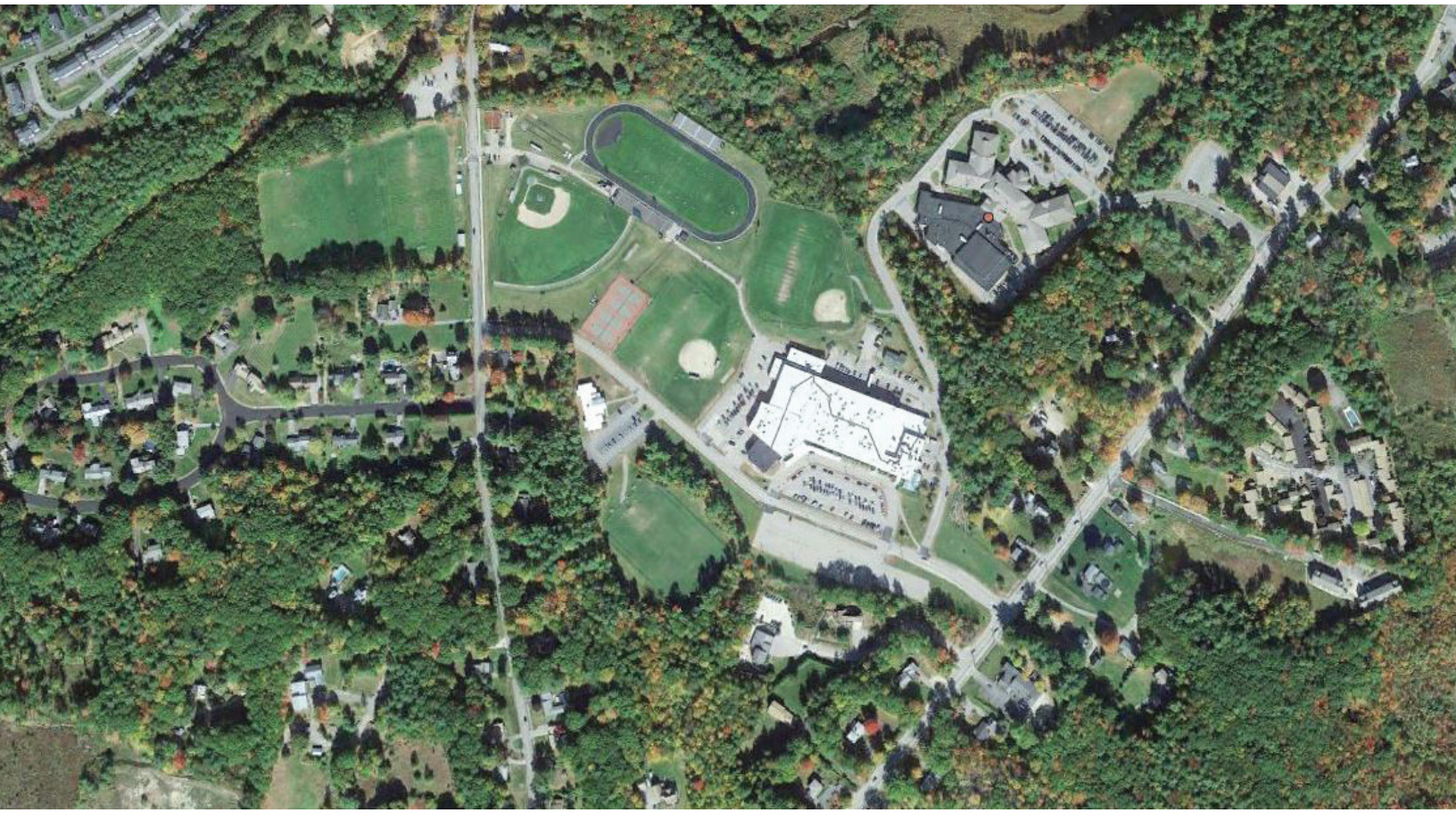
DOVER HIGH SCHOOL AND CAREER TECHNICAL CENTER

Site & Building Assesment Report

Dover, New Hampshire

February 2015



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Acknowledgements

We wish to thank the following individuals for their assistance and their contributions to this feasibility study:

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Section 1

Overview

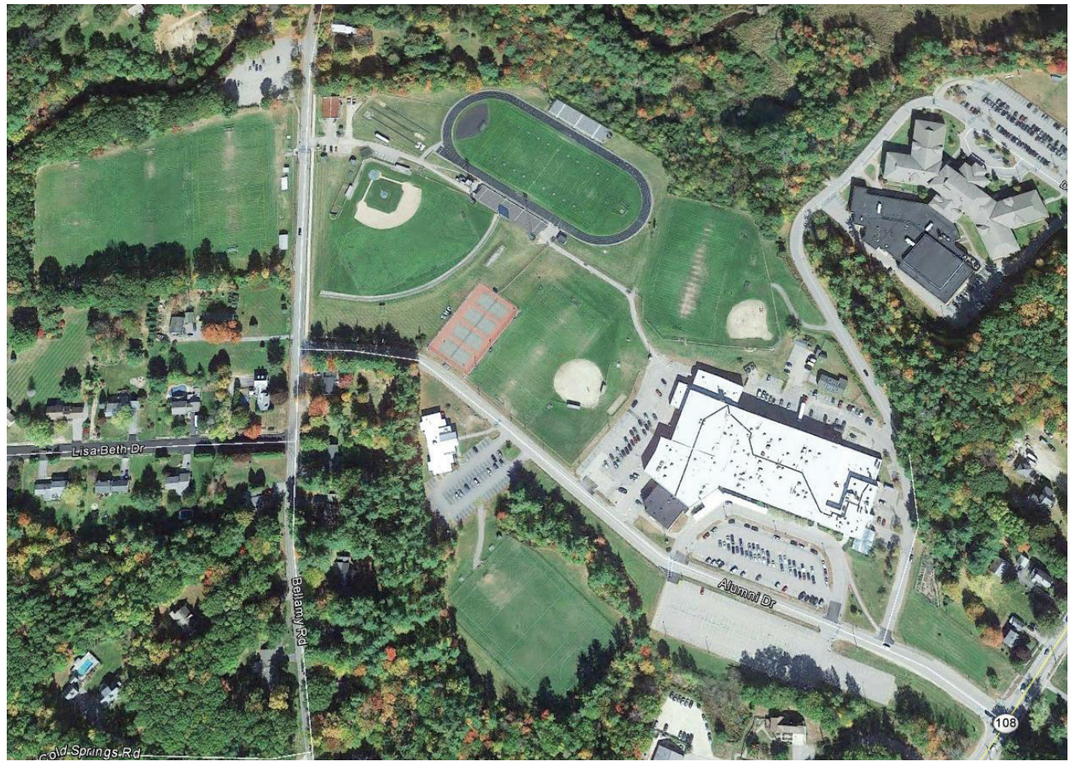


Image courtesy Google Maps

Aerial View of Dover High School & Career Technical Center

Introduction

HMFH Architects, Inc was hired by the Dover Joint Building Committee to undertake a Feasibility Study for the future of The Dover High School & Regional Career Technical Center (DHS-CTC) located at 25 Alumni Drive, in Dover New Hampshire. This Existing Conditions Analysis represents a portion of that Feasibility Study. The intent of this analysis is to understand the state of the existing facility including architectural components, structural systems, mechanical, electrical, fire protection, plumbing, general civil engineering systems, and landscaping components.

The following information was gathered from various site visits at the Dover High School & Regional Career Technical Center (DHS-CTC) during January and February of 2015. Jeffery White, Director of Facilities for the Dover School System was instrumental in locating historical documentation and providing detailed information on current systems.

The campus is approximately 44 acres, with several play and practice fields for baseball, softball, football, track, field hockey, lacrosse, and other athletic programs. The original high school was designed by Dirsha & Lampron Architects & Engineers, and built in 1967. In 1989, Lavallee / Brensinger Architects were hired to design the Career Tech Center addition, and in 2002 McHenry Architecture was hired to design a World Language Classroom addition, once commonly referred to as the "Freshman Academy". Throughout this report the 3 buildings making up the High School and CTC are referred to as the 1967 building, the 1989 building and the 2002 building. The current school is approximately 250,000 square feet and has around 1300 full time Dover High School students, and 75 Career Technical Center students, from other regional schools. Some of the larger capital projects include:

- 1970 addition of tin storage shed added to the grounds
- 1991 part of the girls locker room was converted to a weight room
- 1999 the administration and art rooms were renovated,
- 2000 an accessible ramp was constructed to connect the main entry to the first floor level
- 2002 a boiler replacement project was undertaken
- 2007 new bleachers were installed in the gymnasium,
- 2008 the roof was replaced
- 2009 a new barn was built for the Animal Science Career Tech Program
- 2010 new flashing was installed on the Freshman Academy
- 2014 the home side gym bleachers were replaced.

Executive Summary

The report details the conditions of the systems and provides recommendations for renovations and repair. The building has been well maintained throughout the years; however most of finishes and systems, many of which are original to the school have exceeded their useful life, and will require replacement with any renovation. Substantial renovations will trigger compliance with current code. Key issues to be aware of include:

- Lateral and seismic loading issues are a concern on all three of the buildings but particularly in the 1967 building where a complete seismic retrofit would be recommended. The nature of the existing columns, footings and floor framing system make any seismic upgrade challenging,
- Concerns about the concrete entry canopy seismic resistance as well as intensive ongoing maintenance associated with the canopy
- Lack of general code compliant accessibility, accessible toilets, and challenging accessible paths throughout,
- Lack of code complaint egress including enclosure of 2 stairs, handrails at 2 stairs, and quantity of egress doors,
- 50 % of classrooms are interior with no natural light. Many have poor quality artificial light
- Thermal control in many classrooms is poor
- Energy inefficient walls and roof,
- The Kalwall exterior window wall system on the 1967 building should be replaced,
- Most terminal heating equipment, air handling equipment, cooling and piping systems should be replaced as part of any substantial renovations,
- All branch circuit wiring, lighting systems and fire alarm systems should be replaced as part of any substantial renovations,
- All plumbing fixture should be replaced as part of any substantial renovations,
- All sprinkler heads in the 1967 and the 1989 buildings should be replaced as part of any substantial renovations,
- Most interior partitions are 4”cmu and do not meet current acoustical separation standards,
- Existing Floor to floor heights for the 2nd and 3rd floors are low creating challenges for retrofitting ductwork to meet requirements for today’s building code.

As bulleted above and described in detail below many systems, components and finishes within the school are in need of replacement. Accessibility challenges within the entire building are significant. A renovation addressing these issues will likely trigger code compliance for conditions that are currently “grandfathered”. Specifically, any renovation with a work area of more than 50% of the existing building will require substantial compliance with current codes. The 3-story portion of the 1967 building is of particular concern due to the lateral and seismic issues within the building and the structural complexity associated with addressing those concerns.

Section 2

Architectural Existing Conditions

View of Roof with snow cover

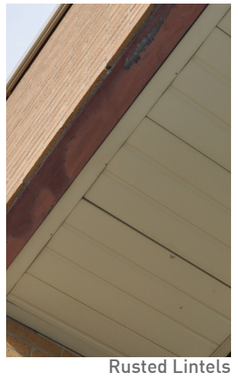
View of Entrance Canopy

Flaking Plaster at Entrance Canopy

Exterior Wall System 1 - Brick Veneer

Stained Brick

Visible Efflorescence



Rusted Lintels

Cracked Sealant

Exterior Systems

Roof Systems

In 2008, a new white Thermoplastic Polyolefin (TPO) roof was installed over the entire school. These roofs generally carry a 20 year prorated warranty, so the roof is 7 years old, and in generally good condition. When walking the site, the roof was covered in 3" to 4" of snow. When viewing the roof in this condition, the melting pattern of the snow on the roof indicated areas where heat was escaping due to the thermal breaks at the roof fasteners. This melting pattern might imply the installation of the mechanical fasteners was directly connected to the metal deck. Further investigation into this melting pattern is recommended should the building be renovated.

Entrance Canopy

At the main entrance a large double barrel vaulted canopy covers the walkway approach to the school. The canopy is held up by painted concrete columns, and the roof structure is concrete with painted plaster. The structure itself is sound, however the plaster is continuously flaking, requiring yearly maintenance repairs. (See Structural Report for further information)

Exterior Wall Systems

There are two main exterior wall systems used in the construction of the 1967 portion of Dover High School. The first is a brick veneer attached to a 10" concrete masonry unit backup system, and 1" rigid poly-urethane insulation. The second is an aluminum curtain wall system attached to the steel super structure. The curtain wall frame is in filled with Kalwall panels and windows. Neither of the exterior wall systems meets the insulation requirements of today's International Energy Conservation Code (IECC 2009). The current code also requires a continuous Air Barrier, which is not indicated to be present in the 1967 construction documents for the school; however it is assumed a mastic weather-barrier was installed, as it was a common construction practice at the time. Without selective demolition, it is difficult to confirm the continuity of the mastic barrier and how well it was tied into with the windows systems. In addition, Kalwall panels have been tested by Kalwall to have approximately a 50 year expected life, which will be reached in 2017 for the 1967 portion of Dover High School. With any renovation, replacement of the Kalwall Panels is recommended. The masonry portions of the 1967 building have held up well over the years, with minimal cracking in the brick. Efflorescence is visible in the masonry in some areas of the building which indicates areas of water flowing out of the brick, and possible issues with the air space and drainage cavity behind the brick. Staining of the brick occurs where water weeps from the Kalwall panels.

Exterior Wall System 2 - Curtain Wall with Kalwall Infill

Stained Brick Under Curtain Wall System

CTC Entrance & Brick in Disrepair

2002 Addition with Visible Efflorescence

Roll Up Garage Doors

Windows Located at Grade, same window after snow storm

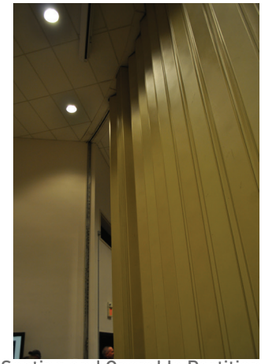
The sealant around windows, doors, and control joints is showing signs of cracking, and some of the visible loose lintels are rusting with decay. There are various corners around the building where brick has been damaged and requires replacement. Although the masonry wall system does not meet today's code, The overall condition appears to be good, and with minimal work, new sealant, selective repointing, selective brick replacement, and a thorough cleaning, further investigation to its reuse should the building be renovated is recommended.

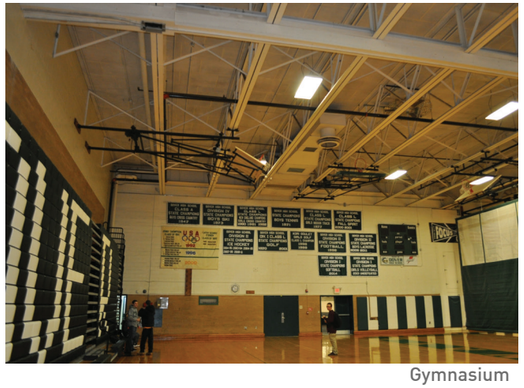
Both the addition added in 1989 & 2002 utilize a similar brick veneer wall system with a CMU back up wall and 2" of rigid poly-urethane insulation. This wall construction would meet today's IECC 2009, using an alternate compliance method. Over all the brick veneer is in good shape, with small areas of visible staining at window sills, and the 2002 addition has visible efflorescence stains. Further investigation regarding the efflorescent stains is recommended, to ensure there is not a larger problem with the drainage cavity and weeps of the wall system, that can lead to larger failures of the wall system over time.

Windows & Exterior Doors

The windows at the 1967 building are original to the building. They are aluminum with a single pane 1/4" tempered glass. There are a variety of fixed and operating windows. The windows are still functioning, but have exceeded their useful life and complete replacement is recommended if a renovation option is selected. As noted in the summary, many of the interior spaces do not have any windows; in fact 21 out of 52 classrooms are interior with no views to the exterior. The current configurations of windows would not qualify for the prerequisite access to views or the day lighting credits for LEED, which is one rating system for high performance buildings. The 2002 addition have aluminum frame windows with double glazing. These windows are approaching their half life, and have been reported to have significant drafts. Overall the window construction is in good condition. The exterior doors are constructed of aluminum with aluminum frames and have ¼" tempered glass similar to the windows. There are 9 roll up garage doors, 7 of which are used for CTC, and two at the loading docks. The roll up doors are functioning and in fair condition, replacement is recomended. The windows on the lower level of the north side are located almost at grade, and have to be shoveled out when it snows, creating a maintenance nightmare, and increase risk for leaking.


Auditorium



Fixed Seating and Operable Partition


Gymnasium



Drinking Fountain, Aged Base Board & Cracking CMU



Boy's Locker Rooms


Weight Rooms

Interior Conditions - Spaces

Auditorium

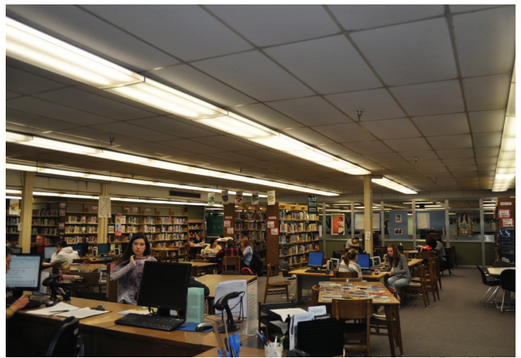
The Auditorium is a double height space with original fixed metal seating. The slope of the Auditorium floor is too steep to meet ADA and no wheelchair locations with companion seat are currently provided. Also, the auditorium stage is not accessible from the seating area. A wheelchair lift or ramp system would need to be installed to correct this problem. There are no assisted listening devices currently provided. One would need to be installed. There is no accessible access to the back of the house seating that rises up to the floor above. The areas of seating that rise up to the second floor were also originally designed to be separated from the main auditorium space with large movable partitions which no longer work, and the school has found that parts are no longer made for these partitions. The seating throughout the auditorium is damaged uncomfortable and generally in poor condition. Given the large size of the Auditorium it may be cost effective to renovate this portion of the existing school.

Gymnasium

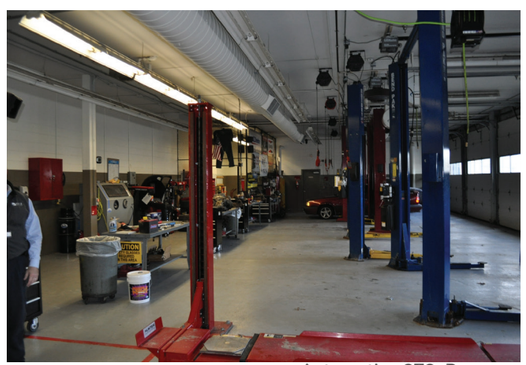
The Gymnasium is approximately 13,690 square feet allowing for two full size gym stations, with a divider curtain separating the two courts. A main basketball court can be created by pulling out the retractable bleachers on either end. The visitor bleachers were replaced in 2002, and then the home side bleacher were replaced in 2014. The athletic equipment such as basket ball backstops and nets are in fair condition. There is a climbing wall on the Southwest wall that appears to be in good condition. The wood floors have been well maintained, and are in fair condition, however due to their age replacement is recommended. The lower third of the gym wall is exposed brick, with portions covered with aged wall padding for safety, and the upper two thirds of the wall is painted CMU. There is a settlement cracking pattern in the CMU that would require further investigation should the space be renovated. The base around the gym is wood and projects out about 4" from the wall. This wood is in poor condition and should be replaced. The drinking fountains are in poor conditions and have visible rust and have stained the brick around them. The bathrooms and locker rooms adjacent to the gym are large but are in poor condition. The lighting is poor in the locker rooms, and cracked ceramic tile on the walls has been replaced over the years with various colors not matching the original. The boy's locker room showers are not used for showering and a portion of them is now used for overflow gym storage. Part of the original Girl's Locker Room has been converted to a weight room. The weight room was only sized to accommodate lifting weights and will not accommodate cardio equipment.


Cafetorium


Kitchen Rubber Floor


Library, No Natural Daylight


Interior Aluminum Wall System & Aged Bookshelves


Automotive CTC Program


Electrical Technology CTC Program

Cafeteria and Kitchen
The existing Cafeteria and Kitchen are located in the lowest level of the building adjacent to the original loading dock. The large trucks that service the school cannot make the turn into the original loading dock so it has been abandoned. Currently trucks use a loading dock at the opposite end of the school near the CTC addition and the goods for the kitchen are transported a significant distance through the corridors. This is not the most efficient layout for deliveries but the school has made it work. Both Cafeteria and kitchen are adequate in size, but the kitchen equipment is out of date and past its useful life. The floor of the kitchen has been replaced to a rubber floor due to heaving and cracking issues of the quarry tile.

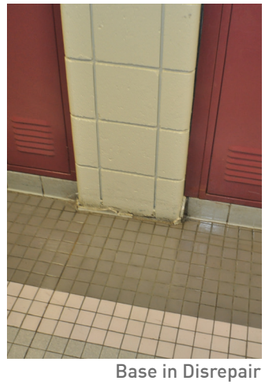
Library
The Library is located central to the school on the main level. There are no exterior windows or natural light, and the interior lighting is poor. This interior space is furnished with aged tables, chairs and book shelves. The wall paper is original to the school, and shows visible tears and repairs with duct tape. The space requires a complete renovation, and all finishes should be replaced. This space would benefit greatly from natural light.

Career Technical Spaces
The majority of the Career Technical Spaces are overall in good condition; however the configuration of many of the spaces does not meet the programmatic needs of the different departments. The current spaces do not adequately separate noise and smells from that adjacent hallways and classrooms above. Every Thursday the smells from washing of dogs in the Animal Science Program permeates through the school. The Automotive Center's gas and oil smells also travel through the school, and complaints about the smells are constant. A recent flood and lack of dehumidification has allowed mold growth on the lower floor in many of the CTC spaces. The equipment for the various departments varies in age, however much of it will be able to be used in a new school or renovated school. The overall structure and finishes in the space are in good condition, with the exception of the corridor tile, which is cracking.


CMU Wall


Typical Corridor


Typical Classroom - Asbestos Tile Floor


Base in Disrepair


Cracked Tile Floor


Cracked Tile Floor


Classroom to Corridor Transition


Missing Expansion Joint at 2002 Addition

Interior Conditions - Materials

Interior Partitions

The typical interior partitions between through the school are concrete masonry units (CMU). The overall condition of the interior walls appears to be in fair condition, with minor cracking throughout as to be expected with CMU and plaster. The permanent nature of CMU does not lend itself well for renovations as it is very difficult to move walls, reuse, and run new conduit, piping and ductwork for building technology and systems upgrades. There are large interior classrooms spaces that utilize movable partitions to break the large classroom into smaller classrooms, these partitions are in fair condition, however they do not provide the necessary acoustical separation between classrooms spaces to be in agreement with today's acoustical standards. The bathroom walls are full height ceramic tile and base, with visible cracks and dated colors. Full replacement is recommended.

Floors

The 1966 portion of DHS has a variety of floor types throughout the school. The corridors, kitchen, bathrooms, and lockers rooms are ceramic tile, the classrooms and cafeteria are Vinyl Coated Tile (VCT), the auditorium, library, computer room, administration areas and select other spaces have carpet, the gymnasium is athletic wood flooring. All of the flooring in the 1966 portion of the school is beyond its useful life and would require full replacement. The 2012 AHERA report as attached in the appendix, indicates that all of the flooring listed above with the exception of the gym floor is assumed to have asbestos containing material, and would need full remediation prior with any renovation , demolition or addition.

The 1989 addition also has a variety of floor types throughout, including exposed concrete in the shop areas, VCT in the classroom areas, and ceramic tiles in the corridors. Overall the exposed concrete areas have slight cracking as to be expected. Both the VCT and Ceramic Tile flooring is beyond its useful life and too is listed in the AHERA report requiring full abatement.

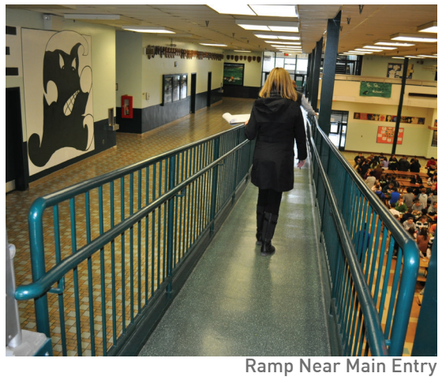
The 2002 addition primarily has VCT in the corridors and classrooms. The overall condition of this VCT is fair condition and is 13 years old nearing its life expectancy of 15-20 years. Given that these floors were installed in 2002, the likely hood that asbestos containing materials were used is rare, and the 2012 AHERA report does not list these spaces. However, if a renovation option is selected, it would be recommended to replace these floors.

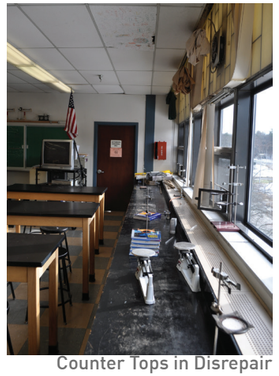

Typical Corridor Ceiling in Disrepair


Typical Interior Classroom Ceiling

Typical, Painted Ceiling Tiles


Chipped Blue Stone Treads


Ramp Near Main Entry


Counter Tops in Disrepair


Original Chemical Shower


Typical Science Classroom Casework

Ceilings
Acoustic Ceiling Tile (ACT) is installed throughout the school, and is in complete disrepair. Much of the ceiling tile and grid is warped, stained, or painted. None of the existing ceiling tile and grid is salvageable and will require full replacement with any renovation.

Ramps, Stairs & Elevator
There is one permanent ramp in the school located approximately 140 feet from the main entrance. The ramp is approximately 60 feet long and connects the main entry level to the first floor. The ramp is constructed of painted steel stringers, guardrails and handrails. In the 1967 building there are 4 main stairs that connect all three levels. The stairs are constructed of painted steel stringers and risers, with slate treads, and stainless steel hand rails. The handrails are 36" high and require a guardrail up to 42" high to be compliant with Current code. The vertical supports are spaced approximately every 3 ft, and do not have any infill pickets. The maximum opening between pickets to meet current code is 4". Any renovation would require full replacement of the handrail and guardrails (see full code analysis in Appendix). The treads are made of blue Stone and chipping throughout. The 1989 CTC addition added one stair and a new entrance to the CTC building. The entrance is equipped with a vertical platform lift for accessibility. The 2002 World Language Addition also added a stair, which is equipped with a stair lift for accessibility, however a stair lift is not recognized by ADA or IBC to be included as part of an accessible route. There is one elevator located in the Northeast corner of the 1967 building, and was constructed with the original school. Replacement of the elevator is recommended with any new renovation, and would be required to be brought up to current elevator and ADA codes. See Section 4.3 for a full code analysis of the existing building.

Interior Built-in Furnishings
All of the interior built in furnishing are original to the school, and in poor condition. The majority of built in casework is located in the science classrooms and labs. Full replacement is recommended with any renovation.

Multiple Levels

Rails and Guards

Inaccessible Toilet Stalls

Hardware Issues

Lift at CTC Entrance

Inaccessible Water Fountain

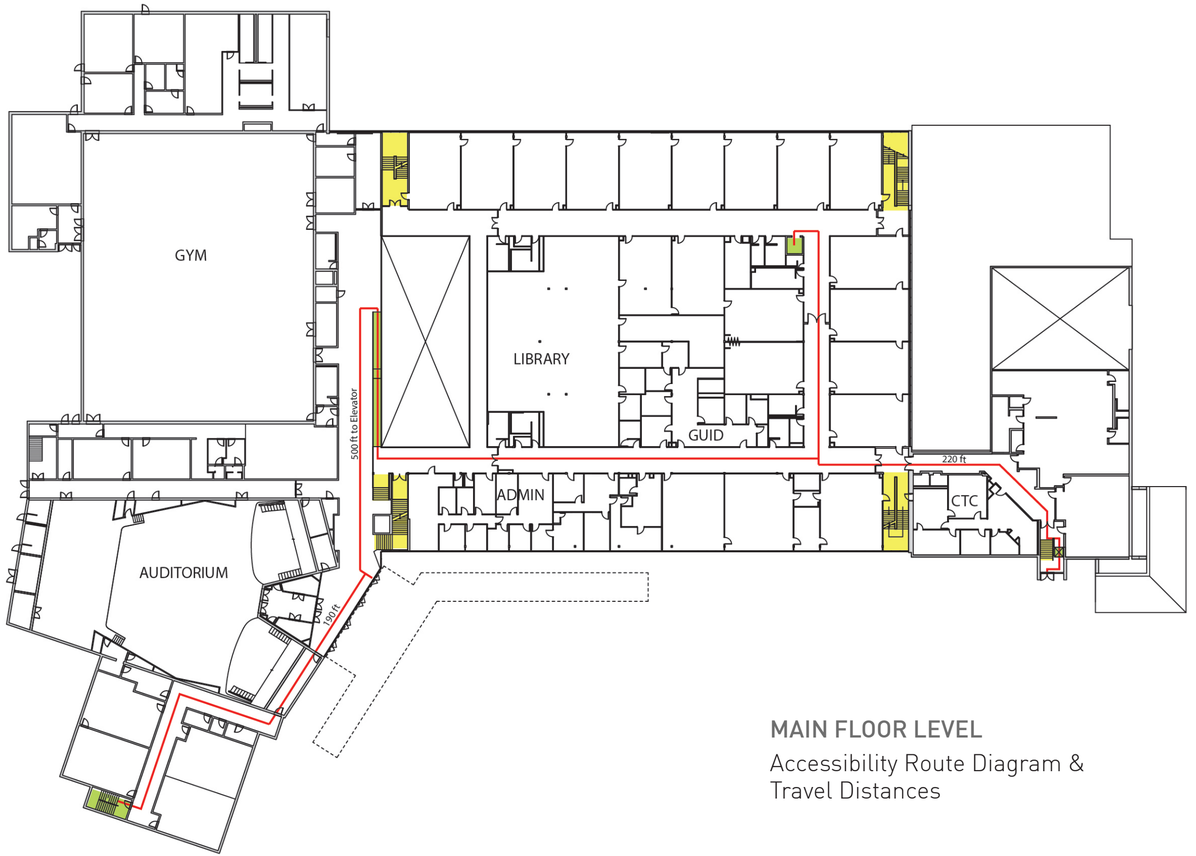
Remotely Located Elevator

Accessibility

Americans with Disability Act

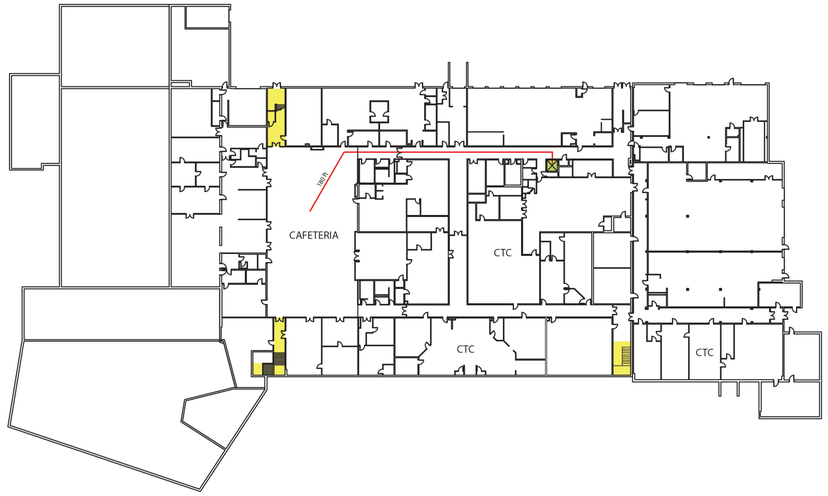
A renovation of the Dover High School and Regional Career Technical Center would require the renovation be brought up to full compliance with ADA. See Section 4.3 for a complete ADA compliance report on the existing school. Public school buildings are also required to meet full ADA regulations. Any significant renovation to Dover High School would trigger the ADA upgrade requirement. The notable challenges to bring the current school into compliance and non compliant ADA issues observed at the Dover High School and Regional Career Technical Center (DHS-CTC) are as follows:

- There are multiple level transitions, and limited accessible routes, which makes it difficult for someone with a disability to navigate the school in a timely efficient manner. (See Accessibility travel distance diagrams below)
- The school only has access to one passenger elevator, and it is located in the classroom portion of the building, which favors one side of the school. Schools of this size typically have a minimum of 2 elevators.
- Handrails at existing stairs do not meet a number of ADA regulations. It would be necessary to install new handrails to meet these requirements.
- There is only a couple of accessible toilets that meet the current ADA standards for students and staff. These would need to be provided at each floor for both students and staff.
- Currently the drinking fountains lack appropriate clear floor space and height requirements ADA.
- Many of the doors do not provide the required push/ pull clearances and must be replaced or relocated to meet the ADA requirements. This condition occurs throughout the building including several of the classroom entrances, and secondary egress doors.
- Door hardware must be upgraded or replaced to meet ADA regulations including, but not limited to, door handles, closers and panic devices, as previously noted
- Signage throughout the building must be replaced to meet ADA requirements.
- Egress Lighting and Exit signs will need to be added at various locations
- All replacement materials must comply with Code. Existing to remain can stay as is.



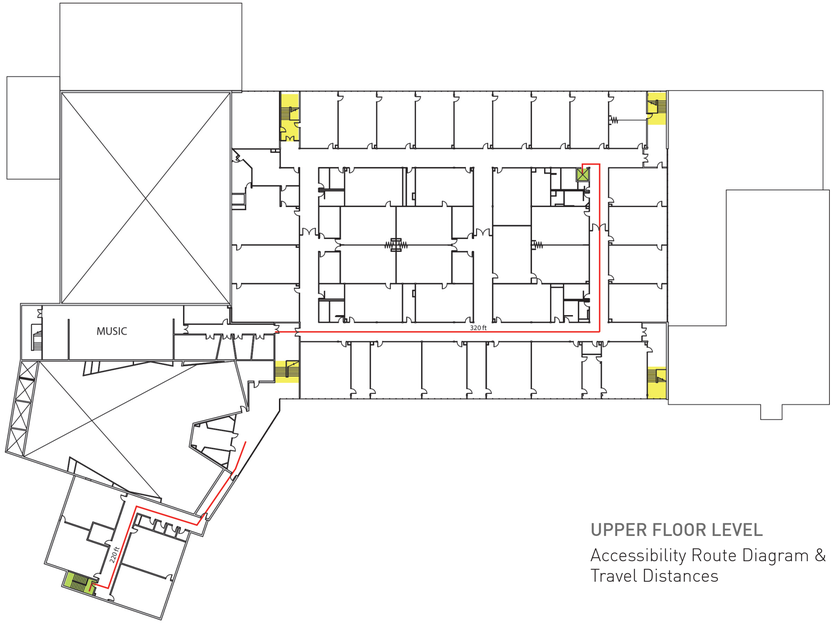
MAIN FLOOR LEVEL

Accessibility Route Diagram &
Travel Distances



LOWER FLOOR LEVEL

Accessibility Route Diagram &
Travel Distances



UPPER FLOOR LEVEL

Accessibility Route Diagram &
Travel Distances

Repair / Renovation Recommendations

If a renovation were to be undertaken to upgrade the existing High School and CTE facilities with the goal of extending the life of the physical facility by 30 – 40 years the following items would need to be replaced:

Exterior

Exterior Wall Systems

Brick Veener – Exterior wall not compliant with IECC, seek alternate compliance methods or upgrade wall to be compliant. Recommend recaulking at all control joints, doors, windows and inside masonry corners, selective repointing and replacement brick

Aluminum Curtain Wall System – Full replacement of Exterior Kalwall Insulated Panel system and windows. See structural report for required structural upgrades with any replacement

Windows & Exterior Doors

The windows in the 1967 building and 1989 additions require full replacement. The 2002 addition windows are in fair conditions, and have been reported to be drafty. Further investigation into these windows is recommended to determine if full replacement is recommended. All exterior doors to be replaced as well.

Interior

Floors - 1967 Building & 1989 Addition

a. Replace all tile floors
b. Abate and replace all VCT Floors (See Hazmat Survey in Appendix)
c. Replace all Carpet
d. Replace Wood Athletic Floor in Gym
e. Replace Auditorium Floor and Stage
f. Replace Kitchen Quarry Tile & Rubber Floor
g. Reseal Exposed Concrete Floor in 1989 Addition
h. 2002 Addition – New coat of wax over VCT, clean floors

Ceiling – All buildings

a. Replace all ceiling tile and grid

Walls – All buildings

a. Selective Re-plastering of interior walls
b. Repaint all walls
c. Replace tile walls in bathrooms and Kitchen
d. Replace tile base

Ramps, Stairs & Elevator

a. Replace existing 3 stop Elevator
b. Add addition new elevator 3 stop
c. Replace all hand rails and pickets to meet code
d. Replace all stair treads

Fixed Furniture

a. Replace all base and upper cabinets
b. Replace all library shelving , tables and chairs
c. Provide accessible tables in science classrooms

Special Spaces

a. Auditorium
    i. Replace all Seating
    ii. Replace all Flooring
    iii. Replace Moveable Partitions
    iv. Replace curtains & Stage Rigging
    v. Replace Acoustical Components
    vi. Update Lighting System
b. Gymnasium
    i. Replace Gym Floor & Base
    ii. New Striping
    ii.. Replace visitor bleachers
    iv. Replace wall pads
    v. Repaint all wall surfaces
    vi. Further exploration of Tectum Deck recommended

Roof

a. Roof membrane is in good condition, was replaced in 2008
b. Repair roof where equipment is moved, or replaced

Fire Code Updates (See Section 4.3 for full code analysis)

a. Update all egress stairs and doorways to meet egress width requirements as indicated in existing conditions code analysis
b. Provide second means of egress in all rooms with 1000 sf or greater
c. install smoke barriers at main entry / cafeteria

Abbreviations

AHERA - Asbestos Hazardouse Emergency Response Act
ADA - Americans with Disabilities Act
IBC - International Building Code
IEC - International Energy Conservation Code
DHS - Dover High School
CTC - Career Technical Center
LEED - Leadership in Energy and Environmental Design
VCT - Vinyl Coated Tile

Section 3

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DOVER HIGH SCHOOL
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Existing Conditions Structural Report
February 18, 2015

I. INTRODUCTION and GENERAL DESCRIPTION

Foley Buhl Roberts & Associates, Inc. (FBRA) is collaborating with *HMFH Architects, Inc. (HMFH)* in the review and evaluation of planning alternatives for Dover High School and Career Technical Center (CTC), in Dover, New Hampshire. The purpose of this report is to identify and describe the structural systems of the various sections of the school and to comment on the structural issues/conditions observed. General comments relating to potential renovations, alterations and additions to the building (governed by the International Existing Building Code (IEBC; 2009 edition) are presented as well. The evaluation of specific renovation and/or renovation/addition schemes will be addressed in a separate, future structural narrative.

Dover High School is located at 25 Alumni Drive in Dover, New Hampshire. The facility consists of a single building, comprised of three generations of construction. The largest, original portion of the building was built in 1967. The original school is three stories and comprises approximately 208,000 gross square feet. (In this report, “first floor” refers to the lowest floor level of the original building. The school’s main entry is at the second floor level.)

There have been two additions to the original school. The two-story 1989 Career Technical Center (CTC) addition is located at the east end of the school. This addition is 1-1/2 stories and comprises approximately 25,800 gross square feet, plus an attached greenhouse of approximately 1600 square feet.

The 2002 addition, known originally as the “Freshman Academy”, is now referred to as the “World Language Wing” (and is hereinafter referred to as “The 2002 addition”). This is a two-story classroom addition off the southwest corner of the original school, comprising approximately 10,600 gross square feet.

The school’s main entry and drop-off are on the south side of the original 1967 building. This main entry lobby is on the second floor level and it provides direct access to the auditorium and to the school’s main office and central corridors. The grading around the building slopes downhill to the north such that the first floor (or “basement” level) is partially below grade along most of the south elevation, but is at grade along the north elevation.

The floors of the 1989 CTC addition are aligned with the first and second floor levels of the original building. The CTC addition has its own separate entry, also located on the south side of the building, providing direct access to the bus drop-off lane. The upper level (second floor) of this addition is dedicated to the culinary arts program, with the balance of the technical arts programs located on the first floor.

The primary access to the 2002 addition is from the school’s main entry lobby. This addition is comprised of eight (8) classrooms and associated support and circulation space, with four classrooms on each floor level. The floor levels of the 2002 addition align with the second and third floors of the original school.

The original school is irregular in plan. The core of the original facility is a rectangular, three-story classroom wing, measuring approximately 260' x 190'. This core includes all of the original classrooms as well as the office, library and cafeteria areas. The first floor level includes the original tech education classrooms. The cafeteria, located on the first floor, is the only two-story space within this core area.

At the west end of the classroom wing is an irregularly shaped, two-story section of the building that includes the gymnasium, the auditorium, locker rooms, training rooms, music rooms, the boiler room and the majority of the main entry lobby. This two-story area aligns with the second and third floors of the classroom wing and is structurally integrated (i.e.; connected) with the core classroom wing.

Structural conditions at the school were reviewed on site on December 4, 2014. Our review of the existing structure was limited, as most areas were concealed by finishes.

The following documents were reviewed in the preparation of this *Existing Conditions Structural Report:*

Original (1967) School:

- Structural Drawings S-1 through S-4, Architectural drawings A-1, A-3 through A-10, A12 through A23, all of the above by Dirsa and Lampron, Architects and Engineers, Manchester, NH. November 1965 through March 1966.
- 3-7-66 Borings (Boring Logs and boring location plan) by C. L. Guild Drilling & Boring Co., Inc.
- 3-28-66 "Revised Foundation Drawing" (re-issue of drawing S-1 for pile foundation).
- 3-29-66 "Topo Plan" (Plot Plan) Test pit locations. By Dirsa and Lampron, Harvey Construction.
- "Misc Foundation Piles Plan" partial foundation plan, no date, no author listed, depicts additional piles under grade beams.

1989 CTC Addition:

- Architectural Drawings A2 through A17, prepared by Lavallee Brensinger Professional Association (Architects), Manchester, NH, May 1988.
- Structural Drawings S1 through S4, prepared by Peter H. Steffensen, P.E., Manchester, NH, May 1988.

2002 Addition:

- Architectural Drawings A1.1 through A5.1 (10 drawings total), prepared by McHenry Architecture, Portsmouth, New Hampshire, and Witcher Builders, Strafford, New Hampshire, December 11, 2002.

- Structural Drawings F1, F2, S1 through S11, prepared by Civil Consultants, South Berwick, Maine, November 12, 2002.
- "New Addition Site Plan", prepared by Civil Consultants, South Berwick, Maine, October 4, 2002.
- "Report of Geotechnical Investigation for Proposed Addition to Dover High School" by R. W. Gillespie & Associates, Inc., April 5, 2002.

No exploratory demolition or structural materials testing was performed in conjunction with this review. Subsurface soils data associated with the original building and the 2002 addition was been reviewed for this report, however no additional geotechnical investigations have been conducted.

II. STRUCTURAL SYSTEMS DESCRIPTION

1967 Construction

General Description: The three-story core classroom wing of the original 1967 building has a structural steel primary frame comprised of wide flange ("WF") rolled steel beams and girders supported on square and rectangular structural steel columns of varying sizes. The columns are typically protected by an outer fire-resistant shell, with a gypsum fill between the outer shell and the inner structural core.

The primary steel frame is infilled with "H" series open web steel joists, typically spaced at 2'-0" for support of the framed floors and 3'-0" on centers for the support of the roof deck. Typical joist spans in the three-story classroom core range from 12'-0" at corridors to 36'-0" over the perimeter classrooms. Joist depths in the classroom wing range from 8" to 18".

The gymnasium roof utilizes 56" deep open web joists spaced at 5'-0" on centers, while the auditorium roof includes a range of joist sizes up to 48" deep, typically spaced at 4'-0" on centers. The joists in the gymnasium and the auditorium are typically supported on load-bearing concrete masonry walls.

Story Heights (core classroom wing):

First Floor to Second Floor:	15.00' +/-
Second Floor to Third Floor:	11.25' +/-
Third Floor to Roof:	11.30' +/-
Roof to top of parapet:	1.5' +/-

Structural Materials:

Concrete - Foundations:	3000 psi 28 day compressive strength
Concrete – Framed floors:	3,750 psi 28 day compressive strength
Steel Reinforcing :	20 ksi allowable stress
Structural Steel:	Not specified, presumed to be ASTM A36; Fy = 36 ksi on the basis of the construction date.
Open web steel joists:	"H" and "J" series, per May 1961 SJI standards.
Load-bearing Masonry:	Not specified.

Design Loads:

Floors:	Not specified.
Roof:	Not specified.
Wind:	Not specified
Seismic:	Not specified (predates seismic design requirements)

Upper Floor Construction:

The design live load capacity of the floors is not enumerated on the original construction drawings.

The floor decks are comprised of cast-in-place concrete supported on draped, steel-reinforced fiber forms ("SteelTex" system). Steeltex is an archaic building product intended to serve as both a concrete form and to provide reinforcement for the floor slab. These slabs are 4" minimum thickness at the second floor and 2.5" minimum thickness at the third floor. The open web steel floor joists that support the floor decks are spaced typically at 2'-0" on centers. Product literature on the load capacity of the Steeltex floor system could not be located for this study, however it is likely that the load capacity of these slabs is not the limiting factor in the floor load capacity.

Open web steel joist sizes and spans were reviewed for this study. The joist sizes, span conditions and arrangements are similar on both the second and third floors, despite the thicker floor slab used at the second floor level (4" minimum thickness, vs. 2.5"). This evaluation indicates that typical classroom floor live load capacities ranged from 40 to 55 pounds per square foot for the commonly used 18H6 and 18H7 joist sizes used on 35' and 36' spans in the classroom areas.

The main corridors on both floor levels utilize 8H2 joists, with the most prevalent span condition being 12 feet. However there are two locations on each floor where the original structural plans indicate that those joists span 16 feet. Corridor live loads were therefore rated at 96 psf for the typical 12' span condition, but only 30 psf for the 16' maximum span conditions.

Roof Construction: The roof deck is typically a 4" cement fiber deck similar to "Tectum", although the actual manufacturer is unknown. Typically these panels span 3'-0" between steel joists in the core classroom wing, but longer spans (4'-0" to 5'-0" on centers) are utilized in the auditorium and gymnasium areas. The cement fiber roof deck is augmented with steel bulb tees in those areas where the longer roof deck spans are utilized and at roof overhangs. All areas of the building have flat roofs.

Expansion Joints: The original building has no expansion joints.

Lowest Level Floors: The lowest-level floor slabs are grade supported, cast-in-place concrete slabs with welded wire fabric reinforcing. These slabs are typically 4" thick in the corridors and academic areas, with 6" slabs used in the tech ed and shop areas.

Exterior Wall Construction: The north, south and east exterior elevations of the core classroom wing are predominately curtain wall assemblies comprised of strip windows (glass), translucent Kalwal panels and vertical aluminum mullions. The mullions are restrained at each floor level.

The auditorium and gymnasium area exterior walls are comprised primarily of load-bearing concrete masonry (CMU) with an 4" exterior brick veneer. The CMU has a nominal thickness of 8" in the multi-story areas and 12" in the high bay areas. The cavity between the brick veneer and the CMU is less than 1" wide and is uninsulated.

Subsurface Soils: Eight borings were conducted in February and March of 1966. The depth of these borings ranged from 5 feet to 35 feet below the original ground surface. All of these borings encountered strata described as "soft grey clay", ranging in thickness from 2 to 12 feet, with Standard Penetration Test values as low as 2.

Foundations: Two versions of the original foundation plan (drawing S-1) exist. The original release, dated 11-26-1965, depicts a shallow, spread and strip footing foundation. The notes on that plan indicate that the footings were designed for a bearing pressure of 2 tons per square foot.

However a revised issue of this drawing stamped and dated 3-26-1966 was issued to depict a pile foundation for the three-story core classroom area. This revised drawing is likely the result of the geotechnical borings performed in February and March of 1966. It appears that the foundation design was revised in response to the relatively weak clay soil layers that underlie the building site. The piles depicted in the 3-26-66 plan set are concrete-filled steel pipe piles, ranging in diameter from 10.75" to 12.75". Design loads documented on the plan range from 35 to 90 tons per pile.

It appears that a change to pile foundations was implemented for the three-story classroom wing, but not for the two-story westerly portions of the building. The revised foundation plan shows the auditorium, music and the westerly side of the gymnasium on spread footing foundations. The foundations are not accessible for visual examination and accordingly the extents of this change in the foundation type could not be fully determined for this assessment.

Lateral Load Resistance: The 1967 construction predates the inclusion of seismic design criteria into the model building codes. The building does not comply with current design standards for wind or seismic loads. The building does not have a defined lateral load-resisting system.

For the classroom wing, it is likely that some lateral load resistance is provided by the limited flexural capacity of the simple structural steel framing connections and by the non load-bearing interior CMU walls that extend from the foundation to the underside of the second floor structural steel.

For the gym, music and auditorium areas, the load-bearing exterior wall masonry would function – by default - to attract lateral loads and convey them to the building foundations.

Drop-off Canopy: The main entry canopy extends along the bus drop-off roadway. This canopy is comprised of precast concrete barrel vault elements supported on precast concrete columns.

Drainage: The presence of a perimeter and/or underslab drainage system is not known; however, no drainage is indicated on the available drawings.

1989 CTC Wing Construction

General Description: The Career Technical Center (CTC) has a rectangular footprint measuring approximately 195' x 100', with one long side immediately adjacent to the east end of the original 1967 classroom wing. The main floor of the CTC is a grade-supported slab, aligned with the first

floor of the original 1967 building. The CTC has a partial upper floor of approximately 8100 gsf, occupying the southerly portion of building footprint. The elevation of the upper floor aligns with the second floor of the original 1967 building. The low roof area occupies the northerly portion of the building footprint and extends across approximately 70% of the interface line where the CTC meets the original building.

The CTC has a structural steel primary frame comprised of wide flange ("WF") rolled steel beams and girders supported on square HSS structural steel tube columns ranging in size from 4"X4" to 7"X7".

The primary steel frame is infilled with "K" series open web steel joists, typically spaced at 1'-7" to 4'-1" for support of the framed floors and 2'-0" to 4'-6" on centers for the support of the roof deck. The joist spans are variable, ranging from 10'-4" to 35'-0". Joist depths range from 10" to 26".

Story Heights: The floor elevations in the CTC addition match the first and second floor elevations of the original building. The story height from the highest floor elevation to the top of the roof steel is variable; the roof steel is sloped to achieve drainage pitch.

Structural Materials:

Concrete	3000 psi 28 day compressive strength
Steel Reinforcing:	Grade 60 bars.
Structural Steel:	Beams and girders: ASTM A36; Fy = 36 ksi HSS columns: Fy = 46 ksi.
Open web steel joists:	"K" series, per SJI standards.
Roof Deck:	1.5" deep cold-formed steel deck, 22 gauge, Type B.
Floor Forms:	9/16" deep, 28 gauge corrugated steel deck.
Load Bearing Masonry:	ASTM C90 concrete block, grade N, type 1, with Type "S" mortar and 3000 psi grout, reinforced.

Design Loads:

Flat Roof Snow Load (min.):	40 psf
Floor Live Load – Slabs on Grade:	100 psf
Floor Live Load, framed floors, Corridors:	80 psf
Floor Live Load, Framed floors, Classrooms:	40 psf
Floor Live Load, Storage Areas:	125 psf
Wind Load:	20 psf
Seismic Loads:	Not specified.

Upper Floor Construction: Cast-in-place concrete slabs on 9/16" deep, 28 gauge form deck, with 6"x6" welded wire fabric reinforcing. Typical slab thickness is 3 inches, except as noted below.

The floor slab in the Food Trades area is atypical and varies in thickness from 3.5" to 5.5" in order to provide a pitch to the floor drains.

The floor slab in the food storage area is atypical and is 8" thick.

Roof Construction: 1.5" deep, 22 gauge, cold formed steel roof deck, Type "B".

Expansion Joints: There are no expansion joints within the CTC wing. The CTC wing is separated (i.e., structurally isolated) from the original 1967 construction by a 1" wide expansion joint.

Lowest Level Floors: Grade-supported 5" thick concrete slabs with welded wire mesh reinforcement (Note: the original structural drawings contain ambiguous or contradictory information on the slab thickness and on the gauge of the welded wire fabric.).

Exterior Wall Construction: The main level (second floor level) are predominately 8" concrete masonry walls with a 4" brick veneer. There is a 2" cavity between the brick and the CMU. The window openings are punched openings, with loose steel angle lintels.

Perimeter exterior walls at the upper level (third floor) are predominately comprised of 6" cold-formed steel stud backup with a 4" brick masonry veneer.

The exterior walls at the upper level (third floor; over low roof areas) are predominately composed of metal panels on light gauge steel framing.

Subsurface Soils: No soils descriptions, subsurface explorations or geotechnical report are on record for this addition.

Foundations: Shallow, spread footing and strip footing foundations at frost depth (i.e., 4'-0" minimum below grade). Notes on the structural drawings indicate that the foundations were designed for a soil bearing capacity of 1.0 ton per square foot.

Lateral Load Resistance: East-west lateral load resistance is provided for by structural steel moment-resisting frames. The design loads for the connections in these frames is specified on the structural drawings, however, the source of these design loads (wind or seismic) is not identified.

North-south lateral load resistance is provided for by moment frame action, achieved by attachment of extended joist bottom chords to the columns (i.e., "tie joists). No design loads are specified for the tie joist connections.

Drainage: Not specified.

2002 World Languages/Freshman Academy Wing

General Description: The two-story 2002 addition has a rectangular footprint measuring approximately 68' x 88', with the northeast side of this addition immediately adjacent to the main entry lobby and auditorium of the original school. The floors of this addition are aligned with the second floor (main floor) and third floor (upper level) of the original school. The 2002 addition is accessed by corridors on both floor levels that connect to the auditorium/main entry lobby and the balcony lobby (upper level). This addition has 8 classrooms, four on each floor level.

The lower floor of the 2002 addition is a grade-supported 5" thick cast-in-place concrete slab. The upper floor construction includes both cast-in-place and precast concrete decks, with the former supported on open web steel joists. The cold-formed steel roof deck is also supported on open web steel joists.

The majority of the floor and roof framing is supported on interior and exterior load-bearing masonry walls. The exception to this is a single line of structural steel beams and columns, located immediately adjacent to the original 1967 building.

Story Heights: The floor elevations of the 2002 addition align with the second and third floors of the original building.

Structural Materials:

Concrete	4000 psi 28 day compressive strength, normal weight
Steel Reinforcing:	ASTM A615, Grade 60 bars.
Structural Steel:	Rolled shapes: ASTM A992 Grade 50. Plates and angles ASTM A36; Fy = 36 ksi. HSS columns: ASTM A500, Fy = 46 ksi.
Open web steel joists:	"K" series, per SJI standards.
Roof Deck:	1.5" deep cold-formed steel deck, gauge unknown.
Floor Forms:	1.5" deep, 22 gauge cold-formed steel deck.
Precast floor deck:	6" deep hollow core precast prestressed plank, f'c=5000 psi.
Load Bearing Masonry:	ASTM C90 concrete block. Type "S" mortar. Grout: ASTM C476. f'm = 2000 psi
Masonry Vertical reinforcement and bond beams:	ASTM A615 bars, #4, 48" maximum spacing.
Horizontal joint reinforcement:	9 gauge, galvanized, ladder type.

Design Loads:

Flat Roof Snow Load (min.):	66 psf
Maximum snow drift load:	153 psf
Floor Live Load, framed floors, Corridors:	105 psf
Floor Live Load, Framed floors, Classrooms:	45 psf
Wind Load:	unknown
Seismic Loads:	per 2000 International Building Code, Seismic Design Category "C" Seismic Use Group II, Site Class "E".

Upper Floor Construction:

Classrooms: 4" cast-in-place concrete slab on 1.5" deep, 20 gauge cold-formed steel deck, supported by "K" series open web steel joists spaced at 24" on centers. Joists in the classroom areas are typically 24" deep and have a maximum span of 34'-8". Floor joists are typically supported on 8" concrete masonry interior bearing walls (corridor walls) and on the exterior masonry walls.

Corridors: 6" hollow core precast prestressed concrete plank with a 2" cast-in-place concrete topping. Typical spans are 9'-4" to 9'-8". Planks are supported on the interior masonry corridor walls and on the structural steel frame line adjacent to the original building.

Roof Construction: Cold-formed, galvanized steel roof deck, 1.5" deep, supported on open web steel joists spaced at 36" to 48" on centers. Joist sizes range from 10" deep over the corridors to 24" deep over the classrooms.

Expansion Joints: There are no internal expansion joints internal to the 2002 addition. The upper floor and roof of the 2002 addition are separated from the original building by a 1" expansion joint.

Lowest Level Floors: The lower floor of this addition is a 5" concrete slab on grade. The structural drawings call for either welded wire fabric or synthetic fiber reinforcement; it is not known which of these options was utilized.

Exterior Wall Construction: The exterior walls of the building are typically 12" thick concrete masonry. The construction is variable, with some areas utilizing a single 12" wythe, while other areas are comprised of an 8" inner wythe and an exterior 4" wythe, with the outer wythe typically consisting of a contrasting color CMU. The exterior walls are load-bearing and are reinforced with #4@48" typical vertical reinforcement and with bond beams and joint reinforcement horizontally. The punched window openings range in width from 4'-4" to 8'-4". The shorter openings utilize single span, double angle loose lintels. The longer windows typically occur in pairs, utilizing two-span, WT loose lintels.

Subsurface Soils: Subsurface borings and a geotechnical report were completed for the 2002 addition. This work was completed by R.W. Gillespie & Associates, Inc. (RWGA) and is summarized in their 4/5/2002 report. That report notes the presence of a soft, silty clay layer beneath the addition footprint. The borings indicate that the clay layer ranges from 3 to 53 feet in thickness. The RWGA report recommended that the building be founded on shallow spread and strip footings designed for a bearing pressure of 1.0 ton per square foot. That report also recommends a preload surcharge of the building site in order to pre-compress the silty clay layers that underlie the site. It is not known if the preload recommendation was implemented. Foundation drawing F2 included notes pertaining to the design soil bearing pressure, but unfortunately those drawing notes are no longer legible.

Foundations: The foundations for the 2002 addition are comprised of shallow spread and strip footings, bearing on pre-compressed native soils.

Lateral Load Resistance: The drawing notes indicate that the building was designed for seismic loads, in accordance with the 2000 International Building Code. No information on design wind loads is included in the contract drawings. Lateral load resistance is provided by reinforced masonry shear walls, including the exterior walls and the corridor walls.

Drainage: A perimeter foundation drainage system consisting of 4" perforated PVC pipes laid in a coarse gravel bed was specified on the construction drawings. This system is consistent with the recommendations included in the RWGA geotechnical report.

III. STRUCTURAL CONDITION/COMMENTS

Structural Conditions at Dover High School were reviewed at the site (to the extent possible) on December 4, 2014. Generally speaking, floor and roof construction appears to be in satisfactory condition (where visible); there is no evidence of structural distress that would indicate significantly overstressed, deteriorated or failed structural members.

Foundations generally appear to be performing adequately. Typically, there are no signs of excessive total or differential settlements.

Floors and roofs appear to have been constructed in general accordance with the available, original framing drawings.

Specific areas of structural concern are discussed further below.

Floor live load capacity: Live load capacities were reviewed for this report, either as tabulated on the original plans, or by analysis of the framing sizes shown on the original plans. With one exception, the live load capacities were found to meet or exceed current IBC/ASCE-7 design standards, which are as follows:

Minimum uniform live load capacities (ASCE 7-05):

Classrooms	40 psf
First floor corridors	100 psf
Corridors above the first floor:	80 psf

The exception was certain areas of the second and third floor corridors in the original 1967 building. Typically, those corridors are framed with 8H2 joists spanning 12 feet. However there are specific bays where that same joist size is used on a 16' span. The corresponding floor live load capacity for those 16' spans is approximately 30 pounds per square foot. If the framing sizes shown on the original plans are correct, then this represents a significant live load deficiency in those areas. That framing was concealed from view at the time of our site visit. Field verification of the framing sizes in these bays is recommended.

Lateral Load Resisting Systems: The construction drawings for the 2002 addition contain specific information on seismic design loads and the masonry shear walls that are intended to resist those loads. However no information on the design wind loads was included in that drawing package. Given the type of construction used for that addition, it is likely that the seismic loads specified on the plans were the governing factor in design.

The plans for the 1989 addition included connection design forces for the structural steel moment frames used to resist lateral loads. A design wind load of 20 pounds per square foot is specified on those plans, however no seismic design criteria are included in the drawing notes. The BOCA model building code widely used in New Hampshire at that time did require consideration of seismic loads, but it is not clear if the connection design forces shown on the plans are the result of wind forces or seismic forces.

The original 1967 construction predates any code-mandated seismic design requirements. This portion of the building lacks a defined, dedicated lateral load-resisting system. Lateral loads are likely resisted by the masonry walls acting as shear walls. In the case of the auditorium and gymnasium areas, the masonry walls are typically load-bearing perimeter walls that have relatively few windows or other penetrations. In the case of the classroom wing, the masonry walls are, for the most part, interior to the building and non-load bearing, typically consisting of an infill of the primary steel building frame. In both cases, reinforcement of these walls is limited and accordingly they lack the ductility that would be provided by reinforced masonry. This deficiency is offset (to some degree) by the number, length and arrangement of the walls.

Concrete Main Entry Canopy: The main entry and bus drop-off canopy has reportedly been a continuing maintenance issue. This canopy is comprised of precast concrete vaulted roof components, bearing on precast concrete columns. The resulting shape apparently traps snow

within the structure, resulting in water penetration and paint system failure. This canopy is massive and laterally unrestrained and accordingly it may represent a seismic hazard. If this structure is to be maintained, FBRA recommends that an analysis be conducted to evaluate the expected performance of this canopy under seismic loads.

Foundations: The documentation on file indicates that the 1967 building was originally designed with a spread footing foundation, but that subsurface borings performed immediately prior to the start of construction resulted in a change to a pile foundation for the 3-story classroom wing. However the change to a pile foundation was apparently not implemented for the auditorium and gymnasium areas.

The 1989 addition was designed with a spread footing foundation, using a low design soil bearing pressure (1.0 ton per square foot). There is no indication that any additional site preparation work was conducted to address the site soil conditions in this area.

For the 2002 addition, the existing documentation indicates that the building site was surcharged in order to consolidate the compressible clay strata that underlie the building footprint. The addition was then constructed with spread footing foundations, also designed for the relatively low bearing pressure of 1.0 ton per square foot.

In summary, the foundation types and elevations used for each of the three eras of construction are substantially different. In addition, the original 1967 construction apparently utilizes two dissimilar foundation types. See further comments below under "Isolation Joints".

Grading: Exterior grade elevations along the south side of the 1967 classroom wing result in snow depths that frequently are above the window sill level. This condition has reportedly resulted in continuing maintenance and snow removal issues.

Expansion Joints and Isolation Joints: The 1989 and 2002 additions are both separated from the original building by 1" isolation joints, thereby making the additions structurally independent of the original building. The isolation joint separating the 1989 addition from the original building appears to be of insufficient width to address lateral drift under seismic loadings.

There are no internal expansion joints within the original 1967 building. However the plan arrangement of the two-story auditorium /gymnasium represents a geometric irregularity with respect to the 3 story classroom wing. In addition to this plan irregularity, the foundations in each of these areas are of different types (shallow strip footings vs. piles), The elevation of the lowest level differs by one story, and the structural systems used in these two areas are dissimilar. No isolation joint was included to separate these distinct areas. A crack has formed in the main entry lobby floor slab and the interior lobby wall, apparently as a result of these discontinuities and the reentrant corner near the main entry doors. This crack is apparently the result of the geometric irregularities and the two distinct structural systems used within this building.

Partition Walls: The framed floors throughout the entire school utilize open web joists to support the floor decks. Joists were specifically "doubled up" (i.e., two joists in close proximity) where masonry partition walls were anticipated. As a result, the relocation of interior masonry partitions supported on joist-supported floor decks would likely require augmentation of the existing floor framing beneath the new partitions.

Cement Fiber Roof Deck: Cement fiber roof decks were utilized throughout the original 1967 building. Although similar products remain on the market, this type of deck is generally considered to be an archaic building product. The deck can be directly observed in the gymnasium. Typically, this deck performs satisfactorily under gravity loads, provided that it is

kept dry. This type of deck has a poor performance history when subjected to wet conditions. No evidence of deteriorated roof deck was observed in the gymnasium area where the deck is exposed to view.

Snow Drift: The original building predates building code requirements for consideration of snow drift loads occurring on low roofs that are adjacent to taller sections of the building. Potential snow drift conditions exist on the one-story low roof areas at the northwest corner of the building, over the locker rooms.

IV. RENOVATIONS AND ADDITIONS – BUILDING CODE REQUIREMENTS

General comments relating to potential renovations, alterations and additions to Dover High School are presented in this section. Renovations, alterations, repairs and additions to existing buildings in New Hampshire governed by the provisions of the 2009 International Existing Building Code (IEBC).

The IEBC defines three (3) compliance methods for the repair, alteration, change of occupancy, addition or relocation of an existing building. The method of compliance is chosen by the Design Team (based on the project scope and cost considerations) and cannot be combined with other methods.

The *Prescriptive Compliance Method* (IEBC Chapter 3) duplicates Sections 3403 through 3411 of Chapter 34 in the *2009 International Building Code* (IBC) and prescribes specific minimum requirements for construction related to additions, alterations, repairs, fire escapes, glass replacement, change of occupancy, historic buildings, moved buildings and accessibility. If the impact of the proposed alterations and additions to structural elements carrying gravity loads and lateral loads is minimal (less than 5% and 10% respectively), seismic upgrades to an existing building are generally not required.. Renovations and alterations must be conducted in a manner such that the level of compliance of the existing building is not diminished.

The *Performance Compliance Method* (IEBC Chapter13) duplicates Section 3412 of Chapter 34 in the IBC and provides an alternative means for evaluating a building based on fire safety, means of egress and general safety (19 parameters total). This method allows for the evaluation of the existing building to demonstrate that proposed alterations, while not meeting new construction requirements, will maintain existing conditions at their current levels (at a minimum) or improve conditions, as required. A structural investigation and analysis of the existing building is required to determine the adequacy of the structural systems for the proposed alteration, addition or change of occupancy. A report of the investigation and evaluation, along with proposed compliance alternatives must be submitted to the Code official for approval.

The *Work Area Compliance Method* (IEBC Chapters 4 through 12) is based on a proportional approach to compliance, where upgrades to an existing building are triggered by the type and extent of work. The Work Area Compliance Method includes requirements for three levels of alterations, in addition to requirements for repairs, changes in occupancy, additions, historic buildings or moved buildings. A complete seismic evaluation of the existing building is required for the following: Level 2 alterations where the demand to capacity ratio of lateral load resisting elements has been increased by more than 10%, all Level 3 alterations, a change in occupancy to a higher category (not applicable in this case) and where structurally attached additions (vertical or horizontal) are planned. A full renovation of Dover High School (involving more than 50% of the space reconfigured) would be classified as a Level 3 alteration.

The Work Area Compliance Method will likely be applicable to this project. If there a no programmatic changes made in connection to the renovation project, then it may be feasible to limit structural alterations to a Work Area Level 2 categorization.

Regardless of the compliance method chosen, an assessment of masonry shear stresses, wall slenderness, parapets, wall anchorage, diaphragm anchorage, etc. is required. The auditorium and gymnasium areas of the original building include masonry load-bearing walls that would be classified as “unreinforced” (although these walls do include horizontally reinforced bond beams).

Given the geotechnical Site Class “E” classification (as determined for the 2002 addition), in combination with an Occupancy Category III classification (per IBC table 1604.5; secondary school with occupancy greater than 250 people), the resulting Seismic Design Category for the school as a whole is “D”. Accordingly, a Level 3 alteration of this area of the building would require a seismic retrofit designed for the earthquake loads applicable to new construction. (Reference: IEBC Appendix A1, paragraph A102.2). Although compliance with this requirement may be technically feasible, the cost associated with complying with these requirements may render a Level 3 Alteration with a seismic retrofit an impractical alternative.

Future Additions – General Comments:

The design and construction of any proposed future addition to Dover High School would be conducted in accordance with the Code for new construction. Significant, horizontal additions should be structurally separated from the existing building by an expansion (seismic) joint, to avoid an increase in gravity loads or lateral loads to existing structural elements. The roof structure and foundations of the existing building were not designed to accommodate a vertical addition.

Further Study

One major factor contributing to the seismic design requirements associated with renovating this school is the Seismic Site Class. Although a classification of “E” was utilized for the 2002 addition, further geotechnical testing is warranted to confirm this Site Classification. Shear wave velocity testing conducted in accordance with Chapter 20 of ASCE/SEI 7-05 may result in an improved Site Class determination, thereby easing the required retrofit design criteria.

The original architectural and structural plans for the 1967 construction do not indicate that the masonry load-bearing walls of the auditorium and gymnasium area contain vertical steel reinforcement. In the absence of vertical reinforcement, these walls must be classified as “unreinforced”. As noted in this report, a Level 3 Alteration would require that unreinforced masonry load-bearing walls be retrofitted to comply with the requirements of IEBC Appendix A1. FBRA recommends that these walls be scanned with a pacometer (or other non-destructive scanning methodology) to confirm the absence of vertical reinforcement.

As noted previously, the floor joist sizes used in the longer bays of the corridors of the 1967 building should be field verified.

FBRA recommends that the existing main entry canopy be reviewed with regard to its stability under lateral loads.

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DOVER HIGH SCHOOL
Dover, New Hampshire

Existing Conditions Structural Report
February 18, 2015

I. INTRODUCTION and GENERAL DESCRIPTION

Foley Buhl Roberts & Associates, Inc. (FBRA) is collaborating with *HMFH Architects, Inc. (HMFH)* in the review and evaluation of planning alternatives for Dover High School and Career Technical Center (CTC), in Dover, New Hampshire. The purpose of this report is to identify and describe the structural systems of the various sections of the school and to comment on the structural issues/conditions observed. General comments relating to potential renovations, alterations and additions to the building (governed by the International Existing Building Code (IEBC; 2009 edition) are presented as well. The evaluation of specific renovation and/or renovation/addition schemes will be addressed in a separate, future structural narrative.

Dover High School is located at 25 Alumni Drive in Dover, New Hampshire. The facility consists of a single building, comprised of three generations of construction. The largest, original portion of the building was built in 1967. The original school is three stories and comprises approximately 208,000 gross square feet. (In this report, "first floor" refers to the lowest floor level of the original building. The school's main entry is at the second floor level.)

There have been two additions to the original school. The two-story 1989 Career Technical Center (CTC) addition is located at the east end of the school. This addition is 1-1/2 stories and comprises approximately 25,800 gross square feet, plus an attached greenhouse of approximately 1600 square feet.

The 2002 addition, known originally as the "Freshman Academy", is now referred to as the "World Language Wing" (and is hereinafter referred to as "The 2002 addition"). This is a two-story classroom addition off the southwest corner of the original school, comprising approximately 10,600 gross square feet.

The school's main entry and drop-off are on the south side of the original 1967 building. This main entry lobby is on the second floor level and it provides direct access to the auditorium and to the school's main office and central corridors. The grading around the building slopes downhill to the north such that the first floor (or "basement" level) is partially below grade along most of the south elevation, but is at grade along the north elevation.

The floors of the 1989 CTC addition are aligned with the first and second floor levels of the original building. The CTC addition has its own separate entry, also located on the south side of the building, providing direct access to the bus drop-off lane. The upper level (second floor) of this addition is dedicated to the culinary arts program, with the balance of the technical arts programs located on the first floor.

The primary access to the 2002 addition is from the school's main entry lobby. This addition is comprised of eight (8) classrooms and associated support and circulation space, with four classrooms on each floor level. The floor levels of the 2002 addition align with the second and third floors of the original school.

If either mandatory or voluntary seismic upgrades to the 1967 classroom wing are implemented, the likely course of action would be to introduce structural steel braced bays to resist lateral loads. However there are several features of the existing construction that complicate any plan to retrofit the building frame with braced bays. These are:

1. The existing columns: The existing columns are tube steel structural systems with an outer "shell". The shell encases a concrete fireproofing around the inner structural section. The outer shell and fireproofing would have to be wholly removed in order to reinforce the column section. The shell and fireproofing would also have to be removed locally for installation of the bracing gusset connection plates.

2. The existing framed floor slab: The existing floor slab was cast on "Steeltex" draped fabric forms. These forms deflect significantly between the supporting joists during concrete placement. The deflected shape of the underside of the slab complicates the later addition of supplemental framing.

3. The existing foundations: The classroom wing was constructed on pile foundations that were not sized or detailed in anticipation of the uplift loads that would be generated by bracing bays during a seismic event.

Further field investigation and review of concealed beam-to-column connections in the 1967 classroom wing is warranted. The features enumerated above may make any type of seismic retrofit an impractical solution.

The 1989 addition and the 2002 addition were both designed for specific lateral load criteria. Accordingly, load paths were provided for in their design to transfer lateral forces to their foundations. *Level 2* renovations to these additions should not require structural upgrades to these systems. However, if more extensive *Level 3 Alterations* are planned, the solutions for these two additions would differ. For a *Level 3 Alteration*, the lateral load-resisting systems would have to be adequate to resist reduced seismic forces equal to 75% of those required for new construction.

In view of its reinforced masonry bearing walls, Level 3 alterations (involving structural changes) to the 2002 addition would be difficult to implement. However, based on this review, we believe this 2002 addition would satisfy all code-mandated loading requirements without the need for extensive structural modifications.

Level 3 alterations to the 1989 addition would likely require extensive and significant structural upgrades to satisfy the applicable wind and seismic load standards. On the basis of this initial review, we anticipate that the moment-resisting framing connections used in this addition would be inadequate to resist the code-mandated lateral loads. Reinforcement of these framing members and their connections would be an impractical solution. The most effective approach to a Level 3 alteration of this wing would likely involve the introduction of braced bays into the existing building frame.

Following the development of proposed, specific renovation/alteration schemes for the building, the anticipated scope of structural/structurally related work required will be addressed in a separate narrative.

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V. PHOTOGRAPHS

1. Bus drop-off and main entry canopy, 1967 classroom wing at left.

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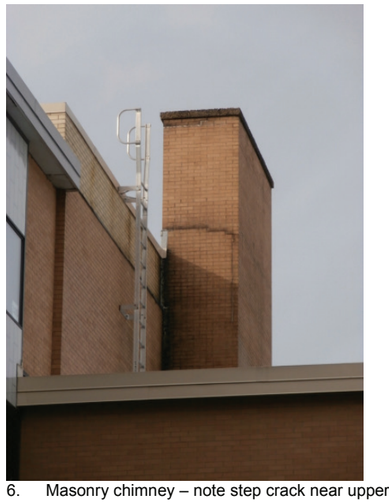
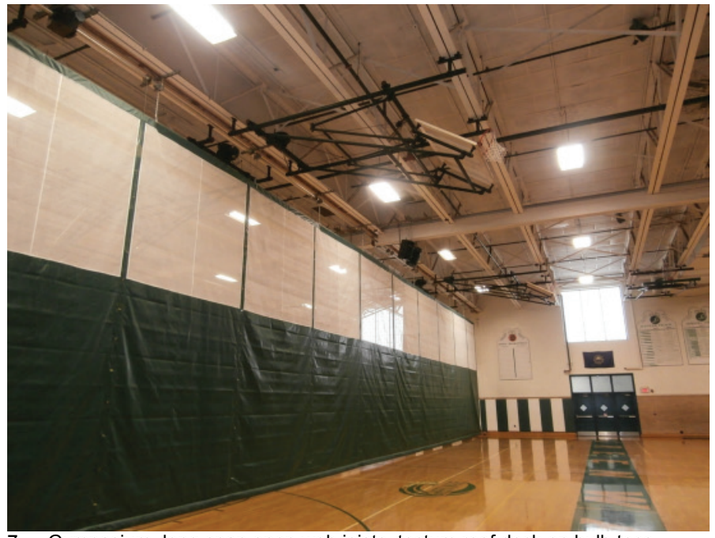
3. 1989 CTC Addition: Main entry

4. Low roof area, north side of 1989 addition, adjacent to three-story 1967 classroom wing.

5. North side of 1967 building – low roof locker room wing.



6. Masonry chimney – note step crack near upper roof line.



7. Gymnasium, long span open web joists, tectum roof deck on bulb tees.

9. 1967 Classroom Wing – corner column at corridor intersection.

10. High and low roof areas of the 2002 CTC addition, looking NE from the third floor of the 1967 classroom wing.

End of Existing Conditions Structural Report

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HVAC

Executive Summary:

The existing High School (1967) and Addition building (1989 & 2002) are heated by a gas-fired, standard efficiency boiler plant. A second gas-fired, standard efficiency boiler plant provides heating to the 1989 Addition. The building is ventilated by a combination of indoor air handling units, packaged rooftop units, unit ventilators and fan coil units. Exhaust air ventilation is provided by a combination of roof mounted and inline exhaust air fans. The buildings do not have a central air conditioning plant. Air conditioning is provided to several areas of the building by a combination of ductless and ducted type, split system AC units and window air conditioning units.

The majority of the building's heating and ventilation systems and equipment are originally installed equipment and have exceeded their expected useful service life. The majority of the 1967 School building systems, with the Boiler Plant as a notable exception, were installed circa 1967. Therefore, the majority of the equipment and systems are approximately 48 years old. The 1967 School boiler plant was installed in 2002, and the boilers and pumps appear to be in good condition. The majority of the 1989 Addition building HVAC systems were installed circa 1989, are approximately 25 years old and are nearing or have exceeded their expected useful service life. The 2002 Addition building HVAC systems were installed in 2002, are approximately 11 years old and appear to be in fair condition.

The existing HVAC systems appear to have been well maintained throughout recent years. However, even with proper system maintenance, equipment efficiencies and operation will gradually degrade over time due to factors such as equipment age, wear and scaling build-up on piping distribution systems.

Therefore, it is our recommendation that the majority of building HVAC systems be replaced and upgraded. The existing 1967 School boiler plant could remain as it has not exceeded the midway point of its expected service life. However the 1989 Addition boilers should be removed and/or replaced. The 1989 Addition wing could potentially be connected to the 1967 School boiler plant, however new cross connecting piping and pumps would need to be provided, and a complete building heating load analysis would need to be provided in order to make that determination. In general, due to the HVAC piping and ductwork distribution systems age, we would recommend that piping and ductwork distribution systems are replaced. However, if any existing hot water piping and ductwork were to be re-used as part of a renovation project we recommend that all existing to remain piping and ductwork be internally cleaned prior to re-use.

For improved energy efficiency we would recommend the following HVAC system improvements. New ventilation systems, equipped with energy recovery should be installed to replace existing ventilation systems that have exceeded their useful service life. New mechanical ventilation systems should be provided for exterior classrooms that currently utilize operable windows for ventilation. New outside air ventilation units should be provided for the Locker Rooms, which are currently provided with ventilation air through the use of transferred air from the gymnasium. New high efficiency air conditioning systems should be provided to replace existing window AC units and older split system AC units and ductless AC units. All new fans and pumps should be equipped with VFD drives. A new building energy management and direct digital control system should be installed to control all building HVAC systems.

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High School Heating Plant:

The building is primarily heated by gas fired hot water boiler plant. There are three (3) gas-fired hot water boilers located in the lower level boiler room. The boilers were manufactured by Cleaver Brooks (Model CBLE-700 240 125, Serial Nos. 0L102065, 0L102066, 0L102067) with 9,900 MBH gas input. The boilers are equipped with CB Hawk boiler controls. The boilers were installed circa 2002 and are approximately 12 years old. The boilers appear to be in good physical condition.

Existing Boilers

The boilers are vented by a common manifold double wall steel breeching system that terminates through a masonry chimney to the outdoors. There are some visible cracks at the top of the chimney. The condition of the interior liner was not inspected during the site visit.

Boiler Chimney

Steel Breeching (top left)

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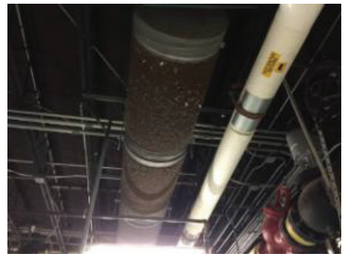
Combustion Air Fan

Combustion Air Fan



Combustion Air Perforated Supply Diffuser

Combustion air for the boilers is provided by two (2) inline combustion air fan systems. Combustion air is distributed to the boilers via galvanized sheetmetal ductwork and perforated supply diffusers that are located between the boilers. The perforated supply diffusers were observed to be dirty and clogged.

Hot water is distributed from the boilers to terminal heating equipment located throughout the 1967 School and Additions are of the building by two (2) in-line base mounted pumps. The pumps appear to have been installed in 2002. In general, the pumps appear to be in fair condition. The pumps are equipped with variable speed drives.

Existing Hot Water Pumps

Existing HW Pump VFDs (left) and Expansion Tanks (right)

There are three (3) hot water expansion tanks that appear to be in good condition.

In general, the majority of the main hot water supply and return piping distribution system and associated valving located within the boiler room appear to be have been installed circa 2002. In general the hot water piping and insulation appears to be in good condition. The majority of the hot water piping located outside of the boiler room in the 1967 School is believed to have been installed in 1967.

There is a steam boiler system installed in the mechanical room. The steam boiler is a Fulton Edge boiler. The steam boiler provides steam for the Kitchen dishwasher and steam cooking kettles. The steam boiler appears to be in good condition.

Steam Boiler

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1989 Addition Heating Plant:

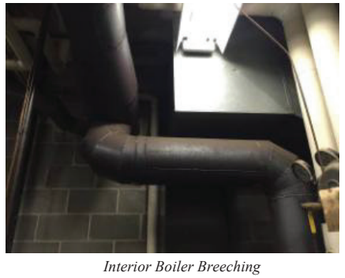
The 1989 Addition building is primarily heated by a gas fired hot water boiler plant. There are two gas-fired cast iron sectional hot water boilers located in the boiler room. The boilers were manufactured by Cleaver Brooks. One boiler is equipped with a S.T. Johnson Co, burner and the other boiler has a Cleaver Brooks burner. The boiler equipped with Johnson burner has an input capacity of 2,520 MBH. The boiler equipped with a Cleaver Brooks Burner (Model I-506 Series 200, Serial No. CI-1296) has a capacity of 2,237 MBH gas input and 1,786 MBH output (I=B=R). The boilers were installed circa 1989 and are approximately 26 years old and nearing the end of their useful service life. The boilers appear to be in fair physical condition. One boiler has recently had a damaged control board replaced.

Existing Boiler (Johnson Burner)

Existing Boiler (CB Burner)

The boilers are vented by a common steel breeching system that terminates through the roof to the outdoors. The steel breeching is uninsulated, and the exterior breeching shows visible signs of rust and corrosion.

Exterior Boiler Breeching Stack



Interior Boiler Breeching

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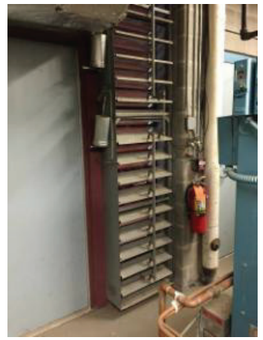

Combustion Air Louver

Hot water is distributed from the Boilers to terminal heating equipment located throughout the building by six (6) inline zone circulator pumps. The pumps appear to have been installed in 1989. In general, the pumps appear to range from fair to poor physical condition. Much of the adjacent piping insulation is damaged. There is a hot water expansion tank which appears to be in good condition.

Existing Hot Water Pumps

Existing Expansion Tank (back)

In general, the majority of the piping distribution system and associated valving located in the 1989 Addition building appears to be have been installed circa 1989. In general, the hot water piping appears to be in fair condition. The condition of piping insulation appears to range from fair to poor condition.

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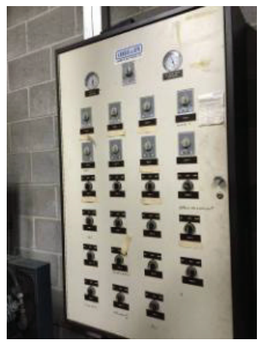
Automatic Temperature Controls:

The building HVAC automatic temperature control system is a combination pneumatic and direct digital control (DDC) system. The DDC system appears to be an older generation DDC system that was manufactured by Powers/Landis&Gyr. The DDC system was updated in recent years with Siemens DDC controls and front end workstation.

There is a pneumatic air compressor, equipped with air dryer system, located in the each of the Boiler rooms.



Existing 1989 Addition ATC System Pneumatic Compressor and Control Panel

Existing 1989 Addition Building ATC DDC Control Panel

Existing 1967 School Boiler Room ATC DDC Control Panel

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Ventilation Systems:

The 1967 School and 1989 Addition areas of the building are mechanically ventilated by a combination of indoor air handling units, rooftop units and unit ventilator and fan coil units with outdoor air connections.

The majority of 1967 School classrooms located on exterior walls are not ventilated by mechanical ventilation systems. These Classrooms are ventilated by natural ventilation through the use of operable windows.

Ventilation air is exhausted from the majority of areas of the building by a combination of inline, propeller and roof mounted exhaust air fans. The majority of exhaust fans appear to be originally installed equipment, however some exhaust fans have been replaced within recent years.

Exhaust Air Fan

Unit Ventilator Intake Louver

Roof Intake and Exhaust Air Hoods and Fans

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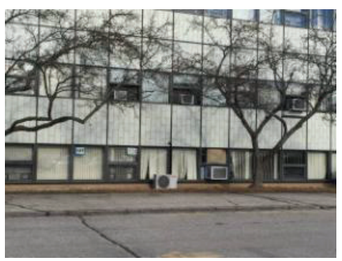
Air Conditioning Systems:

The majority of the building is not air conditioned. Some areas of the building are air conditioned by window AC units, split-system and ductless cooling type air conditioning systems. There are several roof mounted and grade mounted air-cooled condensing (ACC) units that are connected to ductless split system AC units located throughout the building. The Administration area, Copy room, Computer Classroom and Main Server room are air conditioned by split system AC units. The teacher Dining Room, Custodian's office and various Classrooms are air conditioned by Window AC units. In general the majority of these units appear to have been installed within the past 5-10 years and in fair to good physical condition. There was one older condensing unit observed that appeared to be of an older vintage and in need of replacement.

1989 Addition Dining Room Ceiling Ductless AC Unit (typical of 2)



Window AC Units

Grade Mounted Air Cooled Condensing Units

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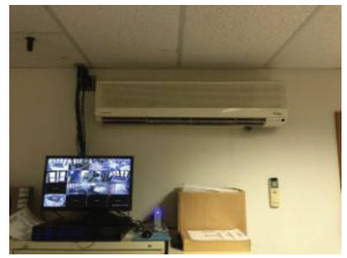
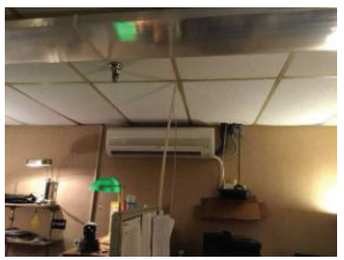


Ductless Cooling Unit – Operations Office



Ductless Cooling Unit – IT Server and Office

Administration Area ACC Unit

Ductless AC Unit ACC Units

Roof ACC Unit

Roof ACC Unit

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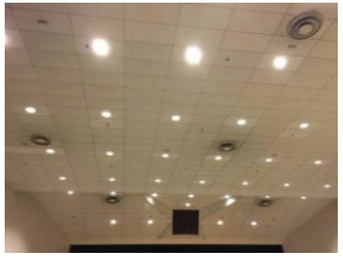
Library/Media Center:

The Library/Media Center is heated and ventilated by indoor ceiling suspended heating and ventilation unit ventilators. The units were installed circa 1967, and are approximately 48 years old and past their expected service life. The Library/Media Center is also heated by supplemental fin tube radiation that is located along the perimeter exterior walls.

Library Heating & Ventilation Unit

Auditorium:

The Auditorium is heated and ventilated by two indoor air-handling units (AHU-8 & 9) that deliver supply air to the space via a galvanized sheetmetal distribution system and ceiling mounted diffusers. Return air is primarily removed from the space by return registers located under the stage. The air handling units and ductwork distribution system was installed circa 1967, and is approximately 48 years old and past its expected service life. The Lecture Hall rooms are heated and ventilated by an indoor air-handling unit (AHU-10) that delivers supply air to the space via a galvanized sheetmetal distribution system and ceiling mounted diffusers. There are return air grilles located in each of the stair risers in the adjacent Lecture Hall rooms.



Auditorium - Ceiling Supply Diffusers

Auditorium - Return Register

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Music Classrooms:

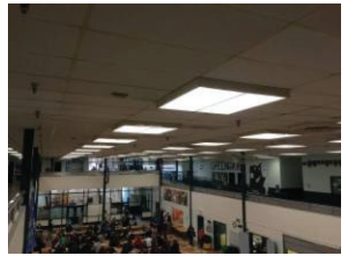
The Music classrooms are heated and ventilated by horizontal type classroom unit ventilators, and are exhausted by exhaust air fan systems. The unit ventilators and ductwork distribution systems appear to be originally installed equipment, installed circa 1967, and past their expected service life. Some Music classrooms also have supplemental hot water fin tube radiation installed; the fin tube radiation also appear to be originally installed equipment.

Music Classroom – Unit Ventilator

Music Classroom – Fin tube Radiation

Cafeteria:

The Cafeteria is heated and ventilated by an indoor hot water air-handling unit (AHU-6) that delivers supply air to the space via a galvanized sheetmetal distribution system and ceiling mounted diffusers. Return air is primarily removed from the space by low wall return registers. The air handling unit and ductwork distribution system was installed circa 1967, and is approximately 48 years old and past its expected service life.



Cafeteria – Ceiling Diffusers

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High School Kitchen:

The Kitchen has a stainless steel exhaust hood that is exhausted by a centrifugal utility set exhaust fan located in the Penthouse Mechanical room. The kitchen exhaust ductwork riser does not appear to meet all current NFPA 96 code requirements as the riser is not located in a 2-hr fire rated enclosure. The Kitchen is heated by supplemental hot water unit heaters and supply air registers that are connected to a make-up heating and ventilation air-handling unit (AHU-7). There is a wall mounted propeller fan that is utilized to provide airflow movement within the space. The dishwasher is exhausted by stainless steel ductwork that is connected to an exhaust air fan. The Kitchen service corridor is heated by a unit heater.

Supply Diffusers (left) and Prop Fan (right)

Dishwasher Exhaust Ductwork

Kitchen – Unit Heater

Kitchen Exhaust Duct Riser in Storage Closet

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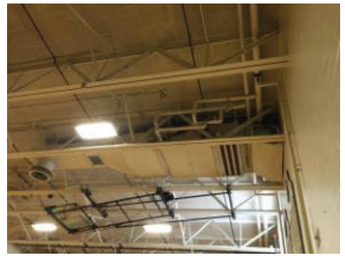
Gymnasium:

The Gymnasium is heated and ventilated by four (4) indoor, ceiling suspended, hot water heating and ventilation units (AHU-1, 2, 3 & 4). The units appear to have been installed circa 1967 and are in poor physical condition and have exceeded their expected service life. Exhaust air is removed from the gymnasium via ceiling exhaust grilles that are connected to roof exhaust fans. There are (4) four roof exhaust fans.

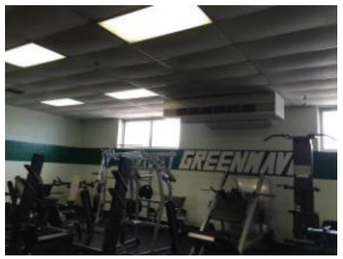


Gym Heating & Ventilation Units

Gym Exhaust Grille

Fitness Room:

The Fitness Room is heated by a ceiling suspended hot water unit ventilator. It appears that the unit ventilator is originally installed equipment circa 1967. The heating and ventilation system appears to be in poor condition and past its expected service life.



Fitness Room Unit Ventilator

Locker and Team Rooms:

The Locker Rooms are heated by a combination of suspended hot water unit ventilators and hot water fin tube radiation heating equipment. The Girls locker room has a ducted exhaust air system that is served by two (2) inline exhaust air fans. The Boy's Locker room is exhaust by rooftop exhaust air fans. It appears that the heating and ventilation system appears to be originally installed equipment, in poor physical condition and past its expected service life. Sections of the fin tube radiation and several of the air distribution devices appear to be rusted and soiled.

The majority of the make-up ventilation air for the Boys and Girls Locker Rooms are provided from the adjacent Gymnasium instead of being provided directly from the outdoors. Therefore it does not appear that the original design would be fully code compliant per today's mechanical code's ventilation air requirements.

Locker Room Unit Ventilator

Locker Room Fin tube Radiation

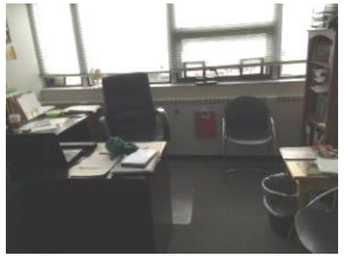
The Team Rooms are heated by a combination of an indoor hot water air handling unit (AHU-5) and hot water fin tube radiation heating equipment. The heating and ventilation system appears to be originally installed equipment, in poor physical condition and past its expected service life. Sections of the fin tube radiation and several of the air distribution devices appear to be rusted and soiled. The Team rooms are exhausted by roof mounted exhaust air fans.

There are approximately five (5) exhaust fans serving the Boys locker room and Team rooms. Three (3) of the exhaust air fans have been replaced within the recent years.

Administration:

The Administration offices are heated primarily by wall mounted fin tube radiation. The Main Administration area is air conditioned and ventilated by a ceiling suspended indoor split AC unit that is located in the kitchenette area. The fin tube radiation appears to be originally installed equipment. It is our understanding that the AC system and associated ductwork was installed approximately 7-8 years ago.

Administration Air Handling Unit



Administration Office – Fin tube Radiation Heating

The Operations office is air conditioned by a ductless AC unit.

Administration Ductless AC Unit

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Classrooms:

The majority of interior classrooms are heated and ventilated by horizontal type classroom unit ventilators. The exterior classrooms are typically heated by hot water fin tube radiation and ventilated through the use of operable windows. Roof mounted exhaust air fans and associated exhaust ductwork distribution systems provide exhaust air for the majority of classrooms. The unit ventilators, exhaust fans and ductwork distribution systems appear to be originally installed equipment, installed circa 1967, and past their expected service life.

Classroom – Fin tube Radiation

Classroom –Exhaust Grille

Science Classrooms:

Science Classroom Fume Hoods

Science Classroom Sidewall Exhaust Fan

Some of the Science Classrooms have fume hoods and associated exhaust air fan systems. Some of the Science classrooms also have a sidewall exhaust air fan. It has been reported that the fume hood operation interferes with the heating and ventilations system's ability to properly heat the space, as warm air is exhausted through the fume hood and sidewall exhaust air fan while they are in operation. Tempered mechanical make-up air ventilation should be provided in these Classrooms.

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2002 Addition Building Classrooms:

The World Language Arts Classrooms are heated and ventilated by hot water fan coil units which are located above the ceilings in the corridor. There are four (4) fan coil units that serve eight (8) classrooms and asscoaiated teacher offices. The fan coil units were installed circa 2003. Therefore the units are approximayely 12 years old. The fan coil units are ducted to supply air and return air distribution devices.

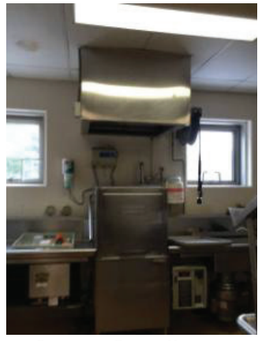
The adjacent stairwell and entry way are heated by hot water cabinet unit heaters.

The HVAC systems in the addition area of the building appear to be in fair condition.

1989 Addition Kitchen and Dining:

The 1989 Addition Kitchen has a main stainless steel kitchen exhaust hood and associated roof mounted exhaust air fan. There is also a stainless steel canopy dishwasher hood. There are hot water ceiling suspended unit heaters that provide heating to the kitchen. Make up air ventilation is provided by a roof top make-up air unit. The exhaust, make-up air and heating systems appears to have been installed circa 1989 and appear to be in fair to poor condition.

Kitchen Exhaust Hood



Dishwasher Exhaust Hood

The 1989 Addition Dining room is heated and air conditioned by a ductless AC split system heat pump system. There is also perimeter hot water fin tube radiation heating. It has been reported that the heat pump AC system and hot water fin tube radiation heating operate simultaneously at certain times of the year, resulting in both excess energy usage and temperature control complaints. The ductless cassette type AC heat pump system has its own stand-alone thermostat controls which are not fully integrated into the building control system.

1989 Addition Dining Room - Cassette Type AC Unit (left)

1989 Addition Dining - Thermostats

1989 Addition Auto Shop:

The Auto Shop is primarily heated and ventilated by a central indoor air handling unit and duct mounted hot water heating coils. Supplemental heating is provided by hot water unit heaters. There are general exhaust air, welding booth and under-slab exhaust air systems installed. The air handling unit, unit heaters, general exhaust and under slab exhaust were installed circa 1989 and are generally in poor physical condition. The welding booth exhaust and ventilation ductwork appear to be in fair condition.

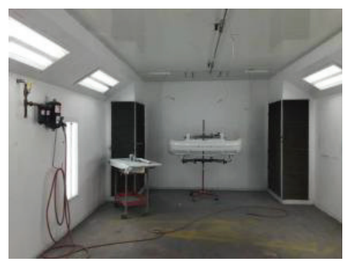
Auto Shop Unit Heater

Auto Shop Under Slab Exhaust

Auto Shop Welding Exhaust System

1989 Addition Auto Body Shop

The Auto Body Shop is primarily heated and ventilated by a central indoor air handling unit and duct mounted hot water heating coils. Supplemental heating is provided by hot water unit heaters. There are general exhaust air, and paint booth exhaust welding booth systems installed. The air handling unit, unit heaters and general exhaust systems were installed circa 1989 and are generally in poor physical condition. The paint booth make-up ventilation air is provided from a rooftop unit and exhaust air is provided by an associated exhaust fan. The paint booth appears to be in fair condition.



Paint Booth

Paint Booth Ductwork and Unit Heater

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1989 Addition Trades Shop

The Trades Shop is primarily heated and ventilated by a central indoor air-handling unit and duct mounted hot water heating coils, and supplemental heating is provided by ceiling suspended propeller type unit heaters. The unit heaters appear to be in good condition. There is a re-circulating filtered type dust collector installed. The dust collector appears to be in good condition.

Unit Heaters

Dust Collector

1989 Addition Wood Shop

The Wood Shop is primarily heated and ventilated by a hot water unit ventilator, and supplemental ventilation air is provided by a central station air handling unit. There is an outdoor grade mounted dust collector installed that is ducted to wood-working saws and equipment via galvanized sheetmetal ductwork. The unit ventilator, dust collector and associated ductwork appears to be in poor condition.

Wood Shop - Ventilation Ductwork

Wood Shop - Dust Collector

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Wood Shop Unit Ventilator

Wood Shop Dust Collector Exhaust Ductwork

1989 Addition CADD ClassRoom/Shop

The CADD Classroom and Shop is primarily heated and ventilated by a central indoor air handling unit and duct mounted hot water heating coils. There are general exhaust air and hose-reel exhaust air systems installed. The air handling unit, general exhaust fan and hose-reel exhaust systems were installed circa 1989 and are generally in poor physical condition. The exhaust and ventilation ductwork appear to be in fair condition.

CADD Shop Heating Coil and Ventilation Ductwork

Hose-Reel Exhaust

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IT Server Room and Office:

The IT Server and Office room is air conditioned by a ductless AC unit. It was reported that the room is consistently warm and experiences inadequate airflow and temperature control.

IT Room - Ductless AC Unit

Entryways, Stairwells, and Corridors:

Entryways, stairwells, and corridors are typically heated by cabinet unit heaters. There are also locations where hot water fin tube radiation is installed. In general, the heating equipment is originally installed equipment, approximately 25 to 48 years old dependent upon its location and date of installation.

Existing Cabinet Unit Heater

Existing Cabinet Unit Heater

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Existing Cabinet Unit Heater – World Arts Wing

Restrooms:

The majority of restrooms are exhausted by via a galvanized sheetmetal distribution system, typically through sidewall exhaust air grilles to roof mounted exhaust air fans. The exhaust air systems appear to be originally installed systems, circa 1989 or 1967, dependent upon location. The majority of restroom exhaust air systems have exceeded their expected service life.

Renovation Recommendations

If a renovation were to be undertaken to upgrade the existing High School and CTE facilities with the goal of extending the life of the physical facility by 30 – 40 years the following items would need to be replaced:

*Note * = Code Issue*

- Boiler Plants - The existing CTC Boilers, Pumps and Boiler room hot water piping should be replaced. New high efficiency condensing boilers should be installed to replace the existing boilers that have experienced increasing maintenance issues over the past years. Alternatively the CTC building could be connected to the existing High School boiler plant. In order to accomplish this, new cross connecting hot water piping, valving, pumps equipped with VFD drives, and associated controls would need to be provided.

- Terminal Heating Equipment:
  - General: Existing fin tube radiation, unit heaters, unit ventilators and convector heating equipment should be replaced, with exception of Language Arts Building fan coil unit and unit heater heating equipment.
  - High School Classrooms: The existing High School Unit ventilators that serve the interior classrooms should be replaced. New HVAC systems with mechanical ventilation should be provided for exterior classrooms. New mechanical ventilation systems should be provided with energy recovery.
  -
  - Library: Existing hot water unit ventilators should be replaced and new energy efficient HVAC system should installed to serve this area.

- Air Handling Unit Systems:
  - General: Existing indoor air handling units should be replaced.
  - CTC Shops and Classrooms: The existing hot water heating air handling unit systems should be replaced.
  - Administration Areas: The Main Administration area is air conditioned and ventilated by a ceiling suspended indoor split AC unit that is located in the kitchenette area. The existing Administration area air handling unit and associated roof mounted condensing unit should be replaced with a new air handling unit and condenser.
  - Auditorium – The existing air handling units and associated ductwork should be replaced.
  - Gymnasium) - The four (4) existing indoor heating and ventilation units and associated ductwork should be replaced. New exhaust fans should be installed
  - Locker, Team and Fitness Rooms: Existing air handling units and unit ventilators should be replaced.
  - Cafeteria – The existing air handling unit should be replaced with high efficiency units. Existing ductwork systems should be replaced and new terminal supplemental heating should be installed.

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  - Kitchen – High School and CTC Buildings - The air handling units and kitchen exhaust fans in both Kitchens should be replaced with new exhaust fan and make-up air systems. A new Variable volume hood exhaust air system should be installed for energy savings. Kitchen exhaust and make-up air ductwork should be replaced. Existing unit heaters should be removed and new radiant heating panels and unit heaters should be installed.

- Ventilation Systems:
  - General: Existing ventilation systems should be replaced and upgraded, including the following:
  - New HVAC systems with mechanical ventilation should be provided for exterior classrooms*. New mechanical ventilation systems should be provided with energy recovery.
  - Direct outdoor air ventilation system should be provided for Locker rooms that are currently provided with ventilation air that is transferred from Gym*.
  - Corridor and Entryway Heating and Ventilation – The majority of corridor areas should be provided with improved mechanical ventilation, as many appear under ventilated*. Existing ductwork and diffusers should be replaced and existing hot water radiator/convectors/unit heaters should be replaced.
  - New science classroom exhaust air systems for fume hood and lab/prep room areas should be provided so that exhaust rates are in accordance with code requirements*.
  - Team and Locker room should get improved ventilation systems as it appears ventilation is below current code requirements*.
  - New Exhaust air system should be installed to serve the all copy room and janitor closet areas*.
  - The Kitchen Exhaust Ductwork should be enclosed in 2 hour rated shaft*.
  - The CTC Trade Shop dust collector should be located outdoors for improved noise control.
  - The CTC Auto Body and Auto Shops air pressurization needs to be corrected, as exhaust fumes often migrate to occupied areas of the building*.
  - Exhaust fans: Existing rooftop and indoor exhaust fans should be replaced. Exceptions include five (5) recently replaced exhaust fans that serve the locker rooms and team room.

- Air Conditioning Systems:
  - General: Existing air conditioning systems should be replaced, including the following. It is highly recommended that a more centralized high efficiency air conditioning system is considered utilizing unitary type equipment with standard energy efficiency:
    - Window Air Conditioning Units
    - Ductless Split System AC Units
    - Air Handling Systems with Split System AC
    - IT Server Room/Office – this unit should be upsized.

- Piping, Valving and Insulation – The majority of building hot water piping, with exception of the piping located with the High School Boiler Room and the Language Arts Building, should be replaced.

- Ductwork Distribution Systems: The majority of ductwork distribution systems, with exception of the piping located with the High School Boiler Room and the Language Arts Building, should be replaced.

- Automatic Temperature Controls: A new building energy management system (EMS) and direct digital control (DDC) system should be installed to replace the existing ATC pneumatic/DDC system. The existing High School boiler plant controls could remain and be integrated into the new EMS system. All buildings ATC control should be fully integrated into one common EMS system.

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ELECTRICAL

Executive Summary

In general, the electrical systems have reached their life expectancy and are in poor condition with the exception of the world language addition. Life safety lighting and exit signs are battery type and not served from a backup generator. The electrical service was replaced during last addition but is not sufficient in size for present standards.

The fire alarm system is in fair condition and will require replacement due to voice evacuation requirements of present code.

Lighting systems in general have been upgraded with lamps and ballasts to conserve energy. T8 lamps have been installed in most spaces. Light fixtures however are in poor/fair condition in the majority of the building. The fixtures are original to respective addition construction period in most locations and should be upgraded.

The power for the facility is in poor/fair condition, a new power distribution system should be provided at 277/480 volt distribution.

The communications system wiring infrastructure for tel/data has been upgraded to accommodate desired use. A classroom intercom/paging system head end has been upgraded but is not up to present standards. The central clock system is not operational. There is a dedicated headend room and remote IDF closets with a fiber optic back bone that is in fair condition but lacks physical space.

Electrical Distribution System

The service voltage is 120/208V rated at 2000 amps. The switch is in fair condition and within its 40 year useful life. The main switchboard does not have space for future expansion. The main switchboard is manufactured by Square D.

The parking lot lighting has a step up transformer for 480 volt branch circuits.

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There is a dedicated utility company pad mounted transformer for the facility. The service is underground from the transformer to main electrical room. The service was upgraded as part of last addition.

A motor control center is present in gym to serve backstop motors.

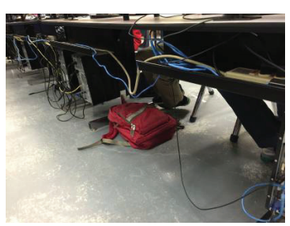
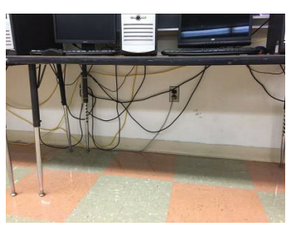
There are sub-panels located throughout the facility and they are generally in closets and are circuit breaker type and are in poor condition where original. Panels have been with each addition and are in fair condition.

Motor starter panels are used for Roof exhaust fans.

Branch Circuits/Wiring Devices

This quantity of receptacles appears minimal in most spaces. Additional receptacles for computers have been added in classrooms typically done using surface wiremold.

Kitchen and Science Lab receptacles are not on GFCI circuits to meet present code. Science labs do not have EPO's installed.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Interior Lighting System

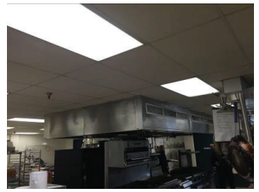
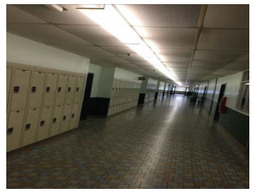
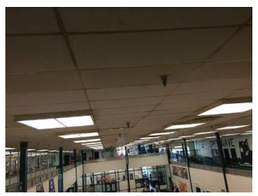
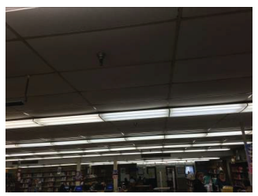
Lighting in corridor varies but is generally surface 1'x4' acrylic fluorescent fixtures.

Classroom lighting typically consists of surface 1'x4' acrylic fluorescent fixtures. The lighting system should be upgraded in all classrooms. The fixtures are controlled by manual wall switches.

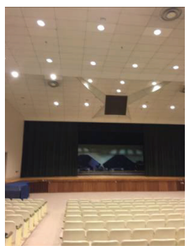
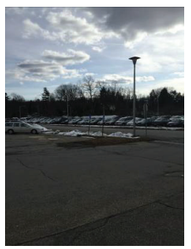
Lighting in shop/mechanical spaces consists of fluorescent industrial fixtures. Woodshop has vapor tight fixtures present.

Cafeteria lighting consists of surface fluorescent fixtures forming a 4'x4' square.

Kitchen lighting consists of 2'x4' recessed fluorescent fixtures. The fixtures have lenses and are in fair condition.

Lighting in auditorium is recessed fluorescent downlighting. The fixtures replaced original incandescent fixtures.

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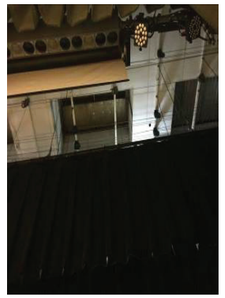
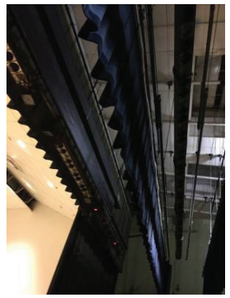
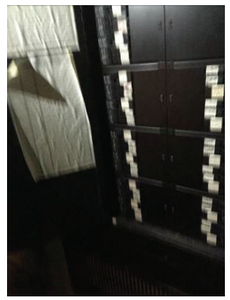
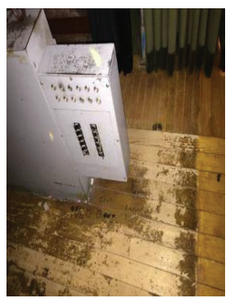
Site lighting consists of pole fixtures with period type heads and are in poor condition.

Theatrical spot lights are in good condition. The system dimming rack has been updated within the last ten years or so. The dimming rack is manufactured by EDI and has 54 dimmers.









Gym lighting consists of high bay fluorescent fixtures. The fixtures were replaced approximately within the last ten years. The fixtures are equipped with T5 lamps.

Media center lighting typically consists of surface fluorescent wraparound fixtures similar to classroom.

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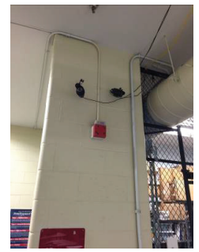
Emergency Lighting System

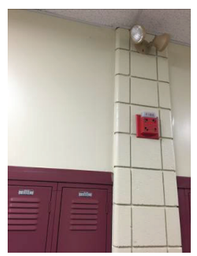
The existing emergency lighting and exit signs are battery type. There is an inverter present for the original building. The system is in poor condition and should be replaced with an emergency generator for backup power.

Emergency lighting is normally “off”. There were no area protection relays observed.

Fire Alarm System

The fire alarm panel is manufactured by EST. The system is an addressable type. The fire alarm notification alarms are not code compliant in accordance with present code. There are door holders in corridors as required by code. The world language addition has strobes in the classrooms.





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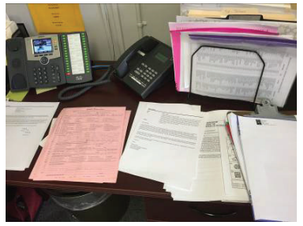
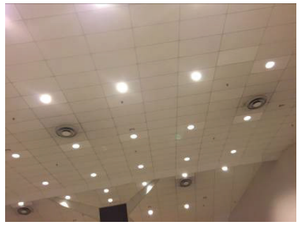
There is smoke detection in Corridors.

The fire alarm annunciator is located in the main entrance.

Data/Telephone/Classroom Intercom/Clock System/Security System

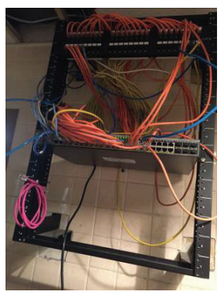
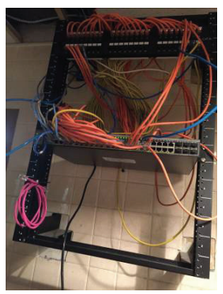
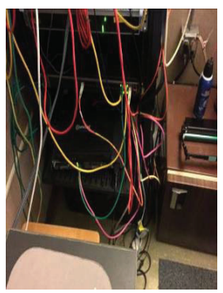
The master clock system is operational but beyond its life expectancy. Classroom clocks have been replaced with battery type where system clocks have failed.

There are smartboards present in each classroom. There is a classroom amplification system manufactured by Light-speed Model Redcat.

There is a local sound system in Auditorium.

In the classrooms there are two data drops for teacher computers. All data wiring is CAT 5. The voice/data infrastructure should be updated to present standards. The CAT 5 is installed in Wiremold. The location of data outlets appears fine.

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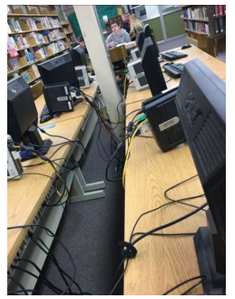


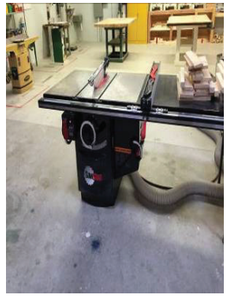
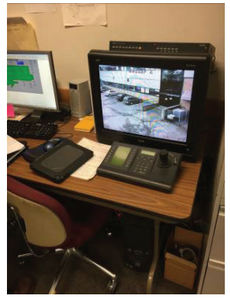
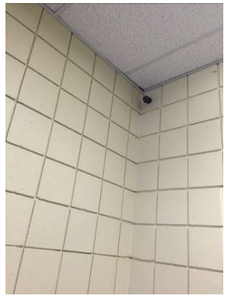

There are dedicated data closets. There is a wall mounted patch panel in one classroom.

There is a Netgear wireless data network presently being installed throughout the facility. Netgear switches are installed with gigabit backbone and POE.

The classroom intercom system is manufactured Bogan. A Multicom 2000 headend has replaced the original Dukane intercom system.

There are paging speakers throughout the facility connected through the Bogen intercom system.

A closed circuit TV system is present. The coverage in the building covers corridors and entrance locations. Exterior perimeter has building dome camera. The cameras are analog type. Exterior camera DVR is manufactured by Bosch.

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Renovation Recommendations

If a renovation were to be undertaken to upgrade the existing High School and CTE facilities with the goal of extending the life of the physical facility by 30 – 40 years the following items would need to be replaced:

*Note * = Code Issue*

- Switchgear serving original building and CTE facilities.
- Branch circuit wiring throughout including addition of surge suppression equipment.
- Interior and exterior lighting system with replacement of LED.
- Emergency lighting system including new natural gas approximately 200 kW. The generator will also service the heating system, tel/data systems and fire alarm system. *
- New fire alarm system. *
- New CAT6 tel/data infrastructure.
- New 50 micron fiber distrubiotn for 10 gbps transmission to IDFs.
- Data/Telephone/Classroom Intercom/Clock System/Security System
    - Master Clock
    - Local Sound Systems
    - Data Outlets
    - Wireless Data Network
    - Classroom Communication System
    - Paging System
    - CCTV System

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Dover High School
Dover, NH
Plumbing Existing Conditions Systems Report
J#831 044 00.00
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PLUMBING

Executive Summary:

Presently, the Plumbing Systems serving the building are cold water, hot water, sanitary, waste and vent system, special waste and vent system, storm drain system, and natural gas. Municipal sewer and municipal water service 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 fixtures are generally in fair condition. The plumbing fixtures in the 2003 Addition are in good condition. In general, the fixtures in the original and 1989 Addition 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. 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 in the original and 1989 Addition.

Cast iron is used for sanitary and storm drainage. Rainwater from flat roof areas is collected by interior rain leaders which appear to discharge to a below grade drainage system. Where visible, the cast iron pipe appears to be in fair condition. Smaller pipe sizes appear to be copper or PVC. In general, the drainage piping can be reused where adequately sized for the intended new use.

Fixtures:

The water closets are predominately floor mounted vitreous china with manually operated flush valves.

Urinals are pedestal type, vitreous china with manually operated flush valves.

Lavatories are generally wall hung vitreous china. The lavatories have a variety of faucet types with hot and cold water supplies.

Drinking fountains consist of either wall mounted stainless steel and vitreous china single bowl fountains.

Electric water coolers are wall hung, non accessible.

Janitor's sink are generally trap standard mounted, enameled cast iron sinks. Faucets are typically not equipped with vacuum breakers.

Science classroom sinks are resin type with deck mounted faucets. Faucets are not equipped with vacuum breakers. Classrooms contain an antiquated emergency shower fixture fed by the cold water system only. Sinks are not piped to an acid neutralization system.

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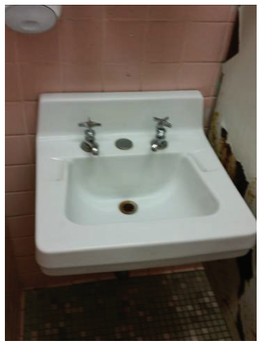
Shop/Tech labs have a wash fountain fixture.

Shop/Tech labs contain either a combination emergency shower/eye wash or just an eyewash fixture. The emergency fixtures are fed by cold water system only; water is not tepid.

The main Kitchen area and Culinary Arts Kitchen fixtures are in fair to good condition. The pot washing sinks are fitted with grease interceptors.



Typical bathroom fixtures

Stainless steel drinking fountain

China drinking fountain

Electric water cooler

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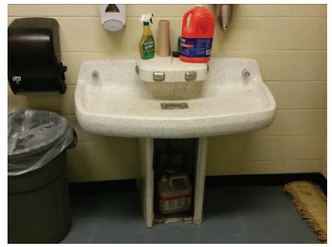


Service sink *Shop sink* *Emergency fixture*

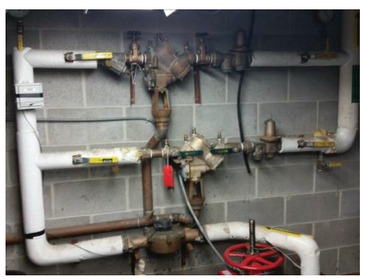
Water Systems:

The building has two separate domestic water services, one in the 1967 School and one in the 1989 Addition.

In the 1967 School there is a dedicated 4" domestic water service which enters the mechanical room. There is a 4" domestic water meter and two 2" reduced pressure backflow preventers with pressure reducing valves located in parallel. There is also two 1-1/2" pressure reducing valves piped in parallel configuration. The distribution main is 4" in size.

In the 1989 Addition there is a combined 8" water service which enters the lower level mechanical room. Off of this service there is a 2-1/2" domestic water supply with 2" water meter and two 1-1/2" reduced pressure backflow preventers with 1-1/2" pressure reducing valves located in parallel. The outlet water pressure is 70 PSI.

1967 school water service & meter



1989 addition water meter

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Domestic hot water in 1967 School is generated through three natural gas fired storage type water heaters. Water heaters are PVI model 750N-400A, with a natural gas input of 600,000 BTUH and 400 gallon storage capacity. The water heaters are in fair condition. The hot water systems are recirculated. There are two thermostatic mixing valves on the systems to prevent scalding, Lawler model 805 and Lawler model 802.

Domestic hot water in 1989 Addition is generated through a gas fired storage type water heater. Water heater are PVI model 375P-225, with a natural gas input of 300,000 BTUH and 225 gallon storage capacity. The water heater is in fair condition. The hot water system is recirculated. There are two thermostatic mixing valves on the systems to prevent scalding, both are Symmons model 5-900.

1967 School water heaters

1989 Addition water heater

Gas:

The building has two gas services; one at the original building and on at the 1989 Addition.

The gas service at the 1989 Addition is elevated pressure and it supplies the heating boilers, domestic water heater, and the Culinary Arts kitchen cooking equipment. Culinary Arts kitchen supply is equipped with an automatic shutoff valve. Hood contains a fire suppression system.

The gas service at the 1967 School is elevated pressure and it supplies the heating boilers, domestic water heater, Science classroom, and the main kitchen cooking equipment. The main kitchen supply is equipped with an automatic shutoff valve. Hood contains a fire suppression system.

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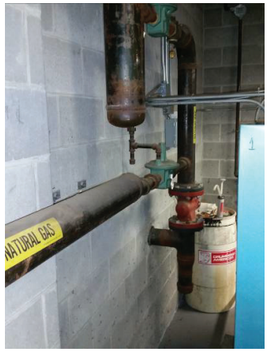
Gas piping is black steel with a combination of screwed and welded joints and fittings depending on the time of installation.

Science Classrooms are equipped with a master emergency shutoff valve located in the teacher's bench.

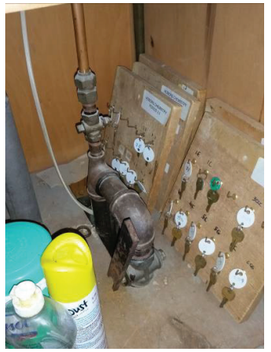
Original building gas service & meter

1989 building gas service & meter

Original building gas piping



1989 building gas piping



Science room gas valve

Drainage Systems:

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 or PVC.

Tech shops are equipped with trench drains. There is no evidence that trench drains are piped through an oil/sand separator.

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

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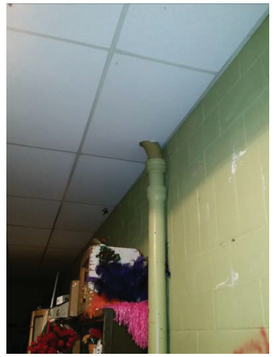
Acid waste and vent piping is hub and spigot dur-iron. The systems is not piped to an acid neutralization system



Cast iron drainage piping

Science waste piping

Compressed Air System:

The technical shops are provided with compressed air. There are various pipe drops in each shop supplied from the piping distribution system. Typical outlets include a filter and pressure regulator.

The compressed air is provided by a single 15 h.p. motor located on a horizontal receiver. Compressor is located in the 1989 Addition mechanical room. The air compressor is in good condition.

Air compressor

Typical air outlet station

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Renovation Recommendations

If a renovation were to be undertaken to upgrade the existing High School and CTE facilities with the goal of extending the life of the physical facility by 30 – 40 years the following items would need to be replaced:

- All plumbing fixtures with high efficiency water conserving types.
- Domestic water heaters
- Domestic water shutoff valves.
- Provide tepid water to emergency fixtures.
- Provide code required cross connection devices on water supply to Science Classroom sink.
- Acid resistant waste and vent piping for science Classroom.
- Provide acid neutralization system for Science Classroom waste.
- Natural Gas shutoff valves including Science Classroom master gas valves.
- Compressed Air System shutoff valves and air outlet stations.

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Dover High School
Dover, NH
Fire Protection Existing Conditions Systems Report
J#831 044 00.00
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FIRE PROTECTION

Executive Summary

The building is protected by automatic sprinkler systems. The building is served by two separate fire water services. There is one service located in the original 1967 School which supplies the original building and the 2002 addition. The other service is located in the 1989 addition mechanical room and supplies the 1989 addition. The majority of the equipment and systems installed appear to have been well maintained and are generally in fair to good condition.

1967 School

There is dedicated 6" fire water service which enters the lower level storage room adjacent to the mechanical room. There is a 4" double check valve assembly (Febco Model 805) with a 4" wet alarm valve and fire distribution main.

Fire service is controlled by an exterior Post Indicating Valve.

Fire department connection is a 4" x 2-1/2" x 2-1/2" Siamese.

Piping is black steel with coupling or threaded fittings, depending on pipe size.

All shutoff valves are monitored by the fire alarm system.

Sprinkler heads in general are standard response type heads. Pendent type in ceiling areas and upright type in non-ceiling areas.

Standpipes are not provided in the Stage.

Incoming water pressure is in excess of 100 PSI.

Fire service riser

Double check valve assembly

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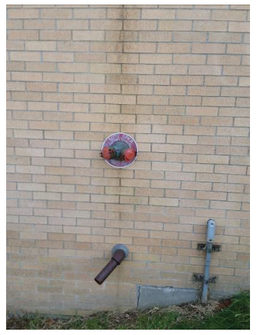
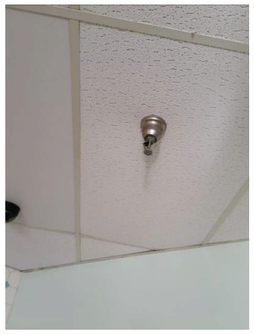
Post Indicating valve



Siamese Fire Department connection



Typical pendent sprinkler

1989 Addition

There is a combined 8" water service which enters the lower level mechanical room. Off of this service there is a 6" double check valve assembly (Febco Model 805). There is a 6" wet alarm valve and fire distribution main.

Fire service is controlled by an exterior Post Indicating Valve.

Fire department connection is a 4" x 2-1/2" x 2-1/2" Siamese.

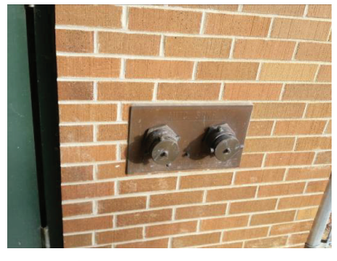
Piping is black steel with coupling or threaded fittings, depending on pipe size.

All shutoff valves are monitored by the fire alarm system.

Sprinkler heads in general are standard response type heads. Pendent type in ceiling areas and upright type in non-ceiling areas.

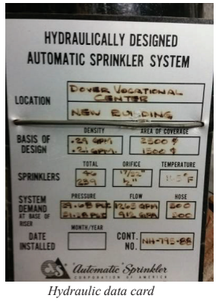
Incoming water pressure is in excess of 100 PSI.

Combined water service - FP riser



Siamese Fire Department connection

Post indicating valve



Hydraulic data card

Renovation Recommendations

If a renovation were to be undertaken to upgrade the existing High School and CTE facilities with the goal of extending the life of the physical facility by 30 – 40 years the following items would need to be replaced:

- Sprinkler heads in 1967 School and 1989 addition

Nobis
Engineering a Sustainable Future

MEMORANDUM

To:	HMFH Architects, Inc.
From:	Nobis Engineering, Inc.
Subject:	Dover High School and Regional Career Technical Center - Site Assessment Report
Date:	February 23, 2015

SITE ASSESSMENT

On December 4 and December 30, 2014, Nobis Engineering, Inc. performed visual site assessments of the 44 acre Dover High School & Regional Career Technical Center campus at 25 Alumni Drive.

The site assessment conducted by Nobis was limited to visually inspecting the condition of surficial site features. The inspection included, but was not limited to, pavement, driveways, parking spaces, curb, sidewalks, landscaping, and building access and accessibility. Once an ALTA survey is completed Nobis can make additional assessments on grading and subsurface features including utilities and drainage. Detailed below are the findings and recommendations of the site assessment.

Executive Summary

In general, the existing bituminous asphalt pavement, curbing, and walkways/sidewalks are in poor condition and have reached or surpassed their life expectancy. The asphalt surfaces appear to have been overlain several times and as a result the asphalt surface is severely cracked from underlying deficiencies. The exception to this assessment is the site conditions of the Dover Alternative Program at 50 Alumni Drive. The conditions of the asphalt at the Dover Alternative Program are in good condition.

The condition of the landscaping appears to be well established and healthy. The existence of an irrigation system could not be determined from visual inspection.

Building access and accessibility is generally not in conformance with current American with Disabilities Act (ADA) design standards. The non-conformances include, but are not limited to, total number of accessible parking spaces in each parking lot, van designated spaces, signage, and access aisle striping and accessibility.

The existence of the utilities servicing the building/campus were observed including municipal water and sewer, natural gas, electrical power, site lighting, and a closed drainage system. The condition of the services cannot be noted from visual inspection however the structures appeared

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to be in good condition (manhole covers, hydrants, valves, meters, etc.). The majority of the drainage runoff from the impervious surfaces on-site appears to sheet flow to a closed drainage system. The closed drainage system is believed to discharge to the seasonal brook east of the campus and the seasonal brook south of the Senior Lot. DHS also has a foundation drain and roof drains that tie into the closed drainage system.

Pavement/Driveway Assessment

Upon inspection of the campus parking lots and driveways Nobis noted the following:

A Lot & Bus Drop-off

- Upon visual inspection the condition of the existing pavement is generally less than satisfactory. Numerous cracks (longitudinal, traverse, alligator) were observed in both the bus-drop off loop and the A Lot. Few of the cracks observed in the pavement have been sealed using asphalt crack sealant while the majority of the cracks have been left untreated.
- Some patch work and pavement overlays have been done over the years presumably to address the worst sections of pavement.
- Some raveling and aging (pavement surface deterioration/loss of aggregate) of the pavement is evident throughout but is the worst in the visitor parking spaces.
- The pavement overlays at the entrance and exit from Alumni Drive are in good condition.

B Lot

- Upon visual inspection the condition of the existing pavement is generally poor. Numerous cracks (longitudinal, traverse, alligator) were observed in both the B lot and the portion of the lot associated with the 2002 addition. Few of the cracks observed in the pavement have been sealed using asphalt crack sealant while the majority of the cracks have been left untreated.
- Some patch work and pavement overlays have been done over the years presumably to address the worst sections of pavement.
- Some raveling and aging (pavement surface deterioration/loss of aggregate) of the pavement is evident throughout.
- The pavement overlay at the entrance and exit from Alumni Drive is in good condition.
- The entrance and exit from Alumni Drive is in less than satisfactory condition.

C Lot

- Upon visual inspection the condition of the existing pavement is generally very poor. Numerous cracks (longitudinal, traverse, alligator) were observed in the C lot. A few of the cracks observed in the pavement have been sealed using asphalt crack sealant while the majority of the cracks have been left untreated.
- Some patch work and pavement overlays have been done over the years presumably to address the worst sections of pavement.
- Serious raveling and aging (pavement surface deterioration/loss of aggregate) of the pavement is evident throughout sections of the C lot. This likely results in surface ponding during/following rain events.
- The entrance and exit road from Alumni Drive is in less than satisfactory condition.

Senior Lot

- Upon visual inspection the condition of the existing pavement is generally in satisfactory to less than satisfactory condition. Longitudinal and traverse cracking is low to medium in severity while alligator cracking is minimal. None of the cracks observed in the pavement have been sealed using asphalt crack sealant.
- Raveling and aging (pavement surface deterioration/loss of aggregate) of the pavement is not evident.

Dover Alternative Program Parking Lot (50 Alumni Drive)

- Upon visual inspection the condition of the existing pavement is generally in good condition.
- No cracking, raveling and aging (pavement surface deterioration/loss of aggregate) of the pavement is evident.
- A couple of minor puddles were observed in the parking lot.

Pavement East of 1989 Addition (Including the access road from Alumni Drive)

- Upon visual inspection the condition of the existing pavement is generally satisfactory to less than satisfactory. Numerous cracks (longitudinal, traverse, alligator) were observed in the pavement. None of the cracks observed in the pavement have been sealed using asphalt crack sealant.
- There is minor raveling and aging (pavement surface deterioration/loss of aggregate) of the pavement evident throughout the area.
- The pavement overlay at the entrance and exit from Alumni Drive is in good condition.

Curb Assessment

Upon inspection of the campus parking lots and driveways Nobis observed multiple types of curbing. Refer below for Nobis' findings at locations around the campus:

A Lot & Bus Drop-off

- The A Lot and Bus Drop-off driveway are surrounded by bituminous concrete curb (BCC) except along the face of the concrete sidewalk entering the main entrance to the building.
- Based on visual inspection most of the BCC is nearing the end of its life cycle however it still appears to be functioning as designed. The BCC is cracked into several small 1 to 2 foot sections and is deformed in areas. BCC is a cost-effective curb, however, the harsh New England winters and snow plows shorten its useful life.
- The height of BCC is generally desired to be about 4-5 inches above finished grade. Nobis observed sections of BCC less than 3 inches (likely due to pavement overlays over the years).
- Recommend replacing BCC with vertical granite curb (VGC) along sidewalk for pedestrian safety.

B Lot
- No curb

C Lot
- No curb

Senior Lot
- No curb except around the landscape island abutting Alumni Drive. The landscape island has BCC along both sides of the island and VGC around the radial ends.
- The condition of the VGC is satisfactory while the condition of the BCC is nearing the end of its useful life. The BCC is cracked into several small 1 to 2 foot sections but has not begun to lose its alignment.

Dover Alternative Program Parking Lot (50 Alumni Drive)
- No curb except around the southeast corner of the building. The curb around the edge of the parking lot surrounding the southeast corner of the building is sloped granite curb (SGC). The SGC is in satisfactory condition.

Pavement East of 1989 Addition (East Side of DHS)
- SGC around portions of the asphalt perimeter along the east side of the 1989 addition. The SGC is in satisfactory condition.

Sidewalk/Walkway Assessment

Upon inspection of the campus sidewalks and walkways Nobis noted the following:

Observations
- The concrete sidewalk along the main entrance at the front of the school is in satisfactory condition. There is some cracking along the sidewalk and minimal chipping. The concrete steps to the main entrance have some chipped concrete at the edges.
- The asphalt sidewalk that loops from Alumni Drive along the front of the school is in less than satisfactory condition. Numerous cracks (longitudinal, traverse) were observed along the sidewalk. Some of the cracks have been treated with asphalt crack sealant but the majority

of the cracks have been left untreated. Appeared that the sidewalk has been overlain in the past.

- The sidewalk along the edge of Alumni Drive is in poor condition. Numerous cracks (longitudinal, traverse, alligator) were observed in the asphalt. Raveling and aging (pavement surface deterioration/loss of aggregate) of the asphalt was also observed, most notably at the sidewalk edges. Appeared that the sidewalk has been overlain in the past.
- The walkways to the building at 50 Alumni Drive are in good condition.
- The walkway from the B Lot to the ball fields was in good condition.
- The walkway from the B Lot to the doors at the front of the 2002 addition (Door #3 & Door #4) are in good condition.
- The concrete sidewalk leading to Door 28 at the east side of the 1989 addition is in poor condition. The concrete has deteriorated next to the accessible parking space.

Landscaping Assessment

Upon inspection of the campus landscaping Nobis noted the following:

Observations

- Landscape inspection included the inspection of the trees and shrubs around the perimeter of the buildings and parking lots. The inspection did not include the landscaping and vegetation of the ball fields.
- The trees and shrubs planted around the buildings and parking lots appeared to be well established and healthy.
- The majority of the planted tree and shrubs are along the front face of the buildings and along the western edge of the driveway from Alumni Drive heading towards the C lot and middle school.
- Visible inspection of the grass appeared to be well established throughout the campus.
- The existence of an irrigation system could not be determined during the inspection.

Building Access and Accessibility Assessment

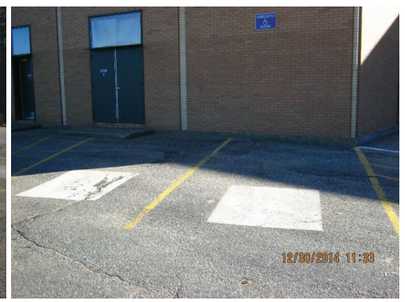
Upon inspection of the campus building access and accessibility Nobis noted the following:

A Lot & Bus Drop-off

- Upon visual inspection there are two accessible parking spaces in the A lot and one accessible ramp into the main entrance of the building. There are approximately 87 parking spaces in the A Lot. According to state and federal ADA design standards there should be a minimum of 4 accessible parking spaces. In addition to having less than the minimum number of accessible spaces required, the access aisle striping and parking space signage are out of compliance. Also the head of the accessible aisles does not lead to an accessible path of travel as required by ADA.


B Lot

- Upon visual inspection of the building exterior it appears that Door 3, 4, 5, and 12 are accessible building entrances. There are approximately 90 parking spaces in the B Lot. According to ADA design standards there should be a minimum of 4 accessible parking spaces for which 4 accessible parking spaces are provided in the B Lot.
- Although the number of accessible spaces provided for Door 3 and 4 (one each) are adequate, one of the spaces should be designated as a van accessible space with an 8 foot wide access aisle.
- There are two accessible parking spaces designated in the shortest accessible route to Door 5. Although the number of spaces is adequate one of the spaces should be designated as van accessible and the accessible spaces are not properly striped with an access aisle.
- There is a long concrete ramp leading to the Door 5 entrance. This ramp should have a handrail and a level landing per the ADA standards.
- No accessible parking spaces are provided to access Door 12. If this is an accessible building entrance a minimum of one van designated accessible space should be provided.

C Lot

- Upon visual inspection of the building exterior it is unclear whether any of the building entrances are intended to be accessible.
- Based on the total number of parking spaces provided in the C Lot (approximately 65) three accessible parking spaces would be required per ADA design standards if any of the building entrances in the C Lot are accessible.

Senior Lot

- Upon visual inspection there are no accessible spaces in the Senior Lot. According to the ADA design standards the amount of accessible parking spaces that must be provided is based on the total number of spaces in each parking lot. Nobis interprets this to mean that the Senior Lot should have accessible parking spaces given that it is parking lot that is used by seniors to access various accessible entrances on the campus. A minimum of 6 accessible parking spaces is required based on a total of approximately 186 parking spaces in the lot.

Dover Alternative Program Parking Lot (50 Alumni Drive)

- Upon visual inspection there are three accessible parking spaces in the parking lot and there appears to be one accessible entrance at the front of the building. There are approximately 76 parking spaces in the parking lot.
- Two accessible parking spaces are properly located closest to the accessible entrance although one of the spaces should be designated as van accessible. The other accessible space is located closest to the walkway to one of the ball fields. To be in accordance with ADA design standards this accessible space should be designated as van accessible and have an 8 foot wide access aisle to the right of the space.
- Based on the 76 parking spaces in the parking lot per ADA design standards 4 accessible parking spaces are required and only 3 accessible parking spaces are provided.
-


1989 Addition Parking Spaces

- Upon visual inspection there is one accessible entrance (Door 28) to the 1989 addition. There is a small 4 parking space lot accessible to this entrance. One of the four parking spaces is accessible which meets ADA design standards. However, this accessible parking space should be designated as van accessible and have an 8 foot wide access aisle to the right of the space.

- **Nobis could not determine if the accessible path from the parking spaces to the accessible building entrance meets the ADA design standards for running slope or cross slope. A detailed topographic survey will be necessary to make this determination.**
- **All building accessibility assessments have been based off of visual inspection of the building exterior. If programmatic needs or building entrance accessibility changes or the assumptions made above are incorrect the accessible parking spaces and accessible paths will need to be addressed accordingly.**

Existing Utility Assessment

Upon inspection of the Dover High School campus and blueprints Nobis noted the following regarding the existing utilities on-site:

Water: The building is serviced by municipal water supply. It appears that the water supply enters the building in two locations. The two locations are between the B Lot and C Lot behind the building and at the east side of the building for the 1989 addition.

Sewer: The building is serviced by municipal sewer. It appears that the municipal sewer exits the building in two locations. The two locations are between the B Lot and C Lot behind the building and at the north side of the building for the 1989 addition.

Gas: The building is serviced by natural gas. It appears that the natural gas enters the building between the B Lot and C Lot behind the building as evidenced by the gas meter. It is unclear from visual inspection if the natural gas line enters the building in any other locations.

Electric: The building appears to receive its electric service from the transformer off of Alumni Drive in front of the 2002 building addition.

Site Lighting: The site has several site lighting posts throughout the campus. Based upon the number and spacing of the site light poles the lighting seems adequate. There are several light poles along the driveway from Alumni Drive to the middle school that have been abandoned for reasons unknown to Nobis.

Drainage: The majority of the drainage runoff from the impervious surfaces on-site appears to sheet flow to a closed drainage system. The closed drainage system is believed to discharge to the seasonal brook east of the campus and the seasonal brook south of the Senior Lot. DHS also has a foundation drain and roof drains that tie into the closed drainage system.

Summary of American with Disabilities Act (ADA) Non-compliance
(References are to the Department of Justice 2010 ADA Standards for Accessible Design)

A Lot & Bus Drop-off

- Insufficient number of accessible parking spaces (Section 208.2)
- No van accessible space designated (Section 502)
- Improper signage for accessible spaces (Section 502 & 703)
- Access aisle does not lead to accessible path (Section 403 & 502)
- Access aisle does not meet running and cross slope requirements (Section 403)

B Lot

- Accessible parking spaces are not located in the shortest accessible route to a building entrance (Section 208.3)
- No van accessible space designated (Section 502)
- Improper signage for accessible spaces (Section 502 & 703)
- Access aisle does not lead to accessible path (Section 403 & 502)
- Access aisle may not meet running and cross slope requirements (Section 403)
- Ramp does not have handrails or a level landing (Section 405.7 & 405.8)

C Lot

- No accessible spaces are provided

Senior Lot

- No accessible spaces are provided

Dover Alternative Program Parking Lot (50 Alumni Drive)

- Insufficient number of accessible parking spaces (Section 208.2)
- No van accessible space designated (Section 502)

1989 Addition (4 Parking Spaces)

- No van accessible space designated (Section 502)
- Access aisle does not lead to accessible path (Section 403 & 502)
- Access aisle on wrong side of accessible space (Section 502)

Renovation Recommendations

If a renovation were to be undertaken to upgrade the existing High School and CTE facilities with the goal of extending the life of the physical facility by 30 – 40 years the following items would need to be replaced:

A, B, C Lot & 1989 Addition

- Full depth pavement reconstruction, including new pavement and gravels. Installation of heavy duty pavement section for truck travel paths in Lot C. Addition of geogrid may be necessary pending results of a geotechnical investigation.
- Bituminous concrete curb
- Bituminous asphalt sidewalks including along Alumni Drive (pavement replacement only)

Senior Lot

- Grind pavement and place 1” pavement overlay
- Bituminous asphalt sidewalk along Alumni Drive (pavement replacement only)

ADA Compliance

- All ADA requirements will need to be complied with including designating the required number of spaces with proper signage, striping, accessible routes, handrails, landings at doorways, etc. as detailed on the previous page.

Section 4

Supplimental Reports

Dover School Department: 3-Year AHERA Reinpsection-2012

Location	ACBM	Approximate Quantity	Category	Friable	Condition	Assessment	Response	Notes
Dover High School								
Ground/ First Floor								
Men's Room, off Kitchen	Pipe Fitting Insulation	5 observed	TSI	Yes	Good	5	1	
	Ceramic Tile grout/mastic	25 sq. ft	Misc	No	Good	NF	1	
Cafeteria	9" Floor Tiles and mastic	6000 sq. ft	Misc	No	Fair	NF	1	Normal wear observed throughout.
	Pipe Fitting Insulation	23 observed	TSI	Yes	Good	5	1	Limited access to area above ceiling tiles. Observations made from upper level walkway.
Teacher's Room/Office	Pipe Fitting Insulation	30 observed	TSI	Yes	Good	5	1	Above ceiling tile and/or at ceiling level
Custodial Closet by Teacher's Room	Ceramic Tile grout/mastic	50 sq. ft	Misc	No	Good	NF	1	
Room 115	9" Floor Tiles and mastic	960 sq. ft	Misc	No	Good	NF	1	
	Pipe Fitting Insulation	5 observed	TSI	Yes	Good	5	1	Above ceiling tile and/or at ceiling level
Room 116	9" Floor Tiles and mastic	960 sq. ft	Misc	No	Good	NF	1	
	Pipe Fitting Insulation	6 observed	TSI	Yes	Good	5	1	Above ceiling tile and/or at ceiling level
Hall from Cafeteria	Ceramic Tile grout/mastic	800 sq. ft	Misc	No	Good	NF	1	
Room 137B, Art Classroom, formerly Mechanical Tool Classroom	12" Floor Tiles and mastic	960 sq, ft	Misc	No	Good	NF	1, 4	Newer materials should have MSDS information and confirmation testing performed. ACBM may be beneath newer flooring
Laundry	Ceramic Tile grout/mastic	70 sq. ft	Misc	Yes	Good	NF	1	
	Ceramic Tile grout/mastic	70 sq. ft	Misc	Yes	Good	NF	1	
	Pipe Fitting Insulation	4 observed	TSI	No	Good	5	1	
Women's Bath by Laundry	Pipe Fitting Insulation	12 observed	TSI	Yes	Fair	1	2	Some fittings were observed to have some slight damaged material and should be repaired as soon as feasible.
	Ceramic Tile grout/mastic	50 sq. ft	Misc	No	Good	NF	1	

See notes on last page

Dover School Department: 3-Year AHERA Reinpsection-2012

Location	ACBM	Approximate Quantity	Category	Friable	Condition	Assessment	Response	Notes
Dover High School								
Ground/ First Floor (Cont'd)								
Men's Bath by Laundry	Pipe Fitting Insulation	34 observed	TSI	Yes	Fair	1	2	Some fittings were observed to have some slight damaged material and should be repaired as soon as feasible.
	Ceramic Tile grout/mastic	50 sq. ft	Misc	No	Good	NF	1	
Food Prep	Pipe Fitting Insulation	30 observed	TSI	Yes	Damaged	1	3	Majority of fittings were observed above ceiling tile and have significant damaged materials and water damage with debris observed. Should be removed and surfaces cleaned.
	Ceramic Tile grout/mastic	300 sq. ft	Misc	No	Good	NF	1	
	Pipe Insulation	40 lf	TSI	Yes	Damaged	1	3	Majority of insulation was observed above ceiling tile and have significant damaged materials and water damage with debris observed. Should be removed and surfaces cleaned.
	Ceramic Tile grout/mastic	500 sq. ft	Misc	No	Good	NF	1	
See notes on last page								

Dover School Department: 3-Year AHERA Reinpsection-2012

Location	ACBM	Approximate Quantity	Category	Friable	Condition	Assessment	Response	Notes
Dover High School								
Ground/First Floor (Cont'd)								
Food Service and Dish Wash A&B	Pipe Insulation	51lf	TSI	Yes	Damaged	1	3	Majority of fittings were observed above ceiling tile and have significant damaged materials and water damage with debris observed. Should be removed and surfaces cleaned.
	Ceramic Tile grout/mastic	500 sq. ft	Misc	No	Good	NF	1	
	Pipe Fitting Insulation	51observed	TSI	Yes	Damaged	1	2,3	Majority of insulation was were observed above ceiling tile and has significant damaged materials and water damage with debris observed. Should be removed and surfaces cleaned.
Kitchen Area	Pipe Fitting Insulation	29 observed	TSI	Yes	Damaged	1	2,3	Majority of insulation was observed above ceiling tile and has significant damaged materials and water damage with debris observed. Should be removed and surfaces cleaned.
	Ceramic Tile grout/mastic	400 sq. ft	Misc	No	Good	NF	1	
Loading Dock	Pipe Fitting Insulation	8 observed	TSI	Yes	Damaged	1	2	Majority of insulation was observed above ceiling tile and has significant damaged materials and water damage with debris observed. Should be removed and surfaces cleaned.
Women's Bath by Custodian closet	Pipe Fitting Insulation	4 observed	TSI	Yes	Good	5	1	
	Ceramic Tile grout/mastic	50 sq. ft	Misc	No	Good	NF	1	
Men's Bath by Custodial and Wood Shop	Pipe Fitting Insulation	8 observed	TSI	Yes	Good	5	1	
	Ceramic Tile grout/mastic		Misc	No	Good	NF	1	
See notes on last page								

Dover School Department: 3-Year AHERA Reinpsection-2012

Location	ACBM	Approximate Quantity	Category	Friable	Condition	Assessment	Response	Notes
Dover High School								
Ground/First Floor (Cont'd)								
Wood Shop; 139	Pipe Fitting Insulation	48 observed	TSI	Yes	Fair	1	2	Ceiling height. Some observed to have some slight damaged material and should be repaired as soon as feasible.
Service 001 by Art	Ceramic Tile grout/mastic	100 sq. ft	Misc	No	Good	NF	1	Approximately 5 sq. ft of missing/damaged ceramic tile grout was observed.
Service Closet by Wood Shop Entry	Pipe Fitting Insulation	3 observed	TSI	Yes	Good	5	1	
	Ceramic Tile grout/mastic	50 sq. ft	Misc	No	Good	NF	1	
Bath By elevator across from Auto Tech	Pipe Fitting Insulation	3 observed	TSI	Yes	Fair	5	1	
	Ceramic Tile grout/mastic	50 sq. ft	Misc	No	Good	NF	1	
Room 140	12" Floor Tiles and mastic	800 sq. ft	Misc	No	Good	NF	1,4	Newer tiles should have MSDS and confirmations testing performed. Older ACBM may be present beneath newer tile.
	Pipe Fitting Insulation	9 observed	TSI	Yes	Good	5	1	
Room 141	12" Floor Tiles and mastic	500 sq. ft	Misc	No	Good	NF	1,4	Newer tiles should have MSDS and confirmations testing performed. Older ACBM may be present beneath newer tile.
	Pipe Fitting Insulation	7 observed	TSI	Yes	Good	5	1	Ceiling level
Loading Dock Auto Shop	Pipe Fitting Insulation	15 observed	TSI	Yes	Good	5	1	Ceiling level
Room 122 A	Pipe Fitting Insulation	6 observed	TSI	Yes	Good	5	1	Ceiling level
Room 123	Pipe Fitting Insulation	8 observed	TSI	Yes	Good	5	1	Ceiling level
Room 121: Cosmetology	Pipe Fitting Insulation	10 observed	TSI	Yes	Good	5	1	Ceiling level
	Ceramic Tile grout/mastic	100 sq. ft	Misc	No	Fair	NF	1	
Room 124: Drafting	9" Floor Tiles and mastic	1000 sq. ft	Misc	No	Good	NF	1	
	Pipe Fitting Insulation	11observed	TSI	Yes	Good	5	1	Ceiling level

See notes on last page

Dover School Department: 3-Year AHERA Reinpsection-2012

Location	ACBM	Approximate Quantity	Category	Friable	Condition	Assessment	Response	Notes
Dover High School								
Ground/First Floor (Cont'd)								
Room 132; Voc. Assessment	Pipe Fitting Insulation	13 observed	TSI	Yes	Good	5	1	Insulation was observed above ceiling tile and has significant damaged materials and water damage with debris observed. Should be removed and surfaces cleaned.
Room 133; Electrical Trades	Pipe Fitting Insulation	16 observed	TSI	Yes	Good	5	1	
Corridor	9" Floor Tiles and mastic	1500 sq. ft	Misc	No	Fair	NF	1	Materials were observed to have normal wear and slight lifting observed. Some patch tiles .
Room 136	12" Floor Tiles and mastic	400 sq. ft	Misc	No	Good	NF	1,4	Newer tiles should have MSDS and confirmation testing performed. Older ACBM may be present beneath newer tile.
	Pipe Fitting Insulation	9 observed	TSI	Yes	Good	5	1	Ceiling level
	Ceramic Tile grout/mastic	600 sq. ft	Misc	No	Good	NF	1	
Room 135	12" Floor Tiles and mastic	600 sq. ft	Misc	MNO	MNO	MNO	6	Material covered by carpet.
Custodial Department	9" Floor Tiles and mastic	------	Misc	MNO	MNO	MNO	6	Material was not located and further review is required.
Team Room # 3 Boy's Locker Room	Pipe Fitting Insulation	2	TSI	Yes	Good	5	1	Ceiling Level
Women's Bath, Foyer by Boy's Locker Room	Pipe Fitting Insulation	2	TSI	Yes	Damaged	1	2	Ceiling Level. Material was observed to have water damage and should be repaired as soon as feasible.
	Ceramic Tile grout/mastic	25 sq. ft	Misc	No	Good	NF	1	

See notes on last page

Dover School Department: 3-Year AHERA Reinpsection-2012

Location	ACBM	Approximate Quantity	Category	Friable	Condition	Assessment	Response	Notes
Dover High School								
Ground/First Floor (Cont'd)								
Men's Bath by Service 3	Pipe Fitting Insulation	8 observed	TSI	Yes	Fair	1	2	Materials were observed to have water damage present and should be repaired as soon as feasible.
Custodial Room by Women's Bath	Duct Jacket	------	TSI	Yes	Good	5	4	Material is suspect and requires review prior to disturbance.
	Ceramic Tile grout/mastic	25 sq. ft	Misc	No	Good	NF	1	
ESL; 117 (A&B)	9" Floor Tiles and mastic	480 sq ft	Misc	No	Good	NF	1	
Service 3	Pipe Fitting Insulation	5 observed	TSI	Yes	Good	5	1	
	Ceramic Tile grout/mastic	30 sq. ft	Misc	No	Good	NF	1	
	Pipe Fitting Insulation	-----	TSI	MNO	MNO	MNO	6	Material was not located and further review is required.
Men's Bath by Service 3	Pipe Fitting Insulation	8 observed	TSI	Yes	Fair	5	1	
	Ceramic Tile grout/mastic	75 sq. ft	Misc	No	Good	NF	1	
Women's Bath By Service	Ceramic Tile grout/mastic	50 sq. ft	Misc	No	Good	NF	1	
Room 3	Pipe Fitting Insulation	3 observed	TSI	Yes	Good	5	1	
Marketing: Rooms 134 &134B	9" Floor Tiles and mastic	750 sq. ft	Misc	MNO	MNO	MNO	1,6	Material was not observed and may have been covered over with carpet.
	12" Floor Tiles and mastic	100 sq. ft	Misc	No	Good	NF	1,4	Newer materials should have MSDS information and confirmation testing performed. ACBM may be beneath newer flooring
	Pipe Fitting Insulation	-----	TSI	MNO	MNO	MNO	6	Material was not located and further review is required. Piping in this area covered by fiberglass and black foam insulation.
Rooms 135 A&B	9" Floor Tiles and mastic	500 sq. ft	MNO	MNO	MNO	MNO	6	Material was not observed and may have been covered over with carpet.

See notes on last page

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Location	ACBM	Approximate Quantity	Category	Friable	Condition	Assessment	Response	Notes
Dover High School								
Ground/First Floor (Cont'd)								
Front Office Area	9" Floor Tiles and mastic	400 sq. ft	Misc	MNO	MNO	MNO	1	Material has been covered by carpet.
	Pipe Fitting Insulation	27observed	TSI	Yes	Good	5	1	
Paper Storage by Main Entry	9" Floor Tiles and mastic	100 sq. ft	Misc	MNO	MNO	MNO	1	Material has been covered by carpet.
Men's Bath by Main Entry	Ceramic Tile grout/mastic	50 sq. ft	Misc	No	Good	NF	1	
	Pipe Fitting Insulation	3 observed	TSI	Yes	Good	5	1	
Main Entry	Ceramic Tile grout/mastic	700 sq. ft	Misc	No	Good	NF	1	
Main Entry Electrical	9" Floor Tiles and mastic	50 sq. ft	Misc	No	Good	NF	1	
Room	Pipe Fitting Insulation	2 observed	TSI	Yes	Good	5	1	
Main Entry Women's Bath	Pipe Fitting Insulation	5 observed	TSI	Yes	Good	5	1	
	Ceramic Tile grout/mastic	45 sq. ft	Misc	No	Good	NF	1	
Girl's Locker Room	Ceramic Tile grout/mastic	400 sq. ft	Misc	No	Good	NF	1	
	Pipe Fitting Insulation	60 observed	TSI	Yes	Good	5	1	
Boy's Locker Room, Team Rooms 1 & 2, Coaches Office	Pipe Fitting Insulation	74 observed	TSI	Yes	Good	5	1	
Gymnasium	Pipe Fitting Insulation	91 observed	TSI	Yes	Good	5	1	
AD's Office	Pipe Fitting Insulation	5 observed	TSI	Yes	Good	5	1	
Music Office	Pipe Fitting Insulation	15 observed	TSI	Yes	Good	5	1	
	9" Floor Tiles and mastic	350 sq. ft	Misc	No	Good	NF	1	
Music Hall	9" Floor Tiles and mastic	600 sq. ft	Misc	No	Good	NF	1	
Music Classroom	9" Floor Tiles and mastic	450 sq. ft	Misc	No	Good	NF	1	
Band Room	9" Floor Tiles and mastic	3000 sq. ft	Misc	No	Fair	NF	1	Normal wear observed.
	Pipe Fitting Insulation	8 observed	TSI	Yes	Damaged	1	3	Some fittings were observed to have significant damage with debris present on top of ceiling tile. Material should be removed and area cleaned as soon as feasible.

See notes on last page

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Location	ACBM	Approximate Quantity	Category	Friable	Condition	Assessment	Response	Notes
Dover High School								
Ground/First Floor (Cont'd)								
Tonic Room	9" Floor Tiles and mastic	225 sq. ft	Misc	No	Fair	NF	1	Normal wear observed
Practice Room by Tonic Room	9" Floor Tiles and mastic	225 sq. ft	Misc	No	Good	NF	1	
Stairwell off Music Room	Ceramic Tile grout/mastic	75 sq. ft	Misc	No	Good	NF	1	
Second Floor								
Room 202	9" Floor Tiles and mastic	480 sq. ft	Misc	No	Good	NF	1	
Health	9" Floor Tiles and mastic	250 sq. ft	Misc	MNO	MNO	MNO	1	Materials were not observed newer carpet/floor tiles were observed.
	Pipe Fitting Insulation	8 observed	TSI	Yes	Good	5	1	
Nurse	9" Floor Tiles and mastic	250 sq. ft	Misc	No	Good	NF	1	Materials were not observed newer carpet/floor tiles were observed.
Room 201	9" Floor Tiles and mastic	480 sq. ft	Misc	No	Good	NF	1	
	Pipe Fitting Insulation	8 observed	TSI	Yes	Good	5	1	
Room 202	9" Floor Tiles and mastic	480 sq. ft	Misc	No	Good	NF	1	
	Pipe Fitting Insulation	10 observed	TSI	Yes	Good	NF	1	
Room 203	9" Floor Tiles and mastic	480 sq. ft	Misc	No	Good	NF	1	Materials were not observed newer carpet/floor tiles were observed.
	Pipe Fitting Insulation	8 observed	TSI	Yes	Damaged	1	3	Some fittings were observed to have damaged materials with debris present on top of ceiling tile. Remove material and clean area as soon as feasible.
Laundry	9" Floor Tiles and mastic	75 sq. ft	Misc	No	Good	NF	1	
Room 204	9" Floor Tiles and mastic	480 sq. ft	Misc	No	Good	NF	1	
	Pipe Fitting Insulation	25 observed	TSI	Yes	Good	NF	1	
Display	9" Floor Tiles and mastic	60 sq. ft	Misc	No	Good	NF	1	

See notes on last page

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Location	ACBM	Approximate Quantity	Category	Friable	Condition	Assessment	Response	Notes
Dover High School								
Second Floor (Cont'd)								
Room 205	9" Floor Tiles and mastic	480 sq. ft	Misc	No	Good	NF	1	
	Pipe Fitting Insulation	13 observed	TSI	Yes	Damaged	1	3	Some fittings were observed to have damaged materials with debris present on top of ceiling tile. Remove material and clean area as soon as feasible.
Room 206	9" Floor Tiles and mastic	480 sq. ft	Misc	No	Good	NF	1	
Room 208 previously listed as Room 207	9" Floor Tiles and mastic	480 sq. ft	Misc	No	Good	NF	1	
	Pipe Fitting Insulation	5 observed	TSI	Yes	Good	5	1	
Room 210 previously listed as 208)	9" Floor Tiles and mastic	480 sq. ft	Misc	No	Good	NF	1	
Room 207/209 previously listed as Room 209 and	9" Floor Tiles and mastic	480 sq. ft	Misc	No	Good	NF	1	
	Pipe Fitting Insulation	18 observed	TSI	Yes	Fair	5	1	
Room 211	9" Floor Tiles and mastic	480 sq. ft	Misc	No	Good	NF	1	
	Pipe Fitting Insulation	9 observed	TSI	Yes	Good	5	1	
Room 212, 213, and 215 previously listed as Room 212, 213 and 214	9" Floor Tiles and mastic	1500 sq. ft	Misc	No	Good	NF	1	
Room 217 previously listed as Room 215	9" Floor Tiles and mastic	500 sq. ft	Misc	No	Good	NF	1	
	Pipe Fitting Insulation	3 observed	TSI	Yes	Good	5	1,6	Possibly spot removal conducted, removal records were not available for review at the time of the survey.
Room 219 previously listed as room 216	Pipe Fitting Insulation	-----	TSI	MNO	MNO	MNO	6	Materials were not observed and may have been removed. Records were not available at the time of the survey.
	9" Floor Tiles and mastic	480 sq. ft	Misc	No	Good	NF	1	
Room 218 previously listed as Room 221	9" Floor Tiles and mastic	480 sq. ft	Misc	No	Good	NF	1	
	Pipe Fitting Insulation	5 observed	TSI	Yes	Good	5	1	

See notes on last page

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Location	ACBM	Approximate Quantity	Category	Friable	Condition	Assessment	Response	Notes
Dover High School								
Second Floor (Cont'd)								
Room 220 previously listed as Room 217	9" Floor Tiles and mastic	480 sq. ft	Misc	No	Good	NF	1	
	Pipe Fitting Insulation	7 observed	TSI	Yes	Damaged	1	2,3	Some fittings were observed to have damaged materials with debris present on top of ceiling tile. Remove material and clean area as soon as feasible.
Room 222 previously listed as Room 219	9" Floor Tiles and mastic	480 sq. ft	Misc	No	Fair	NF	1	Materials were observed to have chips and dents present.
	Pipe Fitting Insulation	7 observed	TSI	Yes	Damaged	1	3	Some Fittings were observed to have significant damage with debris present on top of ceiling and should be removed and area cleaned .
Boy's Bath by Service G	Ceramic Tile grout/mastic	75 sq. ft	Misc	No	Good	NF	1	
Room 221 previously listed as Room 218	9" Floor Tiles and mastic	480 sq. ft	Misc	No	Good	NF	1	
Room 219 previously listed as Room 216	9" Floor Tiles and mastic	500 sq. ft	Misc	No	Good	NF	1	
	Pipe Fitting Insulation	10 observed	TSI	Yes	Good	5	1	
Women's Staff bath by 213	Pipe Fitting Insulation	12 observed	TSI	Yes	Good	5	1	
	Ceramic Tile grout/mastic	45 sq. ft	Misc	No	Good	NF	1	
Girl's/Boy's Bath	Pipe Fitting Insulation	20 observed	TSI	Yes	Good	5	1	
	Ceramic Tile grout/mastic	50 sq. ft	Misc	No	Good	NF	1	
Hall 211-219	Pipe Fitting Insulation	50 observed	TSI	Yes	Good	5	1	
	Ceramic Tile grout/mastic	2800 sq. ft	Misc	No	Good	NF	1	
Hall 205-208	Pipe Fitting Insulation	15 observed	TSI	Yes	Good	5	1	
	Ceramic Tile grout/mastic	1100 sq.ft	Misc	No	Good	NF	1	
Hall Principals to 204	Pipe Fitting Insulation	50 observed	TSI	Yes	Good	5	1	
	Ceramic Tile grout/mastic	2800 sq. ft	Misc	No	Good	NF	1	
	Pipe Fitting Insulation	1 observed	TSI	Yes	Good	5	1	
See notes on last page								

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Location	ACBM	Approximate Quantity	Category	Friable	Condition	Assessment	Response	Notes
Dover High School								
Second Floor (Cont'd)								
Administration	9" Floor Tiles and mastic	300 sq. ft	Misc	No	Good	NF	1	
	Pipe Fitting Insulation	19 observed	TSI	Yes	Good	5	1	
English Dept.	9" Floor Tiles and mastic	250 sq. ft	Misc	No	Good	NF	1	
Library	9" Floor Tiles and mastic	120 sq. ft	Misc	No	Good	NF	1	
	Pipe Fitting Insulation	40 observed	TSI	Yes	Good	5	1	
Men's/Women's Bath	Ceramic Tile grout/mastic	45 sq. ft	Misc	No	Good	NF	1	
	Pipe Fitting Insulation	1 observed	TSI	Yes	Good	5	1	
Audio Visual	9" Floor Tiles and mastic	135 sq. ft	Misc	No	Good	NF	1	
Lighting Stage	9" Floor Tiles and mastic	65 sq. ft	Misc	No	Good	NF	1	
	Pipe Fitting Insulation	20 observed	TSI	Yes	Good	5	1	
Nurse's Storage Upper	9" Floor Tiles and mastic	150 sq. ft	Misc	No	Good	NF	1	
	Pipe Fitting Insulation	2 observed	TSI	Yes	Good	5	1	
Third Floor								
Room 322 previously listed as Room 325	9" Floor Tiles and mastic	480 sq. ft	Misc	No	Fair	NF	1	Materials were observed to have a few chipped floor tiles present.
	Pipe Fitting Insulation	9 observed	MNO	MNO	MNO	5	6	Material was not observed and may have been removed. Further review is recommended.
Room 334 previously listed as Room 323	Pipe Fitting Insulation	8 observed	TSI	Yes	Good	5	1	
	9" Floor Tiles and mastic	480 sq. ft	Misc	No	Good	NF	1	
Room 332 previously listed as Room 322	Pipe Fitting Insulation	8 observed	TSI	Yes	Good	5	1	
	9" Floor Tiles and mastic	480 sq. ft	Misc	No	Good	NF	1	
Room 330 previously listed as Room 321	Floor Tiles and mastic	480 sq. ft	Misc	No	MNO	MNO	1	Material has been covered by carpet.
	Pipe Fitting Insulation	8 observed	TSI	Yes	Good	5	1	
Room 320 previously listed as Room 336	9" Floor Tiles and mastic	400 sq. ft	Misc	No	Good	NF	1	
	Pipe Fitting Insulation	8 observed	TSI	Yes	Good	5	1	
See notes on last page								

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Location	ACBM	Approximate Quantity	Category	Friable	Condition	Assessment	Response	Notes
Dover High School								
Third Floor (Cont'd)								
Room 328/329 previously listed as Office 335A	Floor Tiles and mastic	200 sq. ft	Misc	No	MNO	NF	1	Material has been covered by carpet.
Room 335 and 335 B	Floor Tiles and mastic	500 sq. ft	Misc	No	MNO	NF	1	Material has been covered by carpet.
Room 327 previously listed as Room 334	9" Floor Tiles and mastic	480 sq. ft	Misc	No	Good	NF	1	
Room 325 previously listed as Room 333	9" Floor Tiles and mastic	480 sq. ft	Misc	No	Good	NF	1	
Room 324 previously listed as Room 332	9" Floor Tiles and mastic	480 sq. ft	Misc	No	Good	NF	1	
Room 323 previously listed as Room 331	9" Floor Tiles and mastic	400 sq. ft	Misc	No	Good	NF	1	
Room 321 previously listed as Room 330	9" Floor Tiles and mastic	400 sq. ft	Misc	No	Good	NF	1	
Room 319 previously listed as Room 329	9" Floor Tiles and mastic	400 sq. ft	Misc	MNO	MNO	MNO	1	Materials have been covered over with newer flooring.
Room 318 previously listed as Room 328	9" Floor Tiles and mastic	400 sq. ft	Misc	No	Good	NF	1	
Room 317 previously listed as Room 327	9" Floor Tiles and mastic	400 sq. ft	Misc	No	Good	NF	1	
Room 316 previously listed as Room 326	9" Floor Tiles and mastic	400 sq. ft	Misc	No	Good	NF	1	
Faculty Bath	Ceramic Tile grout/mastic	25 sq. ft	Misc	No	Good	NF	1	
Office # 7	9" Floor Tiles and mastic	200 sq. ft	Misc	No	Good	NF	1	
Room 310	9" Floor Tiles and mastic	400 sq. ft	Misc	No	Good	NF	1	
Room 311	9" Floor Tiles and mastic	400 sq. ft	Misc	No	Good	NF	1	
Room 313 previously listed as Room 312	9" Floor Tiles and mastic	400 sq. ft	Misc	No	Good	NF	1	
	Lab Top	100 sq. ft	Misc	No	Good	NF	1	
See notes on last page								

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Location	ACBM	Approximate Quantity	Category	Friable	Condition	Assessment	Response	Notes
Dover High School								
Third Floor (Cont'd)								
Room 315 previously listed as Room 313	9" Floor Tiles and mastic	400 sq. ft	Misc	No	Good	NF	1	
Room 314	9" Floor Tiles and mastic	480 sq. ft	Misc	No	Good	NF	1	
Room 312 previously listed as Room 315	9" Floor Tiles and mastic	400 sq. ft	Misc	No	Good	NF	1	
Room 336 previously listed as Room 316	Pipe Fitting Insulation	19	TSI	Yes	Damaged	1	3	Some Fittings were observed to have significant damage with debris present on top of ceiling and should be removed and area cleaned as soon as feasible.
Room 335 previously listed as Room 318	9" Floor Tiles and mastic	480 sq. ft	Misc	No	Good	NF	1	
Room 304 previously	Pipe Fitting Insulation	17 observed	TSI	Yes	Good	5	1	
listed as Room 308	9" Floor Tiles and mastic	480 sq. ft	Misc	No	Good	NF	1	
Room 307	Pipe Fitting Insulation	20 observed	TSI	Yes	Good	5	1	
	9" Floor Tiles and mastic	400 sq. ft	Misc	No	Good	NF	1	
Room 309 previously listed as Room 306	9" Floor Tiles and mastic	800 sq. ft	Misc	No	Fair	NF	1	Materials were observed to have a few chipped floor tiles present.
Room 309 previously listed as Room 306	Pipe Fitting Insulation	2 observed	TSI	Yes	Good	5	1	
Room 308 previously listed as Room 305	9" Floor Tiles and mastic	400 sq. ft	Misc	No	Good	NF	1	Patch floor tiles were present.
Room 306 previously listed as Room 304	9" Floor Tiles and mastic	400 sq. ft	Misc	No	Good	NF	1	Patch floor tiles were present.
Storage C& D	9" Floor Tiles and mastic	400 sq. ft	Misc	No	Good	NF	1	
Room 305 previously	9" Floor Tiles and mastic	100 sq. ft	Misc	No	Good	NF	1	
listed as Room 303	9" Floor Tiles and mastic	500 sq. ft	Misc	No	Good	NF	1	
	Lab Top	50 sq. ft	Misc	No	Good	NF	1	
See notes on last page	9" Floor Tiles and mastic	480 sq. ft	Misc	No	Good	NF	1	

Dover School Department: 3-Year AHERA Reinpsection-2012

Location	ACBM	Approximate Quantity	Category	Friable	Condition	Assessment	Response	Notes
Dover High School								
Third Floor (Cont'd)								
Room 303 previously listed as Room 302	9" Floor Tiles and mastic	480 sq. ft	Misc	No	Good	NF	1	
	Lab Top	50 sq. ft	Misc	No	Good	NF	1	
	Fume Hood	50 sq. ft	Misc	No	Good	NF	1	
Storage A	9" Floor Tiles and mastic	120 sq. ft	Misc	No	Fair	NF	1	Normal wear observed
Room 301	9" Floor Tiles and mastic	480 sq. ft	Misc	No	Good	NF	1	
	Lab Top	50 sq. ft	Misc	No	Good	NF	1	
	Fume Hood	50 sq. ft	Misc	No	Good	NF	1	
Storage Across from 302	Ceramic Tile grout/mastic	100 sq. ft	Misc	No	Good	NF	1	
Room 326 previously listed as Room 324	9" Floor Tiles and mastic	120 sq. ft	Misc	No	Fair	NF	1	Normal wear observed
	9" Floor Tiles and mastic	480 sq. ft	Misc	No	Good	NF	1	
Room 310	Pipe Fitting Insulation	2 observed	TSI	Yes	Good	5	1	
Room 331 previously listed as Room 320	9" Floor Tiles and mastic	480 sq. ft	Misc	No	Good	NF	1	
Room 333 previously listed as Room 319	Pipe Fitting Insulation	8 observed	TSI	Yes	Good	5	1	
	Pipe Fitting Insulation	2 observed	TSI	Yes	Good	5	1	
Room 302 previously listed as Room 309	9" Floor Tiles and mastic	480 sq. ft	Misc	No	Good	NF	1	
	Pipe Fitting Insulation	3 observed	TSI	Yes	Good	5	1	
Math Office	9" Floor Tiles and mastic	480 sq. ft	Misc	No	Good	NF	1	
Services Rooms, Bath, and Hallway	Ceramic Tile grout/mastic							
Guidance	9" Floor Tiles and mastic	50 sq. ft	Misc	MNO	MNO	MNO	1	Materials have been covered over with carpet.
McKenna	9" Floor Tiles and mastic	300 sq. ft	Misc	MNO	MNO	MNO	1	Materials have been covered over with carpet.
Kushner	9" Floor Tiles and mastic	250 sq. ft	Misc	MNO	MNO	MNO	1	Materials have been covered over with carpet.
	Pipe Fitting Insulation	4 observed	TSI	Yes	Good	5	1	
See notes on last page	9" Floor Tiles and mastic	480 sq. ft	Misc	No	Good	NF	1	

Dover School Department: 3-Year AHERA Reinpsection-2012

Location	ACBM	Approximate Quantity	Category	Friable	Condition	Assessment	Response	Notes
Dover High School								
Third Floor (Cont'd)								
Cole	9" Floor Tiles and mastic	300 sq. ft	Misc	MNO	MNO	MNO	1	
Throughout	Pipe Fitting Insulation	unknown	Misc	MNO	MNO	MNO	1	Possible concealed pipe and pipe fitting insulation present throughout the school.
Throughout	Other suspect materials are present and further review is required. Prior to any renovation and/or demolition a full NESHAP survey must be conducted in accordance with various state and federal regulations.						4	Possible inaccessible ACBM also.

Category: MISC is miscellaneous material; TSI is thermal system insulation; SURF is surfacing material. Categorized in accordance with 40 CFR Part 763.

Assessment Codes based on 40 CFR Part 763: 1. Damaged or significantly damaged thermal system insulation ACM; 2. Damaged friable surfacing ACM; 3. Significantly damaged friable surfacing ACM; 4. Damaged or significantly damaged friable miscellaneous ACM; 5. ACBM with potential for damage; 6. ACBM with potential for significant damage; 7. Any remaining ACM. Please reference AHERA and the school management plan for discussion on assessment codes.

Response Codes: 1. Manage ACBM in accordance with Management Plan; 2. Conduct repairs and cleaning; 3. Conduct removal and cleaning; 4. Material suspect and requires further testing; 5. ACBM has been removed and may be removed from listings; 6. ACBM was not observed and further review is required. See further discussion and requirements in report.

DOVER HIGH SCHOOL SI..IONTH REINPSECTION

Dover High School		DATE	STATUS	DATE	STATUS	
Ground/ First Floor		8/15/14				
Men's Room, off Kitchen	Pipe Fitting Insulation	8/15	NC			
	Ceramic Tile grout/mastic	8/15	NC			
Cafeteria	9" Floor Tiles and mastic	8/2013	5 sq ft tile replaced			Normal wear observed throughout.
	Pipe Fitting Insulation	8/15	NC			Limited access to area above ceiling tiles. Observations made from upper level walkway.
Teacher's Room/Office	Pipe Fitting Insulation	8/15	NC			Above ceiling tile and/or at ceiling level
Custodial Closet by Teacher's Room	Ceramic Tile grout/mastic	8/15	NC			
Room 115	9" Floor Tiles and mastic	8/15	NC			
	Pipe Fitting Insulation	8/15	NC			Above ceiling tile and/or at ceiling level
Room 116	9" Floor Tiles and mastic	8/15	NC			
	Pipe Fitting Insulation	8/15	NC			Above ceiling tile and/or at ceiling level
Hall from Cafeteria	Ceramic Tile grout/mastic	8/15	NC			
Room 137B, Art Classroom, formerly Mechanical Tool Classroom	12" Floor Tiles and mastic	8/15	NC			Newer materials should have MSDS information and confirmation testing performed. ACBM may be beneath newer flooring
Laundry	Ceramic Tile grout/mastic	8/15	NC			
	Ceramic Tile grout/mastic	8/15	NC			
	Pipe Fitting Insulation	8/15	NC			
Women's Bath by Laundry	Pipe Fitting Insulation	8/15	NC			Some fittings were observed to have some slight damaged material and should be repaired as soon as feasible.
	Ceramic Tile grout/mastic	8/15	NC			
See notes on last page						

DOVER HIGH SCHOOL SIX MONTH REINSPECTION

Dover High School		DATE	STATUS	DATE	STATUS	
Ground/ First Floor (Cont'd)		8/15/14				
Men's Bath by Laundry	Pipe Fitting Insulation	8/15	NC			Some fittings were observed to have some slight damaged material and should be repaired as soon as feasible.
	Ceramic Tile grout/mastic	8/15	NC			
Food Prep	Pipe Fitting Insulation	8/15	NC			Majority of fittings were observed above ceiling tile and have significant damaged materials and water damage with debris observed. Should be removed and surfaces cleaned.
	Ceramic Tile grout/mastic	8/15	NC			
	Pipe Insulation	8/15	NC			Majority of insulation was observed above ceiling tile and have significant damaged materials and water damage with debris observed. Should be removed and surfaces cleaned.
	Ceramic Tile grout/mastic	8/15	NC			
See notes on last page						

DOVER HIGH SCHOOL SIX MONTH REINSPECTION

8/15/14

Dover High School						
Ground/First Floor (Cont'd)		DATE	STATUS	DATE	STATUS	
Food Service and Dish Wash A&B	Pipe Insulation	8/15	NC			Majority of fittings were observed above ceiling tile and have significant damaged materials and water damage with debris observed. Should be removed and surfaces cleaned.
	Ceramic Tile grout/mastic	8/15	NC			
	Pipe Fitting Insulation	8/15	NC			Majority of insulation was were observed above ceiling tile and has significant damaged materials and water damage with debris observed. Should be removed and surfaces cleaned.
Kitchen Area	Pipe Fitting Insulation	8/15	NC			Majority of insulation was observed above ceiling tile and has significant damaged materials and water damage with debris observed. Should be removed and surfaces cleaned.
	Ceramic Tile grout/mastic	8/1/2013	150 sqft replaced			
Loading Dock	Pipe Fitting Insulation	8/15	NC			Majority of insulation was observed above ceiling tile and has significant damaged materials and water damage with debris observed. Should be removed and surfaces cleaned.
Women's Bath by Custodian closet	Pipe Fitting Insulation	8/15	NC			
	Ceramic Tile grout/mastic	8/15	NC			
Men's Bath by Custodial and Wood Shop	Pipe Fitting Insulation	8/15	NC			
	Ceramic Tile grout/mastic	8/15	NC			
See notes on last page						

DOVER HIGH SCHOOL SI_ :IONTH REINSPECTION

8/15/14

Dover High School						
Ground/First Floor (Cont'd)		Date	STATUS	DATE	STATUS	
Wood Shop; 139	Pipe Fitting Insulation	8/15	NC			Ceiling height. Some observed to have some slight damaged material and should be repaired as soon as feasible.
Service 001 by Art	Ceramic Tile grout/mastic	8/15	NC			Approximately 5 sq. ft of missing/damaged ceramic tile grout was observed.
Service Closet by Wood Shop Entry	Pipe Fitting Insulation	8/15	NC			
	Ceramic Tile grout/mastic	8/15	NC			
Bath By elevator across from Auto Tech	Pipe Fitting Insulation	8/15	NC			
	Ceramic Tile grout/mastic	8/15	NC			
Room 140	12" Floor Tiles and mastic	8/15	NC			Newer tiles should have MSDS and confirmations testing performed. Older ACBM may be present beneath newer tile.
	Pipe Fitting Insulation	8/15	NC			
Room 141	12" Floor Tiles and mastic	8/15	NC			Newer tiles should have MSDS and confirmations testing performed. Older ACBM may be present beneath newer tile.
	Pipe Fitting Insulation	8/15	NC			Ceiling level
Loading Dock Auto Shop	Pipe Fitting Insulation	8/15	NC			Ceiling level
Room 122 A	Pipe Fitting Insulation	8/15	NC			Ceiling level
Room 123	Pipe Fitting Insulation	8/15	NC			Ceiling level
Room 121: Cosmetology	Pipe Fitting Insulation	8/15	NC			Ceiling level
	Ceramic Tile grout/mastic	8/15	NC			
Room 124: Drafting	9" Floor Tiles and mastic	8/15	NC			
	Pipe Fitting Insulation	8/15	NC			Ceiling level
See notes on last page						

Dover High School Six Mo[illegible]h Reinspection

Dover High School		8/15/14				
Ground/First Floor (Cont'd)		DATE	STATUS	DATE	STATUS	
Room 132; Voc. Assessment	Pipe Fitting Insulation	8/15	NC			Insulation was observed above ceiling tile and has significant damaged materials and water damage with debris observed. Should be removed and surfaces cleaned.
Room 133; Electrical Trades	Pipe Fitting Insulation	8/15	NC			
Corridor	9" Floor Tiles and mastic	8/15	NC			Materials were observed to have normal wear and slight lifting observed. Some patch tiles.
Room 136	12" Floor Tiles and mastic	8/15	NC			Newer tiles should have MSDS and confirmation testing performed. Older ACBM may be present beneath newer tile.
	Pipe Fitting Insulation	8/15	NC			Ceiling level
	Ceramic Tile grout/mastic	8/15	NC			
Room 135	12" Floor Tiles and mastic	8/15	NC			Material covered by carpet.
Custodial Department	9" Floor Tiles and mastic	8/15	NC			Material was not located and further review is required.
Team Room # 3 Boy's Locker Room	Pipe Fitting Insulation	8/15	NC			Ceiling Level
Women's Bath, Foyer by Boy's Locker Room	Pipe Fitting Insulation	8/15	NC			Ceiling Level. Material was observed to have water damage and should be repaired as soon as feasible.
	Ceramic Tile grout/mastic	8/15	NC			
See notes on last page						

DOVER HIGH SCHOOL SIX MONTH REINSPECTION

Dover High School		8/15/14				
Ground/First Floor (Cont'd)		DATE	STATUS	DATE	STATUS	
Men's Bath by Service 3	Pipe Fitting Insulation	8/15	NC			Materials were observed to have water damage present and should be repaired as soon as feasible.
Custodial Room by Women's Bath	Duct Jacket	8/15	NC			Material is suspect and requires review prior to disturbance.
	Ceramic Tile grout/mastic	8/15	NC			
ESL; 117 (A&B)	9" Floor Tiles and mastic	8/15	NC			
Service 3	Pipe Fitting Insulation	8/15	NC			
	Ceramic Tile grout/mastic	8/15	NC			
	Pipe Fitting Insulation	8/15	NC			Material was not located and further review is required.
Men's Bath by Service 3	Pipe Fitting Insulation	8/15	NC			
	Ceramic Tile grout/mastic	8/15	NC			
Women's Bath By Service Room 3	Ceramic Tile grout/mastic	8/15	NC			
	Pipe Fitting Insulation	8/15	NC			
Marketing: Rooms 134 &134B	9" Floor Tiles and mastic	8/15	NC			Material was not observed and may have been covered over with carpet.
	12" Floor Tiles and mastic	8/15	NC			Newer materials should have MSDS information and confirmation testing performed. ACBM may be beneath newer flooring
	Pipe Fitting Insulation	8/15	NC			Material was not located and further review is required. Piping in this area covered by fiberglass and black foam insulation.
Rooms 135 A&B	9" Floor Tiles and mastic	8/15	NC			Material was not observed and may have been covered over with carpet.
See notes on last page						

DOVER HIGH SCHOOL SI[illegible]ONTH REINSPECTION

Dover High School 8/15/14

Ground/First Floor (Cont'd)		DATE	STATUS	DATE	STATUS	
Front Office Area	9" Floor Tiles and mastic	8/15	NC			Material has been covered by carpet.
	Pipe Fitting Insulation ^	8/15	NC			
Paper Storage by Main Entry	9" Floor Tiles and mastic	8/15	NC			Material has been covered by carpet.
Men's Bath by Main Entry	Ceramic Tile grout/mastic	8/15	NC			
	Pipe Fitting Insulation 2	8/15	NC			
Main Entry	Ceramic Tile grout/mastic	8/15	NC			
Main Entry Electrical Room	9" Floor Tiles and mastic	8/15	NC			
	Pipe Fitting Insulation ^	8/15	NC			
Main Entry Women's Bath	Pipe Fitting Insulation *t*	8/15	NC			
	Ceramic Tile grout/mastic ^	8/15	NC			
Girl's Locker Room	Ceramic Tile grout/mastic ^	8/15	NC			
	Pipe Fitting Insulation (	8/15	NC			
Boy's Locker Room, Team Rooms 1 & 2, Coaches Office	Pipe Fitting Insulation "	8/15	NC			
Gymnasium	Pipe Fitting Insulation S	8/15	NC			
AD's Office	Pipe Fitting Insulation f	8/15	NC			
Music Office	Pipe Fitting Insulation 1	8/15	NC			
	9" Floor Tiles and mastic 2	8/15	NC			
Music Hall	9" Floor Tiles and mastic (	8/15	NC			
Music Classroom	9" Floor Tiles and mastic A	8/15	NC			
Band Room	9" Floor Tiles and mastic :	8/15	NC			Normal wear observed.
	Pipe Fitting Insulation \	8/15	NC			Some fittings were observed to have significant damage with debris present on top of ceiling tile. Material should be removed and area cleaned as soon as feasible.

See notes on last page

DOVER HIGH SCHOOL SIX MONTH REINSPECTION

Dover High School 8/15/14

Ground/First Floor (Cont'd)		DATE	STATUS	DATE	STATUS	
Tonic Room	9" Floor Tiles and mastic	8/15	NC			Normal wear observed
Practice Room by Tonic Room	9" Floor Tiles and mastic	8/15	NC			
Stairwell off Music Room	Ceramic Tile grout/mastic	8/15	NC			
Second Floor		DATE	STATUS	DATE	STATUS	
Room 202	9" Floor Tiles and mastic	8/15	NC			
Health	9" Floor Tiles and mastic	8/15	NC			Materials were not observed newer carpet/floor tiles were observed.
	Pipe Fitting Insulation	8/15	NC			
Nurse	9" Floor Tiles and mastic	8/15	NC			Materials were not observed newer carpet/floor tiles were observed.
Room 201	9" Floor Tiles and mastic	8/15	NC			
	Pipe Fitting Insulation	8/15	NC			
Room 202	9" Floor Tiles and mastic	8/15	NC			
	Pipe Fitting Insulation	8/15	NC			
Room 203	9" Floor Tiles and mastic	8/15	NC			Materials were not observed newer carpet/floor tiles were observed.
	Pipe Fitting Insulation	8/15	NC			Some fittings were observed to have damaged materials with debris present on top of ceiling tile. Remove material and clean area as soon as feasible.
Laundry	9" Floor Tiles and mastic	8/15	NC			
Room 204	9" Floor Tiles and mastic	8/15	NC			
	Pipe Fitting Insulation	8/15	NC			
Display	9" Floor Tiles and mastic	8/15	NC			

See notes on last page

DOVER HIGH SCHOOL SI[illegible]ONTH REINSPECTION

8/15/14

Dover High School						
Second Floor (Cont'd)		DATE	STATUS	DATE	STATUS	
Room 205	9" Floor Tiles and mastic	8/15	NC			
	Pipe Fitting Insulation	8/15	NC			Some fittings were observed to have damaged materials with debris present on top of ceiling tile. Remove material and clean area as soon as feasible.
Room 206	9" Floor Tiles and mastic	8/15	NC			
Room 208 previously listed as Room 207	9" Floor Tiles and mastic	8/15	NC			
	Pipe Fitting Insulation	8/15	NC			
Room 210 previously listed as 208)	9" Floor Tiles and mastic	8/15	NC			
Room 207/209 listed as Room 209 and	9" Floor Tiles and mastic	8/15	NC			
	Pipe Fitting Insulation	8/15	NC			
Room 211	9" Floor Tiles and mastic	8/15	NC			
	Pipe Fitting Insulation	8/15	NC			
Room 212,213, and 215 previously listed as Room 212, 213 and 214	9" Floor Tiles and mastic	8/15	NC			
Room 217 previously listed as Room 215	9" Floor Tiles and mastic	8/15	NC			
	Pipe Fitting Insulation	8/15	NC			Possibly spot removal conducted, removal records were not available for review at the time of the survey.
Room 219 previously listed as room 216	Pipe Fitting Insulation	8/15	NC			Materials were not observed and may have been removed. Records were not available at the time of the survey.
	9" Floor Tiles and mastic	8/15	NC			
Room 218 previously listed as Room 221	9" Floor Tiles and mastic	8/15	NC			
	Pipe Fitting Insulation	8/15	NC			
See notes on last page						

DOVER HIGH SCHOOL SIX MONTH REINSPECTION

8/15/14

Dover High School						
Second Floor (Cont'd)						
Room 220 previously listed as Room 217	9" Floor Tiles and mastic	8/15	NC			
	Pipe Fitting Insulation	8/15	NC			Some fittings were observed to have damaged materials with debris present on top of ceiling tile. Remove material and clean area as soon as feasible.
Room 222 previously listed as Room 219	9" Floor Tiles and mastic	8/15	NC			Materials were observed to have chips and dents present.
	Pipe Fitting Insulation	8/15	NC			Some Fittings were observed to have significant damage with debris present on top of ceiling and should be removed and area cleaned .
Boy's Bath by Service G	Ceramic Tile grout/mastic	8/15	NC			
Room 221 previously listed as Room 218	9" Floor Tiles and mastic	8/15	NC			
Room 219 previously listed as Room 216	9" Floor Tiles and mastic	8/15	NC			
	Pipe Fitting Insulation	8/15	NC			
Women's Staff bath by 213	Pipe Fitting Insulation	8/15	NC			
	Ceramic Tile grout/mastic	8/15	NC			
Girl's/Boy's Bath	Pipe Fitting Insulation	8/15	NC			
	Ceramic Tile grout/mastic	8/15	NC			
Hall 211-219	Pipe Fitting Insulation	8/15	NC			
	Ceramic Tile grout/mastic	8/15	NC			
Hall 205-208	Pipe Fitting Insulation	8/15	NC			
	Ceramic Tile grout/mastic	8/15	NC			
Hall Principals to 204	Pipe Fitting Insulation	8/15	NC			
	Ceramic Tile grout/mastic	8/15	NC			
	Pipe Fitting Insulation	8/15	NC			
See notes on last page						

DOVER HIGH SCHOOL SIX MONTH REINSPECTION

8/15/14

Dover High School						
Second Floor (Cont'd)		DATE	STATUS	DATE	STATUS	
Administration	9" Floor Tiles and mastic	8/15	NC			
	Pipe Fitting Insulation	8/15	NC			
English Dept.	9" Floor Tiles and mastic	8/15	NC			
Library	9" Floor Tiles and mastic	8/15	NC			
	Pipe Fitting Insulation	8/15	NC			
Men's/Women's Bath	Ceramic Tile grout/mastic	8/15	NC			
	Pipe Fitting Insulation	8/15	NC			
Audio Visual	9" Floor Tiles and mastic	8/15	NC			
Lighting Stage	9" Floor Tiles and mastic	8/15	NC			
	Pipe Fitting Insulation	8/15	NC			
Nurse's Storage Upper	9" Floor Tiles and mastic	8/15	NC			
	Pipe Fitting Insulation	8/15	NC			
Third Floor		DATE	STATUS	DATE	STATUS	
Room 322 previously listed as Room 325	9" Floor Tiles and mastic	8/15	NC			Materials were observed to have a few chipped floor tiles present.
	Pipe Fitting Insulation	8/15	NC			Material was not observed and may have been removed. Further review is recommended.
Room 334 previously listed as Room 323	Pipe Fitting Insulation	8/15	NC			
	9" Floor Tiles and mastic	8/15	NC			
Room 332 previously listed as Room 322	Pipe Fitting Insulation	8/15	NC			
	9" Floor Tiles and mastic	8/15	NC			
Room 330 previously listed as Room 321	Floor Tiles and mastic	8/15	NC			Material has been covered by carpet.
	Pipe Fitting Insulation	8/15	NC			
Room 320 previously listed as Room 336	9" Floor Tiles and mastic	8/15	NC			
	Pipe Fitting Insulation	8/15	NC			
See notes on last page						

DOVER HIGH SCHOOL SIX MONTH REINSPECTION

8/15/14

Dover High School						
Third Floor (Cont'd)		DATE	STATUS	DATE	STATUS	
Room 328/329 previously listed as Office 335A	Floor Tiles and mastic	8/15	NC			Material has been covered by carpet.
Room 335 and 335 B	Floor Tiles and mastic	8/15	NC			Material has been covered by carpet.
Room 327 previously listed as Room 334	9" Floor Tiles and mastic	8/15	NC			
Room 325 previously listed as Room 333	9" Floor Tiles and mastic	8/15	NC			
Room 324 previously listed as Room 332	9" Floor Tiles and mastic	8/15	NC			
Room 323 previously listed as Room 331	9" Floor Tiles and mastic	8/15	NC			
Room 321 previously listed as Room 330	9" Floor Tiles and mastic	8/15	NC			
Room 319 previously listed as Room 329	9" Floor Tiles and mastic	8/15	NC			Materials have been covered over with newer flooring.
Room 318 previously listed as Room 328	9" Floor Tiles and mastic	8/15	NC			
Room 317 previously listed as Room 327	9" Floor Tiles and mastic	8/15	NC			
Room 316 previously listed as Room 326	9" Floor Tiles and mastic	8/15	NC			
Faculty Bath	Ceramic Tile grout/mastic	8/15	NC			
Office # 7	9" Floor Tiles and mastic	8/15	NC			
Room 310	9" Floor Tiles and mastic	8/15	NC			
Room 311	9" Floor Tiles and mastic	8/15	NC			
Room 313 previously listed as Room 312	9" Floor Tiles and mastic	8/15	NC			
	Lab Top	8/15	NC			
See notes on last page						

DOVER HIGH SCHOOL SIX MONTH REINSPECTION

8/15/14

Dover High School Third Floor (Cont'd)		DATE	STATUS	DATE	STATUS	
Room 315 previously listed as Room 313	9" Floor Tiles and mastic	8/15	NC			
Room 314	9" Floor Tiles and mastic	8/15	NC			
Room 312 previously listed as Room 315	9" Floor Tiles and mastic	8/15	NC			
Room 336 previously listed as Room 316	Pipe Fitting Insulation		NC			Some Fittings were observed to have significant damage with debris present on top of ceiling and should be removed and area cleaned as soon as feasible.
Room 335 previously listed as Room 318	9" Floor Tiles and mastic	8/15	NC			
Room 304 previously listed as Room 308	Pipe Fitting Insulation	8/15	NC			
	9" Floor Tiles and mastic	8/15	NC			
Room 307	Pipe Fitting Insulation	8/15	NC			
	9" Floor Tiles and mastic	8/15	NC			
Room 309 previously listed as Room 306	9" Floor Tiles and mastic	8/15	NC			Materials were observed to have a few chipped floor tiles present.
Room 309 previously listed as Room 306	Pipe Fitting Insulation	8/15	NC			
Room 308 previously listed as Room 305	9" Floor Tiles and mastic	8/15	NC			Patch floor tiles were present.
Room 306 previously listed as Room 304	9" Floor Tiles and mastic	8/15	NC			Patch floor tiles were present.
Storage C& D	9" Floor Tiles and mastic	8/15	NC			
Room 305 previously listed as Room 303	9" Floor Tiles and mastic	8/15	NC			
	9" Floor Tiles and mastic	8/15	NC			
	Lab Top	8/15	NC			
See notes on last page	9" Floor Tiles and mastic	8/15	NC			

DOVER HIGH SCHOOL SI..ONTH REINSPECTION

8/15/14

Dover High School Third Floor (Cont'd)		DATE	STATUS	DATE	STATUS	
Room 303 previously listed as Room 302	9" Floor Tiles and mastic	8/15	NC			
	Lab Top	8/15	NC			
	Fume Hood	8/15	NC			
Storage A	9" Floor Tiles and mastic	8/15	NC			Normal wear observed
Room 301	9" Floor Tiles and mastic	8/15	NC			
	Lab Top	8/15	NC			
	Fume Hood	8/15	NC			
Storage Across from 302	Ceramic Tile grout/mastic	8/15	NC			
Room 326 previously listed as Room 324	9" Floor Tiles and mastic	8/15	NC			Normal wear observed
	9" Floor Tiles and mastic	8/15	NC			
Room 310	Pipe Fitting Insulation	8/15	NC			
Room 331 previously listed as Room 320	9" Floor Tiles and mastic	8/15	NC			
Room 333 previously listed as Room 319	Pipe Fitting Insulation	8/15	NC			
	Pipe Fitting Insulation	8/15	NC			
Room 302 previously listed as Room 309	9" Floor Tiles and mastic	8/15	NC			
	Pipe Fitting Insulation	8/15	NC			
Math Office	9" Floor Tiles and mastic	8/15	NC			
Services Rooms, Bath, and Hallway	Ceramic Tile grout/mastic	8/15	NC			
Guidance	9" Floor Tiles and mastic	8/15	NC			Materials have been covered over with carpet.
McKenna	9" Floor Tiles and mastic	8/15	NC			Materials have been covered over with carpet.
Kushner	9" Floor Tiles and mastic	8/15	NC			Materials have been covered over with carpet.
	Pipe Fitting Insulation	8/15	NC			
See notes on last page	9" Floor Tiles and mastic	8/15	NC			

DOVER HIGH SCHOOL SIX MONTH REINSPECTION

Dover High School							
Third Floor (Cont'd)		DATE	STATUS		DATE	STATUS	
Cole	9" Floor Tiles and mastic						
Throughout	Pipe Fitting Insulation						Possible concealed pipe and pipe fitting insulation present throughout the school.
Throughout	Other suspect materials are present and further review is re and/or demolition a full NESHAP survey must be conduct state and federal regulations.			quired. Prior to any		renovation 4 jd in accordance with various	Possible inaccessible ACBM also.
Category: MISC is miscellaneous material; TSI is thermal system insulation; SURF is							ordance with 40 CFR Part 763.
Assessment Codes based on 40 CFR Part 763: 1. Damaged or significantly damaged thermal system insulation ACM; 2. Damaged friable surfacing ACM; 3. Significantly damaged friable surfacing ACM; 4. Damaged or significantly damaged friable miscellaneous ACM; 5. ACBM with potential for damage; 6. ACBM with potential for significant damage; 7. Any remaining ACM. Please reference AHERA and the school management plan for discussion on assessment codes.							
Response Codes: 1. Manage ACBM in accordance with Management Plan; 2. Conduct repairs and cleaning; 3. Conduct removal and cleaning; 4. Material suspect and requires further testing; 5. ACBM has been removed and may be removed from listings; 6. ACBM was not observed and further review is required. See further discussion and requirements in report.							

REPORT
FOR
HAZARDOUS MATERIALS IDENTIFICATION
SURVEY
AT THE
HIGH SCHOOL AND VOCATIONAL CAREER AND TECHNICAL SCHOOL
DOVER, NEW HAMPSHIRE

PROJECT NO: 215 020.00

Survey Dates:
January 16-22, 2015

CONDUCTED BY:

UNIVERSAL ENVIRONMENTAL CONSULTANTS
12 Brewster Road
Framingham, MA 01702

universal environmental consultants

February 10, 2015

Mr. Robert Williams
HMFH Architects
130 Bishop Allen Drive
Cambridge, MA 02139

Reference: **Report for Hazardous Materials Inspection Services at the Dover High School and Vocational Career Technical School, Dover, New Hampshire**

Dear Mr. Williams:

Thank you for the opportunity for Universal Environmental Consultants (UEC) to provide professional services.

Enclosed please find the report for Hazardous Materials Identification Survey at the High School and Vocational Career Technical School, Dover, New Hampshire.

The inspection was performed by an Environmental Protection Agency (EPA) accredited and New Hampshire licensed asbestos inspector Mr. Jason Becotte (AI-000372).

Please do not hesitate to call should you have any questions.

Very truly yours,

Universal Environmental Consultants

Ammar M. Dieb
President

UEC:\215 020\REPORT.DOC

Enclosure

1.0 INTRODUCTION:

Universal Environmental Consultants (UEC) has been providing comprehensive asbestos services since 2001 and has completed projects throughout New England. We have completed projects for a variety of clients including commercial, industrial, municipal, and public and private schools. We maintain appropriate asbestos licenses and staff with a minimum of twenty years of experience.

UEC was contracted by HMFH Architects to conduct the following services at the High School and Vocational Career Technical School, Dover, New Hampshire:

- Asbestos Containing Materials (ACM) inspection and sampling;
- Polychlorinated Biphenyls (PCB's)-Electrical Equipment and Light Fixtures inspection;
- PCB's Caulking inspection and sampling;
- Lead Based Paint inspection;
- Underground Oil Tanks review.

The scope of work included the inspection of accessible ACM, collection of bulk samples from materials suspected to contain asbestos, determination and quantities of types of ACM found and cost estimates for remediation. A comprehensive survey per the Environmental Protection Agency (EPA) NESHAP regulation would be required prior to any renovation or demolition activities.

Bulk samples analyses for asbestos were performed using the standard Polarized Light Microscopy (PLM) Method in accordance with EPA standard. Bulk samples were collected by a New Hampshire licensed asbestos inspector Mr. Jason Becotte (AI-000372) and analyzed by a New Hampshire licensed laboratory EMSL, Woburn, MA.

PCB's bulk samples were analyzed by an EMSL, Cinnaminson, NJ in accordance with EPA 3540C/8082 method.

Samples results are attached.

2.0 FINDINGS:

Asbestos Containing Materials (ACM):

The regulations for asbestos inspection are based on representative sampling. It would be impractical and costly to sample all materials in all areas. Therefore, representative samples of each homogenous area were collected and analyzed or assumed.

All suspect materials were grouped into homogenous areas. By definition a homogenous area is one in which the materials are evenly mixed and similar in appearance and texture throughout. A homogeneous area shall be determined to contain asbestos based on findings that the results of at least one sample collected from that area shows that asbestos is present in an amount greater than 1 percent in accordance with EPA regulations. No additional suspect and accessible ACM were found during this survey. However, hidden ACM may be found during the renovation and demolition activities.

Number of Samples Collected:

Interior of school:

One hundred and thirty one (131) bulk samples were collected from materials suspected of containing asbestos, including:

Type and Location of Suspect Material

1. Wall skim coat at room 117

2. Wall skim coat at second floor hallway
3. Wall skim coat at room 222
4. Wall skim coat at room 303
5. Wall skim coat at room 308
6. Wall skim coat at room 311
7. Wall skim coat at room 313
8. Joint compound at room 328
9. Joint compound at room 328
10. Wall caulking at room 137A column block
11. Wall caulking at room 137A column block
12. Wall board above lockers at second floor hallway
13. Wall board above lockers at third floor hallway
14. White window sill at room 311
15. White window sill at room 324
16. Ceramic wall tile glue at boy's locker room
17. Ceramic wall tile glue at boy's locker room
18. Ceramic wall tile glue at kitchen
19. Ceramic wall tile glue at kitchen
20. Ceramic cove base glue at third floor hallway
21. Ceramic floor tile glue at first floor hallway
22. Ceramic wall tile glue at third floor hallway small squares
23. Black interior window glazing caulking at auto shop
24. Black interior window glazing caulking at room 329
25. Black interior window glazing caulking at room 329
26. Old hard interior window glazing caulking at cafeteria hallway
27. Old hard interior window glazing caulking at first floor hallway
28. Old hard interior window glazing caulking at second floor hallway
29. Door glass glazing caulking at room 311
30. Door glass glazing caulking at room 323
31. Black paper between wood at gymnasium floor
32. Black paper between wood at gymnasium floor
33. Tar paper under wood at gymnasium floor on cement
34. Tar paper under wood at gymnasium floor on cement
35. Beige cove base at room 311
36. Beige cove base at room 319
37. Brown glue at beige cove base at room 311
38. Brown glue at beige cove base at room 319
39. Grey cove base at room 327
40. Brown glue on grey cove base at room 327
41. Green 9" x 9" vinyl floor tile at room 303
42. Green 9" x 9" vinyl floor tile at room 319
43. Tan 9" x 9" vinyl floor tile at room 303
44. Tan 9" x 9" vinyl floor tile at room 319
45. Tan 9" x 9" vinyl floor tile at room 213
46. Grey 9" x 9" vinyl floor tile at room 323
47. Grey 9" x 9" vinyl floor tile at room 327
48. Grey 9" x 9" vinyl floor tile at room 213
49. Black mastic on green 9" x 9" vinyl floor tile at room 303
50. Black mastic on tan 9" x 9" vinyl floor tile at room 303
51. Black mastic on tan 9" x 9" vinyl floor tile at room 213
52. Black mastic on grey 9" x 9" vinyl floor tile at room 323
53. Black mastic on grey 9" x 9" vinyl floor tile at room 213
54. White 12" x 12" vinyl floor tile at room 136B
55. White 12" x 12" vinyl floor tile at room 136B
56. White/blue 12" x 12" vinyl floor tile at room 121
57. White/blue 12" x 12" vinyl floor tile at room 121
58. White/black 12" x 12" vinyl floor tile at room 137
59. White/black 12" x 12" vinyl floor tile at room 137
60. 2' x 4' suspended acoustical tile type 1 at room 303
61. 2' x 4' Suspended acoustical tile type 1 at room 316
62. 2' x 4' Suspended acoustical tile type 2 at nurse's room
63. 2' x 4' Suspended acoustical tile type 2 at room 328
64. 2' x 4' Suspended acoustical tile type 2 at room 329
65. 2' x 4' Suspended acoustical tile type 3 at auditorium
66. 2' x 4' Suspended acoustical tile type 3 at auditorium
67. 2' x 4' Suspended acoustical tile type 4 at kitchen
68. 2' x 4' Suspended acoustical tile type 4 at kitchen
69. Stage lighting wiring at auditorium
70. Stage lighting wiring at auditorium
71. White sink coating at room 313
72. White sink coating at room 315
73. Black sink coating at room 339
74. Black sink coating at library storage
75. Grey sink coating at teacher's lounge
76. Grey sink coating at nurse's room
77. Red duct sealant at boiler room
78. Red duct sealant at boiler room
79. Grey duct sealant at kitchen exhaust
80. Grey duct sealant at kitchen exhaust
81. Hard joint insulation on fiberglass insulated pipe at auditorium storage
82. Hard joint insulation on fiberglass insulated pipe at auditorium under seats
83. Hard joint insulation on fiberglass insulated pipe at auditorium catwalk
84. Hard joint insulation on fiberglass insulated pipe at auditorium catwalk
85. Hard joint insulation on fiberglass insulated pipe at second floor A/C
86. Black mastic on fiberglass paper wrap at boiler room
87. Black mastic on fiberglass paper wrap at boiler room
88. Black mastic on fiberglass paper wrap at electric room
89. New beveled edge lab top at room 302
90. New beveled edge lab top at room 306
91. Old round corner lab top at room 303
92. Old round corner lab top at room 306
93. Lab drying rack at 301/303 prep
94. Lab drying rack at room 309
95. Lab sink at room 305
96. Lab sink at room 306
97. Lab fume hood at room 301
98. Lab fume hood at room 303
99. 2' x 2' Suspended acoustical tile at CTC second floor hallway
100. 2' x 2' Suspended acoustical tile at CTC second floor hallway
101. Blue 12" x 12" vinyl floor tile at CTC room 127
102. Blue 12" x 12" vinyl floor tile at CTC room 127
103. Black mastic on blue 12" x 12" vinyl floor tile at CTC room 127
104. Black mastic on blue 12" x 12" vinyl floor tile at CTC room 127
105. Pink 12" x 12" vinyl floor tile at CTC room 128
106. Pink 12" x 12" vinyl floor tile at CTC room 128
107. Grey cove base at CTC room 128
108. Grey cove base at CTC room 128
109. Brown glue on grey cove base at CTC room 128
110. Brown glue on grey cove base at CTC room 128
111. Grey duct sealant at CTC second floor hallway A/C
112. Grey duct sealant at CTC second floor hallway A/C
113. Grey duct sealant at CTC boiler room

114. Grey duct sealant at CTC boiler room
115. Wall caulking block-block at CTC room 144
116. Wall caulking block-block at CTC room 143
117. Joint compound at CTC room 230
118. Joint compound at CTC office
119. Black interior window glazing at CTC room 230
120. Black interior window glazing at CTC office
121. Black door glass glazing on block at CTC room 125
122. 2' x 4' Suspended acoustical tile type 5 at 2003 addition in hallway
123. 2' x 4' Suspended acoustical tile type 5 at 2003 addition in hallway
124. Wall caulking block-block at 2003 addition in first floor hallway
125. Wall caulking block-block at 2003 addition in stairwell
126. Tan 12" x 12" vinyl floor tile at 2003 addition in hallway
127. Tan 12" x 12" vinyl floor tile at 2003 addition in custodian storage
128. Green 12" x 12" vinyl floor tile at 2003 addition in hallway
129. Green 12" x 12" vinyl floor tile at 2003 addition in custodian storage
130. Blue 12" x 12" vinyl floor tile at 2003 addition in stairwell
131. Blue 12" x 12" vinyl floor tile at 2003 addition in stairwell

Sample Results:

Type and Location of Suspect Material	Sample Result
1. Wall skim coat at room 117	No Asbestos Detected
2. Wall skim coat at second floor hallway	No Asbestos Detected
3. Wall skim coat at room 222	No Asbestos Detected
4. Wall skim coat at room 303	No Asbestos Detected
5. Wall skim coat at room 308	No Asbestos Detected
6. Wall skim coat at room 311	No Asbestos Detected
7. Wall skim coat at room 313	No Asbestos Detected
8. Joint compound at room 328	No Asbestos Detected
9. Joint compound at room 328	No Asbestos Detected
10. Wall caulking at room 137A column block	No Asbestos Detected
11. Wall caulking at room 137A column block	No Asbestos Detected
12. Wall board above lockers at second floor hallway	No Asbestos Detected
13. Wall board above lockers at third floor hallway	No Asbestos Detected
14. White window sill at room 311	10% Asbestos
15. White window sill at room 324	10% Asbestos
16. Ceramic wall tile glue at boy's locker room	5% Asbestos
17. Ceramic wall tile glue at boy's locker room	5% Asbestos
18. Ceramic wall tile glue at kitchen	No Asbestos Detected
19. Ceramic wall tile glue at kitchen	No Asbestos Detected
20. Ceramic cove base glue at third floor hallway	5% Asbestos
21. Ceramic floor tile glue at first floor hallway	5% Asbestos
22. Ceramic wall tile glue at third floor hallway small squares	5% Asbestos
23. Black interior window glazing caulking at auto shop	7% Asbestos
24. Black interior window glazing caulking at room 329	No Asbestos Detected
25. Black interior window glazing caulking at room 329	7% Asbestos
26. Old hard interior window glazing caulking at cafeteria hallway	2% Asbestos
27. Old hard interior window glazing caulking at first floor hallway	2% Asbestos
28. Old hard interior window glazing caulking at second floor hallway	2% Asbestos
29. Door glass glazing caulking at room 311	No Asbestos Detected
30. Door glass glazing caulking at room 323	3% Asbestos
31. Black paper between wood at gymnasium floor	No Asbestos Detected
32. Black paper between wood at gymnasium floor	No Asbestos Detected
33. Tar paper under wood at gymnasium floor on cement	No Asbestos Detected
34. Tar paper under wood at gymnasium floor on cement	No Asbestos Detected
35. Beige cove base at room 311	No Asbestos Detected
36. Beige cove base at room 319	No Asbestos Detected
37. Brown glue at beige cove base at room 311	No Asbestos Detected
38. Brown glue at beige cove base at room 319	No Asbestos Detected
39. Grey cove base at room 327	No Asbestos Detected
40. Brown glue on grey cove base at room 327	No Asbestos Detected
41. Green 9" x 9" vinyl floor tile at room 303	5% Asbestos
42. Green 9" x 9" vinyl floor tile at room 319	5% Asbestos
43. Tan 9" x 9" vinyl floor tile at room 303	5% Asbestos
44. Tan 9" x 9" vinyl floor tile at room 319	5% Asbestos
45. Tan 9" x 9" vinyl floor tile at room 213	5% Asbestos
46. Grey 9" x 9" vinyl floor tile at room 323	5% Asbestos
47. Grey 9" x 9" vinyl floor tile at room 327	5% Asbestos
48. Grey 9" x 9" vinyl floor tile at room 213	5% Asbestos
49. Black mastic on green 9" x 9" vinyl floor tile at room 303	10% Asbestos
50. Black mastic on tan 9" x 9" vinyl floor tile at room 303	10% Asbestos
51. Black mastic on tan 9" x 9" vinyl floor tile at room 213	10% Asbestos
52. Black mastic on grey 9" x 9" vinyl floor tile at room 323	10% Asbestos
53. Black mastic on grey 9" x 9" vinyl floor tile at room 213	10% Asbestos
54. White 12" x 12" vinyl floor tile at room 136B	No Asbestos Detected
55. White 12" x 12" vinyl floor tile at room 136B	No Asbestos Detected
56. White/blue 12" x 12" vinyl floor tile at room 121	No Asbestos Detected
57. White/blue 12" x 12" vinyl floor tile at room 121	No Asbestos Detected
58. White/black 12" x 12" vinyl floor tile at room 137	No Asbestos Detected
59. White/black 12" x 12" vinyl floor tile at room 137	No Asbestos Detected
60. 2' x 4' Suspended acoustical tile type 1 at room 303	No Asbestos Detected
61. 2' x 4' Suspended acoustical tile type 1 at room 316	No Asbestos Detected
62. 2' x 4' Suspended acoustical tile type 2 at nurse's room	No Asbestos Detected
63. 2' x 4' Suspended acoustical tile type 2 at room 328	No Asbestos Detected
64. 2' x 4' Suspended acoustical tile type 2 at room 329	No Asbestos Detected
65. 2' x 4' Suspended acoustical tile type 3 at auditorium	No Asbestos Detected
66. 2' x 4' Suspended acoustical tile type 3 at auditorium	No Asbestos Detected
67. 2' x 4' Suspended acoustical tile type 4 at kitchen	No Asbestos Detected
68. 2' x 4' Suspended acoustical tile type 4 at kitchen	No Asbestos Detected
69. Stage lighting wiring at auditorium	70% Asbestos
70. Stage lighting wiring at auditorium	70% Asbestos
71. White sink coating at room 313	No Asbestos Detected
72. White sink coating at room 315	No Asbestos Detected
73. Black sink coating at room 339	5% Asbestos
74. Black sink coating at library storage	5% Asbestos
75. Grey sink coating at teacher's lounge	No Asbestos Detected
76. Grey sink coating at nurse's room	No Asbestos Detected
77. Red duct sealant at boiler room	No Asbestos Detected
78. Red duct sealant at boiler room	No Asbestos Detected
79. Grey duct sealant at kitchen exhaust	No Asbestos Detected
80. Grey duct sealant at kitchen exhaust	No Asbestos Detected
81. Hard joint insulation on fiberglass insulated pipe at auditorium storage	No Asbestos Detected
82. Hard joint insulation on fiberglass insulated pipe at auditorium under seats	No Asbestos Detected
83. Hard joint insulation on fiberglass insulated pipe at auditorium cat walk	No Asbestos Detected
84. Hard joint insulation on fiberglass insulated pipe at auditorium cat walk	No Asbestos Detected
85. Hard joint insulation on fiberglass insulated pipe at second floor A/C	No Asbestos Detected
86. Black mastic on fiberglass paper wrap at boiler room	No Asbestos Detected
87. Black mastic on fiberglass paper wrap at boiler room	No Asbestos Detected
88. Black mastic on fiberglass paper wrap at electric room	No Asbestos Detected
89. New beveled edge lab top at room 302	No Asbestos Detected

90.	New beveled edge lab top at room 306	No Asbestos Detected
91.	Old round corner lab top at room 303	15% Asbestos
92.	Old round corner lab top at room 306	15% Asbestos
93.	Lab drying rack at 301/303 prep	15% Asbestos
94.	Lab drying rack at room 309	15% Asbestos
95.	Lab sink at room 305	No Asbestos Detected
96.	Lab sink at room 306	No Asbestos Detected
97.	Lab fume hood at room 301	20% Asbestos
98.	Lab fume hood at room 303	20% Asbestos
99.	2' x 2' Suspended acoustical tile at CTC second floor hallway	No Asbestos Detected
100.	2' x 2' Suspended acoustical tile at CTC second floor hallway	No Asbestos Detected
101.	Blue 12" x 12" vinyl floor tile at CTC room 127	No Asbestos Detected
102.	Blue 12" x 12" vinyl floor tile at CTC room 127	No Asbestos Detected
103.	Black mastic on blue 12" x 12" vinyl floor tile at CTC room 127	No Asbestos Detected
104.	Black mastic on blue 12" x 12" vinyl floor tile at CTC room 127	No Asbestos Detected
105.	Pink 12" x 12" vinyl floor tile at CTC room 128	No Asbestos Detected
106.	Pink 12" x 12" vinyl floor tile at CTC room 128	No Asbestos Detected
107.	Grey cove base at CTC room 128	No Asbestos Detected
108.	Grey cove base at CTC room 128	No Asbestos Detected
109.	Brown glue on grey cove base at CTC room 128	No Asbestos Detected
110.	Brown glue on grey cove base at CTC room 128	No Asbestos Detected
111.	Grey duct sealant at CTC second floor hallway A/C	No Asbestos Detected
112.	Grey duct sealant at CTC second floor hallway A/C	No Asbestos Detected
113.	Grey duct sealant at CTC boiler room	No Asbestos Detected
114.	Grey duct sealant at CTC boiler room	No Asbestos Detected
115.	Wall caulking block-block at CTC room 144	No Asbestos Detected
116.	Wall caulking block-block at CTC room 143	No Asbestos Detected
117.	Joint compound at CTC room 230	No Asbestos Detected
118.	Joint compound at CTC office	No Asbestos Detected
119.	Black interior window glazing at CTC room 230	7% Asbestos
120.	Black interior window glazing at CTC office	7% Asbestos
121.	Black door glass glazing on block at CTC room 125	7% Asbestos
122.	2' x 4' Suspended acoustical tile type 5 at 2003 addition in hallway	No Asbestos Detected
123.	2' x 4' Suspended acoustical tile type 5 at 2003 addition in hallway	No Asbestos Detected
124.	Wall caulking block-block at 2003 addition in first floor hallway	No Asbestos Detected
125.	Wall caulking block-block at 2003 addition in stairwell	No Asbestos Detected
126.	Tan 12" x 12" vinyl floor tile at 2003 addition in hallway	No Asbestos Detected
127.	Tan 12" x 12" vinyl floor tile at 2003 addition in custodian storage	No Asbestos Detected
128.	Green 12" x 12" vinyl floor tile at 2003 addition in hallway	No Asbestos Detected
129.	Green 12" x 12" vinyl floor tile at 2003 addition in custodian storage	No Asbestos Detected
130.	Blue 12" x 12" vinyl floor tile at 2003 addition in stairwell	No Asbestos Detected
131.	Blue 12" x 12" vinyl floor tile at 2003 addition in stairwell	No Asbestos Detected

Exterior of School:

Number of Samples Collected:

Thirty one (31) bulk samples were collected from materials suspected of containing asbestos, including:

Type and Location of Suspect Material

1. Expansion joint caulking at 1966 by gymnasium XJ3
2. Door frame caulking at 1966 door #9 of auditorium
3. Door frame caulking at 1966 door #18 of boiler room
4. Door frame caulking at 1966 door #13 of weight room
5. Door glass glazing at 1966 door #13 of weight room
6. Window-wall interior aluminum trim at 1966 room 208
7. Window-wall interior aluminum trim at 1966 room 222
8. Window-wall interior old frame caulking at 1966 room 208
9. Window-wall interior old frame caulking at 1966 room 222
10. Old aluminum window glazing at 1966 windows of boiler room
11. Old aluminum window glazing at 1966 windows of boiler room
12. Old aluminum window glazing at 1966 window 6 boy's locker room
13. Old aluminum window glazing at 1966 weight room
14. Expansion joint caulking at CTC XJ1
15. Expansion joint caulking at CTC XJ2
16. Window frame caulking at CTC window 1 room 127
17. Window frame caulking at CTC window 2 room 144
18. Greenhouse frame caulking at CTC greenhouse
19. Greenhouse glass glazing at CTC greenhouse
20. Door frame caulking at CTC door 23
21. Door frame caulking at CTC door 24
22. Door frame caulking at CTC door 30
23. Black paper at CTC wall cut #1
24. Expansion joint caulking at 2003 addition XJ4
25. Door frame caulking at 2003 addition door 5
26. Window frame caulking at 2003 addition window 3 room 13
27. Window frame caulking at 2003 window 4 room 11
28. Window glass glazing at 2003 addition window 3 room 13
29. Window glass glazing at 2003 addition window 4 room 11
30. Black damproofing at 2003 addition cut #9
31. Black damproofing at 2003 addition cut #10

Sample Results:

Type and Location of Suspect Material		Sample Result
1.	Expansion joint caulking at 1966 by gymnasium XJ3	No Asbestos Detected
2.	Door frame caulking at 1966 door #9 of auditorium	No Asbestos Detected
3.	Door frame caulking at 1966 door #18 of boiler room	No Asbestos Detected
4.	Door frame caulking at 1966 door #13 of weight room	No Asbestos Detected
5.	Door glass glazing at 1966 door #13 of weight room	No Asbestos Detected
6.	Window-wall interior aluminum trim at 1966 room 208	4% Asbestos
7.	Window-wall interior aluminum trim at 1966 room 222	4% Asbestos
8.	Window-wall interior old frame caulking at 1966 room 208	5% Asbestos
9.	Window-wall interior old frame caulking at 1966 room 222	3% Asbestos
10.	Old aluminum window glazing at 1966 windows of boiler room	<1% Asbestos
11.	Old aluminum window glazing at 1966 windows of boiler room	2% Asbestos
12.	Old aluminum window glazing at 1966 window 6 boy's locker room	4% Asbestos
13.	Old aluminum window glazing at 1966 weight room	No Asbestos Detected
14.	Expansion joint caulking at CTC XJ1	No Asbestos Detected
15.	Expansion joint caulking at CTC XJ2	No Asbestos Detected
16.	Window frame caulking at CTC window 1 room 127	No Asbestos Detected
17.	Window frame caulking at CTC window 2 room 144	No Asbestos Detected
18.	Greenhouse frame caulking at CTC greenhouse	No Asbestos Detected
19.	Greenhouse glass glazing at CTC greenhouse	No Asbestos Detected
20.	Door frame caulking at CTC door 23	No Asbestos Detected
21.	Door frame caulking at CTC door 24	No Asbestos Detected
22.	Door frame caulking at CTC door 30	No Asbestos Detected
23.	Black paper at CTC wall cut #1	No Asbestos Detected
24.	Expansion joint caulking at 2003 addition XJ4	No Asbestos Detected
25.	Door frame caulking at 2003 addition door 5	No Asbestos Detected

26. Window frame caulking at 2003 addition window 3 room 13	No Asbestos Detected
27. Window frame caulking at 2003 window 4 room 11	No Asbestos Detected
28. Window glass glazing at 2003 addition window 3 room 13	No Asbestos Detected
29. Window glass glazing at 2003 addition window 4 room 11	No Asbestos Detected
30. Black damproofing at 2003 addition cut #9	No Asbestos Detected
31. Black damproofing at 2003 addition cut #10	No Asbestos Detected

Observations:

1. White window sill was found to contain asbestos.
2. Ceramic wall tile glue was found to contain asbestos.
3. Ceramic cove base glue was found to contain asbestos.
4. Ceramic floor tile glue was found to contain asbestos.
5. Ceramic wall tiles (small squares) were found to contain asbestos.
6. Black interior window glazing caulking was found to contain asbestos.
7. Various types of 9" x 9" vinyl floor tiles and mastic were found to contain asbestos.
8. Auditorium stage light wiring insulation was found to contain asbestos.
9. Black sink coating was found to contain asbestos.
10. Old round corner lab tops were found to contain asbestos.
11. Lab drying racks were found to contain asbestos.
12. Lab fume hoods were found to contain asbestos.
13. Black door glass glazing caulking was found to contain asbestos.
14. Window-wall interior aluminum trim was found to contain asbestos. It appears most windows were replaced however, old caulking and original aluminum trim still exit on the interior of the window wall system.
15. Window-wall interior old frame caulking was found to contain asbestos.
16. Old aluminum window frame caulking was found to contain asbestos.
17. Glue holding blackboard was assumed to contain asbestos.
18. Flexible connectors were assumed to contain asbestos.
19. Glue inside walk-in coolers was assumed to contain asbestos.
20. Roofing material was assumed to contain asbestos.
21. Sewer pipes were assumed to contain asbestos (transite).
22. All other suspect materials were found not to contain asbestos. Hidden ACM may be found during renovation and demolition activities.

Polychlorinated Biphenyls (PCB's)-Electrical Equipment and Light Fixtures:

Observations and Conclusions
Visual inspection of various equipments such as light fixtures, thermostats, exit signs and switches was performed for the presence of PCB's and mercury. Ballasts in light fixtures were assumed not to contain PCB's since there were labels indicating that "No PCB's" was found. Tubes in light fixtures, thermostats, signs and switches were assumed to contain mercury. It would be very costly to test those equipments and dismantling would be required to access. Therefore, the above mentioned equipments should be disposed in an EPA approved landfill as part of the demolition project.

Lead Based Paint:

Observations and Conclusions
LBP was assumed to exit on painted surfaces. A school is not considered a regulated facility. All LBP activities performed, including waste disposal, should be in accordance with applicable Federal, State, or local laws, ordinances, codes or regulations governing evaluation and hazard reduction. In the event of discrepancies, the most protective requirements prevail. These requirements can be found in OSHA 29 CFR 1926-Construction Industry Standards, 29 CFR 1926.62-Construction Industry Lead Standards, 29 CFR 1910.1200-Hazards Communication, 40 CFR 261-EPA Regulations. According to OSHA, any amount of LBP triggers compliance.

PCB's in Caulking:

PCB's are manmade chemicals that were widely produced and distributed across the country from the 1950s to 1977 until the production of PCB's was banned by the US Environmental Protection Agency (EPA) law which became effective in 1978. PCB's are a class of chemicals made up of more than 200 different compounds. PCB's are non-flammable, stable, and good insulators so they were widely used in a variety of products including: electrical transformers and capacitors, cable and wire coverings, sealants and caulking, and household products such as television sets and fluorescent light fixtures. Because of their chemical properties, PCB's are not very soluble in water and they do not break down easily in the environment. PCB's also do not readily evaporate into air but tend to remain as solids or thick liquids. Even though PCB's have not been produced or used in the country for more than 30 years, they are still present in the environment in the air, soil, and water and in our food. EPA requires that all construction waste including caulking be disposed as PCB's if PCB's level exceed 50 mg/kg (ppm). An abatement plan might also be required.

Number of Samples Collected

Ten (10) bulk samples were collected from the following.

Type and Location of Material

1. Expansion joint caulking at 1966 XJ3
2. Door framing caulking at 1966 door 9
3. Door framing caulking at 1966 door 18
4. Window framing caulking at 1966 boiler room
5. Window framing caulking at 1966 room 222 interior
6. Window framing caulking at 1966 room 208 interior
7. Expansion joint caulking at CTC XJ1
8. Door framing caulking at CTC door 30
9. Window framing caulking at CTC room 127
10. Greenhouse framing caulking at CTC

Sample Results

Type and Location of Material	Sample Result
1. Expansion joint caulking at 1966 XJ3	No PCB's Detected
2. Door framing caulking at 1966 door 9	No PCB's Detected
3. Door framing caulking at 1966 door 18	No PCB's Detected
4. Window framing caulking at 1966 boiler room	1.2 mg/kg
5. Window framing caulking at 1966 room 222 interior	43 mg/kg
6. Window framing caulking at 1966 room 208 interior	No PCB's Detected
7. Expansion joint caulking at CTC XJ1	No PCB's Detected
8. Door framing caulking at CTC door 30	No PCB's Detected
9. Window framing caulking at CTC room 127	16 mg/kg
10. Greenhouse framing caulking at CTC	No PCB's Detected

Observations and Conclusions:
PCB's levels in all of the samples were either non-detected or lower than EPA limit of 50 mg/kg.

Underground Oil Tanks:
None was observed. Boilers are gas fired.

3.0 COST ESTIMATES:

The cost includes removal and disposal of all accessible ACM and an allowance for removal of inaccessible or hidden ACM that may be found during the demolition or renovation project. All ACM that might be disturbed must be removed.

Location	Material	Approximate Quantity	Cost Estimate ($)
1966 Wing:			
	Exposed 9"x 9" Vinyl Floor Tiles and Mastic	70,000 SF	280,000.00
	Multiple Layers of Flooring	10,000 SF	50,000.00
	Ceramic Tiles and Glue	75,000 SF	375,000.00
	Window Sill	2,000 LF	20,000.00
	Counter Tops	50 Total	10,000.00
	Lab Drying Racks	10 Total	5,000.00
	Lab Hume Hoods	4 Total	10,000.00
	Sinks	35 Total	3,500.00
	Glue holding Blackboards	100 Total	15,000.00
	Interior Windows	210 Total	21,000.00
	Interior Doors	95 Total	19,000.00
	Light Fixtures, Thermostats; etc.	1,800 Total	63,000.00
	Miscellaneous ACM	Unknown	50,000.00
Auditorium	Electrical Wires	150 LF	7,500.00
Kitchen Area	Walk-in Freezers	4 Total	15,000.00
Exterior	Old Windows	12 Total	2,400.00
	Old Caulking/Aluminum Trim	Unknown	65,000.00
CTC Wing:			
	Ceramic Tiles and Glue	2,000 SF	10,000.00
	Interior Windows	50 Total	5,000.00
	Interior Doors	15 Total	1,500.00
Roofing	Roofing Material	Unknown	125,000.00
Underground	Transite Sewer Pipes	Unknown	50,000.00
Engineering fees for Inspection, Design, Construction Monitoring and Air Sampling Services			97,100.00
		TOTAL:	***$ 1,300,000.00***

4.0 DESCRIPTION OF SURVEY METHODS AND LABORATORY ANALYSES:

Asbestos:
Asbestos samples were collected using a method that prevents fiber release. Homogeneous sample areas were determined by criteria outlined in EPA document 560/5-85-030a. Bulk material samples were analyzed using PLM and dispersion staining techniques with EPA method 600/M4-82-020.

Polychlorinated Biphenyls:
PCB's samples were analyzed in accordance with EPA 3540C/8082 method.

5.0 LIMITATIONS AND CONDITIONS:

This report has been completed based on visual and physical observations made and information available at the time of the site visits, as well as an interview with the Owner's representatives. This report is intended to be used as a summary of available information on existing conditions with conclusions based on a reasonable and knowledgeable review of evidence found in accordance with normally accepted industry standards, state and federal protocols, and within the scope and budget established by the client. Any additional data obtained by further review must be reviewed by UEC and the conclusions presented herein may be modified accordingly.

This report and attachments, prepared for the exclusive use of Owner for use in an environmental evaluation of the subject site, are an integral part of the inspections and opinions should not be formulated without reading the report in its entirety. No part of this report may be altered, used, copied or relied upon without prior written permission from UEC, except that this report may be conveyed in its entirety to parties associated with Owner for this subject study.

Inspection by:

Jason Becotte
Asbestos Inspector, AI-000372

OrderID: 131500325

1315003255

CHAIN OF CUSTODY

Universal Environmental Consultants
12 Brewster Road
Framingham, MA 01702
Tel: (508) 628-5486 - Fax: (508) 628-5488
adieb@uec-env.com

PLM (SV) 1/23/15
48-hour TAT

Town/City: Dover, NH Building Name Dover High School

Sample	Result	Description of Material	Sample Location
1		wall skim coat	Rm 117
2		"	second floor Hall
3		"	Rm 222
4		"	Rm 303
5		"	Rm 308
6		"	Rm 311
7		"	Rm 313
8		Joint compound	Rm 328
9		"	Rm 328
10		wall caulk	Rm 137A Column - Block
11		"	"
12		wall board Above Lockers	second floor Hall
13		"	Third floor Hall
14		White window sill	Rm 311
15		"	Rm 329
16		Ceramic wall tile glue	Boys locker room
17		"	"
18		"	Kitchen
19		"	"
20		Ceramic Cove base glue	third floor Hall

Reported By: Jason Beaudet Date: 1-22-15 Due Date:

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PLM
48-hour TAT

Town/City: Dover, NH Building Name Dover High School

Sample	Result	Description of Material	Sample Location
21		Ceramic floor tile glue	1st fl. Hall
22		ceramic wall tile glue	3rd floor Hall small squares
23		Interior win glaze Black	auto shop
24		"	Rm 329
25		"	"
26		Interior win glaze Old Hard	Cafe Hall
27		"	1st floor Hall
28		"	2nd floor Hall
29		Door Glass glaze	Rm 311
30		"	Rm 323
31		Black Paper between wood	gym floor
32		"	"
33		Tar Paper under wood	gym floor on cement
34		"	" "
35		Beige cove base	Rm 311
36		"	Rm 319
37		Brown glue	on sample 35
38		"	on sample 36
39		Grey cove base	Rm 327
40		Brown glue	on sample 39

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PLM
48-hour TAT

Town/City: Dover, NH Building Name Dover High School

Sample	Result	Description of Material	Sample Location
41		green 9x9 VFT	Room 303
42		"	Room 319
43		Tan 9x9 VFT	Room 303
44		"	Room 319
45		"	Room 213
46		Grey 9x9 VFT	Room 323
47		"	Room 327
48		"	Room 213
49		Black mastic	on sample 41
50		"	on sample 43
51		"	on sample 45
52		"	on sample 46
53		"	on sample 48
54		white 12x12 VFT	Room 136B
55		"	"
56		white/Blue 12x12 VFT	Room 121
57		"	"
58		white/Black 12x12 VFT	Room 137
59		"	"
60		2x4 SAT Type 1	Room 303

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PLM
48-hour TAT

Town/City: Dover, NH Building Name Dover High School

Sample	Result	Description of Material	Sample Location
61		2x4 SAT Type 1	Room 316
62		2x4 SAT Type 2	Nurse
63		"	Room 328
64		"	Room 329
65		2x4 SAT Type 3	Auditorium
66		"	"
67		2x4 SAT Type 4	Kitchen
68		"	"
69		stage light wiring	auditorium
70		"	"
71		white sink coating	Room 313
72		"	Room 315
73		Black sink coating	Room 330
74		"	Library storage
75		Grey sink coating	Teachers Lounge
76		"	Nurse
77		Red duct sealant	Boiler room
78		"	"
79		Grey duct sealant	Kitchen exhaust
80		"	"

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PLM
48-hour TAT

Town/City: Dover, NH Building Name: Dover High School

Sample	Result	Description of Material	Sample Location
81		Hard joint on FG Pipe	Auditorium storage
82		"	under auditorium seats
83		"	Auditorium cat walk
84		"	"
85		"	Second Floor Hall A/C
86		Black mastic on FG Pipe wrap	Boiler room
87		"	"
88		"	electric room
89		new Beveled edge Lab Top	Room 302
90		"	Room 306
91		old Round corner lab top	Room 303
92		"	Room 306
93		Lab drying rack	301/303 Prep
94		"	Room 309
95		Lab sink	Room 305
96		"	Room 306
97		Lab Fume Hood	Room 301
98		"	Room 303
99		2x2 SAT	CTC second floor Hall
100		"	"

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PLM
48-hour TAT

Town/City: Dover, NH Building Name: Dover High School

Sample	Result	Description of Material	Sample Location
101		Blue 12x12 VFT	CTC Room 127
102		"	"
103		Black mastic	on sample 101
104		"	on sample 102
105		Pink 12x12 VFT	CTC Room 128
106		"	"
107		Grey Cove base	CTC Room 128
108		"	"
109		Brown glue	on sample 107
110		"	on sample 108
111		Grey duct sealant	CTC 2nd Floor Hall A/C
112			"
113			CTC Boiler room
114			"
115		Wall caulk Block-Block	CTC Room 144
116		"	CTC Room 143
117		Joint Compound	CTC Room 230
118		"	CTC office
119		Interior window glaze Black	CTC Room 230
120		"	CTC office

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PLM
48-hour TAT

Town/City: Dover, NH Building Name: Dover High School

Sample	Result	Description of Material	Sample Location
121		Door glass glaze Black	CTC Room 125
122		2x4 SAT Type S	2003 Addl Hall
123		" "	" "
124		Wall caulk Black - Block	2003 Addl 1st Fl. Hall
125		" "	2003 Addl Stairwell
126		Tan 12x12 VFT	2003 Addl Hall
127		" "	2003 Addl Custodian Storage
128		Green 12x12 VFT	2003 Addl Hall
129		" "	2003 Addl Custodian Storage
130		Blue 12x12 VFT	2003 Addl Stairwell
131		" "	" "

Reported By: Jason Becotte Date: 1-22-15 Due Date:

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Page 7 Of 7

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Phone: (508) 628-5486
Fax: (508) 628-5488
Received: 01/23/15 1:00 PM
Analysis Date: 1/26/2015
Collected: 1/22/2015

Project: **Dover High School; Dover, NH**

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
1 *131500325-0001*	Room 117 - Wall Skim Coat	Gray Non-Fibrous Homogeneous		100% Non-fibrous (other)	**None Detected**
2 *131500325-0002*	2nd Floor Hall - Wall Skim Coat	Gray Non-Fibrous Homogeneous		100% Non-fibrous (other)	**None Detected**
3 *131500325-0003*	Room 222 - Wall Skim Coat	Gray Non-Fibrous Homogeneous		100% Non-fibrous (other)	**None Detected**
4 *131500325-0004*	Room 303 - Wall Skim Coat	Gray Non-Fibrous Homogeneous		100% Non-fibrous (other)	**None Detected**
5 *131500325-0005*	Room 308 - Wall Skim Coat	Gray Non-Fibrous Homogeneous		100% Non-fibrous (other)	**None Detected**
6 *131500325-0006*	Room 311 - Wall Skim Coat	Gray Non-Fibrous Homogeneous		100% Non-fibrous (other)	**None Detected**
7 *131500325-0007*	Room 313 - Wall Skim Coat	Gray Non-Fibrous Homogeneous		100% Non-fibrous (other)	**None Detected**
8 *131500325-0008*	Room 328 - Joint Compound	White Non-Fibrous Homogeneous		100% Non-fibrous (other)	**None Detected**

Analyst(s)
Steve Grise (131)

Steve Grise, Laboratory Manager
or other approved signatory

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Samples analyzed by EMSL Analytical, Inc. Woburn, MA NVLAP Lab Code 101147-0, CT PH-0315, MA AA000188, RI AAL-107T3 and VT AL357102

Initial report from 01/26/2015 18:00:13

Test Report PLM-7.28.9 Printed: 1/26/2015 6:00:13 PM 1

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Collected: 1/22/2015

Project: **Dover High School; Dover, NH**

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
9 *131500325-0009*	Room 328 - Joint Compound	White Non-Fibrous Homogeneous		100% Non-fibrous (other)	**None Detected**
10 *131500325-0010*	Room 137 A Column Block - Wall Caulk	White Non-Fibrous Homogeneous		100% Non-fibrous (other)	**None Detected**
11 *131500325-0011*	Room 137 A Column Block - Wall Caulk	White Non-Fibrous Homogeneous		100% Non-fibrous (other)	**None Detected**
12 *131500325-0012*	2nd Floor Hall - Wall Board Above Lockers	Gray Fibrous Homogeneous	5% Cellulose	95% Non-fibrous (other)	**None Detected**
13 *131500325-0013*	2nd Floor Hall - Wall Board Above Lockers	Gray Fibrous Homogeneous	5% Cellulose	95% Non-fibrous (other)	**None Detected**
14 *131500325-0014*	Room 311 - White Window Sill	White Non-Fibrous Homogeneous		90% Non-fibrous (other)	**10% Chrysotile**
15 *131500325-0015*	Room 324 - White Window Sill	White Non-Fibrous Homogeneous		90% Non-fibrous (other)	**10% Chrysotile**
16 *131500325-0016*	Boys Locker Room - Ceramic Wall Tile Glue	Yellow Non-Fibrous Homogeneous		95% Non-fibrous (other)	**5% Chrysotile**

Analyst(s)
Steve Grise (131)

Steve Grise, Laboratory Manager
or other approved signatory

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Project: **Dover High School; Dover, NH**

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
17 *131500325-0017*	Boys Locker Room - Ceramic Wall Tile Glue	Yellow Non-Fibrous Homogeneous		95% Non-fibrous (other)	**5% Chrysotile**
18 *131500325-0018*	Kitchen - Ceramic Wall Tile Glue	Yellow Non-Fibrous Homogeneous		100% Non-fibrous (other)	**None Detected**
19 *131500325-0019*	Kitchen - Ceramic Wall Tile Glue	Yellow Non-Fibrous Homogeneous		100% Non-fibrous (other)	**None Detected**
20 *131500325-0020*	3rd Floor Hall - Caermic Covebase Glue	Tan Non-Fibrous Homogeneous		95% Non-fibrous (other)	**5% Chrysotile**
21 *131500325-0021*	1st Fl Hall - Caermic Floor Tile Glue	Tan Non-Fibrous Homogeneous		95% Non-fibrous (other)	**5% Chrysotile**
22 *131500325-0022*	3rd Floor Hall Small Squares - Ceramic Wal Tile Glue	Tan Non-Fibrous Homogeneous		95% Non-fibrous (other)	**5% Chrysotile**
23 *131500325-0023*	Auto Shop - Interior Win Glaze Black	Black Non-Fibrous Homogeneous		93% Non-fibrous (other)	**7% Chrysotile**
24 *131500325-0024*	Room 329 - Interior Win Glaze Black	Black Non-Fibrous Homogeneous		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

			Non-Asbestos			Asbestos
Sample	**Description**	**Appearance**	**% Fibrous**	**% Non-Fibrous**		**% Type**
25 *131500325-0025*	Room 329 - Interior Win Glaze Black	Black Non-Fibrous Homogeneous		93% Non-fibrous (other)		**7% Chrysotile**
26 *131500325-0026*	Café Hall - Interior Win Glaze Old Hard	Gray Non-Fibrous Homogeneous		98% Non-fibrous (other)		**2% Chrysotile**
27 *131500325-0027*	1st Floor Hall - Interior Win Glaze Old Hard	Gray Non-Fibrous Homogeneous		98% Non-fibrous (other)		**2% Chrysotile**
28 *131500325-0028*	2nd Floor Hall - Interior Win Glaze Old Hard	Gray Non-Fibrous Homogeneous		98% Non-fibrous (other)		**2% Chrysotile**
29 *131500325-0029*	Room 311 - Door Glass Glaze	White Non-Fibrous Homogeneous		100% Non-fibrous (other)		**None Detected**
30 *131500325-0030*	Room 323 - Door Glass Glaze	Gray Non-Fibrous Homogeneous		97% Non-fibrous (other)		**3% Chrysotile**
31 *131500325-0031*	Gym Floor - Black Paper Between Wood	Black Fibrous Homogeneous	70% Cellulose 5% Glass	25% Non-fibrous (other)		**None Detected**
32 *131500325-0032*	Gym Floor - Black Paper Between Wood	Black Fibrous Homogeneous	70% Cellulose 5% Glass	25% 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

			Non-Asbestos			Asbestos
Sample	**Description**	**Appearance**	**% Fibrous**	**% Non-Fibrous**		**% Type**
33 *131500325-0033*	Gly Floor on Cement - Tar Paper Under Wood	Black Fibrous Homogeneous	75% Cellulose	25% Non-fibrous (other)		**None Detected**
34 *131500325-0034*	Gly Floor on Cement - Tar Paper Under Wood	Black Fibrous Homogeneous	75% Cellulose	25% Non-fibrous (other)		**None Detected**
35 *131500325-0035*	Room 311 - Beige Covebase	Beige Non-Fibrous Homogeneous		100% Non-fibrous (other)		**None Detected**
36 *131500325-0036*	Room 319 - Beige Covebase	Beige Non-Fibrous Homogeneous		100% Non-fibrous (other)		**None Detected**
37 *131500325-0037*	- Brown Glue on Sample 35	Brown Non-Fibrous Homogeneous		100% Non-fibrous (other)		**None Detected**
38 *131500325-0038*	- Brown Glue on Sample 36	Brown Non-Fibrous Homogeneous		100% Non-fibrous (other)		**None Detected**
39 *131500325-0039*	Room 327 - Grey Covebase	Gray Non-Fibrous Homogeneous		100% Non-fibrous (other)		**None Detected**
40 *131500325-0040*	- Brown Glue on Sample 39	Brown Non-Fibrous Homogeneous		100% Non-fibrous (other)		**None Detected**

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EMSL Order: 131500325
CustomerID: UEC63
CustomerPO:
ProjectID:

Attn: **Jason Becotte**
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Received: 01/23/15 1:00 PM
Analysis Date: 1/26/2015
Collected: 1/22/2015

Project: **Dover High School; Dover, NH**

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
41 *131500325-0041*	Room 303 - Green 9x9 VFT	Green Non-Fibrous Homogeneous		95% Non-fibrous (other)	**5% Chrysotile**
42 *131500325-0042*	Room 319 - Green 9x9 VFT	Green Non-Fibrous Homogeneous		95% Non-fibrous (other)	**5% Chrysotile**
43 *131500325-0043*	Room 303 - Tan 9x9 VFT	Tan Non-Fibrous Homogeneous		95% Non-fibrous (other)	**5% Chrysotile**
44 *131500325-0044*	Room 319 - Tan 9x9 VFT	Tan Non-Fibrous Homogeneous		95% Non-fibrous (other)	**5% Chrysotile**
45 *131500325-0045*	Room 213 - Tan 9x9 VFT	Tan Non-Fibrous Homogeneous		95% Non-fibrous (other)	**5% Chrysotile**
46 *131500325-0046*	Room 323 - Grey 9x9 VFT	Gray Non-Fibrous Homogeneous		95% Non-fibrous (other)	**5% Chrysotile**
47 *131500325-0047*	Room 327 - Grey 9x9 VFT	Gray Non-Fibrous Homogeneous		95% Non-fibrous (other)	**5% Chrysotile**
48 *131500325-0048*	Room 213 - Grey 9x9 VFT	Gray Non-Fibrous Homogeneous		95% Non-fibrous (other)	**5% Chrysotile**

Analyst(s)
Steve Grise (131)

Steve Grise, Laboratory Manager
or other approved signatory

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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-Asbestos % Non-Fibrous	Asbestos % Type
49 *131500325-0049*	- Black Mastic on Sample 41	Black Non-Fibrous Homogeneous		90% Non-fibrous (other)	**10% Chrysotile**
50 *131500325-0050*	- Black Mastic on Sample 43	Black Non-Fibrous Homogeneous		90% Non-fibrous (other)	**10% Chrysotile**
51 *131500325-0051*	- Black Mastic on Sample 45	Black Non-Fibrous Homogeneous		90% Non-fibrous (other)	**10% Chrysotile**
52 *131500325-0052*	- Black Mastic on Sample 46	Black Non-Fibrous Homogeneous		90% Non-fibrous (other)	**10% Chrysotile**
53 *131500325-0053*	- Black Mastic on Sample 48	Black Non-Fibrous Homogeneous		90% Non-fibrous (other)	**10% Chrysotile**
54 *131500325-0054*	Room 136 B - White 12x12 VFT	White Non-Fibrous Homogeneous		100% Non-fibrous (other)	**None Detected**
55 *131500325-0055*	Room 136 B - White 12x12 VFT	White Non-Fibrous Homogeneous		100% Non-fibrous (other)	**None Detected**
56 *131500325-0056*	Room 121 - White/Blue 12c12 VFT	White Non-Fibrous Homogeneous		100% Non-fibrous (other)	**None Detected**

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Project: **Dover High School; Dover, NH**

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
57 *131500325-0057*	Room 121 - White/Blue 12c12 VFT	Blue Non-Fibrous Homogeneous		100% Non-fibrous (other)	**None Detected**
58 *131500325-0058*	Room 137 - White/Black 12c12 VFT	Black Non-Fibrous Homogeneous		100% Non-fibrous (other)	**None Detected**
59 *131500325-0059*	Room 137 - White/Black 12c12 VFT	White Non-Fibrous Homogeneous		100% Non-fibrous (other)	**None Detected**
60 *131500325-0060*	Room 303 - 2x4 SAT Type 1	Gray/White Fibrous Homogeneous	40% Cellulose 40% Min. Wool	20% Non-fibrous (other)	**None Detected**
61 *131500325-0061*	Room 316 - 2x4 SAT Type 1	Gray/White Fibrous Homogeneous	40% Cellulose 40% Min. Wool	20% Non-fibrous (other)	**None Detected**
62 *131500325-0062*	Nurse - 2x4 SAT Type 1	Gray/White Fibrous Homogeneous	35% Cellulose 35% Min. Wool	30% Non-fibrous (other)	**None Detected**
63 *131500325-0063*	Room 328 - 2x4 SAT Type 1	Gray/White Fibrous Homogeneous	35% Cellulose 35% Min. Wool	30% Non-fibrous (other)	**None Detected**
64 *131500325-0064*	Room 329 - 2x4 SAT Type 1	Gray/White Fibrous Homogeneous	35% Cellulose 35% Min. Wool	30% 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-Asbestos % Non-Fibrous	Asbestos % Type
65 *131500325-0065*	Auditorium - 2x4 SAT Type 3	Tan/White Fibrous Homogeneous	40% Cellulose 40% Min. Wool	20% Non-fibrous (other)	**None Detected**
66 *131500325-0066*	Auditorium - 2x4 SAT Type 3	Tan/White Fibrous Homogeneous	40% Cellulose 40% Min. Wool	20% Non-fibrous (other)	**None Detected**
67 *131500325-0067*	Kitchen - 2x4 SAT Type 4	Gray Fibrous Homogeneous	60% Min. Wool	40% Non-fibrous (other)	**None Detected**
68 *131500325-0068*	Kitchen - 2x4 SAT Type 4	Gray Fibrous Homogeneous	60% Min. Wool	40% Non-fibrous (other)	**None Detected**
69 *131500325-0069*	Auditorium - Stage Light Wiring	Gray Non-Fibrous Homogeneous	20% Glass	10% Non-fibrous (other)	**70% Chrysotile**
70 *131500325-0070*	Auditorium - Stage Light Wiring	Gray Fibrous Homogeneous	20% Glass	10% Non-fibrous (other)	**70% Chrysotile**
71 *131500325-0071*	Room 313 - White Sink Coating	White Non-Fibrous Homogeneous	20% Cellulose	80% Non-fibrous (other)	**None Detected**
72 *131500325-0072*	Room 315 - White Sink Coating	White Non-Fibrous Homogeneous	20% Cellulose	80% 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-Asbestos % Non-Fibrous	Asbestos % Type
73 *131500325-0073*	Room 330 - Black Sink Coating	Black Non-Fibrous Homogeneous		95% Non-fibrous (other)	**5% Chrysotile**
74 *131500325-0074*	Library Storage - Black Sink Coating	Black Non-Fibrous Homogeneous		95% Non-fibrous (other)	**5% Chrysotile**
75 *131500325-0075*	Teacher's Lounge - Grey Sink Coating	Gray Non-Fibrous Homogeneous	15% Cellulose	85% Non-fibrous (other)	**None Detected**
76 *131500325-0076*	Nurse - Grey Sink Coating	Gray Non-Fibrous Homogeneous	15% Cellulose	85% Non-fibrous (other)	**None Detected**
77 *131500325-0077*	Boiler Room - Red Duct Sealant	Red Non-Fibrous Homogeneous		100% Non-fibrous (other)	**None Detected**
78 *131500325-0078*	Boiler Room - Red Duct Sealant	Red Non-Fibrous Homogeneous		100% Non-fibrous (other)	**None Detected**
79 *131500325-0079*	Kitchen Exhaust - Grey Duct Sealant	Gray Non-Fibrous Homogeneous	5% Cellulose	95% Non-fibrous (other)	**None Detected**
80 *131500325-0080*	Kitchen Exhaust - Grey Duct Sealant	Gray Non-Fibrous Homogeneous	5% Cellulose	95% 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-Asbestos % Non-Fibrous	Asbestos % Type
81 *131500325-0081*	Auditorium Storage - Hard Joint on FG Pipe	Gray Fibrous Homogeneous	35% Min. Wool	65% Non-fibrous (other)	**None Detected**
82 *131500325-0082*	Under Auditorium Seats - Hard Joint on FG Pipe	Gray Fibrous Homogeneous	35% Min. Wool	65% Non-fibrous (other)	**None Detected**
83 *131500325-0083*	Auditorium Cat Walk - Hard Joint on FG Pipe	Gray Fibrous Homogeneous	35% Min. Wool	65% Non-fibrous (other)	**None Detected**
84 *131500325-0084*	Auditorium Cat Walk - Hard Joint on FG Pipe	Gray Fibrous Homogeneous	35% Min. Wool	65% Non-fibrous (other)	**None Detected**
85 *131500325-0085*	2nd Floor Hall A/C - Hard Joint on FG Pipe	Gray Fibrous Homogeneous	35% Min. Wool	65% Non-fibrous (other)	**None Detected**
86 *131500325-0086*	Boiler Room - Black Mastic on Fg Paper Wrap	Black Non-Fibrous Homogeneous		100% Non-fibrous (other)	**None Detected**
87 *131500325-0087*	Boiler Room - Black Mastic on Fg Paper Wrap	Black Non-Fibrous Homogeneous		100% Non-fibrous (other)	**None Detected**
88 *131500325-0088*	Electric Room - Black Mastic on Fg Paper Wrap	Black Non-Fibrous Homogeneous		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-Asbestos % Non-Fibrous	Asbestos % Type
89 *131500325-0089*	Room 302 - New Beveled Edge Lap Top	Black Non-Fibrous Homogeneous		100% Non-fibrous (other)	**None Detected**
90 *131500325-0090*	Room 306 - New Beveled Edge Lap Top	Black Non-Fibrous Homogeneous		100% Non-fibrous (other)	**None Detected**
91 *131500325-0091*	Room 303 - Old Round Corner Lab Top	Black Non-Fibrous Homogeneous		85% Non-fibrous (other)	**15% Chrysotile**
92 *131500325-0092*	Room 306 - Old Round Corner Lab Top	Black Non-Fibrous Homogeneous		85% Non-fibrous (other)	**15% Chrysotile**
93 *131500325-0093*	301/303 Prep - Lab Drying Rack	Black Non-Fibrous Homogeneous		85% Non-fibrous (other)	**15% Chrysotile**
94 *131500325-0094*	Room 309 - Lab Drying Rack	Black Non-Fibrous Homogeneous		85% Non-fibrous (other)	**15% Chrysotile**
95 *131500325-0095*	Room 305 - Lab Sink	Gray/Black Non-Fibrous Homogeneous		100% Non-fibrous (other)	**None Detected**
96 *131500325-0096*	Room 306 - Lab Sink	Gray/Black Non-Fibrous Homogeneous		100% Non-fibrous (other)	**None Detected**

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Sample	Description	Appearance	Non-Asbestos % Fibrous	Non-Asbestos % Non-Fibrous	Asbestos % Type
97 *131500325-0097*	Room 301 - Lab Fume Head	Black Non-Fibrous Homogeneous		80% Non-fibrous (other)	**20% Chrysotile**
98 *131500325-0098*	Room 303 - Lab Fume Head	Black Non-Fibrous Homogeneous		80% Non-fibrous (other)	**20% Chrysotile**
99 *131500325-0099*	CTC 2nd Floor Hall - 2x2 SAT	Gray Fibrous Homogeneous	30% Cellulose 40% Min. Wool	30% Non-fibrous (other)	**None Detected**
100 *131500325-0100*	CTC 2nd Floor Hall - 2x2 SAT	Gray Fibrous Homogeneous	30% Cellulose 40% Min. Wool	30% Non-fibrous (other)	**None Detected**
101 *131500325-0101*	CTC Room 127 - Blue 12x12 VFT	Blue Non-Fibrous Homogeneous		100% Non-fibrous (other)	**None Detected**
102 *131500325-0102*	CTC Room 127 - Blue 12x12 VFT	Blue Non-Fibrous Homogeneous		100% Non-fibrous (other)	**None Detected**
103 *131500325-0103*	- Black Mastic on Sample 101	Black Non-Fibrous Homogeneous		100% Non-fibrous (other)	**None Detected**
104 *131500325-0104*	- Black Mastic on Sample 102	Black Non-Fibrous Homogeneous		100% Non-fibrous (other)	**None Detected**

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			Non-Asbestos		Asbestos	
Sample	Description	Appearance	% Fibrous	% Non-Fibrous	% Type	
105 *131500325-0105*	CTC Room 128 - Pink 12x12 VFT	Pink Non-Fibrous Homogeneous		100% Non-fibrous (other)	**None Detected**	
106 *131500325-0106*	CTC Room 128 - Pink 12x12 VFT	Pink Non-Fibrous Homogeneous		100% Non-fibrous (other)	**None Detected**	
107 *131500325-0107*	CTC Room 128 - Grey Covebase	Gray Non-Fibrous Homogeneous		100% Non-fibrous (other)	**None Detected**	
108 *131500325-0108*	CTC Room 128 - Grey Covebase	Gray Non-Fibrous Homogeneous		100% Non-fibrous (other)	**None Detected**	
109 *131500325-0109*	- Brown Glue on Sample 107	Brown Non-Fibrous Homogeneous		100% Non-fibrous (other)	**None Detected**	
110 *131500325-0110*	- Brown Glue on Sample 108	Brown Non-Fibrous Homogeneous		100% Non-fibrous (other)	**None Detected**	
111 *131500325-0111*	CTC 2nd Floor Hall A/C - Grey Duct Sealant	Gray Non-Fibrous Homogeneous		100% Non-fibrous (other)	**None Detected**	
112 *131500325-0112*	CTC 2nd Floor Hall A/C - Grey Duct Sealant	Gray Non-Fibrous Homogeneous		100% Non-fibrous (other)	**None Detected**	

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			Non-Asbestos		Asbestos	
Sample	Description	Appearance	% Fibrous	% Non-Fibrous	% Type	
113 *131500325-0113*	CTC Boiler Room - Grey Duct Sealant	Gray Non-Fibrous Homogeneous		100% Non-fibrous (other)	**None Detected**	
114 *131500325-0114*	CTC Boiler Room - Grey Duct Sealant	Gray Non-Fibrous Homogeneous		100% Non-fibrous (other)	**None Detected**	
115 *131500325-0115*	CTC Room 144 - Wall Caulk Black-Block	Gray Non-Fibrous Homogeneous		100% Non-fibrous (other)	**None Detected**	
116 *131500325-0116*	CTC Room 143 - Wall Caulk Black-Block	Gray Non-Fibrous Homogeneous		100% Non-fibrous (other)	**None Detected**	
117 *131500325-0117*	CTC Room 230 - Joint Compound	White Non-Fibrous Homogeneous		100% Non-fibrous (other)	**None Detected**	
118 *131500325-0118*	CTC Office - Joint Compound	White Non-Fibrous Homogeneous		100% Non-fibrous (other)	**None Detected**	
119 *131500325-0119*	CTC Room 230 - Interior Win Glaze Black	Black Non-Fibrous Homogeneous		93% Non-fibrous (other)	**7% Chrysotile**	
120 *131500325-0120*	CTC Office - Interior Win Glaze Black	Black Non-Fibrous Homogeneous		93% Non-fibrous (other)	**7% Chrysotile**	

Analyst(s)
Steve Grise (131)

Steve Grise, Laboratory Manager
or other approved signatory

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Samples analyzed by EMSL Analytical, Inc. Woburn, MA NVLAP Lab Code 101147-0, CT PH-0315, MA AA000188, RI AAL-107T3 and VT AL357102

Initial report from 01/26/2015 18:00:13

EMSL Analytical, Inc.
7 Constitution Way, Suite 107, Woburn, MA 01801
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EMSL Order: 131500325
CustomerID: UEC63
CustomerPO:
ProjectID:

Attn: **Jason Becotte**
Universal Environmental Consultants
12 Brewster Road
Framingham, MA 01702

Phone: (508) 628-5486
Fax: (508) 628-5488
Received: 01/23/15 1:00 PM
Analysis Date: 1/26/2015
Collected: 1/22/2015

Project: **Dover High School; Dover, NH**

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
121 *131500325-0121*	CTC Room 125 - Door Glass Glaze Black	Black Non-Fibrous Homogeneous		93% Non-fibrous (other)	**7% Chrysotile**
122 *131500325-0122*	2003 Add Hall - 2x4 Sat Type 5	Gray/White Fibrous Homogeneous	35% Cellulose 35% Min. Wool	30% Non-fibrous (other)	**None Detected**
123 *131500325-0123*	2003 Add Hall -	Gray/White	35% Cellulose	30% Non-fibrous (other)	**None Detected**
124 *131500325-0124*	2003 Add 1st Floor Hall - Wall Caulk Black-Block	Gray Non-Fibrous Homogeneous		100% Non-fibrous (other)	**None Detected**
125 *131500325-0125*	2003 Add Stairwell - Wall Caulk Black-Block	Gray Non-Fibrous Homogeneous		100% Non-fibrous (other)	**None Detected**
126 *131500325-0126*	2003 Add Hall - Tan 12x12 VFT	Tan Non-Fibrous Homogeneous		100% Non-fibrous (other)	**None Detected**
127 *131500325-0127*	2003 Add Custodian Storage - Tan 12x12 VFT	Tan Non-Fibrous Homogeneous		100% Non-fibrous (other)	**None Detected**
128 *131500325-0128*	2003 Add Hall - Green 12x12 VFT	Green Non-Fibrous Homogeneous		100% Non-fibrous (other)	**None Detected**

Analyst(s)
Steve Grise (131)

Steve Grise, Laboratory Manager
or other approved signatory

Initial report from 01/26/2015 18:00:13

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Analysis Date: 1/26/2015
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Project: **Dover High School; Dover, NH**

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
129 *131500325-0129*	2003 Add Hall - Green 12x12 VFT	Green Non-Fibrous Homogeneous		100% Non-fibrous (other)	**None Detected**
130 *131500325-0130*	2003 Add Stairwell - Blue 12x12 VFT	Blue Non-Fibrous Homogeneous		100% Non-fibrous (other)	**None Detected**
131 *131500325-0131*	2003 Add Stairwell - Blue 12x12 VFT	Blue Non-Fibrous Homogeneous		100% Non-fibrous (other)	**None Detected**

Analyst(s)
Steve Grise (131)

Steve Grise, Laboratory Manager
or other approved signatory

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Samples analyzed by EMSL Analytical, Inc. Woburn, MA NVLAP Lab Code 101147-0, CT PH-0315, MA AA000188, RI AAL-107T3 and VT AL357102

Initial report from 01/26/2015 18:00:13

OrderID: 131500326

131500326

CHAIN OF CUSTODY

Universal Environmental Consultants
12 Brewster Road
Framingham, MA 01702
Tel: (508) 628-5486 - Fax: (508) 628-5488
adieb@uec-env.com

PLM @ 1/23/15
48-hour TAT

Town/City: Dover, NH Building Name Dover High School Exterior

Sample	Result	Description of Material	Sample Location
1		Expansion Joint caulk	1966 bg gym XJ3
2		Door Frame Caulk	1966 Door #9 Auditorium
3		"	1966 Door #18 Boiler room
4		"	1966 Door #13 Weight room
5		Door glass Glaze	"
6		Win-wall Int Aluminum Trim	1966 Rm 208
7		"	1966 Rm 222
8		Win-wall Int old Frame Caulk	1966 Rm 208
9		"	1966 Rm 222
10		old Aluminum window glaze	1966 windows Boiler room
11		old Aluminum window Frame caulk	1966 windows Boiler room
12		"	1966 window 6 Boys Locker
13		"	1966 weight room
14		expansion Joint caulk	CTC XJ 1
15		"	CTC XJ 2
16		window Frame caulk	CTC window 1 Rm 127
17		"	CTC window 2 Rm 144
18		Greenhouse frame caulk	CTC Greenhouse
19		Greenhouse glass glaze	CTC Greenhouse
20		Door frame caulk	CTC Door 23

Reported By: Jason Becotte Date: 1-22-15 Due Date:

Received By: Date:

RECEIVED JAN 23 2015 By JL 13:00

W-IN

OrderID: 131500326

131500326

CHAIN OF CUSTODY

Universal Environmental Consultants
12 Brewster Road
Framingham, MA 01702
Tel: (508) 628-5486 - Fax: (508) 628-5488
adieb@uec-env.com

PLM
48-hour TAT

Town/City: Dover, NH Building Name Dover High School Exterior

Sample	Result	Description of Material	Sample Location
21		Door Frame Caulk	CTC Door 24
22		"	CTC Door 30
23		Black Paper	CTC wall cut #1
24		expansion Joint caulk	2003 Add XJ 4
25		Door Frame Caulk	2003 Add Door 5
26		window Frame Caulk	2003 Add window 3 Room 13
27		"	2003 Add window 4 Room 11
28		window Glass glaze	2003 Add window 3 Room 13
29		"	2003 Add window 4 Room 11
30		Black Dampproof	2003 Add cut 9
31		"	2003 Add cut 10

Reported By: Jason Becotte Date: 1-22-15 Due Date:

Received By: Date:

RECEIVED JAN 23 2015 By JL 13:00

EMSL Analytical, Inc.
7 Constitution Way, Suite 107, Woburn, MA 01801
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EMSL Order: 131500326
CustomerID: UEC63
CustomerPO:
ProjectID:

Attn: **Jason Becotte**
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Framingham, MA 01702

Phone: (508) 628-5486
Fax: (508) 628-5488
Received: 01/23/15 1:00 PM
Analysis Date: 1/26/2015
Collected: 1/22/2015

Project: **Dover High School Exterior; Dover, NH**

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
1 *131500326-0001*	1966 by Gym XJ3 - Expansion Joint Caulk	White Non-Fibrous Homogeneous		100% Non-fibrous (other)	**None Detected**
2 *131500326-0002*	1966 Door #9 Auditorium - Door Frame Caulk	Gray Non-Fibrous Homogeneous		100% Non-fibrous (other)	**None Detected**
3 *131500326-0003*	1966 Door #18 Boiler Room - Door Frame Caulk	White Non-Fibrous Homogeneous		100% Non-fibrous (other)	**None Detected**
4 *131500326-0004*	1966 Door #13 Weight Room - Door Frame Caulk	White Non-Fibrous Homogeneous		100% Non-fibrous (other)	**None Detected**
5 *131500326-0005*	1966 Door #13 Weight Room - Door Glass Glaze	Black Non-Fibrous Homogeneous		100% Non-fibrous (other)	**None Detected**
6 *131500326-0006*	1966 Room 208 - Win-Wall Int Aluminum Trim	Black Non-Fibrous Homogeneous		96% Non-fibrous (other)	**4% Chrysotile**
7 *131500326-0007*	1966 Room 222 - Win-Wall Int Aluminum Trim	Black Non-Fibrous Homogeneous		96% Non-fibrous (other)	**4% Chrysotile**
8 *131500326-0008*	1966 Room 208 - Win-Wall Int Old Frame Caulk	Gray Non-Fibrous Homogeneous		95% Non-fibrous (other)	**5% Chrysotile**

Analyst(s)
Steve Grise (3)
Sean Ryan (28)

Steve Grise, Laboratory Manager
or other approved signatory

Initial report from 01/26/2015 18:17:27

EMSL Analytical, Inc.
7 Constitution Way, Suite 107, Woburn, MA 01801
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EMSL Order: 131500326
CustomerID: UEC63
CustomerPO:
ProjectID:

Attn: **Jason Becotte**
Universal Environmental Consultants
12 Brewster Road
Framingham, MA 01702

Phone: (508) 628-5486
Fax: (508) 628-5488
Received: 01/23/15 1:00 PM
Analysis Date: 1/26/2015
Collected: 1/22/2015

Project: **Dover High School Exterior; Dover, NH**

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
9 *131500326-0009*	1966 Room 222 - Win-Wall Int Old Frame Caulk	Gray Non-Fibrous Homogeneous		97% Non-fibrous (other)	**3% Chrysotile**
10 *131500326-0010*	1966 Window 5 Boiler Room - Old Aluminum Window Glaze	Gray Non-Fibrous Homogeneous		100% Non-fibrous (other)	**<1% Chrysotile**
11 *131500326-0011*	1966 Window 5 Boiler Room - Old Aluminum Window Frame Caulk	Gray Non-Fibrous Homogeneous		98% Non-fibrous (other)	**2% Chrysotile**
12 *131500326-0012*	1966 Window 6 Boys Locker - Old Aluminum Window Frame Caulk	Gray Non-Fibrous Homogeneous		96% Non-fibrous (other)	**4% Chrysotile**
13 *131500326-0013*	1966 Weight Room - Old Aluminum Window Frame Caulk	Gray Non-Fibrous Homogeneous		100% Non-fibrous (other)	**None Detected**
14 *131500326-0014*	CTC XJ1 - Expansion Joint Caulk	Brown Non-Fibrous Homogeneous		100% Non-fibrous (other)	**None Detected**
15 *131500326-0015*	CTC XJ2 - Expansion Joint Caulk	Brown Non-Fibrous Homogeneous		100% Non-fibrous (other)	**None Detected**

Analyst(s)
Steve Grise (3)
Sean Ryan (28)

Steve Grise, Laboratory Manager
or other approved signatory

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EMSL Order: 131500326
CustomerID: UEC63
CustomerPO:
ProjectID:

Attn: **Jason Becotte**
Universal Environmental Consultants
12 Brewster Road
Framingham, MA 01702

Phone: (508) 628-5486
Fax: (508) 628-5488
Received: 01/23/15 1:00 PM
Analysis Date: 1/26/2015
Collected: 1/22/2015

Project: **Dover High School Exterior; Dover, NH**

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
16 *131500326-0016*	CTC Window 1 Room 127 - Window Frame Caulk	Gray Non-Fibrous Homogeneous		100% Non-fibrous (other)	**None Detected**
17 *131500326-0017*	CTC Window 2 Room 144 - Window Frame Caulk	Gray Non-Fibrous Homogeneous		100% Non-fibrous (other)	**None Detected**
18 *131500326-0018*	CTC Greenhouse - Greenhousr Frame Caulk	Gray Non-Fibrous Homogeneous		100% Non-fibrous (other)	**None Detected**
19 *131500326-0019*	CTC Greenhouse - Greenhouse Glass Glaze	Gray Non-Fibrous Homogeneous		100% Non-fibrous (other)	**None Detected**
20 *131500326-0020*	CTC Door 23 - Door Frame Caulk	Brown Non-Fibrous Homogeneous		100% Non-fibrous (other)	**None Detected**
21 *131500326-0021*	CTC Door 24 - Door Frame Caulk	Brown Non-Fibrous Homogeneous		100% Non-fibrous (other)	**None Detected**
22 *131500326-0022*	CTC Door 30 - Door Frame Caulk	Brown Non-Fibrous Homogeneous		100% Non-fibrous (other)	**None Detected**
23 *131500326-0023*	CTC Wall Cut #1 - Black Paper	Black Fibrous Homogeneous	80% Cellulose	20% Non-fibrous (other)	**None Detected**

Analyst(s)
Steve Grise (3)
Sean Ryan (28)

Steve Grise, Laboratory Manager
or other approved signatory

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Attn: **Jason Becotte**
Universal Environmental Consultants
12 Brewster Road
Framingham, MA 01702

Phone: (508) 628-5486
Fax: (508) 628-5488
Received: 01/23/15 1:00 PM
Analysis Date: 1/26/2015
Collected: 1/22/2015

Project: **Dover High School Exterior; Dover, NH**

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
24 *131500326-0024*	2003 Add XJ4 - Expansion Joint Caulk	Beige Non-Fibrous Homogeneous		100% Non-fibrous (other)	**None Detected**
25 *131500326-0025*	2003 Add Door 5 - Door Frame Caulk	Brown Non-Fibrous Homogeneous		100% Non-fibrous (other)	**None Detected**
26 *131500326-0026*	2003 Add Window 3 Room 13 - Window Frame Caulk	Brown Non-Fibrous Homogeneous		100% Non-fibrous (other)	**None Detected**
27 *131500326-0027*	2003 Add Window 4 Room 11 - Window Frame Caulk	Brown Non-Fibrous Homogeneous		100% Non-fibrous (other)	**None Detected**
28 *131500326-0028*	2003 Add Window 3 Room 13 - Window Glass Glaze	Black Non-Fibrous Homogeneous		100% Non-fibrous (other)	**None Detected**
29 *131500326-0029*	2003 Add Window 4 Room 11 - Window Glass Glaze	Black Non-Fibrous Homogeneous		100% Non-fibrous (other)	**None Detected**
30 *131500326-0030*	2003 Add Cut 9 - Black Damproof	Black Non-Fibrous Homogeneous		100% Non-fibrous (other)	**None Detected**
31 *131500326-0031*	2003 Add Cut 10 - Black Damproof	Black Non-Fibrous Homogeneous		100% Non-fibrous (other)	**None Detected**

Analyst(s)
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Sean Ryan (28)

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Samples analyzed by EMSL Analytical, Inc. Woburn, MA NVLAP Lab Code 101147-0, CT PH-0315, MA AA000188, RI AAL-107T3 and VT AL357102

Initial report from 01/26/2015 18:17:27

OrderID: 011500344

011500344

CHAIN OF CUSTODY

Universal Environmental Consultants
12 Brewster Road
Framingham, MA 01702
Tel: (508) 628-5486 - Fax: (508) 628-5488
adieb@uec-env.com

Test For PCB
2-week TAT

Town/City: Dover, NH Building Name Dover High School Exterior

	Sample	Result	Description of Material	Sample Location
1	1		expansion Joint caulk	1966 xJ 3
2	2		Door frame Caulk	1966 Door 9 Auditorium
3	3		| |	1966 Door 18 Boiler room
4	4		window frame caulk	1966 Boiler room
5	5		| |	1966 win-wall Room 222 Interior
6	6		| |	1966 win-wall Room 208 Interior
7	7		expansion joint caulk	CTC XJ 1
8	8		Door frame caulk	CTC Door #30
9	9		window frame Caulk	CTC window 1 Room 127
10	10		Greenhouse Frame Caulk	CTC Greenhouse

Reported By: Jason Becotte Date: 1-22-15 Due Date:

Received By: RECEIVED JAN 23 2015 By SA 13:00 Date: Per Ammar - no contracted 1/26 [illegible]

w-in [illegible] 1/26/15 0900 4°

Page 1 Of 1

EMSL Analytical, Inc.
200 Route 130 North, Cinnaminson, NJ 08077
Phone: (856) 303-2500 Fax: (856) 858-4571 Email: EnvChemistry2@emsl.com

Attn: **Ammar Dieb**
Universal Environmental Consultants
12 Brewster Road
Framingham, MA 01702

2/9/2015

Phone: (508) 628-5486
Fax: (508) 628-5488

The following analytical report covers the analysis performed on samples submitted to EMSL Analytical, Inc. on 1/26/2015. The results are tabulated on the attached data pages for the following client designated project:

Dover High School Exterior

The reference number for these samples is EMSL Order #011500344. Please use this reference when calling about these samples. If you have any questions, please do not hesitate to contact me at (856) 303-2500.

Reviewed and Approved By:

Julie Smith - Laboratory Director

The test results contained within this report meet the requirements of NELAP and/or the specific certification program that is applicable, unless otherwise noted.
NELAP Certifications: NJ 03036, NY 10872, PA 68-00367

EMSL Analytical does not hold SHW certification for PCB analysis in the state of New Hampshire.

The samples associated with this report were received in good condition unless otherwise noted. This report relates only to those items tested as received by the laboratory. The QC data associated with the sample results meet the recovery and precision requirements established by the NELAP, unless specifically indicated. All results for soil samples are reported on a dry weight basis, unless otherwise noted. This report may not be reproduced except in full and without written approval by EMSL Analytical, Inc.

Page 1 of 13

Page 1 of 5

EMSL Analytical, Inc.
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EMSL Order: 011500344
CustomerID: UEC63
CustomerPO:
ProjectID:

Attn: **Ammar Dieb**
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12 Brewster Road
Framingham, MA 01702

Phone: (508) 628-5486
Fax: (508) 628-5488
Received: 01/26/15 9:00 AM

Project: **Dover High School Exterior**

Analytical Results

Client Sample Description 1
1966 xJ3
Collected: 1/22/2015 ***Lab ID:*** *0001*

Method	*Parameter*	*Result*	*RL*	*Units*	*Prep Date*	*Analyst*	*Analysis Date*	*Analyst*
3540C/8082A	Aroclor-1016	ND	0.64	mg/Kg	2/2/2015	AB	2/5/2015	EH
3540C/8082A	Aroclor-1221	ND	0.64	mg/Kg	2/2/2015	AB	2/5/2015	EH
3540C/8082A	Aroclor-1232	ND	0.64	mg/Kg	2/2/2015	AB	2/5/2015	EH
3540C/8082A	Aroclor-1242	ND	0.64	mg/Kg	2/2/2015	AB	2/5/2015	EH
3540C/8082A	Aroclor-1248	ND	0.64	mg/Kg	2/2/2015	AB	2/5/2015	EH
3540C/8082A	Aroclor-1254	ND	0.64	mg/Kg	2/2/2015	AB	2/5/2015	EH
3540C/8082A	Aroclor-1260	ND	0.64	mg/Kg	2/2/2015	AB	2/5/2015	EH
3540C/8082A	Aroclor-1262	ND	0.64	mg/Kg	2/2/2015	AB	2/5/2015	EH
3540C/8082A	Aroclor-1268	ND	0.64	mg/Kg	2/2/2015	AB	2/5/2015	EH

Client Sample Description 2
1966 Door 9 Auditorium
Collected: 1/22/2015 ***Lab ID:*** *0002*

Method	*Parameter*	*Result*	*RL*	*Units*	*Prep Date*	*Analyst*	*Analysis Date*	*Analyst*
3540C/8082A	Aroclor-1016	ND	1.0	mg/Kg	2/2/2015	AB	2/5/2015	EH
3540C/8082A	Aroclor-1221	ND	1.0	mg/Kg	2/2/2015	AB	2/5/2015	EH
3540C/8082A	Aroclor-1232	ND	1.0	mg/Kg	2/2/2015	AB	2/5/2015	EH
3540C/8082A	Aroclor-1242	ND	1.0	mg/Kg	2/2/2015	AB	2/5/2015	EH
3540C/8082A	Aroclor-1248	ND	1.0	mg/Kg	2/2/2015	AB	2/5/2015	EH
3540C/8082A	Aroclor-1254	ND	1.0	mg/Kg	2/2/2015	AB	2/5/2015	EH
3540C/8082A	Aroclor-1260	ND	1.0	mg/Kg	2/2/2015	AB	2/5/2015	EH
3540C/8082A	Aroclor-1262	ND	1.0	mg/Kg	2/2/2015	AB	2/5/2015	EH
3540C/8082A	Aroclor-1268	ND	1.0	mg/Kg	2/2/2015	AB	2/5/2015	EH

Client Sample Description 3
1966 Door 18 Boiler Room
Collected: 1/22/2015 ***Lab ID:*** *0003*

Method	*Parameter*	*Result*	*RL*	*Units*	*Prep Date*	*Analyst*	*Analysis Date*	*Analyst*
3540C/8082A	Aroclor-1016	ND	0.95	mg/Kg	2/2/2015	AB	2/3/2015	EH
3540C/8082A	Aroclor-1221	ND	0.95	mg/Kg	2/2/2015	AB	2/3/2015	EH
3540C/8082A	Aroclor-1232	ND	0.95	mg/Kg	2/2/2015	AB	2/3/2015	EH
3540C/8082A	Aroclor-1242	ND	0.95	mg/Kg	2/2/2015	AB	2/3/2015	EH
3540C/8082A	Aroclor-1248	ND	0.95	mg/Kg	2/2/2015	AB	2/3/2015	EH
3540C/8082A	Aroclor-1254	ND	0.95	mg/Kg	2/2/2015	AB	2/3/2015	EH
3540C/8082A	Aroclor-1260	ND	0.95	mg/Kg	2/2/2015	AB	2/3/2015	EH
3540C/8082A	Aroclor-1262	ND	0.95	mg/Kg	2/2/2015	AB	2/3/2015	EH
3540C/8082A	Aroclor-1268	ND	0.95	mg/Kg	2/2/2015	AB	2/3/2015	EH

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EMSL Order: 011500344
CustomerID: UEC63
CustomerPO:
ProjectID:

Attn: **Ammar Dieb**
Universal Environmental Consultants
12 Brewster Road
Framingham, MA 01702

Phone: (508) 628-5486
Fax: (508) 628-5488
Received: 01/26/15 9:00 AM

Project: **Dover High School Exterior**

Analytical Results

Client Sample Description 4
1966 Boiler Room
Collected: 1/22/2015 ***Lab ID:*** *0004*

Method	*Parameter*	*Result*	*RL*	*Units*	*Prep Date*	*Analyst*	*Analysis Date*	*Analyst*
3540C/8082A	Aroclor-1016	ND	0.85	mg/Kg	2/2/2015	AB	2/3/2015	EH
3540C/8082A	Aroclor-1221	ND	0.85	mg/Kg	2/2/2015	AB	2/3/2015	EH
3540C/8082A	Aroclor-1232	ND	0.85	mg/Kg	2/2/2015	AB	2/3/2015	EH
3540C/8082A	Aroclor-1242	ND	0.85	mg/Kg	2/2/2015	AB	2/3/2015	EH
3540C/8082A	Aroclor-1248	ND	0.85	mg/Kg	2/2/2015	AB	2/3/2015	EH
3540C/8082A	Aroclor-1254	1.2	0.85	mg/Kg	2/2/2015	AB	2/3/2015	EH
3540C/8082A	Aroclor-1260	ND	0.85	mg/Kg	2/2/2015	AB	2/3/2015	EH
3540C/8082A	Aroclor-1262	ND	0.85	mg/Kg	2/2/2015	AB	2/3/2015	EH
3540C/8082A	Aroclor-1268	ND	0.85	mg/Kg	2/2/2015	AB	2/3/2015	EH

Client Sample Description 5
1966 Win-Wall Room 222 Interior
Collected: 1/22/2015 ***Lab ID:*** *0005*

Method	*Parameter*	*Result*	*RL*	*Units*	*Prep Date*	*Analyst*	*Analysis Date*	*Analyst*
3540C/8082A	Aroclor-1016	ND	0.61	mg/Kg	2/2/2015	AB	2/5/2015	EH
3540C/8082A	Aroclor-1221	ND	0.61	mg/Kg	2/2/2015	AB	2/5/2015	EH
3540C/8082A	Aroclor-1232	ND	0.61	mg/Kg	2/2/2015	AB	2/5/2015	EH
3540C/8082A	Aroclor-1242	ND	0.61	mg/Kg	2/2/2015	AB	2/5/2015	EH
3540C/8082A	Aroclor-1248	ND	0.61	mg/Kg	2/2/2015	AB	2/5/2015	EH
3540C/8082A	Aroclor-1254	43	3.0	mg/Kg	2/2/2015	AB	2/6/2015	EH
3540C/8082A	Aroclor-1260	ND	3.0	mg/Kg	2/2/2015	AB	2/6/2015	EH
3540C/8082A	Aroclor-1262	ND	3.0	mg/Kg	2/2/2015	AB	2/6/2015	EH
3540C/8082A	Aroclor-1268	ND	0.61	mg/Kg	2/2/2015	AB	2/5/2015	EH

Client Sample Description 6
1966 Win-Wall Room 208 Interior
Collected: 1/22/2015 ***Lab ID:*** *0006*

Method	*Parameter*	*Result*	*RL*	*Units*	*Prep Date*	*Analyst*	*Analysis Date*	*Analyst*
3540C/8082A	Aroclor-1016	ND	0.85	mg/Kg	2/2/2015	AB	2/3/2015	EH
3540C/8082A	Aroclor-1221	ND	0.85	mg/Kg	2/2/2015	AB	2/3/2015	EH
3540C/8082A	Aroclor-1232	ND	0.85	mg/Kg	2/2/2015	AB	2/3/2015	EH
3540C/8082A	Aroclor-1242	ND	0.85	mg/Kg	2/2/2015	AB	2/3/2015	EH
3540C/8082A	Aroclor-1248	ND	0.85	mg/Kg	2/2/2015	AB	2/3/2015	EH
3540C/8082A	Aroclor-1254	ND	0.85	mg/Kg	2/2/2015	AB	2/3/2015	EH
3540C/8082A	Aroclor-1260	ND	0.85	mg/Kg	2/2/2015	AB	2/3/2015	EH
3540C/8082A	Aroclor-1262	ND	0.85	mg/Kg	2/2/2015	AB	2/3/2015	EH
3540C/8082A	Aroclor-1268	ND	0.85	mg/Kg	2/2/2015	AB	2/3/2015	EH

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EMSL Order: 011500344
CustomerID: UEC63
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Received: 01/26/15 9:00 AM

Project: **Dover High School Exterior**

Analytical Results

Client Sample Description 7 CTC xJ1 ***Collected:*** 1/22/2015 ***Lab ID:*** *0007*

Method	*Parameter*	*Result*	*RL*	*Units*	*Prep Date*	*Analyst*	*Analysis Date*	*Analyst*
3540C/8082A	Aroclor-1016	ND	0.98	mg/Kg	2/4/2015	AB	2/5/2015	EH
3540C/8082A	Aroclor-1221	ND	0.98	mg/Kg	2/4/2015	AB	2/5/2015	EH
3540C/8082A	Aroclor-1232	ND	0.98	mg/Kg	2/4/2015	AB	2/5/2015	EH
3540C/8082A	Aroclor-1242	ND	0.98	mg/Kg	2/4/2015	AB	2/5/2015	EH
3540C/8082A	Aroclor-1248	ND	0.98	mg/Kg	2/4/2015	AB	2/5/2015	EH
3540C/8082A	Aroclor-1254	ND	0.98	mg/Kg	2/4/2015	AB	2/5/2015	EH
3540C/8082A	Aroclor-1260	ND	0.98	mg/Kg	2/4/2015	AB	2/5/2015	EH
3540C/8082A	Aroclor-1262	ND	0.98	mg/Kg	2/4/2015	AB	2/5/2015	EH
3540C/8082A	Aroclor-1268	ND	0.98	mg/Kg	2/4/2015	AB	2/5/2015	EH

Client Sample Description 8 CTC Door #30 ***Collected:*** 1/22/2015 ***Lab ID:*** *0008*

Method	*Parameter*	*Result*	*RL*	*Units*	*Prep Date*	*Analyst*	*Analysis Date*	*Analyst*
3540C/8082A	Aroclor-1016	ND	0.72	mg/Kg	2/4/2015	AB	2/5/2015	EH
3540C/8082A	Aroclor-1221	ND	0.72	mg/Kg	2/4/2015	AB	2/5/2015	EH
3540C/8082A	Aroclor-1232	ND	0.72	mg/Kg	2/4/2015	AB	2/5/2015	EH
3540C/8082A	Aroclor-1242	ND	0.72	mg/Kg	2/4/2015	AB	2/5/2015	EH
3540C/8082A	Aroclor-1248	ND	0.72	mg/Kg	2/4/2015	AB	2/5/2015	EH
3540C/8082A	Aroclor-1254	ND	0.72	mg/Kg	2/4/2015	AB	2/5/2015	EH
3540C/8082A	Aroclor-1260	ND	0.72	mg/Kg	2/4/2015	AB	2/5/2015	EH
3540C/8082A	Aroclor-1262	ND	0.72	mg/Kg	2/4/2015	AB	2/5/2015	EH
3540C/8082A	Aroclor-1268	ND	0.72	mg/Kg	2/4/2015	AB	2/5/2015	EH

Client Sample Description 9 CTC Window 1 Room 127 ***Collected:*** 1/22/2015 ***Lab ID:*** *0009*

Method	*Parameter*	*Result*	*RL*	*Units*	*Prep Date*	*Analyst*	*Analysis Date*	*Analyst*
3540C/8082A	Aroclor-1016	ND	0.56	mg/Kg	2/4/2015	AB	2/5/2015	EH
3540C/8082A	Aroclor-1221	ND	0.56	mg/Kg	2/4/2015	AB	2/5/2015	EH
3540C/8082A	Aroclor-1232	ND	0.56	mg/Kg	2/4/2015	AB	2/5/2015	EH
3540C/8082A	Aroclor-1242	ND	0.56	mg/Kg	2/4/2015	AB	2/5/2015	EH
3540C/8082A	Aroclor-1248	ND	0.56	mg/Kg	2/4/2015	AB	2/5/2015	EH
3540C/8082A	Aroclor-1254	16	0.56	mg/Kg	2/4/2015	AB	2/5/2015	EH
3540C/8082A	Aroclor-1260	ND	0.56	mg/Kg	2/4/2015	AB	2/5/2015	EH
3540C/8082A	Aroclor-1262	ND	0.56	mg/Kg	2/4/2015	AB	2/5/2015	EH
3540C/8082A	Aroclor-1268	ND	0.56	mg/Kg	2/4/2015	AB	2/5/2015	EH

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Phone: (508) 628-5486
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Received: 01/26/15 9:00 AM

Project: **Dover High School Exterior**

Analytical Results

Client Sample Description 10 CTC Greenhouse ***Collected:*** 1/22/2015 ***Lab ID:*** *0010*

Method	*Parameter*	*Result*	*RL*	*Units*	*Prep Date*	*Analyst*	*Analysis Date*	*Analyst*
3540C/8082A	Aroclor-1016	ND	0.75	mg/Kg	2/4/2015	AB	2/5/2015	EH
3540C/8082A	Aroclor-1221	ND	0.75	mg/Kg	2/4/2015	AB	2/5/2015	EH
3540C/8082A	Aroclor-1232	ND	0.75	mg/Kg	2/4/2015	AB	2/5/2015	EH
3540C/8082A	Aroclor-1242	ND	0.75	mg/Kg	2/4/2015	AB	2/5/2015	EH
3540C/8082A	Aroclor-1248	ND	0.75	mg/Kg	2/4/2015	AB	2/5/2015	EH
3540C/8082A	Aroclor-1254	ND	0.75	mg/Kg	2/4/2015	AB	2/5/2015	EH
3540C/8082A	Aroclor-1260	ND	0.75	mg/Kg	2/4/2015	AB	2/5/2015	EH
3540C/8082A	Aroclor-1262	ND	0.75	mg/Kg	2/4/2015	AB	2/5/2015	EH
3540C/8082A	Aroclor-1268	ND	0.75	mg/Kg	2/4/2015	AB	2/5/2015	EH

Definitions:
ND - indicates that the analyte was not detected at the reporting limit
RL - Reporting Limit

EMSL Analytical Inc.

SOIL / SOLID SURROGATE RECOVERY

Lab Name:	EMSL Analytical					
*** : Values outside of QC limits**						
D: Surrogate diluted out						
	Compound Name:	TCX	TCX2	DCB	DCB2	**Total Out**
	CAS #:	877-09-8	877-09-8	2051-24-3	2051-24-3	
	QC Limits:	(30-137)	(30-137)	(30-138)	(30-138)	
011500285-37 4X	02/03/15 13:19	49 D	48 D	57 D	51 D	0
011500285-38 8X	02/03/15 13:47	72 D	68 D	61 D	55 D	0
011500285-32 10X	02/03/15 11:00	93 D	88 D	104 D	90 D	0
011500285-33 10X	02/03/15 11:28	44 D	45 D	50 D	45 D	0
011500285-34 10X	02/03/15 11:56	57 D	59 D	68 D	63 D	0
011500285-35 10X	02/03/15 12:24	67 D	68 D	84 D	77 D	0
011500285-36 5X	02/03/15 12:51	53 D	50 D	61 D	55 D	0
011500285-39 10X	02/03/15 14:14	92 D	93 D	101 D	97 D	0
011500285-40 10X	02/03/15 14:42	84 D	78 D	93 D	81 D	0
MB 1 OP 3175-43	02/03/15 15:10	76	62	88	65	0
LCS 1 OP 3175-43	02/03/15 15:38	81	65	94	69	0
MB 1 OP 3175-43	02/03/15 15:47	84	85	96	94	0
011500285-37 MS	02/03/15 16:06	51 D	46 D	59 D	49 D	0
LCS 1 OP 3175-43	02/03/15 16:16	87	87	100	98	0
011500285-37	02/03/15 16:34	37 D	34 D	47 D	40 D	0
011500374-1 10X	02/03/15 16:46	78 D	84 D	92 D	104 D	0
011500409-1 4X	02/03/15 17:16	84 D	90 D	75 D	95 D	0
011500305-1 10X	02/03/15 18:25	60 D	56 D	73 D	66 D	0
011500344-3 5X	02/03/15 18:46	82 D	90 D	91 D	90 D	0
011500305-2 5X	02/03/15 18:52	64 D	62 D	81 D	73 D	0
011500413-1 10X	02/03/15 19:19	40 D	40 D	53 D	46 D	0
011500344-6 8X	02/03/15 19:45	64 D	69 D	68 D	61 D	0
011500344-4 8X	02/03/15 20:15	71 D	84 D	84 D	86 D	0
011500344-1 5X	02/05/15 15:38	51 D	46 D	63 D	52 D	0
011500344-2 10X	02/05/15 16:06	72 D	66 D	84 D	72 D	0
011500344-5 5X	02/05/15 16:33	74 D	71 D	91 D	78 D	0
011500344-5 25X	02/06/15 10:29	D	D	D	D	0

TCX=Tetrachloro-m-xylene
DCB=Decachlorobiphenyl

EMSL Analytical Inc.

PCB ORGANICS ANALYSIS DATA SHEET

		Customer Sample#:	MB 1 OP 3175-43 CU
Lab Name:	EMSL Analytical		
EMSL Sample ID:		**Project:**	
Lab File ID:	Y35695.D	**Sample Matrix:**	SOIL / SOLID
Instrument ID:	ECD-Y	**Sampling Date:**	12:00:00 AM
Analyst:	EH	**Date Extracted:**	2/2/2015
GC Column:	CLPest I (0.25 mm)	**Analysis Date**	2/3/2015 3:47:02 PM
GC Column 2:	CLPest II (0.25 mm)	**Sample wt/vol:**	10 G
% Moisture:	0	**Dilution Factor:**	1
PH:	0	**Concentrated Extract Vol:**	10 (mL)
GPC Cleanup(Y/N):	N	**Injection Volume:**	1 (ul)
Extraction Type:	3540C	**Sulfur Cleanup:**	N
Method:	SW846 8081b/8082a		

CAS NO	COMPOUND	Report Limit (mg/Kg)	CONC. (mg/Kg)	Q
12674-11-2	Aroclor 1016	0.050		U
11104-28-2	Aroclor 1221	0.050		U
11141-16-5	Aroclor 1232	0.050		U
53469-21-9	Aroclor 1242	0.050		U
12672-29-6	Aroclor 1248	0.050		U
11097-69-1	Aroclor 1254	0.050		U
11096-82-5	Aroclor 1260	0.050		U
37324-23-5	Aroclor 1262	0.050		U
11100-14-4	Aroclor 1268	0.050		U

Qualifier Definitions
U = Undetected
B = Compound detected in method blank
E = Estimated value
D = Dilution
P = Results between the two columns differ >40%

EMSL Analytical Inc.

SOIL / SOLID LCS/QCS/ LFB RECOVERY

	Lab Name:	EMSL Analytical		Original	LCS 1 OP		
				File ID:	Y35695.D/Y35696.D		
	* : Values outside of QC						
	COMPOUND	CAS NO	LOW LIMIT	HIGH LIMIT	SPIKE ADDED mg/Kg	LCS CONC. mg/Kg	LCS REC%
1	Aroclor 1016	12674-11-2	58	123	1.50	1.27	85
2	Aroclor 1260	11096-82-5	63	131	1.50	1.41	94
				Total Out			0 of 2

EMSL Analytical Inc.

SOIL / SOLID MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

	Lab Name:	EMSL Analytical		Original	011500285-37 MS 4X													
				File ID:	X38924.D/X38930.D/X38931.D													
	* : Values outside of QC																	
	COMPOUND	CAS NO	LOW LIMIT	HIGH LIMIT	RPD LIMIT	SAMPLE CONC.	MS SPIKE ADDED mg/Kg	MS CONC. mg/Kg	MS REC%	MSD SPIKE ADDED mg/Kg	MSD CONC. mg/Kg	MSD REC%	RPD %					
1	Aroclor 1016	12674-11-2	12	164	25	0.00	7.39	4.65	63	7.50	4.26	57	10					
2	Aroclor 1260	11096-82-5	43	167	25	0.00	7.39	3.77	51	7.50	3.41	45	11					
				Total Out					0 of 2			0 of 2	0 of 2					

EMSL Analytical Inc.

SOIL / SOLID SURROGATE RECOVERY

Lab Name:	EMSL Analytical					
*** : Values outside of QC limits**						
D: Surrogate diluted out						
	Compound Name:	TCX	TCX2	DCB	DCB2	**Total Out**
	CAS #:	877-09-8	877-09-8	2051-24-3	2051-24-3	
	QC Limits:	(30-137)	(30-137)	(30-138)	(30-138)	
011500344-7 10X	02/05/15 13:49	45 D	46 D	53 D	44 D	0
011500388-1 MS	02/05/15 10:16	82 D	86 D	74 D	78 D	0
011500388-1 MSD	02/05/15 10:46	76 D	80 D	70 D	75 D	0
MB 1 OP 3175-46	02/05/15 11:16	67	69	82	81	0
LCS 1 OP 3175-46	02/05/15 11:46	81	81	92	92	0
011500383-1 4X	02/05/15 12:16	50 D	55 D	58 D	59 D	0
011500388-2 10X	02/05/15 14:15	89 D	98 D	115 D	119 D	0
011500344-8 5X	02/05/15 14:16	32 D	31 D	41 D	35 D	0
011500344-9 5X	02/05/15 14:43	75 D	71 D	93 D	79 D	0
011500443-1 5X	02/05/15 14:45	74 D	86 D	44 D	52 D	0
011500344-10 5X	02/05/15 15:11	23 D	22 D	29 D	24 D	0
011500443-2 2X	02/05/15 15:14	69 D	72 D	51 D	53 D	0
011500474-1 5X	02/05/15 15:44	85 D	94 D	99 D	89 D	0
011500346-1 CU	02/05/15 16:14	81	82	50	71	0
011500346-3 2X	02/05/15 16:43	86 D	91 D	94 D	94 D	0
MB 1 OP 3175-46	02/05/15 08:44	79	80	92	90	0
LCS 1 OP 3175-46	02/05/15 09:14	91	90	96	92	0
011500388-1 4X	02/05/15 09:47	82 D	91 D	80 D	87 D	0

TCX=Tetrachloro-m-xylene
DCB=Decachlorobiphenyl

EMSL Analytical Inc.

PCB ORGANICS ANALYSIS DATA SHEET

		Customer Sample#:	MB 1 OP 3175-46 CU
Lab Name:	EMSL Analytical		
EMSL Sample ID:		**Project:**	
Lab File ID:	Y35720.D	**Sample Matrix:**	SOIL / SOLID
Instrument ID:	ECD-Y	**Sampling Date:**	12:00:00 AM
Analyst:	EH	**Date Extracted:**	2/4/2015
GC Column:	CLPest I (0.25 mm)	**Analysis Date**	2/5/2015 8:44:39 AM
GC Column 2:	CLPest II (0.25 mm)	**Sample wt/vol:**	10 G
% Moisture:	0	**Dilution Factor:**	1
PH:	0	**Concentrated Extract Vol:**	10 (mL)
GPC Cleanup(Y/N):	N	**Injection Volume:**	1 (ul)
Extraction Type:	3540C	**Sulfur Cleanup:**	N
Method:	SW846 8081b/8082a		

CAS NO	COMPOUND	Report Limit (mg/Kg)	CONC. (mg/Kg)	Q
12674-11-2	Aroclor 1016	0.050		U
11104-28-2	Aroclor 1221	0.050		U
11141-16-5	Aroclor 1232	0.050		U
53469-21-9	Aroclor 1242	0.050		U
12672-29-6	Aroclor 1248	0.050		U
11097-69-1	Aroclor 1254	0.050		U
11096-82-5	Aroclor 1260	0.050		U
37324-23-5	Aroclor 1262	0.050		U
11100-14-4	Aroclor 1268	0.050		U

Qualifier Definitions
U = Undetected
B = Compound detected in method blank
E = Estimated value
D = Dilution
P = Results between the two columns differ >40%

EMSL Analytical Inc.

SOIL / SOLID LCS/QCS/ LFB RECOVERY

	Lab Name:	EMSL Analytical		**Original**	LCS 1 OP		
				File ID:	Y35720.D/Y35721.D		
	*** : Values outside of QC**						
	COMPOUND	**CAS NO**	**LOW LIMIT**	**HIGH LIMIT**	**SPIKE ADDED mg/Kg**	**LCS CONC. mg/Kg**	**LCS REC%**
1	Aroclor 1016	12674-11-2	58	123	1.50	1.33	89
2	Aroclor 1260	11096-82-5	63	131	1.50	1.44	96
				Total Out			0 of 2

Printed: 02/09/15 12:44:45 PM
SampleList: QC Batch OP 3175-46
ERM: K:\EMSL_ENV\ERMs\8081-8082\8082soil.erm

FORM III PCB_2

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EMSL Analytical Inc.

SOIL / SOLID MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

	Lab Name:	EMSL Analytical		**Original**	011500388-1 MS 4X CU								
				File ID:	Y35722.D/Y35723.D/Y35724.D								
	*** : Values outside of QC**												
	COMPOUND	**CAS NO**	**LOW LIMIT**	**HIGH LIMIT**	**RPD LIMIT**	**SAMPLE CONC.**	**MS SPIKE ADDED mg/Kg**	**MS CONC. mg/Kg**	**MS REC%**	**MSD SPIKE ADDED mg/Kg**	**MSD CONC. mg/Kg**	**MSD REC%**	**RPD %**
1	Aroclor 1016	12674-11-2	12	164	25	0.00	7.21	6.12	85	7.11	5.77	81	4
2	Aroclor 1260	11096-82-5	43	167	25	0.00	7.21	6.07	84	7.11	5.65	79	6
				Total Out					0 of 2			0 of 2	0 of 2

Printed: 02/09/15 12:45:26 PM
SampleList: QC Batch OP 3175-46
ERM: K:\EMSL_ENV\ERMs\8081-8082\8082soil.erm

FORM III PCB_2

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MEMORANDUM

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DATE: February 25, 2015

TO: Bobby Williams, AIA
Associate, HMFH Architects, Inc.

COPY: Laura Wernick, FAIA
Senior Principal, HMFH Architects, Inc.

FROM: Jerry R. Tepe, FAIA

SUBJECT: Dover High School Existing Code and ADA Assessment

Per our agreement, I visited the Dover High School on February 10, 1015 and met with Jeff White, Facilities Director. The purpose of this visit was to assess the existing building for compliance with the New Hampshire Building and Fire Codes, specifically the 2009 *International Building Code* (IBC), 2009 *International Existing Building Code* (IEBC), ICC/ANSI A117.1-2003 *Accessible and Useable Buildings and Facilities* (A117.1) referenced in the IBC and IEBC, NFPA 1-2009, *Fire Code* and NFPA 101-2009, *Life Safety Code* (LSC). I also was tasked with evaluating the existing building for compliance with the *2010 ADA Standards for Accessible Design* as part of the Americans with Disabilities Act (ADA). The purpose of this assessment was to assist HMFH in determining the extent and cost of potential additions and/or renovations to the existing building.

Note I chose to cite the IBC only where it matches the requirements of the LSC; the LSC is cited when its requirements are different. Similarly the A117.1 Standard is cited rather than the ADA as their technical requirements are very similar. See also comments about ADA scoping under the Accessibility heading.

It should be noted that the building code states in IBC §102.6 "[T]he legal occupancy of any structure existing on the date of adoption of this code shall be permitted to continue in use without change, except as specifically provided in this code." This is often referred to as the

"grandfather" clause. Therefore any issues of noncompliance with the building code (and A117.1) cited in this memo are permitted to remain. Only when alterations are undertaken will compliance become required per the IEBC. All new work/additions must comply with the building code as for new construction.

The fire code however does have specific requirements for existing buildings, in this instance Chapters 13 and 15 of the LSC. These are noted where applicable. Again, all new work/additions must comply with the fire code as for new construction.

See the section titled Accessibility for a discussion of the ADA requirements for existing buildings. And as noted above, all new work/additions must comply with the ADA Standards.

I was also provided a draft copy of the Existing Conditions Structural Report dated January 14, 2015 prepared by Foley Buhl Roberts and Associates, Inc. (FBRA). Any descriptions regarding the structure of the building were derived therefrom. Other than HMFH $^{1}/_{16}$ scale floor plans, I have seen no other drawings of any of the building construction. Structural assessment is being provided by FBRA and not covered in this assessment.

Mechanical (HVAC and plumbing), fire suppression/detection/notification and electrical systems assessment is also provided by others.

General Description:

The building, as noted in the structural report, consists of three generations of construction; the original building in 1966, the Career Technical Center addition in 1989 and World Language Wing in 2002. The original building is a three story building, although the main and second floors have multi-levels. The 1989 building aligns with the lower floor and main floor of the 1966 building and the 2002 building aligns with the main and second floors where they abut the 1966 building.

Again as noted in the structural report, the 1966 building consists of two distinctly different types of construction. The classroom building has a steel primary structural frame, consisting of columns with (maybe) some fire-resistance-rated enclosure, but the remainder of the frame does not. The gymnasium/auditorium (western) portion of the 1966 building consists of masonry bearing walls with steel joist roof framing with no fire-resistance-rating. The 1989 building is also a non-rated steel frame and the 2002 building is of load-bearing masonry construction.

The entire building (1966, 1989 and 2002) has approximately 247,000 ft^2 while the footprint is approximately 115,620 ft^2

The building has both a sprinkler system and a fire alarm system. Others will determine if these systems are compliant with current requirements of NFPA 13 and NFPA 72 respectively.

Building Code (IBC and IEBC):

Chapter 10 of the IEBC establishes the requirements for any proposed additions. Any addition will need to comply with the IBC as for new construction as well as Chapter 10 of the IEBC. For the purposes of this report, it is assumed any alterations to the existing building will have a work area (as defined in the IEBC) of greater than 50% of the aggregate area of the building, therefore it will be classified as a Level 3 Alteration (per Chapter 4 of the IEBC) which requires compliance with Chapters 6, 7 and 8 of the IEBC.

Further discussion explores the possibility that a portion of the 1966 building may be demolished and replaced, with the balance of that building, the western portion consisting of the gymnasium, auditorium and associated areas, to remain. The 1989 and 2002 buildings will also remain. It is possible under this scenario that the remaining portions of the building could, depending on the extent and type of renovation, be considered as a Level 2 Alteration. See discussion below on building area and construction types.

Chapter 6 of the IBC covers the Types of Construction. The existing building (1966, 1989 and 2002) has, as noted above, two distinct construction types, steel primary structural frame and masonry bearing walls with steel frame infill. Neither has any fire-resistance-rating. These would be classified as Types IIB and IIIB respectively per IBC §602. Per IBC §602.1, a building can only have one assigned construction type and it is the lowest rated of any possibilities. Therefore, the building would be classified as Construction Type IIIB.

Once a construction type has been determined, IBC Table 503 establishes the code permitted height and area of a building. A school is considered occupancy Group E, including the assembly areas per IBC §303.1(4). For Group E of Type IIIB construction, the table permits 2 stories/55 feet in height and 14,500 ft^2 This is further modified in IBC §504.2 to add a single story/20 feet in height due to the presence of a sprinkler system. The permitted area can also be increased due to the sprinkler system by 200% per IBC §506.3 and still further increased per IBC §506.2 due to the perimeter of the building being fully accessible for fire service operations by an additional 75%. In all, the building area can be increased by 275%.

Therefore the permitted footprint of a Group E, Type IIIB building is 54,375 ft^2 and the maximum permitted total area per IBC §506.4.1(2) is 163,125 ft^2. As noted above, the building has a footprint of 115,620 ft^2 and a total area of approximately 247,000 ft^2 .

Therefore the building is in non-compliance with the code. However, as an existing building, it is permitted to remain as is, "grandfathered," per IBC §102.6.

Because of this, any proposed additions would be required to be separated from the existing building by a 3-hour rated fire wall per IBC §706 or some other code compliant method to reduce the area of the building into several components as IEBC §1002.2 will not permit the further expansion of the nonconformity.

Stairs in the 1966 building are numbered 1 thru 4 beginning at the southwest corner near the main entrance and moving counterclockwise to the northwest corner. Stairs 1 and 4 are located near the cafeteria, stair 2 near the 1989 building and stair 3 in the northeast corner. There is also a stair at the entrance to the 1989 building and one at the far end of the 2002 building. There are other stairs serving limited areas, including one from the music room egressing between the auditorium and the gymnasium and one on the second floor at the auditorium. All main stairs except 1 and 4 are within a fire-rated enclosure (labels were noted on the doors). Stairs 1 and 4, while partially enclosed, do not have any noticeable rated enclosure. This is an issue of noncompliance with IEBC §703.2. Stairs 1 and 4 also require a center handrail to achieve the (assumed) required egress capacity per IEBC §705.9.1 (see below). Most handrails, except in the 2002 building are not continuous (IBC §1012.4), do not have extensions at top or bottom of runs and some do not return to the wall (IBC §1012.6). A note that while the IBC §1012.7 handrail clearance of 1½ inches is provided, the LSC requires 2¼ inches (LSC §7.2.2.4.4.5). Any handrails that are replaced as part of alterations should comply with these latter requirements of the LSC.

The code calculated occupant load of the building (see below) is approximately 3,620. IBC Table 2902.1 lists the required minimum number of toilet fixtures. For Group E, the factor is one toilet and one lavatory per 50 occupants. This creates a requirement for 73 of each fixture, divided equally between male and female facilities. An actual count of existing fixtures was not performed, and many of the fixtures are in single-occupant, staff only rooms; however there does not appear to be the requisite number of fixtures provided. Particularly none are provided for use by the general public when the auditorium and/or gymnasium are occupied. These fixture counts would be required to follow Table 2902.1 for Group A-1 and A-3 respectively.

The gymnasium can accommodate 1,956 occupants at 7 ft^2 each. That equates to 8 toilet fixtures for men and 15 for women and 10 lavatories per IBC Table 2902.1 for Group A-3. A similar calculation should be performed for the auditorium, Group A-1 (I did not count the fixed seats), but would likely result in fewer fixtures required than for the gymnasium.

These fixtures are not necessarily in addition to the Group E requirements if properly located for use if use is considered as non-simultaneous,

Similarly, Table 2902.1 requires a drinking fountain per each 100 occupants for a total of 37. Again an actual count was not performed, but the total provided appears lower. As noted below, only one drinking fountain was noted as being accessible.

Fire Code (NFPA 101, LSC):

Being as liberal as I can reasonably be interpreting the occupant load of the building per LSC Table 7.3.1.2 (IBC Table 1004.1.1 is similar), only counting classrooms and staff spaces (offices and kitchen), and not including areas such as the cafeteria, gymnasium and auditorium, the code required occupant load of the building is approximately 3,620; 920 on the lower floor, 1,150 on the main floor and 1,550 on the second floor. This is compared to the actual number of occupants of 1,300 students and 185 staff for a total of 1,485. The code values are used to calculate egress capacity among other requirements (see toilet fixture calculations above).

Starting with the 1966 building second floor (ignoring for now the 2002 building) occupant load of 1,380 and using the 0.3-inch per occupant width factor for stairs in LSC Table 7.3.3.1, the required total width of stairs required is 414 inches. The existing four stairs serving this area only provide 261 inches, leaving 153 inches of egress width not provided (note the full width of Stair 1 cannot be used due to lack of a center handrail per LSC §7.2.2.4.1.2(2)(b).

A similar analysis of the main floor (again ignoring the 2002 building and also the 1989 building) occupant load of 866 multiplied by 0.3-inch width factor, the required total width of stairs is 260 inches. Here the 261 inches provided is (barely) adequate. However the required egress width cannot be reduced along the path of egress per LSC §7.3.1.4, therefore the 414 inch capacity must be maintained.

The lower floor exits at grade except for stair 1, so stair width is not an issue.

The gymnasium, as noted previously, occupant load is 1,956 at 7 ft^2 each. Egress doors are measured at 0.2-inches per occupant width factor for doors in LSC Table 7.3.3.1. For the 1,956 occupants, that equates to 392 inches of required egress width. A 36 inch door can accommodate approximately 163 occupants (32.5 inch clear width x 0.2) which equates to 12 doors. During the visit there were only 10 doors noted. A similar analysis should be performed for the auditorium (I did not count the fixed seats).

Other egress issues include:

- The library doors are required to swing in the direction of egress travel as the occupant load of the library exceeds 50 per LSC 7.2.1.4.2; they currently swing inward.
- The two wing areas of the auditorium are missing some EXIT signs for use when the folding doors are closed per LSC §7.10.
- The two wing areas of the auditorium are missing handrails along wall at the aisle stairs per LSC §13.2.5.6.8.
- Any room greater than 1,000 ft^2 and/or 50 occupants requires two separate exit access doors per LSC §15.2.5.4. Several rooms do not comply including, but not necessarily limited to, Marketing, Cosmetology, Electrical Technology, Home Economics, Aqua Agriculture and three Science rooms (based on data on HMFH floor plans).

The cafeteria is located in a two-story communicating space, often referred to as a mini-atrium, per LSC §8.6.6. The existing space meets all the criteria of the section with the exception of numbers 3 and 4. These require the space to be open such that a fire in any part can be observed by all occupants and a smoke barrier separation from the remainder of the building respectively. It is the lack of a smoke barrier on the main floor from the area of the main entrance and auditorium that creates both issues of noncompliance. That space is part of the communicating space but lacks the ability for observation and it has no smoke barrier separation. Both can be relatively remedied by adding the smoke barrier.

Accessibility (A117.1 and ADA):

As a unit of public government, Dover High School is subject to Title II (State and Local Government) of the ADA, 28 CFR Part 35, and as such has the primary duty to provide program accessibility, e.g. programs when viewed in their entirety must be readily accessible to and usable by people with disabilities. The term “program” includes all amenities and services provided to those without disabilities. Therefor the existing building would not require physical alterations as long as program accessibility is attained. However, any additions and/or alterations would be required to comply with the technical requirements of the *2010 ADA Standards*. Additions and alterations would also be required to comply with the IBC, IEBC and A117.1 requirements for accessibility.

IEBC §605 contains the requirements for accessibility in alterations and mirrors the requirements of the ADA. Essentially both require, to the extent technically feasible, for

persons with disabilities to enter and exit the building and to have an accessible route throughout. The second major requirement is to provide accessible toilet facilities. Both the ADA and the IEBC require a maximum of 20% of the alteration costs be used to provide the accessible route to areas of primary functions within the building. In the instance of a school, classrooms qualify as a primary function, although not all necessarily need to be accessible, as well as ancillary spaces such as auditoriums, libraries, gymnasiums, dining facilities and the like. Some office spaces may also qualify as a primary function.

The main entrance to the 1966 building is accessible via a ramp to the side of the entrance steps. In addition, one entrance to the 1989 building is accessible with the use of a platform lift and the other on the lower floor, while accessible, is a restricted entrance and generally used for egress only. The 2002 building does have an accessible entrance but is generally used for egress only. A NH amendment to the A117.1 Standard would require an automatic door operator on accessible entrances. Other doors are either restricted entrance doors or are normally for egress purposes only and are not accessible primarily due to a single step at the exterior door. Any alterations should consider making these accessible within the 20% provision.

Within the building an accessible route, while not always convenient, is provided. Most building entrances are on the main floor which is multi-level. The main entrance is on the lower of the two levels and accesses the lower floor of the 2002 building, the auditorium and gymnasium. The 1989 building entrance is on the upper of the two levels and accesses the remainder of the main floor, including the elevator, located near the northeast corner of the 1966 building, which accesses all three main clssroom levels. There is a two-section ramp connecting the two levels of the main floor located at the cafeteria atria and near the main entrance. The upper level of the 2002 building is accessed via an inclined stair lift located at the far southwest corner.

With only one elevator, it might be necessary for a disabled person to traverse an entire floor to access the elevator and then traverse back the same distance on another level. Not convenient, but ADA and code compliant. The only item in noncompliance is the inclined stair lift. Neither the ADA nor the IBC/A117.1 Standard recognizes an inclined stair lift as part of an accessible route. Platform lifts are recognized as part of an accessible route in the ADA and the IBC/A117.1 Standard only in limited circumstances in new construction. The IEBC/A117.1 Standard and the ADA do recognize platform lifts in alterations.

The main reason an inclined stair lift is not recognized is that, generally and certainly in this instance, when in use, it prohibits the use of the stair for egress by others. This stair is a required means of egress and if thus blocked, it violates IBC §1003.6 and LSC §7.1.10 among others that prohibit obstructing a means of egress. In any proposed alteration, this

lift should be removed. The upper level of the 2002 building could be accessed via a platform lift at the second floor change in level or, alternatively, activities on that level could be relocated as necessary to achieve program accessibility.

There is a major accessibility issue with the toilet facilities. None are compliant with the ADA or the IBC/A117.1 Standard. While there has been some attempt to provide accessible toilets, most have not been changed since original construction. The 2002 building toilets are the newest and hence the "most" accessible, but are single occupant for staff only and not completely compliant. Some other toilets have been altered, unsuccessfully, to provide accessibility; at least one observed actually made the room less accessible for wheelchair use. Any alterations to the building will have to include major alterations to the toilet facilities that will also require additional space than currently occupied by the toilet rooms.

Other areas of accessibility noncompliance with standards include the serving line in the cafeteria, lack of accessible seating in the cafeteria, drinking fountains (only one dual height fountain was observed), stair handrails, stage access, locker and bathing rooms and wheelchair accessible spaces in the auditorium. There seems to have been an attempt at providing the latter by removing existing seats, but this only creates a sloped floor upon which a wheelchair can be located which can cause the chair and occupant to roll forward and certainly puts the occupant in a leaning forward, uncomfortable position. Note the 2010 ADA Standards has new requirements for accessible seating in assembly areas which include not only wheelchair accessible locations (with adjacent companion seating) but also designated aisle seating. Accessible seating is also required in the gymnasium. The ADA also requires assisted listening devices in assembly spaces. This would also apply to the gymnasium if a speaker system is present. Both are also covered in IBC §1108.

No accessible stage access is currently provided. Although there are stairs from the auditorium directly to the stage, a person with a disability is required to exit at the rear of the auditorium and continue down a corridor to a backstage entrance. This is not permitted per IBC §1108.2.8 and similar requirements in the ADA.

Both the ADA and the A117.1 Standard require protection against protruding objects into a corridor. All the existing drinking fountains project more than the maximum 4-inches, although some may have the bottom of the fixture below the minimum 27 inch height.

Due to the heavy snow covering, I was not able to examine the accessible parking. I did note a few signs, but was not able to neither see the spaces nor determine if there were the appropriate number of spaces or if there were van accessible spaces. I was also not able to determine if the drop off was compliant with requirements. This can be followed-up in the spring if necessary.

Any proposed alterations should include addressing the accessible route for convenience, perhaps adding a second elevator remote from the existing one. As noted above, major alterations to toilet facilities will be required, and the other areas should be examined for potential alteration to provide accessibility per the IEBC. Any altered or new areas must comply with the IBC/A117.1 Standard and the ADA.

Energy Efficiency (IEBC and IECC):

The IEBC for any level of alteration does not require the entire building to comply with the energy requirements of the *International Energy Conservation Code* (IEEC), only those portions being altered. Any additions or new construction shall comply with the IEEC and obviously, it is in the owner's interest to pursue energy efficiency improvements where and whenever possible.

End of Existing Code and ADA Assessment

In process to be added to report upon completion