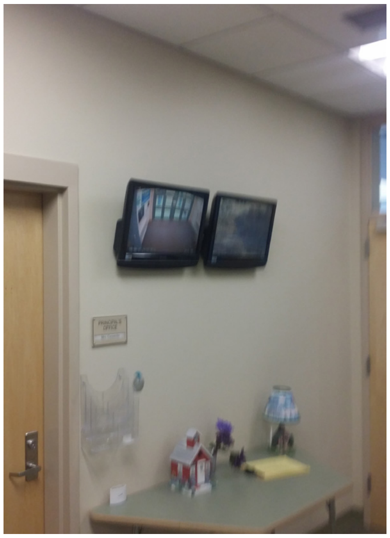
CLASSROOM INSTRUCTIONAL TECHNOLOGY

- SMART Technology Smart Boards with standard throw projectors mounted in the ceilings. All classrooms appear to contain this technology;
- Small laser printers at the teacher's desk area



Access Control System

Digital Signage



Security Camera Display

- HP Desktop Computers for teachers and 4 computers for students;
- Mobil Chromebook carts were observed;
- One computer lab with multiple student desktop computers and similar AV equipment as the classroom

NETWORK

- Newer Procurve HP switch chassis in the closet for networking. Switch equipment is expandable and supported by HP;
- UPS equipment supporting network switches;
- Enterasys wireless access points throughout that can be expanded

LARGE VENUE AV SYSTEMS

- Large venue AV system in Cafeteria (with stage) and Gym

RECOMMENDATIONS AS PART OF A RENOVATION PROJECT

- Review security plans and expand surveillance as required;
- Expand wireless access as required;
- Update and possibly replace telephone system due to difficulty obtaining replacement parts;
- Upgrade from standard throw projectors in the ceilings to ultrashort throw projectors;
- Review AV equipment in large venue spaces like Cafeteria and Gym and update as required;
- All building related technology systems appear to be recent and are in good working condition with capability for expansion. These core systems include building communications, clock system, infrastructure cabling, security system (intrusion, access control and surveillance) and large venue AV systems. The possibility exists that the existing core systems could be expanded to accommodate expansion of the school.

11. HAZARDOUS MATERIALS - FUSS & O'NEILL

Refer to full Hazardous Materials report appended to section 3.1.4 within section K.

BOURNEDALE EXISTING FLOOR MATERIALS

KEY: FLOOR MATERIALS

- VCT (VINYL COMPOSITE TILE)
- SSF (Synthetic Sports Flooring)
- CARPET
- CERAMIC TILE
- EXPOSED CONCRETE
- RUBBER

BOURNEDALE EXISTING CEILING MATERIALS

KEY: CEILING MATERIALS

- 24" x 24" ACT (ACOUSTIC CEILING TILE)
- 24" x 48" ACT (ACOUSTIC CEILING TILE)
- GWB (PAINTED)
- 48" x 48" ACT (ACOUSTIC CEILING TILE)
- EXPOSED (STEEL PAINTED)

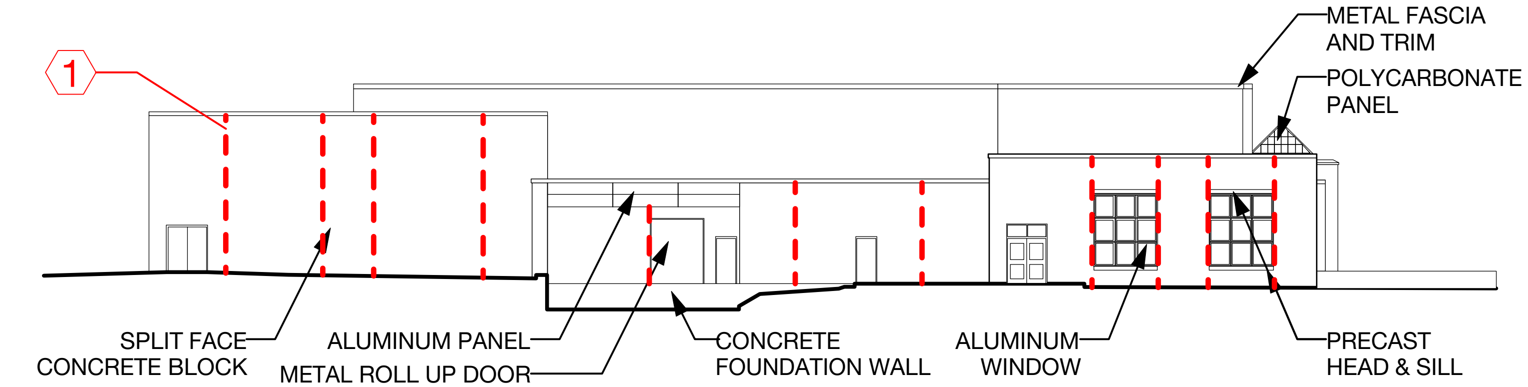
Bournedale Elementary School
Bourne, Massachusetts

Flansburgh Architects

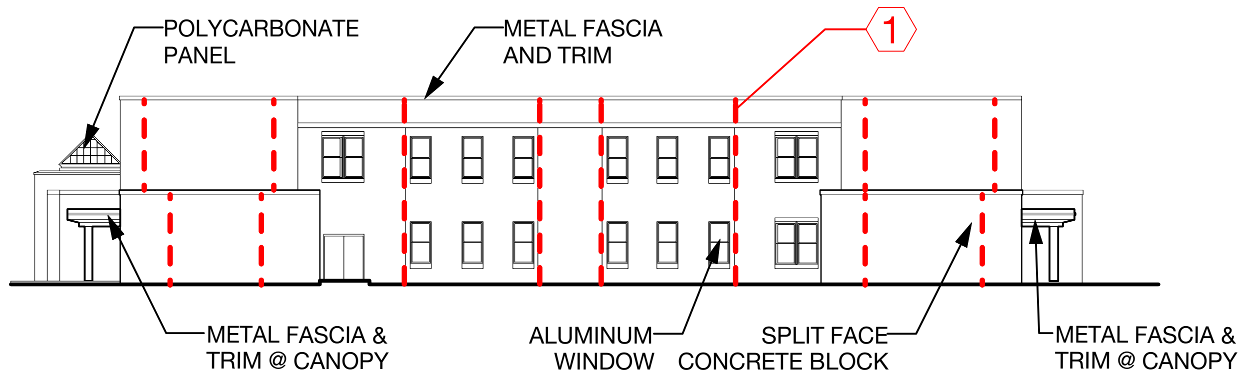
Bournedale Elementary

Existing Building Elevations

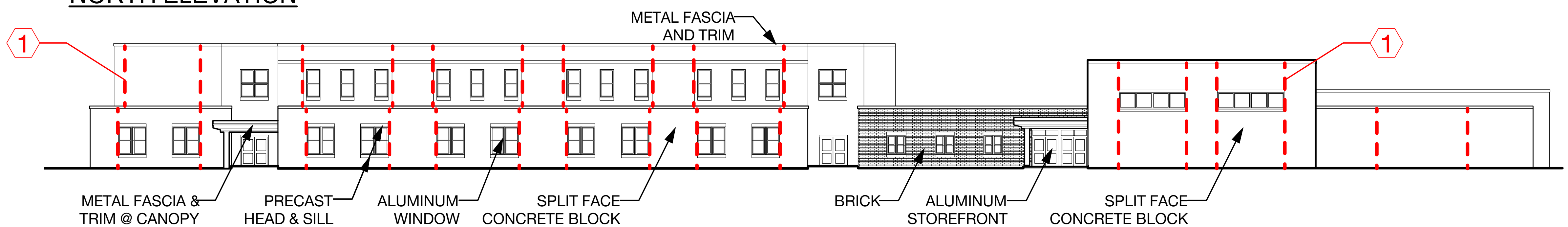
KEY: ELEVATION
1 CONTROL JOINT TO BE RESEALED
- - - - CONTROL JOINT
* PRECAST SILLS TO BE REPOINTED
* ROOF FLASHING TO BE REPLACED @ ROOF/WALL INTERFACE, FURTHER INVESTIGATION REQUIRED
* STAINING ON BLOCK AND PRECAST SILLS TO BE CLEANED AND SILLS TO BE SEALED. FURTHER INVESTIGATION REQUIRED



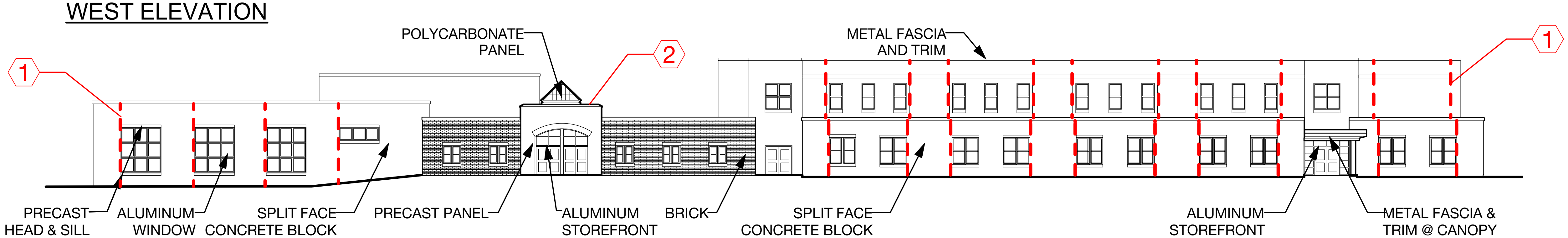
SOUTH ELEVATION



NORTH ELEVATION



WEST ELEVATION



EAST ELEVATION

F. Code Evaluation

F. CODE EVALUATION

Peebles Elementary School

In accordance with the code, an existing building is presumed to have met the codes and regulations in effect at the same time of its construction and is allowed to continue in its use, provided it is maintained per the original code. Current building codes are applicable to any alteration, addition or change in use of the structure, in accordance with 780 CMR. The requirements to meet current codes will impact all spaces and effectively require a full renovation of the school to achieve compliance.

Current codes applicable to the project include the following:

Building: 780 CMR: Massachusetts State Building Code, 8th Edition (2009 International Building Code)
Fire Prevention: 527 CMR: Massachusetts Fire Prevention Regulations (2012 NFPA 1),
M.G.L. C148 §26G – Sprinkler Protection
Mechanical: 2009 International Mechanical Code
Electrical: 527 CMR 12.00: Massachusetts Electrical Code (2014 National Electrical Code)
Plumbing: 248 CMR: Massachusetts Plumbing Code
Energy Conservation: 2012 International Energy Conservation Code

The occupancy of the facility in non-separated mixed use with assembly and educational uses as follows:

Classrooms, School Offices, Media Center	E - Educational
Cafeteria, Gymnasium	A-3 – Accessory Assembly

CONSTRUCTION CLASSIFICATION

Based upon the definitions in the current code, the minimum classification of the building is as follows:

1953 (Original)	IIB Noncombustible
1959 (Addition)	IIB Noncombustible

A renovation project is governed by 2009 IEBC - International Existing Building Code, incorporated into 780 CMR as Chapter 34. This chapter is “intended to maintain or increase public safety, health, and general welfare, without requiring full compliance with the code for new construction.” The scope of work will determine the level of compliance required by code.

i. Building renovation - For continuation of the same use groups the building shall comply with 2009 IEBC.

ii. New Building Systems - Any new building system or portion thereof shall conform to 2009 IEBC for new construction to the fullest extent practical.

iii. Alterations and Repairs - Alterations of repairs to existing buildings, which maintain or improve the performance of the building may be made with like material, unless required otherwise under 2009 IEBC - Structural Requirements for Existing Buildings.

iv. Number of Means of Egress - Egress for the existing facility is sufficient in accordance with the current building code.

v. Capacity of Exits - There is sufficient egress capacity to meet current codes at the doors throughout the facility.

vi. Length of Access Travel - Shall not exceed 200 feet, in building without a sprinkler system. All areas of the existing building are within 200 feet of an exit.

vii. Exit Signs and Lights - For notes on the existing system, refer to the Electrical Existing Conditions Report.

viii. Means of Egress Lighting - Refer to the Electrical Existing Conditions Report.

ix. Height and Area Limitations - Under 2009 IEBC the building is in conformance with applicable height and area limitations, so long as there is no change in use. Additions may be made to the structure.

x. Fire Protection Systems - Fire protection systems must be provided for existing buildings that are “substantially” altered or “substantially” renovated where required for the specific use group. 30% rule, if 30% of the assessed value is expended then fire protection must be installed.

xi. Enclosure of Stairways - Open egress stairways are prohibited. There shall be no minimum fire resistance rating required for an existing enclosure of a stairway.

xii. Assembly Use Groups - Any alteration within an assembly use group shall comply with the code for new construction. This applies to the cafeteria, auditorium and gymnasium.

xiii. Accessibility for Persons with Disabilities - Accessibility for persons with disabilities shall be provided in accordance with the regulations of the Architectural Access Board.

xiv. Energy Provisions for Existing Buildings - Alterations to components affecting energy conservation performance shall comply with 2009 IECC - International Energy Conservation Code.

xv. Evaluation of Existing Building - The structural engineer shall make a structural evaluation of the existing building to determine the adequacy of all structural systems that are affected by alteration or damage to be repaired.

xvi. Existing Lateral Load Capacity (Refer to Structural Existing Conditions Report for further information) - Alterations shall not be made to elements or systems contributing to the lateral load resistance unless the altered lateral load resisting system conforms to 2009 IEBC.

xvii. Earthquake Loads (Refer to Structural Existing Conditions Report for further information) - For no change in use groups, but alterations exceeding 50% of the assessed valuation of the building, the project is defined as Seismic Hazard Category 2.

xviii. Earthquake resistance shall comply with the requirements of 2009 IEBC.

xix. The provisions of NFPA govern Fire Resistant Materials - Fire resistant construction systems.

Interior Finishes 780 CMR 8

Interior trim and finishes altered as a part of a renovation shall conform to the requirements of the NFPA. Flame spread of Interior Finishes for the E, A-2, and A-3 Use Groups, shall conform to current requirements. Existing finishes are code compliant.

The State Fire Marshall introduced regulations in 2003 restricting display of paper in egress areas. The provisions are as follows:

i. Paper display in classrooms shall not exceed 20% of the wall area. Measurement of wall area shall include windows and doors.

ii. Paper display in corridors shall not exceed 10% of the wall area and shall not be placed within 5 feet of an egress door. It shall be applied directly to the wall and shall not be grouped in areas bigger than 6 feet by 12 feet.

Below are listed deficiencies noted during evaluation of the existing buildings.

1. LANDSCAPE
- The larger play structure does not appear to meet fall zone height requirements.

2. CIVIL
- Current drainage system is not in compliance with the current Department of Environmental Protection (DEP) Stormwater Regulations (2008).

3. ARCHITECTURE
- Existing envelope has a low R-value of approximately 8.65. Current energy code requires approx. R-22.
- Existing roof has a low R-value of approximately 11. Current energy code requires at least R-25.
- Egress stair at south end of 1953 building does not discharge to grade.
- Annex building is not protected with a sprinkler system.
- Door width of 2'-4" at individual toilet rooms is insufficient. Clear width at all doors should be minimum 2'-8".
- ADA lift encroaches on the required clear width of stair; minimum of 3'-8" is required.
- Windows near grade at addition are not tempered and are prone to breaking. All glazing within 18" of grade or floor level is required to be tempered, as is fixed glazing within 24" of a doorway with bottom edge less than 60" above floor level.
- Plumbing fixture counts are insufficient to support occupant load.

4. STRUCTURAL
- At the time these buildings were constructed, un-reinforced masonry was allowed for load bearing elements, and lateral load analysis for wind was commonly ignored for low rise buildings, assuming that masonry walls and partitions would provide sufficient resistance. Seismic provisions were not a requirement. Existing wall anchorage, and transitions between the concrete and wood floors at the Multipurpose Room (Gym) are not adequate by today's standards.
- The most significant structural item is likely to be alterations to the lateral load-resisting system. We assume that the work area will exceed 50% of the building area. That will require existing unreinforced masonry walls to be tied into the floor and roof diaphragms.
- Lateral bracing is required at tops of interior partitions.
- Anchoring exterior walls to roof and floor diaphragms is necessary.

5. HVAC
- Dishwasher must be vented separately from the main kitchen exhaust hood.
- Make-up air for the kitchen hood is provided through openings between the cafeteria and kitchen wall as there is no direct supply of make-up air or ventilation for the kitchen. This lack of ventilation within the kitchen is not code-compliant.
- The stage area was not provided with any supply or exhaust ventilation air, leaving this area non-code compliant.
- The music room and the teachers' workroom in original locker rooms were provided with convection heat however, they were not provided with any source of ventilation air and based on the size and population of the space would be considered non-code compliant.
- At all classroom unit ventilators, exterior wall louver providing outside ventilation air is undersized to meet the standard ASHRAE II control cycle.

6. ELECTRICAL

- Although there have been some upgrades to the lighting and emergency lighting, most of the equipment is not up to current industry standards, nor current energy efficiency or code requirements.
- Lighting levels do not appear to provide sufficient footcandles for egress paths.
- Additional exit signs will be required throughout the building.
- Each classroom should have a minimum of (2) duplex receptacles per wall and (2) double duplex receptacles at classroom computer workstations.
- A new fire alarm system will be required to meet the latest codes.

7. PLUMBING

- In terms of water conservation fixtures, their use is governed by the provisions of the Plumbing and Building Code. The existing plumbing fixtures do not meet current water conservation requirements.

8. FIRE PROTECTION

- Massachusetts General Law M.G.L. c.148, s.26G requires any existing commercial building which undergoes a major renovation or building addition which results in a gross floor area of greater than 7,500 square feet must be sprinklered throughout. Massachusetts code requires that any new school building greater than 12,000 square feet gross floor area must be sprinklered. Should the existing building undergo a major renovation the building will require upgrades to the existing sprinkler system to provide complete protection of all spaces, existing and new. The proposed scope of work is considered a major alteration; therefore, an automatic combined sprinkler/standpipe system is required for the building
- There is a 6” fire service which enters the main Mechanical Room. The service does not have a backflow prevention device.
- The service has a 6 inch OS&Y gate valve and an alarm check valve. The gate valve is not supervised by the fire alarm system.

F. CODE EVALUATION

Bournedale Elementary School

The existing facility as a whole is in compliance with the original code. This does not mean that it meets every standard of the current code. In accordance with the code, an existing building is presumed to have met the codes and regulations in effect at the same time of its construction and is allowed to continue in its use, provided it is maintained per the original code. Current building codes are applicable to any alteration, addition or change in use of the structure, in accordance with 780 CMR.

Current codes applicable to the project include the following:

Building: 780 CMR: Massachusetts State Building Code, 8th Edition (2009 International Building Code)
Fire Prevention: 527 CMR: Massachusetts Fire Prevention Regulations (2012 NFPA 1),
M.G.L. C148 §26G – Sprinkler Protection
Mechanical: 2009 International Mechanical Code
Electrical: 527 CMR 12.00: Massachusetts Electrical Code (2014 National Electrical Code)
Plumbing: 248 CMR: Massachusetts Plumbing Code
Energy Conservation: 2012 International Energy Conservation Code

The occupancy of the facility in non-separated mixed use with assembly and educational uses as follows:

Classrooms, School Offices	E - Educational
Cafeteria, Gymnasium, Media Center	A-3 – Accessory Assembly

CONSTRUCTION CLASSIFICATION

Based upon the definitions in the current code, the minimum classification of the building is as follows:

2009 building	IIB Noncombustible

A renovation project is governed by 2009 IEBC - International Existing Building Code. This chapter is “intended to maintain or increase public safety, health, and general welfare, without requiring full compliance with the code for new construction.”

i. Building renovation - For continuation of the same use groups the building shall comply with 2009 IEBC.

ii. New Building Systems - Any new building system or portion thereof shall conform to 2009 IEBC for new construction to the fullest extent practical.

iii. Alterations and Repairs - Alterations of repairs to existing buildings, which maintain or improve the performance of the building may be made with like material, unless required otherwise under 2009 IEBC - Structural Requirements for Existing Buildings.

iv. Number of Means of Egress - Egress for the existing facility is sufficient in accordance with the current building code.

v. Capacity of Exits - There is sufficient egress capacity to meet current codes at the doors throughout the facility.

vi. Length of Access Travel - Shall not exceed 200 feet, in building without a sprinkler system. All areas of the existing building are within 200 feet of an exit.

vii. Exit Signs and Lights - For notes on the existing system, refer to the Electrical Existing Conditions Report.

viii. Means of Egress Lighting - Refer to the Electrical Existing Conditions Report.

ix. Height and Area Limitations - Under 2009 IEBC the building is in conformance with applicable height and area limitations, so long as there is no change in use. Additions may be made to the structure.

x. Fire Protection Systems - Fire protection systems must be provided for existing buildings that are “substantially” altered or “substantially” renovated where required for the specific use group. 30% rule, if 30% of the assessed value is expended then fire protection must be installed.

xi. Enclosure of Stairways - Open egress stairways are prohibited. There shall be no minimum fire resistance rating required for an existing enclosure of a stairway.

xii. Assembly Use Groups - Any alteration within an assembly use group shall comply with the code for new construction. This applies to the cafeteria, auditorium and gymnasium.

xiii. Accessibility for Persons with Disabilities - Accessibility for persons with disabilities shall be provided in accordance with the regulations of the Architectural Access Board.

xiv. Energy Provisions for Existing Buildings - Alterations to components affecting energy Conservation performance shall comply with 2009 IECC - International Energy Conservation Code.

xv. Evaluation of Existing Building - The structural engineer shall make a structural evaluation of the existing building to determine the adequacy of all structural systems that are affected by alteration or damage to be repaired.

xvi. Existing Lateral Load Capacity (Refer to Structural Existing Conditions Report for further Information) - Alterations shall not be made to elements or systems contributing to the lateral load resistance unless the altered lateral load resisting system conforms to 2009 IEBC.

xvii. Earthquake Loads (Refer to Structural Existing Conditions Report for further information) - For no change in use groups, but alterations exceeding 50% of the assessed valuation of the building, the project is defined as Seismic Hazard Category 2.

xviii. Earthquake resistance shall comply with the requirements of 2009 IEBC.

xix. The provisions of NFPA govern Fire Resistant Materials - Fire resistant construction systems.

Interior Finishes 780 CMR 8

Interior trim and finishes altered as a part of a renovation shall conform to the requirements of the NFPA. Flame spread of Interior Finishes for the E and A-3 Use Groups shall conform to current requirements. Existing finishes are code compliant.

The State Fire Marshall introduced regulations in 2003 restricting display of paper in egress areas. The provisions are as follows:

i. Paper display in classrooms shall not exceed 20% of the wall area. Measurement of wall area shall include windows and doors.

ii. Paper display in corridors shall not exceed 10% of the wall area and shall not be placed within 5 feet of an egress door. It shall be applied directly to the wall and shall not be grouped in areas bigger than 6 feet by 12 feet

Display Areas in Corridor

Below are listed deficiencies noted during evaluation of the existing building.

6. ELECTRICAL

- The existing fire alarm system is in good condition, however there are system notification devices that are not compliant with current codes.

G. MAAB/ADA Evaluation

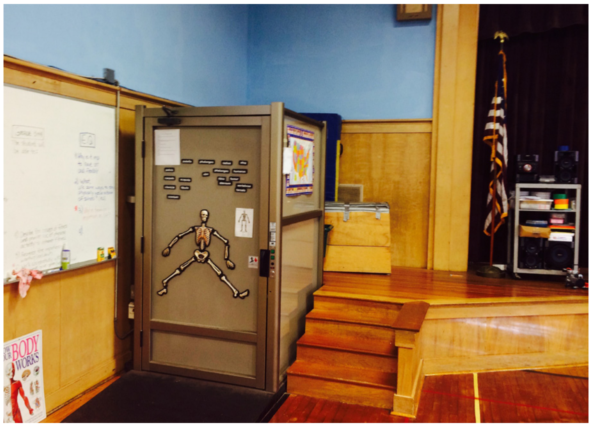
G. MAAB/ADA EVALUATION

Peebles Elementary School

The building should comply with the 2006 version of the Massachusetts Architectural Access Board (MAAB) regulations. Although there have been some upgrades such as installation of lifts, most of the building is not up to current accessibility code. The regulations require that any building undergoing a renovation where the costs exceed 30% of its assessed value must comply with the requirements of the MAAB.

Accessibility Code: 521 CMR: Massachusetts Architectural Access Board Regulations (2006)

Below are listed deficiencies noted during evaluation of the existing buildings.



Gymnasium Handicap Lift

1. LANDSCAPE

- Number of accessible parking spaces is insufficient: two provided; three required. The parking spaces, signage, access aisle, and accessible route to the accessible building entrance all do not appear to comply with current MAAB standards.
- None of the existing doors leading into the building appear to be MAAB compliant.
- Crosswalk at Trowbridge Road does not include a curb cut ramp, and does not comply with current MAAB Standards. No accessible route from Trowbridge Rd exists.
- The accessible route to the tot lot does not meet current MAAB universal accessibility standards.
- The tot lot does not appear to comply with current MAAB universal accessibility standards.

3. ARCHITECTURAL

- Main school entry is not accessible due to six-inch step into entry vestibule. Out-swinging doors must have flat surface beyond swing of door. No wheelchair access to main entrance is provided.
- Finish hardware consists of a mix of knobs and levers, hinges, panic devices, and locksets. The current door hardware knobs do not meet handicap accessibility code regulations and need to be replaced with levers. Doors at classroom storage do not include accessible door pulls.
- Guardrails, railing heights, mix of materials, handrail profile vary throughout the project and are non-compliant. Requirements for height, handrail profile are as follows:
- Minimum guardrail height should be 42"; handrail height should be 34" above stair nosing.
- Handrail at stairs is not continuous and extensions are not provided.
- Handrail profile is 2" round and should not exceed 1½".
- Required distance of 1½" clear between handrail and wall or guardrail is not continuously maintained.
- Second means of egress from gymnasium is metal fire escape with non-compliant guardrail. Vertical spacing of pickets exceeds permissible dimension.
- Railing at exterior areaway is too low.
- Drinking fountains are not accessible; fixtures protrude into knee space.
- Toilet partitions do not include accessible stalls.
- Individual toilets between classrooms do not include adequate clearances for accessibility.
- Classroom sinks do not provide accessible knee space.
- Fixture controls are not accessible.
- From most remote point of upper level, a student in a wheelchair must travel 400 feet to reach the cafeteria and must utilize two chair lifts and one vertical lift.
- Required push/pull clearances at doorways are not provided.

6. ELECTRICAL

- The fire alarm system is addressable, but does not meet ADA requirements and is lacking coverage in some areas.
- Existing strobes do not meet ADA for intensity; classrooms and toilet rooms do not have ADA horn/strobe units.

7. PLUMBING

- The plumbing fixtures are in fair condition. The fixtures do not meet current accessibility codes. In general, the fixtures appear to have served their useful life. Current Access Code requires accessible fixtures wherever plumbing is provided.
- Lavatories in the student gang toilet rooms are molded stone wash fountains, with foot operation, not permitted under current accessibility code.

9. FURNITURE & EQUIPMENT

- Classroom sinks do not provide accessible knee space.

G. MAAB/ADA EVALUATION

Bournedale Elementary School

The building should comply with the 2006 version of the Massachusetts Architectural Access Board (MAAB) regulations. Designed under the 1996 version of MAAB regulations, for the most part, the building is in compliance with the current accessibility code. The regulations require that any building undergoing a renovation where the costs exceed 30% of its assessed value must comply with the requirements of MAAB.

Accessibility Code: 521 CMR: Massachusetts Architectural Access Board Regulations (2006)

Below are listed deficiencies noted during evaluation of the existing building.

1. LANDSCAPE

- The flagpole is surrounded by lawn and does not appear to have an MAAB compliant accessible route.

6. ELECTRICAL

- Existing fire alarm strobes do not meet ADA for intensity.

H. Proposed Soils Exploration

H. PROPOSED SOILS EXPLORATION AND GEOTECHNICAL EVALUATIONS

Geotechnical Services Inc. performed geotechnical engineering services associated with the Peebles and Bournedale Elementary School sites in Bourne.

PURPOSE:
The purpose of the work is provide information on the subsurface soil conditions to determine bearing capacity, foundation design, and other subsurface related information to aid in the future design of a potential addition or new construction option on these sites.

PEEBLES ELEMENTARY SCHOOL SITE

TASKS PERFORMED:
- A total of four test borings were drilled on site and identified as borings B-1 to B-4. The borings were drilled to depths ranging from approximately 18.5-ft to 22-ft below the existing grade.
- Standard Penetration Tests (SPTs) were performed and split-spoon soil samples were retrieved generally at the ground surface and subsequently at 5-ft intervals.
- The finalized logs for the test borings were compiled.

FINDINGS:
- Topsoil was encountered in all the test borings except boring B-4. The thickness of the topsoil encountered varies from about 3-in. to 8-in.
- The naturally deposited Sand Deposits were encountered in all the borings. The Sand Deposits generally consist of medium dense to dense, brown, fine to medium SAND with varying amounts of gravel, coarse sand and silt.
- Very large boulders were observed in the vicinity of boring B-3 and along the hillside in an area just south of the paved area behind the existing school.
- Groundwater levels were measured within each borehole which varied from about 7 to 8-ft below grade at the time the borings were completed.

CONCLUSION / RECOMMENDATIONS:
1. It is anticipated that the foundations for any new construction will bear upon the Sand Deposits. The naturally deposited Sand Deposits are suitable foundation bearing material (referred to herein as the “bearing strata”). Boulders and bedrock may be encountered and may require rock excavation via drilling and blasting.
2. Building walls, columns and other structural elements be supported by reinforced concrete spread or strip footings bearing directly on the bearing strata.
3. Bottoms of exterior footings bearing on compacted Structural Fill, Crushed Stone or on the undisturbed (prepared) bearing strata should be positioned at least 4-ft below the lowest adjacent ground (finished grade) exposed to freezing temperatures.
4. A permanent foundation perimeter drainage should be provided to collect and drain any infiltrating surface or seepage water which might otherwise become trapped against below-grade walls and seep into the building or exert hydro-static pressures on the walls.
5. Other construction related recommendations, i.e., excavation, compacted, drainage, protection, structural and common fill material, etc. are standard measures the design team will consider in the design of the project.

BOURNEDALE ELEMENTARY SCHOOL SITE

TASKS PERFORMED:
- A total of five test borings were drilled on site identified as borings B-1 to B-5. The borings were drilled to depths ranging from approximately 7-ft (Boring B-3) to 22-ft (Boring B-4) below the existing grade.
- Standard Penetration Tests (SPTs) were performed and split-spoon soil samples were retrieved

generally at the ground surface and subsequently at 5-ft intervals.
- The finalized logs for the test borings were compiled.

FINDINGS:
- Topsoil was encountered in all the test borings. The thickness of the topsoil encountered varies from about 7-in. to 8-in.
- The naturally deposited Sand Deposits were encountered in all the borings. The Sand Deposits generally consist of medium dense to very dense, brown, fine to medium SAND with varying amounts of gravel, coarse sand and silt.
- Refusal was encountered in all the test boring expect boring B-4 at depths ranging from 7-ft (boring B-3) to 17-ft (boring B-5). The refusal is likely due to cobbles, boulders or bedrock.

Groundwater levels were measured within each borehole varied from about 8 to 12-ft below grade at the time the borings were completed.

CONCLUSION:
1. It is anticipated that the foundations for any new construction will bear upon the Sand Deposits. The naturally deposited Sand Deposits are suitable foundation bearing material (referred to herein as the “bearing strata”). Boulders and bedrock may be encountered and may require rock excavation via drilling and blasting.
2. Building walls, columns and other structural elements be supported by reinforced concrete spread or strip footings bearing directly on the bearing strata.
3. Bottoms of exterior footings bearing on compacted Structural Fill, Crushed Stone or on the undisturbed (prepared) bearing strata should be positioned at least 4-ft below the lowest adjacent ground (finished grade) exposed to freezing temperatures.
4. A permanent foundation perimeter drainage should be provided to collect and drain any infiltrating surface or seepage water which might otherwise become trapped against below-grade walls and seep into the building or exert hydro-static pressures on the walls.
5. Other construction related recommendations, i.e., excavation, compacted, drainage, protection, structural and common fill material, etc. are standard measures the design team will consider in the design of the project.

The full geotechnical report follows.

GEOTECHNICAL REPORT

PEEBLES ELEMENTARY SCHOOL
70 TROWBRIDGE ROAD
BUZZARDS BAY, MASSACHUSETTS

November 18, 2015
(Revised December 17, 2015)

GSI Project No. 215256

Prepared for:

Mr. Kent Kovacs
Flansburgh Architects, Inc.
77 North Washington Street
Boston, Massachusetts 02114-1910

Prepared by:

Geotechnical Services, Inc.

55 North Stark Highway

Weare, NH 03281

Geotechnical Services Inc.

Geotechnical Engineering ◣ Environmental Studies ◣ Materials Testing ◣ Construction Monitoring

November 18, 2015
(Revised December 17, 2015)

Mr. Kent Kovacs
Flansburgh Architects, Inc.
77 North Washington Street
Boston, Massachusetts 02114-1910

Advanced copy via email: kkovacs@flansburgh.com

Re: Geotechnical Investigation Report
Peebles Elementary School
Buzzards Bay, MA
GSI Project No. 215256

Dear Mr. Kovacs:

Geotechnical Services, Inc. (GSI) is pleased to submit this geotechnical report on the above referenced project. The report includes the subsurface data obtained through an exploration program, a geotechnical engineering evaluation of the subsurface data and the observed surface geology in relation to foundation design for the proposed development. The work was undertaken in accordance with the scope of work stated in our proposal dated September 29, 2015 and your subsequent authorization. The content of this report is subject to the attached **Limitations** (Appendix A).

PROJECT UNDERSTANDING

The project site is located at the Peebles Elementary School at 70 Trowbridge Road in Buzzards Bay, MA (See Figure 1, Project Locus. The geotechnical evaluation presented in this report is part of a feasibility study to either renovate of replace the existing school building. Several test borings were made around the existing building to investigation the subsurface soil and groundwater conditions as part of this study.

SUBSURFACE INVESTIGATION

Four test borings, identified as borings B-1 to B-4, were drilled at the site on November 5, 2015 by New England Boring Contractors located in Brockton, Massachusetts under full-time supervision by a GSI engineer. The borings were drilled using a truck-mounted drill rig (Diedrich D-50) 4-in. I.D. flush-mounted casing with a rollerbit and water to advance the boreholes. The borings were drilled to depths ranging from approximately 18.5-ft to 22-ft below the existing grade. The locations of the test borings are shown on Figure 2, Exploration Location Plan.

Standard Penetration Tests (SPTs) were performed and split-spoon soil samples were retrieved (ASTM D 1586) generally at the ground surface and subsequently at 5-ft intervals. Each soil sample, upon recovery, was observed by the GSI engineer and classified in accordance with the Burmister Classification system. Representative portions of each sample retrieved were saved in glass jars with identification, and delivered to the GSI Soils Laboratory. The samples were re-examined and field classifications were reviewed. The finalized logs for the test borings are included in Appendix B. The soil samples will be stored at the GSI laboratory during the course of the project design-development, and will be shipped to your designated address or discarded upon your notification.

SUBSURFACE CONDITIONS

The subsurface conditions encountered in the investigation indicate that the site is underlain by the following soil units/deposits, described in order of increasing depth:

Topsoil (Surface Deposits): Topsoil was encountered in all the test borings except boring B-4. The thickness of the topsoil encountered varies from about 3-in. to 8-in.

Sand Deposits: The naturally deposited Sand Deposits were encountered in all the borings. The Sand Deposits generally consist of medium dense to dense, brown, **fine to medium SAND** with varying amounts of gravel, coarse sand and silt. The drill action during borehole advancement indicated nested **cobbles** within the Sand Deposit Layer. In addition, very **large boulders** were observed in the vicinity of boring B-3 and along the hillside in an area just south of the paved area behind the existing school. The Sand Deposits were encountered to the termination depths of the test borings ranging from 18.5 to 22-ft below the existing grade.

Groundwater Conditions

Groundwater levels were measured within each borehole which varied from about 7 to 8-ft below grade at the time the borings were completed.

PRELIMINARY GEOTECHNICAL DESIGN RECOMMENDATIONS

General

As a general guideline, foundation design and construction must conform to the applicable provisions of the Massachusetts Building Code, 8th Edition (Building Code). At this early phase in the design, it is assumed that no basements are planned and that the lowest floor elevation for any new structures will be slab-on-grade.

Foundations

It is anticipated that the foundations for any new construction will bear upon the Sand Deposits. Pavement, Topsoil, and any fill soils that may be encountered during construction are unsuitable for building foundation support and should be excavated and replaced, if necessary. The naturally deposited Sand Deposits are suitable foundation bearing material (referred to herein as the "**bearing strata**").

We recommend that building walls, columns and other structural elements be supported by reinforced concrete spread or strip footings bearing directly on the bearing strata or compacted Structural Fill or Crushed Stone (wrapped in a geotextile filter fabric, such as, Mirafi 160N, or equal) placed above the natural bearing strata after removal of the unsuitable materials.

Specific building foundation design recommendations are provided below:

- Footings with a least lateral dimension (width) of 3-ft may be designed using a design bearing pressures of 4.0 ksf.
- For footings with a lateral dimension less than 3-ft, the maximum allowable bearing pressure should be reduced to a value equal to one-third of the maximum allowable bearing pressure given above multiplied by the least lateral dimension of the footing, measured in feet. For example, a 1.5-ft wide footing should be designed using a reduced allowable bearing pressure equal to 1.5-ft x 1/3 x 4 ksf = 2.0-ksf.
- Wall (Strip) Footings should have a least lateral dimension of 18-in.
- Bottoms of exterior footings bearing on compacted Structural Fill, Crushed Stone or on the undisturbed (prepared) bearing strata should be positioned at least 4-ft below the lowest adjacent ground (finished grade) exposed to freezing temperatures. Footings at heated interior locations should bear at least 18-in. below the adjacent slab surface.

Ground Floor Slab

We recommend that the ground floor be constructed as an earth-supported slab-on-grade, after removal of any Pavement, Topsoil, or any other unsuitable material, and backfilling with Compacted Structural Fill and Slab Base Course. A 6-in. minimum thickness of Compacted Slab Base Course should be provided directly beneath the slab. For slab design, GSI recommends a modulus of subgrade reaction equal to 175 pounds per cubic feet (pci).

Foundation Settlements

At the recommended allowable bearing pressures, we anticipate that the settlement of individual footings under the anticipated design loading conditions and constructed as recommended herein, will not exceed about 3/4-in., with differential settlements between adjacent footings not exceeding about 3/4-in. Most of the settlement will likely occur during construction as structure dead loads are placed on the foundations.

Seismic Design Input

Seismic design parameters for the project site have been obtained from Commonwealth of Massachusetts, State Building Code, Eighth Edition, 2010. Ground motion parameters at the project site (i.e., the design earthquake for the subject facility) are represented by S_s, 0.2 sec. (short period) Spectral Acceleration, and S_1, 1.0-second period Spectral Acceleration. These parameters have been obtained as:

$S_s = 0.210$ g

$S_1 = 0.056$ g

Site Class for the project site has been established as "Stiff Soil Profile" with the designation **Site Class D**. Site Coefficient for the Short Period has been established as $F_a = 1.6$, and Site Coefficient for the 1-sec Period has been established as $F_v = 2.4$. Parameters F_a, and F_v relate to the potential amplification of the earthquake induced shear stress waves traveling upward through the soil-rock profile underlying the project site. The soils within the project site are not considered liquefaction susceptible.

Lateral Earth Pressures

The following design criteria for yielding and non-yielding walls are recommended based on the assumption that adequate drainage shall be installed adjacent to and along the below grade structures and behind retaining walls, to eliminate any hydrostatic forces acting on the walls:

	Yielding	Non-yielding
Static Lateral Earth Pressure: (Native soil or lightly compacted structural fill as an equivalent fluid unit weight)	40 pcf (drained)	60 pcf
Traffic Surcharge: (Distributed uniformly over the height of the wall)	80 psf	120 psf

Seismic Lateral Earth Pressures

Per Section 1610.2 of the Building Code, exterior foundation walls and retaining walls shall be designed to resist an earthquake force, F_w, for horizontal backfill surface equal to:

$$F_w = 0.100(S_s)(F_a)(\gamma_t)(H)^2$$

where: S_s is the 0.2 sec. (short period) Spectral Acceleration,

F_a is the site coefficient for the Short Period,

γ_t is the total unit weight of the soil (backfill), and

H is the height of the wall measured as the difference in elevation of the finished ground surface or floor in front of and behind the wall.

For design, a soil unit weight (γ_t) of 125 pounds per cubic feet (pcf) may be used.

Foundation and Floor Drainage

GSI recommends that permanent foundation perimeter drainage be provided to collect and drain any infiltrating surface or seepage water which might otherwise become trapped against below-grade walls and seep into the building or exert hydro-static pressures on the walls. We recommend that drainage be provided at all below-grade foundation walls where the adjacent floor slab is **2-ft or deeper** below adjacent exterior finished grade. Such systems should be provided at exterior walls and walls between differing floor levels beneath the building.

The perimeter foundation drainage should consist of a free-draining material against the wall and a drainage "pipe" at the wall base to collect and transmit the water. For installation convenience and cost-efficiency, we recommend that a prefabricated drainage board product, such as Amerdrain 200 by the American Wick Drain Company (AWDC), or equivalent, be applied to the exterior walls from the level 2-ft below ground surface down to the drainage "pipe". The drainage board should connect at its base to a "high-profile sheet drain section" (such as Amerdrain Total-Drain System by AWDC) or to a 4-in. diameter continuous perforated PVC or corrugated HDPE drainpipe.

If a drain pipe is used for the perimeter drainage, it should be completely surrounded by a 6-in. (min.) thick zone of drainage fill (1/2-in to 3/4-in. sized crushed stone) which in turn is completely surrounded by a non-woven filter fabric to avoid potential clogging due to migration of fine soils into the drainage system. The crushed stone should be placed in contact with the drainage board against the wall in accordance with manufacturer's details. Drainpipe inverts should be between the bottom of footing and 6-in. beneath the elevation of the adjacent building floor. Pipes should be pitched nominally toward the system discharge points (slope 0.25 to 0.10 percent). Perforations in the drainpipe should be positioned downward.

Below-grade walls and floors should be dampproofed and insulated in according with the Building Code. Elevator pits and other small depressions below the lowest floors should be water proofed and designed to resist hydrostatic pressures corresponding to the full vertical depth of the structural depression below the floor slab. Vapor barriers should be installed beneath the floor slab per the Code. Use of vapor barriers should be coordinated with the slab design and construction.

To limit the water infiltration around the structures, it is recommended that the upper twelve inches of backfill within approximately 10-ft of the building in unpaved areas should consist of silty topsoil or other soils having relatively low permeability. In general, the ground surface immediately around the buildings should be sloped downward and away from the structures to direct surface runoff.

CONSTRUCTION CONSIDERATIONS

General

In general, all excavation work, dewatering, and other construction activities should conform to the requirements of OSHA and all other applicable regulations. The site soils would typically be classified as Type C based on OSHA 29 CFR 1926.

Excavation

Building foundation and the lowest floor slab construction will involve clearing and grubbing, stripping off the topsoil, subsoil, pavements, fill soils, as well as naturally deposited Alluvial soils, and then backfilling and filling to design footing and slab bearing levels. All unsuitable materials above the undisturbed bearing strata and floor slab must be removed within the zone of influence of new footings. The zone of influence for the footings is defined as the zone beneath the footing bottoms down to the top of the natural, undisturbed bearing strata, and within the zone beneath imaginary lines extending from points 1-ft laterally beyond the footing outer bottom edges and down on a 1H:1V slope to the top of undisturbed glacial deposit or bedrock.

We anticipate that the excavations in soil for the building construction and site grading can be accomplished with conventional earth-moving equipment.

Temporary cut soil slopes should, typically, be stable if constructed no steeper than about 1.5H:1V. Some sloughing and raveling should be anticipated in temporary earth slopes.

Construction Dewatering

Based on the available subsurface data it is anticipated that during the general site work, no significant dewatering measures will be necessary to conduct the construction "in-the-dry." Groundwater and surface water must be controlled as necessary to enable all final excavation and foundation construction to be conducted in-the-dry.

The Contractor should take measures to prevent storm water to enter into excavated areas, and be prepared to remove ponded surface water by means of localized sumps and pumps. The Contractor should select whichever dewatering procedures may be effective to maintain dry, stable excavation bottoms. Dewatering, including its discharge, should be performed in accordance with all local, state, and federal regulations.

Existing Utilities and Foundations of Former Structures

Unknown and/or undocumented subsurface features, structures, and utilities may be present within the project site. Foundations and utilities from buildings, and associated construction debris should be anticipated during excavation work, especially within the existing "Big Room" area, and will need to be carefully removed to limit disturbance to underlying natural soil deposits. Remnants of prior structures should be removed within the zone of influence beneath new foundations.

Preparation and Protection of Bearing Surfaces

Final excavation should be conducted in a manner that minimizes disturbance to the natural soils when excavating for footing or slab bearing surfaces. All final excavation and footing construction should be conducted in-the-dry. We recommend that the exposed subgrade soils be observed in the field by a geotechnical engineer to confirm the projected foundation bearing conditions. It may be necessary to over-excavate and replace weak, disturbed or otherwise unacceptable foundation bearing materials.

Following excavation to slab or footing bearing grades, exposed naturally deposited soil surfaces should be re-compacted (proofrolled) prior to placing Compacted Structural Fill or constructing foundations, with a minimum of two passes with a heavy vibratory roller or other heavy vibratory compaction equipment.

If subgrade protection difficulties are encountered due to surface or groundwater, various methods can be utilized:

- Leave subgrades high until immediately before forming and concreting to minimize the time the subgrade is exposed.
- Place a lean concrete mud mat on the exposed soil surface at footing locations after the subgrade has been prepared.
- Over excavate footings by 6 to 8 in. using a smooth edged bucket, place non-woven filter fabric on the exposed stable soil subgrade, and backfill to the design bearing elevation using crushed stone. The exposed top of the crushed stone beneath the constructed footing should also be covered with non-woven filter fabric to prevent migration of fines from the backfill placed above.

Each such encounter is probably best resolved individually in the field upon observation of the subgrade conditions.

In the event that a boulder becomes partially exposed at subgrade level or at footing bearing level, one of the following options should be utilized:

- Remove the boulder, and fill the void with crushed stone, compacted structural fill or lean concrete, or
- Remove a portion of the boulder sufficient to provide placement of 6 in. of crushed stone (with filter fabric) beneath the slab or footing over the boulder. Each such encounter is probably best resolved individually in the field.

Protection From Freezing

Soil bearing surfaces below completed foundations and slabs must be protected against freezing, before and after foundation construction. If construction is performed during freezing weather, footings bearing on the Glacial deposits or compacted Structural Fill should be covered to a sufficient depth (up to 4-ft) as soon as possible after they are constructed. Alternatively, insulating blankets, lowering of footings, providing heaters, or other means may be used for protection against freezing.

Compaction

Minimum compaction requirements refer to percentages of the maximum dry density determined in accordance with ASTM D1557. Recommended compaction requirements are as follows:

Location	Minimum Compaction Requirements
Beneath and around footings, beneath slabs	95 %
Parking, roadways and sidewalks	92 % up to 3 ft below finished grade 95 % in the upper 3 ft
Landscaped areas	90 % nominal compaction

Filling and Backfilling

Filling and backfilling will be required within the proposed building limits to reach footing and slab bearing levels. We recommend that Compacted Structural Fill or Slab Base Coarse be used as fill and backfill beneath footings and slabs to the limits described below. A minimum of 6-in. of Compacted Slab Base Coarse, or 12-in. of Crushed Stone for the planned basement, should be provided directly beneath the floor slabs.

Where Compacted Structural Fill is required beneath foundations, it should be placed beneath the footings and within the zone beneath imaginary lines extending from points 1-ft laterally beyond the footing outer bottom edge and down on a 1H:1V slope, down to the top of natural bearing strata (zone of influence).

Except for zones requiring special backfill such as directly beneath pavements or exterior slabs, the exterior of foundation walls may be backfilled with Common Fill.

Placement of compacted soil fills should not be conducted when air temperatures are low enough (approximately 30 degrees F, or below) to cause freezing of the moisture in the fill during or before placement. Fill materials should not be placed on snow, ice or uncompacted frozen soil. Compacted fill should not be placed on frozen soil. No fill should be allowed to freeze prior to compaction. At the end of each day's operations, the last lift of fill, after compaction, should be rolled by a smooth-wheeled roller to eliminate ridges of uncompacted soil.

Structural Fill

Structural Fill beneath footings and building slabs should consist of bank-run sand and gravel, free of organic material, snow, ice, or other unsuitable materials and should be well-graded within the following limits:

Sieve Size	Percent Finer by Weight
3 in.	100
No. 4	30 – 80
No. 40	10 – 50
No. 200	0 – 10

Other materials could be acceptable for compacted Structural Fill, and should be evaluated by the Geotechnical Engineer on a case-by-case basis if proposed by the Contractor.

Structural Fill should be placed in lift thicknesses not exceeding 12 in. loose measure. In confined areas, hand-guided equipment such as a vibratory plate compactor should be used and the loose lift thickness should not exceed 6 in.

A minimum of four systematic passes of the compaction equipment should be used to compact each lift.

Common Fill

Common fill should consist of mineral sandy soil, free from organic matter, plastic, metal, wood, ice, snow or other deleterious material and should have the characteristic that it can be readily placed and compacted. Common fill imported to the site should have a maximum of 80 percent passing the No. 40 sieve and a maximum of 30 percent finer than the No. 200 sieve. The largest particle size for common fill should not exceed 2/3 of the lift thickness.

Silty common fill soils may require moisture control during placement and compaction. Common Fill should be placed and compacted in the manner described in "Filling and Backfilling."

Crushed Stone

Crushed Stone should consist of durable crushed rock or crushed gravel stone obtained by breaking and crushing rock, or boulders, and it is free from a detrimental quantity of thin, flat, elongated or other objectionable pieces.

The ½-inch crushed stone should have the following gradation:

Sieve Size	Percent Finer by Weight
5/8 inch	100
½ inch	85-100
3/8 inch	15-45
No. 4	0-15
No. 8	0-5

Slab Base Course

Slab Base Course beneath building slabs should consist of bank-run sand and gravel, free of organic material, snow, ice, or other unsuitable materials and should be well-graded within the following limits:

Sieve Size	Percent Finer by Weight
2 in.	100
No. 4	40 – 70
No. 40	25 – 45
No. 200	0-10

Other materials could be acceptable for compacted Slab Base Course, and should be evaluated by the Geotechnical Engineer on a case-by-case basis if proposed by the Contractor.

Slab Base Course should be placed in lift thicknesses not exceeding 8-in. loose measure. In confined areas, hand-guided equipment such as a vibratory plate compactor should be used and the loose lift thickness should not exceed 6 in.

A minimum of four systematic passes of the compaction equipment should be used to compact each lift.

PLAN REVIEW

It is recommended that GSI be provided the opportunity to review the final plans in order to confirm that the recommendations made in this report were interpreted and implemented as intended.

CLOSURE

GSI appreciates the opportunity for participating in this early phase of the project, and looks forward to our continuing association during its subsequent phases towards its successful completion. In the mean time, please do not hesitate to contact us, if you have any questions on the content of this report.

Very truly yours,

GEOTECHNICAL SERVICES, INC.

Glen V. Zoladz, P.E.
Project Engineer

Harry K. Wetherbee, P.E.
Principal Engineer

Figure 1	Project Locus
Figure 2	Exploration Location Plan
Appendix A	Limitations
Appendix B	Test Boring Logs

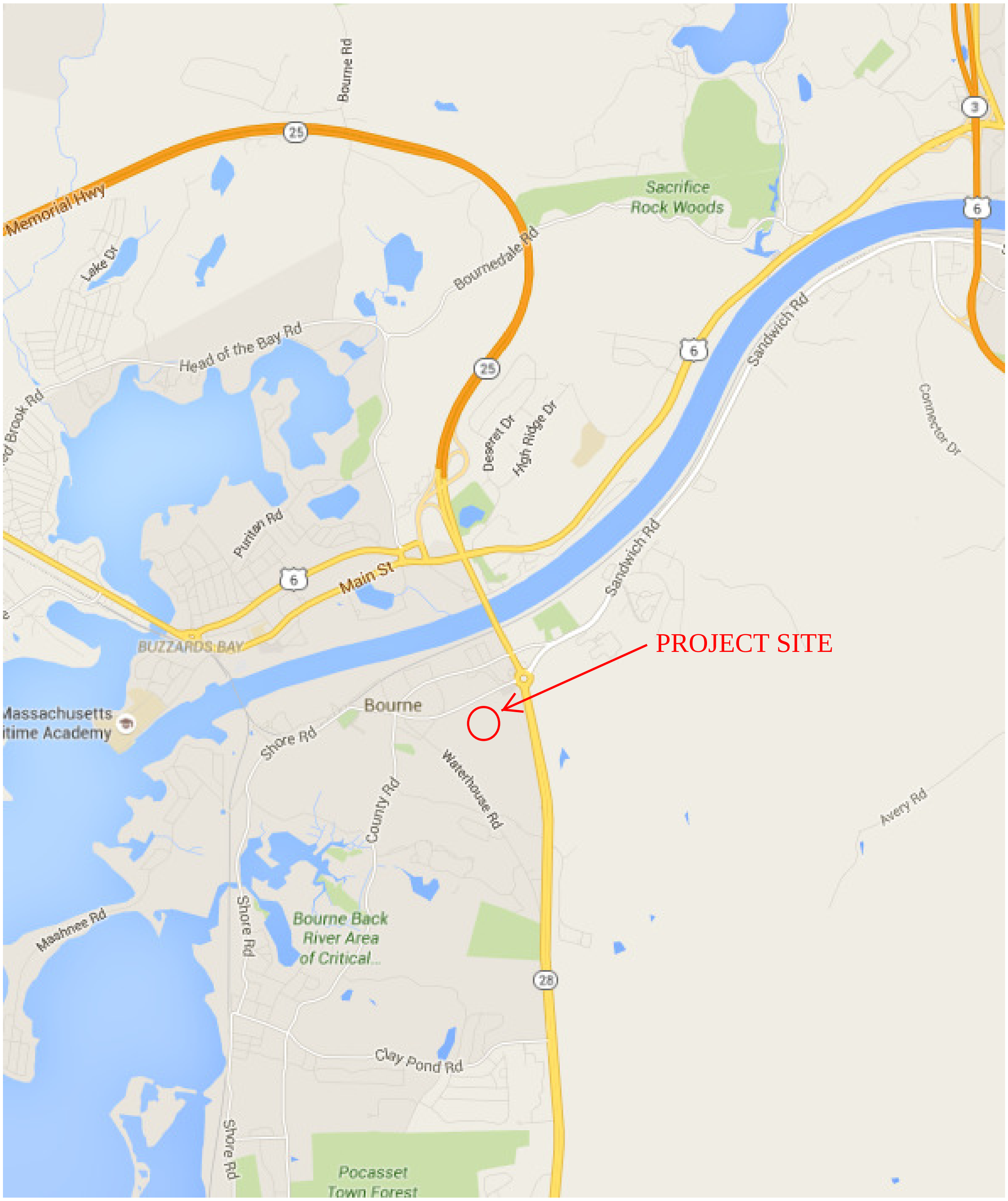
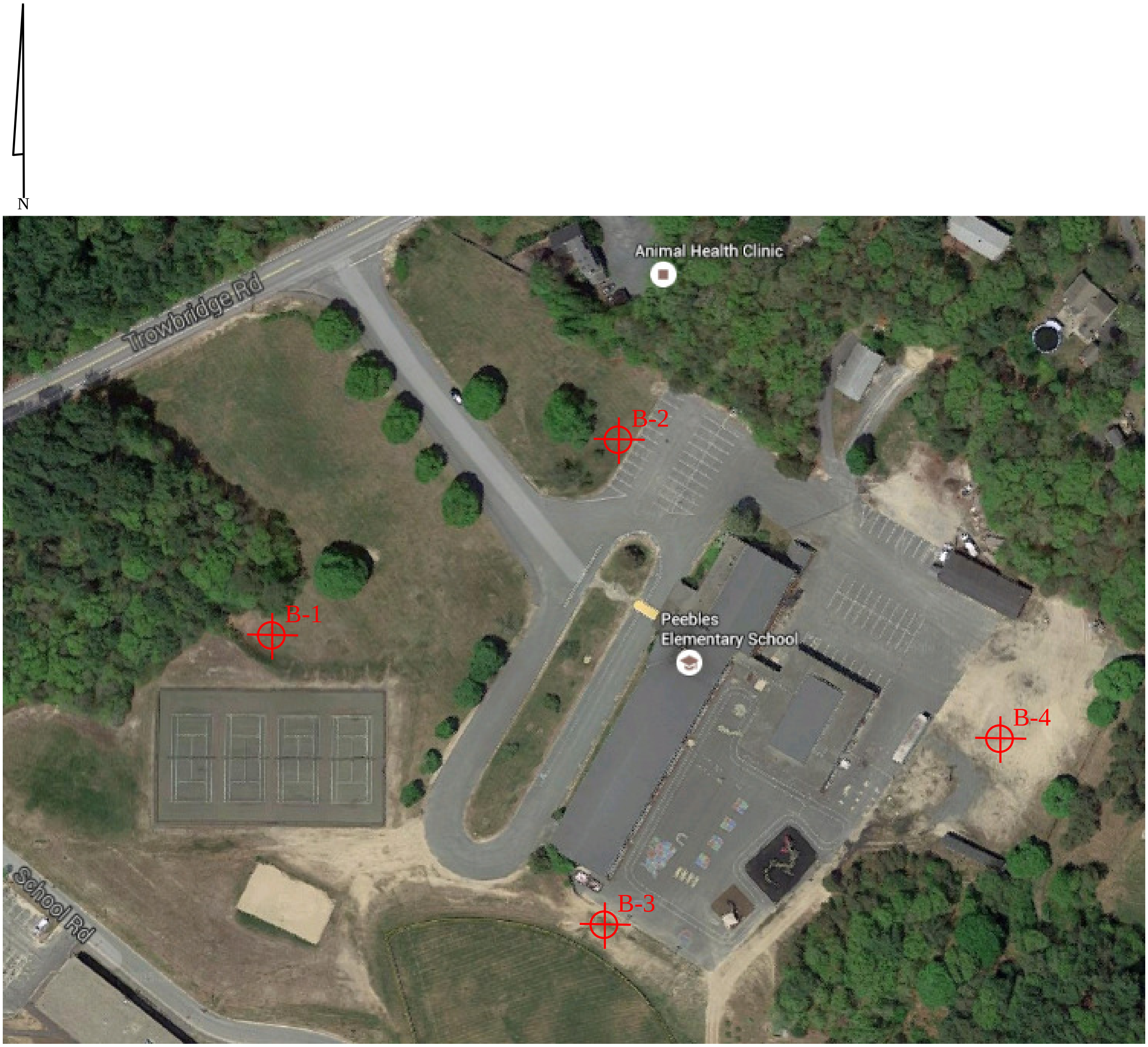


FIGURE 1–PROJECT LOCUS

PEEBLES ELEMENTARY SCHOOL
BUZZARDS BAY, MA
GSI PROJECT NO. 215256



NOT TO SCALE

LEGEND:

B-1 TEST BORING I.D. AND APPROXIMATE LOCATION

FIGURE 2–EXPLORATION LOCATION PLAN

PEEBLES ELEMENTARY SCHOOL
BUZZARDS BAY, MA
GSI PROJECT NO. 215256

APPENDIX A

LIMITATIONS

LIMITATIONS

Explorations

1. The analyses, recommendations and designs submitted in this report are based in part upon the data obtained from preliminary subsurface explorations. The nature and extent of variations between these explorations may not become evident until construction. If variations then appear evident, it will be necessary to re-evaluate the recommendations of this report.

2. The generalized soil profile described in the text is intended to convey trends in subsurface conditions. The boundaries between strata are approximate and idealized and have been developed by interpretation of widely spaced explorations and samples; actual soil transitions are probably more gradual. For specific information, refer to the individual test pit and/or boring logs.

3. Water level readings have been made in the test pits and/or test borings under conditions stated on the logs. These data have been reviewed and interpretations have been made in the text of this report. However, it must be noted that fluctuations in the level of the groundwater may occur due to variations in rainfall, temperature, and other factors differing from the time the measurements were made.

Review

4. It is recommended that this firm be given the opportunity to review final design drawings and specifications to evaluate the appropriate implementation of the recommendations provided herein.

5. In the event that any changes in the nature, design, or location of the proposed areas are planned, the conclusions and recommendations contained in this report shall not be considered valid unless the changes are reviewed and conclusions of the report modified or verified in writing by Geotechnical Services, Inc.

Construction

6. It is recommended that this firm be retained to provide geotechnical engineering services during the earthwork phases of the work. This is to observe compliance with the design concepts, specifications, and recommendations and to allow design changes in the event that subsurface conditions differ from those anticipated prior to the start of construction.

Use of Report

7. This report has been prepared for the exclusive use of Flansburgh Architects, Inc. in accordance with generally accepted soil and foundation engineering practices. No other warranty, expressed or implied, is made.

8. This report has been prepared for this project by Geotechnical Services, Inc. This report was completed for preliminary design purposes and may be limited in its scope to complete an accurate bid. Contractors wishing a copy of the report may secure it with the understanding that its scope is limited to evaluation considerations only.

APPENDIX B

TEST BORING LOGS

Geotechnical Services, Inc. " 55 North Stark Highway Tel. 603.529.7766 Fax. 603.529.7080 " 30 Newbury Street, Boston, MA 02116 Tel. 617.455.4248 Fax. 617.745.4308

TEST BORING LOG

Boring No. **B-1**

Project	Peebles School	Project No.	215256	Elevation	N/A
Location	Bourne, MA	Inspector	G. Zoladz	Datum	N/A
Client	Flansburgh Architects	Project Manager	G. Zoladz	Start	11/5/2015
Contractor	NEBC	Checked By		Finish	11/5/2015
Driller	P. Donohoe	Drill Rig	Diedrich	Model	D-50

Item:	Auger	Casing	Sampler	Core Barrel
Type	-	HW	S	-
Inside Diameter (in.)	-	4	1.375	-
Hammer Weight (lb)	-	300	140	
Hammer Fall (in.)	-	24	30	

☑ Truck ☐ Skid ☐ Track ☐ ATV ☐ Bomb. ☐ Geophone ☐ Tripod ☐ Other

Hammer Type: ☑ Safety Hammer ☐ Doughnut ☐ Automatic

☐ Winch ☑ Cat Head ☐ Roller Bit ☑ Cutting Head

Depth (ft)	Casing (Blows/ft)	Sample Data: No.	Depth (ft)	Rec. (in.)	SPT (Blows/ 6-in.)	Rock RQD (%)	PID Rdg. (ppm)	Stratum Change (ft)	Soil-Rock Visual Classification and Description (Soils - Burmister System) (Rock - U.S. Corps of Engineers System)
0		S1	0-2	8	3 11 10 6			~8	Topsoil
									Note: drill action indicates nested cobbles
5		S2	5-7	12	6 5 7 6				M. dense, brown, f/m SAND, little gravel, c-sand, tr. silt
10		S3	10-12	8	8 9 21 17				Dense, brown, f/m SAND, little c-sand
									Note: drill action indicates nested cobbles
15		S4	15-17	3	6 9 11 14				M. dense, brown, f/m SAND, little c-sand, tr. gravel
									Auger refusal at 18.5-ft Bottom of exploration at 18.5-ft.
20									
25									

Water Level Data

Date	Time	Depth (ft) to: Bott. of Casing	Bott. of Hole	Water
5-Nov	-	-	-	~8

Sample Identification
O = Open Ended
U = Undisturbed
S = Split Spoon
C = Rock Core
G = Geoprobe

Cohesive Soils N-Value
0 to 2: Very Soft
2 to 4: Soft
4 to 8: Medium Stiff
8 to 15: Stiff
15 to 30 Very Stiff
Over 30: Hard

Granular Soils N- Value
0 to 4: Very Loose
4 to 10: Loose
11 to 30: Medium Dense
31 to 50: Dense
Over 50: Very Dense

Trace (0 to 5%), Little (10 to 20%), Some (20 to 35%), And (35 to 50%)

Notes:

B-1

TEST BORING LOG

Boring No.	B-2
Page	1 of 1

Project	Peebles School	Project No.	215256	Elevation	N/A
Location	Bourne, MA	Inspector	G. Zoladz	Datum	N/A
Client	Flansburgh Architects	Project Manager	G. Zoladz	Start	11/5/2015
Contractor	NEBC	Checked By		Finish	11/5/2015
Driller	P. Donohoe	Drill Rig	Diedrich	Model	D-50

Item:	Auger	Casing	Sampler	Core Barrel
Type	-	HW	S	-
Inside Diameter (in.)	-	4	1.375	-
Hammer Weight (lb)	-	300	140	
Hammer Fall (in.)	-	24	30	

☑ Truck ☐ Skid ☐ Track ☐ ATV ☐ Bomb. ☐ Geophone ☐ Tripod ☐ Other

Hammer Type: ☑ Safety Hammer ☐ Doughnut ☐ Automatic

☐ Winch ☑ Cat Head ☐ Roller Bit ☑ Cutting Head

Depth (ft)	Casing (Blows/ft)	Sample Data: No.	Depth (ft)	Rec. (in.)	SPT (Blows/ 6-in.)	Rock RQD (%)	PID Rdg. (ppm)	Stratum Change (ft)	Soil-Rock Visual Classification and Description (Soils - Burmister System) (Rock - U.S. Corps of Engineers System)
0		S1	0-2	16	6 10 10 13			~8	Topsoil M. dense, br., silty f/c SAND, little gravel *Note: drill action indicates nested cobbles*
5		S2	5-7	14	6 12 18 24				Dense, brown, f/m SAND, little gravel, c-sand
10		S3	10-12	16	14 21 27 21				Dense, brown, f/m SAND, little gravel, c-sand, tr. silt *Note: drill action indicates nested cobbles*
15		S4	15-17	16	14 10 14 15				M. dense, brown, f/m SAND, little gravel, c-sand *Note: drill action indicates nested cobbles*
20		S5	20-22	8	24 20 21 21				Dense, brown, f/m SAND, little gravel, c-sand, tr. silt
									Bottom of exploration at 22-ft.
25									

Water Level Data

Date	Time	Depth (ft) to: Bott. of Casing	Bott. of Hole	Water
5-Nov	-	-	-	~7

Sample Identification
O = Open Ended
U = Undisturbed
S = Split Spoon
C = Rock Core
G = Geoprobe

Cohesive Soils N-Value
0 to 2: Very Soft
2 to 4: Soft
4 to 8: Medium Stiff
8 to 15: Stiff
15 to 30 Very Stiff
Over 30: Hard

Granular Soils N- Value
0 to 4: Very Loose
4 to 10: Loose
11 to 30: Medium Dense
31 to 50: Dense
Over 50: Very Dense

Trace (0 to 5%), Little (10 to 20%), Some (20 to 35%), And (35 to 50%)

Notes:

B-2

Geotechnical Services, Inc. ~ 55 North Stark Highway Tel. 603.529.7766 Fax. 603.529.7080 ~ 30 Newbury Street, Boston, MA 02116 Tel. 617.455.4248 Fax. 617.745.4308

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TEST BORING LOG

Boring No. **B-3**

Project	Peebles School	Project No.	215256	Elevation	N/A
Location	Bourne, MA	Inspector	G. Zoladz	Datum	N/A
Client	Flansburgh Architects	Project Manager	G. Zoladz	Start	11/5/2015
Contractor	NEBC	Checked By		Finish	11/5/2015
Driller	P. Donohoe	Drill Rig	Diedrich	Model	D-50

Item:	Auger	Casing	Sampler	Core Barrel
Type	-	HW	S	-
Inside Diameter (in.)	-	4	1.375	-
Hammer Weight (lb)	-	300	140	
Hammer Fall (in.)	-	24	30	

☑ Truck ☐ Skid ☐ Track ☐ ATV ☐ Bomb. ☐ Geophone ☐ Tripod ☐ Other

Hammer Type: ☑ Safety Hammer ☐ Doughnut ☐ Automatic

☐ Winch ☑ Cat Head ☐ Roller Bit ☑ Cutting Head

Depth (ft)	Casing (Blows/ft)	Sample No.	Sample Depth (ft)	Rec. (in.)	SPT (Blows/6-in.)	Rock RQD (%)	PID Rdg. (ppm)	Stratum Change (ft)	Soil-Rock Visual Classification and Description (Soils - Burmister System) (Rock - U.S. Corps of Engineers System)
0		S1	0-2	20	3 5 13 14			~0.3	Topsoil
									M. dense, silty, f/m SAND, tr. gravel
									Note: drill action indicates nested cobbles
5		S2	5-7	18	15 16 11 15				M. dense, brown, f/m SAND, little gravel, c-sand
10		S3	10-12	12	12 12 13 18				M. dense, brown, f/m SAND, little gravel, c-sand, tr. silt
									Note: drill action indicates nested cobbles
15		S4	15-17	12	14 19 19 22				Dense, brown, f/m SAND, little gravel, c-sand
									Note: drill action indicates nested cobbles
20		S5	20-22	16	20 23 24 34				Dense, brown, f/m SAND, little gravel, c-sand, tr. silt
									Bottom of exploration at 22-ft.
25									

Water Level Data

Date	Time	Depth (ft) to: Bott. of Casing	Bott. of Hole	Water
5-Nov	-	-	-	~8

Sample Identification
O = Open Ended
U = Undisturbed
S = Split Spoon
C = Rock Core
G = Geoprobe

Cohesive Soils N-Value
0 to 2: Very Soft
2 to 4: Soft
4 to 8: Medium Stiff
8 to 15: Stiff
15 to 30 Very Stiff
Over 30: Hard

Granular Soils N- Value
0 to 4: Very Loose
4 to 10: Loose
11 to 30: Medium Dense
31 to 50: Dense
Over 50: Very Dense

Trace (0 to 5%), Little (10 to 20%), Some (20 to 35%), And (35 to 50%)

Notes:

B-3

Geotechnical Services, Inc. ~ 55 North Stark Highway Tel. 603.529.7766 Fax. 603.529.7080 ~ 30 Newbury Street, Boston, MA 02116 Tel. 617.455.4248 Fax. 617.745.4308

TEST BORING LOG

Boring No. **B-4**

Page 1 of 1

Project	Peebles School	Project No.	215256	Elevation	N/A
Location	Bourne, MA	Inspector	G. Zoladz	Datum	N/A
Client	Flansburgh Architects	Project Manager	G. Zoladz	Start	11/5/2015
Contractor	NEBC	Checked By		Finish	11/5/2015
Driller	P. Donohoe	Drill Rig	Diedrich	Model	D-50

Item:	Auger	Casing	Sampler	Core Barrel
Type	-	HW	S	-
Inside Diameter (in.)	-	4	1.375	-
Hammer Weight (lb)	-	300	140	
Hammer Fall (in.)	-	24	30	

☑ Truck ☐ Skid ☐ Track ☐ ATV ☐ Bomb. ☐ Geophone ☐ Tripod ☐ Other

Hammer Type: ☑ Safety Hammer ☐ Doughnut ☐ Automatic

☐ Winch ☑ Cat Head ☐ Roller Bit ☑ Cutting Head

Depth (ft)	Casing (Blows/ft)	Sample Data: No.	Depth (ft)	Rec. (in.)	SPT (Blows/ 6-in.)	Rock RQD (%)	PID Rdg. (ppm)	Stratum Change (ft)	Soil-Rock Visual Classification and Description (Soils - Burmister System) (Rock - U.S. Corps of Engineers System)
0		S1	0-2	5	15 24 50/3"				V. dense, br., f/c SAND, some gravel, tr. silt
5		S2	5-7	10	7 5 3 2				Loose, brown, f/m SAND, little c-sand, tr. silt
10		S3	10-12	12	28 8 9 42				M. dense, brown, f/m SAND, little c-sand, tr. silt *Note: drill action indicates nested cobbles*
15		S4	15-17	11	2 5 4 3				Loose, brown, f/m SAND, little c-sand, tr. silt *Note: drill action indicates nested cobbles*
20		S5	20-22	10	9 8 9 12				M. dense, brown, f/m SAND, little c-sand, tr. silt
									Bottom of exploration at 22-ft.
25									

Water Level Data

Date	Time	Depth (ft) to: Bott. of Casing	Bott. of Hole	Water
5-Nov	-	-	-	~8

Sample Identification	Cohesive Soils N-Value	Granular Soils N- Value
O = Open Ended	0 to 2: Very Soft	0 to 4: Very Loose
U = Undisturbed	2 to 4: Soft	4 to 10: Loose
S = Split Spoon	4 to 8: Medium Stiff	11 to 30: Medium Dense
C = Rock Core	8 to 15: Stiff	31 to 50: Dense
G = Geoprobe	15 to 30 Very Stiff	Over 50: Very Dense
	Over 30: Hard	

Trace (0 to 5%), Little (10 to 20%), Some (20 to 35%), And (35 to 50%)

Notes:

B-4

GEOTECHNICAL REPORT

BOURNEDALE ELEMENTARY SCHOOL

41 ERNEST VALERI ROAD

BOURNE, MASSACHUSETTS

November 19, 2015
(Revised: December 17, 2015)

GSI Project No. 215257

Prepared for:

Mr. Kent Kovacs
Flansburgh Architects, Inc.
77 North Washington Street
Boston, Massachusetts 02114-1910

Prepared by:

Geotechnical Services, Inc.

55 North Stark Highway

Weare, NH 03281

Geotechnical Services Inc.

Geotechnical Engineering ◣ Environmental Studies ◣ Materials Testing ◣ Construction Monitoring

November 19, 2015
(Revised: December 17, 2015)

Mr. Kent Kovacs
Flansburgh Architects, Inc.
77 North Washington Street
Boston, Massachusetts 02114-1910

Advanced copy via email: kkovacs@flansburgh.com

Re: Geotechnical Investigation Report
Bournedale Elementary School
Bourne, MA
GSI Project No. 215257

Dear Mr. Kovacs:

Geotechnical Services, Inc. (GSI) is pleased to submit this geotechnical report on the above referenced project. The report includes the subsurface data obtained through an exploration program, a geotechnical engineering evaluation of the subsurface data and the observed surface geology in relation to foundation design for the proposed development. The work was undertaken in accordance with the scope of work stated in our proposal dated September 29, 2015 and your subsequent authorization. The content of this report is subject to the attached **Limitations** (Appendix A).

PROJECT UNDERSTANDING

The project site is located at the Bournedale Elementary School at 41 Ernest Valeri Road in Bourne, MA (See Figure 1, Project Locus. The geotechnical evaluation presented in this report is part of a feasibility study to either renovate of replace the Peebles Elementary School currently located at 70 Trowbridge Road in Buzzards Bay, MA. Several test borings were made around the existing building to investigation the subsurface soil and groundwater conditions as part of this study.

SUBSURFACE INVESTIGATION

Five test borings, identified as borings B-1 to B-5, were drilled at the site on November 4, 2015 by New England Boring Contractors located in Brockton, Massachusetts under full-time supervision by a GSI engineer. The borings were drilled using a truck-mounted drill rig (Diedrich D-50) and 4-in. I.D. flush-mounted casing with a rollerbit and water to advance the boreholes. The borings were drilled to depths ranging from approximately 7-ft (Boring B-3) to 22-ft (Boring B-4) below the existing grade. The locations of the test borings are shown on Figure 2, Exploration Location Plan.

Standard Penetration Tests (SPTs) were performed and split-spoon soil samples were retrieved (ASTM D 1586) generally at the ground surface and subsequently at 5-ft intervals. Each soil sample, upon recovery, was observed by the GSI engineer and classified in accordance with the Burmister Classification system. Representative portions of each sample retrieved were saved in glass jars with identification, and delivered to the GSI Soils Laboratory. The samples were re-examined and field classifications were reviewed. The finalized logs for the test borings are included in Appendix B. The soil samples will be stored at the GSI laboratory during the course of the project design-development, and will be shipped to your designated address or discarded upon your notification.

SUBSURFACE CONDITIONS

The subsurface conditions encountered in the investigation indicate that the site is underlain by the following soil units/deposits, described in order of increasing depth:

Topsoil (Surface Deposits): Topsoil was encountered in all the test borings. The thickness of the topsoil encountered varies from about 7-in. to 8-in.

Sand Deposits: The naturally deposited Sand Deposits were encountered in all the borings. The Sand Deposits generally consist of medium dense to very dense, brown, fine to medium **SAND** with varying amounts of gravel, coarse sand and silt. The Sand Deposits were encountered to the termination depths of the test borings ranging from 7 to 22-ft below the existing grade.

Refusal: Refusal was encountered in all the test boring expect boring B-4 at depths ranging from 7-ft (boring B-3) to 17-ft (boring B-5). The refusal is likely due to cobbles, boulders or bedrock.

Groundwater Conditions

Groundwater levels were measured within each borehole varied from about 8 to 12-ft below grade at the time the borings were completed. Groundwater levels should be expected to vary with season, precipitation, snowmelt, construction activities, and other factors. As a result, groundwater levels encountered during construction may differ from those encountered during the explorations.

PRELIMINARY GEOTECHNICAL DESIGN RECOMMENDATIONS

General

As a general guideline, foundation design and construction must conform to the applicable provisions of the Massachusetts Building Code, 8th Edition (Building Code). At this early phase in the design, it is assumed that no basements are planned and that the lowest floor elevation for any new structures will be slab-on-grade.

Foundations

It is anticipated that the foundations for any new construction will bear upon the Sand Deposits. Pavement, Topsoil, and any fill soils that may be encountered during construction are unsuitable for building foundation support and should be excavated and replaced, if necessary. The naturally deposited Sand Deposits are suitable foundation bearing material (referred to herein as the "**bearing strata**"). Some cobbles, boulders and possiblly bedrock may be encountered based on the refusals encountered in the test borings at depth ranging from 7 to 17-ft.

We recommend that building walls, columns and other structural elements be supported by reinforced concrete spread or strip footings bearing directly on the bearing strata or compacted Structural Fill or Crushed Stone (wrapped in a geotextile filter fabric, such as, Mirafi 160N, or equal) placed above the natural bearing strata after removal of the unsuitable materials.

Specific building foundation design recommendations are provided below:

- Footings with a least lateral dimension (width) of 3-ft may be designed using a design bearing pressures of 4.0 ksf.
- For footings with a lateral dimension less than 3-ft, the maximum allowable bearing pressure should be reduced to a value equal to one-third of the maximum allowable bearing pressure given above multiplied by the least lateral dimension of the footing, measured in feet. For example, a 1.5-ft wide footing should be designed using a reduced allowable bearing pressure equal to 1.5-ft x 1/3 x 4 ksf = 2.0-ksf.
- Wall (Strip) Footings should have a least lateral dimension of 18-in.
- Bottoms of exterior footings bearing on compacted Structural Fill, Crushed Stone or on the undisturbed (prepared) bearing strata should be positioned at least 4-ft below the lowest adjacent ground (finished grade) exposed to freezing temperatures. Footings at heated interior locations should bear at least 18-in. below the adjacent slab surface.

Ground Floor Slab

We recommend that the ground floor be constructed as an earth-supported slab-on-grade, after removal of any Pavement, Topsoil, or any other unsuitable material, and backfilling with Compacted Structural Fill and Slab Base Course. A 6-in. minimum thickness of Compacted Slab Base Course should be provided directly beneath the slab. For slab design, GSI recommends a modulus of subgrade reaction equal to 175 pounds per cubic feet (pci).

Foundation Settlements

At the recommended allowable bearing pressures, we anticipate that the settlement of individual footings under the anticipated design loading conditions and constructed as recommended herein, will not exceed about 3/4-in., with differential settlements between adjacent footings not exceeding about 3/4-in. Most of the settlement will likely occur during construction as structure dead loads are placed on the foundations.

Seismic Design Input

Seismic design parameters for the project site have been obtained from Commonwealth of Massachusetts, State Building Code, Eighth Edition, 2010. Ground motion parameters at the project site (i.e., the design earthquake for the subject facility) are represented by S_s, 0.2 sec. (short period) Spectral Acceleration, and S_1, 1.0-second period Spectral Acceleration. These parameters have been obtained as:

$S_s = 0.210$ g

$S_1 = 0.056$ g

Site Class for the project site has been established as “Very dense soil and soft rock” with the designation **Site Class C**. Site Coefficient for the Short Period has been established as $F_a = 1.2$, and Site Coefficient for the 1-sec Period has been established as $F_v = 1.7$. Parameters F_a, and F_v relate to the potential amplification of the earthquake induced shear stress waves traveling upward through the soil-rock profile underlying the project site. The soils within the project site are not considered liquefaction susceptible.

Lateral Earth Pressures

The following design criteria for yielding and non-yielding walls are recommended based on the assumption that adequate drainage shall be installed adjacent to and along the below grade structures and behind retaining walls, to eliminate any hydrostatic forces acting on the walls:

	Yielding	Non-yielding
Static Lateral Earth Pressure: (Native soil or lightly compacted structural fill as an equivalent fluid unit weight)	40 pcf (drained)	60 pcf
Traffic Surcharge: (Distributed uniformly over the height of the wall)	80 psf	120 psf

Seismic Lateral Earth Pressures

Per Section 1610.2 of the Building Code, exterior foundation walls and retaining walls shall be designed to resist an earthquake force, F_w, for horizontal backfill surface equal to:

$$F_w = 0.100(S_s)(F_a)(\gamma_t)(H)^2$$

where: S_s is the 0.2 sec. (short period) Spectral Acceleration,

F_a is the site coefficient for the Short Period,

γ_t is the total unit weight of the soil (backfill), and

H is the height of the wall measured as the difference in elevation of the finished ground surface or floor in front of and behind the wall.

For design, a soil unit weight (γ_t) of 125 pounds per cubic feet (pcf) may be used.

Foundation and Floor Drainage

GSI recommends that permanent foundation perimeter drainage be provided to collect and drain any infiltrating surface or seepage water which might otherwise become trapped against below-grade walls and seep into the building or exert hydro-static pressures on the walls. We recommend that drainage be provided at all below-grade foundation walls where the adjacent floor slab is **2-ft or deeper** below adjacent exterior finished grade. Such systems should be provided at exterior walls and walls between differing floor levels beneath the building.

The perimeter foundation drainage should consist of a free-draining material against the wall and a drainage "pipe" at the wall base to collect and transmit the water. For installation convenience and cost-efficiency, we recommend that a prefabricated drainage board product, such as Amerdrain 200 by the American Wick Drain Company (AWDC), or equivalent, be applied to the exterior walls from the level 2-ft below ground surface down to the drainage "pipe". The drainage board should connect at its base to a "high-profile sheet drain section" (such as Amerdrain Total-Drain System by AWDC) or to a 4-in. diameter continuous perforated PVC or corrugated HDPE drainpipe.

If a drain pipe is used for the perimeter drainage, it should be completely surrounded by a 6-in. (min.) thick zone of drainage fill (1/2-in to 3/4-in. sized crushed stone) which in turn is completely surrounded by a non-woven filter fabric to avoid potential clogging due to migration of fine soils into the drainage system. The crushed stone should be placed in contact with the drainage board against the wall in accordance with manufacturer's details. Drainpipe inverts should be between the bottom of footing and 6-in. beneath the elevation of the adjacent building floor. Pipes should be pitched nominally toward the system discharge points (slope 0.25 to 0.10 percent). Perforations in the drainpipe should be positioned downward.

Below-grade walls and floors should be dampproofed and insulated in according with the Building Code. Elevator pits and other small depressions below the lowest floors should be water proofed and designed to resist hydrostatic pressures corresponding to the full vertical depth of the structural depression below the floor slab. Vapor barriers should be installed beneath the floor slab per the Code. Use of vapor barriers should be coordinated with the slab design and construction.

To limit the water infiltration around the structures, it is recommended that the upper twelve inches of backfill within approximately 10-ft of the building in unpaved areas should consist of silty topsoil or other soils having relatively low permeability. In general, the ground surface immediately around the buildings should be sloped downward and away from the structures to direct surface runoff.

CONSTRUCTION CONSIDERATIONS

General

In general, all excavation work, dewatering, and other construction activities should conform to the requirements of OSHA and all other applicable regulations. The site soils would typically be classified as Type C based on OSHA 29 CFR 1926.

Excavation

Building foundation and the lowest floor slab construction will involve clearing and grubbing, stripping off the topsoil, subsoil, pavements, fill soils, as well as naturally deposited Alluvial soils, and then backfilling and filling to design footing and slab bearing levels. All unsuitable materials above the undisturbed bearing strata and floor slab must be removed within the zone of influence of new footings. The zone of influence for the footings is defined as the zone beneath the footing bottoms down to the top of the natural, undisturbed bearing strata, and within the zone beneath imaginary lines extending from points 1-ft laterally beyond the footing outer bottom edges and down on a 1H:1V slope to the top of undisturbed Sand Deposits.

We anticipate that the excavations in soil for the building construction and site grading can be accomplished with conventional earth-moving equipment.

Temporary cut soil slopes should, typically, be stable if constructed no steeper than about 1.5H:1V. Some sloughing and raveling should be anticipated in temporary earth slopes.

Construction Dewatering

Based on the available subsurface data it is anticipated that during the general site work, no significant dewatering measures will be necessary to conduct the construction "in-the-dry." Groundwater and surface water must be controlled as necessary to enable all final excavation and foundation construction to be conducted in-the-dry.

The Contractor should take measures to prevent storm water to enter into excavated areas, and be prepared to remove ponded surface water by means of localized sumps and pumps. The Contractor should select whichever dewatering procedures may be effective to maintain dry, stable excavation bottoms. Dewatering, including its discharge, should be performed in accordance with all local, state, and federal regulations.

Existing Utilities and Foundations of Former Structures

Unknown and/or undocumented subsurface features, structures, and utilities may be present within the project site. Foundations and utilities from buildings, and associated construction debris should be anticipated during excavation work, especially within the existing "Big Room" area, and will need to be carefully removed to limit disturbance to underlying natural soil deposits. Remnants of prior structures should be removed within the zone of influence beneath new foundations.

Preparation and Protection of Bearing Surfaces

Final excavation should be conducted in a manner that minimizes disturbance to the natural soils when excavating for footing or slab bearing surfaces. All final excavation and footing construction should be conducted in-the-dry. We recommend that the exposed subgrade soils be observed in the field by a geotechnical engineer to confirm the projected foundation bearing conditions. It may be necessary to over-excavate and replace weak, disturbed or otherwise unacceptable foundation bearing materials.

Following excavation to slab or footing bearing grades, exposed naturally deposited soil surfaces should be re-compacted (proofrolled) prior to placing Compacted Structural Fill or constructing foundations, with a minimum of two passes with a heavy vibratory roller or other heavy vibratory compaction equipment.

If subgrade protection difficulties are encountered due to surface or groundwater, various methods can be utilized:

- Leave subgrades high until immediately before forming and concreting to minimize the time the subgrade is exposed.
- Place a lean concrete mud mat on the exposed soil surface at footing locations after the subgrade has been prepared.
- Over excavate footings by 6 to 8 in. using a smooth edged bucket, place non-woven filter fabric on the exposed stable soil subgrade, and backfill to the design bearing elevation using crushed stone. The exposed top of the crushed stone beneath the constructed footing should also be covered with non-woven filter fabric to prevent migration of fines from the backfill placed above.

Each such encounter is probably best resolved individually in the field upon observation of the subgrade conditions.

In the event that a boulder or bedrock becomes partially exposed at subgrade level or at footing bearing level, one of the following options should be utilized:

- Remove the boulder, and fill the void with crushed stone, compacted structural fill or lean concrete, or
- Remove a portion of the boulder or bedrock sufficient to provide placement of 6 in. of crushed stone (with filter fabric) beneath the slab or footing over the boulder. Each such encounter is probably best resolved individually in the field.

Protection From Freezing

Soil bearing surfaces below completed foundations and slabs must be protected against freezing, before and after foundation construction. If construction is performed during freezing weather, footings bearing on the Glacial deposits or compacted Structural Fill should be covered to a sufficient depth (up to 4-ft) as soon as possible after they are constructed. Alternatively, insulating blankets, lowering of footings, providing heaters, or other means may be used for protection against freezing.

Compaction

Minimum compaction requirements refer to percentages of the maximum dry density determined in accordance with ASTM D1557. Recommended compaction requirements are as follows:

Location	Minimum Compaction Requirements
Beneath and around footings, beneath slabs	95 %
Parking, roadways and sidewalks	92 % up to 3 ft below finished grade 95 % in the upper 3 ft
Landscaped areas	90 % nominal compaction

Filling and Backfilling

Filling and backfilling will be required within the proposed building limits to reach footing and slab bearing levels. We recommend that Compacted Structural Fill or Slab Base Coarse be used as fill and backfill beneath footings and slabs to the limits described below. A minimum of 6-in. of Compacted Slab Base Coarse, or 12-in. of Crushed Stone for the planned basement, should be provided directly beneath the floor slabs.

Where Compacted Structural Fill is required beneath foundations, it should be placed beneath the footings and within the zone beneath imaginary lines extending from points 1-ft laterally beyond the footing outer bottom edge and down on a 1H:1V slope, down to the top of natural bearing strata (zone of influence).

Except for zones requiring special backfill such as directly beneath pavements or exterior slabs, the exterior of foundation walls may be backfilled with Common Fill.

Placement of compacted soil fills should not be conducted when air temperatures are low enough (approximately 30 degrees F, or below) to cause freezing of the moisture in the fill during or before placement. Fill materials should not be placed on snow, ice or uncompacted frozen soil. Compacted fill should not be placed on frozen soil. No fill should be allowed to freeze prior to compaction. At the end of each day's operations, the last lift of fill, after compaction, should be rolled by a smooth-wheeled roller to eliminate ridges of uncompacted soil.

Structural Fill

Structural Fill beneath footings and building slabs should consist of bank-run sand and gravel, free of organic material, snow, ice, or other unsuitable materials and should be well-graded within the following limits:

Sieve Size	Percent Finer by Weight
3 in.	100
No. 4	30 – 80
No. 40	10 – 50
No. 200	0 – 10

Other materials could be acceptable for compacted Structural Fill, and should be evaluated by the Geotechnical Engineer on a case-by-case basis if proposed by the Contractor.

Structural Fill should be placed in lift thicknesses not exceeding 12 in. loose measure. In confined areas, hand-guided equipment such as a vibratory plate compactor should be used and the loose lift thickness should not exceed 6 in.

A minimum of four systematic passes of the compaction equipment should be used to compact each lift.

Common Fill

Common fill should consist of mineral sandy soil, free from organic matter, plastic, metal, wood, ice, snow or other deleterious material and should have the characteristic that it can be readily placed and compacted. Common fill imported to the site should have a maximum of 80 percent passing the No. 40 sieve and a maximum of 30 percent finer than the No. 200 sieve. The largest particle size for common fill should not exceed 2/3 of the lift thickness. Silty common fill soils may require moisture control during placement and compaction. Common Fill should be placed and compacted in the manner described in "Filling and Backfilling."

Crushed Stone

Crushed Stone should consist of durable crushed rock or crushed gravel stone obtained by breaking and crushing rock, or boulders, and it is free from a detrimental quantity of thin, flat, elongated or other objectionable pieces.

The ½-inch crushed stone should have the following gradation:

Sieve Size	Percent Finer by Weight
5/8 inch	100
½ inch	85-100
3/8 inch	15-45
No. 4	0-15
No. 8	0-5

Slab Base Course

Slab Base Course beneath building slabs should consist of bank-run sand and gravel, free of organic material, snow, ice, or other unsuitable materials and should be well-graded within the following limits:

Sieve Size	Percent Finer by Weight
2 in.	100
No. 4	40 – 70
No. 40	25 – 45
No. 200	0-10

Other materials could be acceptable for compacted Slab Base Course, and should be evaluated by the Geotechnical Engineer on a case-by-case basis if proposed by the Contractor.

Slab Base Course should be placed in lift thicknesses not exceeding 8-in. loose measure. In confined areas, hand-guided equipment such as a vibratory plate compactor should be used and the loose lift thickness should not exceed 6 in.

A minimum of four systematic passes of the compaction equipment should be used to compact each lift.

PLAN REVIEW

It is recommended that GSI be provided the opportunity to review the final plans in order to confirm that the recommendations made in this report were interpreted and implemented as intended.

CLOSURE

GSI appreciates the opportunity for participating in this early phase of the project, and looks forward to our continuing association during its subsequent phases towards its successful completion. In the mean time, please do not hesitate to contact us, if you have any questions on the content of this report.

Very truly yours,

GEOTECHNICAL SERVICES, INC.

Glen V. Zoladz, P.E.
Project Engineer

Harry K. Wetherbee, P.E.
Principal Engineer

Figure 1	Project Locus
Figure 2	Exploration Location Plan
Appendix A	Limitations
Appendix B	Test Boring Logs

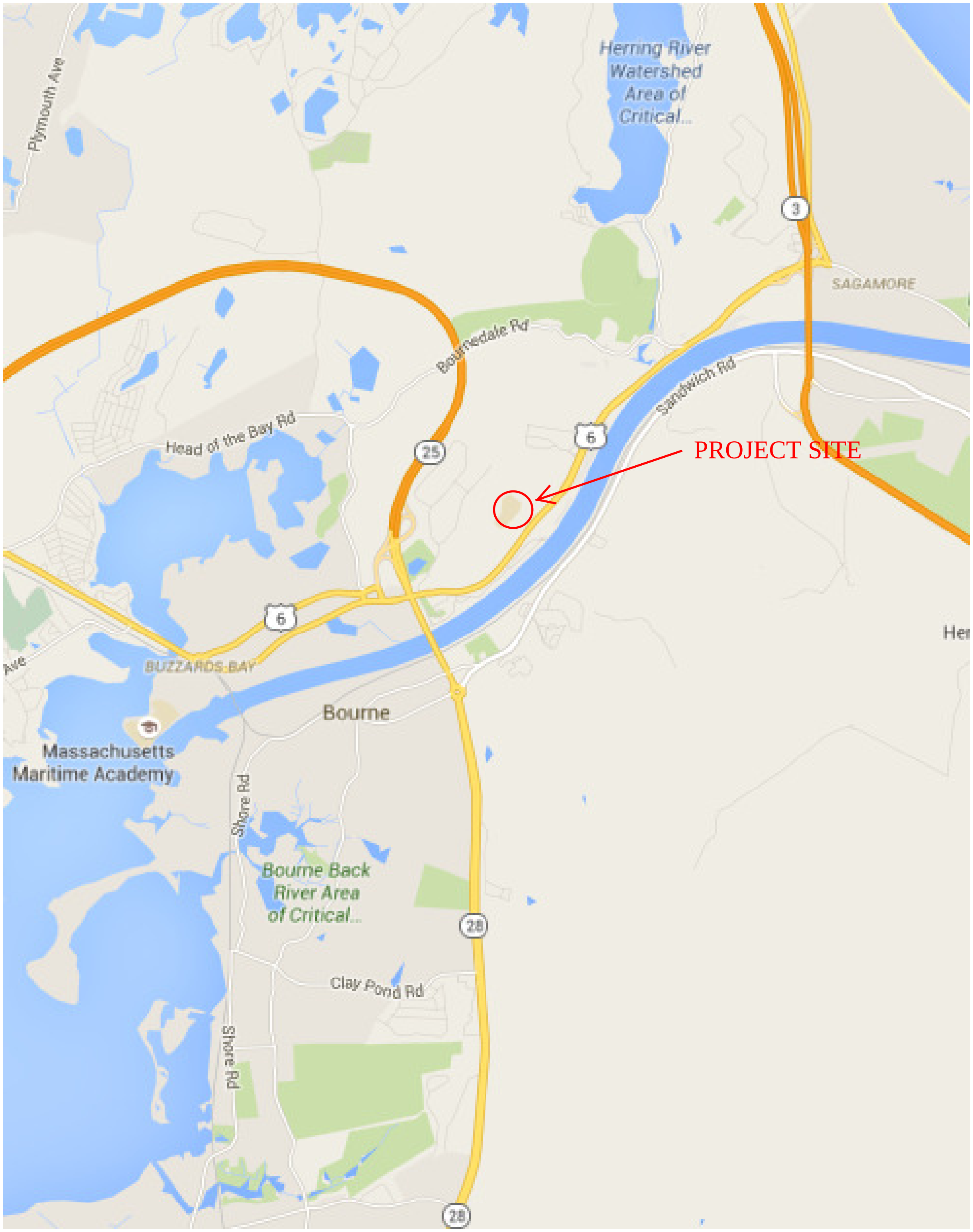
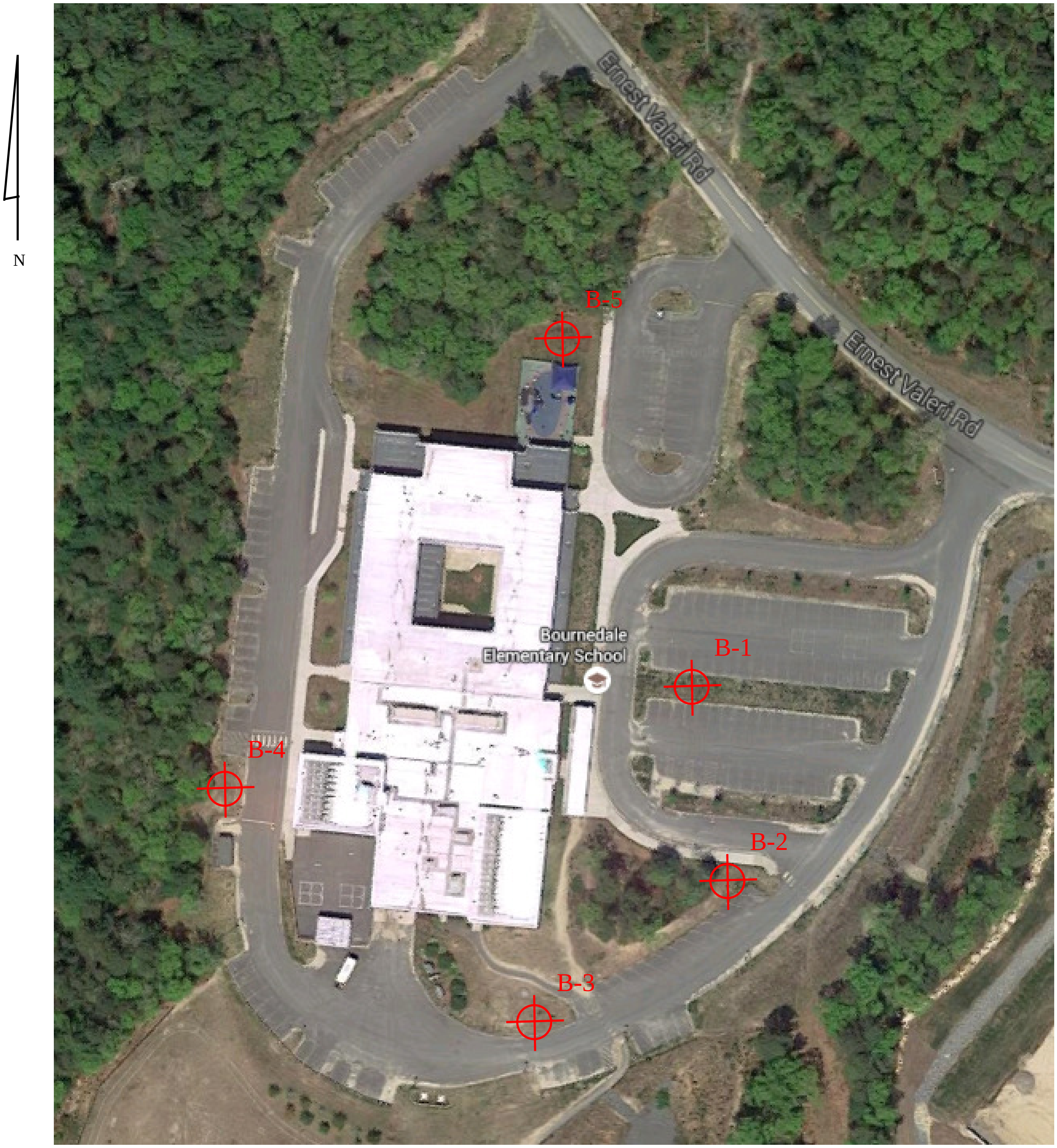


FIGURE 1–PROJECT LOCUS

BOURNEDALE ELEMENTARY SCHOOL
BOURNE, MA
GSI PROJECT NO. 215257



LEGEND:

NOT TO SCALE

B-1

TEST BORING I.D.AND APPROXIMATE LOCATION

GSI

FIGURE 2–EXPLORATION LOCATION PLAN

BOURNEDALE ELEMENTARY SCHOOL
BOURNE, MA
GSI PROJECT NO. 215257

APPENDIX A

LIMITATIONS

LIMITATIONS

Explorations

1. The analyses, recommendations and designs submitted in this report are based in part upon the data obtained from preliminary subsurface explorations. The nature and extent of variations between these explorations may not become evident until construction. If variations then appear evident, it will be necessary to re-evaluate the recommendations of this report.

2. The generalized soil profile described in the text is intended to convey trends in subsurface conditions. The boundaries between strata are approximate and idealized and have been developed by interpretation of widely spaced explorations and samples; actual soil transitions are probably more gradual. For specific information, refer to the individual test pit and/or boring logs.

3. Water level readings have been made in the test pits and/or test borings under conditions stated on the logs. These data have been reviewed and interpretations have been made in the text of this report. However, it must be noted that fluctuations in the level of the groundwater may occur due to variations in rainfall, temperature, and other factors differing from the time the measurements were made.

Review

4. It is recommended that this firm be given the opportunity to review final design drawings and specifications to evaluate the appropriate implementation of the recommendations provided herein.

5. In the event that any changes in the nature, design, or location of the proposed areas are planned, the conclusions and recommendations contained in this report shall not be considered valid unless the changes are reviewed and conclusions of the report modified or verified in writing by Geotechnical Services, Inc.

Construction

6. It is recommended that this firm be retained to provide geotechnical engineering services during the earthwork phases of the work. This is to observe compliance with the design concepts, specifications, and recommendations and to allow design changes in the event that subsurface conditions differ from those anticipated prior to the start of construction.

Use of Report

7. This report has been prepared for the exclusive use of Flansburgh Architects, Inc. in accordance with generally accepted soil and foundation engineering practices. No other warranty, expressed or implied, is made.

8. This report has been prepared for this project by Geotechnical Services, Inc. This report was completed for preliminary design purposes and may be limited in its scope to complete an accurate bid. Contractors wishing a copy of the report may secure it with the understanding that its scope is limited to evaluation considerations only.

APPENDIX B

TEST BORING LOGS

TEST BORING LOG

Boring No. **B-1**

Page 1 of 1

Project	Bournedale School	Project No.	215257	Elevation	N/A
Location	Bourne, MA	Inspector	G. Zoladz	Datum	N/A
Client	Flansburgh Architects	Project Manager	G. Zoladz	Start	11/4/2015
Contractor	NEBC	Checked By		Finish	11/4/2015
Driller	P. Donohoe	Drill Rig	Diedrich	Model	D-50

Item:	Auger	Casing	Sampler	Core Barrel
Type	-	HW	S	-
Inside Diameter (in.)	-	4	1.375	-
Hammer Weight (lb)	-	300	140	
Hammer Fall (in.)	-	24	30	

☑ Truck ☐ Skid ☐ Track ☐ ATV ☐ Bomb. ☐ Geophone ☐ Tripod ☐ Other

Hammer Type: ☑ Safety Hammer ☐ Doughnut ☐ Automatic

☐ Winch ☑ Cat Head ☐ Roller Bit ☑ Cutting Head

Depth (ft)	Casing (Blows/ft)	Sample Data: No.	Depth (ft)	Rec. (in.)	SPT (Blows/ 6-in.)	Rock RQD (%)	PID Rdg. (ppm)	Stratum Change (ft)	Soil-Rock Visual Classification and Description (Soils - Burmister System) (Rock - U.S. Corps of Engineers System)
0		S1	0-2	20	5 12 24 33			~0.6	Topsoil Dense, brown, silty f/m SAND, tr. gravel, c-sand
5		S2	5-7	14	12 17 20 23				Dense, brown, f/m SAND
10		S3	10-12	14	19 27 29 33				V. dense, brown, fine SAND, with 2-in. seam of br., f/c SAND, tr. gravel Note: grinding on rock at 14-ft. Rollerbit refusal at 14.7-ft.
15									Refusal at 14.6-ft. Bottom of exploration at 14.6-ft.
20									
25									

Water Level Data

Date	Time	Depth (ft) to: Bott. of Casing	Bott. of Hole	Water
4-Nov				~8

Sample Identification
O = Open Ended
U = Undisturbed
S = Split Spoon
C = Rock Core
G = Geoprobe

Cohesive Soils N-Value
0 to 2: Very Soft
2 to 4: Soft
4 to 8: Medium Stiff
8 to 15: Stiff
15 to 30 Very Stiff
Over 30: Hard

Granular Soils N- Value
0 to 4: Very Loose
4 to 10: Loose
11 to 30: Medium Dense
31 to 50: Dense
Over 50: Very Dense

Trace (0 to 5%), Little (10 to 20%), Some (20 to 35%), And (35 to 50%)

Notes:

B-1

Geotechnical Services, Inc. " 55 North Stark Highway Tel. 603.529.7766 Fax. 603.529.7080 " 30 Newbury Street, Boston, MA 02116 Tel. 617.455.4248 Fax. 617.745.4308

Geotechnical Services, Inc. · 55 North Stark Highway Tel. 603.529.7766 Fax. 603.529.7080 · 30 Newbury Street, Boston, MA 02116 Tel. 617.455.4248 Fax. 617.745.4308

TEST BORING LOG

Boring No. **B-2**

Project	Bournedale School	Project No.	215257	Elevation	N/A
Location	Bourne, MA	Inspector	G. Zoladz	Datum	N/A
Client	Flansburgh Architects	Project Manager	G. Zoladz	Start	11/4/2015
Contractor	NEBC	Checked By		Finish	11/4/2015
Driller	P. Donohoe	Drill Rig	Diedrich	Model	D-50

Item:	Auger	Casing	Sampler	Core Barrel
Type	-	HW	S	-
Inside Diameter (in.)	-	4	1.375	-
Hammer Weight (lb)	-	300	140	
Hammer Fall (in.)	-	24	30	

Rig: ☑ Truck ☐ Skid ☐ Track ☐ ATV ☐ Bomb. ☐ Geophone ☐ Tripod ☐ Other

☐ Winch ☑ Cat Head ☐ Roller Bit ☑ Cutting Head

Hammer Type: ☑ Safety Hammer ☐ Doughnut ☐ Automatic

Depth (ft)	Casing (Blows/ft)	Sample Data No.	Depth (ft)	Rec. (in.)	SPT (Blows/6-in.)	Rock RQD (%)	PID Rdg. (ppm)	Stratum Change (ft)	Soil-Rock Visual Classification and Description (Soils - Burmister System) (Rock - U.S. Corps of Engineers System)
0		S1	0-2	12	4 7 7 5			~0.6	Topsoil
									M. dense, brown, silty fine SAND, tr. m/c sand
5		S2	5-7	5	4 8 6 6				M. dense, brown, f/m SAND, little c-sand, tr. silt
10		S3	10-10.6	5	82 50/0"				V. dense, brown, f/c SAND, tr. silt (rick in spoon tip)
									Roller bit to 11-ft. Refusal at 11-ft. Bottom of exploration at 11-ft.
15									
20									
25									

Water Level Data

Date	Time	Depth (ft) to: Bott. of Casing	Bott. of Hole	Water
4-Nov				~8

Sample Identification
O = Open Ended
U = Undisturbed
S = Split Spoon
C = Rock Core
G = Geoprobe

Cohesive Soils N-Value
0 to 2: Very Soft
2 to 4: Soft
4 to 8: Medium Stiff
8 to 15: Stiff
15 to 30 Very Stiff
Over 30: Hard

Granular Soils N- Value
0 to 4: Very Loose
4 to 10: Loose
11 to 30: Medium Dense
31 to 50: Dense
Over 50: Very Dense

Trace (0 to 5%), Little (10 to 20%), Some (20 to 35%), And (35 to 50%)

Notes:

TEST BORING LOG

Boring No. **B-3**

Page 1 of 1

Project	Bournedale School	Project No.	215257	Elevation	N/A
Location	Bourne, MA	Inspector	G. Zoladz	Datum	N/A
Client	Flansburgh Architects	Project Manager	G. Zoladz	Start	11/4/2015
Contractor	NEBC	Checked By		Finish	11/4/2015
Driller	P. Donohoe	Drill Rig	Diedrich	Model	D-50

Item:	Auger	Casing	Sampler	Core Barrel
Type	-	HW	S	-
Inside Diameter (in.)	-	4	1.375	-
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☑ Truck ☐ Skid ☐ Track ☐ ATV ☐ Bomb. ☐ Geophone ☐ Tripod ☐ Other

Hammer Type: ☑ Safety Hammer ☐ Doughnut ☐ Automatic

☐ Winch ☑ Cat Head ☐ Roller Bit ☑ Cutting Head

Depth (ft)	Casing (Blows/ft)	Sample Data No.	Depth (ft)	Rec. (in.)	SPT (Blows/ 6-in.)	Rock RQD (%)	PID Rdg. (ppm)	Stratum Change (ft)	Soil-Rock Visual Classification and Description (Soils - Burmister System) (Rock - U.S. Corps of Engineers System)
0		S1	0-2	6	11 14 14 13			~0.6	Topsoil M. dense, brown, f/m SAND
5		S2	5-7	14	5 17 100/6"				V. dense, brown, f/c SAND, tr. silt
									Roller bit to 7-ft. Second attempt-refusal at 7-ft. Refusal at 11-ft. Bottom of exploration at 7-ft. No groundwater detected.
10									
15									
20									
25									

Water Level Data

Date	Time	Depth (ft) to: Bott. of Casing	Bott. of Hole	Water
4-Nov				N/A

Sample Identification
O = Open Ended
U = Undisturbed
S = Split Spoon
C = Rock Core
G = Geoprobe

Cohesive Soils N-Value
0 to 2: Very Soft
2 to 4: Soft
4 to 8: Medium Stiff
8 to 15: Stiff
15 to 30 Very Stiff
Over 30: Hard

Granular Soils N- Value
0 to 4: Very Loose
4 to 10: Loose
11 to 30: Medium Dense
31 to 50: Dense
Over 50: Very Dense

Trace (0 to 5%), Little (10 to 20%), Some (20 to 35%), And (35 to 50%)

Notes:

B-3

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TEST BORING LOG

GSI

Boring No.	B-4
Page	1 of 1

Project	Bournedale School	Project No.	215257	Elevation	N/A
Location	Bourne, MA	Inspector	G. Zoladz	Datum	N/A
Client	Flansburgh Architects	Project Manager	G. Zoladz	Start	11/4/2015
Contractor	NEBC	Checked By		Finish	11/4/2015
Driller	P. Donohoe	Drill Rig	Diedrich	Model	D-50

Item:	Auger	Casing	Sampler	Core Barrel
Type	-	HW	S	-
Inside Diameter (in.)	-	4	1.375	-
Hammer Weight (lb)	-	300	140	
Hammer Fall (in.)	-	24	30	

☑ Truck ☐ Skid
☐ Track ☐ ATV
☐ Bomb. ☐ Geophone
☐ Tripod ☐ Other
☐ Winch ☑ Cat Head ☐ Roller Bit ☑ Cutting Head

Hammer Type:
☑ Safety Hammer
☐ Doughnut
☐ Automatic

Depth (ft)	Casing (Blows/ft)	Sample Data: No.	Depth (ft)	Rec. (in.)	SPT (Blows/ 6-in.)	Rock RQD (%)	PID Rdg. (ppm)	Stratum Change (ft)	Soil-Rock Visual Classification and Description (Soils - Burmister System) (Rock - U.S. Corps of Engineers System)
0		S1	0-2	14	6 12 8 6			~8	Topsoil M. dense, br., f/m SAND, tr. silt
5		S2	5-7	6	5 3 2 3				Loose, br., f/m SAND
10		S3	10-12	8	8 10 14 17				M. dense, br., f/m SAND, tr. silt
15		S4	15-17	16	7 11 18 32				M. dense, br., f/m SAND
20		S5	20-22	14	20 21 24 62				V. dense, br., fine SAND, tr. m-sand
									Bottom of exploration at 22-ft.
25									

Water Level Data

Date	Time	Depth (ft) to: Bott. of Casing	Bott. of Hole	Water
4-Nov				~12

Sample Identification
O = Open Ended
U = Undisturbed
S = Split Spoon
C = Rock Core
G = Geoprobe

Cohesive Soils N-Value
0 to 2: Very Soft
2 to 4: Soft
4 to 8: Medium Stiff
8 to 15: Stiff
15 to 30 Very Stiff
Over 30: Hard

Granular Soils N- Value
0 to 4: Very Loose
4 to 10: Loose
11 to 30: Medium Dense
31 to 50: Dense
Over 50: Very Dense

Trace (0 to 5%), Little (10 to 20%), Some (20 to 35%), And (35 to 50%)

Notes:

B-4

TEST BORING LOG

Boring No. **B-5**

Page 1 of 1

Project	Bournedale School	Project No.	215257	Elevation	N/A
Location	Bourne, MA	Inspector	G. Zoladz	Datum	N/A
Client	Flansburgh Architects	Project Manager	G. Zoladz	Start	11/4/2015
Contractor	NEBC	Checked By		Finish	11/4/2015
Driller	P. Donohoe	Drill Rig	Diedrich	Model	D-50

Item:	Auger	Casing	Sampler	Core Barrel
Type	-	HW	S	-
Inside Diameter (in.)	-	4	1.375	-
Hammer Weight (lb)	-	300	140	
Hammer Fall (in.)	-	24	30	

☑ Truck ☐ Skid ☐ Track ☐ ATV ☐ Bomb. ☐ Geophone ☐ Tripod ☐ Other

Hammer Type: ☑ Safety Hammer ☐ Doughnut ☐ Automatic

☐ Winch ☑ Cat Head ☐ Roller Bit ☑ Cutting Head

Depth (ft)	Casing (Blows/ft)	Sample Data: No.	Depth (ft)	Rec. (in.)	SPT (Blows/ 6-in.)	Rock RQD (%)	PID Rdg. (ppm)	Stratum Change (ft)	Soil-Rock Visual Classification and Description (Soils - Burmister System) (Rock - U.S. Corps of Engineers System)
0		S1	0-2	20	12 21 17 8			~7	Topsoil Dense, br., silty f/m SAND
5		S2	5-7	12	7 14 21 24				Dense, br., f/m SAND
10		S3	10-12	12	11 19 21 29				Dense, br., fine SAND, tr. silt
15		S4	15-17		30 38 45 51				V. dense, br., f/m SAND, tr. silt
									Aiger refusal at 17-ft. Bottom of exploration at 17-ft.
20									
25									

Water Level Data

Date	Time	Depth (ft) to: Bott. of Casing	Bott. of Hole	Water
4-Nov				~10

Sample Identification
O = Open Ended
U = Undisturbed
S = Split Spoon
C = Rock Core
G = Geoprobe

Cohesive Soils N-Value
0 to 2: Very Soft
2 to 4: Soft
4 to 8: Medium Stiff
8 to 15: Stiff
15 to 30 Very Stiff
Over 30: Hard

Granular Soils N- Value
0 to 4: Very Loose
4 to 10: Loose
11 to 30: Medium Dense
31 to 50: Dense
Over 50: Very Dense

Trace (0 to 5%), Little (10 to 20%), Some (20 to 35%), And (35 to 50%)

Notes:

B-5

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I. Traffic Impact Study

3.1.4 Evaluation of Existing Conditions

I. TRAFFIC IMPACT STUDY

Nitsch Engineering conducted traffic analysis at work at the Peebles and Bournedale Elementary School sites in Bourne.

PURPOSE: To prepare a qualitative assessment of safety, traffic circulation, and traffic access/egress, associated with the feasibility study. Nitsch Engineering also conducted parental pick-up and drop-off counts as part of their site observation.

The proposed design alternatives were evaluated as part of this study to gain understanding on the potential traffic issues unique to the sites being considered.

Traffic counts were taken at the following two major intersections:

- Route 6 at Nightingale Road
- Route 6 at Edge Hill Road

In addition, Automatic Traffic Recorder (ATR) counts were taken at Trowbridge Road and Ernest Valeri Road.

FINDINGS

(PEEBLES):

- A total of eight buses drop off students at the school
- A total of 93 parental drop-off vehicles were observed
- A total of a 106 vehicles enter the site between 8:30am and 9:30am. 59 vehicles entering the site were traveling eastbound on Trowbridge Road while 47 vehicles were traveling westbound.
- A total of 73 parental pick-up vehicles were observed during afternoon dismissal between 2:00pm and 3:30pm. 47 vehicles entering the site were travelling eastbound on Trowbridge Road while 18 vehicles were traveling westbound.
- There were a total of 66 parking spaces counted with an overall utilization of 78% at the time observed

(BOURNEDALE):

- A total of thirteen buses drop off students at the school
- A total of 69 parental drop-offs were observed during the morning.
- A total of a 128 vehicles enter the site between 8:15 AM through 9:30 AM. 128 vehicles entering the site were traveling westbound on Ernest Valerie Road while 4 vehicles were traveling eastbound.
- 60 vehicles entering the site between 2:30pm and 3:30pm. 59 vehicles entering were traveling westbound on Ernest Valerie Road while 4 vehicles were traveling eastbound.
- A total of 53 parental pick-up vehicles were observed during afternoon dismissal.
- There were a total of 137 parking spaces counted with an overall utilization of 58% at the time observed
- Design Option 3 (PK-5) established a total of 177 vehicles at drop-off and 113 vehicles at pick-up

CONCLUSION:

1. The Design options at the Peebles School site (Options 1 and 4) will have very little or no impact on Trowbridge Road traffic.
2. Design Option 3 (PK-5) established 258 additional entering/exits trips during the morning and 202 entering/exits trips during the afternoon
3. Design Option 3 (PK-5) established a total of 177 vehicles at drop-off and 113 vehicles at pick-up
4. The intersection of Route 6 at Nightingale will see a minor increase in traffic volume.
5. The intersection of Route 6 at Edge Hill Road will see a minor increase in traffic volume.

The full Traffic Impact Study report follows.

Nitsch Engineering

Peebles Elementary School
Bourne, MA

Transportation Feasibility Study

December 17, 2015

Prepared for:

Flansburgh Architects
77 North Washington Street
Boston, MA 02114

Submitted by:

Nitsch Engineering
2 Center Plaza, Suite 430
Boston, MA 02108

Nitsch Project #11078.0

Building better communities with you.

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1 INTRODUCTION

Nitsch Engineering has been retained by Flansburgh Architects (FA) to prepare a qualitative assessment of safety, traffic circulation, and traffic access/egress, associated with the feasibility study and schematic design for the Peebles Elementary School project in Bourne, Massachusetts. Two options are considered for the reconstruction. The first option would be renovate and expand the existing Peebles Elementary School building and grounds on the site of the existing school, located 70 Trowbridge Road in Bourne, Massachusetts. The second option would be to renovate and expand existing Bournedale Elementary School, located at 41 Ernest Valerie Road, approximately 2 miles northeast of the existing school site to include the relocated Peebles Elementary School.

This report will outline the existing and proposed traffic volumes, operations, and safety of the adjacent surrounding roadways and intersections; traffic patterns of the existing Peebles Elementary School and the existing Bournedale Elementary School, including site access/egress, parent and bus pick-up/drop-off, traffic circulation, and parking supply/demand. The report will use this information to project future conditions for both the Peebles Elementary School option and the Bournedale Elementary School option.

The Locus Map of the study area is shown in Figure 1, a map of the existing Peebles Elementary School site is shown in Figure 2, and a map of the existing Bournedale Elementary School Site is shown in Figure 3.

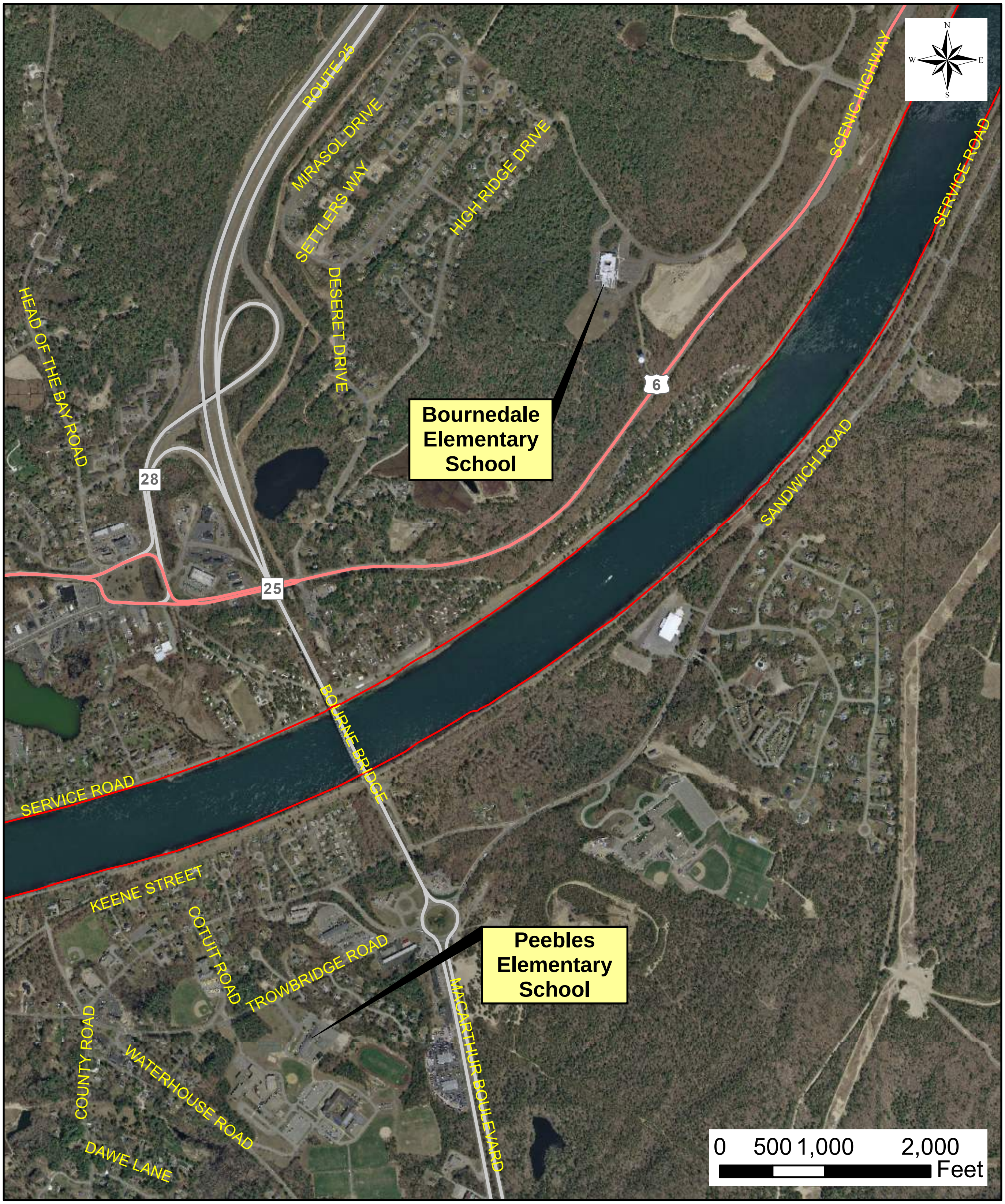

Figure 1: Locus Map

Peebles Elementary School
Bourne, Massachusetts

Data Source: MassGIS
Nitsch Project #11078

Nitsch Engineering

Figure 2: Peebles Elementary School
Peebles Elementary School
Bourne, Massachusetts

Data Source: MassGIS
Nitsch Project #11078

Nitsch Engineering

Figure 3: Bournedale Elementary School
Peebles Elementary School
Bourne, Massachusetts

Data Source: MassGIS
Nitsch Project #11078

Nitsch Engineering

2 EXISTING CONDITIONS

2.1 Study Area Roadways

To examine the existing conditions, we studied and collected data at the following roadways:

1. Trowbridge Road
2. Ernest Valeri Road; and
3. Scenic Highway (Route 6)

Trowbridge Road

Trowbridge Road is classified by the Massachusetts Department of Transportation (MassDOT) as a Rural Major Collector or Urban Minor Arterial and runs in the west-northeast directions between Bourne Rotary and Sandwich Road in Bourne. The posted speed limit along the roadway is 20 miles per hour. The land use along Trowbridge Road is primarily residential. The roadway is within the jurisdiction of the Town of Bourne.

Ernest Valeri Road

Ernest Valeri Road is classified by the Massachusetts Department of Transportation (MassDOT) as a local road and runs in the east-northwest directions between Edge Hill Road and High Ridge Drive in Bourne. The posted speed limit along the roadway is 20 miles per hour. The land use along Ernest Valeri Road is primarily recreational. The roadway is within the jurisdiction of the Town of Bourne.

Scenic Highway (Route 6)

Scenic Highway (Route 6) is classified by MassDOT as a Principal Arterial and runs in the northeast-southwest directions. Scenic Highway (Route 6) is present between Route 3/Sagamore Bridge over Cape Code Canal in Bourne at its northwest terminus and Main Street/Bourne Bridge over the Cape Cod Canal at its southeast terminus. The posted speed limit along the roadway is 50 miles per hour. The land use along Central Avenue is primarily open space. The roadway is within the jurisdiction of the Massachusetts Department of Transportation (MassDOT).

2.2 Study Area Intersections

To examine the existing conditions, we included the following intersections in the study area. The intersection locations are shown in Figure 4.

1. Scenic Highway (Route 6) at Nightingale Farm Road; and
2. Scenic Highway (Route 6) at Edge Hill Road.

Scenic Highway (Route 6) at Nightingale Farm Road

Scenic Highway (Route 6), Nightingale Farm Road and Andy Olivia intersect as a four-way signalized intersection, with Scenic Highway (Route 6) approaching from the east and west, Nightingale Farm Road approaching from the north, and Andy Olivia approaching from the south. A crosswalks is present at the eastbound approach.

From the west, Scenic Highway (Route 6) is a two-way roadway with two lanes in each direction, separated by a 6 feet wide raised concrete median. The approach to the intersection consists of two lanes. The left lane permits a through movement and a left turn movement that transitions to the north on Nightingale Farm Road, and the right lane permits a through movement and a right turn that transitions to the south onto Andy Olivia. Scenic Highway (Route 6) is approximately 56 feet wide at the intersection. Bituminous concrete sidewalks are present on both sides of Scenic Highway (Route 6).

From the east, Scenic Highway (Route 6) is a two-way roadway with two lanes in each direction, separated by a 6 feet wide pavement marking. The approach to the intersection consists of two lanes. The left lane permits a through movement and a left turn movement that transitions to the south onto Andy Olivia, and the right lane permits a through movement and a right turn that transitions to the north on Nightingale Farm Road. Scenic Highway (Route 6) is approximately 56 feet wide at the intersection. There is no sidewalk present on either side of Scenic Highway (Route 6).

From the south, Andy Olivia is a two-way roadway with one lane in each direction, separated by a double yellow centerline. The approach to the intersection consists of one lane to permit through, left, and right movements that transition to the north on Nightingale Road and east and west on Scenic Highway (Route 6). Andy Olivia is approximately 50 feet wide at the intersection. There is no sidewalk present on either side of Andy Olivia.

From the north, Nightingale Road is a two-way roadway separated by a double yellow centerline. The approach to the intersection consists of two lanes. The left lane permits a through movement and a left turn movement that transitions to the east on Scenic Highway (Route 6), and the right lane is a right turn only that transitions to the west on Scenic Highway (Route 6). Nightingale Road is approximately 40 feet wide at the intersection. A bituminous concrete sidewalks is present on the west side of Nightingale Road.

The fully actuated traffic signal operates in three phases. The following movements are permitted or protected, as noted, during each of the phases.

<u>First phase:</u>

- Scenic Highway (Route 6) westbound; and
- Scenic Highway (Route 6) eastbound.

<u>Second phase (if actuated):</u>

- Exclusive pedestrian phase for crossing Scenic Highway (Route 6) eastbound.

<u>Third phase:</u>

- Nightingale Road southbound; and
- Andy Olivia northbound.

Scenic Highway (Route 6) at Edge Hill Road

Scenic Highway (Route 6) and Edge Hill Road intersect as a three-way signalized intersection, with Scenic Highway (Route 6) approaching from the east and west, and Edge Hill Road approaching from the north. There are no crosswalks present at the intersection.

From the west, Scenic Highway (Route 6) is a two-way roadway separated by a 6 feet wide raised concrete median. The approach to the intersection consists of three lanes. The left lane is an exclusive left turn lane that transitions to the north on Edge Hill Road, and the right two lanes permit through movement east on Scenic Highway (Route 6). Scenic Highway (Route 6) is approximately 80 feet wide at the intersection. There is no sidewalk present on either sides of Scenic Highway (Route 6).

From the east, Scenic Highway (Route 6) is a two-way roadway with two lanes in each direction, separated by a 12 feet wide raised concrete median. The approach to the intersection consists of two lanes. The left lane permits a through movement, and the right lane permits a through movement and a right turn that transitions to the north on Edge Hill Road. Scenic Highway (Route 6) is approximately 80 feet wide at the intersection. There is no sidewalk present on either side of Scenic Highway (Route 6).

From the north, Edge Hill Road is a two-way roadway separated by a raised grass median. The approach to the intersection consists of two lanes. The left lane is an exclusive left turn movement lane that transitions to the east on Scenic Highway (Route 6), and the right lane is an exclusive right turn movement lane that transitions to the west on Scenic Highway (Route 6). Edge Hill Road is approximately 60 feet wide at the intersection. There is no sidewalk present on either side of Edge Hill Road.

The fully actuated traffic signal operates in three phases. The following movements are permitted or protected, as noted, during each of the phases.

<u>First phase:</u>

- Scenic Highway (Route 6) westbound left; and
- Scenic Highway (Route 6) westbound Through.

<u>Second phase (if actuated):</u>

- Scenic Highway (Route 6) westbound; and
- Scenic Highway (Route 6) eastbound.

<u>Third phase:</u>

- Edge Hill Road southbound.

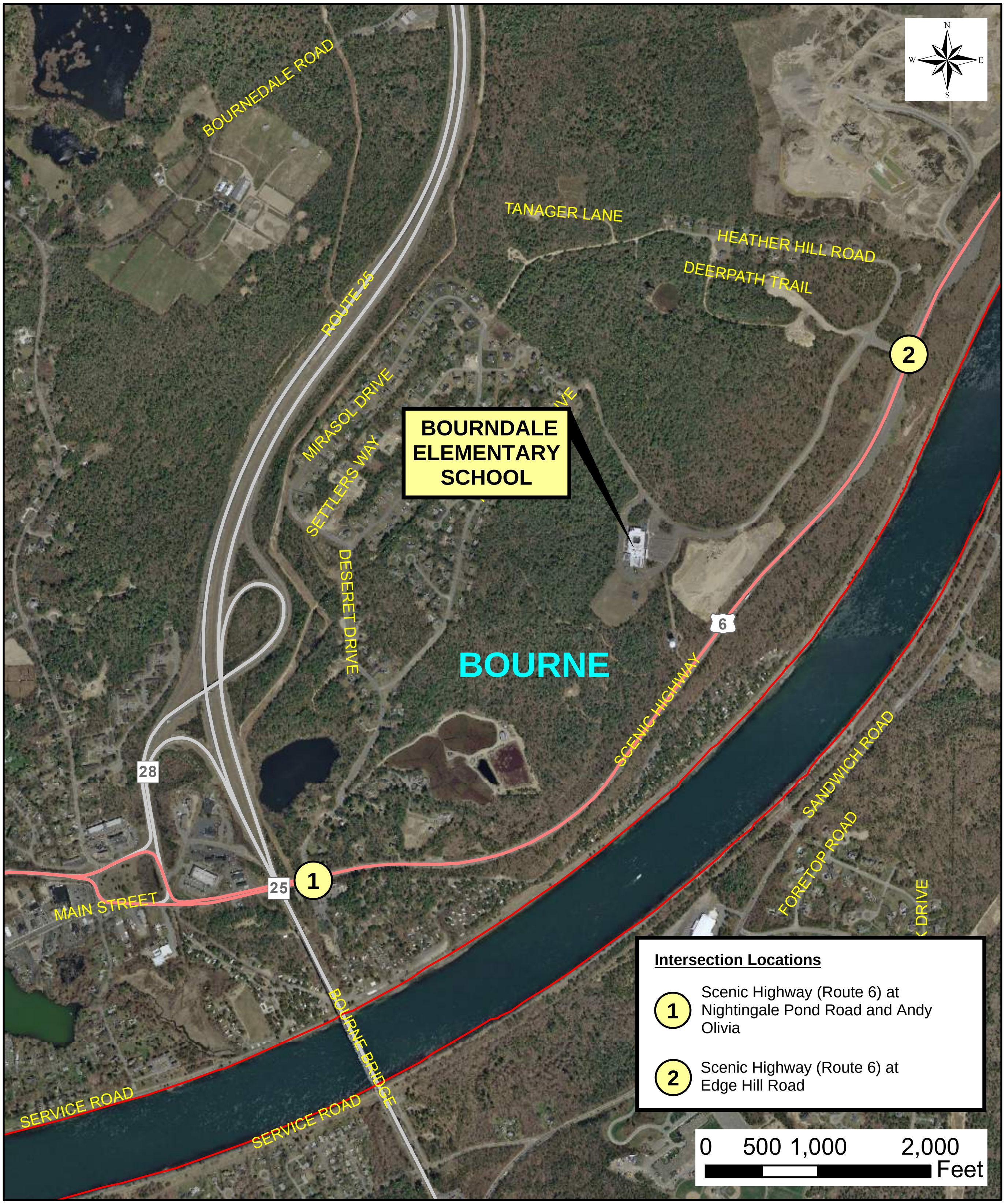

Figure 4: Intersection Locations

Peebles Elementary School
Bourne, Massachusetts

Data Source: MassGIS
Nitsch Project #11078

Nitsch Engineering

2.3 Peebles Elementary School Site Visit

Nitsch Engineering conducted a site visit on Wednesday October 21, 2015 to observe the site circulation associated with the weekday morning drop-off, weekday afternoon pick-up and general queue lengths around the Peebles Elementary School site. The weekday morning drop-off observation occurred during partly cloudy conditions with a temperature of 48 degrees. The weekday afternoon pick-up activity occurred during partly cloudy conditions with a temperature of 58 degrees.

2.4 Peebles Elementary School Site Access and Egress

Peebles Elementary School is located to the south of 70 Trowbridge Road. The single access and egress driveway to Peebles Elementary School exists north of the school at Trowbridge Road. The driveway is approximately 320 feet long and 35 feet wide. A 6-foot sidewalk is present at the westerly side of the driveway, which connect to the sidewalks along Trowbridge Road to the parking lot at Peebles Elementary School. There is no crosswalk at the school driveway at the intersection with Trowbridge Road.

2.5 Peebles Elementary School Traffic Circulation and Pick-up/Drop-off

Existing Morning Drop-off Circulation

Buses and vehicles drop off students via the driveway at Trowbridge Road. The Peebles Elementary School traffic arrives at Trowbridge Road from 8:30 AM through 9:30 AM. We observed that parents arrive and park along driveway and the designated pick-up/drop-off area and walk their children to the school. A total of 93 parental drop-offs were observed during the morning. Buses enter and exit the site from Trowbridge Road. A total of eight buses drop off students at the school. At the time of the site visit we didn't observe any students walkers or bicyclists. 59 vehicles entering the site were travelling eastbound on Trowbridge Road while 47 vehicles were traveling westbound.

Existing Afternoon Pick-up Circulation

The afternoon pick-up period occurs approximately from 2:00 PM to 3:30 PM. Parents start arriving around 2:00 PM and queue up at the school driveway and the pick-up/drop-off area in the parking lot to wait for their children. Once they have collected their children they leave via Trowbridge Road, and normal traffic returns around 3:30 PM. A total of 73 parental pick-up vehicles were observed during afternoon dismissal. Buses enter and exit the site from Trowbridge Road. A total of eight buses pick up students at the school. At the time of the site visit we didn't observe any students walkers or bicyclists. 47 vehicles entering the site were travelling eastbound on Trowbridge Road while 18 vehicles were traveling westbound.

Table 1 quantifies the parent and bus drop-off/pick-up totals for the school.

Table 1 – Peebles Pick-Up/Drop-Off Quantity

Type	Parent		Bus	
Time	**Drop-Off**	**Pick-Up**	**Drop-Off**	**Pick-Up**
8:30 - 8:45	13			
8:45 - 9:00	63		8	
9:00 - 9:15	12			
9:15- 9:30	5			
2:00 - 2:15		2		
2:15 - 2:30		6		
2:30 - 2:45		16		
2:45 - 3:00		29		8
3:00 - 3:15		17		
3:15 - 3:30		3		
Total	93	73	8	8

2.6 Peebles Elementary School Parking Supply and Demand

Nitsch Engineering performed a parking supply and demand count on October 21, 2015. The utilization of the lot was taken at 10:00 AM. Figure 6 shows an overview of the Peebles Elementary School parking lot, the total parking spaces, parking space type, and lot utilization.

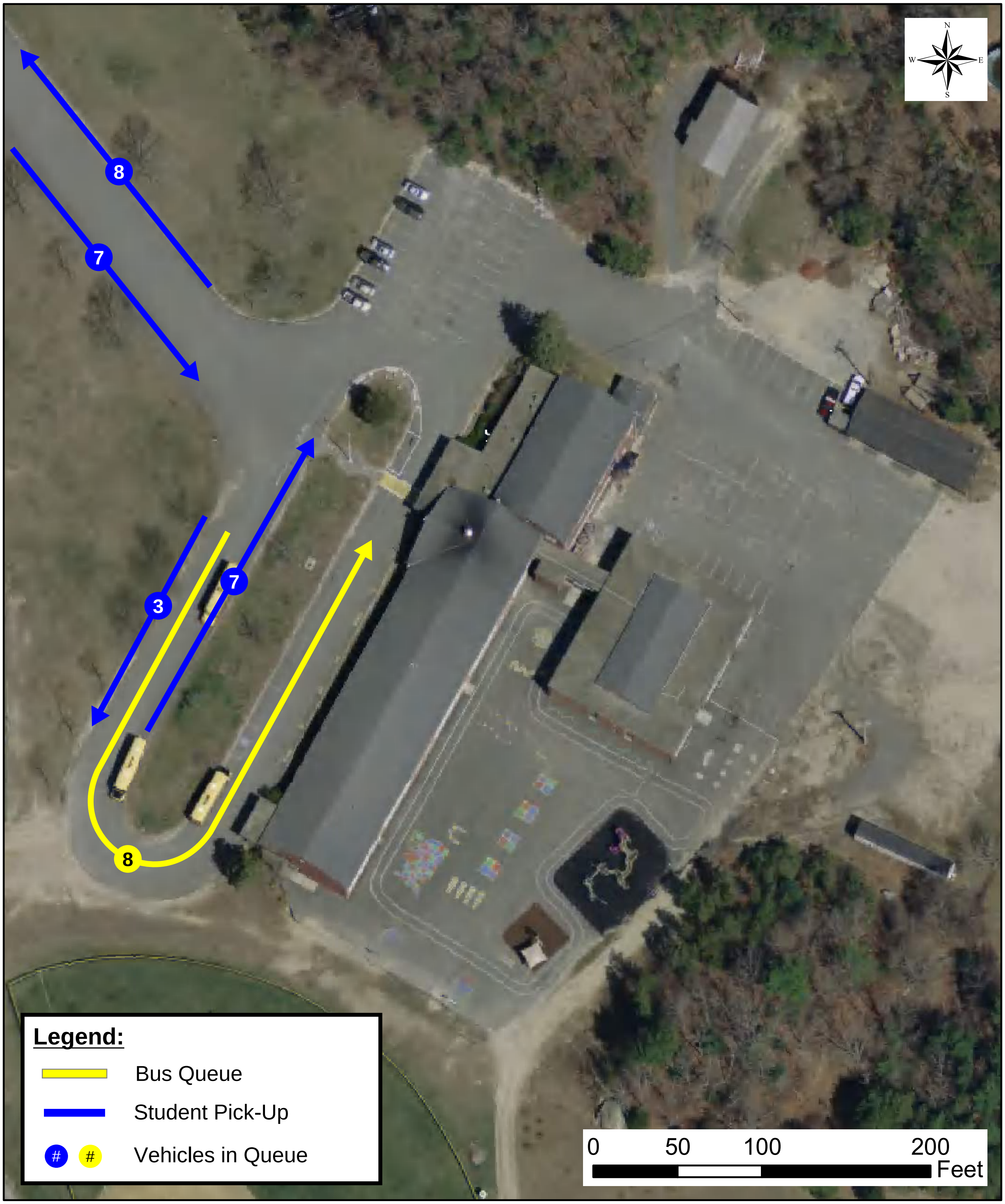

Figure 5: Peebles Elementary School Site Circulation
Peebles Elementary School
Bourne, Massachusetts

Data Source: MassGIS
Nitsch Project #11078

Nitsch Engineering

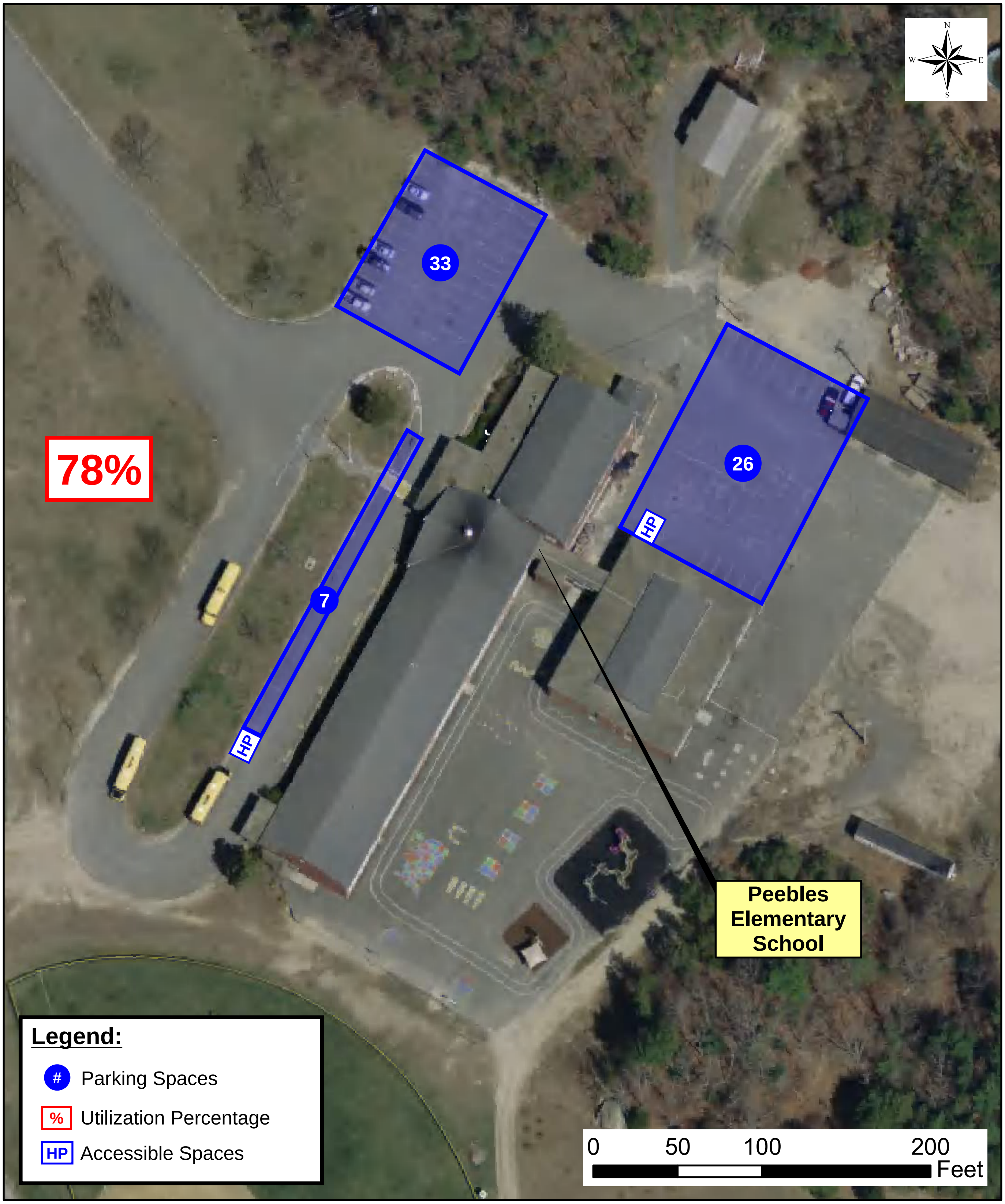

Figure 6: Peebles Elementary Parking Utilization

Peebles Elementary School

Bourne, Massachusetts

Data Source: MassGIS

Nitsch Project #11078

Nitsch Engineering

As can be seen from Figure 6, a total of 66 parking spaces were counted within the Peebles Elementary School, including two of which being accessible spaces. This meets the Architectural Access Board (AAB) Code of Massachusetts Regulations (521 CMR) for the required number of handicapped parking spaces. The two accessible spaces were not utilized at the time of observation. The overall lot utilization was 78%.

2.7 Bournedale Elementary School Site Visit

Nitsch Engineering conducted a site visit on Wednesday October 21, 2015 to observe the site circulation associated with the weekday morning drop-off, weekday afternoon pick-up and general queue lengths around the Bournedale Elementary School site. The weekday morning drop-off observation occurred during partly cloudy conditions with a temperature of 48 degrees. The weekday afternoon pick-up activity occurred during partly cloudy conditions with a temperature of 58 degrees.

2.8 Bournedale Elementary School Site Access and Egress

Bournedale Elementary School is located at 41 Ernest Valerie Road to the south of Ernest Valerie Road, and is served by three access and egress driveways at Ernest Valerie Road. The southerly most driveway is the man driveway to the school. The northerly most driveway is signed DO NOT ENTER, and is generally used for teacher/staff and school bus egress. The middle driveway provides access to the Pre School parking and its pick-off and drop-off area. A 6-foot sidewalk is present at the easterly side of the main driveway, which connects the sidewalk along Ernest Valerie Road to the parking lot at Bournedale Elementary School. There is no crosswalk at the school driveways at their intersection with Ernest Valerie Road.

2.9 Bournedal Elementary School Traffic Circulation and Pick-up/Drop-off

Existing Morning Drop-off Circulation

Buses and vehicles drop off students via the main driveway at Ernest Valerie Road. The Bournedale Elementary School traffic arrives at Ernest Valerie Road from 8:15 AM through 9:30 AM. We observed that parents arrive and drop off their children at the front where school staff greet the children. A total of 69 parental drop-offs were observed during the morning. Buses enter the site from Ernest Valerie Road using the main driveway, and exit the site to Ernest Valerie Road using the northerly most driveway. A total of thirteen buses drop off students at the school. At the time of the site visit we didn’t observe any students walkers or bicyclists. 128 vehicles entering the site were travelling westbound on Ernest Valerie Road while 4 vehicles were traveling eastbound.

Existing Afternoon Pick-up Circulation

The afternoon pick-up period occurs approximately from 2:30 PM to 3:30 PM. Parents start arriving around 2:30 PM and queue up at the school driveway and the pick-up/drop-off area in the parking lot to wait for their children. Once they have collected their children they leave via the main driveway to Ernest Valerie Road, and normal traffic returns around 3:30 PM. A total of 53 parental pick-up vehicles were observed during afternoon dismissal. Buses enter the site from Ernest Valerie Road using the main driveway, and exit the site to Ernest Valerie Road using the northerly most driveway. A total of thirteen buses drop off students at the school. At the time of the site visit we didn’t observe any students walkers or bicyclists. 60 vehicles entering the site were travelling westbound on Ernest Valerie Road while 4 vehicles were traveling eastbound.

Table 2 quantifies the parent and bus drop-off/pick-up totals for the school.

Table 2 – Bournedale Pick-Up/Drop-Off Quantity

Type		Parent		Bus	
Time		Drop-Off	Pick-Up	Drop-Off	Pick-Up
8:15 - 8:30		1			
8:30 - 8:45		3		4	
8:45 - 9:00		48		7	
9:00 - 9:15		17		2	
9:15- 9:30					
1:45 – 2:00			2		
2:00 - 2:15					
2:15 - 2:30			1		
2:30 - 2:45			7		
2:45 - 3:00			20		4
3:00 – 3:15			23		9
3:15 - 3:30					
Total		69	53	13	13

2.10 Bournedale Elementary School Parking Supply and Demand

Nitsch Engineering performed a parking supply and demand count on October 21, 2015. The utilization of the lot was taken at 10:00 AM. Figure 7 shows an overview of the Bournedale Elementary School parking lot, the total parking spaces, parking space type, and lot utilization.

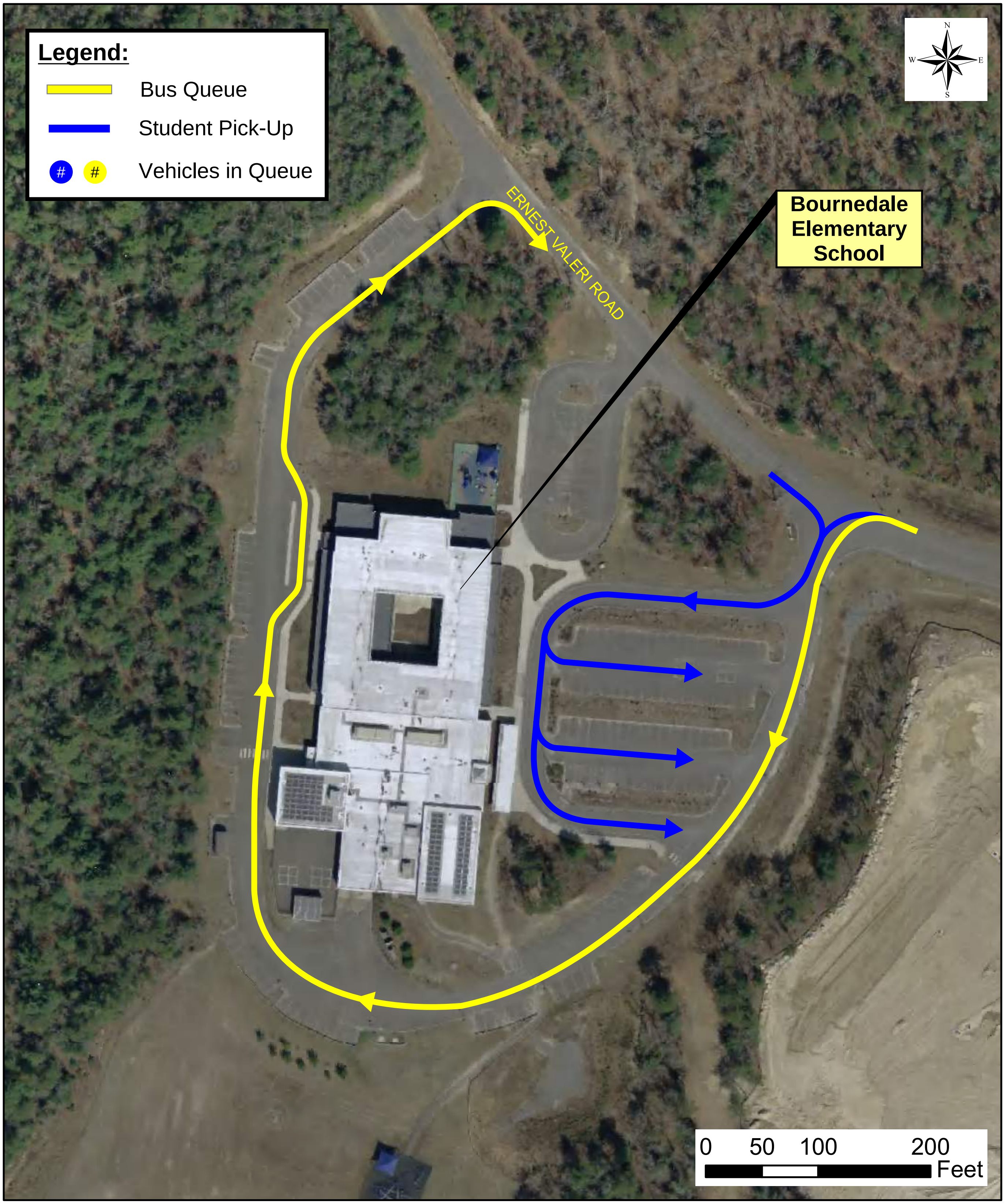

Figure 7: Bournedale Elementary School Site Circulation

Peebles Elementary School
Bourne, Massachusetts

Nitsch Engineering

Data Source: MassGIS
Nitsch Project #11078

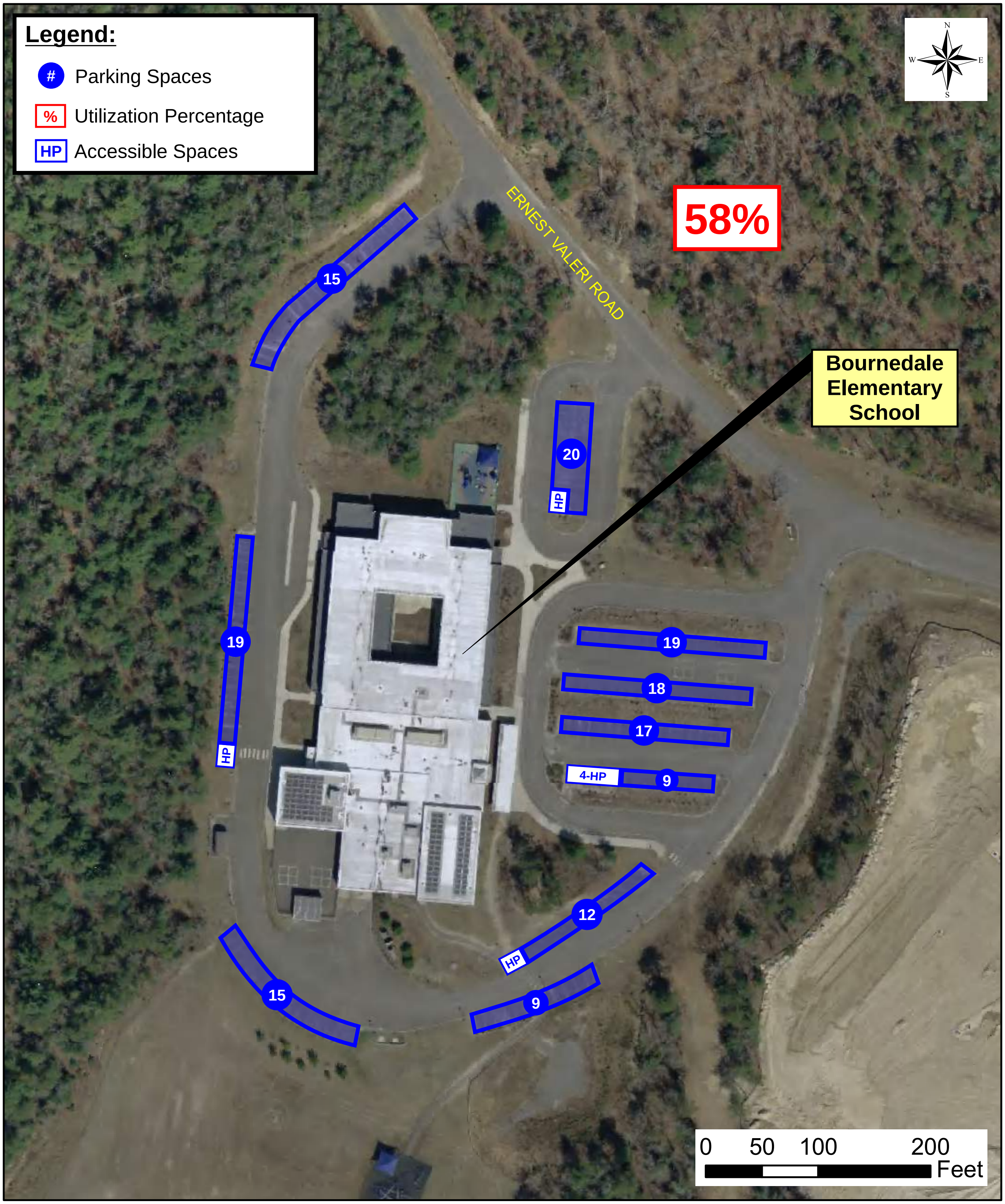

Figure 8: Bournedale Elementary Parking Utilization
Peebles Elementary School
Bourne, Massachusetts

Data Source: MassGIS
Nitsch Project #11078

Nitsch Engineering

As can be seen from Figure 7, a total of 137 parking spaces were counted within the Bournedale Elementary School, including six of which being accessible spaces. This meets the Architectural Access Board (AAB) Code of Massachusetts Regulations (521 CMR) for the required number of handicapped parking spaces. The accessible spaces were not utilized at the time of observation. The overall lot utilization was 58%.

3 SAFETY ANALYSIS

3.1 Crash Data

Nitsch Engineering reviewed the crash data available from MassDOT for the three most recent years available – 2011 to 2013 – for the study intersections. A summary of the crashes, including the severity, and the manner of collision are shown in Table 3.

Table 3 - Crash Summary

Location	Number of Crashes			Severity				Manner of Collision					Percent During	
	Year	Total Crashes	Average	PD[a]	PI[b]	NR[c]	F[d]	A[e]	RE[f]	HO[g]	Other[h]	Incl. Ped-Bike[j]	Peak Hours[k]	Wet/Icy Conditions
Scenic Highway (Route 6) at Nightingale Pond Road	2011	5	8.3	4	1	0	0	1	2	0	2	0	40%	0%
	2012	12		12	0	0	0	0	5	0	7	1	25%	33%
	2013	8		7	1	0	0	0	7	0	1	0	25%	13%
Scenic Highway (Route 6) at Edge Hill Road	2011	1	1.3	1	0	0	0	0	1	0	0	0	0%	0%
	2012	1		1	0	0	0	1	0	0	0	0	0%	0%
	2013	2		2	0	0	0	1	0	0	1	0	50%	50%
Total	ALL	**29**	**4.8**	**27**	**2**	**0**	**0**	**3**	**15**	**0**	**11**	**1**	28%	21%

[a]Property Damage Only; [b]Personal Injury Only (non-Fatal Injury); [c]Not Reported; [d]Fatality; [e]Angle; [f]Rear end; [g]Head on; [h]Sideswipe, opposite direction; sideswipe, same direction, single vehicle crash, rear-to-rear, not reported, unknown, etc.; [j]Includes pedestrian or cyclist; [k]Occurred between 7-9am or 4-6pm

A total of twenty nine crashes were reported within the study areas for the two locations from 2011 to 2013. In terms of severity, twenty seven of the crashes involved property damage and two reported personal injury. In terms of manner of collision, three of the crashes were angle collisions, fifteen were rear-end, and eleven was of other type. One of the crashes involved a pedestrian/bicyclist. Approximately 28% of the crashes occurred during the peak hours of 7:00 to 9:00 AM or 4:00 to 6:00 PM and 21% occurred during wet/icy conditions. Analyzing the crash data, as most crashes were of angle or rear-end type, the crashes were most likely caused by driver carelessness or inattentiveness.

4 EXISTING TRAFFIC CONDITIONS

4.1 2015 Traffic Count Data

Automatic Traffic Recorder (ATR) Data

Nitsch Engineering retained Precision Data Industries, LLC (PDI) of Berlin, Massachusetts to conduct 48-hour Automatic Traffic Recorder (ATR) vehicle traffic counts throughout the study area, on Wednesday, September 9, 2015. Table 3 summarizes the ATR data. A copy of the raw traffic count data is included in Appendix A-1.

Table 4 - Automatic Traffic Recorder (ATR) Summary

LOCATION	PERIOD	ADT[a]			PEAK HOUR TRAFFIC				K factor[d]
		VOLUMES (vpd)[b]	DIRECTIONAL DISTRIBUTION		PERIOD	VOLUMES (vph)[c]	DIRECTIONAL DISTRIBUTION		
Ernest Valeri Road east of Bournedale Elementary School entrance	Weekday	841	50%	WB	Morning	198	66%	WB	0.24
					Evening	209	50%	WB	0.25
Trowbridge Road east of Peebles Elementary School entrance	Weekday	6,730	57%	EB	Morning	556	51%	EB	0.08
					Evening	647	61%	EB	0.10

[a] Average Daily Traffic; [b] Vehicles per day; [c] Vehicles per hour; [d] Percent of daily traffic

Turning Movement Count (TMC) Data

PDI collected Turning Movement Counts (TMC) data at the following signalized intersections on Wednesday, November 18, 2015 from 7:30 AM to 9:30 AM and 1:30 PM to 3:30 PM to capture both the school morning and afternoon peak periods.

- Scenic Highway (Route 6) at Nightingale Pond Road
- Scenic Highway (Route 6) at Edge Hill Road

Nitsch Engineering conducted TMC data at the school access and egress points during the Site Visits. We collected weekday morning and afternoon data on October 21, 2015. Nitsch Engineering did not collect bicycle and pedestrian access and egress data at either of the elementary schools.

The peak hours within the study area were established as 7:35 AM to 8:35 AM during the weekday morning period and 2:30 PM to 3:30 PM during the afternoon period. The 2015 existing traffic volumes are shown in Figure 8.

Vehicle Travel Speeds

PDI measured vehicle travel speeds at the ATR locations at the time of the traffic count. The 85th percentile speed, meaning the speed at which 85% of the vehicles are at or below, is noted because of its importance in determining appropriate roadway speed limits and for calculating required sight distance. The speed data is shown in Table 4.

Table 5 - Vehicle Travel Speeds

INTERSECTION	POSTED SPEED (MPH[a])	85th PERCENTILE SPEED (MPH[a])
Ernest Valeri Road east of Bournedale Elementary School entrance		
Eastbound	Not Posted	28
Westbound	20	28
Trowbridge Road east of Peebles Elementary School entrance		
Eastbound	20	38
Westbound	20	38

a = Miles per hour

Note: 85th Percentile Speeds were averaged between the full two days of data collected

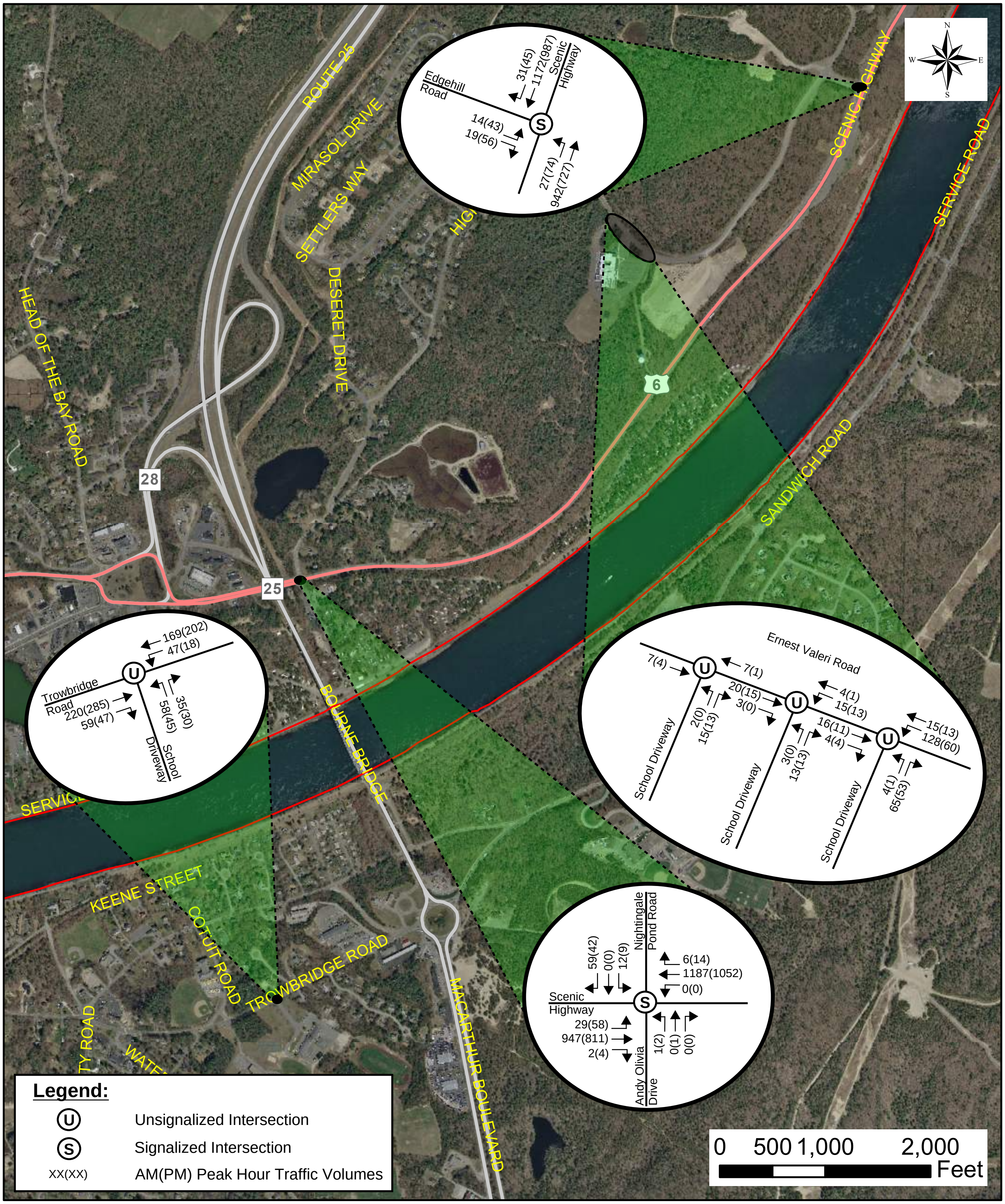

Figure 9: 2015 Existing Traffic Volumes

Peebles Elementary School
Bourne, Massachusetts

Data Source: MassGIS
Nitsch Project #11078

Nitsch Engineering

4.2 Seasonal Adjustment

Nitsch Engineering researched data from MassDOT to establish if any seasonal adjustment to the traffic counts was necessary. We researched and used the MassDOT's 2007 Weekday Seasonal Adjustment Factors, which is the latest data set available. The data compares monthly traffic volumes from different types of roadways across the Commonwealth to compare the traffic volumes from each individual month to the annual average. During the month of October on Cape Cod Recreational roadways, traffic volumes are approximately 1% higher than an average month. Additionally, the counts were performed while school was in full session, so the traffic counts represent the average condition with respect to traffic within the study area. Therefore, we made no adjustment to the collected volumes. The Weekday Seasonal Adjustment Factors are included in Appendix A-2.

5 FUTURE NO-BUILD TRAFFIC CONDITIONS

5.1 Background Growth

Consistent with recent MassDOT projects in eastern Massachusetts, we used an annual background traffic growth factor of 0.5%.

5.2 No-Build Traffic Volumes

The 2020 No-Build Traffic Volumes are shown in Figure 8 and are derived by applying the traffic growth rate of 0.5% per year over the five-year design horizon to project the 2020 traffic counts.

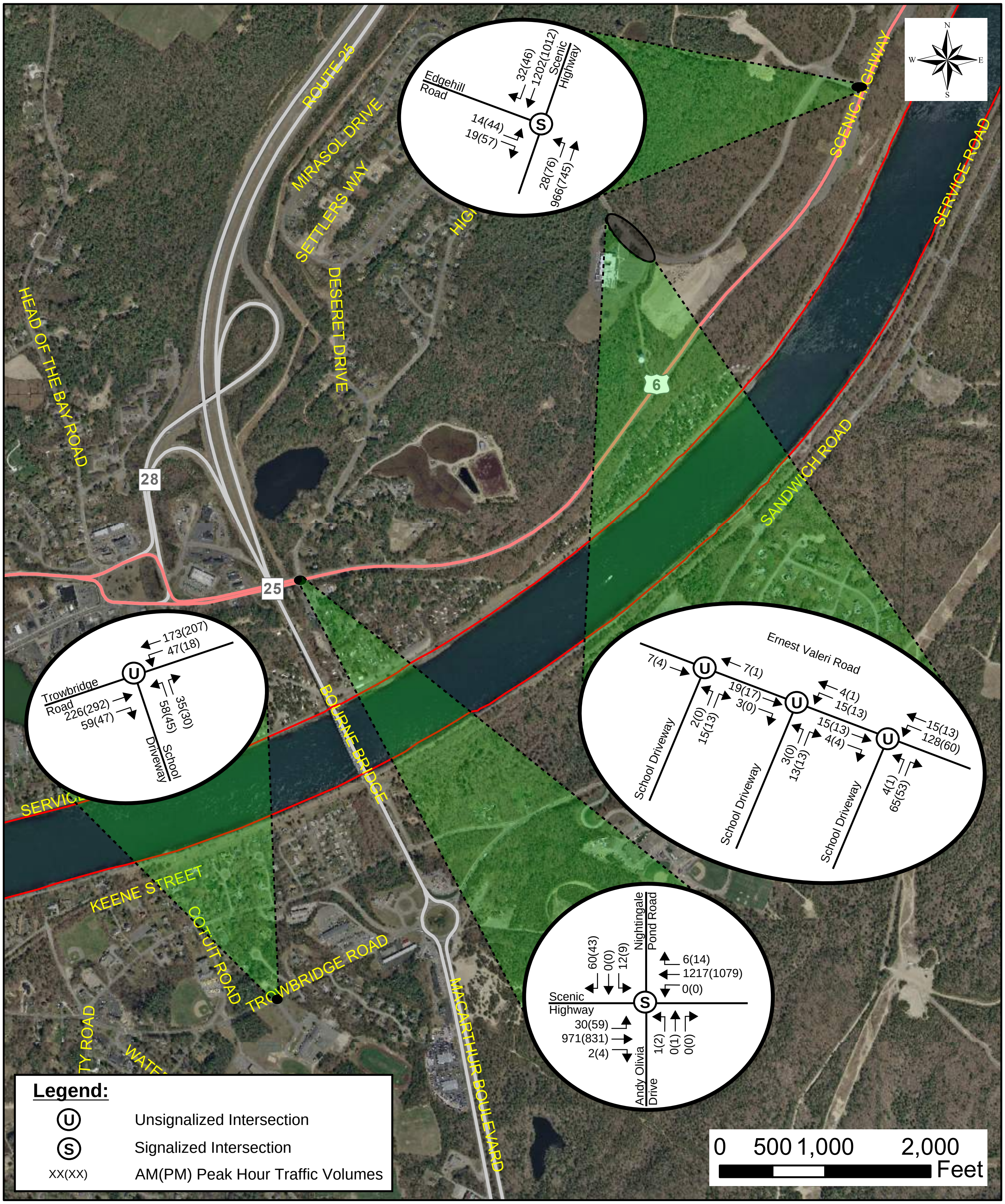

Figure 10: 2020 No-Build Traffic Volumes

Peebles Elementary School
Bourne, Massachusetts

Data Source: MassGIS
Nitsch Project #11078

Nitsch Engineering

6 FUTURE CONDITIONS

The following four options are being reviewed as part of the study scope:

Option 1 – Construct a new or renovated Peebles Elementary School building and grounds on the existing site.
Option 2 – Renovate Bournedale School to consolidate Peebles Elementary School (K-4);
Option 3 – Renovate Bournedale School to consolidate Peebles Elementary School (K-4) as well as the 5th grade students; and
Option 4 – Construct a new or renovated Peebles Elementary School building and grounds on the existing site, and consolidate 5th grade.

The operational conditions for Options 1 will be the same as the existing conditions, this option will have no impact on the traffic network surrounding the school sites.
The operational conditions for Options 4 will also be the same as the existing conditions, except for the consolidated 5th grade, which will result in an increase in traffic volumes at the intersection of Trowbridge and the School Driveway during the morning drop-off and the afternoon pick-up periods . We analyzed the traffic operations at the intersection of Peebles School Driveway at Trowbridge Road for Existing and Build conditions. The analysis indicate that this option will have no impact on the traffic network surrounding the school sites. The analysis worksheets are provided in Appendix A-6.
To be conservative, we examined the proposed future conditions with respect to Option 3 (which is identical to Option 2 with the addition of the 5th grade).

6.1 Proposed Trip Generation

The increase in traffic volumes at Ernest Valeri Road due to the new site for the school during the weekday morning drop-off and weekday afternoon pick-up, are outlined in Table 6.

Table 6 - Existing and Proposed Trip Generation

TRIP DIRECTION/TYPE	Weekday Morning Peak[b]	Weekday Evening Peak[b]
Entering	**AM**	**PM**
Ernest Valeri Road	129	101
Exiting	**AM**	**PM**
Ernest Valeri Road	129	101
Total Future	**258**	**202**
[a]Morning Peak Hour, 7:30 - 8:30 AM; [b]Afternoon Peak Hour, 2:30- 3:30 PM		

As shown in Table 6, the proposed consolidated Peebles and Bournedale elementary schools with the 5th grade at Ernest Valeri Road site would result in approximately 258 additional entering and exiting trips during the weekday morning drop-off and approximately 202 additional entering and exiting trips during the weekday afternoon pick-up. The increase also accounts for vehicular traffic associated with teachers and staff at the new school.

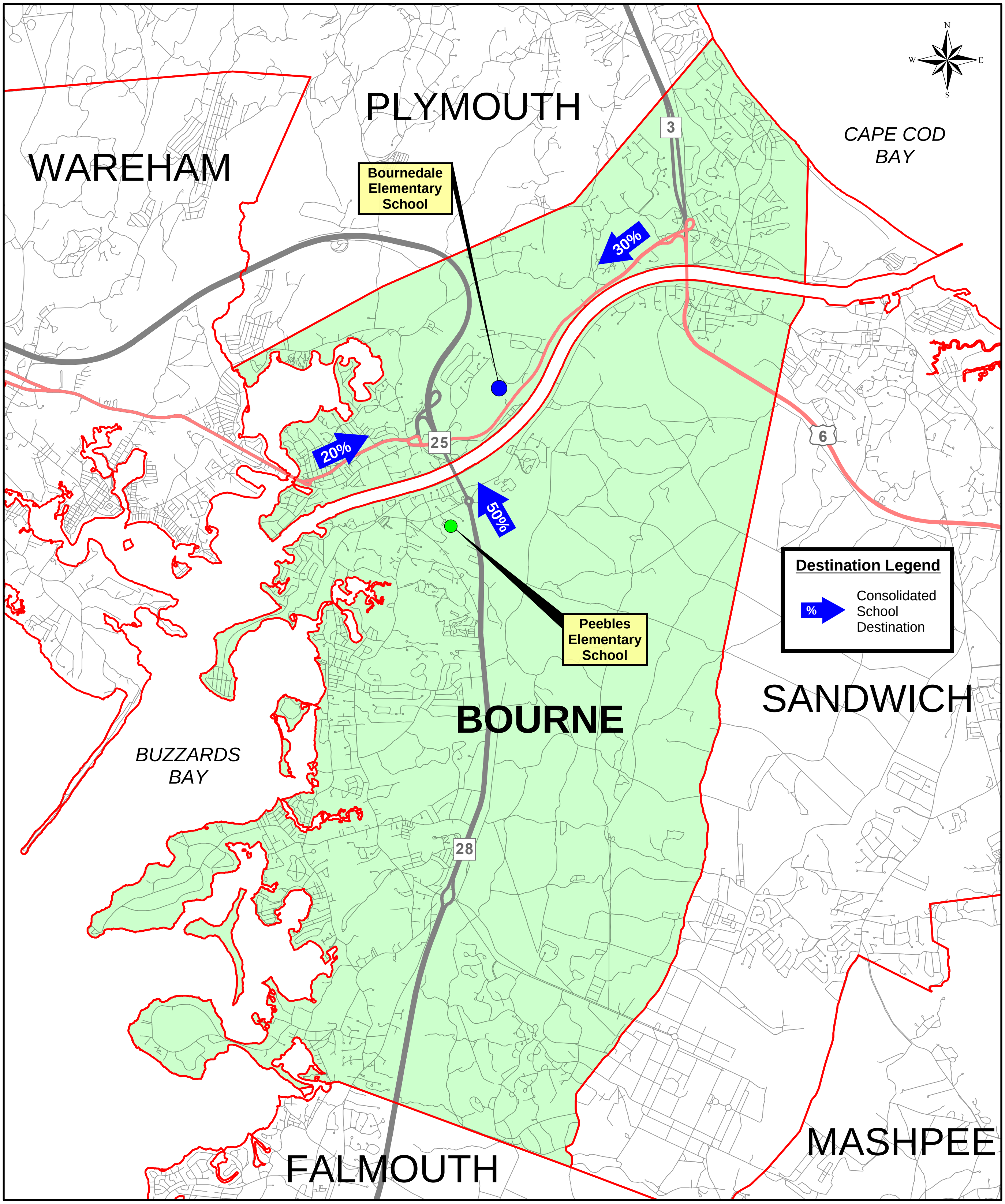

Figure 11: Regional Trip Distribution
Peebles Elementary School
Bourne, Massachusetts

Data Source: MassGIS
Nitsch Project #11078

Nitsch Engineering

6.2 Proposed Option 3 – Consolidated Peebles and Bournedale Elementary Schools

A sketch plan of the Consolidated Peebles and Bournedale Elementary Schools on the Bournedale School Site is shown in Appendix A-4. The sketch plan shows the proposed driveway locations of the school with the site location and outline.

Site Layout

For the construction of the Consolidated Peebles and Bournedale Elementary Schools building and grounds on Bournedale School site, the new school addition building would be constructed east of the existing school.

Parking

Parking would be provided onsite surrounding the proposed school building. In all, 271 parking spaces are proposed.

Vehicle Access/Egress, Circulation, Bus and Parent Pick-Up/Drop-Off

Vehicle access and egress will continue to be provided by the existing three driveways.

- The main driveway will provide direct access to the school parking lots. School buses will also use this driveway. The bus pick-up/drop-off will occur at the designated bus loop located west of the school.

- The PK driveway will be reconstructed to provide a one-way counter-clockwise parent pick-up/drop-off loop around a new reconstructed parking to the east of the school building.

- The most northerly driveway will continue to remain a one-way egress to Ernest Valeri Road.

Trip Distribution, Diversion, and Assignment

The trips to/from the Bournedale Elementary School Site will be distributed and assigned based on the exiting travel patterns and logical travel routes, which are based on the existing roadway network both within the Town of Bourne and the surrounding region.

In order to properly assess the effect of trips to the Bournedale Elementary School Site, drop-off and pick-up trips at the existing Peebles Elementary School must be assigned to the Bournedale Elementary School Site. The Trip Distribution Percentages specific to the Bournedale Elementary School Site are shown in Figure 12.

The resultant trip assignment volumes for both the weekday morning and weekday afternoon peak hours were calculated by multiplying the trip distribution by the trip generation from Table 6, and are shown in Figure 13 for the weekday morning and the weekday afternoon peak hours.

Proposed 2020 Build Volumes

For the Bournedale Elementary School Site, the corresponding trip assignment volumes were added to the 2020 No-Build Volumes to yield the 2020 Build Volumes. The 2020 Build Volumes for the Bournedale Elementary School Site are shown in Figure 14.

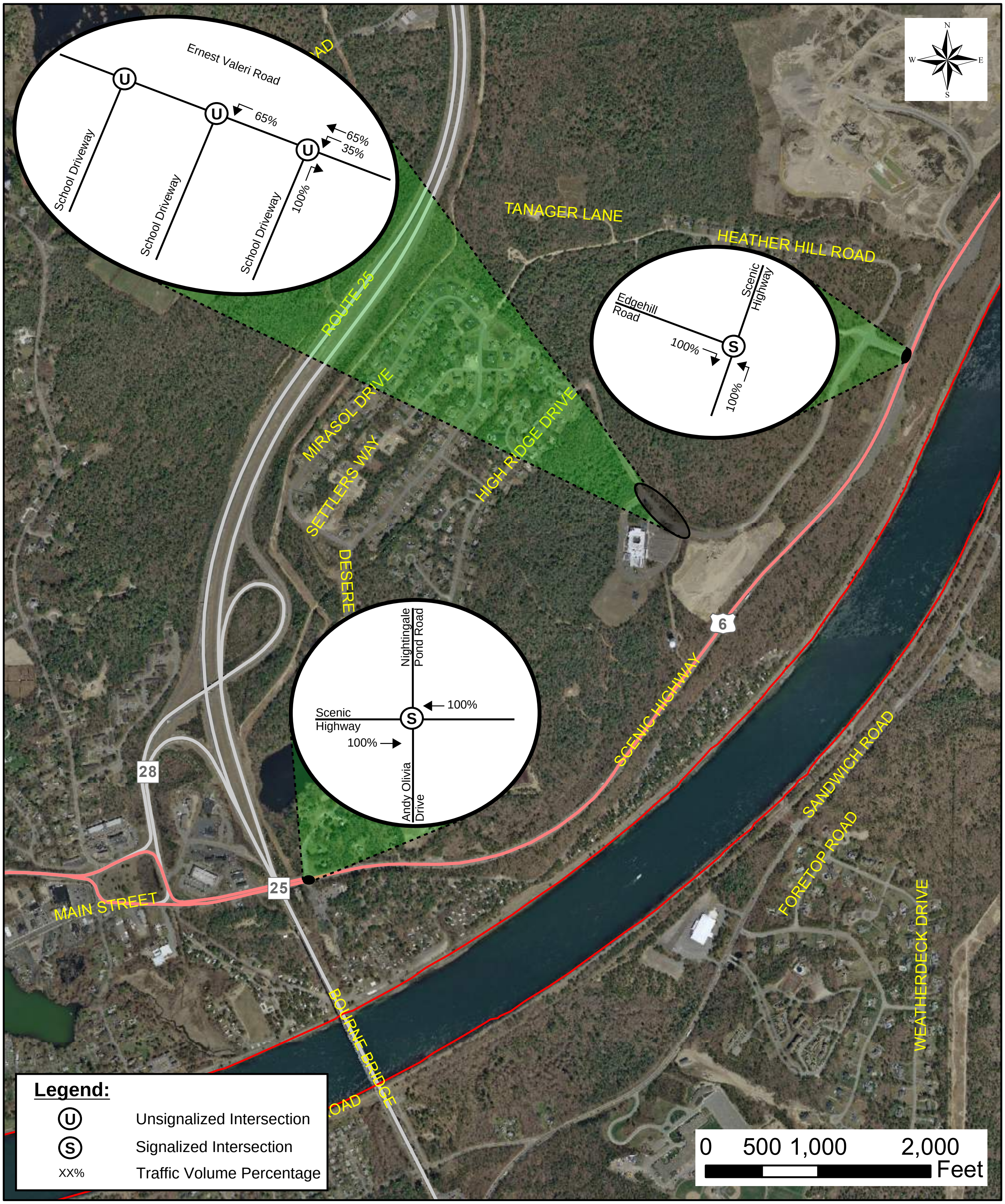

Figure 12: Trip Distribution

Peebles Elementary School
Bourne, Massachusetts

Data Source: MassGIS
Nitsch Project #11078

Nitsch Engineering

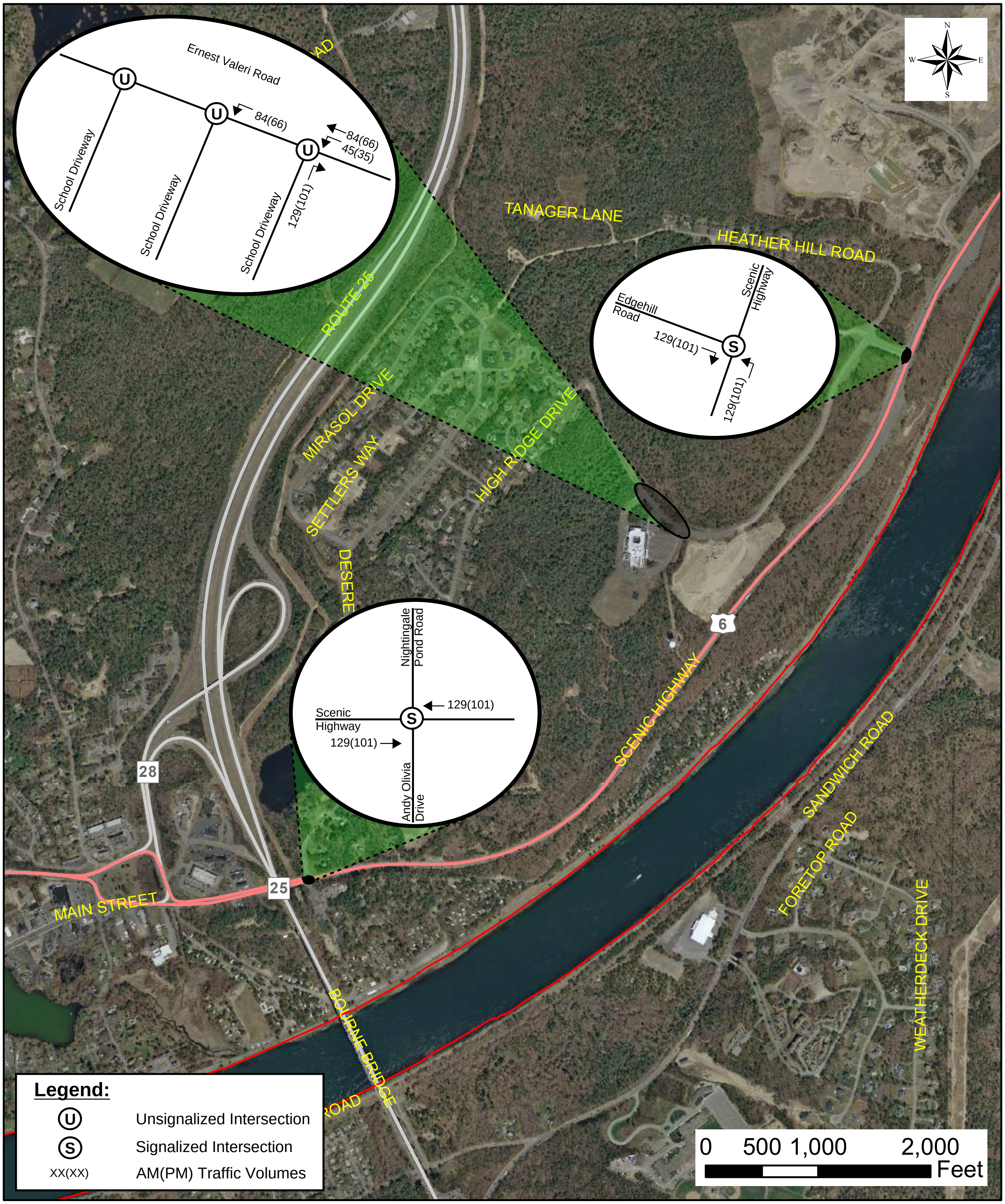

Figure 13: Trip Assignment
Peebles Elementary School
Bourne, Massachusetts

Data Source: MassGIS
Nitsch Project #11078

Nitsch Engineering

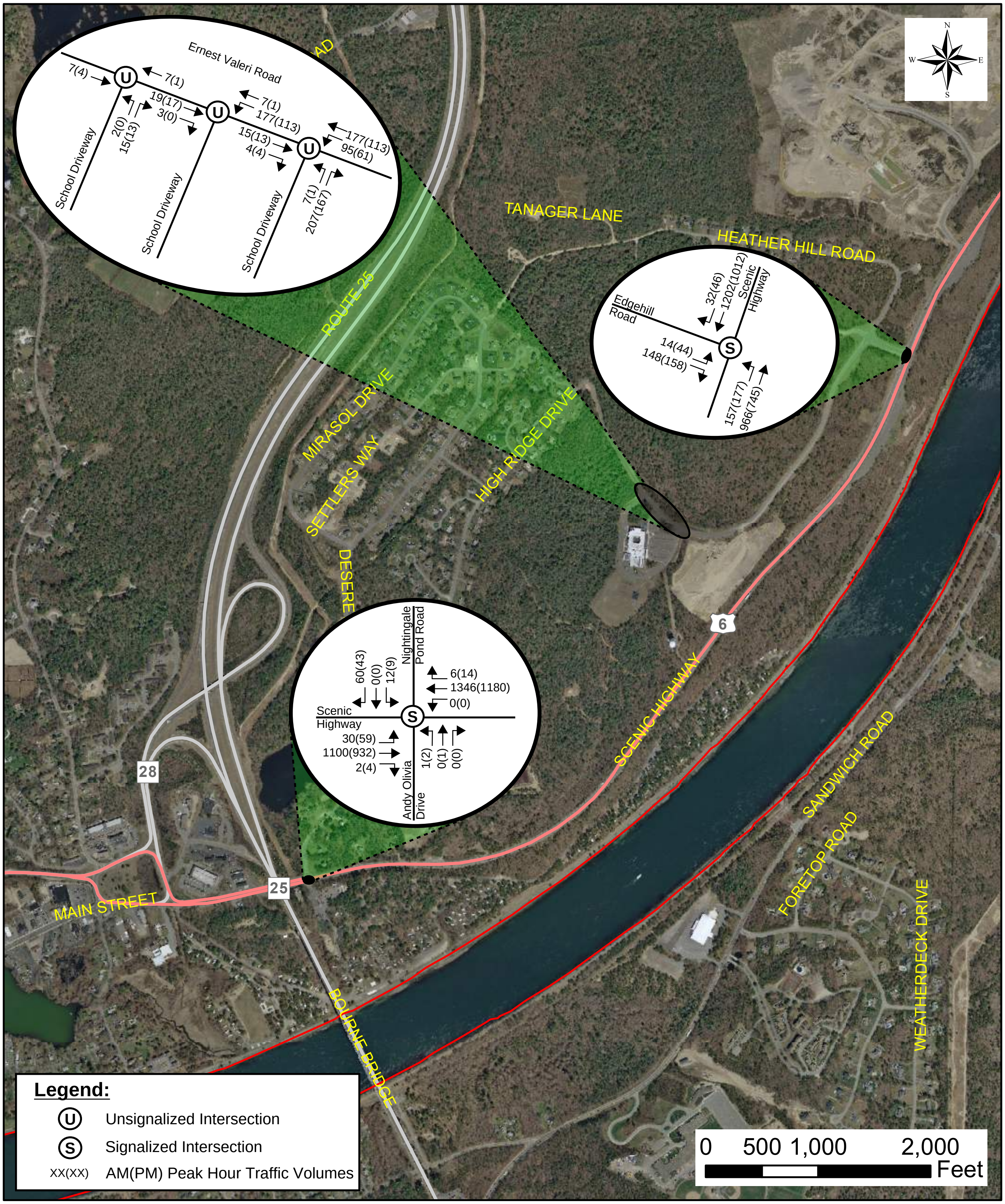

Figure 14: 2020 Future Build Traffic Volumes

Peebles Elementary School
Bourne, Massachusetts

Data Source: MassGIS
Nitsch Project #11078

Nitsch Engineering

7 OPERATIONS ANALYSIS

7.1 Level of Service Criteria

Level of Service (LOS) is a qualitative measure describing operational conditions within a traffic stream. Six LOS criteria are used to describe the quality of traffic flow for any type of facility controls. LOS A represents the best operating conditions and LOS-F represents the worst operating conditions. Nitsch Engineering analyzed the levels of service for the intersections using Synchro 8 software, which is based on the traffic operational analysis methodology of the Highway Capacity Manual[1] (HCM). The methodology for signalized intersections assesses the effects of signal type, timing, phasing, progression, vehicle mix, and geometrics on control delay. Control delay includes initial deceleration delay, queue move-up time, stopped delay, and final acceleration delay. Table 8 summarizes the relationship between LOS and average control delay for signalized and unsignalized intersections.

Table 7 - Level of Service Criteria

SIGNALIZED INTERSECTIONS		UNSIGNALIZED INTERSECTIONS		
Level of Service	Control Delay (seconds/vehicle)	Level of Service by Volume-to-Capacity (v/c) Ratio		Control Delay (seconds/vehicle)
		v/c ≤ 1.0	v/c > 1.0	
A	0 to 10	A	F	0 to 10
B	>10 to 20	B	F	>10 to 15
C	>20 to 35	C	F	>15 to 25
D	>35 to 55	D	F	>25 to 35
E	>55 to 80	E	F	>35 to 50
F	>80	F	F	>50
Source: 2010 Highway Capacity Manual, Transportation Research Board, Washington D.C. 2010				

7.2 Capacity Analysis

Nitsch Engineering performed traffic analyses to evaluate traffic operations for the 2015 Existing Conditions, 2020 No-Build Conditions, and 2020 Build Conditions – Consolidated Peebles and Bournedale Elementary Schools on the Bournedale School site during the weekday morning and weekday afternoon peak hours at the study intersections. The analyses depict the volume-to-capacity (v/c) ratio, vehicle delay, LOS, and the 50th/95th percentile vehicle queues.

[1] Highway Capacity Manual, 2010 Edition, Transportation Research Board (TRB), Washington, D.C.

7.3 2015 Existing Capacity Analysis

Nitsch Engineering analyzed the 2015 Existing Conditions traffic operations at the study intersections based on the existing traffic counts performed by PDI and Nitsch Engineering in October 2015. The Level of Service Summary is shown in Table 8. The analysis worksheets are provided in Appendix A-6.

Table 8 – Level of Service Summary - 2015 Existing Conditions

INTERSECTION	MOVEMENT	WEEKDAY MORNING PEAK HOUR					WEEKDAY EVENING PEAK HOUR				
		V/C[1]	DELAY[2]	LOS[3]	50th Q[4]	95th Q[5]	V/C[1]	DELAY[2]	LOS[3]	50th Q[4]	95th Q[5]
Scenic Highway (Route 6) at Nightingale Road	Scenic Hgwy EB - TL	0.79	24.3	C	254	336	0.83	27.1	C	233	320
	Scenic Hgwy WB - TR	0.76	22.2	C	303	382	0.68	20.1	C	254	323
	Andy Olivia NB - LTR	0.01	38.0	D	1	6	0.02	38.7	D	2	10
	Nightingale Rd SB-LT	0.08	39.61	D	7	25	0.06	39.3	D	5	22
	Nightingale Rd SB-R	0.25	7.0	A	0	23	0.18	3.0	A	0	7
	Overall	0.79	22.8	C			0.83	22.9	C		
Scenic Highway (Route 6) at Edge Hill Road	Scenic Hgwy EB - L	0.46	50.	D	51	95	0.45	50.0	D	49	92
	Scenic Hgwy EB - T	0.29	2.7	A	54	84	0.27	2.8	A	52	81
	Scenic Hgwy WB - TR	0.49	9.3	A	187	292	0.45	9.3	A	166	261
	Edge Hill Rd SB-L	0.26	47.4	D	23	53	0.32	48.3	D	29	64
	Edge Hill Rd SB-R	0.26	6.7	A	0	16	0.29	7.9	A	0	22
	Overall	0.49	8.9	A			0.45	9.1	A		

[1] Volume to Capacity Ratio; [2] Vehicle Delay, measured in seconds; [3] Level Of Service; [4] 50th Percentile Queue (in feet); [5] 95th Percentile Queue (in feet) based upon 22 feet per vehicle; * = Defacto Left Lane; # = volume exceeds capacity, queue may be longer; m = 95th percentile queue is metered by upstream signal; ~ = Volume exceeds capacity, queue is theoretically infinite

7.4 2020 No-Build Capacity Analysis

Nitsch Engineering analyzed the 2020 No-Build Conditions traffic operations at the study intersections. The 2020 No-Build Condition represents the 2015 Existing Conditions and projects a traffic increase at the rate of 0.5% per year between 2015 and 2020. The Level of Service Summary is shown in Table 9. The analysis worksheets are provided in Appendix A-6.

Table 9 – Level of Service Summary - 2020 No-Build Conditions

INTERSECTION	MOVEMENT	WEEKDAY MORNING PEAK HOUR					WEEKDAY EVENING PEAK HOUR				
		V/C[1]	DELAY[2]	LOS[3]	50th Q[4]	95th Q[5]	V/C[1]	DELAY[2]	LOS[3]	50th Q[4]	95th Q[5]
Scenic Highway (Route 6) at Nightingale Road	Scenic Hgwy EB - TL	0.81	25.4	C	267	355	0.84	28.2	C	245	337
	Scenic Hgwy WB - TR	0.77	22.5	C	315	397	0.68	20.1	C	264	335
	Andy Olivia NB - LTR	0.01	39.0	D	1	6	0.02	39.0	D	2	10
	Nightingale Rd SB-LT	0.08	40.1	D	7	25	0.07	40.0	D	5	22
	Nightingale Rd SB-R	0.26	7.2	A	0	24	0.19	3.4	A	0	8
	Overall	0.81	23.5	C			0.84	23.4	C		
Scenic Highway (Route 6) at Edge Hill Road	Scenic Hgwy EB - L	0.47	50.2	D	52	96	0.46	50.0	D	51	95
	Scenic Hgwy EB - T	0.29	2.7	A	56	87	0.28	2.8	A	54	85
	Scenic Hgwy WB - TR	0.50	9.5	A	196	304	0.46	9.3	A	175	275
	Edge Hill Rd SB-L	0.26	47.4	D	23	53	0.33	48.4	D	31	66
	Edge Hill Rd SB-R	0.26	6.7	A	0	16	0.29	8.1	A	0	23
	Overall	0.50	9.0	A			0.46	9.3	A		

[1] Volume to Capacity Ratio; [2] Vehicle Delay, measured in seconds; [3] Level Of Service; [4] 50th Percentile Queue (in feet); [5] 95th Percentile Queue (in feet) based upon 22 feet per vehicle; * = Defacto Left Lane; # = volume exceeds capacity, queue may be longer; m = 95th percentile queue is metered by upstream signal; ~ = Volume exceeds capacity, queue is theoretically infinite

7.5 2020 Build Capacity Analysis

Nitsch Engineering analyzed the 2020 Build Conditions traffic operations at the study intersections for the consolidated Peebles and Bournedale Elementary Schools on the Bournedale School Site. The 2020 Build Conditions represents the 2020 No-Build Conditions traffic volumes with added Trip Assignment Volumes for the consolidated Peebles Elementary School on the Bournedale Elementary School Site. The Level of Service Summary is shown in Table 10. The analysis worksheets are provided in Appendix A-6.

Table 10 – Level of Service Summary - 2020 Build Conditions

INTERSECTION	MOVEMENT	WEEKDAY MORNING PEAK HOUR					WEEKDAY EVENING PEAK HOUR				
		V/C[1]	DELAY[2]	LOS[3]	50th Q[4]	95th Q[5]	V/C[1]	DELAY[2]	LOS[3]	50th Q[4]	95th Q[5]
Scenic Highway (Route 6) at Nightingale Road	Scenic Hgwy EB - TL	0.89	30.8	C	338	#497	0.93	373	D	304	#459
	Scenic Hgwy WB - TR	0.80	23.4	C	372	468	0.72	20.8	C	303	382
	Andy Olivia NB - LTR	0.01	39.0	D	1	6	0.02	39.3	D	2	10
	Nightingale Rd SB-LT	0.09	40.8	D	7	25	0.07	40.3	D	6	22
	Nightingale Rd SB-R	0.27	7.4	A	0	24	0.19	3.5	A	0	8
	Overall	0.89	26.4	C			0.93	27.9	C		
Scenic Highway (Route 6) at Edge Hill Road	Scenic Hgwy EB - L	0.71	51.8	D	134	#218	0.67	50.3	D	116	179
	Scenic Hgwy EB - T	0.29	2.7	A	56	87	0.28	2.8	A	54	85
	Scenic Hgwy WB - TR	0.59	14.8	B	260	348	0.53	13.7	B	214	336
	Edge Hill Rd SB-L	0.26	47.4	D	23	53	0.33	48.4	D	31	66
	Edge Hill Rd SB-R	0.26	6.7	A	0	16	0.29	8.1	A	0	23
	Overall	0.71	14.2	B			0.67	9.3	B		

[1] Volume to Capacity Ratio; [2] Vehicle Delay, measured in seconds; [3] Level Of Service; [4] 50th Percentile Queue (in feet); [5] 95th Percentile Queue (in feet) based upon 22 feet per vehicle; * = Defacto Left Lane; # = volume exceeds capacity, queue may be longer; m = 95th percentile queue is metered by upstream signal; ~ = Volume exceeds capacity, queue is theoretically infinite

7.6 Traffic Signal Warrant Methodology

To quantify if additional mitigation would be necessary at the consolidated Peebles and Bournedale Elementary Schools on the Bournedale School Site, based on the expanded student population, or at the access and egress points to the Bournedale Elementary School Site, we performed a Traffic Signal Warrant Analyses.

We performed the warrants based on the procedures outlined in the *Manual on Uniform Traffic Control Devices*[2] (MUTCD), 2009 edition. The MUTCD indicates nine separate conditions under which a traffic signal warrant can be met, and they are shown below.

1. Warrant 1: Eight-Hour Vehicular Volume;
2. Warrant 2: Four-Hour Vehicular Volume;
3. Warrant 3: Peak Hour;
4. Warrant 4: Pedestrian Volume;
5. Warrant 5: School Crossing;
6. Warrant 6: Coordinated Signal System;
7. Warrant 7: Crash Experience;
8. Warrant 8: Roadway Network; and
9. Warrant 9: Intersection Near A Grade Crossing.

7.7 Traffic Signal Warrant

We performed the Signal Warrant Analysis for Ernest Valeri Road at the Bournedale Elementary School Driveway.

Given the criteria set forth in the MUTCD and the assumptions above, no traffic signal warrant was met for this location. The Traffic Signal Warrant Analysis is included in Appendix A-5.

[2] Manual on Uniform Traffic Control Devices for Streets and Highways, 2009 Edition, Federal Highway Administration

7.8 Travel Time Study

To quantify the additional time expected for students to travel to the consolidated Peebles and Bournedale Elementary Schools on the Bournedale School Site, we conducted a travel study using the Test Car Technique. The distance between the Existing Peebles Elementary School and Bournedale Elementary School was driven 10 times to record the average travel time.

Table 11 – Results of Travel Time Study

Test Run (4.8 Miles)	Travel Time (Min)	Average Travel Speed (MPH)
1	11.5	50
2	12	48
3	11.5	49
4	11.5	50
5	13	48
6	12	46
7	12.25	45
8	13	47
9	11	50
10	11.75	49

Based on the test runs average it will take approximately 12 minutes to travel from existing Peebles Elementary School, located 70 Trowbridge Road to Bournedale Elementary School at 41 Ernest Valerie Road.

8 CONCLUSIONS AND RECOMMENDATIONS

8.1 Conclusions

Nitsch Engineering has been retained by Flansburgh Architects (FA) to prepare a qualitative assessment of safety, traffic circulation, and traffic access/egress, associated with the feasibility study and schematic design for the Peebles Elementary School project in Bourne, Massachusetts. Four options are considered for the reconstruction.

Option I. Build new or renovate the existing Peebles Elementary School building and grounds on the site of the existing school, located 70 Trowbridge Road in Bourne, Massachusetts.

Option II. Renovate and expand existing Bournedale Elementary School, located at 41 Ernest Valerie Road, approximately 2 miles northeast of the existing school site to include the relocated Peebles Elementary School.

Option III. This would be Option 2 with the consolidating the 5th Grade presently at the Middle School; and

Option IV. This would be Option 1 with the consolidating the 5th Grade presently at the Middle School

The operational conditions for Options 1 will be the same as the existing conditions, this option will have no impact on the traffic network surrounding the school sites.

The operational conditions for Options 4 will also be the same as the existing conditions, except for the consolidated 5th grade, which will result in an increase in traffic volumes at the intersection of Trowbridge and the School Driveway during the morning drop-off and the afternoon pick-up periods. We analyzed the traffic operations at the intersection of Peebles School Driveway at Trowbridge Road for Existing and Build conditions. The analysis indicate that this option will have no impact on the traffic network surrounding the school sites. The analysis worksheets are provided in Appendix A-6.

We examined the future conditions, as well as site circulation with respect to the projected student drop-off and pick-up for Option -3, since it presents the worst case scenario. This would result in an increase in traffic volumes within the study area during the weekday morning drop-off and weekday afternoon pick-up, totaling approximately 258 additional trips (entering and exiting) during the weekday morning drop-off, and approximately 202 additional trips (entering and exiting) during the weekday afternoon pick-up. The parking lot will contain 271 spaces, and the curb at the car loop can accommodate approximately 25 vehicles.

We anticipate that the following summarizes the vehicular circulation at the New Bournedale Elementary School site during morning drop-off and afternoon pick-up periods:

- During the morning drop-off, the parents (approximately 177 vehicles) will arrive at the new driveway exclusively for pick-up and drop-off between 8:30 and 9:30 AM. They will drop-off their children at the new car loop and exit the school via the main driveway. Our analysis indicate that during the morning drop-off, the 95th Percentile Queue length on the School driveway for the right turns to Ernest Valeri Road will be 12 feet (approximately one vehicle).
- During the afternoon pick-up, the parents (approximately 113) will start arriving between 2:30 and 3:30 PM. The new pick-up and drop-off loop can accommodate approximately 25 vehicles to park along the car loop curb line without spilling out of the car loop and blocking the driveway. Additional spaces are available at the new parking lot, which can accommodate 127 vehicles. Once the parents have picked up their children, they will proceed to exit the parking lot and the school via the main driveway. 95th Percentile Queue length on the School driveway for the right turns to Ernest Valeri Road will be 12 feet (approximately one vehicle).

The existing roadway network at Scenic Highway (Route 6) contains moderate traffic volumes and some delays during the weekday morning peak hours, as the Bournedale Elementary School drop-off traffic overlaps slightly with the peak hour of the commuter traffic, relocating the Peebles Elementary School to the Bournedale Elementary School site location may add minor impacts to the off-site intersections. However, our analysis show the impacts very minor, and may not require mitigation.

8.2 Recommendations

Based on the proposed Combined Peebles and Bournedale Elementary Schools at Bournedale Elementary School Site, Nitsch Engineering offers the following recommendations:

- Continue the designation of the area as a School Zone under State and local statute, and install new appropriate School Zone signs equipped with flashing lights at Ernest Valeri Road, which can also act as traffic calming devices.
- Reach out to parents via social media to increase safety awareness.

J. Phase I ESA

J. PHASE I ENVIRONMENTAL SITE ASSESSMENT

Fuss & O'Neil Inc. conducted the Phase I Environmental Site Assessment associated with the Peebles and Bournedale Elementary School sites in Bourne.

Purpose: To identify recognized environmental conditions (RECs) present at the site with a focus on hazardous substances and/or petroleum products.

Tasks Performed: The following areas of focus were evaluated and reviewed as part of this study: Site history in regards to previous use and development, various area maps, town records from various departments, interviews and site walkthroughs with school facilities department, owner's site questionnaire, and general hydrological information

FINDINGS (PEEBLES):

- There is a 10,000-gallon fuel underground storage tank (UST) serving the back-up boiler
- There were documents related to an oil spill in 1995 in connection with the underground tank system. Additional documents, which were requested from the Fire Department, but have not been delivered, may complete the review on this item.
- A spill of 17 gallons of diesel fuel occurred when refueling a bus on site and a solution was achieved
- The nearby Camp Edwards is on the USEPA National Priorities list identifying groundwater contamination. The impact area was studied on the maps and none of the impact area plumes migrated toward the site.
- Nearby businesses, i.e. gas stations, did have incidents and solutions were achieved

CONCLUSION:

1. There is one identified recognized environmental condition (REC) associated with the subject site. The REC is the currently unresolved history of spills associated with the UST system. This REC item may be re-designated as a "historical REC" (i.e. a closed case addressed to the satisfaction of state environmental standards) in this evaluation at a later date pending review of Fire Dept. documentation.

2. There are no offsite concerns based on records addressing nearby businesses, i.e. gas stations, Camp Edwards distance from the site, and local hydrological conditions. These conditions should not have a negative impact on the site.

FINDINGS (BOURNEDALE):

- The 2009 Bournedale Elementary School project was greenfield construction
- There are no target sites nearby that would negatively impact the school site
- The eastern portion of the site is located within and adjacent to a medium-yield aquifer. The aquifer map is along the property line and outside proposed project limits.

CONCLUSION:

1. There are no identified recognized environmental conditions (REC) associated with the subject site.

2. There are no offsite concerns based on distance from the site and local hydrological conditions that would have a negative impact on the site.

The full Phase I ESA report follows.

K. Hazardous Materials Assessments

K. HAZARDOUS MATERIAL ASSESSMENT

Fuss & O'Neill EnviroScience, LLC. conducted a Limited Hazardous Building Materials Inspection at the Peebles Elementary School located at 70 Trowbridge Road in Bourne, Massachusetts (the "Site").

PURPOSE: To perform a lead-based paint (LBP) screening, an inventory of fluorescent light ballasts and mercury-containing equipment, a quantification of presumed polychlorinated biphenyl (PCB)–containing source building materials, and a limited asbestos inspection as part of a feasibility study that anticipates demolishing the Site building.

TASKS PERFORMED: The following areas of focus were evaluated and reviewed as part of this inspection: Review of previously performed Limited Hazardous Building Material Inspection Reports, LBP Screening, Inventory of Fluorescent Light Ballasts and Mercury-Containing Equipment, Quantification of Presumed PCB-Containing Source Building Materials, Asbestos Inspection (mostly visual). Destructive investigative techniques were conducted at the Site building to access materials associated with the brick veneer and ceramic tiles only.

FINDINGS – PEEBLES SCHOOL:

- LBP was found associated with Window Supports and Ceramic Wall Tiles.
- Several materials are presumed to contain PCBs including: Window Caulking and Glazing Compound.
- Fluorescent Light Ballasts and Mercury-Containing Equipment were quantified in a previous report.
- Multiple samples were determined to be asbestos-containing materials (ACM) including: Caulking, Glazing Compound, Dampproofing, Plaster Skim Coat, Insulations, Floor Tiles, Boiler Components, Duct Vibration Isolators, Cement Panels, and Soil.

CONCLUSION:
If disturbed by demolition activities, LBP-coated building components should be segregated from the general demolition waste stream, and be analyzed to determine proper off-site disposal.

Identified PCB-containing materials should be presumed to contain regulated concentrations of PCBs until analysis indicates otherwise. These materials should be removed and disposed at an EPA-approved facility.

DEHP-containing fluorescent light ballasts must be segregated for proper packaging, transporting and disposal. While mercury-containing equipment and fluorescent lamps must be recycled, reclaimed, or disposed as hazardous waste prior to disturbance.

Prior to disturbance ACM that would likely be impacted by the proposed demolition activities must first be abated by a Commonwealth of Massachusetts Department of Labor Standards (MADLS)-licensed Asbestos Abatement Contractor. This is a requirement of MADLS, Commonwealth of Massachusetts Department of Environmental Protection (MassDEP), and the United States Environmental Protection Agency (EPA) National Emission Standards for Hazardous Air Pollutants (NESHAP) regulations governing asbestos abatement.

Due to the date of construction, the Bournedale Elementary School possesses a letter from the architect (Kaestle Boos Associates, Inc.) dated August 11, 2011 stating that "no asbestos-containing building materials were specified for use in, nor to the best of our knowledge installed in, the construction of the Bournedale Elementary School." This letter satisfies the EPA Asbestos Hazard Emergency Response Act (AHERA) regulations governing asbestos in schools; however, prior to renovation or demolition, EPA NESHAP regulations still apply. This regulation requires a thorough asbestos inspection of all areas that will be impacted during renovation or demolition. Once a scope of work is defined, a supplemental inspection should be performed to ensure NESHAP requirements are met.

The full Hazardous Material Assessment report follows.

Limited Hazardous Building Materials Inspection Report

James F. Peebles Elementary School &
Bournedale Elementary School
Bourne, Massachusetts

Flansburgh Architects

Boston, Massachusetts

December 2015

Fuss & O'Neill EnviroScience, LLC
50 Redfield Street, Suite 100
Boston, Massachusetts 02122

Project No. 20150666.A1E

FUSS & O'NEILL
EnviroScience, LLC

December 4, 2015

Mr. Kent Kovacs
Vice President
Flansburgh Architects
77 North Washington Street
Boston, MA 02114

RE: Limited Hazardous Building Materials Inspection
James F. Peebles Elementary School Feasibility Study
Bourne, Massachusetts
Fuss & O'Neill EnviroScience No. 20150666.A1E

Dear Mr. Kovacs:

Enclosed is the limited hazardous building materials inspection summary report for the inspection conducted at the James F. Peebles Elementary School located at 70 Trowbridge Road in Bourne, Massachusetts and Bournedale Elementary School located at 41 Ernest Valeri Road in Bourne Massachusetts.

On October 26 and 28, 2015, Fuss & O'Neill EnviroScience, LLC state-certified Asbestos Inspectors performed a limited asbestos inspection, a lead-based paint screening, an inventory of fluorescent light ballasts and mercury-containing equipment, and a quantification of presumed polychlorinated biphenyl (PCB)-containing source building materials as part of a feasibility study that includes demolishing the James F. Peebles Elementary School. The inspection also included reviewing documents associated with the construction of the Bournedale Elementary School.

The information summarized in this report is solely for the abovementioned materials. The work was performed in accordance with our written revised scope of services dated September 25, 2015.

If you should have any questions regarding the contents of this report, please do not hesitate to contact me at 617-282-4375, extension 4703. Thank you for this opportunity to have served your environmental needs.

Sincerely,

Dustin A. Diedricksen
Project Manager

DD/amf

Enclosure

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1 Introduction

On October 26 and 28, 2015, Fuss & O'Neill EnviroScience, LLC (EnviroScience) representatives, Mr. Robert Mallett and Mr. Michael Coffey, performed a limited hazardous building materials inspection as part of a feasibility study to demolish the James F. Peebles Elementary School located at 70 Trowbridge Road in Bourne, Massachusetts (the "Site").

Limited hazardous building materials inspections were previously conducted at the Site; pertinent information from these reports was utilized during this inspection. These reports included six "Limited Hazardous Building Materials Inspection" reports, prepared by EnviroScience, dated as follows:

- December 2014;
- October 2014;
- July 2013;
- December 2012;
- April 2010; and
- August 2009.

The inspection also included reviewing AHERA documents associated with the construction of the Bournedale Elementary School.

1.1 Scope of Work

The work was performed for Flansburgh Architects (the "Client") in accordance with our revised written scope of services dated September 25, 2015. This report is subject to the limitations presented in *Appendix A*. The scope of work included the following:

- Limited Asbestos-Containing Materials (ACM) Inspection;
- Lead-Based Paint (LBP) Screening;
- Inventory of Fluorescent Light Ballasts and Mercury-Containing Equipment; and
- Quantification of presumed polychlorinated biphenyl (PCB)-containing source building materials.

Intrusive or destructive investigative techniques were conducted at the Site to access materials associated with the brick veneer and ceramic tiles only. These techniques were not performed at the Site to access and observe other hidden or concealed areas that may contain suspect ACM that were hidden or obstructed from normal view. Hard enclosures or obstructed areas typically include, but are not limited to, the following:

- Wall Cavities;
- Pipe Chases;
- Spaces above Fixed Ceilings;
- Beneath Window/Door Frames;
- Underneath Wooden or Raised Flooring;
- Behind Mirrors, Blackboards, and Signage;
- Areas behind and within Mechanical Equipment (Including Freezers and Refrigeration Units); and
- Vapor/Moisture Barrier under Floors or on Concrete Foundations.

EnviroScience did not conduct subsurface investigations to identify concealed suspect materials throughout the subject property.

We excluded collection and analysis of suspect materials for polychlorinated biphenyls (PCB) during this inspection. Sampling for PCBs is presently not mandated by the United States Environmental Protection Agency (EPA); however, significant liability risk for disposing PCB-containing wastes exists. Recent knowledge of PCBs within these matrices has become more prevalent, especially with remediation contractors, waste haulers, and disposal facilities. Many property owners have become subject to large changes in schedule, scope, and costs as a result of failure to identify this possible contaminant prior to renovation or demolition activities. Suspect materials recommended by the EPA for testing have instead been presumed to contain regulated concentrations of PCBs.

1.2 Building Description

The Site building is composed of two, two-story sections constructed of concrete masonry units with a brick façade; these are referenced as the "original building" and the "Annex" [building]. The original building was reportedly constructed in the late 1950s with the Annex reportedly being constructed in the early 1960s. The Site building contains approximately 60,000 square feet of interior floor space.

2 Asbestos Inspection

A property owner must ensure that a thorough asbestos inspection is performed prior to possible disturbance of suspect ACM during renovation or demolition activities. This is a requirement of the EPA National Emission Standards for Hazardous Air Pollutants (NESHAP) regulation located at Title 40 CFR, Part 61, Subpart M.

On October 26 and 28, 2015, Mr. Mallett and Mr. Coffey of EnviroScience conducted the inspection. Mr. Mallett and Mr. Coffey are both Commonwealth of Massachusetts Department of Labor Standards (MADLS)-certified Asbestos Inspectors. Refer to *Appendix B* for copies of each Asbestos Inspector state certification and EPA accreditation.

2.1 Methodology

The inspection was conducted by visually inspecting for suspect ACM and touching each of the suspect materials. The suspect materials were categorized into three EPA NESHAP groups: friable and non-friable Category I and Category II type ACM.

- A Friable Material is defined as material that contains greater than one percent (> 1%) asbestos that, when dry, **can** be crumbled, pulverized, or reduced to powder by hand pressure.
- A Category I Non-Friable Material refers to material that contains > 1% asbestos (i.e., packings, gaskets, resilient floor coverings, and asphalt roofing products) that when dry **cannot** be crumbled, pulverized, or reduced to powder by hand pressure.
- A Category II Non-Friable Material refers to any non-friable material excluding Category I materials that contain > 1% asbestos that when dry **cannot** be crumbled, pulverized, or reduced to powder by hand pressure.

The suspect ACM were also categorized into their applications including, Thermal System Insulation (TSI), Surfacing ACM, and Miscellaneous ACM. TSI includes those materials used to prevent heat loss/gain or water condensation on mechanical systems. Examples of TSI are pipe insulation, boiler insulation, duct insulation, and mudded pipe fitting insulations. Surfacing ACM includes those ACM that are applied by spray, trowel, or otherwise applied to an existing surface. Surfacing ACM is commonly used for fireproofing, decorative, and acoustical applications. Miscellaneous materials include those ACM not listed as thermal or surfacing, such as sheet flooring, floor tiles, ceiling tiles, caulking, mastics, construction adhesives, etc.

The EPA recommends collecting suspect ACM samples in a manner sufficient to determine asbestos content and to segregate each suspect type of homogenous (similar in color, texture, and date of application) materials. The EPA NESHAP regulation does not specifically identify a minimum number of samples to be collected for each homogeneous material, but the NESHAP regulation does recommend the use of sampling protocols included in EPA Title 40 CFR, Part 763, Subpart E: Asbestos Hazard Emergency Response Act (AHERA).

The EPA AHERA regulation requires a specific number of samples be collected based on the type of material and quantity present. This regulation includes the following protocol:

1. Surfacing Materials (i.e., plaster, spray-applied fireproofing, etc.) must be collected in a randomly distributed manner representing each homogenous area based on the overall quantity represented by the sampling as follows:

    a. Three samples collected from each homogenous area that is less than or equal to 1,000 square feet.
    b. Five samples collected from each homogenous area that is greater than 1,000 square feet but less than or equal to 5,000 square feet.
    c. Seven samples collected from each homogenous area that is greater than 5,000 square feet.

2. Thermal System Insulation (i.e., pipe insulations, tank insulations, etc.) must be collected in a randomly distributed manner representing each homogenous area. Three samples must be collected from each material. Also, a minimum of one sample of any patching materials applied to TSI, presuming the patched area is less than six linear or square feet, should be collected.

3. Miscellaneous materials (i.e., floor tile, gaskets, construction mastics, etc.) should have a minimum of two samples collected for each type of homogenous material. Sample collection was conducted in a manner sufficient to determine asbestos content of the homogenous material as determined by the inspector.

The inspectors collected samples of suspect ACM and prepared proper chain-of-custody forms for transmission of collected samples to EMSL Analytical, Inc. (EMSL) for analysis. EMSL is a Commonwealth of Massachusetts-licensed and American Industrial Hygiene Association (AIHA)-accredited Asbestos Analytical Laboratory. Initial asbestos sample analysis was conducted using the EPA Interim Method for the Determination of Asbestos in Bulk Building Materials (EPA/600/R-93/116) via Polarized Light Microscopy with Dispersion Staining (PLM/DS).

The EPA recommends that non-friable, organically-bound (NOB) materials (e.g., asphaltic-based materials, adhesives, caulking, etc.) undergo further confirmatory analysis utilizing Transmission Electron Microscopy (TEM). Fourteen (14) of the collected NOB samples were analyzed by TEM.

If samples of suspect ACM could not be collected or were inaccessible but observed elsewhere, these materials were assumed to contain asbestos and the inspector approximated quantities.

2.2 Results

The EPA, the Occupational Safety and Health Administration (OSHA), and the MADLS, define a material that contains > 1% asbestos utilizing PLM/DS, as an ACM. The Massachusetts Department of Environmental Protection (MassDEP) further defines ACM as materials containing greater than or equal to (≥) 1% asbestos. MassDEP also defines an asbestos-containing waste material (ACWM) as:

- ACM removed during renovation or demolition activities;
- Materials contaminated by an ACM during renovation or demolition activities; or
- ACM on and/or in facility components that are inoperable or have been taken out of service.

The MassDEP further defines waste material containing any amount of asbestos as an ACWM which must be managed and disposed as asbestos waste. Materials that are identified as "none detected" are specified as not containing asbestos.

Utilizing the EPA, OSHA, MADLS, and MassDEP protocol and criteria, the following materials were determined to be either **ACM**, or **ACWM**:

- Louver Caulking;
- Door Caulking;
- Window Caulking;
- Window Glazing Compound;
- Dampproofing;
- Ceiling Plaster Skim Coat;
- Boiler Components;
- Duct Vibration Isolators;
- Pipe Insulation;
- Mudded-Pipe Fitting Insulation;
- 9" x 9" Floor Tile;
- Fiber-Reinforced Cement Panels;
- Sub-Slab Dampproofing Materials; and
- Contaminated Soil.

Refer to **Table 1** attached hereto for the complete list of ACM, ACWM, and non-ACM identified by sample identification, material type, sample location, and asbestos content as part of this inspection. Refer to **Table 2**, attached hereto, for the identified ACM inventory.

Refer to *Appendix C* for the asbestos laboratory analytical reports and chain-of-custody forms.

2.3 Conclusions and Recommendations

Based on visual observations, sample collection, and laboratory analysis, ACM/ACWM were identified at the James F. Peebles Elementary School. It should be noted that pieces of corrugated, paper-type and pre-formed, block-type pipe insulations were observed mixed into the soil in the pipe tunnels of both the original and the Annex buildings.

Due to the date of construction, the Bournedale Elementary School possesses a letter from the architect (Kaestle Boos Associates, Inc.) dated August 11, 2011 stating that "no asbestos-containing building materials were specified for use in, nor to the best of our knowledge installed in, the construction of the Bournedale Elementary School." This letter satisfies the EPA AHERA regulations governing asbestos in schools; however, prior to renovation or demolition, EPA NESHAP regulations still apply. This regulation requires a thorough asbestos inspection of all areas that will be impacted during renovation or demolition. Once a scope of work is defined, a supplemental inspection should be performed to ensure NESHAP requirements are met.

Prior to disturbance, ACM/ACWM that would likely be impacted by the proposed renovation/demolition activities must first be abated by a MADLS-licensed Asbestos Abatement Contractor. This is a requirement of MADLS, MassDEP, and EPA NESHAP regulations governing asbestos abatement.

Due to the inability to effectively separate some types of multi-layered ACM (e.g., floor tile/mastic, gypsum board/joint compound, mastic/plywood, etc.) from non-ACM, these materials are considered asbestos-contaminated and must be managed as ACWM for removal and disposal purposes.

Prior to renovation/demolition that may disturb hidden/inaccessible areas, we recommend conducting a supplemental asbestos inspection of these areas and spaces. These spaces include below grade foundation walls, gymnasium floor, and beneath the concrete slab.

If suspect materials should be encountered during renovation/demolition activities that are not identified in this report as being non-ACM, they should be assumed to be ACM until sample collection and laboratory analysis indicate otherwise.

<u>This report is not intended to be utilized as a bidding document or as a project specification document</u>. The report is designed to aid the building owner, architect, construction manager, general contractors, and asbestos abatement contractors in locating ACM and ACWM.

3 Lead-Based Paint Screening

On October 26 and 28, 2015, Mr. Mallett and Mr. Coffey of EnviroScience performed a LBP screening associated with painted building components at the Site that may be disturbed during renovation/demolition activities. An X-ray fluorescence (XRF) spectrum analyzer was used to perform the LBP screening. The screening was conducted in accordance with generally-accepted industry standards for non-residential (i.e., not child-occupied) buildings.

3.1 Methodology

A Radiation Monitoring Device Model LPA-1 (Serial Number 1395) was utilized for the LBP screening. The instrument was calibrated according to the manufacturer's Performance Characteristic Sheet (PCS) prior to each use.

For the purpose of this LBP screening, representative, coated building components were tested for LBP. Individual repainting efforts are not always discoverable in such a limited program. LBP issues involving properties that are not residential are only regulated to a limited degree for worker protection relating to LBP-disturbing work activities and waste disposal.

Worker protection is regulated by OSHA regulations, as well as MADLS regulations. These regulations include air monitoring of workers to determine exposure levels when disturbing lead-containing paint. A LBP screening cannot determine a safe level of lead, but is intended to provide guidance for implementing industry standards for lead in paint at identified locations. Contractors may better determine worker exposure to airborne lead by understanding the different concentrations of LBP on representative components and surfaces. Air monitoring can then be performed during activities that disturb paint on representative surfaces.

The EPA Resource Conservation and Recovery Act (RCRA) and MassDEP regulate lead-containing waste disposal. If lead is determined to be present, representative composite samples of the anticipated waste stream must be collected and analyzed using the Toxicity Characteristic Leaching Procedure (TCLP). The results are compared to a threshold value of 5.0 milligrams per liter (mg/L). If TCLP sample analytical results exceed this value, the waste is characterized as hazardous lead waste. If the result is below the threshold value, the waste material is not considered hazardous and may be disposed as construction and demolition debris.

A level of paint exceeding 1.0 milligram of lead per square centimeter (mg/cm^2) of surface area is considered toxic or dangerous by EPA and the Massachusetts Department of Public Health (MADPH) child-occupied residential standards. For the purpose of this screening, the level of 1.0 mg/cm^2 has been utilized as a guide to segregate coated building materials from general demolition debris for disposal purposes.

3.2 XRF Screening Results

The LBP screening indicated consistent painting trends associated with representative building components that may be impacted by potential renovation/demolition work. Window supports and ceramic wall tiles were determined to contain levels of lead ≥ 1.0 mg/cm^2.

Refer to *Appendix D* for the XRF lead-based paint screening field data sheets.

3.3 Discussion

OSHA published a Lead in Construction Standard (OSHA Lead Standard) Title 29 CFR, Part 1926.62 in May of 1993. This Standard sets no limit for the content of lead in paint below which the OSHA standards do not apply. The OSHA Lead Standards are task-based and are also based on airborne exposures and blood lead levels.

The results of this LBP screening are intended to provide guidance to contractors for occupational lead exposure controls. Building components coated with lead levels above industry standards may cause exposures to lead above OSHA standards during proposed demolition/renovation activities. The results of this screening are also intended to provide insight into waste disposal requirements, in accordance with EPA RCRA regulations. At the Client's request, a TCLP sample to characterize the expected waste that may result from possible selective demolition/renovation activities was not collected as part of this inspection.

3.4 Conclusions and Recommendations

Based on our LBP screening results, LBP was identified on coated building components located at the Site.

Contractors must be made aware that OSHA has not established a level of lead in a material below which OSHA Title 29 CFR, Part 1926.62 does not apply. Contractors shall comply with exposure assessment criteria, interim worker protection, and other requirements of the regulation as necessary to protect workers during any renovation and/or demolition work that will impact LBP.

If disturbed by renovation/demolition activities, LBP-coated building components should be segregated from the general demolition waste stream for sample collection and analysis by TCLP to determine proper off-site waste disposal. If disturbed and managed off-site, non-porous LBP-coated building materials (i.e., metals) may be segregated and recycled as scrap metal. Metal LBP-coated building components cannot be subject to grinding, sawing, drilling, sanding, or torch cutting.

The building is presently characterized as a commercial property, which is not subject to the MADPH Childhood Lead Poisoning Prevention Program (CLPPP) Regulation 105 CMR, Part 460.000. The Site may be renovated using procedures required in accordance with OSHA Title 29 CFR, Part 1926.62 and MADLS Regulation 454 CMR, Part 22.11. In addition, the building is not considered a "child-occupied facility" and therefore, is not subject to MADPH CLPPP regulations.

Note that the information contained in this report concerning the presence or absence of lead in paint, does not constitute a comprehensive lead inspection in accordance with MADPH CLPPP regulations. The screened painted surfaces represent only a portion of those surfaces that would be screened to determine whether the premises are in compliance with the aforementioned regulations, which are specific to a child-occupied residence only, and not applicable to buildings of this type and current use.

4 Presumed Polychlorinated Biphenyls (PCBs) Source Building Materials

4.1 Background

On October 26 and 28, 2015, Mr. Mallett and Mr. Coffey of EnviroScience completed an inventory of presumed PCB-containing source building materials.

Sample collection and analysis of building materials for PCBs is presently not mandated by the EPA. However, significant liability risk exists for improperly disposing of PCB-containing waste materials. Recent knowledge and awareness of PCBs within matrices such as caulking, glazing compounds, paints, adhesives and ceiling tiles has become more prevalent, especially among remediation contractors, waste haulers, and disposal facilities. The EPA recommends sample collection and analysis of caulking and glazing compounds installed between 1950 and 1980 to determine PCB concentration.

The EPA requirements apply and require removal of PCBs once identified, regardless of project intent as an unauthorized use of PCBs. Once it is determined that PCBs are present and a building is to remain for re-use, the EPA still requires PCB-containing material removal. If PCBs are present at certain concentrations, additional sampling and analysis of adjacent surfaces in contact with PCB sources, or which may have been contaminated from a source of PCBs (e.g., masonry, soil), must also be performed or remediated.

EPA requirements apply only if PCBs are present in concentrations above a specified level. Presently, PCB-containing materials at concentrations equal to or greater than (≥) 50 part per million (ppm), or equivalent units of milligrams per kilogram (mg/kg), are regulated. Note materials containing ≥ 1 ppm but less than (<) 50 ppm may also be regulated unless proven to be an "Excluded PCB Product". The definition of an Excluded PCB Product includes those products, or source of the products, containing < 50 ppm concentration PCBs that were legally manufactured, processed, distributed in commerce, or used before October 1, 1984.

4.2 Results

Utilizing the EPA guidelines, an inventory of presumed PCB-containing source building materials by material type, location, and quantity is included in **Table 3** attached hereto.

4.3 Conclusions and Recommendations

Identified materials should be presumed to contain regulated concentrations (≥ 50 ppm) of PCBs until sample collection and analysis indicate otherwise. These materials should be removed and disposed at an EPA-approved facility as regulated PCB Bulk Product Waste.

5 Fluorescent Light Ballasts and Mercury-Containing Equipment

5.1 Fluorescent Light Ballasts

Fluorescent light ballasts manufactured prior to 1979 may contain capacitors that contain PCBs. Light ballasts installed as late as 1985 may contain PCB capacitors. Fluorescent light ballasts that are not labeled as "No PCBs" must be assumed to contain PCBs unless proven otherwise by quantitative analysis. Capacitors in fluorescent light ballasts labeled as non-PCB-containing may contain diethylhexl phthalate (DEHP). DEHP was the primary substitute to replace PCBs for small capacitors in fluorescent lighting ballasts in use until 1991. DEHP is a toxic substance, a suspected carcinogen, and is listed under RCRA and the Superfund Law as a hazardous waste. Therefore, Superfund liability exists for landfilling both PCB- and DEHP-containing light ballasts. These listed materials are considered hazardous waste under RCRA and require special handling and disposal considerations.

5.2 Mercury-Containing Equipment

Fluorescent lamps/tubes are presumed to contain mercury vapor, which is a hazardous substance to both human health and the environment. Thermostatic controls and electrical switch gear may contain a vial or bulb of liquid mercury associated with the control. Mercury-containing equipment is regulated for proper disposal by EPA RCRA regulations.

5.3 Results

On October 26 and 28, 2015, Mr. Mallett and Mr. Coffey of EnviroScience performed a visual inspection of representative fluorescent light fixtures in-place to identify possible PCB-containing ballasts in the building. The inspection involved visually inspecting labels on representative light ballasts to identify dates of manufacture and labels indicating "No PCBs". Ballasts manufactured after 1991 were not listed as PCB- or DEHP-containing ballasts and were not quantified for disposal. An in-place inventory of the fluorescent lamps/tubes and other mercury-containing equipment was completed concurrently. Approximately 1,200 DEHP-containing fluorescent light ballasts and 3,650 four-foot, mercury-containing lamps were identified in the building during this inspection. Mercury-containing switches were identified in the Boiler Room.

5.4 Conclusions and Recommendations

DEHP-containing fluorescent light ballasts and mercury-containing equipment were identified in the building during this inspection.

Light ballasts marked as "No PCBs" with date labels indicating manufacture prior to 1991 are presumed to contain DEHP. DEHP-containing light ballasts must be segregated for proper packaging, transporting, and disposal as non-PCB hazardous waste. Note that disposal requirements for DEHP-containing ballasts are slightly varied, and disposal costs are slightly less than PCB-containing light ballasts.

According to the EPA, mercury-containing equipment is characterized as a hazardous waste and mercury lamps/tubes are characterized as a Universal Waste. The mercury-containing equipment and fluorescent lamps/tubes identified in the proposed renovation areas must be recycled, reclaimed, or disposed as hazardous waste prior to disturbance.

Report prepared by Environmental Technician, Robert Mallett.

Reviewed by:

Dustin A. Diedricksen
Project Manager

Timothy M. Downey
Senior Project Manager

FUSS & O'NEILL EnviroScience, LLC

Tables

FUSS & O'NEILL EnviroScience, LLC

Table 1
Summary of Suspect Asbestos-Containing Materials Laboratory Analytical Data

James F. Peebles Elementary School
Bourne, Massachusetts

Flansburgh Architects
December 4, 2015
Fuss & O'Neill EnviroScience No. 20150666.A1E

Sample Number	Material Type	NESHAP Category	Sample Location	Result	Comments
Lab Report dated November 30, 2015					
01A-MC-1130	Brown Window Frame Paper	Non-ACM	Exterior	ND	
01B-MC-1130	Brown Window Frame Paper	Non-ACM	Exterior	ND	
Lab Report dated November 6, 2015					
01A-RCM-1026	Gray Flashing Sealant	Non-ACM	Connector Building Roof	ND	TEM
01B-RCM-1026	Gray Flashing Sealant	Non-ACM	Connector Building Roof	ND	
02A-RCM-1026	Black Flashing Sealant	Non-ACM	Annex Roof	ND	TEM
02B-RCM-1026	Black Flashing Sealant	Non-ACM	Annex Roof	ND	
03A-RCM-1026	Black Built-Up Roofing	Non-ACM	Annex Roof	ND	TEM
03B-RCM-1026	Black Built-Up Roofing	Non-ACM	Connector Roof	ND	
04A-RCM-1026	Black Hot Mop	Non-ACM	Annex Roof	ND	TEM
04B-RCM-1026	Black Hot Mop	Non-ACM	Connector Roof	ND	
05A-RCM-1026	Gray Asphalt Roof Shingle	Non-ACM	Annex Roof	ND	TEM
05B-RCM-1026	Gray Asphalt Roof Shingle	Non-ACM	Main Roof	ND	
06A-RCM-1026	**White Louver Caulking**	**Cat 2 NF**	**Annex Roof**	**5% Chrysotile**	
06B-RCM-1026	**White Louver Caulking**	**Cat 2 NF**	**Annex Roof**	**Pos Stop**	
07A-RCM-1026	White Flashing Sealant	Non-ACM	Annex Roof	ND	TEM
07B-RCM-1026	White Flashing Sealant	Non-ACM	Annex Roof	ND	
08A-RCM-1026	**Gray Door Caulking**	**Cat 2 NF**	**Annex Roof**	**4% Chrysotile**	
08B-RCM-1026	**Gray Door Caulking**	**Cat 2 NF**	**Annex Roof**	**Pos Stop**	
09A-RCM-1026	Black Roof Felt beneath 05	Non-ACM	Annex Roof	ND	
09B-RCM-1026	Black Roof Felt beneath 05	Non-ACM	Main Building Roof	ND	
11A-RCM-1026	Tan Pipe-Thread Sealant	Non-ACM	Attic	ND	TEM
11B-RCM-1026	Tan Pipe-Thread Sealant	Non-ACM	Cafeteria	ND	
12A-RCM-1026	Gray Drywall	Non-ACM	Above 1st Floor Classrooms	ND	
12B-RCM-1026	Gray Drywall	Non-ACM	Above 1st Floor Classrooms	ND	
13A-RCM-1026	24" x 24" Red with White Splotch Floor Tile	Non-ACM	Classroom 7	ND	
13B-RCM-1026	24" x 24" Red with White Splotch Floor Tile	Non-ACM	Classroom 7	ND	
14A-RCM-1026	24" x 24" Tan with White & Brown Splotch Floor Tile	Non-ACM	Classroom 5	ND	

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14B-RCM-1026	24" x 24" Tan with White & Brown Splotch Floor Tile	Non-ACM	Classroom 5	ND	
15A-RCM-1026	12" x 12" Dark Gray Mottled Floor Tile	Non-ACM	Classroom 3	ND	
15B-RCM-1026	12" x 12" Dark Gray Mottled Floor Tile	Non-ACM	Classroom 3	ND	
17A-RCM-1026	Black Caulking Associated with Window Wall Support Columns	Non-ACM	Classroom 8	ND	TEM
17B-RCM-1026	Black Caulking Associated with Window Wall Support Columns	Non-ACM	Classroom 4	ND	
18A-RCM-1026	Tan Caulking Associated with Window Wall Support Columns	Non-ACM	Classroom 8	ND	TEM
18B-RCM-1026	Tan Caulking Associated with Window Wall Support Columns	Non-ACM	Classroom 4	ND	
19A-RCM-1026	Gray Ceramic Floor Tile Grout	Non-ACM	Ground Floor Boy's Bathroom	ND	
19B-RCM-1026	Gray Ceramic Floor Tile Grout	Non-ACM	1st Floor Boy's Bathroom	ND	
20A-RCM-1026	Black Composite Windowsill	Non-ACM	Classroom 11	ND	
20B-RCM-1026	Black Composite Windowsill	Non-ACM	Classroom 4	ND	
21A-RCM-1026	Gray Ceramic Floor Tile Adhesive	Non-ACM	Ground Floor Boy's Bathroom	ND	
21B-RCM-1026	Gray Ceramic Floor Tile Adhesive	Non-ACM	1st Floor Boy's Bathroom	ND	
22A-RCM-1026	Dark Gray Ceramic Wall Tile Adhesive	Non-ACM	Ground Floor Boy's Classroom	ND	
22B-RCM-1026	Dark Gray Ceramic Wall Tile Adhesive	Non-ACM	1st Floor Boys' Room	ND	
23A-RCM-1026	Gray Ceramic Wall Tile Grout	Non-ACM	Ground Floor Boy's Bathroom	ND	
23B-RCM-1026	Gray Ceramic Wall Tile Grout	Non-ACM	1st Floor Boy's Bathroom	ND	
24A-RCM-1026	Tan Interior Window Caulking	Non-ACM	Ground Floor Boy's Bathroom	ND	TEM
24B-RCM-1026	Tan Interior Window Caulking	Non-ACM	1st Floor Boy's Bathroom	ND	
25A-RCM-1026	Gray Mud-Set Mortar	Non-ACM	1st Floor Boy's Bathroom	ND	
25B-RCM-1026	Gray Mud-Set Mortar	Non-ACM	Ground Floor Boy's Bathroom	ND	
26A-RCM-1026	Gray Mud-Set Mortar	Non-ACM	Annex - 2nd Floor Boy's Bathroom	ND	
26B-RCM-1026	Gray Mud-Set Mortar	Non-ACM	Annex - 1st Floor Boy's Bathroom	ND	
27A-RCM-1026	1' x 1' White Fissured Splined Ceiling Tile	Non-ACM	Connector Hallway-1st	ND	
27B-RCM-1026	1' x 1' White Fissured Splined Ceiling Tile	Non-ACM	Connector Hallway-Ground	ND	
28A-RCM-1026	Tan Window Glazing Compound	Non-ACM	Annex Hallway to Lobby Doors	ND	
28B-RCM-1026	Tan Window Glazing Compound	Non-ACM	Annex Hallway to Lobby Doors	ND	
29A-RCM-1026	**Tan Interior Window Caulking**	**Cat 2 NF**	**Classroom 14**	**5% Chrysotile**	
29B-RCM-1026	**Tan Interior Window Caulking**	**Cat 2 NF**	**Classroom 18**	**Pos Stop**	
30A-RCM-1026	White Interior Window Caulking	Non-ACM	Classroom 14	ND	TEM
30B-RCM-1026	White Interior Window Caulking	Non-ACM	Classroom 18	ND	
31A-RCM-1026	**Tan Window Glazing Compound**	**Cat 2 NF**	**Wood Main Entrance Doors**	**2% Chrysotile**	
31B-RCM-1026	**Tan Window Glazing Compound**	**Cat 2 NF**	**Wood Main Entrance Doors**	**Pos Stop**	

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32A-RCM-1026	**Tan Interior Door Caulking**	**Cat 2 NF**	**Cafeteria Doors**	**6% Chrysotile**	
32B-RCM-1026	**Tan Interior Door Caulking**	**Cat 2 NF**	**Main Building Doors at Connector**	**Pos Stop**	
33A-RCM-1026	White Plaster Skim Coat	Non-ACM	Annex - Ground Level Boy's Bathroom	ND	
33B-RCM-1026	White Plaster Skim Coat	Non-ACM	Annex - Ground Level Girl's Bathroom	ND	
33C-RCM-1026	White Plaster Skim Coat	Non-ACM	Annex - 1st Floor Girl's Bathroom	ND	
33D-RCM-1026	White Plaster Skim Coat	Non-ACM	Annex - 1st Floor Boy's Bathroom	ND	
33E-RCM-1026	White Plaster Skim Coat	Non-ACM	Annex - Hallway Outside 14 & 15	ND	
34A-RCM-1026	Gray Plaster Rough Coat	Non-ACM	Annex - Ground Level Boy's Bathroom	ND	
34B-RCM-1026	Gray Plaster Rough Coat	Non-ACM	Annex - Ground Level Girl's Bathroom	ND	
34C-RCM-1026	Gray Plaster Rough Coat	Non-ACM	Annex - 1st Floor Girl's Bathroom	ND	
34D-RCM-1026	Gray Plaster Rough Coat	Non-ACM	Annex - 1st Floor Girl's Bathroom	ND	
34E-RCM-1026	Gray Plaster Rough Coat	Non-ACM	Annex - Ground Level Girl's Bathroom	ND	
35A-RCM-1026	**Tan Interior Door Caulking**	**Cat 2 NF**	**At Connector Hallway-Ground Floor**	**2% Chrysotile**	
35B-RCM-1026	**Tan Interior Door Caulking**	**Cat 2 NF**	**At Connector Hallway-1st Floor**	**Pos Stop**	
36A-RCM-1026	**Tan Interior Window Caulking**	**Cat 2 NF**	**Connector Window Walls**	**5% Chrysotile**	
36B-RCM-1026	**Tan Interior Window Caulking**	**Cat 2 NF**	**Connector Window Walls**	**Pos Stop**	
37A-RCM-1026	**Gray Window Glazing Compound**	**Cat 2 NF**	**Connector Window Walls**	**2% Chrysotile**	
37B-RCM-1026	**Gray Window Glazing Compound**	**Cat 2 NF**	**Connector Window Walls**	**Pos Stop**	
38A-RCM-1026	**Gray Interior Window Caulking**	**Cat 2 NF**	**Cafeteria**	**2% Chrysotile**	
38B-RCM-1026	**Gray Interior Window Caulking**	**Cat 2 NF**	**Cafeteria**	**Pos Stop**	
39A-RCM-1026	Brown Exterior Window Caulking	Non-ACM	Exterior-Main Building	ND	TEM
39B-RCM-1026	Brown Exterior Window Caulking	Non-ACM	Exterior-Main Building	ND	
40A-RCM-1026	Black Through-Wall Flashing Mastic	Non-ACM	Exterior-Main Building	ND	
40B-RCM-1026	Black Through-Wall Flashing Mastic	Non-ACM	Exterior-Main Building	ND	
41A-RCM-1026	**Tan Exterior Window Sill Caulking**	**Cat 2 NF**	**Annex - Exterior**	**5% Chrysotile**	
41B-RCM-1026	**Tan Exterior Window Sill Caulking**	**Cat 2 NF**	**Annex - Exterior**	**Pos Stop**	
42A-RCM-1026	Gray Exterior Window Caulking	Non-ACM	Annex - Exterior	ND	
42B-RCM-1026	Gray Exterior Window Caulking	Non-ACM	Annex - Exterior	ND	
43A-RCM-1026	**White Exterior Window Sill Caulking**	**Cat 2 NF**	**Annex - Exterior**	**8% Chrysotile**	
43B-RCM-1026	**White Exterior Window Sill Caulking**	**Cat 2 NF**	**Annex - Exterior**	**Pos Stop**	
44A-RCM-1026	Off-White Door Caulking	Non-ACM	Door between Classrooms 17 & 18	ND	TEM
44B-RCM-1026	Off-White Door Caulking	Non-ACM	Door between Classrooms 23 & 24	ND	
45A-RCM-1026	**Tan Door Caulking**	**Cat 2 NF**	**Door between Classrooms 16 & 15**	**2% Chrysotile**	

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Sample Number	Material Type	NESHAP Category	Sample Location	Result	Comments
45B-RCM-1026	**Tan Door Caulking**	**Cat 2 NF**	**Door between Classrooms 16 & 15**	**Pos Stop**	
46A-RCM-1026	Tan Interior Window Caulking	Non-ACM	Classroom 9	ND	TEM
46B-RCM-1026	Tan Interior Window Caulking	Non-ACM	Classroom 11	ND	
47A-RCM-1026	Black Dampproofing	Non-ACM	Behind Brick at Main Building	ND	
47B-RCM-1026	Black Dampproofing	Non-ACM	Behind Brick at Main Building	ND	
50A-RCM-1026	Brown Concrete Paper	Non-ACM	Pipe Tunnel	ND	
50B-RCM-1026	Brown Concrete Paper	Non-ACM	Crawlspace	ND	
51A-RCM-1026	Black Mastic Associated with 50	Non-ACM	Pipe Tunnel	ND	
51B-RCM-1026	Black Mastic Associated with 50	Non-ACM	Crawlspace	ND	
Lab Report dated December 9, 2014					
01A-RCM-1205	Smooth White Plaster Skim Coat	Non-ACM	Ground Floor Stairwell Landing	ND	
01B-RCM-1205	Smooth White Plaster Skim Coat	Non-ACM	Ground Floor Stairwell Landing	ND	
01C-RCM-1205	Smooth White Plaster Skim Coat	Non-ACM	Ground Floor Stairwell Landing	ND	
Lab Results from Emergency Asbestos Project Design dated October 6, 2014					
01A-JH-925	Gray Exterior Door Caulking	Non-ACM	Door D1	ND	
01B-JH-925	Gray Exterior Door Caulking	Non-ACM	Door D1	ND	
01C-JH-925	Gray Exterior Door Caulking	Non-ACM	Door D1	ND	
02A-JH-925	**White Window Glazing Compound**	**Cat 2 NF**	**Door D1**	**2% Chrysotile**	
02B-JH-925	**White Window Glazing Compound**	**Cat 2 NF**	**Door D1**	**Pos Stop**	
02C-JH-925	**White Window Glazing Compound**	**Cat 2 NF**	**Door D1**	**Pos Stop**	
03A-JH-925	Gray Door Window Glazing Compound	Non-ACM	Door D1	ND	
03B-JH-925	Gray Door Window Glazing Compound	Non-ACM	Door D1	ND	
03C-JH-925	Gray Door Window Glazing Compound	Non-ACM	Door D1	ND	
04A-JH-925	Brown Backer Rope beneath Gray Exterior Door Caulking	Non-ACM	Door D1	ND	
04B-JH-925	Brown Backer Rope beneath Gray Exterior Door Caulking	Non-ACM	Door D1	ND	
04C-JH-925	Brown Backer Rope beneath Gray Exterior Door Caulking	Non-ACM	Door D1	ND	
05A-JH-925	**Tan Interior Door Caulking**	**Cat 2 NF**	**Door D1**	**2% Chrysotile**	
05B-JH-925	**Tan Interior Door Caulking**	**Cat 2 NF**	**Door D1**	**Pos Stop**	
05C-JH-925	**Tan Interior Door Caulking**	**Cat 2 NF**	**Door D1**	**Pos Stop**	
06A-JH-925	**Black Dampproofing Behind Brick Veneer**	**Cat 2 NF**	**Exterior**	**15% Chrysotile**	
06B-JH-925	**Black Dampproofing Behind Brick Veneer**	**Cat 2 NF**	**Exterior**	**Pos Stop**	
06C-JH-925	**Black Dampproofing Behind Brick Veneer**	**Cat 2 NF**	**Exterior**	**Pos Stop**	
Lab Report dated July 23, 2013					

Table 1
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Sample Number	Material Type	NESHAP Category	Sample Location	Result	Comments
718DD-01A	**Ceiling Skim Plaster**	**Non-ACM**	**Art Room**	**<1% Chrysotile**	**ACWM**
718DD-01B	**Ceiling Skim Plaster**	**Non-ACM**	**Art Room**	**< 1% Chrysotile**	**ACWM**
718DD-01C	**Ceiling Skim Plaster**	**Non-ACM**	**Art Room**	**< 1% Chrysotile**	**ACWM**
718DD-02A	**Ceiling Rough Plaster**	**Non-ACM**	**Art Room**	**< 1% Chrysotile**	**ACWM**
718DD-02B	Ceiling Rough Plaster	Non-ACM	Art Room	ND	
718DD-02C	Ceiling Rough Plaster	Non-ACM	Art Room	ND	
718DD-03A	Ceiling Plaster Skim Coat	Non-ACM	Kitchen	ND	
718DD-03B	Ceiling Plaster Skim Coat	Non-ACM	Kitchen	ND	
718DD-03C	Ceiling Plaster Skim Coat	Non-ACM	Kitchen	ND	
718DD-03D	Ceiling Plaster Skim Coat	Non-ACM	Bathroom off Kitchen	ND	
718DD-03E	Ceiling Plaster Skim Coat	Non-ACM	Pantry	ND	
718DD-04A	Ceiling Rough Plaster	Non-ACM	Kitchen	ND	
718DD-04B	Ceiling Rough Plaster	Non-ACM	Kitchen	ND	
718DD-04C	Ceiling Rough Plaster	Non-ACM	Kitchen	ND	
718DD-04D	Ceiling Rough Plaster	Non-ACM	Bathroom off Kitchen	ND	
718DD-04E	Ceiling Rough Plaster	Non-ACM	Pantry	ND	
Lab Results from EnviroScience Report dated December 19, 2012					
1	Plaster Rough Coat Associated with Window Surround	Non-ACM	Basement Boy's Bathroom	ND	
2	Plaster Rough Coat Associated with Window Surround	Non-ACM	Basement Boy's Bathroom	ND	
3	Plaster Skim Coat Associated with Window Surround	Non-ACM	Basement Boy's Bathroom	ND	
4	Plaster Skim Coat Associated with Window Surround	Non-ACM	Basement Boy's Bathroom	ND	
817NG-01A	Plaster Skim Coat Associated with Window Surround	Non-ACM	Cafeteria	ND	
817NG-01B	Plaster Skim Coat Associated with Window Surround	Non-ACM	Cafeteria	ND	
817NG-01C	Plaster Skim Coat Associated with Window Surround	Non-ACM	Cafeteria	ND	
817NG-02A	Plaster Rough Coat Associated with Window Surround	Non-ACM	Cafeteria	ND	
817NG-02B	Plaster Rough Coat Associated with Window Surround	Non-ACM	Cafeteria	ND	
817NG-02C	Plaster Rough Coat Associated with Window Surround	Non-ACM	Cafeteria	ND	
817NG-03A	Plaster Skim Coat Associated with Ceiling Drop Beams	Non-ACM	Cafeteria	ND	
817NG-03B	Plaster Skim Coat Associated with Ceiling Drop Beams	Non-ACM	Cafeteria	ND	
817NG-03C	Plaster Skim Coat Associated with Ceiling Drop Beams	Non-ACM	Cafeteria	ND	
817NG-04A	Plaster Rough Coat Associated with Ceiling Drop Beams	Non-ACM	Cafeteria	ND	
817NG-04B	Plaster Rough Coat Associated with Ceiling Drop Beams	Non-ACM	Cafeteria	ND	
817NG-04C	Plaster Rough Coat Associated with Ceiling Drop Beams	Non-ACM	Cafeteria	ND	

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Sample Number	Material Type	NESHAP Category	Sample Location	Result	Comments
821DD-01A	Skim Plaster	Non-ACM	Kitchen at Overhead Duct Associated with Range Hood	ND	
821DD-01B	Skim Plaster	Non-ACM	Kitchen at Overhead Duct Associated with Range Hood	ND	
821DD-01C	Skim Plaster	Non-ACM	Kitchen at Overhead Duct Associated with Range Hood	ND	
821DD-02A	Rough Plaster	Non-ACM	Kitchen at Overhead Duct Associated with Range Hood	ND	
821DD-02B	Rough Plaster	Non-ACM	Kitchen at Overhead Duct Associated with Range Hood	ND	
821DD-02C	Rough Plaster	Non-ACM	Kitchen at Overhead Duct Associated with Range Hood	ND	
821DD-03A	**Caulking at Ductwork to Plaster Joint**	**Cat 2 NF**	**Kitchen at Overhead Duct Associated with Range Hood**	**5% Chrysotile**	**Abated**
821DD-03A	**Caulking at Ductwork to Plaster Joint**	**Cat 2 NF**	**Kitchen at Overhead Duct Associated with Range Hood**	**Pos Stop**	**Abated**
821DD-04A	Plaster Skim Coat Associated with Window Surround	Non-ACM	Kitchen	ND	
821DD-04B	Plaster Skim Coat Associated with Window Surround	Non-ACM	Kitchen	ND	
821DD-05A	Plaster Rough Coat Associated with Window Surround	Non-ACM	Kitchen	ND	
821DD-05B	Plaster Rough Coat Associated with Window Surround	Non-ACM	Kitchen	ND	
821DD-06A	Plaster Ceiling Smooth Skim Coat	Non-ACM	Basement Boy's Bathroom	ND	
821DD-06B	Plaster Ceiling Smooth Skim Coat	Non-ACM	Basement Boy's Bathroom	ND	
821DD-06C	Plaster Ceiling Smooth Skim Coat	Non-ACM	Girl's Basement Bathroom	ND	
821DD-06D	Plaster Ceiling Smooth Skim Coat	Non-ACM	1st Floor Boy's Bathroom	ND	
821DD-06E	Plaster Ceiling Smooth Skim Coat	Non-ACM	1st Floor Girl's Bathroom	ND	
821DD-07A	Plaster Ceiling Rough Coat	Non-ACM	Basement Boy's Bathroom	ND	
821DD-07B	Plaster Ceiling Rough Coat	Non-ACM	Basement Boy's Bathroom	ND	
821DD-07C	Plaster Ceiling Rough Coat	Non-ACM	Basement Girl's Bathroom	ND	
821DD-07D	Plaster Ceiling Rough Coat	Non-ACM	1st Floor Boy's Bathroom	ND	
821DD-07E	Plaster Ceiling Rough Coat	Non-ACM	1st Floor Girl's Bathroom	ND	
821DD-08A	Plaster Ceiling Smooth Skim Coat	Non-ACM	Annex Boy's Bathroom 1st Floor	ND	
821DD-08B	Plaster Ceiling Smooth Skim Coat	Non-ACM	Annex Girl's Bathroom 1st Floor	ND	
821DD-08C	Plaster Ceiling Smooth Skim Coat	Non-ACM	Annex Girl's Bathroom 1st Floor	ND	
821DD-08D	Plaster Ceiling Smooth Skim Coat	Non-ACM	Annex Boy's Basement Bathroom	ND	
821DD-08E	Plaster Ceiling Smooth Skim Coat	Non-ACM	Annex Girl's Basement Bathroom	ND	
821DD-09A	Plaster Ceiling Rough Coat	Non-ACM	Annex Boy's Bathroom 1st Floor	ND	
821DD-09B	Plaster Ceiling Rough Coat	Non-ACM	Annex Girl's Bathroom 1st Floor	ND	
821DD-09C	Plaster Ceiling Rough Coat	Non-ACM	Annex Girl's Bathroom 1st Floor	ND	
821DD-09D	Plaster Ceiling Rough Coat	Non-ACM	Boy's Bathroom Basement	ND	
821DD-09E	Plaster Ceiling Rough Coat	Non-ACM	Girl's Bathroom Basement	ND	
0826DD-01A	Plaster Ceiling Smooth Skim Coat	Non-ACM	Copy Room	ND	

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Sample Number	Material Type	NESHAP Category	Sample Location	Result	Comments
0826DD-01B	Plaster Ceiling Smooth Skim Coat	Non-ACM	Copy Room	ND	
0826DD-01C	Plaster Ceiling Smooth Skim Coat	Non-ACM	Music Room	ND	
0826DD-01D	Plaster Ceiling Smooth Skim Coat	Non-ACM	Teachers' Lounge	ND	
0826DD-01E	Plaster Ceiling Smooth Skim Coat	Non-ACM	Teachers' Lounge	ND	
0826DD-02A	Plaster Ceiling Rough Coat	Non-ACM	Copy Room	ND	
0826DD-02B	Plaster Ceiling Rough Coat	Non-ACM	Copy Room	ND	
0826DD-02C	Plaster Ceiling Rough Coat	Non-ACM	Music Room	ND	
0826DD-02D	Plaster Ceiling Rough Coat	Non-ACM	Teachers' Lounge	ND	
0826DD-02E	Plaster Ceiling Rough Coat	Non-ACM	Teachers' Lounge	ND	
827-NG-1	**White Window Glazing Compound**	**Cat 2 NF**	**Classroom 2**	**2% Chrysotile**	
827-NG-2	**White Window Glazing Compound**	**Cat 2 NF**	**Classroom 2**	**2% Chrysotile**	
827-NG-3	White Window Glazing Compound	Non-ACM	Classroom 6	ND	
827-NG-4	White Window Glazing Compound	Non-ACM	Classroom 6	ND	
827-NG-5	Vinyl Covering on Radiators	Non-ACM	Classroom 8	ND	
827-NG-6	Vinyl Covering on Radiators	Non-ACM	Classroom 8	ND	
827-NG-7	**Gray with White Window Caulking**	**Cat 2 NF**	**Classroom 8**	**2% Chrysotile**	
827-NG-8	**Gray with White Window Caulking**	**Cat 2 NF**	**Classroom 7**	**2% Chrysotile**	
827-NG-9	Newer Smooth Window Glazing Compound	Non-ACM	Classroom 5	ND	
827-NG-10	Newer Smooth Window Glazing Compound	Non-ACM	Classroom 5	ND	
827-NG-11	**Gray with White Caulking**	**Cat 2 NF**	**Classroom 6**	**2% Chrysotile**	
827-NG-12	White Window Glazing Compound	Non-ACM	Cafeteria Exterior	ND	
97NG-01A	Light-Weight Parging Material Behind Lally Columns	Non-ACM	Classroom	ND	
97NG-01B	Light-Weight Parging Material Behind Lally Columns	Non-ACM	Classroom	ND	
97NG-01C	Light-Weight Parging Material Behind Lally Columns	Non-ACM	Classroom	ND	
97NG-02A	Weather-Proofing Cushion Felt underneath Unit Vents	Non-ACM	South Exterior	ND	
97NG-02B	Weather-Proofing Cushion Felt underneath Unit Vents	Non-ACM	South Exterior	ND	
97NG-02C	Weather-Proofing Cushion Felt underneath Unit Vents	Non-ACM	South Exterior	ND	
97NG-03A	Grey Window Caulking	Non-ACM	North Exterior	ND	
97NG-03B	Grey Window Caulking	Non-ACM	North Exterior	ND	
97NG-03C	Grey Window Caulking	Non-ACM	North Exterior	ND	
97NG-04A	White/Gray Window Caulking	Non-ACM	North (front) Exterior	ND	
97NG-04B	White/Gray Window Caulking	Non-ACM	North (front) Exterior	ND	
97NG-04C	White/Gray Window Caulking	Non-ACM	North (front) Exterior	ND	

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Lab Results from EnviroScience Report dated April 16, 2010					
331DD-01 A	Friable Boiler-Jacket Insulation	Non-ACM	Boiler Exterior	ND	
331DD-01 B	Friable Boiler-Jacket Insulation	Non-ACM	Boiler Exterior	ND	
331DD-01 C	Friable Boiler-Jacket Insulation	Non-ACM	Boiler Exterior	ND	
331DD-02A	**Friable TSI at Boiler Ribbing**	**Friable**	**Boiler Interior**	**40% Chrysotile**	
331DD-02B	**Friable TSI at Boiler Ribbing**	**Friable**	**Boiler Interior**	**Pos Stop**	
331DD-02C	**Friable TSI at Boiler Ribbing**	**Friable**	**Boiler Interior**	**Pos Stop**	
331DD-03 A	Boiler Roping at Bottom Seams	Non-ACM	Boiler Exterior (Underside)	ND	
331DD-03 B	Boiler Roping at Bottom Seams	Non-ACM	Boiler Exterior (Underside)	ND	
331DD-03 C	Boiler Roping at Bottom Seams	Non-ACM	Boiler Exterior (Underside)	ND	
331DD-04 A	Hot Water Tank TSI	Non-ACM	Hot Water Tank (Boiler Room)	ND	
331DD-04 B	Hot Water Tank TSI	Non-ACM	Hot Water Tank (Boiler Room)	ND	
331DD-05	Cloth Insulation-Wrap	Non-ACM	Piping Underneath Hot Water Tank	ND	
331DD-06	Grey Flue Patch	Non-ACM	Boiler at Breeching Penetration	ND	
331DD-07	**White Friable TSI at Front Circular Panel**	**Friable**	**Boiler Exterior (Front)**	**10% Chrysotile**	
331DD-08	White Cloth Vibration Isolator	Non-ACM	Boiler Duct	ND	
331DD-09A	**Exterior Gasket at Metal Fixed-Panels**	**Cat 1 NF**	**Boiler Exterior**	**25% Chrysotile**	
331DD-09B	**Exterior Gasket at Metal Fixed-Panels**	**Cat 1 NF**	**Boiler Exterior**	**Pos Stop**	
331DD-10	Residual Door Gaskets	Non-ACM	Boiler Doors	ND	
331DD-11	Red Pipe-Gasket	Non-ACM	Piping Underneath Hot Water Tank	ND	
331DD-12A	Boiler Debris	Non-ACM	Boiler Interior	ND	
331DD-12B	Boiler Debris	Non-ACM	Boiler Interior	ND	
331DD-13	White Friable Pipe Gasket	Non-ACM	Piping at Backside of Boiler	ND	
331DD-14A	Interior Boiler Brick	Non-ACM	Boiler Interior	ND	
331DD-14B	Interior Boiler Brick	Non-ACM	Boiler Interior	ND	
331DD-14C	Interior Boiler Brick	Non-ACM	Boiler Interior	ND	
331DD-15A	Red Brick Boiler-Base (Solid Brick)	Non-ACM	Boiler Base	ND	
331DD-15B	Red Brick Boiler-Base (Solid Brick)	Non-ACM	Boiler Base	ND	
331DD-15C	Red Brick Boiler-Base (Solid Brick)	Non-ACM	Boiler Base	ND	
331DD-16A	Orange Open-Brick Base Insert (Hollow Center)	Non-ACM	Boiler Base (Center)	ND	
331DD-16B	Orange Open-Brick Base Insert (Hollow Center)	Non-ACM	Boiler Base (Center)	ND	
Lab Results from EnviroScience Report dated August 11, 2009					
720JH-01 A	Hot Water Tank Insulation	Non-ACM	Boiler Room	ND	

FUSS & O'NEILL EnviroScience, LLC

Table 1
Summary of Suspect Asbestos-Containing Materials Laboratory Analytical Data

Sample Number	Material Type	NESHAP Category	Sample Location	Result	Comments
720JH-01 B	Hot Water Tank Insulation	Non-ACM	Boiler Room	ND	
720JH-01 C	Hot Water Tank Insulation	Non-ACM	Boiler Room	ND	
720JH-02 A	Boiler Breeching	Non-ACM	Boiler Room (Boiler 2)	ND	
720JH-02 B	Boiler Breeching	Non-ACM	Boiler Room (Boiler 1)	ND	
720JH-02 C	Boiler Breeching	Non-ACM	Boiler Room (Boiler 1)	ND	
720JH-03 A	Boiler Insulation	Non-ACM	Boiler Room (Boiler 2)	ND	
720JH-03 B	Boiler Insulation	Non-ACM	Boiler Room (Boiler 1)	ND	
720JH-03 C	Boiler Insulation	Non-ACM	Boiler Room (Boiler 1)	ND	
720JH-04 A	**Duct Vibration Isolator**	**Cat 2 NF**	**Boiler Room**	**ND**	
720JH-04 B	**Duct Vibration Isolator**	**Cat 2 NF**	**Boiler Room**	**60% Chrysotile**	
720JH-04 C	**Duct Vibration Isolator**	**Cat 2 NF**	**Boiler Room**	**Pos Stop**	
720JH-05 A	**Pre-Formed Block-Type Pipe Insulation**	**Friable**	**Office Near Classroom 9**	**5% Chrysotile 15% Amosite 6% Crocidolite**	
720JH-05 B	**Pre-Formed Block-Type Pipe Insulation**	**Friable**	**Office Near Classroom 9**	**Pos Stop**	
720JH-05 C	**Pre-Formed Block-Type Pipe Insulation**	**Friable**	**Office Near Classroom 9**	**Pos Stop**	
720JH-06 A	**Paper-Type Pipe Insulation**	**Friable**	**Storage near Classroom 13**	**70% Chrysotile**	
720JH-06 B	**Paper-Type Pipe Insulation**	**Friable**	**Chase near Classroom 7**	**70% Chrysotile**	
720JH-06 C	**Paper-Type Pipe Insulation**	**Friable**	**Stage**	**70% Chrysotile**	
720JH-07 A	**Mudded Pipe Fitting Insulation**	**Friable**	**Storage near Classroom 13**	**5% Chrysotile 15% Amosite 12% Crocidolite**	
720JH-07 B	**Mudded Pipe Fitting Insulation**	**Friable**	**Storage near Classroom 13**	**Pos Stop**	
720JH-07 C	**Mudded Pipe Fitting Insulation**	**Friable**	**Stage**	**Pos Stop**	
720JH-08 A	Black Cove Base	Non-ACM	Classroom 10	ND	
720JH-08 B	Black Cove Base	Non-ACM	Classroom 8	ND	
720JH-08 C	Black Cove Base	Non-ACM	Classroom 5	ND	
720JH-09 A	Black Mastic Associated with Black Cove Base	Non-ACM	Classroom 10	ND	
720JH-09 B	Black Mastic Associated with Black Cove Base	Non-ACM	Classroom 8	ND	
720JH-09 C	Black Mastic Associated with Black Cove Base	Non-ACM	Classroom 5	ND	
720JH-10 A	Vinyl Windowsill	Non-ACM	Classroom 4	ND	
720JH-10 B	Vinyl Windowsill	Non-ACM	Classroom 10	ND	
720JH-10 C	Vinyl Windowsill	Non-ACM	Classroom 12	ND	
720JH-11 A	1' x 1' Pin Hole Ceiling Tile	Non-ACM	Loose in Attic	ND	
720JH-11 B	1' x 1' Pin Hole Ceiling Tile	Non-ACM	Loose in Attic	ND	

FUSS & O'NEILL
EnviroScience, LLC

Table 1
Summary of Suspect Asbestos-Containing Materials Laboratory Analytical Data

Sample Number	Material Type	NESHAP Category	Sample Location	Result	Comments
720JH-11 C	1' x 1' Pin Hole Ceiling Tile	Non-ACM	Loose in Attic	ND	
720JH-12 A	Dark Brown Mastic Associated with 1' x 1' Pin Hole Ceiling Tiles	Non-ACM	Loose in Attic	ND	
720JH-12 B	Dark Brown Mastic Associated with 1' x 1' Pin Hole Ceiling Tiles	Non-ACM	Loose in Attic	ND	
720JH-12 C	Dark Brown Mastic Associated with 1' x 1' Pin Hole Ceiling Tiles	Non-ACM	Loose in Attic	ND	
720JH-13 A	Black Mastic Associated with 9" x 9" Floor Tile	Non-ACM	Classroom 22	ND	
720JH-13 B	Black Mastic Associated with 9" x 9" Floor Tile	Non-ACM	Main Lobby	ND	
720JH-13 C	Black Mastic Associated with 9" x 9" Floor Tile	Non-ACM	Ground Floor Hall	ND	
720JH-14 A	Black Mastic Associated with 12" x 12" Floor Tile	Non-ACM	Classroom 9	ND	
720JH-14 B	Black Mastic Associated with 12" x 12" Floor Tile	Non-ACM	Classroom 12	ND	
720JH-14 C	Black Mastic Associated with 12" x 12" Floor Tile	Non-ACM	Breezeway Between Classrooms 10 & 11	ND	
720JH-15 A	Blue/Grey with White Streaks 12" x 12" Floor Tile	Non-ACM	Classroom 1	ND	
720JH-15 B	Blue/Grey with White Streaks 12" x 12" Floor Tile	Non-ACM	Classroom 2	ND	
720JH-15 C	Blue/Grey with White Streaks 12" x 12" Floor Tile	Non-ACM	Classroom 3	ND	
720JH-16 A	White/ Yellow/ Brown 12" x 12" Floor Tile	Non-ACM	Classroom 6	ND	
720JH-16 B	White/ Yellow/ Brown 12" x 12" Floor Tile	Non-ACM	Classroom 6	ND	
720JH-16 C	White/ Yellow/ Brown 12" x 12" Floor Tile	Non-ACM	Classroom 6	ND	
720JH-17 A	Tan with White Streaks 12" x 12" Floor Tile	Non-ACM	Classroom 1	ND	
720JH-17 B	Tan with White Streaks 12" x 12" Floor Tile	Non-ACM	Classroom 2	ND	
720JH-17 C	Tan with White Streaks 12" x 12" Floor Tile	Non-ACM	Classroom 3	ND	
720JH-18 A	White with Brown and Blue Streaks 12" x 12" Floor Tile	Non-ACM	Classroom 8	ND	
720JH-18 B	White with Brown and Blue Streaks 12" x 12" Floor Tile	Non-ACM	Classroom 8	ND	
720JH-18 C	White with Brown and Blue Streaks 12" x 12" Floor Tile	Non-ACM	Classroom 8	ND	
720JH-19 A	Red with Pink Streaks 12" x 12" Floor Tile	Non-ACM	Classroom 4	ND	
720JH-19 B	Red with Pink Streaks 12" x 12" Floor Tile	Non-ACM	Classroom 4	ND	
720JH-19 C	Red with Pink Streaks 12" x 12" Floor Tile	Non-ACM	Classroom 4	ND	
720JH-20 A	Brown with Light Brown and Dark Brown Streaks 12" x 12" Floor Tile	Non-ACM	Classroom 4	ND	
720JH-20 B	Brown with Light Brown and Dark Brown Streaks 12" x 12" Floor Tile	Non-ACM	Classroom 4	ND	
720JH-20 C	Brown with Light Brown and Dark Brown Streaks 12" x 12" Floor Tile	Non-ACM	Classroom 4	ND	
720JH-21 A	Grey with Brown Streaks 12" x 12" Floor Tile	Non-ACM	Classroom 9	ND	
720JH-21 B	Grey with Brown Streaks 12" x 12" Floor Tile	Non-ACM	Classroom 10	ND	
720JH-21 C	Grey with Brown Streaks 12" x 12" Floor Tile	Non-ACM	Classroom 12	ND	
720JH-22 A	Tan with Brown Streaks 12" x 12" Floor Tile	Non-ACM	Breezeway Between Classrooms 10 & 11	ND	
720JH-22 B	Tan with Brown Streaks 12" x 12" Floor Tile	Non-ACM	Breezeway Between Classrooms 10 & 11	ND	

FUSS & O'NEILL EnviroScience, LLC

Table 1
Summary of Suspect Asbestos-Containing Materials Laboratory Analytical Data

Sample Number	Material Type	NESHAP Category	Sample Location	Result	Comments
720JH-22 C	Tan with Brown Streaks 12" x 12" Floor Tile	Non-ACM	Breezeway Between Classrooms 10 & 11	ND	
720JH-23 A	Tan with Pink and Brown Streaks 12" x 12" Floor Tile	Non-ACM	Classroom 12	ND	
720JH-23 B	Tan with Pink and Brown Streaks 12" x 12" Floor Tile	Non-ACM	Classroom 12	ND	
720JH-23 C	Tan with Pink and Brown Streaks 12" x 12" Floor Tile	Non-ACM	Classroom 12	ND	
720JH-24 A	Tan with Brown and White Streaks 12" x 12" Floor Tile	Non-ACM	Classroom 11	ND	
720JH-24 B	Tan with Brown and White Streaks 12" x 12" Floor Tile	Non-ACM	Classroom 11	ND	
720JH-24 C	Tan with Brown and White Streaks 12" x 12" Floor Tile	Non-ACM	Classroom 11	ND	
720JH-25 A	Brown with Brown and White Streaks 12" x 12" Floor Tile	Non-ACM	Classroom 11	ND	
720JH-25 B	Brown with Brown and White Streaks 12" x 12" Floor Tile	Non-ACM	Classroom 11	ND	
720JH-25 C	Brown with Brown and White Streaks 12" x 12" Floor Tile	Non-ACM	Classroom 11	ND	
720JH-26 A	Tan with Brown Streaks 12" x 12" Floor Tile	Non-ACM	Classroom 9	ND	
720JH-26 B	Tan with Brown Streaks 12" x 12" Floor Tile	Non-ACM	Classroom 9	ND	
720JH-26 C	Tan with Brown Streaks 12" x 12" Floor Tile	Non-ACM	Classroom 9	ND	
720JH-27 A	Plaster Wall Rough Coat	Non-ACM	Stairwell Near 12	ND	
720JH-27 B	Plaster Wall Rough Coat	Non-ACM	Classroom 11	ND	
720JH-27 C	Plaster Wall Rough Coat	Non-ACM	Outside Boiler Room	ND	
720JH-27 D	Plaster Wall Rough Coat	Non-ACM	Attic	ND	
720JH-27 E	Plaster Wall Rough Coat	Non-ACM	Attic	ND	
720JH-27 F	Plaster Wall Rough Coat	Non-ACM	Classroom 10	ND	
720JH-27 G	Plaster Wall Rough Coat	Non-ACM	Custodial Closet Near Room 7	ND	
720JH-28 A	Plaster Wall Skim Coat	Non-ACM	Stairwell Near 12	ND	
720JH-28 B	Plaster Wall Skim Coat	Non-ACM	Classroom 11	ND	
720JH-28 C	Plaster Wall Skim Coat	Non-ACM	Outside Boiler Room	ND	
720JH-28 D	Plaster Wall Skim Coat	Non-ACM	Attic	ND	
720JH-28 E	Plaster Wall Skim Coat	Non-ACM	Attic	ND	
720JH-28 F	Plaster Wall Skim Coat	Non-ACM	Classroom 10	ND	
720JH-28 G	Plaster Wall Skim Coat	Non-ACM	Custodial Closet Near Room 7	ND	
720JH-29 A	Plaster Ceiling Rough Coat	Non-ACM	Classroom 10	ND	
720JH-29 B	Plaster Ceiling Rough Coat	Non-ACM	Classroom 11	ND	
720JH-29 C	Plaster Ceiling Rough Coat	Non-ACM	Classroom 12	ND	
720JH-29 D	Plaster Ceiling Rough Coat	Non-ACM	Classroom 1	ND	
720JH-29 E	Plaster Ceiling Rough Coat	Non-ACM	Classroom 2	ND	
720JH-29 F	Plaster Ceiling Rough Coat	Non-ACM	Classroom 3	ND	

FUSS & O'NEILL
EnviroScience, LLC

Table 1
Summary of Suspect Asbestos-Containing Materials Laboratory Analytical Data

Sample Number	Material Type	NESHAP Category	Sample Location	Result	Comments
720JH-29 G	Plaster Ceiling Rough Coat	Non-ACM	Classroom 6	ND	
720JH-30 A	**Ceiling Plaster Skim Coat**	**Friable**	**Classroom 10**	**3% Chrysotile**	
720JH-30 B	**Ceiling Plaster Skim Coat**	**Friable**	**Classroom 11**	**Pos Stop**	
720JH-30 C	**Ceiling Plaster Skim Coat**	**Friable**	**Classroom 12**	**Pos Stop**	
720JH-30 D	**Ceiling Plaster Skim Coat**	**Friable**	**Classroom 1**	**Pos Stop**	
720JH-30 E	**Ceiling Plaster Skim Coat**	**Friable**	**Classroom 2**	**Pos Stop**	
720JH-30 F	**Ceiling Plaster Skim Coat**	**Friable**	**Classroom 3**	**Pos Stop**	
720JH-30 G	**Ceiling Plaster Skim Coat**	**Friable**	**Classroom 6**	**Pos Stop**	
Materials from 1988 & 1994 AHERA Initial and 3-Year Reinspection					
C1	**9" x 9" Floor Tile**	**Cat 1 NF**	**Sample Location Unknown**	**> 1% Asbestos**	*** See Footnote**
C4	**Gray Fiber-Reinforced Cement Panel**	**Cat 2 NF**	**Annex Attic**	**Assumed**	

Cat 1 NF = Category I Non-Friable Material
Cat 2 NF = Category II Non-Friable Material
Pos Stop = Positive Stop
ND = None Detected
ACM = Asbestos-Containing Material
ACWM = Asbestos-Containing Waste Material
TEM = Transmission Electron Microscopy

*Note: Material is identified in 1994 AHERA Reinspection report as being identified as ACM in 1988 AHERA Initial Inspection Report. 1988 AHERA Report and Lab Data are unavailable.

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Table 2
Summary of Asbestos-Containing Materials

James F. Peebles Elementary School
Bourne, Massachusetts

Flansburgh Architects
December 4, 2015
Fuss & O'Neill EnviroScience No. 20150666.A1E

Material Type	Locations(s)	Asbestos Content	Estimated Total Quantity	Comments
White Louver Caulking	Annex Roof	5% Chrysotile	50 LF	
Gray Door Caulking	Annex Roof	4% Chrysotile	10 LF	
Tan Interior Window Caulking	Annex Classrooms	5% Chrysotile	750 LF	
Tan Window Glazing Compound	Main Entrance	2% Chrysotile	1 EA	Door System is approximate 20' x 10'
Tan Interior Door Caulking	Throughout Interior	6% Chrysotile	375 LF	
Tan Interior Door Caulking	Connector Building	2% Chrysotile	2 EA	12' x 10'
Tan Interior Window Caulking	Connector Window Walls	5% Chrysotile	250 LF	
Gray Window Glazing Compound	Connector Window Walls	2% Chrysotile	8 EA	15' x 10'
Gray Interior Window Caulking	Cafeteria	2% Chrysotile	140 LF	
Tan Exterior Window Sill Caulking	Annex - Exterior	5% Chrysotile	250 LF	
White Exterior Window Sill Caulking	Annex - Exterior	8% Chrysotile		
Tan Door Caulking	Door between 16 & 15	2% Chrysotile	18 LF	
Black Dampproofing	Annex Exterior behind Brick Veneer	15% Chrysotile	450 SF	
Ceiling Skim Plaster	Art Room	< 1% Chrysotile	300 SF	ACWM
White Window Glazing Compound	1950s Building Gymnasium, Cafeteria, Classrooms 1 - 13, Offices, & Teachers Lounge	2% Chrysotile	~35 EA	~13 @ 30' x 6.5' ~3 @ 20' x 6.5' ~10 @ 7.5' x 6.5' ~2 @ 12' x 6.5' ~2 @ 12' x 4.5' ~1 @ 15' x 3' ~1 @ 12' x 3'
Gray with White Window Caulking	1950s Building Gymnasium, Cafeteria, Classrooms 1 - 13, Offices, & Teachers Lounge	2% Chrysotile	3,575 LF	
Friable TSI at Boiler Ribbing	Boiler Room (Boilers 1 & 2)	40 % Chrysotile	2 EA	
White Friable TSI at Front Circular Panel	Boiler Exterior (Front)	10% Chrysotile		
Exterior Gasket at Metal Fixed-Panels	Boiler Exterior	25% Chrysotile		
Duct Vibration Isolator	Attic, Annex Lofts, Boiler Room, Stage, & 1st Floor Annex Custodian Closets	60% Chrysotile	15 EA	Associated with HVAC Ductwork
Pre-Formed, Block-Type Pipe Insulation	Concealed in Walls and Pipe Chases	5% Chrysotile 15% Amosite 6% Crocidolite	500 LF	
Corrugated, Paper-Type Pipe Insulation	Pipe Chases, Pipe Tunnels, & above Ceilings in the 1950s Building & Annex	70% Chrysotile	~ 1,500 LF	

Table 2
Summary of Asbestos-Containing Materials

Material Type	Locations(s)	Asbestos Content	Estimated Total Quantity	Comments
Mudded Pipe Fitting Insulation	Building	5% Chrysotile 15% Amosite 12% Crocidolite		
Ceiling Plaster Skim Coat	Ground Floor Main Hallway, Storage Room Across from Classroom 13, Cafeteria, & Classrooms 9 - 13	3% Chrysotile	13,000 SF	
9" x 9" Floor Tile	1950s Building 1st Floor Hallway (from Lobby to Classroom 7), Main Office Spaces, Principals Office, Conference Room, Storage Room adjacent to Main Office, Special Education Office, Stairwell Landings & Stair Treads Across from Room 4, 1950's Building Ground Floor Hallway (Cafeteria to End of Hall), Teachers Room, Custodians Closet, Classroom 13 & Stairwell Landing & Stair Treads adjacent to Room 9	> 1% Asbestos	5,000 SF	
9" x 9" Floor Tile	Ground & 1st Floor Connector Building Hallways & Stairwell Landings between 1950s Building & Annex building	>1% Asbestos	1,200 SF	
9" x 9" Floor Tile	Annex Building Ground & 1st Floor Classrooms, Hallways, Library, Stairwell Landings, Stair Treads & Custodian Spaces (does not include Ground & 1st Floor Bathrooms)	>1% Asbestos	13,500 SF	
Gray Fiber-Reinforced Cement Panel	Annex Loft Along Edge & Boiler Room	Assumed	400 SF	
Sub-Slab Dampproofing Mastics/Materials	1950s & Annex Buildings	Assumed	14,500 SF	
Contaminated Soil	Crawlspaces & Pipe Tunnels	Asbestos-Contaminated	45 CY	Assumes 2,200 SF Removed to a Depth of 6"

CY = Cubic Yard, EA = Each, LF = Linear Feet, SF = Square Feet

ACM = Asbestos-Containing Material

ACWM = Asbestos-Containing Waste Material

TSI = Thermal System Insulation

Table 3
Summary of Presumed PCB-Containing Source Building Materials

Material Type	Location	Estimated Quantity
Exterior/Interior Window Caulking*	Original & Annex Buildings	5,000 LF
Exterior Door Caulking*	Original & Annex Buildings	200 LF
Interior Door Caulking	Original & Annex Buildings	375 LF
Louver Caulking*	Annex Roof	50 LF
Roof Door Caulking*	Annex Roof	10 LF
Window Glazing Compound*	Original & Annex Building Windows	50 Systems
Window Glazing Compound	Main Entrance	1 System
Interior Door Caulking Associated with Connector Building Fire Doors	Connector Building	2 EA
Window Sill Caulking	Annex Exterior	250 LF
Door Caulking	Interior Door Between Room 15 & 16	20 LF
Roof Flashing Caulking	Annex Roof	250 LF

EA = Each, LF = Linear Feet

* Denotes material type also contains, or is presumed to contain, asbestos

Appendix A

Limitations

APPENDIX A

James F. Peebles Elementary School
Bourne, MA

1. This environmental report has been prepared for the exclusive use of the Client, and is subject to, and is issued in connection with, the general terms and conditions of the revised original Agreement (September 25, 2015) and all of its provisions. Any use or reliance upon information provided in this report, without the specific written authorization of the Client and EnviroScience, shall be at the User's individual risk. This report should not be used as an abatement specification. All quantities of materials identified during this inspection are approximate.
2. EnviroScience has obtained and relied upon information from multiple sources to form certain conclusions regarding likely environmental issues at and in the vicinity of the subject property in conducting this inspection. Except as otherwise noted, no attempt has been made to verify the accuracy or completeness of such information or verify compliance by any party with federal, state, or local laws or regulations.
3. EnviroScience has obtained and relied upon laboratory analytical results in conducting the inspection. This information was used to form conclusions regarding the types and quantities of ACM that must be managed prior to renovation or demolition activities that may disturb these materials at the subject property(ies). EnviroScience has not performed an independent review of the reliability of this laboratory data.
4. Unless otherwise noted, only suspect hazardous materials associated within or located on the building (aboveground) were included in this inspection. Suspect hazardous materials may exist below the ground surfaces that were not included in the scope of work of this inspection. EnviroScience cannot guarantee all asbestos or suspect hazardous materials were identified within the areas included in the scope of work. Only visible and accessible areas were included in the scope of work for this inspection.
5. The findings, observations, and conclusions presented in this report are limited by the scope of services outlined in our original Agreement, which reflects schedule and budgetary constraints imposed by the Client. Furthermore, the assessment has been conducted in accordance with generally accepted environmental practices. No other warranty, expressed or implied, is made.
6. The conclusions presented in this report are based solely upon information gathered by EnviroScience to date. Should further environmental or other relevant information be discovered at a later date, the Client should immediately bring the information to EnviroScience's attention. Based upon an evaluation and assessment of relevant information, EnviroScience may modify the letter report and its conclusions.

FUSS & O'NEILL
EnviroScience, LLC

Appendix B

EnviroScience Asbestos Inspector State Certifications and EPA Accreditations

Commonwealth of Massachusetts
Department of Labor Standards
Heather E. Rowe, Director

Asbestos Inspector

MICHAEL COFFEY

Eff. Date 03/04/15
Exp. Date 03/03/16
AI900612
Member of C.O.N.E.S.
HV HV - NEW

16

INSTITUTE FOR ENVIRONMENTAL EDUCATION

This is to certify that

Michael J. Coffey

has completed the requisite training, and has passed an examination for reaccreditation as:

Asbestos Inspector Refresher

pursuant to Title II of the Toxic Substance Control Act, 15 U.S.C. 2646

Course Location

Institute for Environmental Education, Inc.
16 Upton Drive Wilmington, MA 01887

October 14, 2015
Course Dates

15-0421-106-261994
Certificate Number

October 14, 2015
Examination Date

October 14, 2016
Expiration Date

Training Director

16 Upton Drive, Wilmington, MA 01887 Telephone 978.658.5272 www.ieetrains.com

INSTITUTE FOR ENVIRONMENTAL EDUCATION

Commonwealth of Massachusetts

Department of Labor Standards

Jean Zeiler, Acting Director

Asbestos Inspector

ROBERT C. MALLETT

Eff. Date 06/01/15

Exp. Date 06/01/16

AI900557

Member of C.O.N.E.S.

BOSR BOS-RENEW

16

This is to certify that

Robert C Mallett

has completed the requisite training, and has passed an examination for reaccreditation as:

Asbestos Inspector Refresher

pursuant to Title II of the Toxic Substance Control Act, 15 U.S.C. 2646

Course Location

Institute for Environmental Education, Inc.
16 Upton Drive Wilmington, MA 01887

January 14, 2015
Course Dates

15-0026-106-260110
Certificate Number

January 14, 2015
Examination Date

January 14, 2016
Expiration Date

Training Director

16 Upton Drive, Wilmington, MA 01887 Telephone 978.658.5272 www.ieetrains.com

INSTITUTE FOR ENVIRONMENTAL EDUCATION

Appendix C

Asbestos Laboratory Analytical Reports and Chain-of-Custody Forms

EMSL Analytical, Inc.

200 Route 130 North Cinnaminson, NJ 08077
Phone/Fax: (800) 220-3675 / (856) 786-5974
http://www.EMSL.com / cinnasblab@EMSL.com

EMSL Order ID:	041532674
Customer ID:	ENVI54
Customer PO:	20150666.A1E
Project ID:	

Attn:	Dustin Diedricksen Fuss & O'Neill EnviroScience, LLC 146 Hartford Road Manchester, CT 06040	Phone: Fax: Collected: Received: Analyzed:	(860) 646-2469 (888) 838-1160 10/26/2015 11/02/2015 11/06/2015
Proj:	Peebles Elementary School Feasibility Study / 20150666.A1E / 70 Trowbridge Road, Bourne, MA		

Summary Test Report for Asbestos Analysis of Bulk Material via EPA 600/R-93/116 Method via Polarized Light Microscopy

Client Sample ID: 01A-RCM-1026 ***Lab Sample ID:*** **041532674-0001**

Sample Description: Connector bldg roof/Gray flashing sealant

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	11/03/2015	Gray	0%	100%	None Detected	
TEM Grav. Reduction	11/05/2015	Gray	0.0%	100%	None Detected	

Client Sample ID: 01B-RCM-1026 ***Lab Sample ID:*** **041532674-0002**

Sample Description: Connector bldg roof/Gray flashing sealant

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	11/04/2015	Gray	0%	100%	None Detected	

Client Sample ID: 02A-RCM-1026 ***Lab Sample ID:*** **041532674-0003**

Sample Description: Annex roof/Black flashing sealant

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	11/03/2015	Black	15%	85%	None Detected	
TEM Grav. Reduction	11/05/2015	Black	0.0%	100%	None Detected	

Client Sample ID: 02B-RCM-1026 ***Lab Sample ID:*** **041532674-0004**

Sample Description: Annex roof/Black flashing sealant

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	11/04/2015	Black	0%	100%	None Detected	

Client Sample ID: 03A-RCM-1026 ***Lab Sample ID:*** **041532674-0005**

Sample Description: Annex roof/Black built-up roofing

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	11/03/2015	Black	25%	75%	None Detected	
TEM Grav. Reduction	11/05/2015	Black	0.0%	100%	None Detected	

Client Sample ID: 03B-RCM-1026 ***Lab Sample ID:*** **041532674-0006**

Sample Description: Connector roof/Black built-up roofing

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	11/04/2015	Black	25%	75%	None Detected	

Summary Test Report for Asbestos Analysis of Bulk Material via EPA 600/R-93/116 Method via Polarized Light Microscopy

Client Sample ID: 04A-RCM-1026 ***Lab Sample ID:*** **041532674-0007**

Sample Description: Annex roof/Black hot mop

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	11/03/2015	Black	35%	65%	None Detected	
TEM Grav. Reduction	11/05/2015	Black	0.0%	100%	None Detected	

Client Sample ID: 04B-RCM-1026 ***Lab Sample ID:*** **041532674-0008**

Sample Description: Connector roof/Black hot mop

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	11/04/2015	Black	10%	90%	None Detected	

Client Sample ID: 05A-RCM-1026 ***Lab Sample ID:*** **041532674-0009**

Sample Description: Annex roof/Gray asphalt roof shingle

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	11/03/2015	Gray/Black	25%	75%	None Detected	
TEM Grav. Reduction	11/05/2015	Gray/Black	0.0%	100%	None Detected	

Client Sample ID: 05B-RCM-1026 ***Lab Sample ID:*** **041532674-0010**

Sample Description: Main roof/Gray asphalt roof shingle

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	11/04/2015	Gray/Black	10%	90%	None Detected	

Client Sample ID: 06A-RCM-1026 ***Lab Sample ID:*** **041532674-0011**

Sample Description: Annex roof/White louver caulking

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	11/03/2015	White	0%	95%	**5% Chrysotile**	

Client Sample ID: 06B-RCM-1026 ***Lab Sample ID:*** **041532674-0012**

Sample Description: Annex roof/White louver caulking

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	11/03/2015			Stop Positive (Not Analyzed)		

Client Sample ID: 07A-RCM-1026 ***Lab Sample ID:*** **041532674-0013**

Sample Description: Annex roof/White flashing sealant

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	11/03/2015	White	0%	100%	None Detected	
TEM Grav. Reduction	11/05/2015	White	0.0%	100%	None Detected	

Client Sample ID: 07B-RCM-1026 ***Lab Sample ID:*** **041532674-0014**

Sample Description: Annex roof/White flashing sealant

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	11/04/2015	White	0%	100%	None Detected	

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Summary Test Report for Asbestos Analysis of Bulk Material via EPA 600/R-93/116 Method via Polarized Light Microscopy

Client Sample ID: 08A-RCM-1026 ***Lab Sample ID:*** **041532674-0015**
Sample Description: Annex roof/Gray door caulking

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	11/03/2015	Gray	0%	96%	**4% Chrysotile**	

Client Sample ID: 08B-RCM-1026 ***Lab Sample ID:*** **041532674-0016**
Sample Description: Annex roof/Gray door caulking

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	11/03/2015				Stop Positive (Not Analyzed)	

Client Sample ID: 09A-RCM-1026 ***Lab Sample ID:*** **041532674-0017**
Sample Description: Annex roof/Black roof felt b/w 05

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	11/03/2015	Black	60%	40%	None Detected	

Client Sample ID: 09B-RCM-1026 ***Lab Sample ID:*** **041532674-0018**
Sample Description: Main bldg roof/Black roof felt b/w 05

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	11/04/2015	Black	60%	40%	None Detected	

Client Sample ID: 11A-RCM-1026 ***Lab Sample ID:*** **041532674-0019**
Sample Description: Attic/Tan pipe-thread sealant

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	11/03/2015	Tan	0%	100%	None Detected	Very limited sample
TEM Grav. Reduction	11/05/2015	Tan	0.0%	100%	None Detected	

Client Sample ID: 11B-RCM-1026 ***Lab Sample ID:*** **041532674-0020**
Sample Description: Cafeteria/Tan pipe-thread sealant

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	11/04/2015	Tan	0%	100%	None Detected	

Client Sample ID: 12A-RCM-1026 ***Lab Sample ID:*** **041532674-0021**
Sample Description: Above 1st floor classrooms/Gray drywall

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	11/03/2015	Gray	15%	85%	None Detected	

Client Sample ID: 12B-RCM-1026 ***Lab Sample ID:*** **041532674-0022**
Sample Description: Above 1st floor classrooms/Gray drywall

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	11/04/2015	Brown/Gray	70%	30%	None Detected	

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Summary Test Report for Asbestos Analysis of Bulk Material via EPA 600/R-93/116 Method via Polarized Light Microscopy

Client Sample ID: 13A-RCM-1026 ***Lab Sample ID:*** **041532674-0023**

Sample Description: Room 7/24x24 red w/white splotch floor tile

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	11/03/2015	White/Red	0%	100%	None Detected	

Client Sample ID: 13B-RCM-1026 ***Lab Sample ID:*** **041532674-0024**

Sample Description: Room 7/24x24 red w/white splotch floor tile

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	11/04/2015	White/Red	0%	100%	None Detected	

Client Sample ID: 14A-RCM-1026 ***Lab Sample ID:*** **041532674-0025**

Sample Description: Room 5/24x24 tan w/white & brown splotch floor tile

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	11/03/2015	Tan/White	0%	100%	None Detected	

Client Sample ID: 14B-RCM-1026 ***Lab Sample ID:*** **041532674-0026**

Sample Description: Room 5/24x24 tan w/white & brown splotch floor tile

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	11/04/2015	Tan/White	0%	100%	None Detected	

Client Sample ID: 15A-RCM-1026 ***Lab Sample ID:*** **041532674-0027**

Sample Description: Room 3/12x12 dark gray mottled floor tile

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	11/03/2015	Gray	0%	100%	None Detected	

Client Sample ID: 15B-RCM-1026 ***Lab Sample ID:*** **041532674-0028**

Sample Description: Room 3/12x12 dark gray mottled floor tile

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	11/04/2015	Gray	0%	100%	None Detected	

Client Sample ID: 17A-RCM-1026 ***Lab Sample ID:*** **041532674-0029**

Sample Description: Room 8/Black caulking assoc w/window & wall ballads

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	11/03/2015	Black	0%	100%	None Detected	
TEM Grav. Reduction	11/05/2015	Black	0.0%	100%	None Detected	

Client Sample ID: 17B-RCM-1026 ***Lab Sample ID:*** **041532674-0030**

Sample Description: Room 4/Black caulking assoc w/window & wall ballads

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	11/04/2015	Black	0%	100%	None Detected	

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Summary Test Report for Asbestos Analysis of Bulk Material via EPA 600/R-93/116 Method via Polarized Light Microscopy

Client Sample ID: 18A-RCM-1026 ***Lab Sample ID:*** **041532674-0031**
Sample Description: Room 8/Tan caulking assoc w/ window wall ballads

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	11/03/2015	Tan	0%	100%	None Detected	
TEM Grav. Reduction	11/05/2015	Tan	2.8%	97.2%	None Detected	

Client Sample ID: 18B-RCM-1026 ***Lab Sample ID:*** **041532674-0032**
Sample Description: Room 4/Tan caulking assoc w/ window wall ballads

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	11/04/2015	Tan	0%	100%	None Detected	

Client Sample ID: 19A-RCM-1026 ***Lab Sample ID:*** **041532674-0033**
Sample Description: Ground floor boys' room/Gray ceramic floor tile grout

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	11/03/2015	Gray	0%	100%	None Detected	

Client Sample ID: 19B-RCM-1026 ***Lab Sample ID:*** **041532674-0034**
Sample Description: 1st floor boys' room/Gray ceramic floor tile grout

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	11/04/2015	Gray	0%	100%	None Detected	

Client Sample ID: 20A-RCM-1026-Window Sill ***Lab Sample ID:*** **041532674-0035**
Sample Description: Room 11/Black composite windowsill

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	11/03/2015	Tan/Black	0%	100%	None Detected	

Client Sample ID: 20B-RCM-1026 ***Lab Sample ID:*** **041532674-0036**
Sample Description: Room 4/Black composite windowsill

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	11/04/2015	Black	0%	100%	None Detected	

Client Sample ID: 21A-RCM-1026 ***Lab Sample ID:*** **041532674-0037**
Sample Description: Ground floor boys' room/Gray ceramic floor tile adhesive

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	11/03/2015	Gray	0%	100%	None Detected	

Client Sample ID: 21B-RCM-1026 ***Lab Sample ID:*** **041532674-0038**
Sample Description: 1st floor boys' room/Gray ceramic floor tile adhesive

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	11/04/2015	Gray	0%	100%	None Detected	

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Summary Test Report for Asbestos Analysis of Bulk Material via EPA 600/R-93/116 Method via Polarized Light Microscopy

Client Sample ID: 22A-RCM-1026 ***Lab Sample ID:*** **041532674-0039**
Sample Description: Ground floor boys' room/Dark gray ceramic wall tile adhesive

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	11/03/2015	Gray	0%	100%	None Detected	

Client Sample ID: 22B-RCM-1026 ***Lab Sample ID:*** **041532674-0040**
Sample Description: 1st floor boys' room/Dark gray ceramic wall tile adhesive

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	11/04/2015	Gray	0%	100%	None Detected	

Client Sample ID: 23A-RCM-1026 ***Lab Sample ID:*** **041532674-0041**
Sample Description: Ground floor boys' room/Gray ceramic wall tile grout

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	11/03/2015	Gray	0%	100%	None Detected	

Client Sample ID: 23B-RCM-1026 ***Lab Sample ID:*** **041532674-0042**
Sample Description: 1st floor boys' room/Gray ceramic wall tile grout

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	11/04/2015	Gray	0%	100%	None Detected	

Client Sample ID: 24A-RCM-1026 ***Lab Sample ID:*** **041532674-0043**
Sample Description: Ground floor boys' room/Tan interior window caulking

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	11/03/2015	Tan	0%	100%	None Detected	
TEM Grav. Reduction	11/05/2015	Tan	0.0%	100%	None Detected	

Client Sample ID: 24B-RCM-1026 ***Lab Sample ID:*** **041532674-0044**
Sample Description: 1st floor boys' room/Tan interior window caulking

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	11/04/2015	Gray/Tan	0%	100%	None Detected	

Client Sample ID: 25A-RCM-1026 ***Lab Sample ID:*** **041532674-0045**
Sample Description: 1st floor boys' room/Gray mud set

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	11/03/2015	Gray	0%	100%	None Detected	

Client Sample ID: 25B-RCM-1026 ***Lab Sample ID:*** **041532674-0046**
Sample Description: Ground floor boys' room/Gray mud set

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	11/04/2015	Gray	0%	100%	None Detected	

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Summary Test Report for Asbestos Analysis of Bulk Material via EPA 600/R-93/116 Method via Polarized Light Microscopy

Client Sample ID: 26A-RCM-1026 ***Lab Sample ID:*** **041532674-0047**
Sample Description: Annex-2nd floor boys' room/Gray mud set

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	11/03/2015	Gray	0%	100%	None Detected	

Client Sample ID: 26B-RCM-1026 ***Lab Sample ID:*** **041532674-0048**
Sample Description: Annex-1st floor boys' room/Gray mud set

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	11/04/2015	Gray	0%	100%	None Detected	

Client Sample ID: 27A-RCM-1026 ***Lab Sample ID:*** **041532674-0049**
Sample Description: Connector hallway-1st/1x1 white fissured splined ceiling tile

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	11/03/2015	White	90%	10%	None Detected	

Client Sample ID: 27B-RCM-1026 ***Lab Sample ID:*** **041532674-0050**
Sample Description: Connector hallway-Ground/1x1 white fissured splined ceiling tile

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	11/04/2015	White	0%	100%	None Detected	

Client Sample ID: 28A-RCM-1026 ***Lab Sample ID:*** **041532674-0051**
Sample Description: Annex hallway to lobby doors/Tan window glazing compound

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	11/03/2015	Tan	0%	100%	None Detected	Very limited sample

Client Sample ID: 28B-RCM-1026 ***Lab Sample ID:*** **041532674-0052**
Sample Description: Annex hallway to lobby doors/Tan window glazing compound

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	11/04/2015	Tan	0%	100%	None Detected	

Client Sample ID: 29A-RCM-1026 ***Lab Sample ID:*** **041532674-0053**
Sample Description: Room 14/Tan interior window caulking

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	11/03/2015	Tan	0%	95%	**5% Chrysotile**	

Client Sample ID: 29B-RCM-1026 ***Lab Sample ID:*** **041532674-0054**
Sample Description: Room 18/Tan interior window caulking

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	11/03/2015			Stop Positive (Not Analyzed)		

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Client Sample ID: 30A-RCM-1026 ***Lab Sample ID:*** **041532674-0055**
Sample Description: Room 14/White interior window caulking

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	11/03/2015	White	0%	100%	None Detected	
TEM Grav. Reduction	11/05/2015	White	0.0%	100%	None Detected	

Client Sample ID: 30B-RCM-1026 ***Lab Sample ID:*** **041532674-0056**
Sample Description: Room 18/White interior window caulking

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	11/04/2015	White	0%	100%	None Detected	

Client Sample ID: 31A-RCM-1026 ***Lab Sample ID:*** **041532674-0057**
Sample Description: Wood entry doors/Tan window glazing compound

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	11/03/2015	Tan	0%	98%	**2% Chrysotile**	

Client Sample ID: 31B-RCM-1026 ***Lab Sample ID:*** **041532674-0058**
Sample Description: Wood entry doors/Tan window glazing compound

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	11/03/2015			Stop Positive (Not Analyzed)		

Client Sample ID: 32A-RCM-1026 ***Lab Sample ID:*** **041532674-0059**
Sample Description: Cafeteria doors/Tan interior door caulking

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	11/03/2015	Tan	0%	94%	**6% Chrysotile**	

Client Sample ID: 32B-RCM-1026 ***Lab Sample ID:*** **041532674-0060**
Sample Description: Main bldg doors at connector/Tan interior door caulking

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	11/03/2015			Stop Positive (Not Analyzed)		

Client Sample ID: 33A-RCM-1026 ***Lab Sample ID:*** **041532674-0061**
Sample Description: Annex-Ground level boys' room/White plaster skim coat

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	11/03/2015	White	0%	100%	None Detected	

Client Sample ID: 33B-RCM-1026 ***Lab Sample ID:*** **041532674-0062**
Sample Description: Annex-Ground level girls' room/White plaster skim coat

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	11/03/2015	White	0%	100%	None Detected	

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Client Sample ID: 33C-RCM-1026 ***Lab Sample ID:*** **041532674-0063**
Sample Description: Annex-1st floor girls' room/White plaster skim coat

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	11/03/2015	White	0%	100%	None Detected	

Client Sample ID: 33D-RCM-1026 ***Lab Sample ID:*** **041532674-0064**
Sample Description: Annex-1st floor boys' room/White plaster skim coat

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	11/04/2015	White	0%	100%	None Detected	

Client Sample ID: 33E-RCM-1026 ***Lab Sample ID:*** **041532674-0065**
Sample Description: Annex-Hallway o/s 14 & 15/White plaster skim coat

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	11/04/2015	White	0%	100%	None Detected	

Client Sample ID: 34A-RCM-1026 ***Lab Sample ID:*** **041532674-0066**
Sample Description: Annex-Ground level boys' room/Gray plaster rough coat

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	11/04/2015	Gray	0%	100%	None Detected	

Client Sample ID: 34B-RCM-1026 ***Lab Sample ID:*** **041532674-0067**
Sample Description: Annex-Ground level girls' room/Gray plaster rough coat

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	11/04/2015	Gray	0%	100%	None Detected	

Client Sample ID: 34C-RCM-1026 ***Lab Sample ID:*** **041532674-0068**
Sample Description: Annex-1st floor girls' room/Gray plaster rough coat

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	11/04/2015	Gray	0%	100%	None Detected	

Client Sample ID: 34D-RCM-1026 ***Lab Sample ID:*** **041532674-0069**
Sample Description: Annex-1st floor girls' room/Gray plaster rough coat

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	11/04/2015	White	0%	100%	None Detected	

Client Sample ID: 34E-RCM-1026 ***Lab Sample ID:*** **041532674-0070**
Sample Description: Annex-Ground level girls' room/Gray plaster rough coat

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	11/04/2015	White	0%	100%	None Detected	

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Summary Test Report for Asbestos Analysis of Bulk Material via EPA 600/R-93/116 Method via Polarized Light Microscopy

Client Sample ID: 35A-RCM-1026 ***Lab Sample ID:*** **041532674-0071**
Sample Description: At connector hallway-Ground floor/Tan interior door caulking

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	11/04/2015	Tan	0%	98%	**2% Chrysotile**	

Client Sample ID: 35B-RCM-1026 ***Lab Sample ID:*** **041532674-0072**
Sample Description: At connector hallway-1st floor/Tan interior door caulking

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	11/04/2015			Stop Positive (Not Analyzed)		

Client Sample ID: 36A-RCM-1026 ***Lab Sample ID:*** **041532674-0073**
Sample Description: Connector window walls/Tan interior window caulking

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	11/04/2015	Tan	0%	95%	**5% Chrysotile**	

Client Sample ID: 36B-RCM-1026 ***Lab Sample ID:*** **041532674-0074**
Sample Description: Connector window walls/Tan interior window caulking

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	11/04/2015			Stop Positive (Not Analyzed)		

Client Sample ID: 37A-RCM-1026 ***Lab Sample ID:*** **041532674-0075**
Sample Description: Connector window walls/Gray window glazing compound

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	11/04/2015	Gray	0%	98%	**2% Chrysotile**	

Client Sample ID: 37B-RCM-1026 ***Lab Sample ID:*** **041532674-0076**
Sample Description: Connector window walls/Gray window glazing compound

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	11/04/2015			Stop Positive (Not Analyzed)		

Client Sample ID: 38A-RCM-1026 ***Lab Sample ID:*** **041532674-0077**
Sample Description: Cafeteria/Gray interior window caulking

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	11/04/2015	Gray	0%	98%	**2% Chrysotile**	

Client Sample ID: 38B-RCM-1026 ***Lab Sample ID:*** **041532674-0078**
Sample Description: Cafeteria/Gray interior window caulking

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	11/04/2015			Stop Positive (Not Analyzed)		

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EMSL Order ID: 041532674
Customer ID: ENVI54
Customer PO: 20150666.A1E
Project ID:

Summary Test Report for Asbestos Analysis of Bulk Material via EPA 600/R-93/116 Method via Polarized Light Microscopy

Client Sample ID: 39A-RCM-1026 ***Lab Sample ID:*** **041532674-0079**
Sample Description: Exterior-Main bldg/Brown exterior window caulking

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	11/04/2015	Brown	0%	100%	None Detected	
TEM Grav. Reduction	11/05/2015	Brown	0.0%	100%	None Detected	

Client Sample ID: 39B-RCM-1026 ***Lab Sample ID:*** **041532674-0080**
Sample Description: Exterior-Main bldg/Brown exterior window caulking

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	11/04/2015	Brown	0%	100%	None Detected	

Client Sample ID: 40A-RCM-1026 ***Lab Sample ID:*** **041532674-0081**
Sample Description: Exterior-Main bldg/Black through-wall flashing mastic

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	11/04/2015	Black	0%	100%	None Detected	

Client Sample ID: 40B-RCM-1026 ***Lab Sample ID:*** **041532674-0082**
Sample Description: Exterior-Main bldg/Black through-wall flashing mastic

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	11/04/2015	Brown/Black	5%	95%	None Detected	

Client Sample ID: 41A-RCM-1026 ***Lab Sample ID:*** **041532674-0083**
Sample Description: Annex-Exterior/Tan exterior windowsill caulking

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	11/04/2015	Tan	0%	95%	**5% Chrysotile**	

Client Sample ID: 41B-RCM-1026 ***Lab Sample ID:*** **041532674-0084**
Sample Description: Annex-Exterior/Tan exterior windowsill caulking

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	11/04/2015			Stop Positive (Not Analyzed)		

Client Sample ID: 42A-RCM-1026 ***Lab Sample ID:*** **041532674-0085**
Sample Description: Annex-Exterior/Gray exterior window caulking

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	11/04/2015	Gray	0%	100%	None Detected	

Client Sample ID: 42B-RCM-1026 ***Lab Sample ID:*** **041532674-0086**
Sample Description: Annex-Exterior/Gray exterior window caulking

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	11/04/2015	Gray	0%	100%	None Detected	

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Customer ID: ENVI54
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Project ID:

Summary Test Report for Asbestos Analysis of Bulk Material via EPA 600/R-93/116 Method via Polarized Light Microscopy

Client Sample ID: 43A-RCM-1026 ***Lab Sample ID:*** **041532674-0087**
Sample Description: Annex-Exterior/White exterior windowsill caulking

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	11/04/2015	White	0%	92%	**8% Chrysotile**	

Client Sample ID: 43B-RCM-1026 ***Lab Sample ID:*** **041532674-0088**
Sample Description: Annex-Exterior/White exterior windowsill caulking

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	11/04/2015			Stop Positive (Not Analyzed)		

Client Sample ID: 44A-RCM-1026 ***Lab Sample ID:*** **041532674-0089**
Sample Description: Door b/w 17 & 18/Off-white door caulking

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	11/04/2015	White	0%	100%	None Detected	
TEM Grav. Reduction	11/05/2015	White	0.0%	100%	None Detected	

Client Sample ID: 44B-RCM-1026 ***Lab Sample ID:*** **041532674-0090**
Sample Description: Door b/w 23 & 24/Off-white door caulking

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	11/04/2015	Brown/White	0%	100%	None Detected	

Client Sample ID: 45A-RCM-1026 ***Lab Sample ID:*** **041532674-0091**
Sample Description: Door b/w 16 & 15/Tan door caulking

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	11/04/2015	Tan	0%	98%	**2% Chrysotile**	

Client Sample ID: 45B-RCM-1026 ***Lab Sample ID:*** **041532674-0092**
Sample Description: Door b/w 16 & 15/Tan door caulking

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	11/04/2015			Stop Positive (Not Analyzed)		

Client Sample ID: 46A-RCM-1026 ***Lab Sample ID:*** **041532674-0093**
Sample Description: Room 9/Tan int window caulking

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	11/04/2015	Gray/Tan	0%	100%	None Detected	
TEM Grav. Reduction	11/06/2015	Gray/Tan	0.0%	100%	None Detected	

Client Sample ID: 46B-RCM-1026 ***Lab Sample ID:*** **041532674-0094**
Sample Description: Room 11/Tan int window caulking

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	11/04/2015	Tan	0%	100%	None Detected	

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Summary Test Report for Asbestos Analysis of Bulk Material via EPA 600/R-93/116 Method via Polarized Light Microscopy

Client Sample ID: 47A-RCM-1026 ***Lab Sample ID:*** **041532674-0095**

Sample Description: Behind brick at main bldg/Black dampproofing

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	11/04/2015	Black	40%	60%	None Detected	

Client Sample ID: 47B-RCM-1026 ***Lab Sample ID:*** **041532674-0096**

Sample Description: Behind brick at main bldg/Black dampproofing

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	11/04/2015	Black	30%	70%	None Detected	

Client Sample ID: 50A-RCM-1026 ***Lab Sample ID:*** **041532674-0097**

Sample Description: Pipe tunnel/Brown concrete paper

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	11/04/2015	Brown	80%	20%	None Detected	

Client Sample ID: 50B-RCM-1026 ***Lab Sample ID:*** **041532674-0098**

Sample Description: Crawlspace/Brown concrete paper

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	11/04/2015	Brown/Black	95%	5%	None Detected	

Client Sample ID: 51A-RCM-1026 ***Lab Sample ID:*** **041532674-0099**

Sample Description: Pipe tunnel/Black mastic assoc w/50

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	11/04/2015	Black	0%	100%	None Detected	

Client Sample ID: 51B-RCM-1026 ***Lab Sample ID:*** **041532674-0100**

Sample Description: Crawlspace/Black mastic assoc w/50

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	11/04/2015	Black	0%	100%	None Detected	

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Summary Test Report for Asbestos Analysis of Bulk Material via EPA 600/R-93/116 Method via Polarized Light Microscopy

Analyst(s):

Alexis Kum	PLM (45)
Dave Poitras	PLM (10)
Debbie Little	TEM Grav. Reduction (14)
Seri Smith	PLM (33)

Reviewed and approved by:

Benjamin Ellis, Laboratory Manager
or Other Approved Signatory

Samples analyzed by EMSL Analytical, Inc. Cinnaminson, NJ NVLAP Lab Code 101048-0, AIHA-LAP, LLC-IHLAP Lab 100194, NYS ELAP 10872, NJ DEP 03036

Initial report from: 11/04/201513:03:05

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Asbestos Bulk Sample Chain-of-Custody

Sheet 1 of 7

Project Name: Peebles Elementary School Feasibility Study **Project No.:** 20150666.A1E

Building Name/Number: Peebles Elementary School **Project Manager:** D Diedricksen

Site Address: 70 Trowbridge Road, Bourne, MA **Total # of Samples:** 100 ~~96~~

	Sample ID (#-Initials-Date)	Material Type (Size, Color, Description, Material)	Sample Location	Comments/ Quantities
#16	01A -RCM-1026	Gray Flashing Sealant	Connector Bldg. Roof	
	01B -RCM-1026	↓	↓	
#17	02A -RCM-1026	Black Flashing Sealant	Annex Roof	
	02B -RCM-1026	↓	↓	
#18	03A -RCM-1026	Black Built-up Roofing	Annex Roof	
	03B -RCM-1026	↓	Connector Roof	
#19	04A -RCM-1026	Black Hot Mop	Annex Roof	b/n Poly ISO
	04B -RCM-1026	↓	Connector Roof	
#20	05A -RCM-1026	Gray Asphalt Roof Shingle	Annex Roof	
	05B -RCM-1026	↓	Main Roof	
#21	06A -RCM-1026	White Louver Caulking	Annex Roof	
	06B -RCM-1026	↓	↓	
#22	07A -RCM-1026	White Flashing Sealant	Annex Roof	
	07B -RCM-1026	↓	↓	
#23	~~08B~~ 08A -RCM-1026	Gray Door Caulking	Annex Roof	

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Analysis Method: ☒ PLM ☐ TEM ☐ Other ______ Turnaround Time: ~~48-hour~~ 400

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Email Results to: ddiedricksen @fando.com **Do Not Mail Hard Copy Report** **FAX Results to: 888-838-1160.**

Special Instructions: Stop analysis on first positive sample in each homogeneous set of samples unless otherwise noted. Do not layer samples unless indicated. Do not point count. If NOB group samples are ALL negative by PLM, analyze the sample denoted with a star (★) by **TEM NOB** on a 48-hour t/a/t. Analyze a **MAXIMUM** of 20 samples by **TEM** in noted order.

Samples Collected by: Ros Mallett + Mike Coffey **Date:** 10/26/2015 + 10/28/2015

Samples Sent by: RCM **Date:** 10/30/15 **Time:**

Shipped To: ☒ EMSL ☐ Other

Method of Shipment: ☒ Fed Ex ☐ Lab Drop Off ☐ Other

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Asbestos Bulk Sample Chain-of-Custody

Sheet 2 of 7

Project Name: Peebles Elementary School Feasibility Study **Project No.:** 20150666.A1E

Building Name/Number: Peebles Elementary School **Project Manager:** D Diedricksen

Site Address: 70 Trowbridge Road, Bourne, MA **Total # of Samples:** 100 ~~96~~ ~~108~~

Sample ID (#-Initials-Date)	Material Type (Size, Color, Description, Material)	Sample Location	Comments/ Quantities
08B -RCM-1026	Gray Door Caulking	Annex Roof	
09A -RCM-1026	Black Roof Felt b/n 05	Annex Roof	
09B -RCM-1026	↓ ↓	Main Bldg. Roof	
11A -RCM-1026	Tan Pipe-Thread Sealant	Attic	a/u Fire Supression System
11B -RCM-1026	↓	Cafeteria	
12A -RCM-1026	Gray Drywall	Above 1st Floor Classrooms	
12B -RCM-1026	↓	↓	
13A -RCM-1026	24x24 Red w/White Splotch	Room 7	
13B -RCM-1026	↓ Floor Tile	↓	
14A -RCM-1026	24x24 Tan w/White + Brown	Room 5	
14B -RCM-1026	↓ Splotch Floor Tile	↓	
15A -RCM-1026	12x12 Dark Gray Mottled	Room 3	
15B -RCM-1026	↓ Floor Tile	↓	
17A -RCM-1026	Black Caulking at Window	Room 8	
17B -RCM-1026	↓ Wall Ballards	Room 4	

no 10 15

no 16

Analysis Method: ☒ PLM ☐ TEM ☐ Other

Turnaround Time: 48-hour

Please call EnviroScience at (617) 282-4675 if analyses will not be completed for requested t/a/t listed above.

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Special Instructions: Stop analysis on first positive sample in each homogeneous set of samples unless otherwise noted. Do not layer samples unless indicated. Do not point count. If NOB group samples are **ALL** negative by PLM, analyze the sample denoted with a star (★) by **TEM NOB** on a 48-hour t/a/t. Analyze a **MAXIMUM** of 20 samples by **TEM in noted order.**

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Samples Collected by: Ross Mallet + Mike Coffey **Date:** 10/26/2015 + 10/28/2015

Samples Sent by: RM **Date:** 10/30/15 **Time:** PM

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Asbestos Bulk Sample Chain-of-Custody

Sheet 3 of 7

Project Name: Peebles Elementary School Feasibility Study **Project No.:** 20150666.A1E

Building Name/Number: Peebles Elementary School **Project Manager:** D Diedricksen

Site Address: 70 Trowbridge Road, Bourne, MA **Total # of Samples:** ~~96~~ ~~107~~ 110

	Sample ID (#-Initials-Date)	Material Type (Size, Color, Description, Material)	Sample Location	Comments/ Quantities
*2	18A -RCM-1026	Tan Caulking a/w Window	Room 8	
	18B -RCM-1026	↓ Wall Ballards	Room 4	
	19A -RCM-1026	Gray Ceramic Floor Tile Grout	Ground Floor Boys Room	
	19B -RCM-1026	↓ ↓	1st Floor Boys Room	
	20A -RCM-1026	Black Composite Window Sill	Room 11	
	20B -RCM-1026	↓ ↓	Room 4	
	21A -RCM-1026	Gray Ceramic Floor Tile Adhesive	Ground Floor Boys Room	
	21B -RCM-1026	↓ ↓	1st Floor Boys Room	
	22A -RCM-1026	Dark Gray Ceramic Wall Tile	Ground Floor Boys Room	
	22B -RCM-1026	↓ Adhesive	1st Floor Boys Room	
	23A -RCM-1026	Gray Ceramic Wall Tile	Ground Floor Boys Room	
	23B -RCM-1026	↓ Grout	1st Floor Boys Room	
*3	24A -RCM-1026	Tan Interior Window Caulking	Ground Floor Boys Room	
	24B -RCM-1026	↓ ↓	1st Floor Boys Room	
	25A -RCM-1026	Gray Mud Set	1st Floor Boys Room	

Analysis Method: ☒ PLM ☐ TEM ☐ Other ______ Turnaround Time: 48-hour

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Samples Collected by: Ross Mollott + Mike Coffey **Date:** 10/26/2015 + 10/28/2015

Samples Sent by: RM **Date:** 10/30/15 **Time:**

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Asbestos Bulk Sample Chain-of-Custody

Sheet 4 of 7

Project Name: Peebles Elementary School Feasibility Study **Project No.:** 20150666.A1E

Building Name/Number: Peebles Elementary School **Project Manager:** D Diedricksen

Site Address: 70 Trowbridge Road, Bourne, MA **Total # of Samples:** ~~96~~ ~~98~~ 100

Sample ID (#-Initials-Date)	Material Type (Size, Color, Description, Material)	Sample Location	Comments/ Quantities
25B -RCM-1026	Gray Mudset	Ground Floor Boys Room	
26A -RCM-1026	Gray Mudset	Annex - 2nd Floor Boys Room	
26B -RCM-1026	↓	Annex - 1st Floor Girls Room	
27A -RCM-1026	1x1 White Fissured Splined	Connector Hallway - 1st	
27B -RCM-1026	↓ ceiling tile	↓ - Ground	
28A -RCM-1026	Tan Window Glazing Compound	Annex Hallway to Library Doors	
28B -RCM-1026	↓ ↓	↓	
*4 29A -RCM-1026	Tan Interior Window	Room 14	
29B -RCM-1026	↓ Caulking	Room 18	
*5 30A -RCM-1026	White Interior Window	Room 14	
30B -RCM-1026	↓ Caulking	Room 18	
31A -RCM-1026	Tan Window Glazing Compound	Wood Entry Doors	
31B -RCM-1026	↓ ↓	↓	
*6 32A -RCM-1026	Tan Interior Door Caulking	Cafeteria Doors	
32B -RCM-1026	↓ ↓	Main Bldg Doors @ Connector	

Analysis Method: ☒ PLM ☐ TEM ☐ Other ______ Turnaround Time: 48-hour

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Samples Collected by: Ross Moffett + Mike Cordley **Date:** 10/26/2015 + 10/28/2015

Samples Sent by: RM **Date:** 10/30/15 **Time:**

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Asbestos Bulk Sample Chain-of-Custody

Sheet 5 of 7

Project Name: Peebles Elementary School Feasibility Study **Project No.:** 20150666.A1E

Building Name/Number: Peebles Elementary School **Project Manager:** D Diedricksen

Site Address: 70 Trowbridge Road, Bourne, MA **Total # of Samples:** 100 ~~96~~ ~~107~~

Sample ID (#-Initials-Date)	Material Type (Size, Color, Description, Material)	Sample Location	Comments/ Quantities
33A -RCM-1026	White Plaster Skim Coat	Annex - Ground level Boys Room	
33B -RCM-1026		Girls Room	
33C -RCM-1026		1st Floor	
33D -RCM-1026		Boys	
33E -RCM-1026		- Hallway o/s 14 + 15	
34A -RCM-1026	Gray Plaster Rough Coat	Annex - Ground level Boys Room	
34B -RCM-1026		Girls Room	
34C -RCM-1026		1st Floor	
34D -RCM-1026		Boys Room	
34E -RCM-1026		Ground level Girls Room	
★7 35A -RCM-1026	Tan Interior Door Caulking	@ Connector Hallway - Grnd Floor	
35B -RCM-1026		- 1st Floor	
★6 36A -RCM-1026	Tan Interior Window Caulking	Connector Window Walls	
36B -RCM-1026			
37A -RCM-1026	Gray Window Glazing Compound		

Analysis Method: ☒ PLM ☐ TEM ☐ Other

Turnaround Time: 48-hour

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Samples Collected by: Ross Mallett + Mike Colby **Date:** 10/26/2015 + 10/28/2015

Samples Sent by: RM **Date:** 10/30/15 **Time:**

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www.fando.com

50 Redfield Street, Suite 100, Boston, MA 02122 Phone (617) 282-4675 Fax (617) 282-8253

Asbestos Bulk Sample Chain-of-Custody

Sheet 6 of 7

Project Name: Peebles Elementary School Feasibility Study **Project No.:** 20150666.A1E

Building Name/Number: Peebles Elementary School **Project Manager:** D Diedricksen

Site Address: 70 Trowbridge Road, Bourne, MA **Total # of Samples:** 1W ~~96~~ ~~107~~

	Sample ID (#-Initials-Date)	Material Type (Size, Color, Description, Material)	Sample Location	Comments/ Quantities
	37B -RCM-1026	Gray Window Glazing Compound	Connector Window Walls	
★9	38A -RCM-1026	Gray Interior Window Caulking	Cafeteria	
	38B -RCM-1026	↓ ↓	↓	
★10	39A -RCM-1026	Brown Exterior Window Caulking	Exterior - Main Bldg.	-HOLD
	39B -RCM-1026	↓ ↓	↓	-HOLD
	40A -RCM-1026	Black Through-Wall Flashing	Exterior - Main Bldg	Brick to conc.
	40B -RCM-1026	↓ Mastic	↓	
★11	41A -RCM-1026	Tan Exterior Window Sill	Annex - Exterior	
	41B -RCM-1026	↓ Caulking	↓	
★12	42A -RCM-1026	Gray Exterior Window Caulking	Annex Exterior	
	42B -RCM-1026	↓ ↓		
★13	43A -RCM-1026	White Exterior Window Sill		
	~~43A~~ 43B -RCM-1026	↓ Caulking	↓	
★14	44A -RCM-1026	Off-white Door Caulking	Door b/w 17 + 18	
	44B -RCM-1026	↓	↓ b/w 23 + 24	

15 NOV -3 AM 11:54 EMSL CINNAMINSON, NJ

Analysis Method: ☒ PLM ☐ TEM ☐ Other ______ Turnaround Time: 48-hour

Please call EnviroScience at (617) 282-4675 if analyses will not be completed for requested t/a/t listed above.

Email Results to: ddiedricksen@fando.com **Do Not Mail Hard Copy Report** **FAX Results to: 888-838-1160.**

Special Instructions: Stop analysis on first positive sample in each homogeneous set of samples unless otherwise noted. Do not layer samples unless indicated. Do not point count. If NOB group samples are **ALL** negative by PLM, analyze the sample denoted with a star (★) by **TEM NOB** on a 48-hour t/a/t. Analyze a **MAXIMUM** of 20 samples by **TEM** in noted order.

Samples Collected by: Dan Mallett + Mike Colby **Date:** 10/26/2015 + 10/28/2015

Samples Sent by: CM **Date:** 10/30/15 **Time:**

Shipped To: ☒ EMSL ☐ Other

Method of Shipment: ☒ Fed Ex ☐ Lab Drop Off ☐ Other

RECEIVED NOV 02 2015 By: M 8:46

OrderID: 041532674

041532674

FUSS & O'NEILL EnviroScience, LLC

EMSL Customer No. ENVI54

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50 Redfield Street, Suite 100, Boston, MA 02122

Phone (617) 282-4675 Fax (617) 282-8253

Asbestos Bulk Sample Chain-of-Custody

Sheet 7 of 7

Project Name: Peebles Elementary School Feasibility Study **Project No.:** 20150666.A1E

Building Name/Number: Peebles Elementary School **Project Manager:** D Diedricksen

Site Address: 70 Trowbridge Road, Bourne, MA **Total # of Samples:** 100 ~~96~~ ~~107~~

Sample ID (#-Initials-Date)	Material Type (Size, Color, Description, Material)	Sample Location	Comments/ Quantities
45A -RCM-1026	Tan Door Caulking	Door b/w 16 + 15	
45B -RCM-1026	↓	↓	
✱14 46A -RCM-1026	Tan Int. Window Caulking	Room 9	
46B -RCM-1026	↓	Room 11	
47A -RCM-1026	Black Dampproofing	Behind brick @ Main Bldg	
47B -RCM-1026	↓	↓	
~~48 -RCM-1026~~	~~Soil~~	~~Crawlspace~~	
~~49 -RCM-1026~~	~~Pipe + Soil~~	~~Pipe Tunnel~~	
50A -RCM-1026	Brown Concrete Paper	Pipe Tunnel	
50B -RCM-1026	↓	Crawlspace	
51A -RCM-1026	Black Mastic of 50	Pipe Tunnel	
51B -RCM-1026	↓	Crawlspace.	
-RCM-1026			
-RCM-1026			
-RCM-1026			

RECEIVED EMSL CINNAMINSON, NJ 15 NOV -3 AM 11:54

Analysis Method: ☒ PLM ☐ TEM ☐ Other ______ Turnaround Time: 48-hour

Please call EnviroScience at (617) 282-4675 if analyses will not be completed for requested t/a/t listed above.

Email Results to: ddiedricksen@fando.com **Do Not Mail Hard Copy Report** **FAX Results to: 888-838-1160.**

Special Instructions: Stop analysis on first positive sample in each homogeneous set of samples unless otherwise noted. Do not layer samples unless indicated. Do not point count. If NOB group samples are **ALL** negative by PLM, analyze the sample denoted with a star (★) by **TEM NOB** on a 48-hour t/a/t. Analyze a **MAXIMUM** of 20 samples by **TEM in noted order.**

Samples Collected by: Ryan Mallett + Mike Cally **Date:** 10/26/2015 + 10/28/2015

Samples Sent by: R **Date:** 10/30/15 **Time:**

Shipped To: ☒ EMSL ☐ Other ______

Method of Shipment: ☒ Fed Ex ☐ Lab Drop Off ☐ Other ______

RECEIVED NOV 02 2015 By M 8:46

EMSL Analytical, Inc.
7 Constitution Way, Suite 107, Woburn, MA 01801
Phone/Fax: (781) 933-8411 / (781) 933-8412
http://www.EMSL.com bostonlab@emsl.com

EMSL Order:	131405507
CustomerID:	ENVI54
CustomerPO:	20121141.B2E
ProjectID:	

Attn: **Dustin Diedricksen**
Fuss & O'Neill EnviroScience, LLC
146 Hartford Road
Manchester, CT 06040

Phone:	(860) 646-2469
Fax:	(888) 838-1160
Received:	12/08/14 9:00 AM
Analysis Date:	12/9/2014
Collected:	12/5/2014

Project: **20121141.B2E / Bourne Public Schools; Peebles Elementary**

Test Report: Asbestos Analysis of Bulk Materials via EPA 600/R-93/116 Method using Polarized Light Microscopy

			Non-Asbestos		Asbestos
Sample	**Description**	**Appearance**	**% Fibrous**	**% Non-Fibrous**	**% Type**
01A-RCM-1205 *131405507-0001*	Ground Floor Stairwell Landing - Smooth White Plaster Skim Coat	White Non-Fibrous Homogeneous		100% Non-fibrous (other)	**None Detected**
01B-RCM-1205 *131405507-0002*	Ground Floor Stairwell Landing - Smooth White Plaster Skim Coat	White Non-Fibrous Homogeneous		100% Non-fibrous (other)	**None Detected**
01C-RCM-1205 *131405507-0003*	Ground Floor Stairwell Landing - Smooth White Plaster Skim Coat	White Non-Fibrous Homogeneous		100% Non-fibrous (other)	**None Detected**

Analyst(s)

Kevin Pine (3)

Steve Grise, Laboratory Manager
or other approved signatory

Initial report from 12/09/2014 12:33:28

OrderID: 131405507

131405507

FUSS & O'NEILL
EnviroScience, LLC

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50 Redfield Street, Suite 100, Boston, MA 02122

Phone (617) 282-4675 Fax (617) 282-8253

Asbestos Bulk Sample Chain-of-Custody

Sheet 1 of 1

Project Name: Bourne Public Schools - Peebles Elementary **Project No.:** 20121141. D2F

Building Name/Number: Peebles Elementary **Project Manager:** D Diedricksen

Site Address: **Total # of Samples:** 3

	Sample ID (#-Initials-Date)	Material Type	Sample Location	Comments/ Quantities
1	01A - RCM - 1205	Smooth White Plaster Skim Coat	Ground Floor Stairwell Landing	
2	01B - RCM - 1205	↓	↓	
3	01C - RCM - 1205	↓	↓	

Analysis Method ☒ PLM ☐ TEM ☐ Other ______ Turnaround Time: 24 hr

Please call EnviroScience at (617) 282-4675 if analyses will not be completed for requested t/a/t listed above.

Email Results to: DDiedricksen @fando.com **Do Not Mail Hard Copy Report** **FAX Results to: 888-838-1160.**

Special Instructions: Stop analysis on first positive sample in each homogeneous set of samples unless otherwise noted. Do not layer samples unless indicated. Do not point count. **If NOB group samples are ALL negative by PLM, analyze the sample denoted with a star (★) by TEM NOB on a** ______ **t/a/t. Analyze a MAXIMUM of** ____ **samples by TEM in noted order.**

Samples Collected by: RM **Date:** 12/05/2014

Samples Sent by: RM **Date:** 12/5/14 **Time:**

Shipped To: ☒ EMSL ☐ Other FedEx# 7900

Method of Shipment: ☒ Fed Ex ☐ Lab Drop Off ☐ Other 4119 0031

RECEIVED
DEC 08 2014
By SU 0900

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7 Constitution Way, Suite 107, Woburn, MA 01801
Phone/Fax: (781) 933-8411 / (781) 933-8412
http://www.EMSL.com bostonlab@emsl.com

EMSL Order:	131404197
CustomerID:	ENVI54
CustomerPO:	20121141.B1E
ProjectID:	

Attn: **Dustin Diedricksen**
Fuss & O'Neill EnviroScience, LLC
146 Hartford Road
Manchester, CT 06040

Phone:	(860) 646-2469
Fax:	(888) 838-1160
Received:	09/25/14 1:00 PM
Analysis Date:	9/25/2014
Collected:	9/25/2014

Project: **20121141.B1E / Peebles Elementary School, 70 Trowbridge rd, Bourne, MA**

Test Report: Asbestos Analysis of Bulk Materials via EPA 600/R-93/116 Method using Polarized Light Microscopy

			Non-Asbestos		Asbestos
Sample	Description	Appearance	% Fibrous	% Non-Fibrous	% Type
01A-JH-925 *131404197-0001*	Door D1 - Gray exterior door caulking	Gray Non-Fibrous Homogeneous		100% Non-fibrous (other)	**None Detected**
01B-JH-925 *131404197-0002*	Door D1 - Gray exterior door caulking	Gray Non-Fibrous Homogeneous		100% Non-fibrous (other)	**None Detected**
01C-JH-925 *131404197-0003*	Door D1 - Gray exterior door caulking	Gray Non-Fibrous Homogeneous		100% Non-fibrous (other)	**None Detected**
02A-JH-925 *131404197-0004*	Door D1 - White window glazing compound	Gray Non-Fibrous Homogeneous		98% Non-fibrous (other)	**2% Chrysotile**
02B-JH-925 *131404197-0005*	Door D1 - White window glazing compound				**Stop Positive (Not Analyzed)**
02C-JH-925 *131404197-0006*	Door D1 - White window glazing compound				**Stop Positive (Not Analyzed)**
03A-JH-925 *131404197-0007*	Door D1 - Gray door widnow glazing compound	Gray Non-Fibrous Homogeneous		100% Non-fibrous (other)	**None Detected**
03B-JH-925 *131404197-0008*	Door D1 - Gray door widnow glazing compound	Gray Non-Fibrous Homogeneous		100% Non-fibrous (other)	**None Detected**
03C-JH-925 *131404197-0009*	Door D1 - Gray door widnow glazing compound	Gray Non-Fibrous Homogeneous		100% Non-fibrous (other)	**None Detected**

Analyst(s)
Kevin Pine (12)

Steve Grise, Laboratory Manager
or other approved signatory

Initial report from 09/25/2014 15:40:17

EMSL Analytical, Inc.
7 Constitution Way, Suite 107, Woburn, MA 01801
Phone/Fax: (781) 933-8411 / (781) 933-8412
http://www.EMSL.com bostonlab@emsl.com

EMSL Order:	131404197
CustomerID:	ENVI54
CustomerPO:	20121141.B1E
ProjectID:	

Attn: **Dustin Diedricksen**
Fuss & O'Neill EnviroScience, LLC
146 Hartford Road
Manchester, CT 06040

Phone:	(860) 646-2469
Fax:	(888) 838-1160
Received:	09/25/14 1:00 PM
Analysis Date:	9/25/2014
Collected:	9/25/2014

Project: **20121141.B1E / Peebles Elementary School, 70 Trowbridge rd, Bourne, MA**

Test Report: Asbestos Analysis of Bulk Materials via EPA 600/R-93/116 Method using Polarized Light Microscopy

Sample	Description	Appearance	Non-Asbestos % Fibrous		Non-Asbestos % Non-Fibrous		Asbestos % Type
04A-JH-925 *131404197-0010*	Door D1 - Brown backer rope underneath-01	Tan Fibrous Homogeneous	98%	Cellulose	2%	Non-fibrous (other)	**None Detected**
04B-JH-925 *131404197-0011*	Door D1 - Brown backer rope underneath-01	Tan Fibrous Homogeneous	98%	Cellulose	2%	Non-fibrous (other)	**None Detected**
04C-JH-925 *131404197-0012*	Door D1 - Brown backer rope underneath-01	Tan Fibrous Homogeneous	98%	Cellulose	2%	Non-fibrous (other)	**None Detected**
05A-JH-925 *131404197-0013*	Door D1 - Tan interior door caulking	Tan Non-Fibrous Homogeneous	8%	Fibrous (other)	90%	Non-fibrous (other)	**2% Chrysotile**
05B-JH-925 *131404197-0014*	Door D1 - Tan interior door caulking						**Stop Positive (Not Analyzed)**
05C-JH-925 *131404197-0015*	Door D1 - Tan interior door caulking						**Stop Positive (Not Analyzed)**
06A-JH-925 *131404197-0016*	Exterior - Black dampproofing behind brick veneer	Black Fibrous Homogeneous	15%	Cellulose	70%	Non-fibrous (other)	**15% Chrysotile**
06B-JH-925 *131404197-0017*	Exterior - Black dampproofing behind brick veneer						**Stop Positive (Not Analyzed)**
06C-JH-925 *131404197-0018*	Exterior - Black dampproofing behind brick veneer						**Stop Positive (Not Analyzed)**

Analyst(s)
Kevin Pine (12)

Steve Grise, Laboratory Manager
or other approved signatory

Initial report from 09/25/2014 15:40:17

OrderID: 131404197

131404197

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ASBESTOS BULK SAMPLE CHAIN OF CUSTODY

Sheet 1 of 2

Project Name: Peebles Elementary School Project No. 20121141.B1E

Site Address: 70 Trowbridge Rd. Bourne, MA Project Manager: Dustin D.

Building Name/Number. Peebles Elementary School Total # of Samples: 18

Sample ID (01A-Initials-Date)	Material Type	Sample Location	Comments/ Quantities
01A - JH-925	Gray Exterior Door Caulking	Door D1	
01B -	↓	↓	
01C -	↓	↓	
02A -	White Window Glazing Compound	↓	
02B -	↓	↓	
02C -	↓	↓	
03A -	Gray Door Window Glazing Compound	↓	
03B -	↓	↓	
03C -	↓	↓	
04A -	Brown Backer Rope Underneath 01	↓	
04B -	↓	↓	
04C -	↓	↓	
05A -	Tan Interior Door Caulking	↓	
05B -	↓	↓	
05C -	↓	↓	

Analysis Method: ☒ PLM ☐ TEM ☐ Other ______ Turnaround Time 3-hour

Based on the turnaround time indicated above, analyses are due to EnviroScience on or before this date: ______ **Please call EnviroScience if** analyses will not be completed for requested t/a/t at (617) 282-4675.

Email Results to: JHand@fando.com **Do Not Mail Hard Copy Report FAX Results to: 888-838-1160.**

Special Instructions: Stop analysis on first positive sample in each homogeneous set of samples unless otherwise noted. Do not layer samples unless indicated. Do not point count. ~~If NOB group samples are all negative by PLM, analyze only the "A" sample (as noted by star [*] above) by TEM NOB, on a [ ] t/a/t. Analyze a maximum of [ ] samples by TEM.~~ Call Jon @ 401-595-8270 when results are in.

Samples Collected by: Jon Hand **Date:** 9/25/14

Samples Sent by: JH **Date:** 9/25/14 **Time:** 1300

Shipped To: ☒ EMSL ☐ Other ______

Method of Shipment: ☐ Fed Ex ☒ Lab Drop Off ☐ Other ______

RECEIVED SEP 25 2014 By SCR 11:00 w.I

Q:\EnviroScience\Admin\FORMS\Asbestos\Inspections\Boston\BSN Asb Bulk CoC.docx

131404197

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ASBESTOS BULK SAMPLE CHAIN OF CUSTODY

Sheet 2 of 2

Project Name: Peebles Elementary School
Project No. 20121141.B1E

Site Address: 70 Trowbridge Rd, Bourne, MA
Project Manager: Dustin D.

Building Name/Number. Peebles Elementary School
Total # of Samples: 18

Sample ID (01A-Initials-Date)	Material Type	Sample Location	Comments/ Quantities
06A-JH-925	Black Dampproofing Behind Brick Veneer	Exterior	
06B -	↓	↓	
06C -			

Analysis Method: ☒ PLM ☐ TEM ☐ Other ____________
Turnaround Time 3-hr

Based on the turnaround time indicated above, analyses are due to EnviroScience on or before this date: ________. Please call EnviroScience if analyses will not be completed for requested t/a/t at (617) 282-4675.

Email Results to: J Hand @fando.com **Do Not Mail Hard Copy Report** **FAX Results to: 888-838-1160.**

Special Instructions: Stop analysis on first positive sample in each homogeneous set of samples unless otherwise noted. Do not layer samples unless indicated. Do not point count. ~~If NOB group samples are all negative by PLM, analyze only the "A" sample (as noted by star [★] above)~~ by ~~TEM NOB, on a~~ [ ] ~~t/a/t. Analyze a maximum of~~ [ ] ~~samples by TEM.~~

Samples Collected by: Jon Hand **Date:** 9/25/14

Samples Sent by: JH **Date:** 9/25/14 **Time:**

Shipped To: ☒ EMSL ☐ Other ____________

Method of Shipment: ☐ Fed Ex ☒ Lab Drop Off ☐ Other ____________

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By SR 1:00

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U.I

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7 Constitution Way, Suite 107, Woburn, MA 01801
Phone/Fax: (781) 933-8411 / (781) 933-8412
bostonlab@emsl.com

EMSL Order: 131303044
CustomerID: ENVI54
CustomerPO:
ProjectID:

Attn: **Dustin Diedricksen**
Fuss & O'Neill EnviroScience, LLC
146 Hartford Road
Manchester, CT 06040

Phone: (860) 646-2469
Fax:
Received: 07/19/13 9:30 AM
Analysis Date: 7/23/2013
Collected:

Project: **20121141.A1E / Bourne Public Schools; Peebles Elementary School Cafeteria**

Test Report: Asbestos Analysis of Bulk Materials via EPA 600/R-93/116 Method using Polarized Light Microscopy

Sample	Description	Appearance	Non-Asbestos % Fibrous	Non-Asbestos % Non-Fibrous	Asbestos % Type
718DD-01A *131303044-0001*	Art Room - Ceiling Skim Plaster	White Non-Fibrous Homogeneous	5% Cellulose	95% Non-fibrous (other)	**<1% Chrysotile**
718DD-01B *131303044-0002*	Art Room - Ceiling Skim Plaster	White Non-Fibrous Homogeneous	5% Cellulose	95% Non-fibrous (other)	**<1% Chrysotile**
718DD-01C *131303044-0003*	Art Room - Ceiling Skim Plaster	White Non-Fibrous Homogeneous	5% Cellulose	95% Non-fibrous (other)	**<1% Chrysotile**
718DD-02A *131303044-0004*	Art Room - Ceiling Rough Plaster	White Non-Fibrous Homogeneous Sample appears to be skim plaster.	5% Cellulose	95% Non-fibrous (other)	**<1% Chrysotile**
718DD-02B *131303044-0005*	Art Room - Ceiling Rough Plaster	Gray Non-Fibrous Homogeneous		100% Non-fibrous (other)	**None Detected**
718DD-02C *131303044-0006*	Art Room - Ceiling Rough Plaster	Gray Non-Fibrous Homogeneous		100% Non-fibrous (other)	**None Detected**
718DD-03A *131303044-0007*	Kitchen - Ceiling Skim Plaster	White Non-Fibrous Homogeneous		100% Non-fibrous (other)	**None Detected**
718DD-03B *131303044-0008*	Kitchen - Ceiling Skim Plaster	White Non-Fibrous Homogeneous		100% Non-fibrous (other)	**None Detected**

Analyst(s)
Kevin Pine (10)
Steve Grise (6)

Renaldo Drakes, Laboratory Manager
or other approved signatory

Initial report from 07/23/2013 12:46:56

EMSL Analytical, Inc.
7 Constitution Way, Suite 107, Woburn, MA 01801
Phone/Fax: (781) 933-8411 / (781) 933-8412
bostonlab@emsl.com

EMSL Order: 131303044
CustomerID: ENVI54
CustomerPO:
ProjectID:

Attn: **Dustin Diedricksen**
Fuss & O'Neill EnviroScience, LLC
146 Hartford Road
Manchester, CT 06040

Phone: (860) 646-2469
Fax:
Received: 07/19/13 9:30 AM
Analysis Date: 7/23/2013
Collected:

Project: **20121141.A1E / Bourne Public Schools; Peebles Elementary School Cafeteria**

Test Report: Asbestos Analysis of Bulk Materials via EPA 600/R-93/116 Method using Polarized Light Microscopy

			Non-Asbestos		Asbestos
Sample	**Description**	**Appearance**	**% Fibrous**	**% Non-Fibrous**	**% Type**
718DD-03C *131303044-0009*	Kitchen - Ceiling Skim Plaster	White Non-Fibrous Homogeneous		100% Non-fibrous (other)	**None Detected**
718DD-03D *131303044-0010*	Bathroom off Kitchen - Ceiling Skim Plaster	White Non-Fibrous Homogeneous		100% Non-fibrous (other)	**None Detected**
718DD-03E *131303044-0011*	Pantry - Ceiling Skim Plaster	White Non-Fibrous Homogeneous		100% Non-fibrous (other)	**None Detected**
718DD-04A *131303044-0012*	Kitchen - Ceiling Rough Plaster	Gray Non-Fibrous Homogeneous		100% Non-fibrous (other)	**None Detected**
718DD-04B *131303044-0013*	Kitchen - Ceiling Rough Plaster	Gray Non-Fibrous Homogeneous		100% Non-fibrous (other)	**None Detected**
718DD-04C *131303044-0014*	Kitchen - Ceiling Rough Plaster	Gray Non-Fibrous Homogeneous		100% Non-fibrous (other)	**None Detected**
718DD-04D *131303044-0015*	Bathroom off Kitchen - Ceiling Rough Plaster	Gray Non-Fibrous Homogeneous		100% Non-fibrous (other)	**None Detected**
718DD-04E *131303044-0016*	Pantry - Ceiling Rough Plaster	Gray Non-Fibrous Homogeneous		100% Non-fibrous (other)	**None Detected**

Analyst(s)

Kevin Pine (10)
Steve Grise (6)

Renaldo Drakes, Laboratory Manager
or other approved signatory

Initial report from 07/23/2013 12:46:56

131303044

1313 03 044

24 HOUR

FUSS + O'NEILL ENVIROSCIENCE - CHAIN TO BE EMAILED
PROJECT MANAGER - AUSTIN DIEDRICKSEN
PROJECT NAME - BOURNE PUBLIC SCHOOLS - PEEBLES
P.O. = 20121141.A1E ELEMENTARY SCHOOL (CAFETERIA)

	SAMPLE NUMBER	LOCATION	MATERIAL	ANALYSIS
1	718DD-01A	ART ROOM	CEILING SKIM PLASTER	
2	-01B			
3	-01C			
4	718DD-02A		CEILING ROUGH PLASTER	
5	-02B			
6	-02C			
7	718DD-03A	KITCHEN	CEILING SKIM PLASTER	
8	-03B	KITCHEN		
9	-03C	KITCHEN		
10	-03D	BATHROOM OFF KITCHEN		
11	-03E	PANTRY		
12	718DD-04A	KITCHEN	CEILING ROUGH PLASTER	
13	-04B	KITCHEN		
14	-04C	KITCHEN		
15	-04D	BATHROOM OFF KITCHEN		
16	-04E	PANTRY		

24 HOUR
TURNAROUND

RECEIVED
JUL 19 2013
By Sl 0930

FedEx# 7995 5206 4577

EMSL Analytical, Inc.
7 Constitution Way, Suite 107, Woburn, MA 01801
Phone/Fax: (781) 933-8411 / (781) 933-8412
bostonlab@emsl.com

EMSL Order:	131204023
CustomerID:	ENVI54
CustomerPO:	
ProjectID:	

Attn: **Bob May**
Fuss & O'Neill EnviroScience, LLC
146 Hartford Road
Manchester, CT 06040

Phone:	(860) 646-2469
Fax:	(888) 838-1160
Received:	08/15/12 4:30 PM
Analysis Date:	8/16/2012
Collected:	8/15/2012

Project: **Peebles Elementary School; Bourne, MA**

Test Report: Asbestos Analysis of Bulk Materials via EPA 600/R-93/116 and/or EPA 600/M4-82-020 Method(s) using Polarized Light Microscopy

			Non-Asbestos				Asbestos
Sample	**Description**	**Appearance**	**%**	**Fibrous**	**%**	**Non-Fibrous**	**% Type**
1 *131204023-0001*	Boy's Bath Basement - Rough Plaster Window Surround	Gray/White Non-Fibrous Heterogeneous			100%	Non-fibrous (other)	**None Detected**
2 *131204023-0002*	Boy's Bath Basement - Rough Plaster Window Surround	Gray/White Non-Fibrous Heterogeneous			100%	Non-fibrous (other)	**None Detected**
3 *131204023-0003*	Boy's Bath Basement - Skim Coat Window Surround	White Non-Fibrous Heterogeneous			100%	Non-fibrous (other)	**None Detected**
4 *131204023-0004*	Boy's Bath Basement - Skim Coat Window Surround	White Non-Fibrous Heterogeneous			100%	Non-fibrous (other)	**None Detected**

Analyst(s)

Renaldo Drakes (4)

Renaldo Drakes, Laboratory Manager
or other approved signatory

Initial report from 08/16/2012 17:56:13

131204023

EMSL ANALYTICAL, INC.
LABORATORY • PRODUCTS • TRAINING

Asbestos Chain of Custody

EMSL Order Number *(Lab Use Only)*:

131204023

1395

EMSL ANALYTICAL, INC.
7 CONSTITUTION WAY
SUITE 107
WOBURN, MA 01801
PHONE: (781)-933-8411
FAX: (781)-933-8412

Company: Fuss & O'neill (Enviroscience)

EMSL-Bill to: ☐ Same ☐ Different
If Bill to is Different note instructions in Comments**

Street: 50 Redfield St

Third Party Billing requires written authorization from third party

City: Dorchester MA | **State/Province:** MA | **Zip/Postal Code:** | **Country:**

Report To (Name): Bob May / D. Diedricksen | **Telephone #:**

Email Address: | **Fax #:** | **Purchase Order:**

Project Name/Number: Peebles Elementary School | **Please Provide Results:** ☐ Fax ☐ Email

U.S. State Samples Taken: Bourne, MASS | **Connecticut Samples:** ☐ Commercial ☐ Residential

Turnaround Time (TAT) Options* – Please Check

☐ 3 Hour | ☐ 6 Hour | ☑ 24 Hour | ☐ 48 Hour | ☐ 72 Hour | ☐ 96 Hour | ☐ 1 Week | ☐ 2 Week

*For TEM Air 3 hr through 6 hr, please call ahead to schedule.*There is a premium charge for 3 Hour TEM AHERA or EPA Level II TAT. You will be asked to sign an authorization form for this service. Analysis completed in accordance with EMSL's Terms and Conditions located in the Analytical Price Guide.*

PCM - Air ☐ Check if samples are from NY
- ☐ NIOSH 7400
- ☐ w/ OSHA 8hr. TWA

PLM - Bulk (reporting limit)
- ☒ PLM EPA 600/R-93/116 (<1%)
- ☐ PLM EPA NOB (<1%)

DAR 8/15/12

Point Count
- ☐ 400 (<0.25%) ☐ 1000 (<0.1%)

Point Count w/Gravimetric
- ☐ 400 (<0.25%) ☐ 1000 (<0.1%)
- ☐ NYS 198.1 (friable in NY)
- ☐ NYS 198.6 NOB (non-friable-NY)
- ☐ NIOSH 9002 (<1%)

TEM – Air ☐ 4-4.5hr TAT (AHERA only)
- ☐ AHERA 40 CFR, Part 763
- ☐ NIOSH 7402
- ☐ EPA Level II
- ☐ ISO 10312

TEM - Bulk
- ☐ TEM EPA NOB
- ☐ NYS NOB 198.4 (non-friable-NY)
- ☐ Chatfield SOP
- ☐ TEM Mass Analysis-EPA 600 sec. 2.5

TEM – Water: EPA 100.2
- Fibers >10µm ☐ Waste ☐ Drinking
- All Fiber Sizes ☐ Waste ☐ Drinking

TEM- Dust
- ☐ Microvac - ASTM D 5755
- ☐ Wipe - ASTM D6480
- ☐ Carpet Sonication (EPA 600/J-93/167)

Soil/Rock/Vermiculite
- ☐ PLM CARB 435 - A (0.25% sensitivity)
- ☐ PLM CARB 435 - B (0.1% sensitivity)
- ☐ TEM CARB 435 - B (0.1% sensitivity)
- ☐ TEM CARB 435 - C (0.01% sensitivity)
- ☐ TEM Qual. via Filtration Technique
- ☐ TEM Qual. via Drop-Mount Technique

Other:
- ☐

☒ **Check For Positive Stop – Clearly Identify Homogenous Group** | **Filter Pore Size (Air Samples):** ☐ 0.8µm ☐ 0.45µm

Samplers Name: | **Samplers Signature:**

Sample #	Sample Description	Volume/Area (Air) HA # (Bulk)	Date/Time Sampled
1	Boy's Bath Basement rough plaster ~~ceiling~~ Window Surround		8-15
2	Boy's Bath Basement rough plaster ~~ceiling~~ Window Surround		8-15
3	Boy's Bath Basement Skim coat Window Surround		8-15
4	Boy's Bath Basement Skim Coat Window Surround		8-15

Client Sample # (s): - | **Total # of Samples:**

Relinquished (Client): Nicholas Gravallese | **Date:** 8-15-12 | **Time:** 4:34 pm

Received (Lab): | **Date:** | **Time:** walkin

RECEIVED AUG 15 2012 By SA 1630

Comments/Special Instructions:

Please E-mail Dustin Diedricksen@ D.Diedricksen@Fando.net Thx.

TEM UPON REQUEST!!

EMSL Analytical, Inc.
7 Constitution Way, Suite 107, Woburn, MA 01801
Phone/Fax: (781) 933-8411 / (781) 933-8412
bostonlab@emsl.com

EMSL Order:	131204082
CustomerID:	ENVI54
CustomerPO:	
ProjectID:	

Attn: **Dustin Diedricksen**
Fuss & O'Neill EnviroScience, LLC
146 Hartford Road
Manchester, CT 06040

Phone:	(860) 646-2469
Fax:	(888) 838-1160
Received:	08/20/12 10:50 AM
Analysis Date:	8/20/2012
Collected:	8/17/2012

Project: **20121141.A1E / Peebles Elementary School**

Test Report: Asbestos Analysis of Bulk Materials via EPA 600/R-93/116 and/or EPA 600/M4-82-020 Method(s) using Polarized Light Microscopy

			Non-Asbestos		Asbestos
Sample	**Description**	**Appearance**	**% Fibrous**	**% Non-Fibrous**	**% Type**
817NG-01A *131204082-0001*	Cafeteria Window Bank (#6 L-R) - Window Surround Skim Plaster (Underside)	White Non-Fibrous Heterogeneous		100% Non-fibrous (other)	**None Detected**
817NG-01B *131204082-0002*	Cafeteria Window Bank (#10) - Window Surround Skim Plaster (Underside)	White Non-Fibrous Heterogeneous		100% Non-fibrous (other)	**None Detected**
817NG-01C *131204082-0003*	Cafeteria Window Bank (#7) - Window Surround Skim Plaster (Frontside)	White Non-Fibrous Homogeneous		100% Non-fibrous (other)	**None Detected**
817NG-02A *131204082-0004*	Cafeteria Window Bank (#6 L-R) - Window Surround Skim Plaster (Under)	Brown Non-Fibrous Heterogeneous		100% Non-fibrous (other)	**None Detected**
817NG-02B *131204082-0005*	Cafeteria Window Bank (#10) - Window Surround Skim Plaster (Under)	Brown Non-Fibrous Heterogeneous		100% Non-fibrous (other)	**None Detected**

Analyst(s)
Renaldo Drakes (8)
Steve Grise (4)

Renaldo Drakes, Laboratory Manager
or other approved signatory

Initial report from 08/20/2012 17:09:39

EMSL Analytical, Inc.
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Test Report: Asbestos Analysis of Bulk Materials via EPA 600/R-93/116 and/or EPA 600/M4-82-020 Method(s) using Polarized Light Microscopy

			Non-Asbestos		Asbestos
Sample	**Description**	**Appearance**	**% Fibrous**	**% Non-Fibrous**	**% Type**
817NG-02C *131204082-0006*	Cafeteria Window Bank (#7) - Window Surround Skim Plaster (Front)	Gray Non-Fibrous Homogeneous		100% Non-fibrous (other)	**None Detected**
817NG-03A *131204082-0007*	Cafeteria Dropbeam at Ceiling (Near Door) - Skim Plaster	White Non-Fibrous Heterogeneous		100% Non-fibrous (other)	**None Detected**
817NG-03B *131204082-0008*	Cafeteria Dropbeam at Ceiling (Middle Beam) - Skim Plaster	White Non-Fibrous Heterogeneous		100% Non-fibrous (other)	**None Detected**
817NG-03C *131204082-0009*	Cafeteria Dropbeam at Ceiling (Corner Near Kitch.) - Skim Plaster	White Non-Fibrous Homogeneous		100% Non-fibrous (other)	**None Detected**
817NG-04A *131204082-0010*	Cafeteria Dropbeams (Door) - Rough Plaster	White Non-Fibrous Heterogeneous		100% Non-fibrous (other)	**None Detected**
817NG-04B *131204082-0011*	Cafeteria Dropbeams (Middle) - Rough Plaster	White Non-Fibrous Heterogeneous		100% Non-fibrous (other)	**None Detected**

Analyst(s)
Renaldo Drakes (8)
Steve Grise (4)

Renaldo Drakes, Laboratory Manager
or other approved signatory

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Test Report: Asbestos Analysis of Bulk Materials via EPA 600/R-93/116 and/or EPA 600/M4-82-020 Method(s) using Polarized Light Microscopy

			Non-Asbestos				Asbestos
Sample	**Description**	**Appearance**	**%**	**Fibrous**	**%**	**Non-Fibrous**	**% Type**
817NG-04C *131204082-0012*	Cafeteria Dropbeams (Kitchen) - Rough Plaster	Gray Non-Fibrous Homogeneous			100%	Non-fibrous (other)	**None Detected**

Analyst(s)

Renaldo Drakes (8)
Steve Grise (4)

Renaldo Drakes, Laboratory Manager
or other approved signatory

Initial report from 08/20/2012 17:09:39

131204082

131204082

FUSS & O'NEILL
EnviroScience, LLC

www.fando.com

50 Redfield St, Suite 100, Boston, MA 02122

(617) 282-4675 Fax (617) 282-8253

SAMPLE LOG FOR ASBESTOS BULKS

Sheet 1 of 1

Project Name: PEEBLES ELEMENTARY SCHOOL Project No. 20121141. AIE

Building: PEEBLES ELEMENTARY SCHOOL Project Manager: DUSTIN DIEDRICKSEN

Sample ID	Sample Location	Material	Result (%)
817NG-01A	CAFETERIA WINDOW BANK (#6 L-R)	WINDOW SURROUND SKIM PLASTER	(UNDERSIDE)
-01B	(#10)		(UNDERSIDE)
-01C	(#7)		(FRONT SIDE)
817NG-02A	CAFETERIA WINDOW BANK (#6 L-R)	WINDOW SURROUND ROUGH PLASTER	(UNDER)
-02B	(#10)		(UNDER)
-02C	(#7)		(FRONT)
817NG-03A	CAFETERIA DROPBEAMS (NEAR DOOR)	SKIM PLASTER	
-03B	@ CEILING (MIDDLE BEAM)		
-03C	(CORNER NEAR KITCHEN)		
817NG-04A	CAFETERIA DROP BEAMS (DOOR)	ROUGH PLASTER	
-04B	(MIDDLE)		
-04C	(KITCHEN)		

Analysis Method: ☒ PLM ☐ Other SG 8/20/12 Turnaround Time 6 HOUR

Based on the turnaround time indicated above, analyses are due to EnviroScience on or before this date: 8/20. Please call the EnviroScience Laboratory if analyses will be late at (860) 646-2469.

Fax Results to the EnviroScience Laboratory at: 888-838-1160.

Special Instruction: STOP AT 1ST POSITIVE. ~~No~~ HOLD SAMPLES.

Samples collected by: NG + D.D. **Date:** 8/17/12 **Time:** PM

Samples [Rec'd][Sent by] [ ][D.D.] **Date:** [ ][8/20/12] **Time:** AM

Samples Received by: ___ **Date:** ___ **Time:** ___

Shipped To: ☒ EMSL State MA ☐ Other

Method of Shipment: ☐ Fed Ex ☐ UPS Overnight ☐ UPS Ground ☒ Other DROP OFF

RECEIVED
AUG 20 2012
By SG 1050
W-in

EMSL Analytical, Inc.
7 Constitution Way, Suite 107, Woburn, MA 01801
Phone/Fax: (781) 933-8411 / (781) 933-8412
bostonlab@emsl.com

EMSL Order:	131204139
CustomerID:	ENVI54
CustomerPO:	
ProjectID:	

Attn: **Dustin Diedricksen**
Fuss & O'Neill EnviroScience, LLC
146 Hartford Road
Manchester, CT 06040

Phone:	(860) 646-2469
Fax:	(888) 838-1160
Received:	08/22/12 9:30 AM
Analysis Date:	8/22/2012
Collected:	8/21/2012

Project: **20121141.A1E / Peebles Elementary School**

Test Report: Asbestos Analysis of Bulk Materials via EPA 600/R-93/116 and/or EPA 600/M4-82-020 Method(s) using Polarized Light Microscopy

			Non-Asbestos				Asbestos
Sample	**Description**	**Appearance**	**%**	**Fibrous**	**%**	**Non-Fibrous**	**% Type**
821DD-01A *131204139-0001*	Kitchen @ OverheadDuct a/w Range Hood Drop Ceiling - Skim Plaster	White Non-Fibrous Homogeneous			100%	Non-fibrous (other)	**None Detected**
821DD-01B *131204139-0002*	Kitchen @ OverheadDuct a/w Range Hood Drop Ceiling - Skim Plaster	White Non-Fibrous Homogeneous			100%	Non-fibrous (other)	**None Detected**
821DD-01C *131204139-0003*	Kitchen @ OverheadDuct a/w Range Hood Drop Ceiling - Skim Plaster	White Non-Fibrous Homogeneous			100%	Non-fibrous (other)	**None Detected**
821DD-02A *131204139-0004*	Kitchen @ OverheadDuct a/w Range Hood Drop Ceiling - Rough Plaster	Gray Non-Fibrous Homogeneous			100%	Non-fibrous (other)	**None Detected**
821DD-02B *131204139-0005*	Kitchen @ OverheadDuct a/w Range Hood Drop Ceiling - Rough Plaster	Gray Non-Fibrous Homogeneous			100%	Non-fibrous (other)	**None Detected**

Analyst(s)
Steve Grise (31)

Renaldo Drakes, Laboratory Manager
or other approved signatory

Initial report from 08/22/2012 14:33:05

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			Non-Asbestos		Asbestos
Sample	**Description**	**Appearance**	**% Fibrous**	**% Non-Fibrous**	**% Type**
821DD-02C *131204139-0006*	Kitchen @ OverheadDuct a/w Range Hood Drop Ceiling - Rough Plaster	Gray Non-Fibrous Homogeneous		100% Non-fibrous (other)	**None Detected**
821DD-03A *131204139-0007*	Kitchen @ OverheadDuct a/w Range Hood Drop Ceiling - Caulking @ Ductwork and Plaster Ceiling	Tan Non-Fibrous Homogeneous		95% Non-fibrous (other)	**5% Chrysotile**
821DD-03B *131204139-0008*	Kitchen @ OverheadDuct a/w Range Hood Drop Ceiling - Caulking @ Ductwork and Plaster Ceiling				**Stop Positive (Not Analyzed)**
821DD-04A *131204139-0009*	Kitchen Window Surround - Skim Plaster	White Non-Fibrous Homogeneous		100% Non-fibrous (other)	**None Detected**
821DD-04B *131204139-0010*	Kitchen Window Surround - Skim Plaster	White Non-Fibrous Homogeneous		100% Non-fibrous (other)	**None Detected**
821DD-05A *131204139-0011*	Kitchen Window Surround - Rough Plaster	Gray Non-Fibrous Homogeneous		100% Non-fibrous (other)	**None Detected**

Analyst(s)
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Renaldo Drakes, Laboratory Manager
or other approved signatory

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Project: **20121141.A1E / Peebles Elementary School**

Test Report: Asbestos Analysis of Bulk Materials via EPA 600/R-93/116 and/or EPA 600/M4-82-020 Method(s) using Polarized Light Microscopy

			Non-Asbestos				Asbestos
Sample	Description	Appearance	%	Fibrous	%	Non-Fibrous	% Type
821DD-05B *131204139-0012*	Kitchen Window Surround - Rough Plaster	Gray Non-Fibrous Homogeneous			100%	Non-fibrous (other)	**None Detected**
821DD-06A *131204139-0013*	Basement Boys Bathroom - Smooth Skim Plaster Ceiling	White Non-Fibrous Homogeneous			100%	Non-fibrous (other)	**None Detected**
821DD-06B *131204139-0014*	Basement Boys Bathroom - Smooth Skim Plaster Ceiling	White Non-Fibrous Homogeneous			100%	Non-fibrous (other)	**None Detected**
821DD-06C *131204139-0015*	Basement Girls Bathroom - Smooth Skim Plaster Ceiling	White Non-Fibrous Homogeneous			100%	Non-fibrous (other)	**None Detected**
821DD-06D *131204139-0016*	1st Fl Boys Bathroom - Smooth Skim Plaster Drop Ceiling	White Non-Fibrous Homogeneous			100%	Non-fibrous (other)	**None Detected**
821DD-06E *131204139-0017*	1st Fl Girls Bathroom - Smooth Skim Plaster Drop Ceiling	White Non-Fibrous Homogeneous			100%	Non-fibrous (other)	**None Detected**
821DD-07A *131204139-0018*	Basement Boys Bathroom - Rough Ceiling Plaster	Gray Non-Fibrous Homogeneous			100%	Non-fibrous (other)	**None Detected**

Analyst(s)
Steve Grise (31)

Renaldo Drakes, Laboratory Manager
or other approved signatory

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Test Report: Asbestos Analysis of Bulk Materials via EPA 600/R-93/116 and/or EPA 600/M4-82-020 Method(s) using Polarized Light Microscopy

			Non-Asbestos				Asbestos
Sample	**Description**	**Appearance**	**%**	**Fibrous**	**%**	**Non-Fibrous**	**% Type**
821DD-07B *131204139-0019*	Basement Boys Bathroom - Rough Ceiling Plaster	Gray Non-Fibrous Homogeneous			100%	Non-fibrous (other)	**None Detected**
821DD-07C *131204139-0020*	Basement Girls Bathroom - Rough Ceiling Plaster	Gray Non-Fibrous Homogeneous	<1%	Cellulose	100%	Non-fibrous (other)	**None Detected**
821DD-07D *131204139-0021*	1st Fl Boys Bathroom - Rough Drop Ceiling Plaster	Gray Non-Fibrous Homogeneous			100%	Non-fibrous (other)	**None Detected**
821DD-07E *131204139-0022*	1st Fl Girls Bathroom - Rough Drop Ceiling Plaster	Gray Non-Fibrous Homogeneous	<1%	Cellulose	100%	Non-fibrous (other)	**None Detected**
821DD-08A *131204139-0023*	Annex Boys Bathroom 1st Fl - Smooth Ceiling Skim Plaster	White Non-Fibrous Homogeneous			100%	Non-fibrous (other)	**None Detected**
821DD-08B *131204139-0024*	Annex Girls Bathroom 1st Fl - Smooth Ceiling Skim Plaster	White Non-Fibrous Homogeneous			100%	Non-fibrous (other)	**None Detected**
821DD-08C *131204139-0025*	Annex Girls Bathroom 1st Fl - Smooth Ceiling Skim Plaster	White Non-Fibrous Homogeneous			100%	Non-fibrous (other)	**None Detected**

Analyst(s)

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			Non-Asbestos				Asbestos
Sample	**Description**	**Appearance**	**%**	**Fibrous**	**%**	**Non-Fibrous**	**% Type**
821DD-08D *131204139-0026*	Annex Boys Ground/Basement Bathroom - Smooth Ceiling Skim Plaster	White Non-Fibrous Homogeneous			100%	Non-fibrous (other)	**None Detected**
821DD-08E *131204139-0027*	Annex Girls Ground/Basement Bathroom - Smooth Ceiling Skim Plaster	White Non-Fibrous Homogeneous			100%	Non-fibrous (other)	**None Detected**
821DD-09A *131204139-0028*	Annex Boys Bathroom 1st Fl - Smooth Ceiling Rough Plaster	White Non-Fibrous Homogeneous			100%	Non-fibrous (other)	**None Detected**
821DD-09B *131204139-0029*	Annex Girls Bathroom 1st Fl - Smooth Ceiling Rough Plaster	Gray Non-Fibrous Homogeneous			100%	Non-fibrous (other)	**None Detected**
821DD-09C *131204139-0030*	Annex Girls Bathroom 1st Fl - Smooth Ceiling Rough Plaster	Gray Non-Fibrous Homogeneous			100%	Non-fibrous (other)	**None Detected**
821DD-09D *131204139-0031*	Annex Boys Ground/Basement Bathroom - Smooth Ceiling Rough Plaster	Gray Non-Fibrous Homogeneous			100%	Non-fibrous (other)	**None Detected**

Analyst(s)

Steve Grise (31)

Renaldo Drakes, Laboratory Manager
or other approved signatory

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			Non-Asbestos		Asbestos
Sample	**Description**	**Appearance**	**% Fibrous**	**% Non-Fibrous**	**% Type**
821DD-09E *131204139-0032*	Annex Girls Ground/Basement Bathroom - Smooth Ceiling Rough Plaster	Gray Non-Fibrous Homogeneous		100% Non-fibrous (other)	**None Detected**

Analyst(s)

Steve Grise (31)

Renaldo Drakes, Laboratory Manager
or other approved signatory

Initial report from 08/22/2012 14:33:05

131204139

FUSS & O'NEILL
EnviroScience, LLC

www.fando.com

50 Redfield St, Suite 100, Boston, MA 02122

(617) 282-4675 Fax (617) 282-8253

131204139

SAMPLE LOG FOR ASBESTOS BULKS

Sheet 1 of 3

Project Name: ~~Bourne~~ Peebles Elementary School Project No. 20121141.A1E

Building: Peebles Elementary School Project Manager: Dustin Diedricksen

	Sample ID	Sample Location	Material	Result (%)
1	821DD-01A	Kitchen @ overhead Duct associated with Range Hood (Drop Ceiling)	Skim Plaster	Approx 50SF
2	-01B			
3	-01C			
4	821DD-02A		Rough Plaster	
5	-02B			
6	-02C			
7	821DD-03A		Caulking at Ductwork ~~and plaster ceiling~~	25LF
8	-03B			
9	821DD-04A	~~Cafe~~ Kitchen Window Surround	Skim Plaster	
10	-04B			
11	821DD-05A		Rough Plaster	
12	-05B			

Analysis Method: ☒ PLM ☐ Other

Turnaround Time 6 Hour

SA 8/22/12

Based on the turnaround time indicated above, analyses are due to EnviroScience on or before this date: ______. Please call the EnviroScience Laboratory if analyses will be late at (860) 646-2469.

Fax Results to the EnviroScience Laboratory at: 888-838-1160.

Special Instruction: Stop at 1st Positive in each Homogeneous Set. Hold Samples

Samples collected by: A.D **Date:** 8/21/12 **Time:** PM.

Samples [Rec'd] [Sent by] [ ][NG/AD] **Date:** [ ][8/21/12] **Time:** PM

Samples Received by: ______ **Date:** ______ **Time:** ______

Shipped To: ☒ EMSL State MA ☐ Other

Method of Shipment: ☒ Fed Ex ☐ UPS Overnight ☐ UPS Ground ☐ Other

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FedEx# 7937 0408 2170

131204139

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50 Redfield St, Suite 100, Boston, MA 02122

(617) 282-4675 Fax (617) 282-8253

SAMPLE LOG FOR ASBESTOS BULKS

Sheet 2 of 3

Project Name: PEEBLES ELEMENTARY SCHOOL Project No. 20121141. AIE

Building: PEEBLES ELEMENTARY SCHOOL Project Manager: AUSTIN DIEDRICKSEN

	Sample ID	Sample Location	Material	Result (%)
13	821DD-06A	BASEMENT BOYS BATHROOM	SMOOTH SKIM PLASTER CEILING	
14	-06B	BASEMENT BOYS BATHROOM	↓	
15	-06C	~~GIRLS~~ BASEMENT GIRLS BATHROOM		
16	-06D	1ST FLOOR BOYS BATHROOM	(DROP CEILING)	
17	-06E	1ST FLOOR GIRLS BATHROOM	↓	
18	821DD-07A	BASEMENT BOYS BATHROOM	ROUGH CEILING PLASTER	
19	-07B	↓		
20	-07C	BASEMENT GIRLS BATHROOM		
21	-07D	1ST FLOOR BOYS BATHROOM	(DROP CEILING)	
22	-07E	1ST FLOOR GIRLS BATHROOM	↓	
23	821DD-08A	ANNEX BOYS BATHROOM 1ST FLOOR	SMOOTH CEILING SKIM PLASTER	
24	-08B	ANNEX GIRLS BATHROOM 1ST FLOOR	↓	

Analysis Method: ☒ PLM ☐ Other Turnaround Time 6 HOUR

Based on the turnaround time indicated above, analyses are due to EnviroScience on or before this date: _______. Please call the EnviroScience Laboratory if analyses will be late at (860) 646-2469.

Fax Results to the EnviroScience Laboratory at: 888-838-1160.

Special Instruction: SEE 1ST PAGE

Samples collected by: A.D. **Date:** 8/21/12 **Time:** PM

Samples [Rec'd] [Sent by] [ ][NG] **Date:** [ ][8/21/12] **Time:** PM

Samples Received by: _______ **Date:** _______ **Time:** _______

Shipped To: ☒ EMSL State MA ☐ Other

Method of Shipment: ☒ Fed Ex ☐ UPS Overnight ☐ UPS Ground ☐ Other

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By SA 0930

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SAMPLE LOG FOR ASBESTOS BULKS

Sheet 3 of 3

Project Name: PEEBLES ELEMENTARY SCHOOL   Project No. 20121141, A/E

Building: PEEBLES ELEMENTARY SCHOOL   Project Manager: AUSTIN DIEDRICKSEN

	Sample ID	Sample Location	Material	Result (%)
25	-08C	↓	↓	
26	-08D	ANNEX BOYS GROUND/ BASEMENT BATHROOM		
27	-08E	ANNEX GIRLS GROUND/BASEMENT	↓ BATHROOM	
28	821DD-09A	ANNEX BOYS BATH 1ST FL.	SMOOTH CEILING ROUGH PLASTER	
29	-09B	GIRLS BATH 1ST FL.		
30	-09C	GIRLS BATH 1ST FL.		
31	-09D	BOYS BATH GROUND/BASEMENT		
32	-09E	↓ GIRLS BATH GROUND/BASEMENT	↓	

Analysis Method: ☒ PLM ☐ Other   Turnaround Time 6 Hour

Based on the turnaround time indicated above, analyses are due to EnviroScience on or before this date: ________. Please call the EnviroScience Laboratory if analyses will be late at (860) 646-2469.

Fax Results to the EnviroScience Laboratory at: 888-838-1160.

Special Instruction: STOP AT 1ST POSITIVE

Samples collected by: A.D. **Date:** 8/21/12 **Time:** PM

Samples [Rec'd] [Sent by] [ ][NG] **Date:** [ ][8/21/12] **Time:** PM

Samples Received by: ________ **Date:** ________ **Time:** ________

Shipped To: ☒ EMSL State MA ☐ Other ________

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AUG 22 2012
By SA 0930

Method of Shipment: ☒ Fed Ex ☐ UPS Overnight ☐ UPS Ground ☐ Other

EMSL Analytical, Inc.

7 Constitution Way, Suite 107, Woburn, MA 01801
Phone/Fax: (781) 933-8411 / (781) 933-8412
bostonlab@emsl.com

EMSL Order:	131204211
CustomerID:	ENVI54
CustomerPO:	
ProjectID:	

Attn: **Dustin Diedricksen**
Fuss & O'Neill EnviroScience, LLC
146 Hartford Road
Manchester, CT 06040

Phone:	(860) 646-2469
Fax:	(888) 838-1160
Received:	08/23/12 5:05 PM
Analysis Date:	8/24/2012
Collected:	8/22/2012

Project: **20121141.A1E / Peebles Elementary School**

Test Report: Asbestos Analysis of Bulk Materials via EPA 600/R-93/116 and/or EPA 600/M4-82-020 Method(s) using Polarized Light Microscopy

			Non-Asbestos				Asbestos
Sample	**Description**	**Appearance**	**% Fibrous**		**% Non-Fibrous**		**% Type**
0826DD-01A *131204211-0001*	Copy Room - Skim Ceiling Plaster	White Non-Fibrous Homogeneous			100%	Non-fibrous (other)	**None Detected**
0826DD-01B *131204211-0002*	Copy Room - Skim Ceiling Plaster	White Non-Fibrous Homogeneous			100%	Non-fibrous (other)	**None Detected**
0826DD-01C *131204211-0003*	Music Room - Skim Ceiling Plaster	White Non-Fibrous Homogeneous			100%	Non-fibrous (other)	**None Detected**
0826DD-01D *131204211-0004*	Teacher's Lounge - Skim Ceiling Plaster	White Non-Fibrous Homogeneous			100%	Non-fibrous (other)	**None Detected**
0826DD-01E *131204211-0005*	Teacher's Lounge - Skim Ceiling Plaster	White Non-Fibrous Homogeneous			100%	Non-fibrous (other)	**None Detected**
0826DD-02A *131204211-0006*	Copy Room - Rough Ceiling Plaster	Gray Non-Fibrous Homogeneous			100%	Non-fibrous (other)	**None Detected**
0826DD-02B *131204211-0007*	Copy Room - Rough Ceiling Plaster	Gray Non-Fibrous Homogeneous			100%	Non-fibrous (other)	**None Detected**
0826DD-02C *131204211-0008*	Music Room - Rough Ceiling Plaster	Gray Non-Fibrous Homogeneous			100%	Non-fibrous (other)	**None Detected**

Analyst(s)

Kevin Pine (4)
Steve Grise (6)

Renaldo Drakes, Laboratory Manager
or other approved signatory

Initial report from 08/24/2012 16:24:04

EMSL Analytical, Inc.
7 Constitution Way, Suite 107, Woburn, MA 01801
Phone/Fax: (781) 933-8411 / (781) 933-8412
bostonlab@emsl.com

EMSL Order: 131204211
CustomerID: ENVI54
CustomerPO:
ProjectID:

Attn: **Dustin Diedricksen**
Fuss & O'Neill EnviroScience, LLC
146 Hartford Road
Manchester, CT 06040

Phone: (860) 646-2469
Fax: (888) 838-1160
Received: 08/23/12 5:05 PM
Analysis Date: 8/24/2012
Collected: 8/22/2012

Project: **20121141.A1E / Peebles Elementary School**

Test Report: Asbestos Analysis of Bulk Materials via EPA 600/R-93/116 and/or EPA 600/M4-82-020 Method(s) using Polarized Light Microscopy

			Non-Asbestos			Asbestos
Sample	**Description**	**Appearance**	**% Fibrous**	**% Non-Fibrous**		**% Type**
0826DD-02D *131204211-0009*	Teacher's Lounge - Rough Ceiling Plaster	Gray Non-Fibrous Homogeneous		100%	Non-fibrous (other)	**None Detected**
0826DD-02E *131204211-0010*	Teacher's Lounge - Rough Ceiling Plaster	Gray Non-Fibrous Homogeneous		100%	Non-fibrous (other)	**None Detected**

Analyst(s)
Kevin Pine (4)
Steve Grise (6)

Renaldo Drakes, Laboratory Manager
or other approved signatory

Initial report from 08/24/2012 16:24:04

131204211

131204211

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SAMPLE LOG FOR ASBESTOS BULKS

Sheet 1 of 1

Project Name: PEEBLES ELEMENTARY SCHOOL Project No. 20121141.AIE

Building: PEEBLES ELEMENTARY SCHOOL Project Manager: DUSTIN DIEDRICKSEN

	Sample ID	Sample Location	Material	Result (%)
1	0826DD-01A	COPY ROOM	SKIM CEILING PLASTER	
2	-01B	COPY ROOM	↓	
3	-01C	MUSIC ROOM		
4	-01D	TEACHERS' LOUNGE		
5	-01E	TEACHERS' LOUNGE	↓	
6	0826DD-02A	COPY ROOM	ROUGH CEILING PLASTER	
7	-02B	COPY ROOM	↓	
8	-02C	MUSIC ROOM		
9	-02D	TEACHERS' LOUNGE		
10	-02E	TEACHERS' LOUNGE	↓	

Analysis Method: ☒ PLM ☐ Other Turnaround Time 24 HOUR

Sa 8/24/12

Based on the turnaround time indicated above, analyses are due to EnviroScience on or before this date: ________ Please call the EnviroScience Laboratory if analyses will be late at (860) 646-2469.

Fax Results to the EnviroScience Laboratory at: 888-838-1160.

Special Instruction: STOP AT 1ST POSITIVE. NO POINT COUNTING

Samples collected by: D.D. **Date:** 8/22/12 **Time:** PM

Samples [Rec'd] [Sent by] [ ][JH] **Date:** [ ][8/23/12] **Time:** PM

Samples Received by: ________ **Date:** ________ **Time:** ________

Shipped To: ☒ EMSL State MA ☐ Other ________

Method of Shipment: ☐ Fed Ex ☐ UPS Overnight ☐ UPS Ground ☒ Other DROP OFF

RECEIVED
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By DAR 1705

W-M

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7 Constitution Way, Suite 107, Woburn, MA 01801
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bostonlab@emsl.com

EMSL Order:	131204268
CustomerID:	ENVI54
CustomerPO:	
ProjectID:	

Attn: **Bob May**
Fuss & O'Neill EnviroScience, LLC
146 Hartford Road
Manchester, CT 06040

Phone:	(860) 646-2469
Fax:	(888) 838-1160
Received:	08/27/12 4:09 PM
Analysis Date:	8/27/2012
Collected:	8/27/2012

Project: **Peebles Elem. School; Bourne, MA**

Test Report: Asbestos Analysis of Bulk Materials via EPA 600/R-93/116 and/or EPA 600/M4-82-020 Method(s) using Polarized Light Microscopy

			Non-Asbestos				Asbestos
Sample	**Description**	**Appearance**	**% Fibrous**		**% Non-Fibrous**		**% Type**
827-NG-1 *131204268-0001*	Classroom 2 - Window Glazing White Thin Coat	White Non-Fibrous Heterogeneous			98%	Non-fibrous (other)	**2% Chrysotile**
827-NG-2 *131204268-0002*	Classroom 2 - Window Glazing White Thin Coat	White Non-Fibrous Heterogeneous			98%	Non-fibrous (other)	**2% Chrysotile**
827-NG-3 *131204268-0003*	Classroom 6 - Window Glazing White/Thin	White Non-Fibrous Heterogeneous			100%	Non-fibrous (other)	**None Detected**
827-NG-4 *131204268-0004*	Classroom 6 - Window Glazing White/Thin	White Non-Fibrous Heterogeneous			100%	Non-fibrous (other)	**None Detected**
827-NG-5 *131204268-0005*	Classroom 8 - Vinyl Covering on Radiators Tan/Purple	Tan Non-Fibrous Heterogeneous	3%	Cellulose	97%	Non-fibrous (other)	**None Detected**
827-NG-6 *131204268-0006*	Classroom 8 - Vinyl Covering on Radiators Tan/Purple	Brown Fibrous Heterogeneous	10%	Cellulose	90%	Non-fibrous (other)	**None Detected**
827-NG-7 *131204268-0007*	Classroom 8 - Caulking Window Gray	Gray Fibrous Heterogeneous	15%	Cellulose	83%	Non-fibrous (other)	**2% Chrysotile**
827-NG-8 *131204268-0008*	Classroom 7 - Caulking Window Gray	Gray Non-Fibrous Heterogeneous	15%	Cellulose	83%	Non-fibrous (other)	**2% Chrysotile**

Analyst(s)

Renaldo Drakes (12)

Renaldo Drakes, Laboratory Manager
or other approved signatory

Initial report from 08/27/2012 18:22:21

EMSL Analytical, Inc.
7 Constitution Way, Suite 107, Woburn, MA 01801
Phone/Fax: (781) 933-8411 / (781) 933-8412
bostonlab@emsl.com

EMSL Order: 131204268
CustomerID: ENVI54
CustomerPO:
ProjectID:

Attn: **Bob May**
Fuss & O'Neill EnviroScience, LLC
146 Hartford Road
Manchester, CT 06040

Phone: (860) 646-2469
Fax: (888) 838-1160
Received: 08/27/12 4:09 PM
Analysis Date: 8/27/2012
Collected: 8/27/2012

Project: **Peebles Elem. School; Bourne, MA**

Test Report: Asbestos Analysis of Bulk Materials via EPA 600/R-93/116 and/or EPA 600/M4-82-020 Method(s) using Polarized Light Microscopy

			Non-Asbestos				Asbestos
Sample	**Description**	**Appearance**	**%**	**Fibrous**	**%**	**Non-Fibrous**	**% Type**
827-NG-9 *131204268-0009*	Classroom 5 - Newer Smooth Glazing Win	White Non-Fibrous Heterogeneous			100%	Non-fibrous (other)	**None Detected**
827-NG-10 *131204268-0010*	Classroom 5 - Newer Smooth Glazing Win	White Non-Fibrous Heterogeneous			100%	Non-fibrous (other)	**None Detected**
827-NG-11 *131204268-0011*	Classroom 6 Ext. - Caulking Win. Gray, White	White Non-Fibrous Heterogeneous			98%	Non-fibrous (other)	**2% Chrysotile**
827-NG-12 *131204268-0012*	Café Ext. - White Window Glazing	White Non-Fibrous Heterogeneous			100%	Non-fibrous (other)	**None Detected**

Analyst(s)

Renaldo Drakes (12)

Renaldo Drakes, Laboratory Manager
or other approved signatory

Initial report from 08/27/2012 18:22:21

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SAMPLE LOG FOR ASBESTOS BULKS

Sheet 1 of 1

Project Name: Peebles Elem School Bourne MA   Project No. 20114146 AIE

Building: Peebles Elem School   Project Manager: DUSTIN A RIEDRICKSEN

Sample ID	Sample Location	Material	Result (%)
827 NG-1	CLASSROOM (2WA)	WINDOW white GLAZING thin coat	
2	CLASSROOM (210)	↓	
3	CLASSROOM 6	WINDOW GLAZING white/thin	
4	↓	↓	
5	CLASSROOM 8	VINYL COVERING ON radiators	
6	↓	↓ tan/purple	
7	CLASS. ↓	CAULKING WINDOW GRAY	
8	CLASS 7	↓	
9	CLASS 5	NEWER SMOOTH GLAZING WIN	
10	↓	↓	
11	CLASS ↓ EXT	CAULKING WIN. GRAY white	
12	CAFE EXT	WHITE WINDOW GLAZING	

Analysis Method: ☒ PLM ☐ Other DAR 8/27/12

Turnaround Time 3 day

Based on the turnaround time indicated above, analyses are due to EnviroScience on or before this date: 8/(L). Please call the EnviroScience Laboratory if analyses will be late at (860) 646-2469.

Fax Results to the EnviroScience Laboratory at: 888-838-1160.

Special Instruction: NO POINT COUNT
ANALYZE ALL SAMPLES
CALL 617-778-3250

Samples collected by: NG Date: 8/22/12 Time: PM

Samples [Rec'd] [Sent by] [COLLECT] Date: [ ][/ /] Time: PM / PI

Samples Received by: ______ Date: ______ Time: ______

Shipped To: ☒ EMSL State MAIL ☐ Other ______

Method of Shipment: ☐ Fed Ex ☐ UPS Overnight ☐ UPS Ground ☒ Other DROP OFF

RECEIVED
AUG 27 2012
By DAR 1609

EMSL Analytical, Inc.
7 Constitution Way, Suite 107, Woburn, MA 01801
Phone/Fax: (781) 933-8411 / (781) 933-8412
bostonlab@emsl.com

EMSL Order:	131204500
CustomerID:	ENVI54
CustomerPO:	
ProjectID:	

Attn: **Dustin Diedricksen**
Fuss & O'Neill EnviroScience, LLC
146 Hartford Road
Manchester, CT 06040

Phone:	(860) 646-2469
Fax:	(888) 838-1160
Received:	09/12/12 9:15 AM
Analysis Date:	9/12/2012
Collected:	9/7/2012

Project: **20121141.A1E / Peebles Elementary School**

Test Report: Asbestos Analysis of Bulk Materials via EPA 600/R-93/116 and/or EPA 600/M4-82-020 Method(s) using Polarized Light Microscopy

			Non-Asbestos				Asbestos
Sample	**Description**	**Appearance**	**%**	**Fibrous**	**%**	**Non-Fibrous**	**% Type**
97NG-01A *131204500-0001*	Classroom - Lightweight Parging Matl behind Lally Column	White Non-Fibrous Homogeneous			100%	Non-fibrous (other)	**None Detected**
97NG-01B *131204500-0002*	Classroom - Lightweight Parging Matl behind Lally Column	White Non-Fibrous Homogeneous			100%	Non-fibrous (other)	**None Detected**
97NG-01C *131204500-0003*	Classroom - Lightweight Parging Matl behind Lally Column	White Non-Fibrous Homogeneous			100%	Non-fibrous (other)	**None Detected**
97NG-02A *131204500-0004*	South Exterior - Weatherproofing Cushion Felt under Unit Vents	Black Fibrous Heterogeneous	15%	Cellulose	85%	Non-fibrous (other)	**None Detected**
97NG-02B *131204500-0005*	South Exterior - Weatherproofing Cushion Felt under Unit Vents	Black Fibrous Heterogeneous	15%	Cellulose	85%	Non-fibrous (other)	**None Detected**
97NG-02C *131204500-0006*	South Exterior - Weatherproofing Cushion Felt under Unit Vents	Black Fibrous Heterogeneous	15%	Cellulose	85%	Non-fibrous (other)	**None Detected**

Analyst(s)
Kevin Pine (4)
Steve Grise (8)

Renaldo Drakes, Laboratory Manager
or other approved signatory

Initial report from 09/12/2012 15:31:44

EMSL Analytical, Inc.
7 Constitution Way, Suite 107, Woburn, MA 01801
Phone/Fax: (781) 933-8411 / (781) 933-8412
bostonlab@emsl.com

EMSL Order:	131204500
CustomerID:	ENVI54
CustomerPO:	
ProjectID:	

Attn: **Dustin Diedricksen**
Fuss & O'Neill EnviroScience, LLC
146 Hartford Road
Manchester, CT 06040

Phone:	(860) 646-2469
Fax:	(888) 838-1160
Received:	09/12/12 9:15 AM
Analysis Date:	9/12/2012
Collected:	9/7/2012

Project: **20121141.A1E / Peebles Elementary School**

Test Report: Asbestos Analysis of Bulk Materials via EPA 600/R-93/116 and/or EPA 600/M4-82-020 Method(s) using Polarized Light Microscopy

			Non-Asbestos				Asbestos
Sample	Description	Appearance	%	Fibrous	%	Non-Fibrous	% Type
97NG-03A *131204500-0007*	South Exterior - Brown/Tan Window & Expansion Joint Caulking	Brown Non-Fibrous Homogeneous			100%	Non-fibrous (other)	**None Detected**
97NG-03B *131204500-0008*	South Exterior - Brown/Tan Window & Expansion Joint Caulking	Brown Non-Fibrous Homogeneous			100%	Non-fibrous (other)	**None Detected**
97NG-03C *131204500-0009*	South Exterior - Brown/Tan Window & Expansion Joint Caulking	Brown Non-Fibrous Homogeneous			100%	Non-fibrous (other)	**None Detected**
97NG-04A *131204500-0010*	North Front Exterior - White/Gray Window Caulking	Gray Non-Fibrous Homogeneous	5%	Cellulose	95%	Non-fibrous (other)	**None Detected**
97NG-04B *131204500-0011*	North Front Exterior - White/Gray Window Caulking	Gray Non-Fibrous Homogeneous	5%	Cellulose	95%	Non-fibrous (other)	**None Detected**
97NG-04C *131204500-0012*	North Front Exterior - White/Gray Window Caulking	Gray Non-Fibrous Homogeneous	5%	Cellulose	95%	Non-fibrous (other)	**None Detected**

Analyst(s)

Kevin Pine (4)
Steve Grise (8)

Renaldo Drakes, Laboratory Manager
or other approved signatory

Initial report from 09/12/2012 15:31:44

131204500

FUSS & O'NEILL
EnviroScience, LLC

131204500

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(617) 282-4675 Fax (617) 282-8253

SAMPLE LOG FOR ASBESTOS BULKS

Sheet 1 of 1

Project Name: PEEBLES ELEMENTARY SCHOOL   Project No. 20121141.AIE

Building: PEEBLES ELEMENTARY SCHOOL   Project Manager: AUSTIN DIEDRICKSEN

	Sample ID	Sample Location	Material	Result (%)
1	97NG-01A	CLASSROOM	LIGHTWEIGHT PARGING MATERIAL BEHIND LALLY COLUMN	
2	-01B	↓	↓	
3	-01C			
4	97NG-02A	SOUTH EXTERIOR	WEATHERPROOFING CUSHION FELT UNDERNEATH UNIT VENTS	
5	-02B	↓	↓	
6	-02C			
7	97NG-03A	SOUTH EXTERIOR	BROWN/TAN WINDOW + EXPANSION JOINT CAULKING	
8	-03B	↓	↓	
9	-03C			
10	97NG-04A	NORTH (FRONT) EXTERIOR	WHITE/GREY WINDOW CAULKING	
11	-04B	↓	↓	
12	-04C			

Analysis Method: ☒ PLM ☐ Other   SA 9/12/12   Turnaround Time 24 HOUR

Based on the turnaround time indicated above, analyses are due to EnviroScience on or before this date: ________. Please call the EnviroScience Laboratory if analyses will be late at (860) 646-2469.

Fax Results to the EnviroScience Laboratory at: 888-838-1160.

Special Instruction: STOP AT 1ST POSITIVE COUNT IN EACH HOMOGENEOUS SET. NO POINT COUNTING. HOLD SAMPLES FOR TEM ANALYSIS UPON REQUEST.

Samples collected by: NICK GRAVALLESE **Date:** 9/7/12 **Time:** PM

Samples [Rec'd] [Sent by] [ ][AD] **Date:** [ ][9/11/12] **Time:** PM

Samples Received by: ________ **Date:** ________ **Time:** ________

Shipped To: ☒ EMSL State MA ☐ Other ________

Method of Shipment: ☒ Fed Ex ☐ UPS Overnight ☐ UPS Ground ☐ Other

RECEIVED
SEP 12 2012
By SA 0915

FedEx# 7937 0408 2284

EMSL Analytical, Inc.
7 Constitution Way, Suite 107, Woburn, MA 01801
Phone: (781) 933-8411 Fax: (781) 933-8412 Email: bostonlab@emsl.com

Attn: **Bob May**
Fuss & O' Neill EnviroScience, LLC
146 Hartford Road
Manchester, CT 06040

Fax: (413) 647-0018 Phone: (860) 646-2469

Project: **20070914.A6E / Bourne Public Schools; Peebles Elementary School; Boiler**

Customer ID: ENVI54
Customer PO:
Received: 04/06/10 3:35 PM
EMSL Order: 131001366
EMSL Proj:
Analysis Date: 4/8/2010

Test Report: Asbestos Analysis of Bulk Materials via EPA 600/R-93/116 Method using Polarized Light Microscopy

Sample	Description	Appearance	Non-Asbestos % Fibrous	Non-Asbestos % Non-Fibrous	Asbestos % Type
331DD-01A *131001366-0001*	Boiler Exterior; Boiler Jacket Insulation	Gray Fibrous Heterogeneous	25% Glass 25% Min. Wool	50% Non-fibrous (other)	**None Detected**
331DD-01B *131001366-0002*	Boiler Exterior; Boiler Jacket Insulation	Gray Fibrous Homogeneous	25% Min. Wool 10% Glass	65% Non-fibrous (other)	**None Detected**
331DD-01C *131001366-0003*	Boiler Exterior; Boiler Breeching TSI	Gray Fibrous Homogeneous	15% Glass 25% Min. Wool	60% Non-fibrous (other)	**None Detected**
331DD-02A *131001366-0004*	Boiler Interior; Friable TSI @ Int Boiler Ribbing	Brown Fibrous Homogeneous		60% Non-fibrous (other)	**40% Chrysotile**
331DD-02B *131001366-0005*	Boiler Interior; Friable TSI @ Int Boiler Ribbing				**Stop Positive (Not Analyzed)**
331DD-02C *131001366-0006*	Boiler Interior; Friable TSI @ Int Boiler Ribbing				**Stop Positive (Not Analyzed)**
331DD-03A *131001366-0007*	Boiler Ext underside; Boiler Roping @ Bottom Seams	White Fibrous Homogeneous	95% Glass	5% Non-fibrous (other)	**None Detected**

Analyst(s)

Steve Grise (27)

Renaldo Drakes
or other approved signatory

EMSL Analytical, Inc.
7 Constitution Way, Suite 107, Woburn, MA 01801
Phone: (781) 933-8411 Fax: (781) 933-8412 Email: bostonlab@emsl.com

Attn: **Bob May**
Fuss & O' Neill EnviroScience, LLC
146 Hartford Road
Manchester, CT 06040

Fax: (413) 647-0018 Phone: (860) 646-2469

Project: **20070914.A6E / Bourne Public Schools; Peebles Elementary School; Boiler**

Customer ID: ENVI54
Customer PO:
Received: 04/06/10 3:35 PM
EMSL Order: 131001366
EMSL Proj:
Analysis Date: 4/8/2010

Test Report: Asbestos Analysis of Bulk Materials via EPA 600/R-93/116 Method using Polarized Light Microscopy

			Non-Asbestos				Asbestos
Sample	**Description**	**Appearance**	**%**	**Fibrous**	**%**	**Non-Fibrous**	**% Type**
331DD-03B *131001366-0008*	Boiler Ext underside; Boiler Roping @ Bottom Seams	White Fibrous Homogeneous	95%	Glass	5%	Non-fibrous (other)	**None Detected**
331DD-03C *131001366-0009*	Boiler Ext underside; Boiler Roping @ Bottom Seams	White Fibrous Homogeneous	95%	Glass	5%	Non-fibrous (other)	**None Detected**
331DD-04A *131001366-0010*	Hot Water Tank; Boiler Rm; Hot Water Tank TSI	Gray Fibrous Homogeneous	25% 15%	Min. Wool Glass	60%	Non-fibrous (other)	**None Detected**
331DD-04B *131001366-0011*	Hot Water Tank; Boiler Rm; Hot Water Tank TSI	Gray Fibrous Homogeneous	15% 25%	Glass Min. Wool	60%	Non-fibrous (other)	**None Detected**
331DD-05 *131001366-0012*	Piping under Hot Water Tank; Cloth Insulation Wrap	Tan Fibrous Homogeneous	95%	Glass	5%	Non-fibrous (other)	**None Detected**
331DD-06 *131001366-0013*	Boiler @ Breeching Pentration; Flue Patch Material	Gray Fibrous Heterogeneous	20%	Min. Wool	80%	Non-fibrous (other)	**None Detected**
331DD-07 *131001366-0014*	Boiler Ext Front; Insul @ Front Circular Panel	Gray Fibrous Heterogeneous			90%	Non-fibrous (other)	**10% Chrysotile**

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Sample	Description	Appearance	Non-Asbestos %	Non-Asbestos Fibrous	Non-Asbestos %	Non-Asbestos Non-Fibrous	Asbestos % Type
331DD-08 *131001366-0015*	Boiler Duct; White Cloth Vibration Isolator	White Fibrous Homogeneous	95%	Glass	5%	Non-fibrous (other)	**None Detected**
331DD-09A *131001366-0016*	Boiler Exterior; Ext Gasket @ Metal Fixed Panels	Tan/White Fibrous Heterogeneous			75%	Non-fibrous (other)	**25% Chrysotile**
331DD-09B *131001366-0017*	Boiler Exterior; Ext Gasket @ Metal Fixed Panels						**Stop Positive (Not Analyzed)**
331DD-10 *131001366-0018*	Boiler Doors; Residual Door Gaskets	Tan Non-Fibrous Heterogeneous			100%	Non-fibrous (other)	**None Detected**
331DD-11 *131001366-0019*	Piping under Hot Water Tank; Red Gasket a/w Piping	Red/Beige Non-Fibrous Heterogeneous	10%	Wollastonite	90%	Non-fibrous (other)	**None Detected**
331DD-12A *131001366-0020*	Boiler Interior; Boiler Debris	Black Non-Fibrous Heterogeneous			100%	Non-fibrous (other)	**None Detected**
331DD-12B *131001366-0021*	Boiler Interior; Boiler Debris	Black Non-Fibrous Heterogeneous			100%	Non-fibrous (other)	**None Detected**

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Test Report: Asbestos Analysis of Bulk Materials via EPA 600/R-93/116 Method using Polarized Light Microscopy

Sample	Description	Appearance	Non-Asbestos %	Fibrous	%	Non-Fibrous	Asbestos % Type
331DD-13 *131001366-0022*	Backside of Boiler; White Friable Gaskets	Gray Non-Fibrous Homogeneous	20%	Min. Wool	80%	Non-fibrous (other)	**None Detected**
331DD-14A *131001366-0023*	Boiler Interior; Boiler Brick	Red Non-Fibrous Homogeneous			100%	Non-fibrous (other)	**None Detected**
331DD-14B *131001366-0024*	Boiler Interior; Boiler Brick	Red Non-Fibrous Homogeneous			100%	Non-fibrous (other)	**None Detected**
331DD-14C *131001366-0025*	Boiler Interior; Boiler Brick	Red Non-Fibrous Homogeneous			100%	Non-fibrous (other)	**None Detected**
331DD-15A *131001366-0026*	Boiler Base; Red Brick Boiler Base; Solid	Red Non-Fibrous Homogeneous			100%	Non-fibrous (other)	**None Detected**
331DD-15B *131001366-0027*	Boiler Base; Red Brick Boiler Base; Solid	Red Non-Fibrous Homogeneous			100%	Non-fibrous (other)	**None Detected**
331DD-15C *131001366-0028*	Boiler Base; Red Brick Boiler Base; Solid	Red Non-Fibrous Homogeneous			100%	Non-fibrous (other)	**None Detected**

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			Non-Asbestos		Asbestos
Sample	**Description**	**Appearance**	**% Fibrous**	**% Non-Fibrous**	**% Type**
331DD-16A *131001366-0029*	Boiler Base Center; Orange Open Brick Base Insert	Orange Non-Fibrous Homogeneous		100% Non-fibrous (other)	**None Detected**
331DD-16B *131001366-0030*	Boiler Base Center; Orange Open Brick Base Insert	Orange Non-Fibrous Homogeneous		100% Non-fibrous (other)	**None Detected**

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FUSS & O'NEILL
EnviroScience, LLC

131001366

30 SAMPLES

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50 Redfield Street, Suite 100 Boston, MA 02122 (617) 282-4675 Fax: (617) 282-8253

SAMPLE LOG FOR ASBESTOS BULKS

Sheet 1 of 3

Project Name: BOURNE PUBLIC SCHOOLS Project No. 20070914.A6E

Building: PEEBLES ELEMENTARY SCHOOL - BOILER Project Manager: BOB MAY

Sample ID	Sample Location	Material	Result (%)
331DD-01A	BOILER EXTERIOR	BOILER JACKET INSULATION (FRIABLE)	
-01B	↓	↓	
-01C	↓	BOILER BREECHING TSI	
331DD-02A	BOILER INTERIOR	FRIABLE TSI @ INTERIOR BOILER RIBBING	
-02B	↓	↓	
-02C	↓	↓	
331DD-03A	BOILER EXTERIOR (UNDERSIDE)	BOILER PIPING @ BOTTOM SEAMS	
-03B	↓	↓	
-03C	↓	↓	
331DD-04A	HOT WATER TANK (BOILER ROOM)	HOT WATER TANK TSI	
-04B	↓	↓	

Analysis Method: ☒ PLM ☐ Other ______ Turnaround Time 48 HOUR

Based on the turnaround time indicated above, analyses are due to EnviroScience on or before this date: 4/8/10. Please call the EnviroScience Laboratory at (860) 953-2700 if analyses will be late.

Fax Results To: EnviroScience Consultants, Inc. Laboratory at 413-647-0018

Special Instructions: STOP @ 1ST POSITIVE IN EACH HOMOGENEOUS SET

Samples Collected By: D.D. Date: 3/31/10 Time: A.M.

Samples [Rec'd][Sent By]: [ ][D.D.] Date: [ ][4/6] Time: [ ][A.M.]

Samples Received By: ______ Date: ______ Time: ______

Shipped To: ☒ EMSL (State) MA ☐ Other ______

Method of Shipment: ☐ Fed Ex ☐ UPS Overnight ☐ UPS Ground ☒ Other DROPOFF

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APR 06 2010
BY: SG 1535

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EnviroScience, LLC

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SAMPLE LOG FOR ASBESTOS BULKS

Sheet 2 of 3

Project Name: BOURNE PUBLIC SCHOOLS Project No. 20070914.A6E

Building: PEEBLES ELEMENTARY SCHOOL - BOILER Project Manager: BOB MAY

Sample ID	Sample Location	Material	Result (%)
331DD-05	PIPING UNDER HOT WATER TANK	CLOTH INSULATION WRAP	
331DD-06	BOILER @ BREECHING PENETRATION	FLUE PATCH MATERIAL (GREY)	
331DD-07	BOILER EXTERIOR FRONT	INSULATION @ FRONT CIRCULAR PANEL	(WHITE/FRIABLE)
331DD-08	BOILER DUCT	WHITE CLOTH VIBRATION ISOLATOR	X 3 (30 SF)
331DD-09A	BOILER EXTERIOR	EXTERIOR GASKET @ METAL FIXED PANELS	
-09B	↓	↓	
331DD-10	BOILER DOORS	RESIDUAL DOOR GASKETS	
331DD-11	PIPING UNDER HOT WATER TANK	RED GASKET A/W PIPING	2 EA (7 SF)
331DD-12A	BOILER INTERIOR	BOILER ~~DEBRIS~~ DEBRIS	
-12B	↓	↓	
331DD-13	BACKSIDE OF BOILER (PIPING)	WHITE FRIABLE GASKETS	6 EA

Analysis Method: ☒ PLM ☐ Other ______ Turnaround Time 48 HOUR

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Samples [Rec'd][Sent By]: [ ][D.D.] Date: [ ][4/6] Time: [ ][A.M.]

Samples Received By: ______ Date: ______ Time: ______

Shipped To: ☒ EMSL (State) MA ☐ Other ______

Method of Shipment: ☐ Fed Ex ☐ UPS Overnight ☐ UPS Ground ☒ Other DROPOFF

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APR 06 2010

BY: SA 1535

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EnviroScience, LLC

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SAMPLE LOG FOR ASBESTOS BULKS

Project Name: BOURNE PUBLIC SCHOOLS Project No. 20070914.A6E

Building: PEEBLES ELEMENTARY SCHOOL - BOILER Project Manager: BOB MAY

Sample ID	Sample Location	Material	Result (%)
331DD-14A	BOILER INTERIOR	INTERIOR BOILER BRICK	
-14B	↓	↓	
-14C	↓	↓	
331DD-15A	BOILER BASE	RED BRICK BOILER-BASE (SOLID BRICK)	
-15B	↓	↓	
-15C	↓	↓	
331DD-16A	BOILER BASE (CENTER)	ORANGE OPEN-BRICK BASE INSERT (HALLOW CENTER)	
-16B	↓	↓	

Analysis Method: ☒ PLM ☐ Other ______ Turnaround Time 48 HOUR

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Samples Collected By: D.D. Date: 3/31/10 Time: A.M.

Samples [Rec'd] [Sent By]: [ ] [D.D.] Date: [ ] [4/6] Time: [ ] [A.M.]

Samples Received By: ______ Date: ______ Time: ______

Shipped To: ☒ EMSL (State) MA ☐ Other ______

Method of Shipment: ☐ Fed Ex ☐ UPS Overnight ☐ UPS Ground ☒ Other DROPOFF

RECEIVED
APR 06 2010
BY: SA 1535

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307 West 38th Street, New York, NY 10018
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Attn: **Bob May**
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50 Redfield Street
Boston, MA 02122

Fax: (413) 647-0018 Phone: (617) 282-4675

Project: **20070914.A4E/ BOURNE PUBLIC SCHOOLS/ PEEBLES ELEMATARY**

Customer ID: ENVI54C
Customer PO:
Received: 07/24/09 9:00 AM
EMSL Order: 030918779

EMSL Proj:
Analysis Date: 7/25/2009

Asbestos Analysis of Bulk Materials via EPA 600/R-93/116 Method using Polarized Light Microscopy

			Non-Asbestos				Asbestos
Sample	Description	Appearance	%	Fibrous	%	Non-Fibrous	% Type
720JH-01A *030918779-0001*	BOILER ROOM/ HOT WATER TANK INSULATION	Tan Fibrous Heterogeneous	15% 5%	Glass Synthetic	40% 40%	Ca Carbonate Non-fibrous (other)	**None Detected**
720JH-01B *030918779-0002*	BOILER ROOM/ HOT WATER TANK INSULATION	Tan/White Fibrous Heterogeneous	20% 5%	Glass Synthetic	40% 35%	Ca Carbonate Non-fibrous (other)	**None Detected**
720JH-01C *030918779-0003*	BOILER ROOM/ HOT WATER TANK INSULATION	Tan Fibrous Heterogeneous	15% 5%	Glass Synthetic	40% 40%	Ca Carbonate Non-fibrous (other)	**None Detected**
720JH-02A *030918779-0004*	BOILER ROOM/ BOILER BREACHING BOILER INSULATION #2	White/Blue Fibrous Heterogeneous	10% 20%	Glass Synthetic	50% 20%	Ca Carbonate Non-fibrous (other)	**None Detected**
720JH-02B *030918779-0005*	BOILER ROOM/ BOILER BREACHING BOILER INSULATION #1	Gray/White Fibrous Heterogeneous	5% 25%	Glass Synthetic	50% 20%	Ca Carbonate Non-fibrous (other)	**None Detected**

Analyst(s)

Williams John (111)

James Hall, Laboratory Manager
or other approved signatory

Samples analyzed by EMSL Analytical, Inc. New York 307 West 38th Street, New York NY NVLAP Lab Code 101048-9, AIHA IHLAP 102581, NYS ELAP 11506, CT PH-0170, MA AA000170

EMSL Analytical, Inc.
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Asbestos Analysis of Bulk Materials via EPA 600/R-93/116 Method using Polarized Light Microscopy

			Non-Asbestos				Asbestos
Sample	**Description**	**Appearance**	**%**	**Fibrous**	**%**	**Non-Fibrous**	**% Type**
720JH-02C *030918779-0006*	BOILER ROOM/ BOILER BREACHING BOILER INSULATION #1	Tan/Blue Fibrous Heterogeneous	15% 15%	Glass Synthetic	50% 20%	Ca Carbonate Non-fibrous (other)	**None Detected**
720JH-03A *030918779-0007*	BOILER ROOM/ BOILER INSULATION BOILER #2	Gray Fibrous Heterogeneous	25%	Glass	40% 35%	Ca Carbonate Non-fibrous (other)	**None Detected**
720JH-03B *030918779-0008*	BOILER ROOM/ BOILER INSULATION BOILER #1	Gray Fibrous Heterogeneous	35%	Glass	40% 25%	Ca Carbonate Non-fibrous (other)	**None Detected**
720JH-03C *030918779-0009*	BOILER ROOM/ BOILER INSULATION BOILER #1	Gray Fibrous Heterogeneous	15%	Glass	35% 50%	Ca Carbonate Non-fibrous (other)	**None Detected**
720JH-04A *030918779-0010*	BOILER ROOM/ VIBRATION ISOLATOR	Gray/White Fibrous Heterogeneous	95%	Glass	5%	Non-fibrous (other)	**None Detected**
720JH-04B *030918779-0011*	ATTIC/ VIBRATION ISOLATOR	Tan/White Fibrous Heterogeneous	25%	Cellulose	15%	Non-fibrous (other)	**60% Chrysotile**

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			Non-Asbestos				Asbestos
Sample	Description	Appearance	%	Fibrous	%	Non-Fibrous	% Type
720JH-05A *030918779-0012*	OFFICE NEAR ROOM 9/ PREFOUND B DOCK TYPE PIPE	White Fibrous Heterogeneous			50% 24%	Ca Carbonate Non-fibrous (other)	**15% Amosite 5% Chrysotile 6% Crocidolite**
720JH-05B *030918779-0013*	OFFICE NEAR ROOM 9/ PREFOUND B DOCK TYPE PIPE						**Stop Positive (Not Analyzed)**
720JH-05C *030918779-0014*	OFFICE NEAR ROOM 9/ PREFOUND B DOCK TYPE PIPE						**Stop Positive (Not Analyzed)**
720JH-06A *030918779-0015*	STORAGE NEAR ROOM 13/ AIRCELL PIPE INSULATION	White Fibrous Homogeneous	20%	Cellulose	10%	Non-fibrous (other)	**70% Chrysotile**
720JH-06B *030918779-0016*	CHASE NEAR ROOM 7 (CUSTODIAN)/ AIRCELL PIPE						**Stop Positive (Not Analyzed)**
720JH-06C *030918779-0017*	STAGE/ AIRCELL PIPE INSULATION						**Stop Positive (Not Analyzed)**

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			Non-Asbestos		Asbestos
Sample	**Description**	**Appearance**	**% Fibrous**	**% Non-Fibrous**	**% Type**
720JH-07A *030918779-0018*	STORAGE NEAR ROOM 13/ MUDDED FITTINGS	White Fibrous Homogeneous		50% Ca Carbonate 18% Non-fibrous (other)	**15% Amosite** **5% Chrysotile** **12% Crocidolite**
720JH-07B *030918779-0019*	STORAGE NEAR ROOM 13/ MUDDED FITTINGS				**Stop Positive (Not Analyzed)**
720JH-07C *030918779-0020*	STAGE/ MUDDED FITTINGS				**Stop Positive (Not Analyzed)**
720JH-08A *030918779-0021*	ROOM 10/ BLACK COVE BASE	Black Non-Fibrous Homogeneous		100% Non-fibrous (other)	**None Detected**
720JH-08B *030918779-0022*	ROOM 8/ BLACK COVE BASE	Black Non-Fibrous Homogeneous		100% Non-fibrous (other)	**None Detected**
720JH-08C *030918779-0023*	ROOM 5/ BLACK COVE BASE	Black Non-Fibrous Homogeneous		100% Non-fibrous (other)	**None Detected**
720JH-09A *030918779-0024*	ROOM 10/ BLACK MASTIC A/W BLACK COVE BASE	White/Black Non-Fibrous Heterogeneous	2% Cellulose	98% Non-fibrous (other)	**None Detected**

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			Non-Asbestos				Asbestos
Sample	**Description**	**Appearance**	**%**	**Fibrous**	**%**	**Non-Fibrous**	**% Type**
720JH-09B *030918779-0025*	ROOM 8/ BLACK MASTIC A/W BLACK COVE BASE	Black Non-Fibrous Heterogeneous			100%	Non-fibrous (other)	**None Detected**
720JH-09C *030918779-0026*	ROOM 5/ BLACK MASTIC A/W BLACK COVE BASE	Black Non-Fibrous Heterogeneous			100%	Non-fibrous (other)	**None Detected**
720JH-10A *030918779-0027*	ROOM 4/ VINYL WINDOW SILL	Gray/Tan Non-Fibrous Heterogeneous	20%	Cellulose	15% 65%	Ca Carbonate Non-fibrous (other)	**None Detected**
720JH-10B *030918779-0028*	ROOM 10/ VINYL WINDOW SILL	Brown/Gray Non-Fibrous Heterogeneous	25%	Cellulose	10% 65%	Ca Carbonate Non-fibrous (other)	**None Detected**
720JH-10C *030918779-0029*	ROOM 12/ VINYL WINDOW SILL	Brown/Gray Non-Fibrous Heterogeneous	20%	Cellulose	10% 70%	Ca Carbonate Non-fibrous (other)	**None Detected**
720JH-11A *030918779-0030*	LOOSE IN ATTIC/ 1X1 CEILING TILE PIN HOLE	Brown/White Fibrous Heterogeneous	85%	Cellulose	15%	Non-fibrous (other)	**None Detected**
720JH-11B *030918779-0031*	LOOSE IN ATTIC/ 1X1 CEILING TILE PIN HOLE	Brown/White Fibrous Heterogeneous	85%	Cellulose	15%	Non-fibrous (other)	**None Detected**

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Project: **20070914.A4E/ BOURNE PUBLIC SCHOOLS/ PEEBLES ELEMATARY**

Customer ID: ENVI54C
Customer PO:
Received: 07/24/09 9:00 AM
EMSL Order: 030918779

EMSL Proj:
Analysis Date: 7/25/2009

Asbestos Analysis of Bulk Materials via EPA 600/R-93/116 Method using Polarized Light Microscopy

Sample	Description	Appearance	Non-Asbestos % Fibrous		Non-Asbestos % Non-Fibrous		Asbestos % Type
720JH-11C *030918779-0032*	LOOSE IN ATTIC/ 1X1 CEILING TILE PIN HOLE	Brown/White Fibrous Heterogeneous	85%	Cellulose	15%	Non-fibrous (other)	**None Detected**
720JH-12A *030918779-0033*	LOOSE IN ATTIC/ DARK BROWN MASTIC A/W 1X1 CEILING	Brown Non-Fibrous Heterogeneous	5%	Cellulose	95%	Non-fibrous (other)	**None Detected**
720JH-12B *030918779-0034*	LOOSE IN ATTIC/ DARK BROWN MASTIC A/W 1X1 CEILING	Brown Non-Fibrous Heterogeneous	3%	Cellulose	97%	Non-fibrous (other)	**None Detected**
720JH-12C *030918779-0035*	LOOSE IN ATTIC/ DARK BROWN MASTIC A/W 1X1 CEILING	Brown Non-Fibrous Heterogeneous	5%	Cellulose	95%	Non-fibrous (other)	**None Detected**
720JH-13A *030918779-0036*	ROOM 22/ BLACK MASTIC A/W 9X9 FT	Black Non-Fibrous Homogeneous	2%	Cellulose	98%	Non-fibrous (other)	**None Detected**
720JH-13B *030918779-0037*	MAIN LOBBY/ BLACK MASTIC A/W 9X9 FT	Black Non-Fibrous Homogeneous	2%	Cellulose	98%	Non-fibrous (other)	**None Detected**

Analyst(s)

Williams John (111)

James Hall, Laboratory Manager
or other approved signatory

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Sample	Description	Appearance	Non-Asbestos % Fibrous	Non-Asbestos % Non-Fibrous	Asbestos % Type
720JH-13C *030918779-0038*	GROUND FLOOR HALL/ BLACK MASTIC A/W 9X9 FT	Black Non-Fibrous Homogeneous	<1% Cellulose	100% Non-fibrous (other)	**None Detected**
720JH-14A *030918779-0039*	ROOM 9/ BLACK MASTIC A/W 12X12 FT	Black Non-Fibrous Heterogeneous	3% Cellulose	97% Non-fibrous (other)	**None Detected**
720JH-14B *030918779-0040*	ROOM 12/ BLACK MASTIC A/W 12X12 FT	Black Non-Fibrous Heterogeneous	2% Cellulose	98% Non-fibrous (other)	**None Detected**
720JH-14C *030918779-0041*	BREEZEWAY BETWEEN ROOM 10 & 11 / BLACK MASTIC A/W	Brown/Black Non-Fibrous Heterogeneous	15% Cellulose	85% Non-fibrous (other)	**None Detected**
720JH-15A *030918779-0042*	ROOM 1/ BLUE/GREY W/ WHITE STREAKS 12X12	Gray/White Non-Fibrous Heterogeneous	INSUFFICENT MASTIC	20% Ca Carbonate 80% Non-fibrous (other)	**None Detected**
720JH-15B *030918779-0043*	ROOM 2/ BLUE/GREY W/ WHITE STREAKS 12X12	Gray/White Non-Fibrous Heterogeneous	INSUFFICENT MASTIC	20% Ca Carbonate 80% Non-fibrous (other)	**None Detected**

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Sample	Description	Appearance	Non-Asbestos % Fibrous	Non-Asbestos % Non-Fibrous	Asbestos % Type
720JH-15C *030918779-0044*	ROOM 3/ BLUE/GREY W/ WHITE STREAKS 12X12	Gray/White Non-Fibrous Heterogeneous		15% Ca Carbonate 85% Non-fibrous (other)	**None Detected**
			INSUFFICENT MASTIC		
720JH-16A *030918779-0045*	ROOM 6/ WHITE/YELLOW/ BORWN 12X12 FT	Beige Non-Fibrous Heterogeneous		85% Non-fibrous (other) 15% Quartz	**None Detected**
			INSUFFICENT MASTIC		
720JH-16B TILE *030918779-0046*	ROOM 6/ WHITE/YELLOW/ BORWN 12X12 FT	Beige Non-Fibrous Heterogeneous		90% Non-fibrous (other) 10% Quartz	**None Detected**
720JH-16B MASTIC *030918779-0046A*	ROOM 6/ WHITE/YELLOW/ BORWN 12X12 FT	Brown Non-Fibrous Heterogeneous	3% Cellulose	97% Non-fibrous (other)	**None Detected**
720JH-16C TILE *030918779-0047*	ROOM 6/ WHITE/YELLOW/ BORWN 12X12 FT	Beige Non-Fibrous Heterogeneous		85% Non-fibrous (other) 15% Quartz	**None Detected**
720JH-16C MASTIC *030918779-0047A*	ROOM 6/ WHITE/YELLOW/ BORWN 12X12 FT	Brown Non-Fibrous Heterogeneous	2% Cellulose	98% Non-fibrous (other)	**None Detected**

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Sample	Description	Appearance	Non-Asbestos % Fibrous	Non-Asbestos % Non-Fibrous	Asbestos % Type
720JH-17A TILE *030918779-0048*	ROOM 1/ TAN W/ WITE STREAKS 12X12 FT	Gray/White Non-Fibrous Heterogeneous		15% Ca Carbonate 85% Non-fibrous (other)	**None Detected**
720JH-17A MASTIC *030918779-0048A*	ROOM 1/ TAN W/ WITE STREAKS 12X12 FT	Black Non-Fibrous Homogeneous	2% Cellulose	98% Non-fibrous (other)	**None Detected**
720JH-17B TILE *030918779-0049*	ROOM 2/ TAN W/ WITE STREAKS 12X12 FT	Gray/White Non-Fibrous Heterogeneous		10% Ca Carbonate 90% Non-fibrous (other)	**None Detected**
720JH-17B MASTIC *030918779-0049A*	ROOM 2/ TAN W/ WITE STREAKS 12X12 FT	Black Non-Fibrous Heterogeneous	<1% Cellulose	100% Non-fibrous (other)	**None Detected**
720JH-17C TILE *030918779-0050*	ROOM 3/ TAN W/ WITE STREAKS 12X12 FT	Gray/White Non-Fibrous Heterogeneous		15% Ca Carbonate 85% Non-fibrous (other)	**None Detected**
720JH-17C MASTIC *030918779-0050A*	ROOM 3/ TAN W/ WITE STREAKS 12X12 FT	Black Non-Fibrous Homogeneous	2% Cellulose	98% Non-fibrous (other)	**None Detected**
720JH-18A *030918779-0051*	ROOM 8/ WHITE W/ BROWN & BLUE STREAKS 12X12 FT	Gray/White Non-Fibrous Heterogeneous	INSUFFICENT MASTIC	90% Non-fibrous (other) 10% Quartz	**None Detected**

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Asbestos Analysis of Bulk Materials via EPA 600/R-93/116 Method using Polarized Light Microscopy

Sample	Description	Appearance	Non-Asbestos % Fibrous	Non-Asbestos % Non-Fibrous	Asbestos % Type
720JH-18B *030918779-0052*	ROOM 8/ WHITE W/ BROWN & BLUE STREAKS 12X12 FT	Gray/White Non-Fibrous Heterogeneous	INSUFFICENT MASTIC	90% Non-fibrous (other) 10% Quartz	**None Detected**
720JH-18C *030918779-0053*	ROOM 8/ WHITE W/ BROWN & BLUE STREAKS 12X12 FT	Gray/White Non-Fibrous Heterogeneous	INSUFFICENT MASTIC	85% Non-fibrous (other) 15% Quartz	**None Detected**
720JH-19A *030918779-0054*	ROOM 4/ RED W/ PINK STREAKS 12X12 FT	Red Non-Fibrous Homogeneous	INSUFFICENT MASTIC	100% Non-fibrous (other)	**None Detected**
720JH-19B *030918779-0055*	ROOM 4/ RED W/ PINK STREAKS 12X12 FT	Red Non-Fibrous Homogeneous	INSUFFICENT MASTIC	100% Non-fibrous (other)	**None Detected**
720JH-19C *030918779-0056*	ROOM 4/ RED W/ PINK STREAKS 12X12 FT	Red Non-Fibrous Homogeneous	INSUFFICENT MASTIC	100% Non-fibrous (other)	**None Detected**

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Sample	Description	Appearance	Non-Asbestos % Fibrous	Non-Asbestos % Non-Fibrous	Asbestos % Type
720JH-20A TILE *030918779-0057*	ROOM 4/ BROWN W/ LT BROWN & DARK BROWN STREAKS	Gold Non-Fibrous Homogeneous		15% Ca Carbonate 85% Non-fibrous (other)	**None Detected**
720JH-20A MASTIC *030918779-0057A*	ROOM 4/ BROWN W/ LT BROWN & DARK BROWN STREAKS	Black Non-Fibrous Homogeneous	2% Cellulose	98% Non-fibrous (other)	**None Detected**
720JH-20B TILE *030918779-0058*	ROOM 4/ BROWN W/ LT BROWN & DARK BROWN STREAKS	Gold Non-Fibrous Homogeneous		15% Ca Carbonate 85% Non-fibrous (other)	**None Detected**
720JH-20B MASTIC *030918779-0058A*	ROOM 4/ BROWN W/ LT BROWN & DARK BROWN STREAKS	Black Non-Fibrous Homogeneous	<1% Cellulose	100% Non-fibrous (other)	**None Detected**
720JH-20C TILE *030918779-0059*	ROOM 4/ BROWN W/ LT BROWN & DARK BROWN STREAKS	Gold Non-Fibrous Homogeneous		15% Ca Carbonate 85% Non-fibrous (other)	**None Detected**

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Asbestos Analysis of Bulk Materials via EPA 600/R-93/116 Method using Polarized Light Microscopy

Sample	Description	Appearance	Non-Asbestos % Fibrous	Non-Asbestos % Non-Fibrous	Asbestos % Type
720JH-20C MASTIC *030918779-0059A*	ROOM 4/ BROWN W/ LT BROWN & DARK BROWN STREAKS	Black Non-Fibrous Homogeneous	2% Cellulose	98% Non-fibrous (other)	**None Detected**
720JH-21A *030918779-0060*	ROOM 9/ GREY W/ BROWN STREAKS 12X12 FT	Black Non-Fibrous Heterogeneous		15% Ca Carbonate 85% Non-fibrous (other)	**None Detected**
			INSUFFICENT MASTIC		
720JH-21B *030918779-0061*	ROOM 10/ GREY W/ BROWN STREAKS 12X12 FT	Black Non-Fibrous Heterogeneous		10% Ca Carbonate 90% Non-fibrous (other)	**None Detected**
			INSUFFICENT MASTIC		
720JH-21C *030918779-0062*	ROOM 12/ GREY W/ BROWN STREAKS 12X12 FT	Black Non-Fibrous Heterogeneous		15% Ca Carbonate 85% Non-fibrous (other)	**None Detected**
			INSUFFICENT MASTIC		
720JH-22A TILE *030918779-0063*	BREEZEWAY BETWEEN ROOM 10 & 11/ TAN W/ BROWN	Tan Non-Fibrous Heterogeneous		15% Ca Carbonate 85% Non-fibrous (other)	**None Detected**

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720JH-22A MASTIC *030918779-0063A*	BREEZEWAY BETWEEN ROOM 10 & 11/ TAN W/ BROWN	Brown Non-Fibrous Homogeneous	3% Cellulose	97% Non-fibrous (other)	**None Detected**
720JH-22B TILE *030918779-0064*	BREEZEWAY BETWEEN ROOM 10 & 11/ TAN W/ BROWN	Tan Non-Fibrous Heterogeneous		15% Ca Carbonate 85% Non-fibrous (other)	**None Detected**
720JH-22B MASTIC *030918779-0064A*	BREEZEWAY BETWEEN ROOM 10 & 11/ TAN W/ BROWN	Brown Non-Fibrous Homogeneous	2% Cellulose	98% Non-fibrous (other)	**None Detected**
720JH-22C TILE *030918779-0065*	BREEZEWAY BETWEEN ROOM 10 & 11/ TAN W/ BROWN	Tan Non-Fibrous Heterogeneous		15% Ca Carbonate 85% Non-fibrous (other)	**None Detected**
720JH-22C MASTIC *030918779-0065A*	BREEZEWAY BETWEEN ROOM 10 & 11/ TAN W/ BROWN	Brown Non-Fibrous Homogeneous	2% Cellulose	98% Non-fibrous (other)	**None Detected**
720JH-23A TILE *030918779-0066*	ROOM 12/ TAN W/ PINK & BROWN STREAK 12X12 FT	Tan Non-Fibrous Homogeneous		20% Ca Carbonate 80% Non-fibrous (other)	**None Detected**

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720JH-23A MASTIC *030918779-0066A*	ROOM 12/ TAN W/ PINK & BROWN STREAK 12X12 FT	Black Non-Fibrous Homogeneous	2% Cellulose	98% Non-fibrous (other)	**None Detected**
720JH-23B TILE *030918779-0067*	ROOM 12/ TAN W/ PINK & BROWN STREAK 12X12 FT	Tan Non-Fibrous Homogeneous		15% Ca Carbonate 85% Non-fibrous (other)	**None Detected**
720JH-23B MASTIC *030918779-0067A*	ROOM 12/ TAN W/ PINK & BROWN STREAK 12X12 FT	Black Non-Fibrous Homogeneous	<1% Cellulose	100% Non-fibrous (other)	**None Detected**
720JH-23C TILE *030918779-0068*	ROOM 12/ TAN W/ PINK & BROWN STREAK 12X12 FT	Brown Non-Fibrous Heterogeneous		15% Ca Carbonate 85% Non-fibrous (other)	**None Detected**
720JH-23C MASTIC *030918779-0068A*	ROOM 12/ TAN W/ PINK & BROWN STREAK 12X12 FT	Black Non-Fibrous Homogeneous	<1% Cellulose	100% Non-fibrous (other)	**None Detected**
720JH-24A TILE *030918779-0069*	ROOM 11/ TAN W/ BROWN & WHITE STREAKS 12X12 FT	Beige Non-Fibrous Homogeneous		10% Ca Carbonate 90% Non-fibrous (other)	**None Detected**

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720JH-24A MASTIC *030918779-0069A*	ROOM 11/ TAN W/ BROWN & WHITE STREAKS 12X12 FT	Black Non-Fibrous Homogeneous	2% Cellulose	98% Non-fibrous (other)	**None Detected**
720JH-24B *030918779-0070*	ROOM 11/ TAN W/ BROWN & WHITE STREAKS 12X12 FT	Beige Non-Fibrous Heterogeneous	2% Cellulose INSUFFICENT MASTIC	10% Ca Carbonate 88% Non-fibrous (other)	**None Detected**
720JH-24C *030918779-0071*	ROOM 11/ TAN W/ BROWN & WHITE STREAKS 12X12 FT	Beige Non-Fibrous Heterogeneous	3% Cellulose INSUFFICENT MASTIC	15% Ca Carbonate 82% Non-fibrous (other)	**None Detected**
720JH-25A TILE *030918779-0072*	ROOM 11/ BROWN W/ BROWN & WHITE STREAKS 12X12 FT	Brown Non-Fibrous Heterogeneous		20% Ca Carbonate 80% Non-fibrous (other)	**None Detected**

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720JH-25A MASTIC *030918779-0072A*	ROOM 11/ BROWN W/ BROWN & WHITE STREAKS 12X12 FT	Brown Non-Fibrous Heterogeneous	3% Cellulose	97% Non-fibrous (other)	**None Detected**
720JH-25B *030918779-0073*	ROOM 11/ BROWN W/ BROWN & WHITE STREAKS 12X12 FT	Brown Non-Fibrous Heterogeneous		10% Ca Carbonate 90% Non-fibrous (other)	**None Detected**
			INSUFFICENT MASTIC		
720JH-25C *030918779-0074*	ROOM 11/ BROWN W/ BROWN & WHITE STREAKS 12X12 FT	Brown Non-Fibrous Heterogeneous		15% Ca Carbonate 85% Non-fibrous (other)	**None Detected**
			INSUFFICENT MASTIC		
720JH-26A TILE *030918779-0075*	ROOM 9/ TAN W/ BROWN STREAKS 12X12 FT	Tan Non-Fibrous Heterogeneous		15% Ca Carbonate 85% Non-fibrous (other)	**None Detected**

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EMSL Analytical, Inc.
307 West 38th Street, New York, NY 10018
Phone: (212) 290-0051 Fax: (212) 290-0058 Email: manhattanlab@emsl.com

Attn: **Bob May**
Fuss & O' Neill EnviroScience, LLC
50 Redfield Street
Boston, MA 02122

Fax: (413) 647-0018 Phone: (617) 282-4675
Project: **20070914.A4E/ BOURNE PUBLIC SCHOOLS/ PEEBLES ELEMATARY**

Customer ID: ENVI54C
Customer PO:
Received: 07/24/09 9:00 AM
EMSL Order: 030918779
EMSL Proj:
Analysis Date: 7/25/2009

Asbestos Analysis of Bulk Materials via EPA 600/R-93/116 Method using Polarized Light Microscopy

Sample	Description	Appearance	Non-Asbestos % Fibrous	Non-Asbestos % Non-Fibrous	Asbestos % Type
720JH-26A MASTIC *030918779-0075A*	ROOM 9/ TAN W/ BROWN STREAKS 12X12 FT	Black Non-Fibrous Homogeneous	<1% Cellulose	100% Non-fibrous (other)	**None Detected**
720JH-26B TILE *030918779-0076*	ROOM 9/ TAN W/ BROWN STREAKS 12X12 FT	Tan Non-Fibrous Heterogeneous		20% Ca Carbonate 80% Non-fibrous (other)	**None Detected**
720JH-26B MASTIC *030918779-0076A*	ROOM 9/ TAN W/ BROWN STREAKS 12X12 FT	Black Non-Fibrous Homogeneous	2% Cellulose	98% Non-fibrous (other)	**None Detected**
720JH-26C TILE *030918779-0077*	ROOM 9/ TAN W/ BROWN STREAKS 12X12 FT	Tan Non-Fibrous Heterogeneous		15% Ca Carbonate 85% Non-fibrous (other)	**None Detected**
720JH-26C MASTIC *030918779-0077A*	ROOM 9/ TAN W/ BROWN STREAKS 12X12 FT	Black Non-Fibrous Homogeneous	2% Cellulose	98% Non-fibrous (other)	**None Detected**
720JH-27A *030918779-0078*	STAIRWELL NEAR 12/ PLASTER WALL ROUGH	Gray Non-Fibrous Heterogeneous		30% Gypsum 35% Non-fibrous (other) 35% Quartz	**None Detected**

Analyst(s)

Williams John (111)

James Hall, Laboratory Manager
or other approved signatory

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Asbestos Analysis of Bulk Materials via EPA 600/R-93/116 Method using Polarized Light Microscopy

Sample	Description	Appearance	Non-Asbestos % Fibrous	Non-Asbestos % Non-Fibrous	Asbestos % Type
720JH-27B *030918779-0079*	ROOM 1/ PLASTER WALL ROUGH	Gray Non-Fibrous Heterogeneous		20% Gypsum 35% Non-fibrous (other) 45% Quartz	**None Detected**
720JH-27C *030918779-0080*	OUTSIDE BOILER ROOM/ PLASTER WALL ROUGH	Gray Non-Fibrous Heterogeneous	3% Cellulose	20% Gypsum 37% Non-fibrous (other) 40% Quartz	**None Detected**
720JH-27D *030918779-0081*	ATTIC/ PLASTER WALL ROUGH	Gray Non-Fibrous Heterogeneous	2% Cellulose	20% Gypsum 45% Mica 33% Non-fibrous (other)	**None Detected**
720JH-27E *030918779-0082*	ATTIC/ PLASTER WALL ROUGH	Gray Non-Fibrous Heterogeneous	3% Cellulose	15% Gypsum 37% Non-fibrous (other) 45% Quartz	**None Detected**
720JH-27F *030918779-0083*	ROOM 10/ PLASTER WALL ROUGH	Gray Non-Fibrous Heterogeneous	<1% Cellulose	15% Gypsum 40% Non-fibrous (other) 45% Quartz	**None Detected**
720JH-27G *030918779-0084*	COSTODIAL CLOSET NEAR ROOM 7/ PLASTER WALL ROUGH	Gray Non-Fibrous Heterogeneous	2% Cellulose	15% Gypsum 43% Non-fibrous (other) 40% Quartz	**None Detected**

Analyst(s)

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Project: **20070914.A4E/ BOURNE PUBLIC SCHOOLS/ PEEBLES ELEMATARY**

Customer ID: ENVI54C
Customer PO:
Received: 07/24/09 9:00 AM
EMSL Order: 030918779
EMSL Proj:
Analysis Date: 7/25/2009

Asbestos Analysis of Bulk Materials via EPA 600/R-93/116 Method using Polarized Light Microscopy

			Non-Asbestos		Asbestos
Sample	Description	Appearance	% Fibrous	% Non-Fibrous	% Type
720JH-28A *030918779-0085*	STAIRWELL NEAR 12/ PLASTER WALL SKIM	White/Green Non-Fibrous Heterogeneous		50% Ca Carbonate 50% Non-fibrous (other)	None Detected
720JH-28B *030918779-0086*	ROOM 11/ PLASTER WALL SKIM	White Non-Fibrous Heterogeneous		50% Ca Carbonate 50% Non-fibrous (other)	None Detected
720JH-28C *030918779-0087*	OUTSIDE BOILER ROOM/ PLASTER WALL SKIM	White Non-Fibrous Heterogeneous		60% Ca Carbonate 40% Non-fibrous (other)	None Detected
720JH-28D *030918779-0088*	ATTIC/ PLASTER WALL SKIM	White/Green Non-Fibrous Heterogeneous		65% Ca Carbonate 35% Non-fibrous (other)	None Detected
720JH-28E *030918779-0089*	ATTIC/ PLASTER WALL SKIM	White/Green Non-Fibrous Heterogeneous		65% Ca Carbonate 35% Non-fibrous (other)	None Detected
720JH-28F *030918779-0090*	ROOM 1D/ PLASTER WALL SKIM	White Non-Fibrous Heterogeneous		60% Ca Carbonate 40% Non-fibrous (other)	None Detected

Analyst(s)

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Project: **20070914.A4E/ BOURNE PUBLIC SCHOOLS/ PEEBLES ELEMATARY**

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Received: 07/24/09 9:00 AM
EMSL Order: 030918779
EMSL Proj:
Analysis Date: 7/25/2009

Asbestos Analysis of Bulk Materials via EPA 600/R-93/116 Method using Polarized Light Microscopy

Sample	Description	Appearance	Non-Asbestos % Fibrous	Non-Asbestos % Non-Fibrous	Asbestos % Type
720JH-28G *030918779-0091*	CUSTODIAN CLOSET NEAR ROOM 7/ PLASTER WALL SKIM	White/Green Non-Fibrous Heterogeneous		50% Ca Carbonate 50% Non-fibrous (other)	**None Detected**
720JH-29A *030918779-0092*	ROOM 10/ PLASTER CEILING ROUGH	Tan Non-Fibrous Heterogeneous	2% Cellulose	53% Non-fibrous (other) 45% Quartz	**<1% Chrysotile**
720JH-29B *030918779-0093*	ROOM 11/ PLASTER CEILING ROUGH	Tan Non-Fibrous Heterogeneous	2% Cellulose	53% Non-fibrous (other) 45% Quartz	**<1% Chrysotile**
720JH-29C *030918779-0094*	ROOM 12/ PLASTER CEILING ROUGH	Tan Non-Fibrous Heterogeneous	<1% Cellulose	50% Non-fibrous (other) 50% Quartz	**<1% Chrysotile**
720JH-29D *030918779-0095*	ROOM 1/ PLASTER CEILING ROUGH	Tan Non-Fibrous Heterogeneous	2% Cellulose	53% Non-fibrous (other) 45% Quartz	**<1% Chrysotile**
720JH-29E *030918779-0096*	ROOM 2/ PLASTER CEILING ROUGH	Tan Non-Fibrous Heterogeneous	3% Cellulose	52% Non-fibrous (other) 45% Quartz	**<1% Chrysotile**
720JH-29F *030918779-0097*	ROOM 3/ PLASTER CEILING ROUGH	Tan Non-Fibrous Heterogeneous	2% Cellulose	48% Non-fibrous (other) 50% Quartz	**<1% Chrysotile**

Analyst(s)
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James Hall, Laboratory Manager
or other approved signatory

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Project: **20070914.A4E/ BOURNE PUBLIC SCHOOLS/ PEEBLES ELEMATARY**

Customer ID: ENVI54C
Customer PO:
Received: 07/24/09 9:00 AM
EMSL Order: 030918779
EMSL Proj:
Analysis Date: 7/25/2009

Asbestos Analysis of Bulk Materials via EPA 600/R-93/116 Method using Polarized Light Microscopy

Sample	Description	Appearance	Non-Asbestos % Fibrous	Non-Asbestos % Non-Fibrous	Asbestos % Type
720JH-29G *030918779-0098*	ROOM 6/ PLASTER CEILING ROUGH	Tan Non-Fibrous Heterogeneous	2% Cellulose	53% Non-fibrous (other) 45% Quartz	**<1% Chrysotile**
720JH-30A *030918779-0099*	ROOM 10/ PLASTER Skim CEILING ~~ROUGH~~	White Non-Fibrous Heterogeneous	5% Cellulose	50% Ca Carbonate 42% Non-fibrous (other)	**3% Chrysotile**
720JH-30B *030918779-0100*	ROOM 11/ PLASTER CEILING SKIM				**Stop Positive (Not Analyzed)**
720JH-30C *030918779-0101*	ROOM 12/ PLASTER CEILING SKIM				**Stop Positive (Not Analyzed)**
720JH-30D *030918779-0102*	ROOM 1/ PLASTER CEILING SKIM				**Stop Positive (Not Analyzed)**
720JH-30E *030918779-0103*	ROOM 2/ PLASTER CEILING SKIM				**Stop Positive (Not Analyzed)**
720JH-30F *030918779-0104*	ROOM 3/ PLASTER CEILING SKIM				**Stop Positive (Not Analyzed)**

Analyst(s)
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James Hall, Laboratory Manager
or other approved signatory

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Project: **20070914.A4E/ BOURNE PUBLIC SCHOOLS/ PEEBLES ELEMATARY**

Customer ID: ENVI54C
Customer PO:
Received: 07/24/09 9:00 AM
EMSL Order: 030918779
EMSL Proj:
Analysis Date: 7/25/2009

Asbestos Analysis of Bulk Materials via EPA 600/R-93/116 Method using Polarized Light Microscopy

			Non-Asbestos				Asbestos
Sample	**Description**	**Appearance**	**%**	**Fibrous**	**%**	**Non-Fibrous**	**% Type**
720JH-30G *030918779-0105*	ROOM 6/ PLASTER CEILING SKIM						**Stop Positive (Not Analyzed)**

Analyst(s)

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James Hall, Laboratory Manager
or other approved signatory

Samples analyzed by EMSL Analytical, Inc. New York 307 West 38th Street, New York NY NVLAP Lab Code 101048-9, AIHA IHLAP 102581, NYS ELAP 11506, CT PH-0170, MA AA000170

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SAMPLE LOG FOR ASBESTOS BULKS

09 JUL 24 AM 9:50

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Sheet 1 of 10

Project Name: Bourne Public Schools Project No. 20070914.A4E

Building: Peebles Elementary Project Manager: Bob May

Sample ID	Sample Location	Material		Result (%)
720JH-01A	Boiler Room	Hot water Tank insulation		
-01B	↓	↓		
-01C	↓	↓		
720JH-02A	↓	Boiler Breaching insulation	Boiler #2	
-02B	↓	↓	Boiler #1	
-02C	↓	↓	↓	
720JH-03A	↓	Boiler insulation	Boiler #2	
-03B	↓	↓	Boiler #1	
-03C	↓	↓	↓	
720JH-04A	↓	vibration isolator		
-04B	Attic	↓		

Analysis Method: ☒ PLM ☐ Other ____ Turnaround Time 48 hours

Based on the turnaround time indicated above, analyses are due to EnviroScience on or before this date: ____. Please call the EnviroScience Laboratory at (860) 953-2700 if analyses will be late.

#792097962462

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By SA 0940

Fax Results To: EnviroScience Consultants, Inc. Laboratory at 413-647-0018

Special Instructions: Stop @ first positive in each set

Samples Collected By: JH Date: 7/20/09 Time: Am/pm

Samples [Rec'd][Sent By]: [ ][JH] Date: [ ][7/22/09] Time: [ ][PM]

Samples Received By: SVASLOPEZ Date: 7/24/. Time: 9:50 AM

Shipped To: ☒ EMSL (State) ____ ☐ Other ____

Method of Shipment: ☒ Fed Ex ☐ UPS Overnight ☐ UPS Ground ☐ Other ____

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SAMPLE LOG FOR ASBESTOS BULKS

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Sheet 2 of 10

Project Name: Bourne Public Schools Project No. 20070914.A1E

Building: Peebles Elementary Project Manager: Bob May

Sample ID	Sample Location	Material		Result (%)
720JH-05A	Office near Room 9	Pre-formed block Type pipe insulation		
-05B	↓	↓		
-05C	↓	↓		
720JH-06A	storage near Room 13	AirCell pipe insulation		
-06B	Chase near Room 7 (custodial)	↓		
-06C	stage	↓		
720JH-07A	Storage near Room 13	mudded Fittings		
-07B	↓	↓		
-07C	stage	↓		
720JH-08A	Room 10	Black Cove Base		
-08B	Room 8	↓		

Analysis Method: ☒ PLM ☐ Other ______ Turnaround Time 48 hr

Based on the turnaround time indicated above, analyses are due to EnviroScience on or before this date: ______. Please call the EnviroScience Laboratory at (860) 953-2700 if analyses will be late.

Fax Results To: EnviroScience Consultants, Inc. Laboratory at 413-647-0018

Special Instructions: See 1st Page

Samples Collected By: JH Date: 7/20/09 Time: AM/PM

Samples [Rec'd][Sent By]: [ ][JH] Date: [ ][7/22/09] Time: [ ][PM]

Samples Received By: [illegible] Date: 7/24 Time: 9:50 AM

Shipped To: ☒ EMSL (State) ______ ☐ Other ______

Method of Shipment: ☒ Fed Ex ☐ UPS Overnight ☐ UPS Ground ☐ Other ______

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SAMPLE LOG FOR ASBESTOS BULKS

Sheet 3 of 10

Project Name: Bourne Public Schools Project No. 20070914.A4E

Building: Peebles Elementary Project Manager: Bob May

Sample ID	Sample Location	Material	Result (%)
-08C	Room 5	↓	
720JH-09A	Room 10	Black Mastic A/w Black core Base	
-09B	Room 8	↓	
-09C	Room 5	↓	
720JH-10A	Room 4	vinyl window sill	
-10B	Room 10	↓	
-10C	Room 12	↓	
720JH-11 A	Loose in Attic	1x1 ceiling Tile pin hole	
-11B	↓	↓	
-11C	↓	↓	
720JH-12A	↓	Dark Brown mastic A/w 1x1 ceiling tile	

Analysis Method: ☒ PLM ☐ Other ______ Turnaround Time 48 hours

Based on the turnaround time indicated above, analyses are due to EnviroScience on or before this date: ______. Please call the EnviroScience Laboratory at (860) 953-2700 if analyses will be late.

Fax Results To: EnviroScience Consultants, Inc. Laboratory at 413-647-0018

Special Instructions: See 1st page

Samples Collected By: JH Date: 7/20/09 Time: AM/PM

Samples [Rec'd][Sent By]: [ ][JH] Date: [ ][7/22/09] Time: [ ][PM]

Samples Received By: SB Date: 7/24 Time: 940 am

Shipped To: ☒ EMSL (State) ______ ☐ Other ______

Method of Shipment: ☒ Fed Ex ☐ UPS Overnight ☐ UPS Ground ☐ Other ______

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SAMPLE LOG FOR ASBESTOS BULKS

09 JUL 24 AM 9:50

Sheet 4 of 10

Project Name: Bourne Public Schools Project No. 20070914. A4E

Building: Peebles elementary Project Manager: Bob May

Sample ID	Sample Location	Material		Result (%)
-12B	↓	↓		
-12C	↓	↓		
720JH-13A	Room 22	Black mastic A/W 9x9 FT		
-13B	main Lobby	↓		
-13C	Ground Floor Hall	↓		
72054-14A	Room 9	Black mastic A/W 12X12 FT		
-14B	Room 12	↓		
-14C	Breezeway Between Room 10 & 11	↓		
720JH-15A	Room 1	Blue/grey w/ white streaks	12x12	
-15B	↓ 2	↓		
-15C	↓ 3	↓		

Analysis Method: ☒ PLM ☐ Other ______ Turnaround Time 48 hr.

Based on the turnaround time indicated above, analyses are due to EnviroScience on or before this date: ______. Please call the EnviroScience Laboratory at (860) 953-2700 if analyses will be late.

Fax Results To: EnviroScience Consultants, Inc. Laboratory at 413-647-0018

Special Instructions: See 1st page

Samples Collected By: JH Date: 7/20/09 Time: AM/PM

Samples [Rec'd] [Sent By]: [ ][ ] Date: [ ][ ] Time: [ ][ ]

Samples Received By: (SV) Date: 7/24/09 Time: 9:40am

Shipped To: ☒ EMSL (State) ______ ☐ Other ______

Method of Shipment: ☒ Fed Ex ☐ UPS Overnight ☐ UPS Ground ☐ Other ______

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SAMPLE LOG FOR ASBESTOS BULKS

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Sheet 5 of 10

Project Name: Bourne Public Schools Project No. 20070914. AIE

Building: Peebles Elementary Project Manager: Bob May

Sample ID	Sample Location	Material	Result (%)
720JH-16A	Room 6	white/Yellow/Brown 12x12 FT	
-16B	↓	↓	
-16C	↓	↓	
720JH-17A	Room 1	Tan w/ white streaks 12x12 FT	
-17B	↓ 2	↓	
-17C	↓ 3	↓	
720JH-18A	Room 8	white w/ Brown + Blue Streaks 12x12 FT	
-18B	↓	↓	
-18C	↓	↓	
720JH-19A	Room 4	Red w/ Pink Streaks 12x12 FT	
-19B	↓	↓	

Analysis Method: ☒ PLM ☐ Other ______ Turnaround Time 48 hr

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Fax Results To: EnviroScience Consultants, Inc. Laboratory at 413-647-0018

Special Instructions: See 1st page

Samples Collected By: JH Date: 7/20/09 Time: Am/Pm

Samples [Rec'd][Sent By]: [ ][ ] Date: [ ][ ] Time: [ ][ ]

Samples Received By: SV Date: 7/24/09 Time: 9:40 am

Shipped To: ☒ EMSL (State) ______ ☐ Other ______

Method of Shipment: ☒ Fed Ex ☐ UPS Overnight ☐ UPS Ground ☐ Other ______

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SAMPLE LOG FOR ASBESTOS BULKS

Sheet 6 of 10

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Project Name: Bourne Public Schools Project No. 20070914.AHE

Building: Peebles Elementary Project Manager: Bob May

Sample ID	Sample Location	Material	Result (%)
-19C	↓	↓	
720JH-20A	Room 4	Brown w/ LT Brown + Dark Brown streaks	
-20B	↓	12X12 FT	
-20C	↓	↓	
720JH-21A	Room 9	Grey w/ Brown streaks 12X12 FT	
-21B	↓ 10	↓	
-21C	↓ 12	↓	
720JH-22A	Breezeway between Room 10 & 11	Tan w/ Brown streaks 12X12 FT	
-22B	↓	↓	
-22C	↓	↓	
720JH-23A	Room 12	Tan w/ pink & Brown streak 12X12 FT	

Analysis Method: ☒ PLM ☐ Other ________ Turnaround Time 48 hrs

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Fax Results To: EnviroScience Consultants, Inc. Laboratory at 413-647-0018

Special Instructions: See 1st page

Samples Collected By: JH Date: 7/20/09 Time: AM/PM

Samples [Rec'd][Sent By]: [ ][ ] Date: [ ][ ] Time: [ ][ ]

Samples Received By: BV Date: 7/24/09 Time: 9:40am

Shipped To: ☒ EMSL (State) ________ ☐ Other ________

Method of Shipment: ☒ Fed Ex ☐ UPS Overnight ☐ UPS Ground ☐ Other ________

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SAMPLE LOG FOR ASBESTOS BULKS

Sheet 7 of 10

Project Name: Bourne Public Schools Project No. 20070914.A4E

Building: Peebles Elementary School Project Manager: Bob May

Sample ID	Sample Location	Material		Result (%)
-23B	↓	↓		
-23C	↓	↓		
720JH-24A	Room 11	Tan w/ Brown + white streaks 12x12 FT		
-24B	↓	↓		
-24C	↓	↓		
720JH-25A	↓	Brown w/ Brown + white streaks 12x12 FT		
-25B	↓	↓		
-25C	↓	↓		
720JH-26A	Room 9	Tan w/ Brown streaks 12x12 FT		
-26B	↓	↓		
-26C	↓	↓		

Analysis Method: ☒ PLM ☐ Other ______ Turnaround Time 48 hr

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Fax Results To: EnviroScience Consultants, Inc. Laboratory at 413-647-0018

Special Instructions: See 1st page

Samples Collected By: JH Date: 7/20/09 Time: Am/Pm

Samples [Rec'd] [Sent By]: [ ][ ] Date: [ ][ ] Time: [ ][ ]

Samples Received By: SO Date: 9/24/09 Time: 9:40am

Shipped To: ☒ EMSL (State) ______ ☐ Other ______

Method of Shipment: ☒ Fed Ex ☐ UPS Overnight ☐ UPS Ground ☐ Other ______

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(617) 282-4675 Fax: (617) 282-8253

SAMPLE LOG FOR ASBESTOS BULKS

09 JUL 24 AM 9:50

Sheet 8 of 10

Project Name: Bourne Public Schools

Project No: 2007 0914.A4E

Building: Peebles Elementary School

Project Manager: Bob May

Sample ID	Sample Location	Material	Result (%)
720JH-27A	stairwell near 12	Plaster wall Rough	
-27B	Room 11	↓	
-27C	outside Boiler Room		
-27D	Attic		
-27E	↓		
-27F	Room 10		
-27G	Custodial closet near Room 7	↓	
720JH-28A	stairwell near 12	Plaster wall Skim	
-28B	Room 11	↓	
-28C	outside Boiler Room		
-28D	attic	↓	

Analysis Method: ☒ PLM ☐ Other ______ Turnaround Time 48 hr

Based on the turnaround time indicated above, analyses are due to EnviroScience on or before this date: ______. Please call the EnviroScience Laboratory at (860) 953-2700 if analyses will be late.

Fax Results To: EnviroScience Consultants, Inc. Laboratory at 413-647-0018

Special Instructions: See 1st page

Samples Collected By: JH Date: 7/20/09 Time: Am/Pm

Samples [Rec'd][Sent By]: [ ][ ] Date: [ ][ ] Time: [ ][ ]

Samples Received By: [signature] Date: 7/24/09 Time: 9:40am

Shipped To: ☒ EMSL (State) ______ ☐ Other ______

Method of Shipment: ☒ Fed Ex ☐ UPS Overnight ☐ UPS Ground ☐ Other ______

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SAMPLE LOG FOR ASBESTOS BULKS

09 JUL 21 AM 9:50

EMSL MANHATTAN RECEIVED

Sheet 9 of 10

Project Name: Bourn Public Schools Project No. 20070914.A4F

Building: Peebles Elementary Project Manager: Bob May

Sample ID	Sample Location	Material		Result (%)
-28E	Attic			
-28F	Room 10			
-28G	Custodial Closet near Room 7			
720JH-29A	Room 10	Plaster Ceiling Rough		
-29B	Room 11			
-29C	Room 12			
-29D	Room 1			
-29E	Room 2			
-29F	Room 3			
-29G	Room 6			
720JH-30A	Room 10	Plaster Ceiling Skim		

Analysis Method: ☒ PLM ☐ Other ________ Turnaround Time 48 hrs

Based on the turnaround time indicated above, analyses are due to EnviroScience on or before this date: ________. Please call the EnviroScience Laboratory at (860) 953-2700 if analyses will be late.

Fax Results To: EnviroScience Consultants, Inc. Laboratory at 413-647-0018

Special Instructions: See 1st page

Samples Collected By: JH Date: 7/20/09 Time: AM/PM

Samples [Rec'd][Sent By]: [ ][ ] Date: [ ][ ] Time: [ ][ ]

Samples Received By: SV Date: 7/24/09 Time: 9:40am

Shipped To: ☒ EMSL (State) ________ ☐ Other ________

Method of Shipment: ☒ Fed Ex ☐ UPS Overnight ☐ UPS Ground ☐ Other ________

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SAMPLE LOG FOR ASBESTOS BULKS

09 JUL 24 AM 9:50

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Sheet 10 of 10

Project Name: Bourne Public Schools Project No. 20070914.A4E

Building: Peebles Elementary School Project Manager: Bob May

Sample ID	Sample Location	Material	Result (%)
-30B	Room 11	Plaster ceiling skim	
-30C	12		
-30D	1		
-30E	2		
-30F	3		
-30G	6		

Analysis Method: ☒ PLM ☐ Other ______ Turnaround Time 48 hrs

Based on the turnaround time indicated above, analyses are due to EnviroScience on or before this date: ______. Please call the EnviroScience Laboratory at (860) 953-2700 if analyses will be late.

Fax Results To: EnviroScience Consultants, Inc. Laboratory at 413-647-0018

Special Instructions: See 1st page

Samples Collected By: JH Date: 7/20/09 Time: AM/PM

Samples [Rec'd][Sent By]: [ ][JH] Date: [ ][7/22/09] Time: [ ][PM]

Samples Received By: SD Date: 7/24/09 Time: 9:40 am

Shipped To: ☒ EMSL (State) ______ ☐ Other ______

Method of Shipment: ☒ Fed Ex ☐ UPS Overnight ☐ UPS Ground ☐ Other ______

EMSL Analytical, Inc.
7 Constitution Way, Suite 107 Woburn, MA 01801
Tel/Fax: (781) 933-8411 / (781) 933-8412
http://www.EMSL.com / bostonlab@emsl.com

EMSL Order: 131506942
Customer ID: ENVI54
Customer PO: 20150666.A1E
Project ID:

Attention: Dustin Diedricksen
Fuss & O'Neill EnviroScience, LLC
146 Hartford Road
Manchester, CT 06040

Phone: (617) 778-3750
Fax: (888) 838-1160
Received Date: 11/30/2015 12:27 PM
Analysis Date: 11/30/2015
Collected Date: 11/30/2015

Project: 20150666.A1E / Peebles Elementary School, 70 Trowbridge Rd, Bourne, MA

Test Report: Asbestos Analysis of Bulk Materials via EPA 600/R-93/116 Method using Polarized Light Microscopy

			Non-Asbestos		Asbestos
Sample	**Description**	**Appearance**	**% Fibrous**	**% Non-Fibrous**	**% Type**
01A-MC-1130 *131506942-0001*	Exterior - Brown Exterior Window Frame Paper	Brown Fibrous Homogeneous	60% Cellulose	40% Non-fibrous (Other)	None Detected
01B-MC-1130 *131506942-0002*	Exterior - Brown Exterior Window Frame Paper	Brown Fibrous Homogeneous	60% Cellulose 2% Synthetic	38% Non-fibrous (Other)	None Detected

Analyst(s)
Michael Mink (2)

Alexander Maxinoski, Asbestos Laboratory Manager
or Other Approved Signatory

Initial Report From: 11/30/2015 17:50:05

OrderID: 131506942

131506942

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EMSL Customer No. ENVI54

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Phone (617) 282-4675 Fax (617) 282-8253

Asbestos Bulk Sample Chain-of-Custody

Sheet 1 of 1

Project Name: Peebles Elementary School **Project No.:** 20150666.A1E **Task:** ____

Building Name/Number: Peebles Elementary School **Project Manager:** D. Diedricksen

Site Address: 70 Trowbridge Rd, Bourne, Ma **Total # of Samples:** 2

Sample ID (#-Initials-Date)	Material Type (Size, Color, Description, Material)	Sample Location	Comments/ Quantities
01A-MC-1130	Brown Exterior Window Frame Paper	Exterior	
01B-MC-1130	Brown Exterior Window Frame Paper	Exterior	

Analysis Method: ☒ PLM ☐ TEM ☐ Other ____ Turnaround Time: 6 hr

Please call EnviroScience at (617) 282-4675 if analyses will not be completed for requested t/a/t listed above.

Email Results to: **Ddiedricksen** **@fando.com** **Do Not Mail Hard Copy Report** **FAX Results to: 888-838-1160.**

Special Instructions: Stop analysis on first positive sample in each homogeneous set of samples unless otherwise noted. Do not layer samples unless indicated. Do not point count. If NOB group samples are **ALL** negative by PLM, analyze the sample denoted with a star (★) by **TEM NOB** on a ____ t/a/t. Analyze a **MAXIMUM** of ____ samples by **TEM in noted order.**

Samples Collected by: Mike Coffey **Date:** 11/28/15

Samples Sent by: **Mike Coffey** **Date:** 11/30/15 **Time:** pm

Shipped To: ☒ EMSL ☐ Other ____

Method of Shipment: ☐ Fed Ex ☒ Lab Drop Off ☐ Other ____

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WI By Ju 12:27

Appendix D

XRF Lead-Based Paint Screening Field Data Sheets

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XRF Lead-Based Paint Screening Field Data Sheet

Inspector:
XRF Model: RMD – LPA-1 **Serial:**

Project Name: Peebles Elementary School Feasibility Study **Date:** 10/28/15

Building Name/Number: Peebles Elementary School **Project Number:** 20150666.A1E

Site Address: 70 Trowbridge Road, Bourne, Massachusetts **Project Manager:** Dustin Diedricksen

XRF Calibration Check - RMD (0.7 to 1.3 mg/cm² inclusive)

	First Reading	Second Reading	Third Reading	Average
Start Check	1.0	1.0	1.0	1.0
Finish Check	1.0	1.0	1.0	1.0

Room	Side	Surface/Component	Color	Substrate*	XRF Reading	Positive
Basement Corridor	ABC	Wall	light purple		0.1	
	A	Wall	White		0.2	
	A	Wall	yellow		0.2	
	A	Wall	purple		0.1	
	A	Wall	pink		-0.2	
	A	Wall	light blue		-0.1	
	ABCD	Ceramic tile baseboard	green	CT	1.0	
	Floor	9 x 9 floor tile	Brown		-0.3	
	C	Window Frame	white	W	0.0	
→ RM 13	ABCD	Wall	white	D	-0.0	
	ABCD	Baseboard	Black	VR	-0.2	
	A	closet door	Brown	W	-0.2	
		→ Frame	tan	W	-0.1	
	B	Door frame	blue	W	-0.2	
→ Brick Boys BR	ABCD	Bathroom Wall	white	D	-0.1	
		→ ceramic tile	yellow	CT	0.0	
→ Girls BR	ABCD	Wall (upper)	white	P	-0.1	
	ABCD	lower Wall	pink	CT	-0.1	
	Floor	floor	Pink	CT	-0.1	
	A	Door	Brown	Wood	0.0	

* Substrate Type: M = Metal, W = Wood, P = Plaster, D = Drywall, C = Concrete, B = Brick, CMU = Concrete Masonry Unit, A = Aluminum, CT = Ceramic Tile
N/A = Not Accessible, N/C = Not Coated, COV = Covered, VR = Vinyl Replacement, POS = Positive

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XRF Lead-Based Paint Screening Field Data Sheet

Project Name: Peebles Elementary School Feasibility Study **Project Number:** 20150666.A1E

Room	Side	Surface/Component	Color	Substrate*	XRF Reading	Positive
~~[illegible]~~		↳ frame	Blue	M	0.2	
↳ RM	ABCD	Wall	White	P	-0.1	
	C	Window Components	Silver	M	-0.1	
	C	Ballards	White	M	2.3	
	B	Closet Wall	Blue Green	D	-0.0	
	ABCD	lower wall	Brown	W	0.1	
	ABCD	Vinyl Baseboard	Black	VR	-0.3	
	C	Heating Unit	Brown / Blue	M	-0.1	
	C	Composite Sill	Black		0.0	
	D	Door	Brown	W	-0.1	
		↳ frame	blue	M	-0.1	
↳ Boys Room	ABCD	Upper wall	White	P	-0.1	
	ABCD	lower wall	Yellow	CT	-0.2	
	Ceiling	Ceiling	White	P	-0.1	
↳ Custodian RM	ABCD	Wall	light Brown	D	+0.1	
	A	Door	Brown	W	-0.1	
		↳ Frame	Blue	M	0.0	
	C	Chase Door	Pink	M	0.2	
↳ Girls Room	ABCD	Upper wall	white	P	-0.1	
	ABCD	lower wall	Pink	CT	0.0	
	floor	floor	Pink	CT	-0.2	
↳ Room 11	ABCD	Upper wall	White	P	-0.1	
	C	White Ballard	White	M	2.3	
	ABCD	Vinyl Baseboard	Black	V	-0.5	
↳ RM 10	ABCD	Wall	White	P	-0.0	
↳ Storage	ABCD	wall	White	P	0.0	
	B	Pipes	White	—	0.1	
↳ RM	ABCD	Wall	White	P	-0.1	
↳ Cafeteria	ABCD	lower Wall	green	CT	0.5	
	ABCD	Upper Wall	White	P	-0.0	
		Ballards	Yellow	M	2.3	

* Substrate Type: M = Metal, W = Wood, P = Plaster, D = Drywall, C = Concrete, B = Brick, CMU = Concrete Masonry Unit, A = Aluminum, CT = Ceramic Tile
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XRF Lead-Based Paint Screening Field Data Sheet

Project Name: Peebles Elementary School Feasibility Study **Project Number:** 20150666.A1E

Room	Side	Surface/Component	Color	Substrate*	XRF Reading	Positive
Gymnasium	ABCD	Upper Wall	Blue	P	0.2	
		lower wall	Brown	W	0.0	

* Substrate Type: M = Metal, W = Wood, P = Plaster, D = Drywall, C = Concrete, B = Brick, CMU = Concrete Masonry Unit, A = Aluminum, CT = Ceramic Tile
N/A = Not Accessible, N/C = Not Coated, COV = Covered, VR = Vinyl Replacement, POS = Positive