STUDY FOR THE

DAVIS THAYER ELEMENTARY SCHOOL

FRANKLIN, MASSACHUSETTS
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KAESTLE BOOS
associates, inc

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The Town of Franklin, Massachusetts, through the Franklin Public Schools, retained Kaestle Boos Associates to provide consulting and design services to evaluate the existing Davis Thayer Elementary School. These services included:

- documenting the existing building construction and systems,
- evaluating the existing building for compliance with current building and life safety codes,
- evaluating the functionality of current spaces and developing a space needs assessment,
- determining the presence of hazardous materials,
- recommending necessary repairs,
- developing a conceptual scheme for renovation and / or additions to the school,
- providing cost estimates, and
- determining the feasibility to continued use of the building as an elementary school.

Architectural and site conditions as well as mechanical, plumbing, and electrical systems were reviewed and are summarized in detail within the study. This feasibility study is intended to assist the Town to recommend whether the existing facility to be re-used and renovated or replaced with a new building.

Repair of the existing building will require that several major issues be addressed for code compliance, life safety, and durability, including:

- Full compliance with handicapped accessibility guidelines, including installation of an elevator,
- New toilet rooms with accessible fixtures,
- Modification to the bus and parent drop-off area for student safety,
- Abatement of hazardous lead and asbestos materials,
- Structural framing to meet seismic (earthquake) and lateral stability requirements,
- Repair of exterior masonry and steel supports,
- Modification of egress stairs,
- Modification of egress doors and corridors,
- Replacement of floor, wall, and ceiling finishes throughout,
- Replacement of the existing membrane roof,
- Increase the occupant capacity of the cafeteria and kitchen,
- A new heating and ventilation system with air conditioning,
- A new electrical service including a new fire alarm system and emergency generator.

Although the basic structure of the school is sound, in order to retain the school building for durable use over several decades, virtually all systems in the building must be renovated or replaced.

Based on the space needs assessment, the existing building is insufficient to provide a comfortable teaching environment for the students. Existing spaces were evaluated with regard to recommendations for all school spaces established by the Massachusetts School Building Authority for elementary schools. These recommended areas are included in this report in a spreadsheet form in the Appendix.

Conceptual schemes for re-use of the existing building were developed and reviewed with the Committee. Floor plans for the Preferred Option for renovation / addition is included in this study and provide the basis for the Schematic Construction Cost Estimate and Opinion of Probable Cost.

Opinions of Probable Cost, both for the renovation/addition option and for the new construction option, are included in the study and follow this Executive Summary. An Opinion of Probable Cost is based on the Schematic Construction Cost Estimate for the renovation /addition option but further includes all soft costs for design, permitting, furniture, etc. The total estimated OPC for the Renovation /Addition option is $22,438,230 and for the New Construction option is $28,849,650. A detailed Schematic Cost estimate for the Renovation /Addition option is included in the Appendix of the Study.

APPLICABILITY

This analysis reviews the existing Davis Thayer Elementary School ("Davis Thayer") in Franklin, MA, with regard to the Massachusetts State Building Codes ("Code") for new construction. The 8th Edition consists, in part, of the 2009 International Building Code (IBC) and the 2009 International Existing Building Code (IEBC) with Massachusetts Amendments to these codes.
Codes used in this analysis are:

International Building Code (IBC, 2009)
International Existing Building Code (IEBC, 2009)
International Energy Conservation Code (IECC, 2009)
Massachusetts State Building Code Amendments (780 CMR 8th Edition)
Architectural Access Board Rules and Regulations (521 CMR, 2006)
Uniform State Plumbing Code (248 CMR)

Mechanical systems, including electrical, plumbing, and fire protection systems and sitework are reviewed in separate sections of this study.

Chapter 34 *Existing Buildings* in 780 CMR is replaced by reference with the IEBC with Massachusetts Amendments. All buildings in which work is submitted for a Building Permit after February 6, 2011 are required to be reviewed with the 8th Edition of the State Building Code and the 2009 Editions of the IBC and the IEBC. As the grace period for this transition to the 8th Ed. has occurred, conformance with the 8th Edition, and so with the IEBC, will be required. Any new construction must conform with the 8th Edition.

Renovations to existing structures must be reviewed for code compliance by one of three separate methods in the IEBC: the Prescriptive Method, the Performance Method, and the Work Area Method. Within these methods to review compliance, the modifications required for compliance vary dependent upon the extent of the renovation work; renovation work is classified as *Repair, Alteration Level 1, Alteration Level 2,* and *Alteration Level 3*. When the extent of the repair and alteration work exceeds 50% of the aggregate area of the building, this work is classified as *Alteration Level 3* and, under this classification; compliance with requirements of *Alteration Level 1* and *Alteration Level 2* is also required. *Alteration Level 2* requirements are enforced when the work involves reconfiguration of spaces or systems, but not more than 50% of the total building area. *Alteration Level 1* requirements are enforced when the work is cosmetic or replacement of existing materials with similar materials, such as re-roofing projects. All analyses in this study are based on the Work Area Method and the renovation work is classified as Alteration Level 3 based on the worst case assumption that more than 50% of the building will require renovation.

Upgrades and corrections to existing structures undergoing renovations are limited to specific items under the IEBC. During renovations, not all existing safety issues and non-compliant conditions are required to be corrected; typically only items within each renovated area are required to be corrected. However, non-compliant conditions at stairs and egress elements, fire rating separations, accessibility, and fire protection (sprinklers) are required to be corrected or provided as required by the IBC. Because this building was

constructed several decades ago, existing conditions which may be allowed to remain under the requirements of the IEBC may also be in conflict with current life safety codes and standards. Over time, since the original construction of the Davis Thayer School, life safety standards have been improved in reaction to tragic events. In order to provide life safety conditions in accordance with the most current intent for safety, the current IBC and Fire Safety codes and regulations are also used as a basis for judging compliance.

Correcting existing conditions to comply with current Accessibility and Fire Protection requirements is required by the IEBC only when the value of the work exceeds the cost or scope triggers stated in the AAB and the Fire Code.

Compliance with Chapter 148 Section 26G of the State Fire Code is required by the IEBC for all renovations classified as *Alteration Level 3*. This regulation also requires that in all existing buildings in which renovations will exceed 7,500 square feet in area *or* in which major alterations' are planned ,as defined by the statute, must provide a full sprinkler fire suppression system if available water flow and pressure is available. A major alteration is reconfiguration of walls, doors, windows, mechanical systems, etc., which effectively makes installation of sprinkler systems easier and which affects more than 33% of the building area ***or*** more than 33% of the assessed value of the building. Extension and modification of the existing fire suppression system to comply with current Code is anticipated to be required based on the worst case assumption that more than 7,500 square feet of the building will require renovation or addition. Buildings for which sufficient water flow and pressure *does not exist* are exempt, however, it is assumed that sufficient flow and pressure is available as a suppression system exists. As a result, all code discussions below are based on the building being fully sprinklered.

Also, according to this section of the Fire Code, any work performed, even if under separate contracts or building permits, within a 5 year period must be included in the aggregate construction cost to determine applicability of the Code. This includes site work and building renovations, whether done separately or together.

- Future Change Orders and other unanticipated costs could also trigger full compliance if the aggregate value exceeds the 33% limit.

- Cost of future building projects requested for permit within 5 years, before or after the permit date for this project, will be considered part of the project costs and may trigger compliance.

Accessibility in public buildings is regulated by 521 CMR, which is enforced by the Massachusetts Architectural Access Board (MA AAB) and the Building Inspector of the municipality. 521 CMR, as issued in 2006, is used for this review. MA AAB 5.1 Definitions states:

> "Public Buildings: A building privately or publicly financed that is open to and used by the public, including but not limited to …, educational buildings, commercial buildings, buildings having places of assembly, [etc.]…"

and MA AAB 12.1 Educational Facilities states:

> "Educational Facilities shall comply with 521 CMR and shall include but not be limited to: […] Public and private schools..."

Davis Thayer Elementary School is a public, educational building and is required to be accessible in accordance with 521 CMR.

Currently, the AAB regulates only areas and conditions accessed by the "public"; areas occupied solely by staff are not included in the regulation. Staff areas are included in the ADA Accessibility Guidelines as part of federal law, but these are not directly enforceable as part of the Building Code. However, in an effort to unify compliance requirements with the recently adopted IBC as the State Building Code, the AAB will be revising the regulation to include staff areas as well as public areas. In anticipation of the release of this revised AAB document, all discussions below regarding accessibility will include compliance of staff areas.

Applicability of the AAB Regulations for renovations of existing buildings is based on the value of the renovations as a percentage of the current assessed value of the building and grounds (100% valuation). According to AAB 3.3, partial compliance is required when the value of the renovations exceeds $100,000 and full compliance of the entire facility is required when the value of the renovations exceeds 30% of the assessed value of the building. An exception to this rule is for maintenance work on MEP systems, sprinkler systems, roofs, replacement windows, masonry repair, site utilities, landscaping, and septic system which in aggregate is less than $500,000.
As stated in AAB 3.3 (paraphrased):

> "3.3 EXISTING BUILDINGS
> All additions to, reconstruction, remodeling, and alterations or repairs of existing public buildings or facilities …shall be governed by all applicable subsections in 521 CMR.
> 3.3.1…,
> a. if the work costs less than $100,000, then only the work being performed is required to comply with 521 CMR…,
> b. if the work costs $100,000 or more, then the work being performed is required to comply with 521 CMR. In addition, an accessible public entrance and an accessible toilet room, telephone, drinking fountain (if toilets, telephones and drinking fountains are provided) shall also be provided in compliance with 521 CMR…,
> 3.3.2 If the work performed, including the exempted work, amounts to 30% or more of the full and fair cash value (see 521 CMR 5.00) of the building the entire building is required to comply with 521 CMR. "

Also, according to AAB 3.5, any work performed, even if under separate contracts or building permits, within a 3 year period must be included in the aggregate construction cost. This includes sitework and building renovations, whether done separately or together.

- Future Change Orders and other unanticipated costs could also trigger full compliance if the aggregate value exceeds the 30% limit.
- Cost of future building projects requested for permit within 3 years of the permit date for this project will be considered part of the project costs and may trigger compliance.

The building and site must be reviewed together, and may affect compliance in areas not anticipated to be updated to comply.

- If the Building renovation cost exceeds 30% of the building assessed value, then the entire Building and site must be made to comply;

Energy conservation, as required by the IECC for new construction, is not required for renovations to existing structures under the IEBC. However, any new elements or alterations to the exterior building envelope, such as new windows or new roofing, must comply to the greatest degree possible. As stated in the IEBC Alteration Level 3 Section 808 Energy Conservation "*Essentially, the entire building is not require to meet the energy provisions, but only improvement in the energy performance of the building is intended to be achieved by making the new elements meet the IECC…".* Overall upgrades of the exterior envelope of the building is not required or recommended and so are not reviewed as part of this study except for elements recommended to be replaced.

According to the Town of Franklin Assessors Department, the current assessed value for Davis Thayer (structure only) is $2,865,400. The threshold value of the cost trigger for accessibility is 30% of this value less the cost of permitted work within the last 3 years. The threshold value of the cost trigger for fire protection is 33% of this value less the cost of permitted work within the last 5 years; as the building had a fire protection system installed a few years ago, this requirement is only relevant for any new additions. These thresholds are shown below. The cause of the renovation or the source of the funding is not relevant, only the total value of cost for renovations, including demolition. All major permitted work in the building was performed beyond the 3 year window for the accessibility threshold with Modular Classrooms installed in 1999, EPDM roofing replaced in 2000, windows and exterior doors replaced in 2004, and a fire protection system installed in 2008. Based on the estimate of the conceptual design included in this study, the renovation/addition cost is presumed to exceed these thresholds and the entire site and building must be made to comply with current accessibility and fire suppression codes as part of this proposed renovation.

COST THRESHOLDS FOR ACCESSIBILITY AND FIRE SUPPRESSION COMPLIANCE	
Assessed Value of Davis Thayer School (Structure Only)	$2,865,400
30% Cost Trigger for Accessibility Compliance	$ 859,620
33% Cost Trigger for Fire Protection	$ 945,582

BUILDING CODE COMPLIANCE ANALYSIS (IEBC / 780 CMR - IBC)

As this study evaluates the existing facility at the Davis Thayer Elementary School, the requirements of the IEBC are used to determine compliance. In the discussion below, references to specific code sections are noted before each paragraph with parentheses.

(IEBC 101.4.2) Applicability: Under this definition, as a building that has been previously occupied prior to the issuance of the Code, the Davis Thayer School is considered an existing building and regulated under the IEBC.

(IEBC 101.5.2) IEBC offers three methods for compliance analysis and four levels of work classification. For the purposes of this study, the *Work Area Compliance* method will be used and future renovations will be considered as an *Alteration Level 3* work classification.

(IEBC 701.3) Compliance: All new elements must comply with IBC.

IBC Ch. 6 – Types of Construction

*The following discussions regarding Type of Construction, Use Group Classification, and Height and Area Limitations are provided to document the existing facility classification only. These characteristics are not regulated by the IEBC and existing buildings are not required to be modified to comply as a result of renovations. Additions to an existing building, however, must conform to limitations of allowable height and area and are regulated by the IBC. Determination of the allowable height and area of the existing structure provides guidance for the extent of any new additions that are planned.

(IBC Table 601) The building is constructed of masonry bearing wall and skeletal steel frame with concrete slab-on-grade/concrete deck floors and with masonry veneer exterior skin. The structure does not appear to be protected with spray fireproofing or other rated construction. Interior steel stud and plaster partitions and masonry walls are non-load bearing and do not affect this classification. The existing construction system with non-fire rated structural members generally conforms to the requirements for Type II-B (non-combustible) construction in the current IBC.

Type II-B Construction Type Min. Fire Resistance Rating Requirements (780 CMR Table 601)

Building Elements	Required Fire Resistance Rating (Hrs)
Structural Frame (including columns, girders, and trusses)	0
Exterior Bearing Walls	0
Interior Bearing Walls	0
Exterior Non-Bearing Walls and Partitions (See Table 602)	0
Interior Non-Bearing Walls and Partitions	0
Floor Construction (including support beams and joist)	0
Roof Construction (including support beams and joist)	0

Table 601 establishes the required minimum fire rating of construction elements and is related to the allowable height and area discussed in Table 503 below. Type II-B construction allows the building structural members to be unprotected (not fire rated). The tradeoff for not protecting the building structure is a reduction in the allowable height and area that can be built; essentially, the greater the fire protection of building structural elements, the larger the building height and area which is allowed.

(IBC Ch. 3 – Use and Occupancy)

(IBC 305.1) Primary Use Group: Group E - Educational
(IBC 305.1) Mixed Use Areas: Group A-3 Assembly (Media Center, Gym, Cafeteria)
Group S-1 Storage (Mechanical Spaces, Storage)

(IBC Ch. 5 – General Building Limitations)

Height and area limitations for the existing building are presented below with the assumption that the existing fire protection (sprinkler) system is compliant and will be extended throughout any new school additions. These allowable floor area calculations take advantage of the height and area increases permitted when a fire protection system is provided and also incorporates area increases allowed for additional street frontage.

(Table 503) Based on the presumption that any renovation or new construction for this building will extend the existing sprinkler system, the allowable height may be increased by one story and the allowable area may be increased by 200%. Additionally, as the building perimeter is accessible for fire and rescue vehicles from the road or parking areas on all sides of the building, the maximum allowable area may be increased by an additional 75% for this accessible frontage.

- The accessible street frontage combined with the allowable area increase for a sprinkler system will allow a total increase in area of 275% above the limitations stated in Table 503. This total allowable area, for each use group, is shown in the last column of the table below.

(Table 503) The allowable height and area for Type IIB Construction is:

USE GROUP	Total Allowable Height with Additional Increase for Sprinkler System	Allowable Area **per Story** Plus Increase for Sprinkler System and Accessible Perimeter			
		Allowable Area (Table 503)	Sprinkler System Area Increase (+200%)	Accessible Perimeter +75%	Total Allowable Area per Floor with Allowable Increases
A-3	3Stories	9,500 s.f.	+ 19,000 s.f.	+ 7,175 s.f.	+35,625 s.f.
E	3 Stories	14,500 s.f.	+ 29,000 s.f.	+ 10,875 s.f.	+54,375 s.f.
S-1	3Stories	17,500 s.f.	+ 35,000 s.f.	+ 13,175 s.f.	+65,625 s.f.

(502.1) The lowest level of the building housing the gymnasium is considered a basement and not a story above grade. A story is considered a basement when none of the following conditions apply:

- The floor of the story above is more than 6 feet above the average grade plane,
- The floor of the story above is more than 6 feet above the average grade plane for more than 50% of the building area, or,
- The floor of the story above is more than 12 feet above the average grade plane at any point.

The Grade Plane is an imaginary line representing "the average of finished ground level adjoining the building at exterior walls".

- For this building, the grade plane is consistently about 1'-6" lower than the First Floor elevation (floor above the lowest level) on all sides, so the lowest level of the building is considered a Basement and not a Story above Grade.

(504.1) The actual height for the Davis Thayer School is 3 stories above the grade plane. Because an automatic sprinkler system is present, an additional story may be added to the Allowable Height (2 stories on Table 503 for E, A3, and S1 use groups).

- With this height modification, the allowable height is increased to 3 stories above the grade plane for all Use Groups present.

(IBC 508.3 & 508.4) Buildings with multiple Use Groups are called mixed-use buildings. Buildings are further classified as a 'separated' mixed use or a 'non-separated' mixed use. If classified as a 'separated' mixed-use building, then the different use groups within the building must be separated by fire rated construction as required in Table 508.4. If classified as a 'non-separated' mixed-use building, then fire rated separations are not required if the most restrictive use group is used to calculate the allowable height and area.

- Even using the most restrictive Use Group A-3 as a basis for review, the allowable area per floor of 35,625 square feet indicated above far exceeds the actual area for each floor in the building. This will allow an increase in area of 24,683 square feet on the First Floor. Again, height and area are not required for compliance with renovations to existing buildings according to the IEBC, but buildings with new additions are required to comply.

(IBC 508.2.4 and Table 508.4) In Table 508.4, Assembly and Educational use groups are categorized together and are not required to be separated by fire rated construction. This does not apply to Use Group S-1, which is required to be separated from Use Groups A and E with 1 hour fire rated construction if the building is sprinklered (rather than 2 hour fire rated separations when the building is not sprinklered).
However, as stated in 508.2.4, small rooms used for storage may be considered to be accessory to the primary Use Group provided the aggregate area of the storage rooms is less than 10% of each floor area and less than 10% of the area allowed by Table 503.

- The storage rooms in this building do not appear to exceed 10% of the actual existing building area. As it is assumed that the building will be fully sprinklered, A-3 Assembly, Educational, and S-1 Storage use areas do not require separation with fire rated walls.

EXISTING FACILITY FLOOR AREAS AND HEIGHT		
FLOOR	ACTUAL FLOOR AREA	ALLOWABLE STORAGE AREA
Basement	8,418 square feet	841 square feet
1	10,942 square feet	1,094 square feet
2	13,924 square feet	1,392 square feet
3	11,272 square feet	1,127 square feet
TOTAL AREA	44,556 square feet	
ACTUAL HEIGHT	3 Stories above grade plane (with Basement)	

(IEBC 102.2.2.1 & IBC Chapter 10 - Means of Egress

Occupancy in the existing facility is determined by actual student population and staff projections provided by the District. Student population is projected to not exceed 350 students (maximum) and total staff population is projected to be a maximum of 50 persons for a total occupancy load of 400 persons. The egress capacity (0.2"/per occupant) for each 60-inch wide stairway is approximately 300 occupants. The egress capacity (0.15"/per occupant for sprinklered buildings) for a typical single 36-inch wide egress doorway is approximately 220 occupants.

* There are 2 egress stairs evenly dispersed at each end of the building which can provide a combined egress capacity of 600 persons per floor.
* There are 2 egress door pairs at the front and at the rear of the school which can provide an egress capacity of 552 persons at each door. However, access to these exterior doors is limited by 2 smaller pairs of corridor doors at the front stairs of the school and 2 single interior doors at the rear of the school. These limit the access to the stairs on each floor to 373 persons; access to the exterior rear doors is limited to 220 persons.
  - Although the existing egress elements are sufficient to provide egress from any location within the building for the projected occupancy per floor, the existing egress doors within corridors to stairways are not of compliant width. These doors must provide a minimum clear width of 32" but the actual clear width of these doors is less than 28".

IEBC 102.2.2.1 is an amendment by the State of Massachusetts and supersedes other less restrictive paragraphs in the IEBC. This amendment requires that all existing stairs comply with current requirements of the IBC with regard to the quantity of exit ways on each floor, the width of all exit ways, fire rating, handrails, continuity, etc., to "provide safe and adequate means of egress".

- Existing egress stairs in the building are not enclosed in required fire rated construction, do not have risers and treads of required dimensions, do not have railings and guards with required height and spacing, do not have required rail extensions, and do not have fire rated doors which comply. All stair conditions must be corrected in accordance with current egress requirements.

(IEBC 703.2.1 Existing Vertical Openings)
All existing vertical openings connecting 2 or more floors must have an enclosure with a fireresistive rating of 1 hour minimum.

- Exception 6 under this requirement allows vertical openings up to 4 stories in Educational uses which have a fire protection system.
- As the existing sprinkler system is presumed to comply and to be extended for any new additional construction, a renovation will not require closing any existing openings between floors for distribution of ductwork or multistory rooms like the Gym and the Media Center.

(IEBC 703.5.1 Existing Guards)
Existing guards on stairway railings are not in compliance with current IBC must be modified or replaced.

- Guards at stair balcony rails are not 42 inches in height and exceed the maximum opening size requirement (for a 4 inch diameter ball). These guards must be modified or replaced to provide protection to the required height. The existing wall mounted handrails do comply and may remain. However, the interior guardrail does not have a continuous handrail as the existing rail terminates at newel posts at each landing. Handrails must be provided on the interior guardrails.

(IEBC 705.4 - Means of Egress)
IBC Table 1015.1 and IEBC 705.4.1.1 require 2 means of egress from Assembly occupancies when the occupant load exceeds 50 persons. The minimum distance between 2 means of egress from a room is required to be 1/3 of the diagonal room dimension if the building is sprinklered. Also, all exit doors must have compliant exit (push bar) door hardware.

(IBC Table 1016.1 Exit Access Travel Distance)

- The greatest travel distance to an exit enclosure occurs on the 3rd floor and is approximately 130 feet. This is far less than the allowable travel distance of 250 feet. Also, the maximum common path of travel distance, which is the distance one has to travel before having 2 separate means of egress to choose from, is 75 feet for any room or corridor. All rooms which require 2 means of egress are compliant and the longest common travel distance to a corridor is approximately 50 feet within one classroom on the 3rd floor.

(IEBC 705.6) In buildings with an Assembly occupancy, the allowable length of a dead end corridor is 35'.

- The existing egress component capacities and the length of exit access travel to the entrance of an exit meet all requirements of the current IBC. The existing school has 2 stair towers which are evenly spaced on the egress path with no dead end corridors. This provides egress capacity which far exceeds the current IBC requirements.

Minimum Number of Exits (780 CMR 1015.1)

Area	Occupant Load	Required Number of Exits	Number of Exits Provided
Classrooms	< 50	1	1
Offices	< 50	1	1
Kitchens	< 50	1	1
Storage and Mechanical Rooms	< 50	1	1
Assembly – Media Center	≥50 < 500	2	2
Assembly - Gymnasium	≥50 < 500	2	2
Assembly – Cafeteria	≥50 < 500	2	2

(248 CMR 2.10 Plumbing Code: Fixtures) Based on the assumed maximum occupancy of 350 students and 50 staff persons, plumbing fixture requirements for the actual existing occupancy is distributed as shown in the table below. Fixture requirements for the Assembly spaces are based on non-concurrent use by the public (at times the school is not occupied by students) and so the fixture counts provided for student use may also be used to fulfill the requirement for the public.

Use Group	Rate for	Occupants		Minimum # of Fixtures Required
E (Education, Kindergarten)	Student Male: 1/20 Student Female: 1/20	40 students	20 Male 20 Female	Student Male: 1 Fixture Student Female: 1 Fixture (1 unisex fixture for each of 2 kindergarten rooms recommended.)
E (Education, Elementary)	Student Male: 1/60 toilet & 1/60 urinal Student Female: 1/30	310 students	155 Male 155 Female	Student Male: 3 toilet fixtures and 3 urinal fixtures Student Female: 6 Fixtures
	Staff Male: 1/25 Staff Female: 1/20	50 Staff	25 Male 25 Female	Staff Male: 1 Fixture Staff Female: 2 Fixtures
A (Assembly: Media Center)	Public Male: 1/600 toilet & 1/200 urinal Public Female: 1/200	200 spectators	100 Male 100 Female	Public Male: 1 toilet fixtures and 1 urinal fixture Public Female: 1 Fixture
A (Assembly: Gym)	Public Male: 1/600 toilet & 1/200 urinal Public Female: 1/200	100 spectators	50 Male 50 Female	Public Male: 1 toilet fixtures and 1 urinal fixture Public Female: 1 fixtures
A (Assembly: Cafeteria)	Public Male: 1/600 toilet & 1/200 urinal Public Female: 1/200	120 seats	60 Male 60 Female	Public Male: 1 toilet fixtures and 1 urinal fixture Public Female: 1 Fixture

According to the table above, the plumbing code requires:

- a total of 4 toilet fixtures and 3 urinals with 6 sinks for male students;
- a total of 7 toilet fixtures with 4 sinks for female students;
  - (These totals include a recommended unisex toilet in each of 2 kindergarten rooms with 1 toilet fixtures and 1sink in each.)
- a total of 1 toilet fixture and 1 sink for male staff; and
- a total of 2 toilet fixtures and 1 sink for female staff.

In the existing facility there are:

- a total of 10 toilet fixtures and 10 urinals with 6 sinks for male students;
- a total of 12 toilet fixtures with 7 sinks for female students;
- a total of 2 single fixture toilet rooms (1 toilet and 1 sink) for male staff; and
- a total of 2 single fixture toilet rooms (1 toilet and 1 sink) for female staff.
  - There are no fixtures specifically for public use and no fixtures located within kindergarten rooms.

Although the existing toilet fixture count exceeds the requirement above for the student and staff populations, none of the student or staff toilets comply with accessibility regulations Modification of student toilet rooms will result in significant loss of toilet fixtures; however, this will probably not decrease the total fixture count below the required quantities.

- Staff toilet rooms do not meet accessibility requirements and cannot be modified within the existing spaces to comply. These rooms will require relocation.

Of more concern is the spacing of the toilet rooms in a multistory school. The plumbing code requires that facilities be provided within 200 feet and a maximum of 1 floor above or below any occupied space in the building, especially for public assembly spaces like the gym and media center. This distribution will be affected by modifications to comply with accessibility requirements in student toilet rooms. Staff toilet rooms are not distributed throughout the school and do not comply with this requirement of the Plumbing Code. Staff toilet rooms are required to be assigned per gender and unisex toilet rooms are not allowed to provide compliance.

- There is only one female staff toilet room on the 3rd floor and no male staff toilet rooms on the 2nd floor. This requires a male staff person on the 3rd floor to travel to the 1st floor to use a male staff toilet. This is in excess of the allowable travel distance of 1 story to access toilet facilities.

For public assembly spaces, the Plumbing Code requires 1 toilet fixture for 200 female occupants and 1 toilet fixture for each 600 male occupants and 1 urinal fixture for each 200 male occupants. As these spaces are not in use concurrently by the public (during the school day), the toilet fixtures for school use may be used to fulfill this requirement. The closest toilet fixtures to the gym in the basement are on the first floor. The closest toilet fixtures to the media center on the 2nd floor are on the same floor. In both cases, additional fixtures will not need to be provided for this population and travel distance is within the requirements of the Plumbing Code.

In the Nurse's Suite, a single user toilet room with 1 toilet fixture and 1 sink is provided. This toilet room is not accessible.

- This toilet room must be moved to be enlarged to provide compliant access and fixture clearances.

Accessible toilet facilities will be discussed in more detail in AAB Chapter 30 below.

ACCESSIBILITY CODE COMPLIANCE ANALYSIS (521 CMR AAB)

AAB Chapter 12 – Educational Facilities
(521 CMR 12.4)
Sinks, counters and other work areas in classrooms or laboratories are required to comply with the following:

- At least 5%, with a minimum of one of each type of element, in each classroom must comply with the following:
  a. Countertops and sinks must comply with 521 CMR 12.2.2.b, 12.2.2.c, and 12.2.2.d.

➢ Sinks are provided in 2 classrooms, 1 on the 1st floor and 1 on the 2nd floor, however, neither sink is accessible. These counters and sinks require modification for accessibility.

AAB Chapter 14 – Places of Assembly
(AAB 14.2) Because the assembly spaces in the building - Library, Cafeteria, and Gymnasium – do not have fixed seating, specific accessible seating locations are not required.

(AAB 14.5.1) A permanently installed assistive listening system must be provided for all assembly occupancies of more than 50 persons. The minimum number of receivers that needs to be provided must be equal to 4% of the total number of seats, but no less than two receivers.

➢ These systems must be provided in the Library, Cafeteria, and Gymnasium.

AAB Chapter 19 – Recreational Facilities
(AAB 19.4) Locker rooms are not provided and compliance is not required.

AAB Chapter 20 - Accessible Routes
(AAB 20.1) Accessible routes within the building generally comply with requirements for width, passing space, protruding objects, headroom, etc.

➢ Access to the Basement, Second, and Third Floors is not provided. As grade levels and specialty rooms, such as the gymnasium and media center, are distributed on floors other than the First floor, this does not allow for access by all children to classrooms and activities. A compliant elevator must be provided to provide access to all floor levels and activities.

(AAB 20.6.1) Objects projecting from walls with their leading edges between 27 inches and 80 inches above the finished floor must not protrude more than 4 inches into walks, halls, corridors, passageways or aisle and must not have sharp edges.
> The underside of stairs on the first floor is enclosed and so complies, however, the stairs to the Basement are open under and installation of a guard rail or wall is required.

(AAB 20.12) Areas of rescue assistance at stairways and means of egress are not required in accordance with Exception a. Existing Buildings.

(AAB 20.2 - Access to Site)
Please refer to the Landscape section of this study for information regarding site accessibility.

AAB 21.00 Curb Cuts
Please refer to the Landscape section of this study for information regarding site accessibility.

AAB 22.00 Walkways
Please refer to the Landscape section of this study for information regarding site accessibility.

AAB 23.00 Parking and Passenger Loading Zones
Please refer to the Landscape section of this study for information regarding site accessibility.

AAB 24.00 - Ramps
A ramp is provided to access the temporary modular classrooms from within the building. This ramp is compliant.
Ramps are provided at the exterior of the building and appear to comply.
Please refer to the Landscape section of this study for information regarding site accessibility.

AAB 25.00 – Entrances
(AAB 25.1) All public entrances to the building must be accessible and be on an accessible route.

- Access to the building from the exterior is possible only from a ramp at a rear entrance door and a wooden ramp attached to the temporary modular classrooms. The Main Entrance to the building does not provide an accessible route. Modification to the main entrance and required means of egress doorways to provide accessible routes is necessary.

AAB 26.00 – Doors and Doorways
(AAB 26.1.2)
Illuminated signage identifying accessibility by the use of the international symbol contained within the "exit" sign must be provided at all egress doors in assembly and educational occupancies with an occupancy load of over 150 people.

- Provide this signage for exits from the Gym, Cafeteria, and Library.

(AAB 26.6 – Maneuvering Clearances)
Classroom doors throughout the building do not provide required pull and push clearances for accessible doors. Most are in wall recesses which exceed accessible clearances.

- Where not provided, either modify the wall configuration around these doors or provide automatic door operators to defer modification to the building elements.

At toilet rooms, most doors do not provide the opening clearances.

- Where not provided, modification to wall configurations and loss of toilet fixtures may be necessary to provide required clearances.

At stair and corridor doors, door width clearances are narrower than allowed.

- Door pairs at stairways and in corridors must be replaced with 36" wide door leaves to provide required clearance. This will require reconstruction the door frame and wall opening.
  At Cafeteria and Media Center doors pairs, door width clearances are narrower than allowed.
- Door pairs at Cafeteria and Media Center must be replaced with 36" wide door leaves to provide required clearance. This will require reconstruction the door frame and wall opening.

(AAB 26.11 - Door Hardware)

- Existing hardware throughout building is not compliant and must be replaced with lever-type hardware.

(AAB 26.1.2 - Exterior Exit Doors)

Assembly areas within the building all exceed the minimum occupancy of 150 persons and must provide an unobstructed accessible route to the exterior.

- All exterior steps at doors must be provided with ramps for egress.

AAB 27.00 – Stairs

(AAB 27.3 – Nosings)

Stair nosings are required to be angled or radiused and not abrupt. All existing stair nosings have a protruding lip at each tread.

- The stair treads need to be modified to comply. Modification of the treads with tread covers is necessary to reduce the abrupt nosing.

(AAB 27.4 – Railings)

Stair handrails must be provided on both sides of the stair, continuous, and have extensions at the top and bottom of the wall mounted rails.

- All stair railings need to be modified to comply with handrail requirements. The wall mounted handrails do not have extensions at the top and bottom. Interior guardrails do not have handrails at all and guardrails are interrupted by newel posts and are not continuous.

AAB 28.00 – Elevator

(AAB 28.1) Multistory buildings are required to be served by an elevator.

- The building must be modified to provide an elevator to access all floors of the building.

AAB 30.00 – Public Toilet Rooms

Existing toilet rooms do not comply with accessibility requirements and must be modified. Total fixture count for these toilet rooms should comply with the requirements of the Plumbing Code discussed above and be distributed to serve the Assembly occupancy in the building. However, as discussed in 30.14 below, the clearance and mounting height requirements for accessible toilet fixtures for Elementary Schools differs from the requirements for adults and the same accessible toilet fixtures cannot be used for both Elementary school students and Public use.

(AAB 30.1)

A minimum of one toilet and sink in each toilet room shall be accessible. Toilet partitions in all toilet rooms are not compliant and no student toilets are currently compliant. Plumbing fixtures do not comply in mounting height or location. Maneuvering clearances are not compliant. Although not currently required by AAB, staff toilets will be regulated under the revised AAB to be published in the near future.

- Modifications to existing toilet facilities to provide compliant access to fixtures will require deletion of existing fixtures and reduction in overall fixture count.

- Modification to single user staff toilet rooms to provide compliant access will require enlargement or relocation of these rooms.

(AAB 30.14) Children's toilet room in Elementary schools have specific clearance and mounting height requirements for grade levels K-3 and 4-6 which differ from clearance and mounting height requirements for adults. The student toilet rooms in the building do not comply..

- Toilet rooms specifically intended to serve the grade levels K-3 and 4-6 must provide an accessible toilet and sink which is compliant. All toilet rooms must be modified to provide these compliant fixtures. Because adult fixture clearance and mounting height requirements differ from the requirements for accessible Elementary school fixtures, separate toilet fixtures and sinks must be provided for adults using the public assembly facilities. Single user staff toilet rooms may be used for this purpose if allowed for use by the public and constructed on appropriate floors.

AAB 31.00 – Public Bathing Rooms

(AAB 31.7) Locker rooms and showers are not provided and compliance is not required.

AAB 32.00 - Kitchens

(AAB 32.1) Commercial kitchens are not regulated by the AAB.

AAB 36.00 – Drinking Fountains

(AAB 36.1.1)

Drinking fountains are provided within the building but are not accessible.

- These must be replaced with new fixtures with 2 level spouts.

AAB 41.00 – Signage

(AAB 41.00)

Room signage with braille must be provided at all 'permanent rooms and spaces' as well as code required egress signage. Directional signage, where provided, shall be compliant.

- Compliant signage and Symbols of Accessibility are missing throughout building. Where exit signs indicate an accessible route, if all routes are not accessible, these signs shall include the symbol of accessibility.

Overview

The Davis Thayer School, located in the central part of Franklin, on the western of the downtown area, occupies a 3.48 acre site bounded to the south by Rte. 140 , to the west by Union Street, to the north by School Street and the to the east by the Dean College Campus. The site is approximately 270' wide and 530' long (north-south axis). The brick, three story school is located on the southern half of the property with an open field / playground to the north. A group of portable classrooms has been added at the southwest corner of the building. Vehicle circulation and parking is mostly to the eastern side of the property.

General Site Plan

The property is zoned Single Family IV.

	Area SF	Front Yard	Side Yard	Rear Yard	Max. Hgt.		Max % of lot Coverage	
					Stories	Feet	Structures	Structures + Paving
SF IV	15,000	30	20	20	3	35	30%	35%
Davis Thayer Site	151,589	95	50	288	3		18,544sf (12.23%)	61,600sf (40.63%)

The total area of the site is 151,589 sf while the building area of both the portables and the main building is 46,334 gsf. The maximum percentage of impervious cover for the site exceeds the 30% for both structures and paving. However, due to the fact that the structure is a school and is owned by the town of Franklin, the site is exempt from this statute as well as having to apply for a site plan review from the Planning Board.

The play areas north of the school building include a softball field, whose center field currently plays at 260' but the right field and left field is significantly smaller, due to the shape and size of the lot. Playgrounds include play structures and basketball hoops. In the upper north east corner of the site, a stone retaining wall bisected by a stair, separates a grassy parcel, currently not used by the school. Some asphalt on the north end of this parcel may indicate that it was once a residence that has since been demolished.

Remnants of an original foundation for the former Ray School remain below grade in the north corner of the site along School Street. Loose debris from the demolition was reportedly buried in the foundation hole and requires filling periodically as organic material decomposes. Ideally, the original foundation debris and unsuitable material should be removed and replaced with suitable fill.

Site Pavements

The asphalt parking spaces and driveways are in varying states of repair. Some asphalt, such as the new stacking area along the lawn play area, is relatively new. Other sections are older, with evident cracking and signs of water damage. The asphalt has been recently been restriped. Several areas have been patched, particularly on the north side of the building where the paved play is located. This paved play is striped for hopscotch, four square and crosswalk striping to the athletic fields from the three exits from the building.
Sidewalks, which are all concrete, are all of recent construction and in good condition. The walks include new stairs from the intersection of Rte. 140 and Union that connect to the portables (which, once the portables are removed, can be continued to the western most front entrance.

Water damage at Rte. 140

Patching and cracking north of the school

ADA Access

The building was constructed with an elevated first floor so most access is from stairs and all accessible access by concrete or wood ramps. Prior to the additions of the portables, both primary access doors facing Rte. 140 were entered by a series of steps. Two of the rear doors to the building have a stair/ ramp combination while the western most door has only stairs. The railings for the two doors with ramps appear to be compliant, with proper heights, rails and extensions, even though some of the rails are bent. The portable classrooms are accessed from the outside by wooden stairs and one wooden ramp. Access to the basement is by a set of stairs.

ADA parking on site consists of two wide parking spaces, at one time painted blue overall, but now with only a blue square for the HC symbol. These are non-compliant due to missing striping, incorrect signage and no designated loading zone. Per the 60 parking spaces on site, a total of 3 ADA spaces are required by law. The school is missing a passenger drop off area, (5' x 20') that would be normally striped and signed.

While the play structures and playground have some accessible features, there are no set accessible paths to the softball field or any designated viewing areas once the striping ends at the asphalt edge.

HC parking area

Northeast entrance and ramp

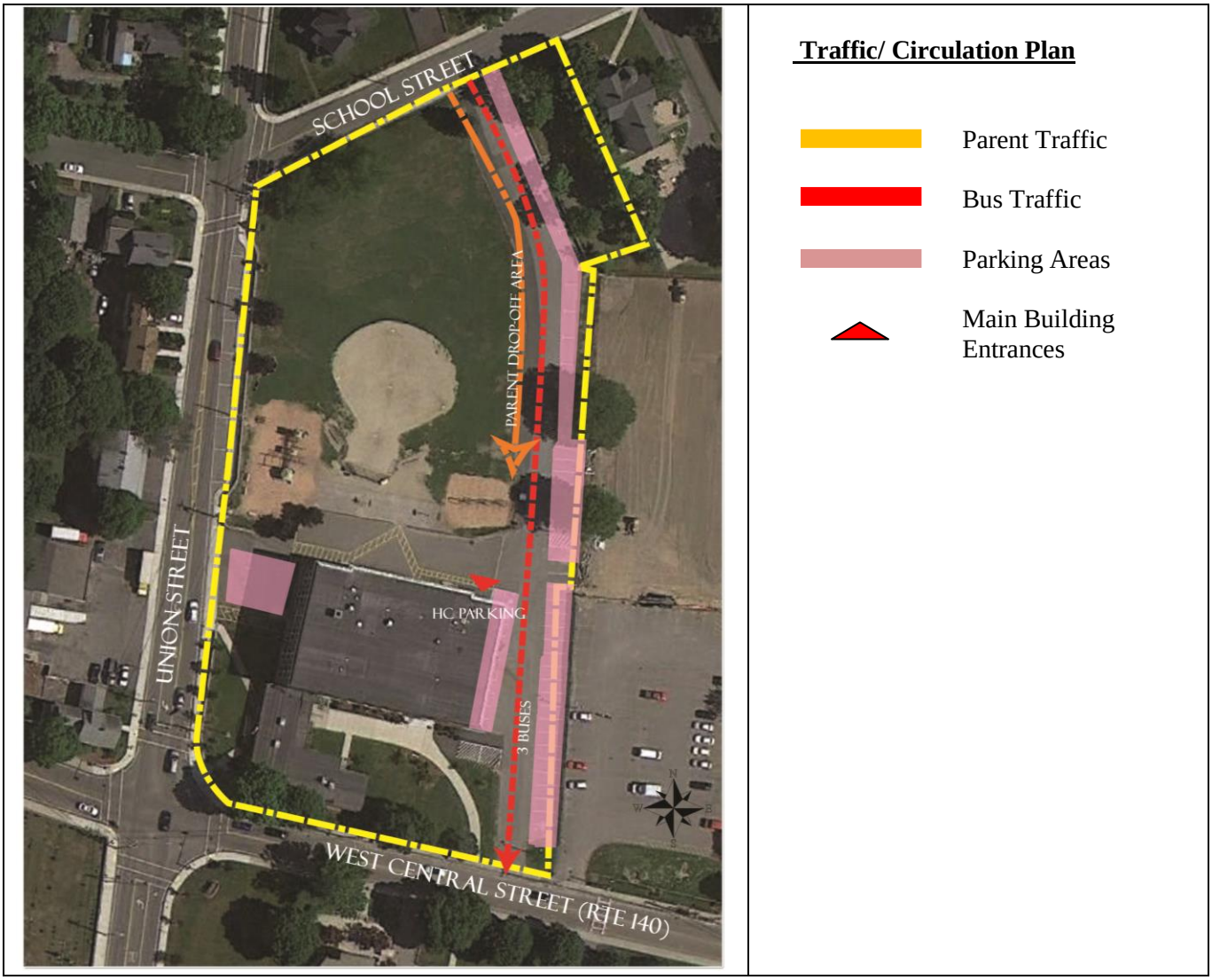
Parking

There are a total of 60 spaces on the school site. Eleven (11) parallel parking spaces are placed on the east side of the driveway accessed from School Street, ending at the oak tree. Thirty (30) 90º parking spaces line the rest of the Dean College property line down to Rte. 140. Ten more spaces are placed along the school's eastern wall (two of which are HC and two of which are occupied by dumpsters). There is no parking at the front of the school (including on Rte. 140). On the western edge of the building there is a striped grid pattern for nine vehicles on the west façade of the school. This western parking grid is on a steep slope down to Union Street (drop of about 5'). Additional street parking (7 spaces) has recently been added on Union Street that can be used for the school. Service deliveries are to the west side of the school, where the cafeteria and kitchen are located.

Traffic Patterns

The morning operations were observed on a typical school day in December, 2012. Approximately 20-30 students arrived by foot with their parents and congregated at the north east door, on the asphalt. Most pedestrians approached from the School Street entrance while a few came off of Union Street. Parents arriving in cars entered from School Street and stacked up, beginning at the chain link fence gate by the swings, on the newly added strip of pavement on the west side of the entrance driveway. This strip holds about 13 vehicles before vehicles begin to overflow on to School Street. The three buses that serve the school arrived by the same entrance and stacked up on the driveway, parallel to the parents dropping off students. Once the buses discharged the students and left the premises, the parents were allowed to discharge their children and follow the buses to Rte. 140 in order to exit the property. There were no vehicles traveling along the north side of the school building,

where the gathered students congregated. There was only about one or two minutes where any vehicle actually was backed up onto School Street. Teachers arrived generally prior to any buses arriving or any children entering the school. Due to the weather, no use of bicycles was observed.



Fencing

Chain link fencing is used around the entire perimeter of the site for the safety of the students. A mixture of galvanized and black vinyl is used around the site. A two double swing gates (with no fabric); one at the School Street entrance and the other by the new storage shed) allows the school play grounds to be closed to vehicular traffic. Most of the fence around the play area and along the property line north of the building is 4' in height. The fence turns 6' tall where the property is bordered by the Dean College Parking lot. Sections of this fence at its south end have been pushed over at an angle due to snow plowing. Another double swing gate is located by the new storage shed that ties into the fence that runs between the paved and soft play areas. Chain link fence runs the entire perimeter of the south boundary (with the exception of the driveway entrance) turns the corner at Union and Rte. 140 and ends at the service area on the west side of the school. Additional chain link fence

includes the backstop for the softball field and a fence separating the hard play surface directly north of the school from the rest of the playground. Most of the chain link fence is in good condition, with small exceptions being where foundations are exposed or some fabric and rails are rusting. A new black vinyl 4' chain link fence is installed on top of the new retaining wall along Union Street. A simple tension wire is holding the bottom of the fence in place but is pulling away in places. It would be recommended to put pipe railings at the bottom of the fence to secure it in place to prevent objects or people from passing under it.

Fence on retaining wall, fabric pulling away

Fence bent out of place/ Dean College property line

Play Structure

The playground consists of a play structure by Miracle Recreation, a structure for 6 swings, a picnic table and some benches. A general review of the play structure was done by M.E. Obrien and Sons. Their comments are the following:

1. The structure does generally meet ADA.
2. Some parts show rust and need to be sanded, primed and painted.
3. There is a missing wheel on the pipe barrier.
4. The picnic table and benches have been vandalized and should be replaced.
5. Due to drainage patterns passing directly through the play structure, much of the wood mulch is being washed toward the retaining wall on Union Street. Drainage should be installed to prevent this in the future.

Miracle Recreation Play structure

Damaged Picnic table

Additional Site Amenities

Union Street has a new retaining wall separating the playground area from the sidewalk. Parallel parking was added to the east side of the street, pushing a new concrete sidewalk into the school grounds. An access stair at the south end of the wall provides entry to the playground from the street.

Signage consists of one decorative sign facing Rte. 140 that has some planting at its base. The rest of the signage is standard street signage, some mounted to utility poles and some on sign posts. Some of the signposts have been knocked crooked due to snow plowinG.

A standalone bicycle rack has been placed on the north side of the building but is moveable. A metal storage box is chained to the building at the northeast corner, probably to hold outdoor play items. There is a small basketball court for youth within the play area, behind the softball backstop. Wheeled Trash containers were observed on the north side of the building while the dumpsters (two) are located in parking spaces on the East side of the building, below windows. A storage bin and two team benches are associated the softball field.

Utility lines run on the school side of the road along Union Street and Rte. 140. The school is serviced by town water, sewer and gas.

Drainage

Drainage problems are mostly related to the playground where inadequate drainage in the stone dust infield and by the swings causes ponding and subsequently mud when the areas are subject to heavy foot traffic. Most of this water is due to sheet flow directly from the driveway /stacking area. A major drainage swale runs under the playscape, as mentioned previously, which drains to the rear of the retaining wall at Union Avenue. Not only is this swale removing large amounts of wood chips that are necessary for fall safety at the playground, it is also eroding the rear of the wall, exposing the rear façade and possibly subjecting it to failure in the future. There is a small erosion problem by the northwest corner of the Dean College parking lot, but this may be caused by overuse from students. This erosion has exposed chain link fence posts as well as the end of the retaining wall supporting the upper platform currently not used by the school. The majority of the south side of the school simply drains onto Rte. 140. No drainage system was observed on site, other than the drainage for the accessway to the basement on the west side of the school.

Drainage running under the play structure

Low area retaining water, turning to mud

Vegetation

The vegetation on the school site is in good condition. Two large oak trees mark the eastern border with Dean College. The front of the school, facing south has a mulched planting bed which includes small junipers and other evergreen shrubs, including hollies as well as two butterfly bushes. Two small shrubs in terracotta pots flank the entrance stairs. A small garden with grasses, euonymus and small shrubs with a small children's bench is well maintained and mulched. Several shrubs or trees have been planted as memorial plants, offered by different classes. The portables have limited vegetation around them, mostly arborvitae that have been planted to screen propane tanks used to heat the portables. Maple trees line the fence line along Rte. 140. Above the newly

reconstructed retaining wall along Union Street, new trees have been planted. Several trees and shrubs have been planted on the south side of the play structure, which provide shade in the summer months for those using the playground and sitting on the benches. Heavy play around these shrubs have resulted in compact earth. These plants are kept trimmed. The northern play area is dotted with three or four mature trees those being maples and spruce. These plants provide a shady area as well as some buffer from the road.

OVERVIEW

The Davis Thayer School structure appears to be sound based on our observations of the the existing conditions. The only areas of concern involve the exterior masonry which is exhibiting damage and deterioration due to the age of the building and water infiltration through the exterior brick walls. The other issue involves the exterior wood sheathing deterioroation on the Portable Classrooms. Our structural review of the building is based only on observations of areas which were not concealed by exterior grades, slabs, finishes or other obstructions. Each of the items addressed in the report should be repaired to eliminate continued damage to the building that will increase in cost as the deterioration spreads in the walls.

STRUCTURAL EVALUATION

Description

The school building is a multi story structure consisting of a wood framed roof, cast in place reinforced concrete ribbed floor slabs and masonry bearing walls with steel framing for large open span areas and reinforced concrete foundation walls and footings.

South face of School

The roof framing is constructed with 2X8 joists which support tongue and groove wood roof decking. The joists span between exterior masonry bearing walls and interior wood stud bearing walls. The wood bearing walls transfer the roof loads onto wood ceiling joists or steel framing that spans the larger open spaces. The ceiling joists span between interior and exterior masonry bearing walls.

Tongue and groove wood roof deck at hatch

Wood roof joists and deck and supporting bearing walls

Bearing stud walls throughout the attic space

The floor framing consists of concrete rib slabs that span between bearing walls located on the interior and exterior. This type framing was built to provide support for the Main, Second and Third floors.

Cast in place concrete tee floor slab

Cast in place concrete tee floor slab viewed from the Boiler Room

The exterior walls are constructed with a combination of exterior brick wythe and inner wythe terra-cotta block with out a cavity to drain the wall. The masonry above the window openings is supported by a combination of flat arches bearing on steel lintel angles.

Exterior brick wythe viewed along south wall

Exterior masonry bearing walls looking at east face

Existing Conditions

The overall condition of the structural system for the school is sound with only a few concerns.

- The exterior masonry is exhibiting signs of considerable wear to the mortar joints. The mortar surface is rough from continual exposure to wind driven rain and age of the building. The course surface will allow water seepage into the joints which then is subjected to freeze/thaw cycles that causes spalling of the mortar and enables additional water to be absorbed by the masonry.

Spalled bricks

Isolated spalled brick faces

Isolated spalling brick on north face of building

Spalling brick face

Spalling mortar joints

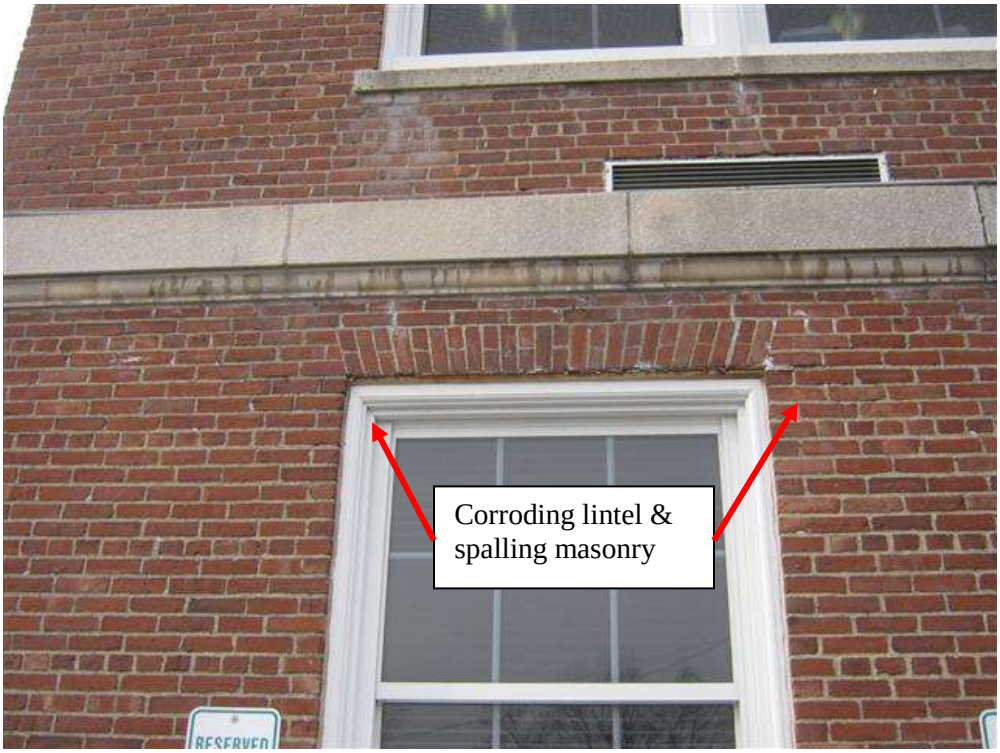
- The next concern also involves the exterior masonry walls at the steel lintels. Several of the lintels are exhibiting corrosion to the steel angles. The corrosion is forcing the exterior brick to move outward which allows more water to enter behind the lintel. Corrosion will accelerate as the mortar and brick open joints through the movement of the brick. Weep holes and flashing are not visitble from the exterior of the building. The flashing would protect the steel angles and provide end dams to keep any water entering the wall above the windows from draining into the brick beyond. The weep holes would be located directly on top of the flashing and provide drainage of the water to the exterior.

Spalled mortar at lintel bearing condition

Spalled mortar joint at steel lintel

Close up of spalling and cracking brick indicating movement in the lintel due to corrosion

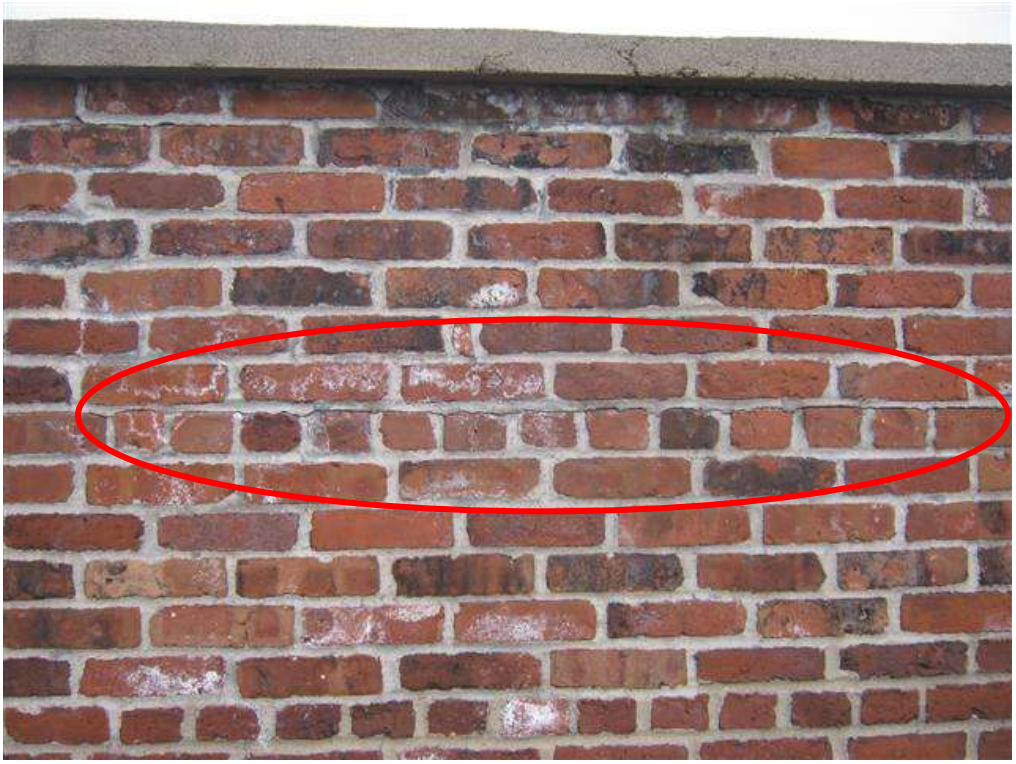
Visible lintel corrosion



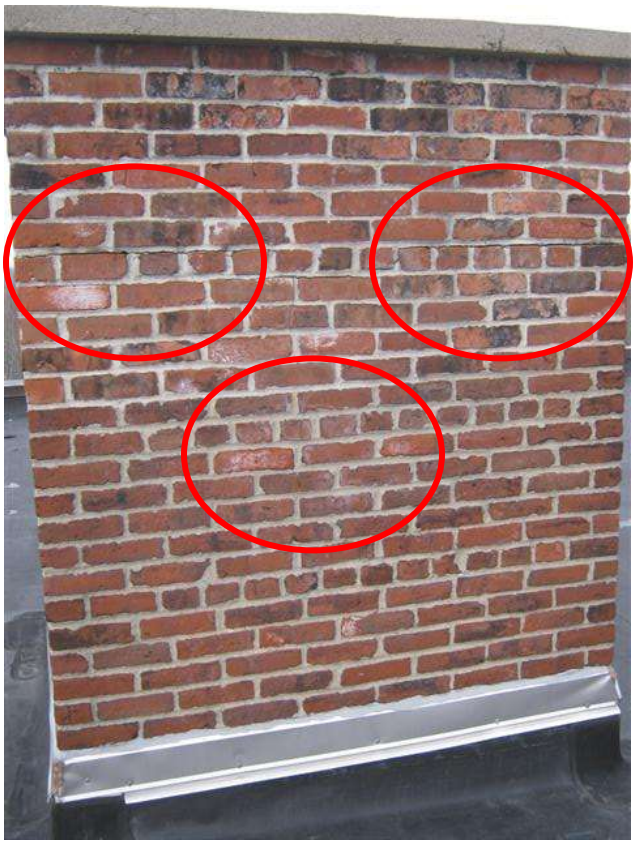
Corrosion damage to lintel and movement in exterior brick due to corrosion

- The masonry chimney projecting above the roof line requires repairs. Vertical and horizontal cracks and spalling have developed in the brick and mortar. The movement and cracking has allowed additional water to enter into the wall. As the brick and mortar absorb the water, the damage will increase.

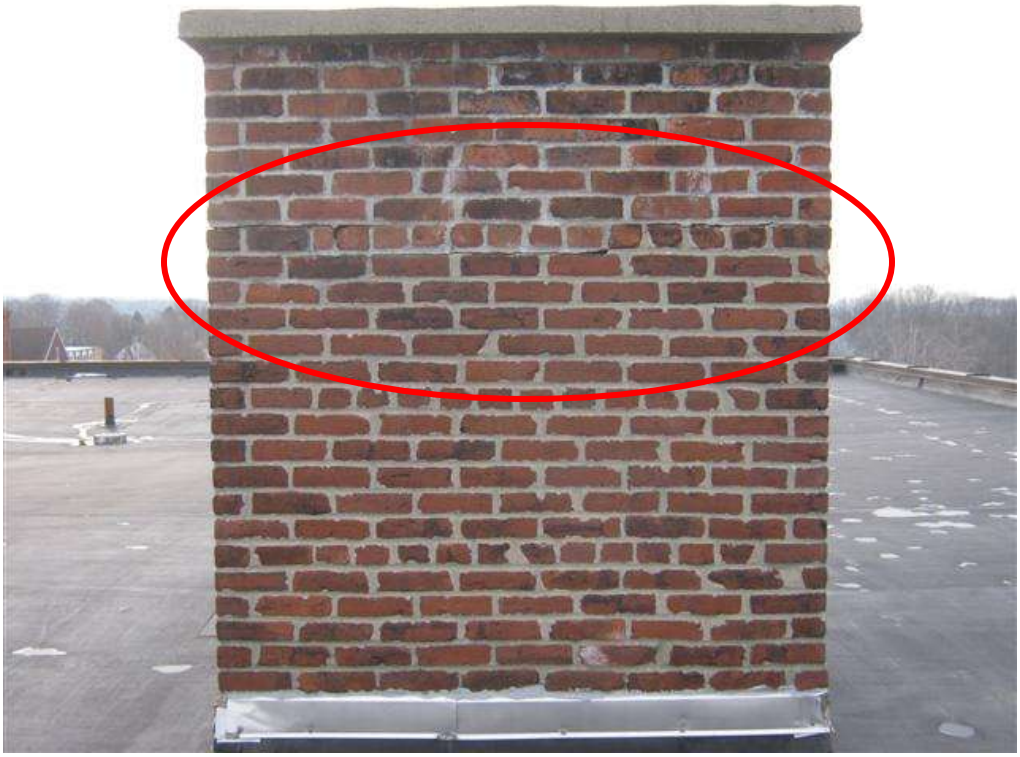
Spalling and cracking in chimney brick and cap looking north



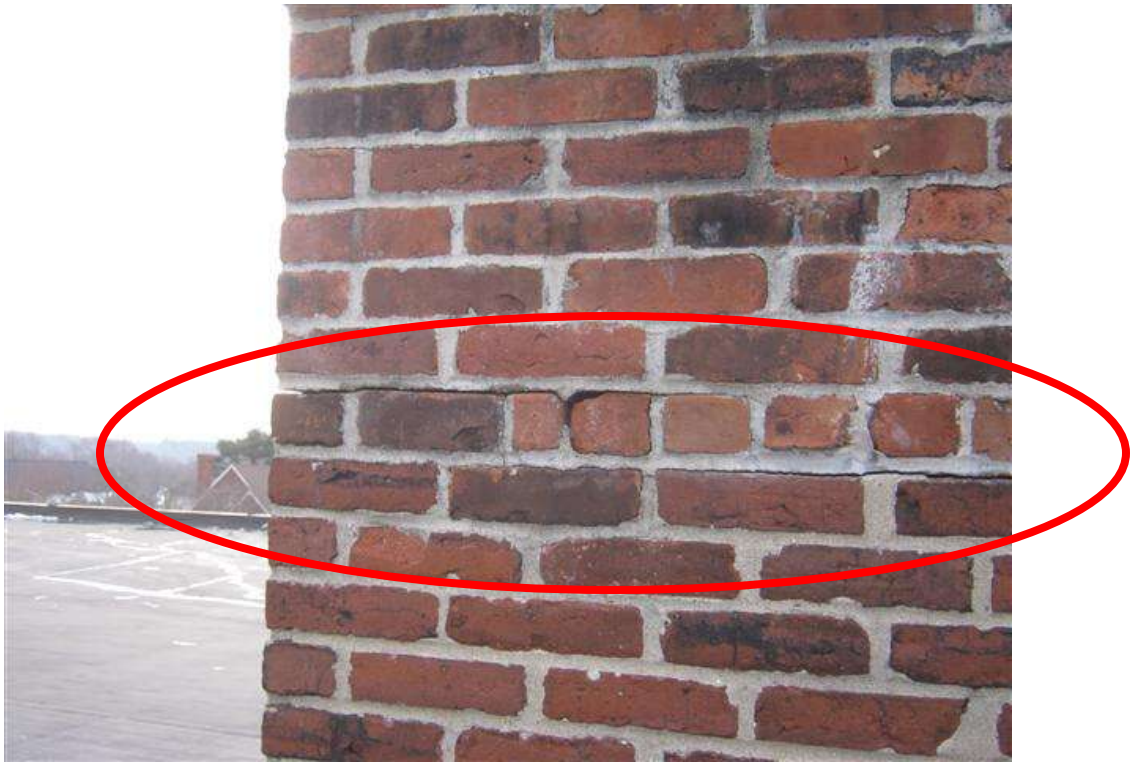
Close up of cracks and spalling



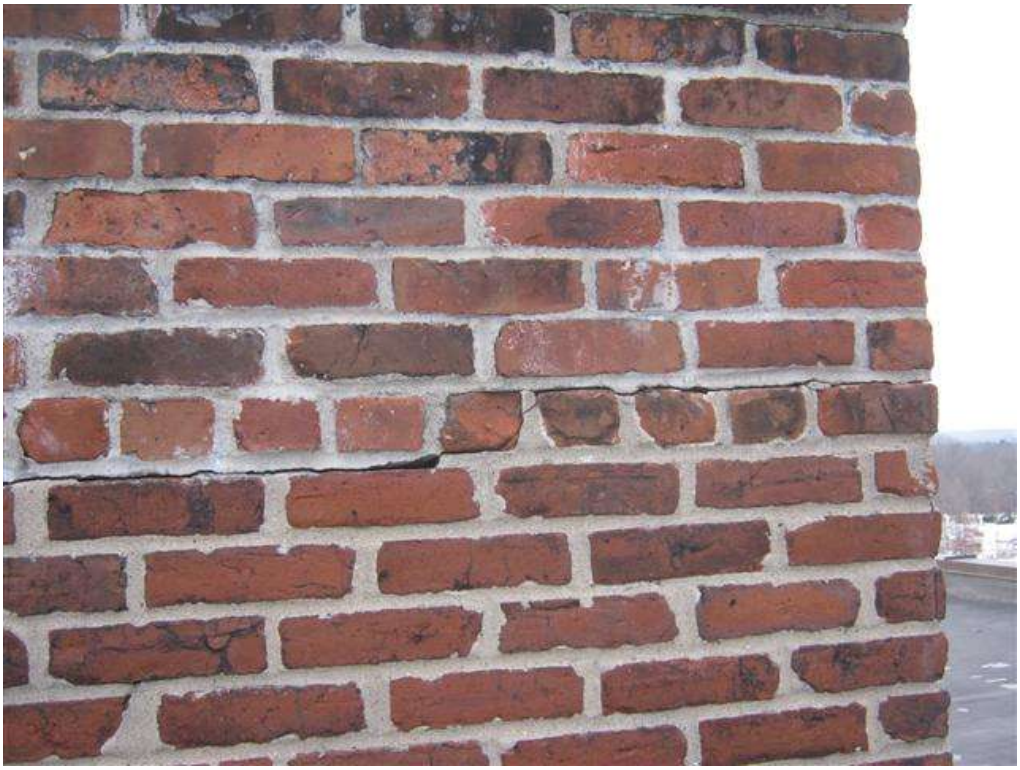
The east face of chimney with spalling brick face



Cracks, spalling and movement in brick on west face



Close up of cracks, spalling and movent



Movement and cracking in chimney

- The exterior wood sheathed portable classrooms are showing signs of severe rotting and possible mold growth on the exposed face of the sheathing. A portion of the condition is caused by missing downspouts and damaged gutters that allow water to be able to splash against the walls and soak the porous sheathing. In areas where the sheating deterioration is excessive, possible rotting to the wall framing may be occurring.

Portable classrooms with deteriorating sheathing along the west face

A sizable gap was observed between the original construction and the portable at the south west corner of the facility where wind driven rain enters the void between the structures creating a favorable environment for mold and mildew.

Sheathing turning green due to constant wetting

Recommendations

- The exterior brick wythe should be completely repointed which would include the routing of all mortar joints and replacement of all damaged bricks. At the same time as the repointing is occurring, all corroding lintels should be removed and replaced. This repair will require that the windows be termporarily removed to allow access to the steel angles. The flat arches and on course of brick must be removed to install the new hot dipped galvanized angles. Flashing, end dams and weep holes will be installed in the outer wythe brick wall above the new lintels.

- The exterior brick on the chimney above the roof should be removed and rebuilt. The new brick will anchored to the inner wythe masonry and flashed properly at the roof.

- The damaged sheathing on the modular classrooms must be replaced to avoid further damage to the framing. The void between the portable classrooms and the original construction should be sealed with a vertical expansion joint cover. The missing downspout should be replaced and the leak in the gutter on the south elevation should be investigated and repaired.At the time that the sheathing is removed, an Engineer from Kaestle Boos Associates should be present to instpect the wall framing for deterioration.

OVERVIEW

The Davis Thayer Elementary School was constructed in 1924 as a high school for the Town of Franklin. Still in use is the original gymnasium located on the basement level, the original cafeteria located on the first floor, and the auditorium which is currently used as a media center / library on the second floor. The media center and gymnasium are both 2 stories in height. Over time, rooms have been adapted and subdivided to meet the classroom needs of the school. Rooms originally used as Boys and Girls locker rooms with showers are now used as a music classroom and a custodial storage room; the showers are still in place with ceramic tiled floors and walls. A renovation in 1973 created classroom spaces, expanded the size of the cafeteria, replaced doors and hardware, installed a new roof, and installed ramps for accessibility.

Egress is provided by two stair towers at each of the main entrances on the front of the building which extend from the First to the Third Floor. Single stairs provide egress from the Basement gymnasium to the exit doors at each side at the rear of the building.

The original building is listed in the Town Assessor Property Data at 45,890 gross square feet and is three stories over a basement. This square footage includes the area of four modular classrooms, 3,872 square feet, which were added to the front of the building on West Central Street. A gymnsasium and boiler room exist on the Basement level at approximately 8,418 square feet, however, this area is not included in the building area on the property data card.

EXTERIOR ENVELOPE

Please refer to the Structural Evaluation in another chapter of this study for a review of the exterior brick veneer and wood sheating on the mobile classrooms.

Windows and Doors

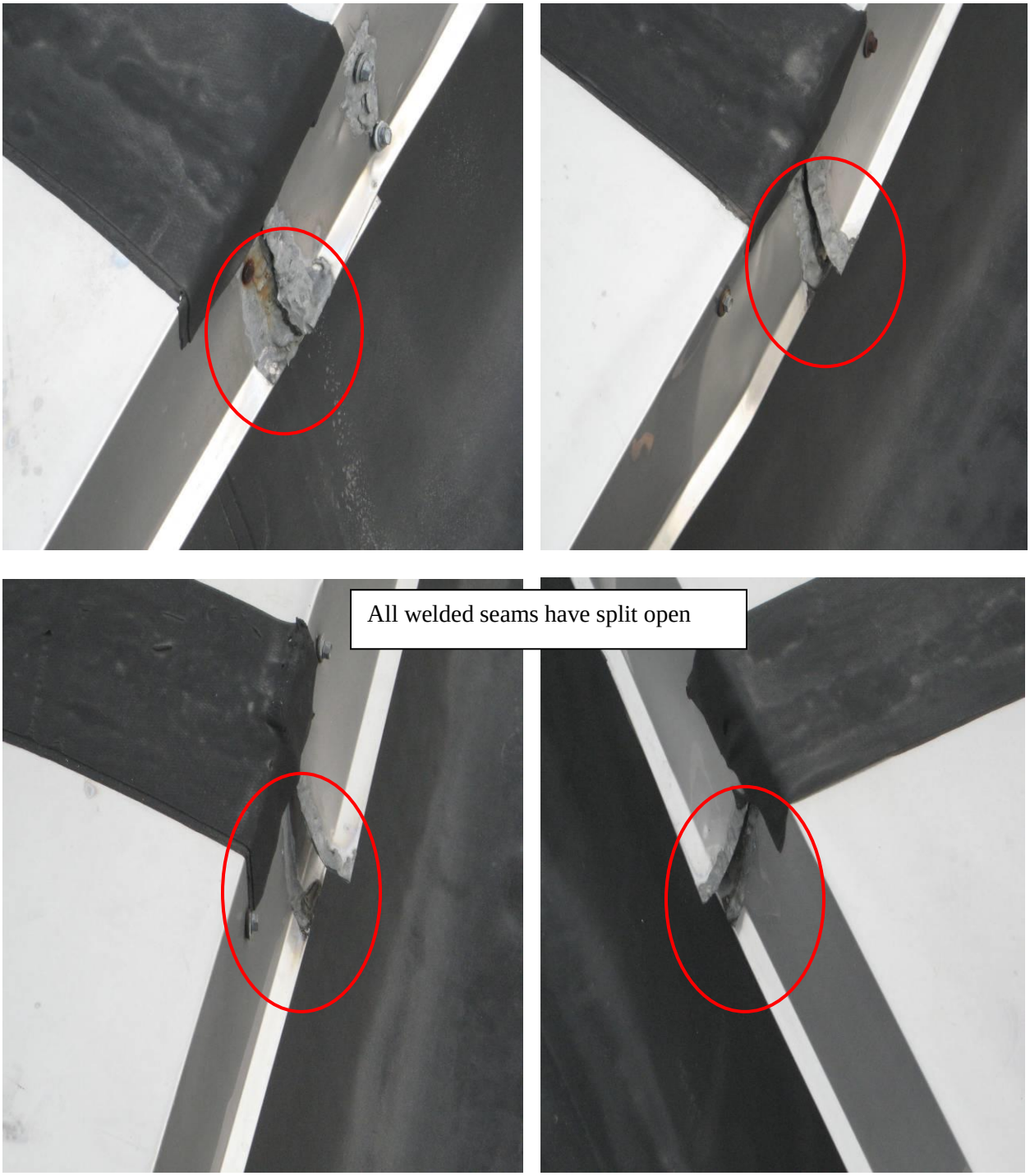
The windows are a residential/light commercial type aluminum replacement window with the original wood frames left in place. These were replaced recently and appear to be in excellent condition. However, the two original circular windows in the stairwells above the entrances have not been replaced or protected and consequently the wood has deteriorated to a point where wind driven rain infiltrates through the window. Exit doors at the main entrances are in good condition with new exit devices.

Roofing

The Davis Thayer School roof was built in 1924; the current roof consists of a fully adhered EPDM membrane on a wood deck. The EPDM membrane appears to be less than 10 years old and is in good shape with no reported leaks. The slopes to the drains are greater than 1/4" per foot and no ponding water was observed.

No open or damaged lap seams were observed.

The stainless steel parapet copings were improperly welded and the majority of the welded joints have split open.



The open seams at the joints between sections of coping were patched with peel and stick flashing tape however several taped seams are splitting open. If the roof membrane was not extended under the copings to seal the masonry at the top of the parapets water infiltration into the wall assembly is most likely occurring.

Nails were driven through the top of the original copper parapet flashing. The nails are backing out and can allow water to infiltrate into the wall system.

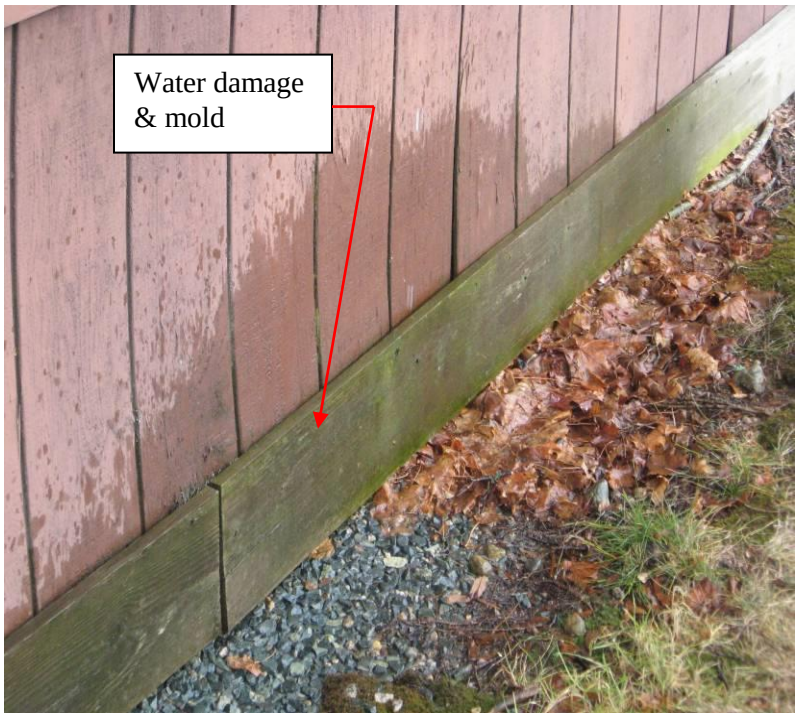
The fully-adhered EPDM membrane roof on the modular classroom addition is in good condition.

A missing downspout was observed at the south west corner of the portable. Water is splashing down the face of the portable damaging the wood veneer. The rain water is also ponding at the base of the wall in lieu of being directed away from the building towards the street.

The gutter on the south elevation is leaking. Water dripping down the face of the wood veneer is getting water damage and mold.


Gutter leak


Water damage
& mold


Water damage
& mold

Recommendations

- The existing EPDM roof is in good condition and should provide adequate waterproof protection for another 5 to 7 years. However, the stainless steel copings should be removed and replaced with copper or copper colored aluminum sheet metal with properly sealed seams. In the process of removing and replacing the stainless steel copings attention should be given to inspect the EPDM membrane to make sure that it extends over the top of the parapets to completely seal and protect the masonry walls.

- The two circular windows should be removed and new aluminum framed double pane windows be installed. If that is not possible at this time, a circular Plexiglas window should be placed over the exterior face of the original wood windows to provide protection from the elements and prevent further damage.

INTERIOR BUILDING ELEMENTS

Interior Finishes

Interior finishes are original plaster walls with paint, acoustical tile ceilings, and vinyl floor tile or carpet.

Flooring is mostly vinyl tile on the First floor and carpet throughout on the Second and Third Floors. Previous renovation documents indicate that corridors and stairways originally were finished with terrazzo. Much of the flooring is original to the building except where replaced in the 1973 renovation and most of the carpeted areas are installed over the original floor finishes.

Much of the surface of the classroom walls are covered with displays and student work and so the condition of these walls cannot be thoroughly evaluated, however, extensive cracking is present in the plaster walls and ceiling in visible areas in the Media Center and stairways. This may be indicative of the condition of other areas of the building. The interior surface of the exterior walls is finished with one inch of insulation with plaster finish; there is no insulation in the minimal masonry cavity of the exterior walls.
Original plaster ceilings are concealed by suspended acoustical tile ceilings in classrooms or adhered acoustical tile in other rooms. The suspended acoustical tiles are in fair condition and are sagging and curling within the suspended ceiling grid.

- Please refer to the Hazardous Materials report for a discussion regarding abatement for flooring material, doors, and insulation and removal requirements for lead paint.

On the lower (basement) level of the building, the wood floor in the gymnasium has been patched in several areas. This floor is past its useful life.

Recommendations:

- All interior flooring finishes should be replaced. Most of the flooring will be removed and replaced as part of an abatement plan and new finishes should be provided.
- The Gym floor has visible patches in the wood floor and has been repaired in the past for water damage. The wood floor is original to the building and is assumed, based on the time of installation, to not have a vapor barrier. A topical vapor barrier should be installed over the existing slab, the slab recess filled with cementitious underlayment, and a synthetic poured floor provided which is appropriate for use by children of this age group.

- All wall surfaces should be patched to repair cracking plaster and repainted.
- All acoustical ceilings should be replaced as part of any renovation project. A building renovation will require extensive work above the ceiling for systems replacement or upgrade and the ceilings will be further damaged.
- Terrazzo floor finishes in corridors and stairwells should be ground and polished to restore the finish.

Interior Doors and Frames

Interior doors are painted steel or stained wood in metal frames. A few doors have been installed with residential grade painted wood frames and casings. Most of the doors are presumed to have been part of the original construction and show wear, dents, and other damage. Classroom doors are set in deep recesses in the corridor walls. During the 1973 renovation, most of the classroom doors were moved from the corridor face to the classroom side of these recesses creating non-compliant and non-handicapped accessible entrances to these rooms.
Doors pairs at stairwells, in corridors, and at the Media Center are not wide enough to comply with egress requirements of the Code. Throughout the building, doors do not provide required clearances, hardware, and width for handicapped accessibility. Old style crashbars are still in place on egress doors and are not compliant with current Code.

Recommendations:

- Door pairs at stairs and common rooms should be replaced with compliant doors of required width, rating and hardware.
- Doors to classrooms should be demolished and replaced with new doors on the corridor face or be replaced with new doors swinging into the classroom to provide accessible clearances and hardware. Where this cannot be provided, automatic door operators should be installed. This is not recommended, however, as this requires the doors to be provided with a door closer and may be difficult for young children to operate.
- All other doors serving common areas and storage rooms should be replace with new doors and hardware to provide accessible entrances.

Classroom Spaces

The building has a single large classroom space on each side of the building on the Second and Third floors. These classrooms were each subdivided into three undersized classrooms (700 sf +/-) with temporary partitions which extend only to the underside of the acoustical ceiling tile grid. This construction creates an acoustically substandard condition between classrooms. The classroom size affects the ability for small group learning within each classroom requiring these activities to be moved to small rooms outside of the classroom or to the Media Center.
Recently, four modular classrooms were installed in front of the building and connected to the building with a corridor accessed from one of the front stairwells. At more than 900 sf each, these classroom spaces are larger than those provide in the building and are used for the Kindergarten classrooms. However, even as these classrooms are larger, they do not provide the recommended 1,200 sf size for a Kindergarten classroom.

Recommendations:

- Temporary classroom partitions should be replaced with acoustically compliant permanent construction.
- Classrooms should be enlarged to provide spaces compliant with recommended sizes of about 900 sf.
- Kindergarten spaces should be relocated to re-sized classroom spaces of compliant size.

Administration Spaces

The main office has been renovated over time to accommodate the needs of the staff. The Principal's office has been enlarged and the Nurse moved from the Administration office to a small office space in the treatment area. This has created a condition where private treatment of a student is impossible as the only cot available is located in the common Treatment space of the Nurse's office.
The Administration offices are undersized for the staff using the space. Controlled access is not provided through the Administration office as the main entrance door is remote from the administration location.
The Nurse's office is undersized and does not provide accessible entrances, cot space, or toilet rooms for patients.

Recommendations:

The Administration offices should be enlarged and reconfigured to provide adequate space for staff, secure storage for private material, and controlled access to the school.
The Nurse's office should be enlarged to provide adequate office space for the School Nurse, secure space for student files and medications, private cot space, and accessible toilet rooms for students/ patients.

Interior Common Spaces

The building has three large common spaces: the Gym in the Basement, Cafeteria on the First Floor, and the Media Center on the Second Floor. The Gym and Media Center are 2 story spaces. The Gym and Cafeteria, adjacent to the upper portion of the Gym on the First Floor, were both modified as part of the 1973 renovation. Cast in place concrete bleachers in the Gym were covered when the floor slab of the Cafeteria was extended to increase its size. Residual space under this floor slab on the bleachers is currently used as makeshift storage space for gymnasium equipment.
The Gym is undersized and does not provide a full size basketball court. There is minimal space beyond the sidelines of the court and no space beyond the endlines to the masonry walls and this presents a hazard to players on the court. Wall pads are provided on the endwalls but not the sidewalls or the bleachers. Storage space for gym equipment is not available and a gym teacher's office is not provided. There is a cast iron roof drain leader mounted on the sidewall which exits through the wall at about 5feet above the floor; this is a severe hazard for students and players using the court.
The Cafeteria, although expanded in 1973, is undersized for the school population of 350 students and requires 5 lunch periods. The kitchen equipment appears to be well maintained and in good condition, however, there is only one serving line and the operation seems to be very inefficient. The cafeteria is currently used as an after school daycare, also.
The Media Center is identified by a plaque as originally being an auditorium; the space is 2 stories in height and is not a comfortable space for quiet group study. The original plaster walls and ceiling moulding, which is in poor condition, cracked, and in need of repair, is very poor acoustically for this use.

Recommendations:

- The Gym floor should be replaced and wall padding provided on all walls, including the concrete columns. The roof drain pipe located on the sidewall must be moved. Storage space for gym equipment should be provided outside of the gym space.
- The cafeteria and kitchen should be increased in size to serve more students at fewer lunch periods. The kitchen and cafeteria will probably need to be relocated to provide this space as further growth will encroach more into the adjacent gym space. Kitchen equipment may be re-used, but a further evaluation for long term projected use is recommended.
- The Media Center should be refinished by patching and repairing all damaged plaster walls and ceilings. Further use of this space will be reviewed in the space use section of this report.

Interior Service Spaces

Toilet rooms are provided for students on all floors except the Basement Floor and for staff on the First, Second and Third Floors. None of these toilet rooms are accessible and the toilet rooms on the Second Floor have a 3" floor transition between the corridor and toilet room floor elevations. Toilet rooms do not provide accessible configurations for water closet stalls or sink for students in Grades K-6.

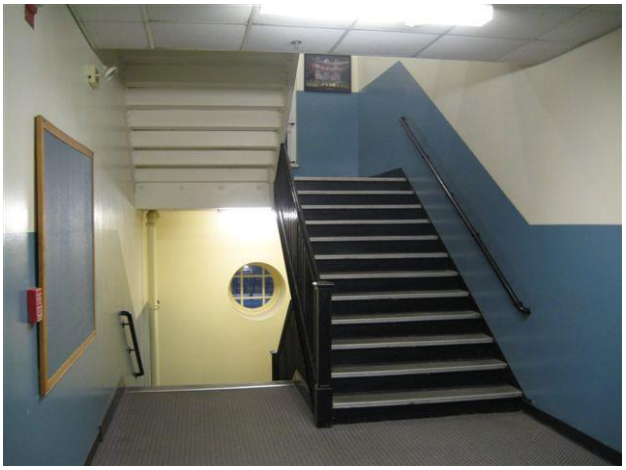
Storage rooms are provided in the Cafeteria and Media Center but not the Gym. Storage rooms for general classroom use are provide in the corridors because the classrooms are undersized and cannot accommodate the storage needs.
Custodial closets and storage spaces are provided in the original locker room spaces; in one space the original tiled shower space with shower fixtures remain in place with material stored in the shower. Custodial spaces are provided on each floor for equipment and supplies as no elevator exists to transport equipment.

Recommendations

- Toilet rooms should be reconstructed or relocated to provide compliant clearances and fixtures.
- Storage spaces should be provided within each re-sized classroom space for individual use. Common storage space can still be provide in corridors or common areas of the building.

Vertical Circulation

The building has 2 interior stairwells on the front of the school at each end of the main circulation corridor providing egress from the Second and Third Floors to grade. The Basement has 2 stairs providing egress from the Gym to grade at the rear of the school. Stairs are steel framed with concrete filled pans and terrazzo finish. The guardrails are not of compliant height and the interior stair railing is set between newel posts. Stair treads and risers are typically 7" high and 10" deep; these cannot be modified without rebuilding the entire stairwell.
No elevator is provided to access the Basement, Second, or Third floors.



Recommendations:

- Rails on the inside of the stairwells should be modified to provide a 42" high guardrail and a continuous handrail for compliance with Code and accessibility guidelines. Handrails on the wall side of the stairwells should be replaced with a railing with a code compliant profile. This handrail should be mounted at the required height and have extensions at the top and bottom of each flight.
- An elevator should be provided for compliant access to all floors.

Power

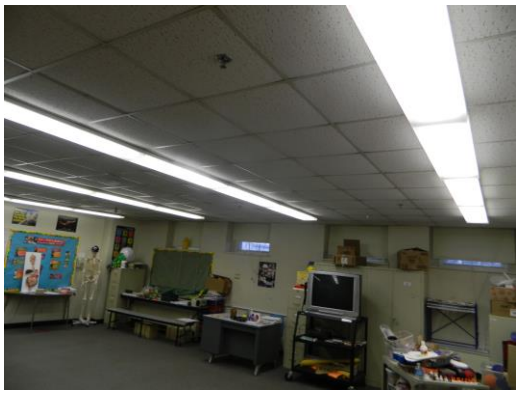
The building is served by a 400 Amp, 208V/120V, 3-phase, 4-wire Main Fused Switch located in the Electrical Room 147 in the basement. The switch and main distribution panel and much of the additional original electrical distribution equipment located throughout the building is manufactured by Westinghouse. The Main Panelboard appears to be in good working condition, but there is no evidence that circuit breakers are tested. Testing provides confidence that breakers will trip if required. The service is fed by an overhead service connection from a pole mounted transformer located on Union Street to a weatherhead service drop and conduit, exposed on the rear of the building, above the electric service.

Lighting and power panelboards are installed at various locations throughout the facility. Most of those were manufactured by Westinghouse and appear to be in fair to good condition. Locating a source for replacement breakers for these panelboards is difficult and in most cases not available, so replacement of these distribution panels are recommended. There are two Motor Control Centers that were installed as part of the original renovation project, and they serve the HVAC equipment. MCC #1 is located in the basement Mechanical Room. MCC #2 is located in the Janitors/Elec. Closet 316 on the third floor. Both appear to be in fair to good condition. Replacement parts are difficult to find. Replacement of the MCC depends on the extent of proposed HVAC system modifications.

Emergency Power

There is no emergency generator backup power to the school.

Lighting and Controls



Much of the fluorescent lighting is old and installed during the major remodel of ceiling and lighting replacement in 1972. Lenses have typically yellowed throughout. Replacement of the existing lighting is recommended, and fluorescent lighting ballasts installed before 1979 may contain PCB's. No lighting control system was found. A lighting control system for the entire building is recommended for compliance with current energy codes.

Emergency Lighting

Emergency lighting is provided throughout the facility by battery type wall mounted units. Emergency lighting is considered to be minimal for a facility of this type. Existing units range from fair to good condition.

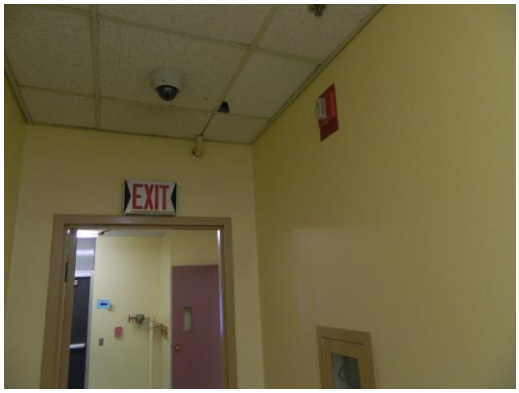
Fire Alarm

The Fire Alarm system serving the school was installed during an upgrade project and appears to be in good condition. The Fire Alarm Control Panel (FACP) is located in the in the basement. Re-use of the existing system may be possible. Further investigation is required to determine if parts are still available and whether the system meets present code requirements. A separate new fire alarm system was added for the portable classroom structures with complete alarm and notification devices. The system is provided, as no fire protection systems exist in the portable structures.

Clock and Speaker System

The existing PA system was provided as part of a building upgrade prior to the 1972 project. Many of the clock/speaker assemblies are not operational and have been modified with independent speakers and wall clocks. A new system is recommended.

Security

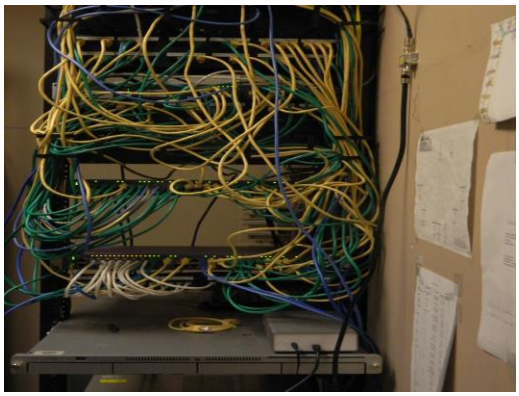


The security system consists of an exterior mounted security camera and screen monitor in the main office. Details and condition of the security system(s) are unknown. A new system is recommended.

Telephone

Telephone service appears to enter the building overhead from a pole located on Union Street.
An NEC 8400 Series phone system was installed in 2011. This system should be upgraded to IP and new handsets provided for all classrooms and administration offices.

Data/Information



Data appears to be mostly a hard wired network with limited wireless devices. The power for the media center equipment is fed through numerous power strips and extended cords draped over the floor below the tables. Some of the classrooms serving the upper grade levels have been fitted with smart board technology for internet access.

Fire Service System

Located within the basement general storage room 143 is a single 8" fire protection service entrance. The fire protection service enters the room through the foundation wall and transitions through an 8" elbow with a 6" reducing flange, drops and horizontally offsets above the floor to a floor mounted double check valve assembly and main system riser alarm valve. The system serves the school's combined standpipe riser, standpipe riser, wet fire protection system and remote located dry alarm riser located on the third floor. The dry alarm system riser assembly is located in the Teacher Toilet Room 321. The dry system feeds the attic dry sprinkler system. The existing old fire protection service located off of the existing domestic water service located in Water/Electric Room 147 at the basement, is still connected with a double check valve assembly. The system is currently valved off. The new system was installed in 2007 and appears to be in good working condition.

Attic

The Attic is protected with a dry sprinkler system throughout and is protected with a combination of exposed piping with upright heads. There is a suspended acoustical ceiling tile plenum located below the original third floor ceiling in the corridors and classrooms. The Media Center 304 has the original ornamental wood trimmed ceiling with dry sprinkler system.

Classrooms, Corridors and Support Spaces

A full coverage wet sprinkler system is installed that covers the three floors of the building. Recessed pendant heads are installed in the suspended acoustical ceiling tiles with concealed piping located above the ceiling. The original plaster ceilings are located in their original condition above the suspended acoustical ceiling and protect the wood framed construction.

Sprinkler coverage was noted as providing full coverage for this building.

Standpipes

Class 1 combined standpipe with hose valves and floor control valves is located in the main stair 279 and a Class 1 standpipe with hose valves is located in other stair near the administrative offices. Egress stairs are compliant and the standpipe system and combined standpipe will be utilized to serve the defined sprinkler zones identified in the overall building study with the existing floor control assemblies.

Summary

It appears that the existing fire service entrance is sufficient to feed the entire school with a fully sprinkled building system design along with the proposed addition. A new fire zone floor control assembly will need to be added for the new addition. Upgrades and integration with the building fire alarm system for zone and supervisory control will become a part of the overall building design.

Boiler Plant

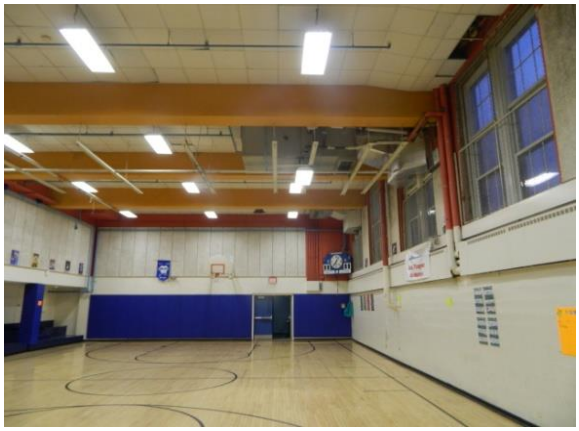
The building is served by a central gas fired gravity vented boiler plant located in the basement mechanical room. Two 1,419 MBH input Weil McLain Model 88 cast iron hot water boilers with gas fired burners were installed in 1996. The boilers feed hot water via a central pumping supply and return piping system to all unit ventilators, cabinet heaters, unit heaters, air handlers and perimeter radiation.

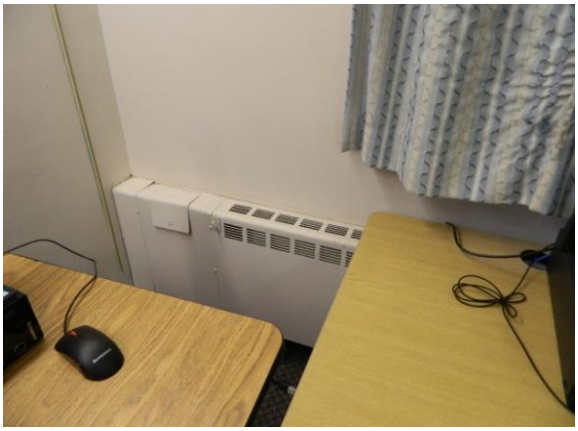
Cooling has been added via a window type air conditioning unit at the principal's office.

Air Side Equipment

Air handlers, AH-1 and 3, located in the mechanical rooms provide heating and ventilation air to the Library Media Center and Cafeteria. A dedicated free blow air handling unit AH-2 is located in the gymnasium. The classrooms, perimeter support spaces and perimeter offices are served by unit

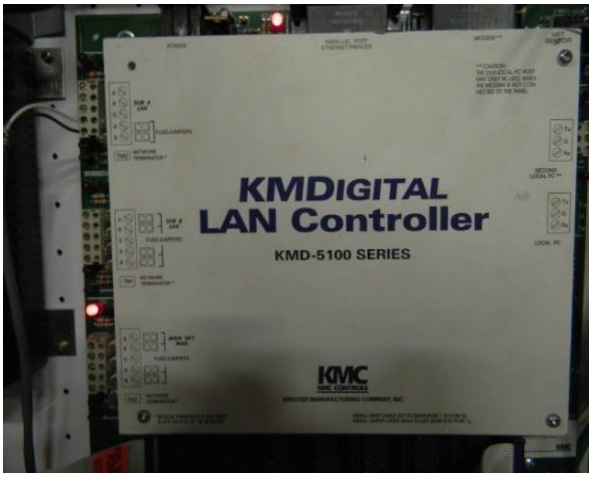
ventilators. The unit ventilators have hydronic coils. Some perimeter rooms have hydronic supplemental fin tube radiation. Cabinet heaters with hydronic coils are installed at entrances, corridors and stairs.





The building has multiple exhaust fan systems serving toilets, dishwasher, kitchen hood, offices, classrooms, storage, and mechanical spaces. These fans are typically located in the attic and high roof.

Controls



The HVAC controls are a pneumatic system. A controls system for the boiler plant and mechanical air handling equipment was installed in a recent upgrade and is via the control panel located in the basement mechanical room. The remaining HVAC equipment including unit ventilators are controlled locally via space thermostats.

Overall Condition

HVAC systems in the building wing are primarily original to the construction or installed in or prior to the 1972 renovation. The 1996 boiler renovation is the only major equipment upgrade that has been made. The equipment is in good condition for its age but is past the expected service life. All equipment is recommended for replacement with more efficient models that use less energy and provide better control. Existing ductwork is in good condition and portions could potentially be reused for a renovation project depending on the layout and subject to cleaning. Two 5 ton propane fired packaged rooftop heating, ventilating and air conditioning units serve the heating, cooling and outdoor air needs for the portable classrooms.

Natural Gas:

A (3") three inch natural gas main enters the basement mechanical room adjacent to the entrance stair from the exterior mounted gas utility meter and regulator. The line runs horizontally along the mechanical room ceiling and drops to the gas fired boilers and domestic hot water boiler. The gas main is fed from the gas service main located in Union Street. The natural gas distribution piping appears to be in very good condition. The existing gas service needs to be coordinated with the gas utility provider to determine if the main is adequate to supply the current and proposed requirements of the school. The portable classroom HVAC rooftops are fed with bottled propane tanks with piping exposed on the roof to the units.

Water Service Room:

The domestic water service enters the Elec./Water service room 147 thru the concrete floor slab and transitions above the floor to a tee and horizontally above the floor to a separate floor mounted double check valve assembly control valve (old limited coverage fire service), gate valve, compound type water meter and a shut off valve on the downstream side of the meter. The domestic water piping is fully insulated from the outlet flange of the shut off valve downstream of the water meter. The fiberglass all service jacket insulation appears to be in fair to good condition. There is a damaged insulated elbow at the base of the riser that appears to be the original insulation that has been damaged. There is a powdery material on the floor below the damage that should be tested for asbestos content. There are labels at the distribution tunnels below the school indicating asbestos materials beyond.

Domestic Hot Water:

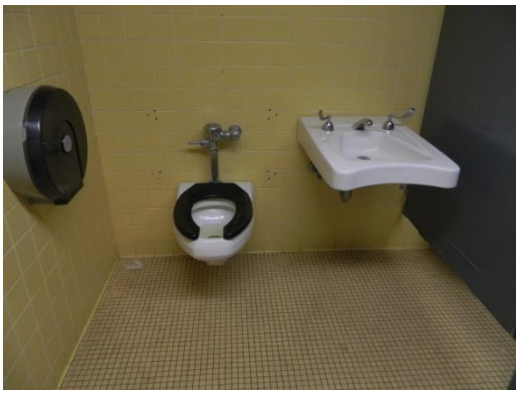
Domestic hot water is generated via a Burnham 50,000 btuh gas fired gravity flue type boiler with A.O. Smith model TJV120M, 119 gallon storage tank and circulation system located in the basement Mechanical Room 144.

Located at the kitchen room 311, below the stainless counter at the dishwasher is a single electric hot water booster heater.

Kitchen:

The existing kitchen consists of a three well pot sink, rinse sink, disposer, dish washer, floor drain, gas fired cooking equipment, kettles, two hand wash sinks and one undersized surface grease interceptor. The domestic hot water supply appears to be at a single temperature with an electric booster at the dish washer. The gas fired equipment is located under a kitchen exhaust hood with the gas supply rising up from the floor adjacent to the hood. There is no visible master gas shut off installed. Only the three pot sink is piped to the recessed grease interceptor. Current MA State plumbing code requires all grease generating waste with the exception of the garbage disposer to be piped to a grease interceptor, including any applicable floor drains. The floor drain does not appear to have a trap primer connection. The gas supply is also required to have an accessible master shut off, as well as a solenoid operated shut off valve with a manual reset that is controlled via a carbon monoxide sensor. The hood is supplied with a chemical fire suppression system with a nozzle located above the open flame surface of the range and includes a manual release pull station.

Toilet Rooms:



The toilet room fixtures are out dated and no longer code compliant and require replacement. Full ADA accessibility will be determined by the architect. The urinals and water closets incorporate manual operated flush valves while the lavatories use 4"centerset conventional controlled faucets. Some of the lavatories have been replaced with wheelchair type lavatories, but lack proper mounting height, clearance and insulation kits to be considered ADA or Massachusetts Architectural Access Barriers Board accessible compliant fixtures. All fixtures are in poor to good condition. There are water closets with wide stalls that have manual flush valves mounted on the wrong side, lacking proper clearance and grab bars to be considered accessible. There have been numerous fixture and fitting replacements over the years for upkeep and maintenance. The existing floor drains within the toilet rooms require trap primer connections to be code compliant and it is not clear at this time if they were the originally installed drains or replacements. There are no plumbing fixtures installed in the portable classrooms.

Storm Drainage:

The main building flat roofs are drained via roof drains and internal rain water leaders. There are no parapets' on the flat roof and no secondary roof drainage is installed or required by code. The roof drains and dome strainers appear to be in good condition.

The portable classroom roofs are drained by external gutters and down spouts that are discharged to grade.

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 fifteen years of experience.

UEC was contracted by Kaestle Boos Associates, Inc. to conduct a determination survey for accessible Asbestos Containing Materials (ACM) and other hazardous materials at the Davis Thayer School, Franklin, MA. A comprehensive survey per EPA NESHAP regulation will be required prior to any renovation or demolition activities.

The scope of work included the inspection of accessible ACM, collection of bulk samples from materials suspected to contain asbestos, determination of types of ACM found and cost estimates for remediation. Bulk samples analyses for asbestos were performed using the standard Polarized Light Microscopy (PLM) in accordance with EPA standard.

Bulk samples were collected by a Massachusetts licensed asbestos inspector Leonard J. Busa (AI-030673) and analyzed by a Massachusetts licensed laboratory Asbestos Identification Laboratory, Woburn, MA.

Samples results are attached to the report.

2.0 FINDINGS:

A. Number of Samples Collected

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. However, all suspect materials that contain any amount of asbestos must be considered asbestos if it is scheduled to be removed per the Department of Environmental Protection (DEP) regulations.

Sample# and Type of Material

Forty five (45) bulk samples were collected from materials suspected of containing asbestos, including:

1. Insulation inside wood fire doors type II at gymnasium
2. Insulation inside wood fire doors type I at cafeteria
3. 2'x 2' Suspended acoustical ceiling tile at second floor main corridor
4. 2'x 2' Suspended acoustical ceiling tile at second floor classroom
5. 2'x 2' Suspended acoustical ceiling tile at first floor staff room
6. 1'x 1' Acoustical ceiling tile at stairs
7. Glue daub for 1'x 1' acoustical ceiling tile at stairs
8. Hard joint insulation
9. Hard joint insulation
10. Hard joint insulation
11. Hard joint insulation
12. Duct insulation at boiler room
13. 2'x 2' Suspended acoustical ceiling tile at kitchen

14. Damproofing on terracotta wall at attic
15. Thick black paper under hardwood floor at second floor classroom 23-B
16. Thick black paper under hardwood floor at third floor classroom 35
17. Blown-in insulation at attic
18. Adhesive on metal duct at attic
19. Adhesive on metal duct at cafeteria storage room
20. Carpet glue at library
21. 12”x 12” Lime green vinyl floor tile at stairwell landing
22. Mastic for 12”x 12” lime green vinyl floor tile at stairwell landing
23. 12”x 12” Lime green vinyl floor tile at gymnasium stairwell landing
24. Mastic for 12”x 12” lime green vinyl floor tile at gymnasium stairwell landing
25. 12”x 12” Chocolate vinyl floor tile at second floor storage room
26. Mastic for 12”x 12” chocolate vinyl floor tile at second floor storage room
27. 18”x 18” Vinyl floor tile at cafeteria hallway
28. 12”x 12” Chocolate vinyl floor tile at resources room
29. Mastic for 12”x 12” chocolate vinyl floor tile at resources room
30. Ceiling plaster at second floor classroom
31. Wall plaster at second floor classroom
32. Ceiling plaster at second floor main corridor
33. Wall joint compound at third floor main corridor
34. Wall plaster at second floor classroom
35. Ceiling plaster at cafeteria storage room
36. Wall joint compound at second floor classroom
37. Wall plaster at library storage room
38. Joint compound on gypsum wall at library storage room
39. Gypsum wall at library storage room
40. Wall plaster at classroom 31
41. Wall joint compound at classroom 31
42. New window framing caulking
43. New window framing caulking
44. Unit vent grille caulking
45. Second layer flooring at cafeteria

B. <u>Sample Results</u>

Sample# and Type of Material	***Sample Result***
1. Insulation inside wood fire doors type II at gymnasium	30% Asbestos
2. Insulation inside wood fire doors type I at cafeteria	30% Asbestos
3. 2’x 2’ Suspended acoustical ceiling tile at second floor main corridor	No Asbestos Detected
4. 2’x 2’ Suspended acoustical ceiling tile at second floor classroom	No Asbestos Detected
5. 2’x 2’ Suspended acoustical ceiling tile at first floor staff room	No Asbestos Detected
6. 1’x 1’ Acoustical ceiling tile at stairs	No Asbestos Detected
7. Glue daub for 1’x 1’ acoustical ceiling tile at stairs	No Asbestos Detected
8. Hard joint insulation	No Asbestos Detected
9. Hard joint insulation	No Asbestos Detected
10. Hard joint insulation	No Asbestos Detected
11. Hard joint insulation	No Asbestos Detected
12. Duct insulation at boiler room	70% Asbestos
13. 2’x 2’ Suspended acoustical ceiling tile at kitchen	No Asbestos Detected
14. Damproofing on terracotta wall at attic	No Asbestos Detected
15. Thick black paper under hardwood floor at second floor classroom 23-B	No Asbestos Detected
16. Thick black paper under hardwood floor at third floor classroom 35	No Asbestos Detected

17. Blown-in insulation at attic	No Asbestos Detected
18. Adhesive on metal duct at attic	3% Asbestos
19. Adhesive on metal duct at cafeteria storage room	Not Analyzed
20. Carpet glue at library	No Asbestos Detected
21. 12”x 12” Lime green vinyl floor tile at stairwell landing	2% Asbestos
22. Mastic for 12”x 12” lime green vinyl floor tile at stairwell landing	10% Asbestos
23. 12”x 12” Lime green vinyl floor tile at gymnasium stairwell landing	Not Analyzed
24. Mastic for 12”x 12” lime green vinyl floor tile at gymnasium stairwell landing	Not Analyzed
25. 12”x 12” Chocolate vinyl floor tile at second floor storage room	2% Asbestos
26. Mastic for 12”x 12” chocolate vinyl floor tile at second floor storage room	10% Asbestos
27. 18”x 18” Vinyl floor tile at cafeteria hallway	No Asbestos Detected
28. 12”x 12” Chocolate vinyl floor tile at resources room	2% Asbestos
29. Mastic for 12”x 12” chocolate vinyl floor tile at resources room	5% Asbestos
30. Ceiling plaster at second floor classroom	No Asbestos Detected
31. Wall plaster at second floor classroom	No Asbestos Detected
32. Ceiling plaster at second floor main corridor	No Asbestos Detected
33. Wall joint compound at third floor main corridor	No Asbestos Detected
34. Wall plaster at second floor classroom	No Asbestos Detected
35. Ceiling plaster at cafeteria storage room	No Asbestos Detected
36. Wall joint compound at second floor classroom	No Asbestos Detected
37. Wall plaster at library storage room	No Asbestos Detected
38. Joint compound on gypsum wall at library storage room	No Asbestos Detected
39. Gypsum wall at library storage room	No Asbestos Detected
40. Wall plaster at classroom 31	No Asbestos Detected
41. Wall joint compound at classroom 31	No Asbestos Detected
42. New window framing caulking	No Asbestos Detected
43. New window framing caulking	No Asbestos Detected
44. Unit vent grille caulking	3% Asbestos
45. Second layer flooring at cafeteria	3% Asbestos

Some samples were not analyzed. EPA regulations states that should one sample from a homogenous area was found to be greater than 1 percent of asbestos, then the material must be considered asbestos containing.

The following suspect materials were assumed to contain Polychlorinated Biphenyls (PCB’s) and or mercury.

- Tubes in light fixtures.
- Exit signs and thermostats.

3.0 OBSERVATION AND COST ESTIMATES:

A. OBSERVATIONS:

1 Insulation inside wood fire doors was found to contain asbestos.
2 Duct insulation was found to contain asbestos.
3 Adhesive on metal duct was found to contain asbestos.
4 Various types of 12”x 12” vinyl floor tiles and mastic were found to contain asbestos. Multiple layers of flooring were found.
5 Unit vent grille caulking was found to contain asbestos.
6 Second layer of flooring at cafeteria was found to contain asbestos.
7 Pipe insulation in the tunnel was assumed to contain asbestos.
8 It appears that all windows were replaced. However, old framing with ACM caulking might exist underneath newer framing.

9 Mastic underneath gymnasium hardwood floor was assumed to contain asbestos.
10 Damproofing on exterior walls and foundation walls below grade was assumed to contain asbestos.
11 All remaining suspect materials were found not to contain asbestos.
12 Painted surfaces were assumed to contain Lead Based Paint. Lead abatement is not required. However, the General and Demolition Contractor must comply with OSHA regulation during demolition and with DEP regulations for proper disposal. OSHA regulations require compliance for any amount over zero (0%) of LBP.
13 Ballasts in light fixtures are new and were assumed not to contain PCB's.
14 Tubes in light fixtures were assumed to contain mercury.
15 Exit signs and thermostats were assumed to contain mercury.

B. 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 renovation and demolition project.

Location	Material	Estimated Quantities	Cost Estimate ($)
Throughout	Multiple Layers of Flooring and Mastic	9,000 SF	54,000.00
	Interior Fire Doors	45 Total	9,000.00
	Hidden Pipe and Hard Joint Insulation	Unknown	10,000.00
	Ceiling and Walls Demolition to access ACM	2,500 SF	5,000.00
	Miscellaneous Hazardous Materials	Unknown	5,000.00
	Light Fixtures	650 Total	25,000.00
Boiler Room	Duct Insulation	180 SF	3,600.00
Tunnel	Pipe and Hard Joint Insulation	100 LF	2,500.00
Gymnasium	Hardwood Floor and Mastic	3,000 SF	18,000.00
Exterior	Window Wall System	105 Total	10,500.00
	Old Doors	4 Total	800.00
	Unit Vents Grille	40 Total	1,000.00
	Caulking	950 LF	9,500.00
	Damproofing[1]	Unknown	150,000.00
	Transite Pipe[2]	1,000 LF	30,000.00
Anticipated Fees for NESHAP Inspection, Design, Construction Monitoring and Air Sampling Services			31,100.00
		TOTAL (Demolition):	***365,000.00***
		TOTAL (Renovation):	***185,000.00***

[1]: Part of demolition.
[2]: Part of excavation.

4.0 DESCRIPTION OF SURVEY METHODS AND LABORATORY ANALYSES:

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.

Inspected By:

Leonard J. Busa
Asbestos Inspector

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.

FEASIBILITY STUDY OF THE FOOD SERVICE FACILITY

Existing Conditions & Recommendations of the Food Facility

This analysis of the existing food service facility at the Davis Thayer Elementary School for this study is based on photographs and an existing conditions floor plan along with the following current program information:

Total student population	335
Grades	K-5
Lunch service	Six (6) waves
One (1) wave for each grade level	

All recommendations are related to an expanded food service facility as part of the proposed addition renovation and designed for three (3) service waves of approximately 120 meals/transactions per wave. Until a detailed analysis of the condition of existing kitchen equipment can be undertaken, all equipment is assumed to be replaced in this study.

Typical Spaces:

Receiving – Exterior and Interior

Description/Assessment:

- This area is minimal, but operational.
- All food service deliveries and trash pass through this area.
- The receiving entrance is a considerable distance from the kitchen and dry storage area. Deliveries and trash pass through a general corridor shared with faculty and student spaces. This is unsanitary and poses a threat of cross-contamination.

Recommendations:

This area should be located adjacent to a new food service facility and include space for staging, janitorial functions, and detergent storage and recycle holding. If required, a washer/dryer area can be included for food service use only. Storage areas, office(s) and staff toilets and lockers should also be located in close proximity to the receiving area.

Janitor's Closet & Detergent Storage

Description/Assessment:

- There is no dedicated janitorial area within the kitchen; however, a small general janitor's closet is in relatively close proximity.

Recommendations:

Provide a dedicated janitorial area that includes a garbage can washer, janitor's sink, drying racks and detergent storage. Garbage cans should be washed here before returning to service in the food production and waste collection areas. A hose reel assembly should be provided within the can washing room to facilitate housekeeping.

Dry Food & Paper Storage Room

Description/Assessment:

- This storage room is inconveniently located and based on the square footage shown on this existing floor plan, this room is undersized for the current program.

Recommendations:

Adequately sized storage areas designed to accommodate approximately ten (10) days of inventory in ambient temperature controlled space should be provided. Replace degraded shelving with new polymer shelving that will be modular in size and mobile.

Refrigerator and Freezer Storage

Description/Assessment:

- All refrigerator and freezer storage is comprised of reach-in units and appear to be in good condition.
- Due to lack of space within the kitchen, some units are located in the Cafeteria.
- Reach-in refrigerators and freezers are generally inadequate for organized storage and handling/rotating of refrigerated foods. More frequent deliveries and short term holding are typically required due to the design and capacity of reach-in units.

Recommendations:

At minimum, a new food service facility should be sized to accommodate any salvageable reach-in refrigerators and freezers that should be located near the receiving area and throughout the production spaces.

Consideration should be given to incorporating a walk-in refrigerator and freezer to enhance organized storage and handling, monitoring inventory and reduce deliveries. If implemented, the walk-in units will be designed to provide storage space for perishable goods and sized for approximately ten (10) days inventory. This area will be comprised of one (1) walk-in refrigerated compartment and one (1) walk-in freezer compartment. Walk-in units will be of the prefabricated type. Units should be fitted with an audio-visual temperature alarm system installed at the front door section of compartment and be inter-wired to an alert system at the building "monitoring system". Included at the walk-in door, there should also be a localized audible panic alarm. The door will be fitted with a vision panel. Emergency generator power may be required. All shelving should be modular in size and mobile.

Until more detailed design criteria can be established, requirements for separate frozen commodities storage will not be considered at this time.

Food Service Office(s)

Description/Assessment:

- There appears to be no private and secured space for this important function within the kitchen area.

Recommendations:

An office designated for the Food Service Director should include adequate space for a staff of one (1) computer work station and multiples of required work items including file cabinets, general office equipment, menu planning, staff training and code compliance documentation. Ideally, an office should be centrally located within the kitchen for visibility of all areas to the greatest degree possible. Additional office requirements may be considered once design criteria have been established.

Preparation Area

Description/Assessment:

- Mobile work tables appear to be in good condition.
- There are no dedicated preparation sinks for proper separation and preparation of food products. It appears that the three-bay pot sink doubles for preparation.
- There appears to be an insufficient quantity of code mandated hand sinks or handicap accessible work stations.
- The code mandated three-bay pot sink assembly with drain-boards appears to be adequate and in good condition.
- Detergents are "stored" under both pot sink tables exposed to the preparation/cooking area and pose the risk of cross contamination. This is not code compliant.
- There are an inadequate number of floor drains to enhance housekeeping.
- Rubber mats are used throughout the food facility to prevent falls. This is unsanitary and hazardous to foot traffic.

Recommendations:

Replace all degraded tables. Provide adequate quantity of preparation sinks, hand washing stations, worktables and food processing machinery. A new food production area should be designed to minimize labor and reduce traffic. The arrangement and selection of types of equipment will be such as to allow a maximum ease of operation, and to promote an exceptionally high degree of sanitation. Food processing machinery intended for use here will be of the competitive manufacture and will bear applicable seals of approval by N.S.F., U.L., A.S.M.E., etc.

Cooking Equipment

Description/Assessment:

- Some of the cooking equipment appears to be antiquated and not energy efficient.
- There is minimal water capture area in the floor at the steamer and kettle battery. This situation will pose a significant hazard to foot traffic.
- Due to the limitations of the existing kitchen space, the cooking equipment is poorly arranged allowing limited access for maintenance, housekeeping and sanitation. This condition is considered unsanitary.
- Exposed piping behind the cooking equipment is unsanitary as it is difficult to access for cleaning and maintenance. This condition is considered unsanitary.

Recommendations:

While all existing equipment will need to be evaluated with food service management and selected for re-use; quantity and type of any new energy efficient cooking equipment will be provided based on production requirements. A new cooking area should be designed to minimize labor and reduce traffic. The arrangement and selection of types of equipment will be such as to allow a maximum ease of operation, and to promote an exceptionally high degree of sanitation.

To eliminate exposed piping, we recommend a mechanical raceway be installed behind the cooking equipment. This system, which is free standing, contains the final point of mechanical connections for all adjacent items of equipment. The use of this "mechanical raceway" allows electrical, gas and water services to be brought in within vertical columnar elements to single points of connection. Quick disconnect devices for all services are located at each piece of equipment allowing ease of service, maintenance and replacement if necessary. The cost of this Utility Distribution System is off-set by a savings in primary utility service installation, final equipment connection and maintenance costs. This unit will also greatly enhance sanitation allowing ease of access for housekeeping.

All new cooking equipment should bear applicable seals of approval by N.S.F., U.L., A.S.M.E., etc.

Exhaust Hood over Cooking Equipment

Description/Assessment:

- The exhaust assembly appears to be antiquated, undersized and inefficient.
- The sloped top of exhaust hood is open to the kitchen ceiling above. This condition is considered unsanitary as it promotes the accumulation of dust and grease.

Recommendations:

Provide a new kitchen exhaust element (over cooking equipment) that complies will current codes and standards. The exhaust hood will be of the high velocity type, fitted with grease extractor cores.

In addition, a new hood unit should be complete with wet chemical fire extinguishing systems, interconnected to automatic cooking equipment power shut down devices.

In the new food service facility, consideration should be given to incorporating an internal cleaning system and an on-demand ventilation system. If implemented, the exhaust hood will be designed with a programmed automatic UV (ultra violet) cleaning system. An energy efficient "Demand Ventilation Control Package" may be incorporated where the system modulates the speed of the exhaust and makeup air fan motors in response to appliance cooking activity.

Serving Area

Description/Assessment:

- The serving lines and work areas indicate extreme congestion. Cashier and multiple serving stations are located within the Cafeteria space. Traffic patterns are inefficient.
- Equipment and arrangement of the serving line/areas are antiquated.
- The serving line does not have code mandated NSF refrigerated cold food serving station.
- There are no dedicated code required hand sinks visible in this work area.
- Food protection/sneeze guards on the serving line are antiquated, in poor condition and may not comply with current NSF standards.
- Protector cases at the hot food stations appear to lack heat lamps to assist in maintaining proper temperature.
- There are no handicapped accessible work, pass-over and cashier stations.
- There is a lack of hot and cold food holding cabinets to ensure temperature maintenance.

Serving Area




Recommendations:
Based on 120 meals/transactions per wave, a new Servery should be provided in a new food service facility which should provide two (2) traditional straight serving lines and a parallel "Express" line, if space allows. Two (2) cashiers are recommended.

Provide new code compliant serving line equipment that will include code mandated cold food serving stations, handicap accessible work stations, code compliant food protectors and display cases and work shelves. Equipment will provide total flexibility/mobility and exceptional access for housekeeping, serviceability and maintenance. In addition, new back-counter support equipment shall include hot and cold holding cabinets, work sinks and code mandated hand sinks. Provide the appropriate separation of kitchen and serving activities.
Specific equipment and serving stations will be established during design criteria with close collaboration with the Owner and Food Service Management.

Ware Washing / Pot Washing Area
Description/Assessment:

- The facility utilizes permanent trays and some disposable wares.
- Based on the current estimated number of meals per wave, the door-type dishwasher appears to satisfy current needs to clean and sanitize service trays.
- Support tables and combined three-bay pot sink assembly with drain-boards appears to be adequate and in good condition.
- There is a lack clean tray drying space.
- Some detergents are stored on the floor exposed under the soiled dish table. This is not code compliant.
- There is no condensate hood over the dish machine to capture heat and steam. This typically creates an extremely hot and wet environment.
- There is no code required hand sink visible within this area.
- All trash must pass through the kitchen and through a general corridor, which is shared with faculty and student spaces. This is unsanitary and poses a threat of cross-contamination.

Recommendations Renovation:
Based on 120 meals/transactions per wave, a conveyor type dishwashing machine is recommended to accommodate the increased number of trays per wave as well as all kitchen wares such as 18" x 26" sheet pans and 12" x 20" cafeteria pans. The ware washing machine should be fitted with integral prewash, wash and final rinse (sanitizing) hot water booster. The soiled accumulation and scrapping areas will be designed to provide for use of the ware washing machinery at maximum capacity. Soiled tray return will be determined from design criteria. A soiled deposit window may be replaced with self-bussing to enclosed trash containers strategically located in the Cafeteria to reduce traffic at tray return window.

General Area Conditions
Description/Assessment:

- There are an inadequate number of floor drains to enhance housekeeping.
- Exposed piping, conduit, steel and ductwork render some areas make it difficult to maintain a sanitary environment.
- Floors material, walls and ceilings must be analyzed /inspected.
- An air-handling fan located near ware washing tends to accumulate and spread dust throughout the entire food facility. This should be considered unsanitary.
- There appears to be no eye wash/drench shower for emergency first aid.

Summary of Existing Conditions & Recommendations

The existing kitchen/servery appears to be under-equipped and extremely congested which poses a risk to food service staff and operational safety. It is our opinion that there is a considerable risk of cross-contamination, which can jeopardize the health, safety and well-being of students and faculty.

In order to comply with current NSF (Nation Sanitation Foundation) standards, NFPA (National Fire Protection Association) standards and HACCP (Hazard Analysis Critical Control Points), which are nationally recognized food safety guidelines for all food service establishments, it is our professional opinion that serious consideration should be given to a renovation of this food facility.

Renovation of the food service facility would be based on satisfying the proposed renovation/addition program. A proposed renovation/addition will allow for the development of an operationally efficient and cost effective food facility with a very long life span. This will enhance sanitation, food and staff safety, maintenance and a life-cost cycle justifying the investment. All traffic patterns are keyed to maximize operational efficiency of the food service operation. This will allows professional planning, selection and arrangement of equipment in close consultation with the Owner. All existing equipment will be evaluated with food service management and selected for re-use to the greatest extent possible.

Recommendations for repair or correction of existing conditions are noted within the evaluation by each discipline in this section. Below is a summary of these recommendations which serve as a basis for the estimate. Renovations or additions to the existing building to meet the requirements of the space use program and the MSBA recommended room sizes are not included here as this is discussed in another section of the report. These recommendations are intended only to provide an outline for repairs to maintain the facility in its current configuration.

Site & Landscape Recommendations

L1 Add curbing along the parent drop off lane to control drainage onto the playground. The curb should have an outlet which drains to a catch basin connected either to the drainage on the street or a leaching pit.
L2 Once the drainage is corrected, replace the wood chips around the play structure.
L3 Replace damaged site furniture.
L4 Repair the chain link fence between Dean College and the school.
L5 Repair asphalt pavements where they are cracked and eroding.
L6 Re-stripe HC parking spaces so that they are compliant with current regulations.
L7 Provide an accessible route from HC parking to the building
L8 Provide a striped drop off and pick up area (5' x 20') with signage.
L9 Replace rusting chain link fence fabric and hardware around the perimeter of the site.
L10 Add a tension wire or a bottom rail (even better) to the chain link fence at the top of the wall.

Structural Recommendations:

S1 The exterior brick wythe should be completely repointed which would include the routing of all mortar joints and replacement of all damaged bricks. At the same time as the repointing is occurring, all corroding lintels should be removed and replaced. This repair will require that the windows be temporarily removed to allow access to the steel angles. The flat arches and one course of brick must be removed to install the new hot dipped galvanized steel lintel angles. Flashing, end dams, and weep holes will be installed in the outer wythe of brick wall above the new lintels.
S2 The exterior brick on the chimney above the roof should be removed and rebuilt. The new brick will be anchored to the inner wythe of existing masonry and must be flashed properly at the roof.
S3 The damaged sheathing on the modular classrooms must be replaced to avoid further damage to the framing. The void between the portable classrooms and the original construction should be sealed with a vertical expansion joint cover. The missing downspout should be replaced and the leak in the gutter on the south elevation should be investigated and repaired.

Architectural Recommendations:

A1 The existing EPDM roof is in good condition and should provide adequate waterproof protection for another 5 to 7 years. However, the stainless steel copings should be removed and replaced with copper or copper colored aluminum sheet metal with properly sealed seams. During the process of removing and replacing the stainless steel copings, attention should be given to inspect the EPDM membrane to make sure that it extends over the top of the parapets to completely seal and protect the masonry walls.

A2 The two circular windows should be removed and new aluminum framed insulated glass windows should be installed.

A3 Classrooms should be enlarged to provide spaces compliant with sizes recommended by the MSBA. Refer to the MSBA chart in the Appendix of this report for recommended room sizes.

A4 Kindergarten spaces should be relocated to classroom spaces of the size recommended by the MSBA.

A5 Storage spaces should be provided within each re-sized classroom space for individual use. Common storage space should still be provided in corridors or common areas of the building.

A6 The Administration offices should be enlarged and reconfigured to provide sufficient space for staff, secure storage for private documents, and controlled access to the school.

A7 The Nurse's office should be enlarged to provide adequate office space for the School Nurse, secure space for student files and medications, private cot space, and an accessible toilet room for students/ patients.

A8 The cafeteria and kitchen should be increased in size to serve more students at fewer lunch periods. The kitchen and cafeteria will need to be relocated to provide this additional space as further growth will encroach into the adjacent gym space. Kitchen equipment may be re-used, however, will need to be replaced in the near future.

A9 The Media Center should be refinished by patching and repairing all damaged plaster walls and ceilings.

A10 All interior flooring finishes should be replaced. Most of the flooring will be removed and replaced as part of an abatement plan and new finishes should be provided.

A11 The Gym floor has deteriorated and should be replaced. A topical vapor barrier should be installed over the existing slab, the slab recess filled with cementitious underlayment, and a poured-synthetic floor provided. Wall padding provided on all walls, including the concrete columns. The roof drain pipe located on the sidewall of the gym is below 6 feet above the gym floor and must be moved for safety. Storage space for gym equipment should be provided outside of the gym space.

A12 All wall surfaces should be patched to repair cracking plaster and repainted.

A13 Temporary classroom partitions should be replaced with acoustically compliant permanent construction which extends to the underside of the floor or roof deck above the ceiling.

A14 All acoustical ceilings are in fair condition and are sagging from age and humidity damage. All should be replaced as part of any renovation project. A building renovation will require extensive work above the ceiling for systems replacement or upgrade and the ceilings will be further damaged.

A15 Terrazzo floor finishes are indicated on the 1973 renovation documents in corridors and stairwells but are now concealed below carpet and rubber floor tile. If existing, these will provide a very durable flooring surface and should be ground and polished to restore the finish.

A16 Existing door hardware throughout building is not compliant and must be replaced with lever-type hardware.

A17 Door pairs at stairways and in corridors must be replaced with 36" wide door leaves to provide required clearance. This will require reconstruction the door frame and wall opening.

A18 Door pairs at Cafeteria and Media Center must be replaced with 36" wide door leaves to provide required clearance. This will require reconstruction the door frame and wall opening.

A19 Door pairs at stairs and common rooms should be replaced with compliant doors of required width for egress, rating and hardware.

A20 Doors to classrooms should be demolished and replaced with new doors on the corridor wall face or be replaced with new doors swinging into the classroom to provide accessible clearances and hardware. Where this cannot be provided, automatic door operators should be installed. This is not recommended as a general solution, however, as this requires the doors to be provided with a door closer and may be difficult for young children to operate.

A21 All other doors serving common areas and storage rooms should be replaced with new doors and hardware to provide accessible entrances.

A22 Staff toilet rooms do not meet accessibility requirements and cannot be modified within the existing spaces to comply. These rooms will require relocation.

A23 There is only one female staff toilet room on the 3rd floor and no male staff toilet rooms on the 2nd floor. This requires a male staff person on the 3rd floor to travel to the 1st floor to use a male staff toilet. This is in excess of the allowable travel distance of 1 story to access toilet facilities.

A24 Toilet rooms specifically intended to serve the grade levels K-3 and 4-6 must provide an accessible toilet and sink which is compliant. All toilet rooms must be modified to provide these compliant fixtures. Because adult fixture clearance and mounting height requirements differ from the requirements for accessible Elementary school fixtures, separate toilet fixtures and sinks must be provided for adults using the public assembly facilities. Single user staff toilet rooms may be used for this purpose if allowed for use by the public and constructed on appropriate floors.

A25 Toilet rooms should be reconstructed or relocated to provide accessible clearances at doors and fixtures. Currently, there are not any fully compliant toilet rooms.

A26 Guards at stair balcony rails are not 42 inches in height and exceed the maximum opening size requirement (for a 4 inch diameter ball). These guards must be modified or replaced to provide protection to the required height. The interior guardrail does not have a continuous handrail as the existing rail terminates at newel posts at each landing. Handrails must be provided on the interior guardrails.

A27 Handrails on the wall side of the stairwells should be replaced with a railing which has a code compliant profile. This handrail should be mounted at the required height and have extensions at the top and bottom of each flight.

A28 Although the existing egress elements are sufficient to provide egress from any location within the building for the projected occupancy per floor, the existing egress doors within corridors to stairways are not of compliant width. These doors must provide a minimum clear width of 32" but the actual clear width of these doors is less than 28".

A29 Existing egress stairs in the building are not enclosed in required fire rated construction, do not have risers and treads of required dimensions, do not have railings and guards with required height and spacing, do not have required rail extensions, and do not have fire rated doors which comply. All stair conditions must be corrected in accordance with current egress requirements.

A30 Access to the Basement, Second, and Third Floors is not provided for handicapped students. As grade levels and specialty rooms, such as the gymnasium and media center, are distributed on floors other than the First floor, this does not allow for access by all children to classrooms and activities. A compliant elevator must be provided to provide access to all floor levels and activities.

A31 Sinks are provided in two classrooms, one on the 1st floor and one on the 2nd floor; however, neither sink is accessible. These counters and sinks require modification for accessibility or must be removed.

A32 The underside of stairs on the first floor is enclosed in compliance with accessibility code, however, the stairs to the Basement are open underneath and installation of a guard rail or wall is required.

A33 Access to the building from the exterior is possible only from a ramp at a rear entrance door and a wooden ramp attached to the temporary modular classrooms. The Main Entrance to the building, used to check into the Main Office, is not accessible. Modification to the main entrance and required means of egress doorways to provide accessible routes is necessary.

A34 The stair treads need to be modified to comply. Modification of the treads with tread covers is necessary to reduce the abrupt nosing.

A35 Drinking fountains must be replaced with new fixtures with 2 level spouts.

A36 Once accessible, provide exit signage from the Gym, Cafeteria, and Library with the symbol for accessibility.

A37 Compliant signage and Symbols of Accessibility are missing throughout building. Where exit signs indicate an accessible route, if all routes are not accessible, these signs shall include the symbol of Accessibility.

Fire Protection System Recommendations:

F1 Selective demolition and addition of new branch piping and sprinkler heads would be included in the phased design to rework the existing systems in the renovated areas as required for full coverage in accordance with NFPA13.

Plumbing Systems Recommendations:

Natural Gas:

P1 Existing gas distribution piping must be modified for any modifications to the boiler plant or domestic hot water heating equipment.

Water Service:

P2 Installation of new domestic water piping is recommended throughout to prevent leaching of lead in the existing distribution piping.

Domestic Hot Water:

P3 Replacement of the existing standard efficiency boiler/ storage tank domestic hot water system with a new high efficiency sealed combustion condensing type gas fired storage heater is recommended.

P4 Installation of new domestic hot water piping is recommended throughout to prevent leaching of lead in the existing distribution piping.

Kitchen:

P5 Full separation of sanitary and grease waste systems with a dedicated grease waste exit to an exterior grease interceptor prior to connection to the sanitary main in Union Street must be provided.

P6 The gas supply must have an accessible master shut off, as well as a solenoid operated shut off valve with a manual reset that is controlled via a carbon monoxide sensor.

Storm Drainage:

P7 No comments.

Mechanical Systems Recommendations:

Boiler Plant:

M1 Full replacement of the existing gas fired boilers with new high efficiency condensing sealed combustion gas fired boilers is recommended. Size of existing boiler plant would increase to provide additional increase in outdoor air requirement, new corridor ventilation system, and new addition area heating. A two boiler installation is recommended. RDK Engineers recommends new variable speed controlled pumping equipment to replace the existing system hot water pumps to integrate with new two position hot water control valves at all heating applications. A differential bypass control valve will allow for system minimum flow rates to be achieved and control system operating pressure.

M2 New distribution piping system should be provided throughout the building.

Air Side Equipment Systems**:**

M3 Replacement of airside equipment, including unit ventilators and air handlers, with roof mounted packaged energy recovery type heating and cooling units is recommended to provide required building exhaust rates with recovery air energy transfer from the exhaust to the fresh air for the building. Classrooms, corridors and support spaces should be provided with conditioned air from the energy recovery units and be provided with fan powered VAV boxes with hot water coils and distribution ductwork. Systems will have a full enthalpy controlled economizer cycle. Exhaust will be captured from all existing renovated building areas and be ducted to the energy recovery units.

M4 New duct chases will be required to be added to the existing building to accommodate the new air systems and distribution ductwork.

M5 A new replacement dedicated heating and ventilating unit is recommended for the existing gymnasium.

Controls Systems:

M6 Replacement of the existing pneumatic controls system with a new BMS controlled DDC electronic controls be is recommended.

Electrical Systems Recommendations:

Electric Service:

E1 Replacement of the existing 400 amp 120/208 3 phase service with a new 1200 amp, 480 volt, 3 phase system is recommended. This new service should be fed from a new pad mounted utility transformer fed below ground from the existing utility poles located on Union Street. A new secondary electrical service entrance should be provided in a new electric room located in the exterior corner of the existing mechanical room. A new main distribution switchboard should be provided to serve the new electrical distribution system. A breaker should be provided with a transformer to back feed the existing 400 amp service to accommodate the phased construction.

E2 All new panelboards, wiring and electrical distribution system should be provided throughout the existing building.

Emergency Power:

E3 Installation of a combination life safety and standby generator with multiple transfer switches serving the life safety emergency lighting with a dedicate life safety distribution system along with a standby power transfer switch and critical operational loads, such as servery refrigerators, network and support systems and other owner identified items, is recommended. A pad mounted exterior located diesel fuel generator is recommended.

Lighting and Controls:

E4 Replacement of the existing lighting throughout the facility with code compliant energy efficient lighting fixtures is recommended. A complete energy code compliant lighting system control system should be provided throughout the facility incorporating daylight control, occupancy sensor control and split light level control within same spaces. Time of day lighting function can be programmed through a new recommended Building Management System.

Emergency Lighting:

E5 Emergency lighting should be achieved with new lighting fixtures wired to the proposed new emergency generator power distribution system. Battery units should be replaced with new emergency lighting in the renovated spaces.

Fire Alarm System:

E6 The fire alarm system should be upgraded for full compliance with a fully addressable voice command system throughout the building.

Security:

E7 The security system is recommended to be upgraded for both access and intrusion monitoring with new systems throughout.

Telephone:

E8 The telephone intercom system is recommended to be upgraded with new systems throughout.

Data / Information Systems:

E9 The Telecommunications system is recommended to be upgraded with new systems and expanded wireless capability throughout.

Hazardous Materials Recommendations:

The following materials were found to contain hazardous materials and are recommended for abatement:

H1 Insulation inside wood fire doors was found to contain asbestos.
H2 Duct insulation was found to contain asbestos.
H3 Adhesive on metal duct was found to contain asbestos.
H4 Various types of 12"x 12" vinyl floor tiles and mastic were found to contain asbestos. Multiple layers of flooring were found.
H5 Unit vent grille caulking was found to contain asbestos.
H6 Second layer of flooring at cafeteria was found to contain asbestos.
H7 Pipe insulation in the tunnel was assumed to contain asbestos.
H8 Mastic underneath gymnasium hardwood floor was assumed to contain asbestos.
H9 Damproofing on exterior walls and foundation walls below grade was assumed to contain asbestos.
H10 Painted surfaces were assumed to contain Lead Based Paint. Lead abatement is not required. However, a General Contractor must comply with OSHA regulations during demolition and with DEP regulations for proper disposal. OSHA regulations require compliance for any amount over zero (0%) of LBP.
H11 Tubes in light fixtures were assumed to contain mercury.
H12 Exit signs and thermostats were assumed to contain mercury.

Davis Thayer Elementary School
Franklin Public Schools
Preliminary Space Needs Program

Projected Student Enrollment :		**350**	**Students**		May 31, 2013
Program Space	**#**	**Cap.**	**Area**	**Total Area**	**Comments**
INSTRUCTIONAL AREAS					
GENERAL CLASSROOMS					
Kindergarten w/toilet	2	44	1,200 SF	2,400 SF	MSBA recommends (3) existing classrooms are 470-690 SF; modulars are 900 SF
Grade 1	3	66	900 SF	2,700 SF	
Grade 2	3	66	900 SF	2,700 SF	
Grade 3	3	66	900 SF	2,700 SF	
Grade 4	3	66	900 SF	2,700 SF	
Grade 5	2	44	900 SF	1,800 SF	
Area Sub Totals	**16**			***15,000 SF***	MSBA recommends (15) total classrooms
Capacity @ 22 students per room		***352***			
SPECIALIZED CLASSROOMS					
Art Classroom	1		1,000 SF	1,000 SF	
Art Storage w/ kiln	1		150 SF	150 SF	
Music Classroom	1		1,200 SF	1,200 SF	
Music Storage	1		150 SF	150 SF	
Health Classroom	1		900 SF	900 SF	
Area Sub Total	**5**			***3,400 SF***	
SPECIAL EDUCATION					
Resource Room	2		500 SF	1,000 SF	
Small group Room/ Reading	1		500 SF	500 SF	
OT/PT	1		500 SF	500 SF	
Area Sub Total	**4**			***2,000 SF***	
ADMINISTRATIVE AREAS					
ADMINISTRATION & GUIDANCE					
Gen Office/ Waiting Room/ Toilet	1		450 SF	450 SF	
Admin. Workroom/ Mail	1		250 SF	250 SF	
File Storage Room	1		110 SF	110 SF	
Principal's Office w/Conference Area	1		375 SF	375 SF	
Assist. Principal Office	1		150 SF	150 SF	
Conference Room	1		250 SF	250 SF	
Adjustment Counselor	1		150 SF	150 SF	
Office	1		150 SF	150 SF	
Teacher Workroom	1		325 SF	325 SF	maybe combine with Teacher Dining
Area Sub Total	**9**			***2,210 SF***	
MEDICAL					
Waiting Area /Office/ Storage	1		250 SF	250 SF	
Exam Room	1		100 SF	100 SF	
Cot Area	1		100 SF	100 SF	
Toilets	1		60 SF	60 SF	
Area Sub Totals	**4**			***510 SF***	

CORE FACILITIES

PHYSICAL EDUCATION

Gymnasium	1	6,000 SF	6,000 SF	Existing gym is +/- 3,500 SF
PE Office w/toilet	1	150 SF	150 SF	
PE Storage	1	150 SF	150 SF	
Area Sub Totals	**3**		***6,300 SF***	

MEDIA CENTER

Media Center/ Reading Room	1	2,245 SF	2,245 SF	
Area Sub Totals	**1**		***2,245 SF***	

SUPPORT AREAS

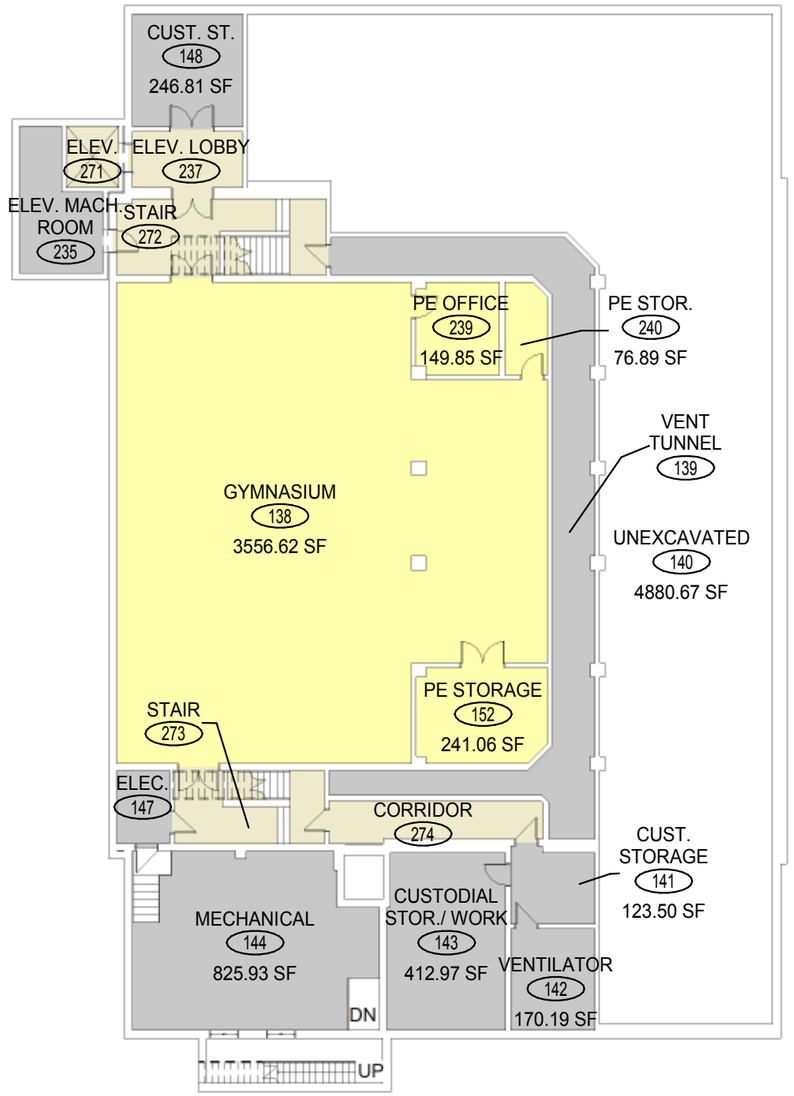
DINING & FOOD SERVICE

Cafeteria	1	2,625 SF	2,625 SF	existing Cafeteria is +/-2,100 SF; currently running (6) waves of lunch
Stage	0	1,000 SF	0 SF	not required
Chair Storage	1	315 SF	315 SF	
Kitchen/ Servery	1	1,650 SF	1,650 SF	
Teacher Dining Room	1	200 SF	200 SF	would like larger; maybe combine with Teacher Workroom
Area Sub Totals	**4**		***4,790 SF***	

CUSTODIAL

Custodial Office	1	150 SF	150 SF	
Custodial Work Room	1	375 SF	375 SF	
Custodial Storage	1	375 SF	375 SF	
Recycling Room/ Trash	1	400 SF	400 SF	
Loading / Receiving	1	215 SF	215 SF	
General Storage (throughout building)	1	235 SF	235 SF	
Network/Telecom Room	1	200 SF	200 SF	
Area Sub Total	**7**		**1,950 SF**	

Sub Total Net Area		**38,405 SF**	
+ Walls / Toilets / Mechanical / Circulation (	**49.0%)**	**18,820 SF**	
Total Building Area		**57,225 SF**	

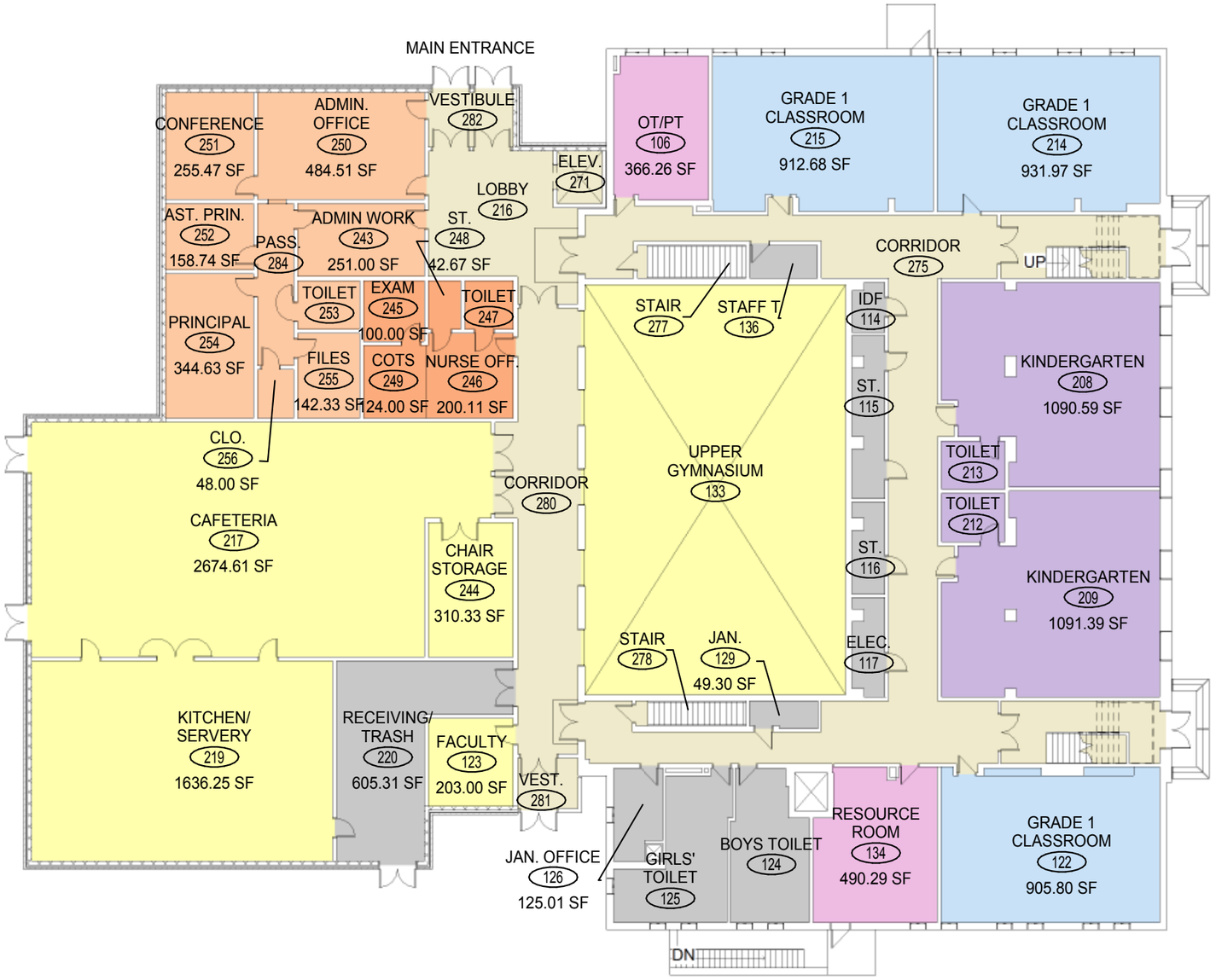


BASEMENT - RENOVATION / ADDITION OPTION

Davis Thayer Elementary School

137 West Central Street Franklin, MA 02038

KAESTLE BOOS associates, inc

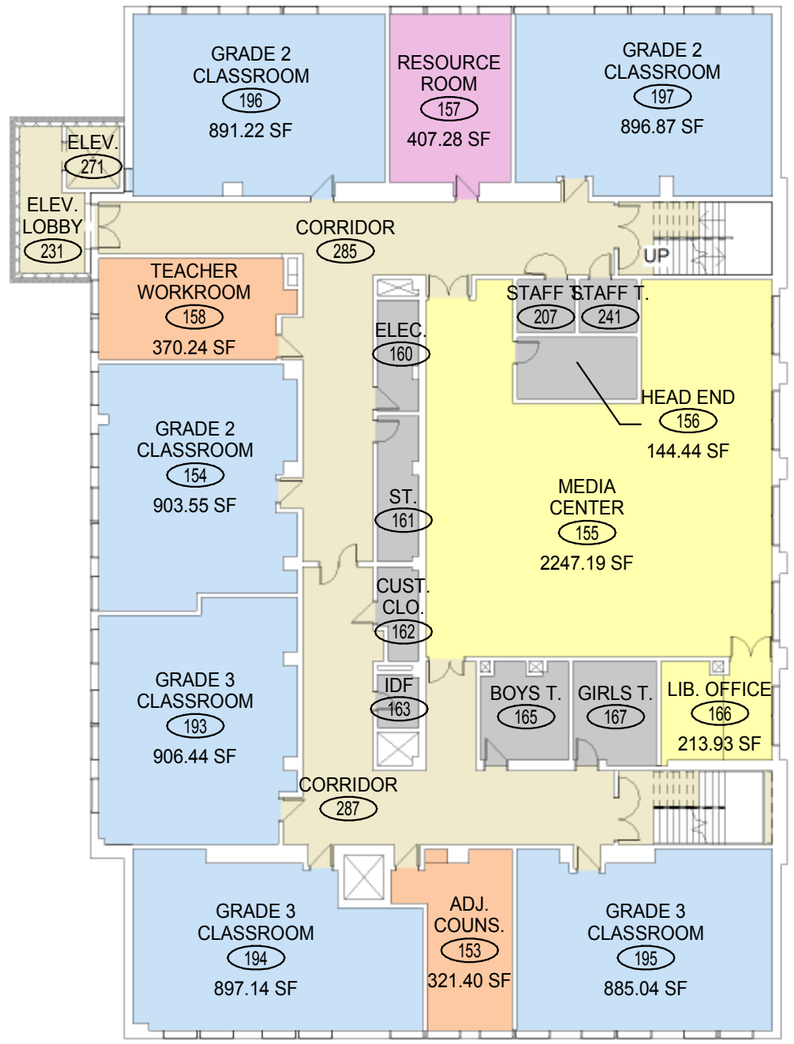


LEVEL 1 - RENOVATION / ADDITION OPTION

Davis Thayer Elementary School

137 West Central Street Franklin, MA 02038

KAESTLE BOOS associates, inc

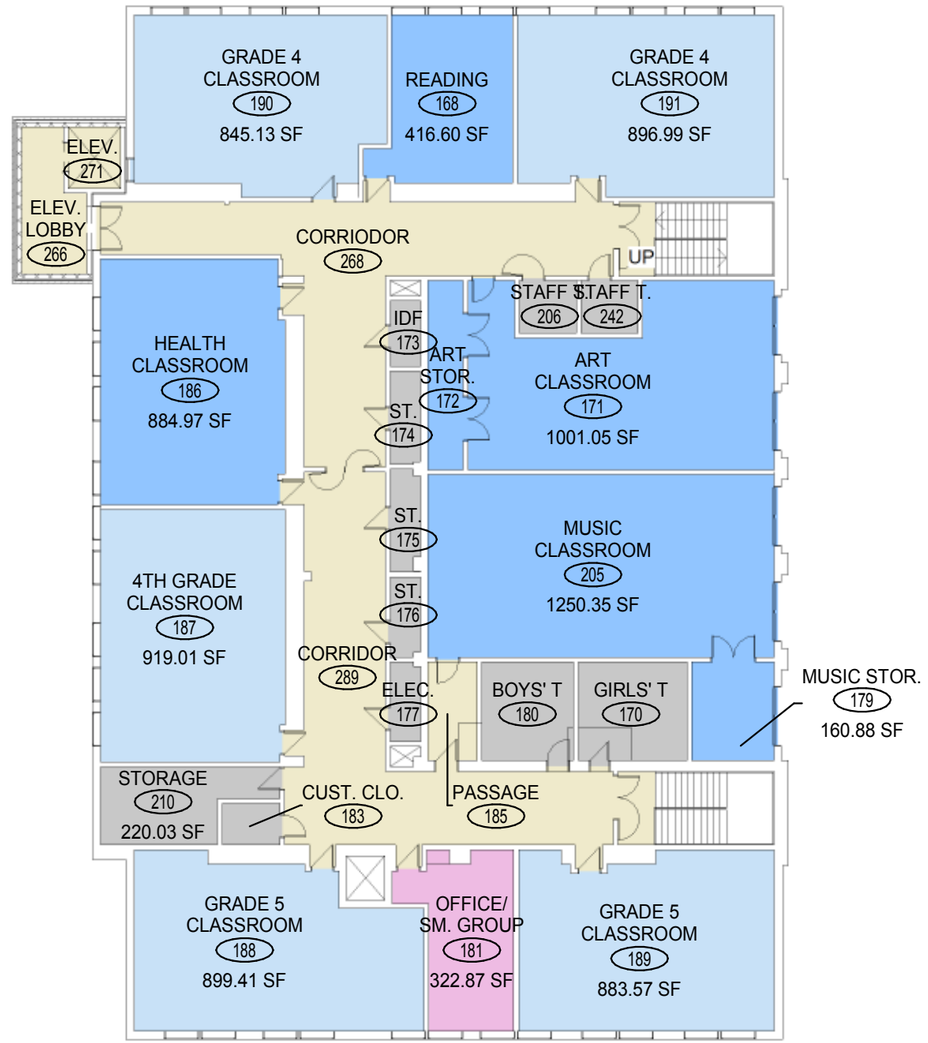


LEVEL 2 - REVONATION / ADDITION OPTION

Davis Thayer Elementary School

137 West Central Street Franklin, MA 02038

KAESTLE BOOS associates, inc



LEVEL 3 - RENOVATION / ADDITION OPTION

Davis Thayer Elementary School

137 West Central Street Franklin, MA 02038

KAESTLE BOOS associates, inc

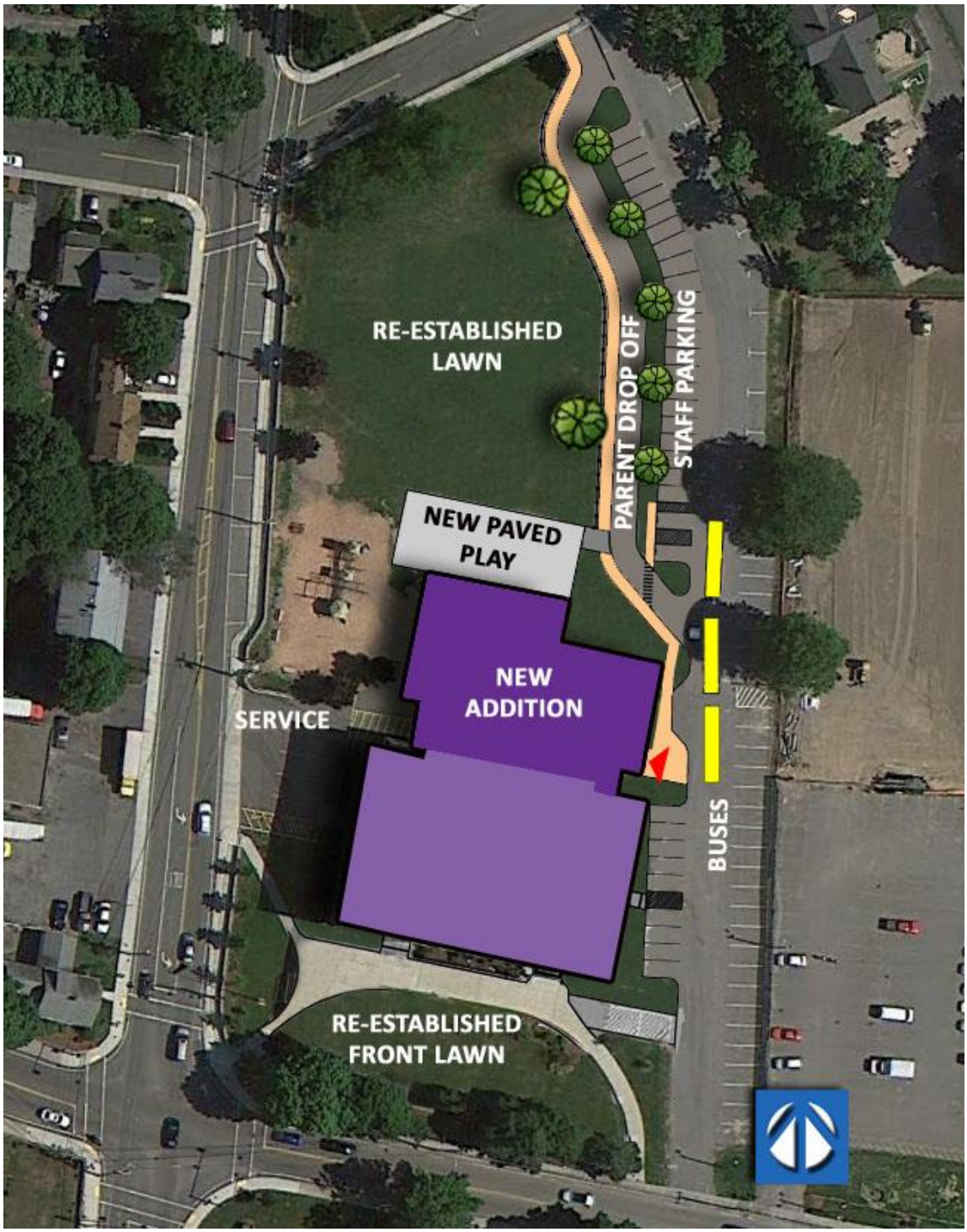
SUMMARY:

As the estimated total building area necessary to support the program areas indicated in Part 4 Space Needs Assessment is approximately 57,225 square feet, it is apparent that the existing Davis Thayer Elementary School building, with approximately 44,500 square feet, cannot provide the necessary floor area with a simple renovation. If the existing building is to provide continued use, an addition will be necessary to provide sufficient space to support the program.
Additionally, there are several functional issues which recommend an addition to the existing building as a solution to the space needs.

- The cafeteria/kitchen is recommended to be enlarged by approximately 1700 square feet to alleviate the need for several lunch seatings. Currently, 6 lunch seatings are required which far exceeds the 2 lunch seatings recommended by MSBA for an elementary school. An enlarged cafeteria will allow more students to be seated for each lunch period and a larger, redesigned servery is necessary to efficiently provide lunches to the increased amount of students. If the school chooses to serve 3 lunches, instead of the 2 lunch seatings recommended, to separate the students into related grade levels, an enlarged cafeteria and kitchen is still required. Without space available within the existing building to provide sufficient area for a cafeteria and kitchen of this recommended size, an addition is necessary.
- The modular classrooms attached to the front of the original building are in disrepair. The siding has rotted in several areas due to excessive and recurrent problems with water. This space is segregated from other classrooms in the original building and accessible only through a long corridor. The extent of water damage is unknown, however, for continued use of the existing building for 25 – 30 years in the future replacement of the modular space with permanent building construction is recommended.
- Classroom space in the existing building is undersized in relation to the MSBA recommendations for an elementary school. Removal of the temporary partitions located between the three classrooms on each side of the building is recommended to create two properly sized classrooms with smaller support spaces, such as Resource Rooms and Small Group Reading Rooms. This will also allow grade levels to be grouped together without segregated in the modular classrooms.
- The Media Center is oversized as a two story space. The Conceptual Plans propose infilling the open floor area on the Third Floor to provide large classroom spaces for Music and Art.
- The Administration and Nurse's Offices are undersized based on MSBA recommendations. The Nurse's Office does not provide privacy for student cot space and does not have an accessible toilet room. This suite is approximately 1,300 square feet smaller than MSBA recommendations.
- All toilet facilities in the school are inaccessible and must be reconfigured to provide compliant facilities of sufficient number in accordance with the plumbing code.
- Only the First Floor of the building is accessible by ramps at the exterior doors. Access to classrooms spaces in the Basement, Second Floor, and Third Floor are not provided. If the existing Davis Thayer building is to continue to be used, an elevator must be provided. Space requirements are best provided outside of the existing building so that the existing structure does not need to be excessively modified to allow for the elevator shaft to penetrate all floors of the building.

To provide the space recommended for the kitchen/cafeteria, Administration offices, and elevator, an addition at the rear of the existing building is recommended. This addition is recommended to be one story in height, except for the elevator, so as to not block exterior windows of the classrooms on the Second and Third Floors. The First Floor at the rear of the building is occupied by the upper level of the existing gymnasium. In order to minimize travel from the bus and parent drop-off area to the east of the school, the main entrance is recommended to be moved to this side of the building within the new addition to provide monitored and controlled access during the day. Locating the cafeteria and kitchen on

the west side of the building allows using the street for service deliveries and separates this activity from the student drop-off area.



Proposed Site Plan

SITE AND LANDSCAPE:

Circulation Improvements

The proposed addition to the existing school will absorb most of the paved play area and significantly shorten the lawn area north of the school. In order to provide both a contiguous play area and provide much needed parking to the site, the drive way layout, with an entrance on School Street and exit on to Rte. 140 will remain. The asphalt area will expand to the west incorporating some of the lawn area that is currently being used for play and the outfield for the softball field. Parking will line the existing drive and front a 10' drainage swale (rain garden). All of the new layout would be graded in such a way as to tilt toward the rain garden, alleviating the current drainage problems the lawn and playground area. The rain garden would separate the new staff parking from a 14' wide new dedicated parent lane for dropping off and picking up students. A six (6') wide sidewalk would border the parent drop off lane connecting the new main entrance on the east side of the building to School street. At the south end of the new staff parking, three new HC accessible parking stalls will be placed.
The parking along the east side of the current building would be pulled away from the wall to allow for a vegetation strip to front the building.

Play area

The play area will be modified by the removal of the softball field and associated fencing and benches. A new paved play area, (95' x 40') will border the north side of the school and be connected to the parent drop off route so that a fire route around the north end of the building can be accessed. The play scape would be left in place, with the swings being moved to a position north of the play scape. The lawn area would be re-established and separated from the sidewalk by either a guard rail or a decorative picket fence.

South side of the School

Once the portables can be removed from the south side of the building, the concrete walks would be extended and connected so that there would be continuous walks from the stairs at the intersection of Rte. 140 and Union Street to the front of the building. Once the walks are established, the lawn would be re-installed.

Service

Service to the building would continue in its present location, off of Union Street with the possibility of an excavated (sunken) loading area for trucks which would allow the trucks to be level as well as direct access to the rear body of the trucks, since the grades along this façade would easily lend themselves to this type of installation.

BUILDING STRUCTURE:

The proposed Addition and floor infill to the Davis Thayer Elementary School will be designed according to IBC 2009 and the Commonwealth of Massachusetts Building Code Amendments. The following describes the structural components, materials and relative building codes to be utilized in the design.

Superstructure

The proposed building addition is a single story structure that is adjacent to the existing building with a seismic joint separating the two buildings.

The structure for the addition will be steel framed with wide flange roof beams supporting Type "B" galvanized metal roof deck and all mechanical equipment set on the roof. The wide flange beams will be connected to HSS tube columns that are supported by reinforced concrete buttresses or piers. The buttresses will be constructed monolithically with the reinforced concrete perimeter foundation walls and footings. The interior concrete piers will be supported on reinforced concrete footings.

The infill of the open space of the Media Center will require the installation of new wide flange beams, tube columns and supporting reinforced concrete piers and footings. The floor construction will be 3" thick concrete slab on 1½" LOK Floor metal floor deck for a total thickness of 4½". The slab on metal deck will be reinforced with a combination of #5 reinforcing over beams and around the perimeter and welded wire fabric supported on metal chairs. The beam to column connections will be moment connections.

Lateral forces, namely wind or seismic, for the building will be transferred by collector elements and diaphragm action through the metal roof deck to braced frames or moment frames. The location of these elements will be coordinated with wall and opening layouts. .

Preliminary Foundation System

The proposed foundation system for the new building will consist of reinforced concrete spread footings, continuous perimeter frost walls and column buttresses. The foundations will all bear on natural soils or on controlled compacted gravel fill or on solid rock ledge depending upon the Geotechnical Report and recommendations.

Typical slab on grade construction will consist of a 4-inch thick concrete slab reinforced with 6x6-W1.4/W1.4 welded wire fabric. Slabs will be placed on a 15 mil vapor retarder on top of a layer of rigid insulation and an 8" layer of porous fill. In addition to the 8" porous fill layer, assume at least 12" of controlled structural fill beneath porous fill beneath the slabs. Control joints in the slab on grade will be sawcut at pre-approved locations.

Materials Summary

- Structural fill shall be offsite clean bank-run gravel or processed gravel thoroughly compacted to a minimum of 95% of optimum dry density.
- Concrete work shall conform to all requirements of the American Concrete Institute Specifications.
- All concrete shall be normal-weight with a minimum compressive strength of 3500 psi at 28 days.
- Reinforcing steel shall conform to ASTM A615 Grade 60.
- All structural steel work shall comply with the "Specifications for Structural Steel Buildings" issued by the American Institute of Steel Construction, and shall comply with the requirements of the current Commonwealth of Massachusetts Building Code.
- The Steel Fabricator shall be certified by the AISC Certification Program as "STD" (**Standard for Steel Building Structures**) and in addition, shall have a minimum of five years satisfactory experience in the type of work shown on the drawings.
- All structural steel Anchor Bolts shall be ASTM F1554, Grade 55.

- Angles, channels and plates shall conform to ASTM A36.
- Structural steel wide flange shapes shall conform to ASTM A992, Grade 50.
- Hollow tubular columns shall be ASTM A500 Grade B.
- Steel roof deck shall be 20 gauge minimum 1½" deep type B profiles as manufactured by United Steel Deck or equal. Deck to be galvanized conforming to ASTM A653 coating class G60. Deck shall be fastened to supporting members by the use of approved mechanical fasteners. No welding of metal roof deck permitted.
- All light gauge wall framing shall comply with AISI Standards and the current Commonwealth of Massachusetts Building Code.

Design Calculation Criteria:

- **Code: 2009 IBC and Commonwealth of Massachusetts Building Code Amendments**
- **Load Schedule:** Roof: Snow Load **55 psf**
- Drift and sliding snow loads As occurring
- **Wind:** Basic Wind Speed V = 100 mph
- Building Occupancy Classification Category III
- Exposure Category Category B
- Importance Factor 1.15
- The design wind pressures to be used for exterior components and cladding materials shall be determined in accordance with section 1609.
- **Seismic: ASCE 7-05 / IBC 2009 Equivalent Lateral Force Procedure**
- Building Occupancy Classification Category III
- Importance Factors 1.25
- Seismic Design Category C
- Earthquake Response Accelerations Ss=0.234
- S1=0.064
- Site Soil Classification (to be determined) assume C
- Seismic Design Category C
- Soil-profile Site Class to be determined by Geotechnical Investigation

FIRE PROTECTION:

RDK Engineers recommends an expansion of the existing to remain full coverage sprinkler system installed in 2007. A new floor control assembly would be connected to the existing main riser assembly located in room 143 to serve the new addition. The zone piping would extend through the mechanical room and rise up through the proposed janitor office 126 at the first floor and extend into the existing corridor and cross into the new addition. All new piping would be run concealed above ceiling in new corridor 280 and extend into new lobby area 216. Branch piping would be provided from the new main to new wet sprinklers serving the new addition spaces to provide full coverage in accordance with NFPA13.

A new chemical fire suppression system would serve the proposed new kitchen servery exhaust hood open flame cooking appliances.

Selective demolition and addition of new branch piping and sprinkler heads would be included in the phased design to rework the existing systems in the renovated areas as required for full coverage in accordance with NFPA13.

PLUMBING:

Natural Gas:

The existing natural gas service entrance is not in the path of the new proposed building and foundation system. RDK Engineers recommends that the service be coordinated with gas utility provider and increased accordingly to handle the proposed increased gas load for the new addition to serve new packaged gas fired rooftop HVAC equipment, Kitchen Make-up air unit and proposed new kitchen server cooking appliances. New gas distribution piping would be run through the new building addition to serve the new gas fired equipment. Existing gas distribution piping would be evaluated for use in serving the proposed new boiler plant and new domestic hot water heating equipment. The existing portable classroom propane system would remain unchanged during the construction.

Water Service:

The existing water service entrance location would be in the way of the proposed new construction foundation systems. RDK Engineers recommends relocation of the water service entrance adjacent to the existing fire service entrance and main riser in room 143. Reconnection to the existing domestic water system would be required for the phased construction. New domestic cold water piping would be run out to the new addition to serve all new plumbing requiring cold water at the new administrative and nursing support area, cafeteria and kitchen servery. Selective demolition and addition of new domestic cold water branch piping would be included in the phased design to rework the existing systems in the renovated areas as required for new plumbing work and fixture replacement. Installation of new domestic water piping is recommended throughout to prevent leaching of lead in the existing distribution piping.

Domestic Hot Water:

RDK Engineers recommends replacement of the existing standard efficiency boiler/ storage tank domestic hot water system with a new high efficiency sealed combustion condensing type gas fired storage heater. The system would be located at the opposite end of the mechanical room from its current location to make room for the new electric rooms at the exterior wall. The system would be reconnected to the existing system to facilitate the construction phasing and a new domestic hot water circulating system would be run out to the new addition to serve all new plumbing requiring hot water at the new administrative and nursing support area, cafeteria and kitchen servery. Multiple temperature point of use mixing would be required at the various fixture and equipment connections. Selective demolition and addition of new recirculating domestic hot water branch piping would be included in the phased design to rework the existing systems in the renovated areas as required for new plumbing work and fixture replacement. Installation of new domestic hot water piping is recommended throughout to prevent leaching of lead in the existing distribution piping.

Kitchen:

RDK recommends a fully designed code compliant kitchen plumbing system with full separation of sanitary and grease waste systems with a dedicated grease waste exit to an exterior grease interceptor with connection to the sanitary main in Union Street. Kitchen to include three well pot sink, prep sink, hand sinks, mop sink, dishwasher, disposer and rinse sink, floor drains, floor sinks and local recessed grease traps in accordance with the Massachusetts State Plumbing Code, Franklin Board of Health and the Sewer Authority.

Storm Drainage:

RDK recommends a fully designed code compliant interior storm drainage system serving the new addition roof area and connected to the proposed new site drainage system connecting to site recharge or Union Street. The existing roof drainage system would be reworked to facilitate new roof reinforcement and replacement with existing leaders to remain. New drain bodies and system insulation would be provided under the phased renovation area work.

HVAC :

Boiler Plant:

RDK Engineers recommends full replacement of the existing gas fired boilers with new high efficiency condensing sealed combustion gas fired boilers. Size of existing boiler plant would increase to provide additional increase in outdoor air requirement, new corridor ventilation system, and new addition area heating. A two boiler installation is recommended. RDK Engineers recommends new variable speed controlled pumping equipment to replace the existing system hot water pumps to integrate with new two position hot water control valves at all heating applications. A differential bypass control valve will allow for system minimum flow rates to be achieved and control system operating pressure. A new distribution piping system will be provided throughout the building and new addition.

Air Side Equipment Systems:

RDK Engineers recommends airside equipment including unit ventilators and air handlers be replaced with roof mounted packaged energy recovery type heating and cooling units to provide required building exhaust rates with recovery air energy transfer from the exhaust to the fresh air for the building. Classrooms, corridors and support spaces will be provided with conditioned air from the energy recovery units and be provided with fan powered VAV boxes with hot water coils and distribution ductwork. Systems will have a full enthalpy controlled economizer cycle. Exhaust will be captured from all existing renovated building areas and be ducted to the energy recovery units. New duct chases will be required to be added to the existing building to accommodate the new air systems and distribution ductwork.

The administrative area of the new addition will be served by a packaged VAV rooftop system with dx cooling and hot water heating and zone control will be provided by a combination of VAV and Fan Powered VAV boxes with hot water coils and distribution ductwork. System will include demand ventilation control of outside air. System will have a full enthalpy controlled economizer cycle.

The new Cafeteria and Servery spaces will be provided with a packaged roofop DX cooling and hot water heating system with distribution ductwork. A dedicated kitchen exhaust system of hood, exhaust fan and heated makeup air system will be provided for the servery. Additional makeup air will be supplied to the

kitchen from the cafeteria system. The system will include demand ventilation and full enthalpy controlled economizer cycle.

RDK Engineers recommends a new replacement dedicated heating and ventilating unit will be provided for the existing gymnasium.

Controls Systems:

RDK Engineers recommends a new replacement BMS controlled DDC electronic controls be installed to replace the existing pneumatic controls system.

ELECTRICAL:

Electric Service:

RDK Engineers recommends replacement of the existing 400 amp 120/208 3 phase service with a new 1200 amp, 480 volt, 3 phase system fed from a new pad mounted utility transformer fed below ground from the existing utility poles located on Union Street. A new secondary electrical service entrance would be provided in a new electric room located in the exterior corner of the existing mechanical room. A main distribution switchboard would be provided to serve the new electrical distribution system. A breaker would be provided with a transformer to back feed the existing 400 amp service to accommodate the phased construction. All new panelboards, wiring and electrical distribution system would be provided throughout the new building addition and renovated existing building. Where exposed construction is required on painted block walls, a two compartment exposed surface wiremold system such as Wiremold would be utilized to house electrical and telecommunications wiring and devices. Classroom and support areas would be provided with additional circuits to accommodate increasing receptacle power and space demand along with network connectivity to eliminate the need for extension cords, plug strips and receptacle multi outlet plug-in expansion currently used in the existing building spaces.

Emergency Power:

RDK Engineers recommends the installation of a combination life safety and standby generator with multiple transfer switches serving the life safety emergency lighting and proposed elevator with a dedicate life safety distribution system along with a standby power transfer switch and critical operational loads, such as servery refrigerators, network and support systems and other owner identified items. A pad mounted exterior located diesel fuel generator is recommended.

Lighting and Controls:

RDK Engineers recommends replacement of the existing lighting throughout the facility with code compliant energy efficient lighting fixtures along with new lighting fixtures in the new addition. A complete energy code compliant lighting system control system shall be designed throughout the facility incorporating daylight control, occupancy sensor control and split light level control within same spaces. Time of day lighting function can be programmed through the new proposed Building Management System.

Emergency Lighting:

RDK Engineers recommends emergency lighting be achieved with new lighting fixtures wired to the proposed new emergency generator power distribution system. Battery units would be replaced with new emergency lighting in the renovated spaces.

Fire Alarm System:

RDK Engineers recommends that the fire alarm system be upgraded for full compliance with a fully addressable voice command system throughout the building.

Security:

RDK Engineers recommends that the security system be upgraded for both access and intrusion monitoring with new systems throughout.

Telephone:

RDK Engineers recommends that the telephone intercom system be upgraded with new systems throughout.

Data / Information Systems:

RDK Engineers recommends that the Telecommunications system be upgraded with new systems and expanded wireless capability throughout.

Davis Thayer School - Preferred Option

Preliminary Opinion of Probable Project Cost

May 23, 2013

Item	Description			Sub Total	Cost	Comments
Site Development Cost						
	Site Work			$520,661		
	Demolition/removal of portables			inc.above		
Building Construction Cost		61,929 Facility				
	Renovation	50,589 SF @	$134 $/SF	$6,772,425		
	Addition	11,340 SF @	$275 $/SF	$5,135,482		
	HazMat			$550,000		
	Design & Pricing Contingency	@ 12%		$1,557,428		
		Subtotal:			**$14,535,996**	
	General Conditions & Overhead	@ 10%		$1,453,600		
	Bonds	@ 1.1%		$175,886		
	Insurance	@ 0.65%		$105,076		
	Permit	Waived by Town		$0		
	GC Fee	@ 3%		$488,117		
		Suntotal Construction Cost:			**$16,758,675**	
		Escalation (3.5%):			$586,556	
		Total Construction Cost:			**$17,345,230**	
Owners' Indirect Costs						
	Land Survey			$0		By Town
	Geotech			$6,500		2-3 Borings
	Arch.& Eng.Fees			$1,550,000		9.25%
	Reimbursable Expenses			$50,000		
	Project Management			$587,000		3.50%
	Structural Peer Review			$3,000		
	Furnishings, Furniture & Equipment			$420,000		MSBA Guideline
	Technology Equipment			$420,000		MSBA Guideline
	Reproduction /Miscellaneous			$25,000		
	Legal/Advertising			$15,000		
	Material Testing			$30,000		
	Owner's Contingency			$1,986,500		10% of all costs
	Estimated Owner's Costs				**$5,093,000**	
Total Project Cost					**$22,438,230**	

Davis Thayer School - New School Option

Preliminary Opinion of Probable Project Cost

May 23, 2013

Item	Description			Sub Total	Cost	Comments
Site Development Cost						
	Site Work -			$1,500,000		Assumed pad ready lot
Building Construction Cost		57,225 Facility				
	New Construction	57,225 SF @	$275 $/SF	$15,736,875		
	HazMat					
	Design & Pricing Contingency	@	12%	$2,068,425		
		Subtotal:			**$19,305,300**	
	General Conditions & Overhead	@	10%	$1,930,530		
	Bonds	@	1.1%	$233,594		
	Insurance	@	0.65%	$139,551		
	Permit	Waived by Town		$0		
	GC Fee	@	3%	$648,269		
		Suntotal Construction Cost:			**$22,257,245**	
		Escalation (3.5%):			$779,006	
		Total Construction Cost:			**$23,036,250**	
Owners' Indirect Costs						
	Land Survey			$15,000		
	Geotech			$15,000		2-3 Borings
	Arch.& Eng.Fees			$2,059,000		9.25%
	Reimbursable Expenses			$50,000		
	Project Management			$779,000		3.50%
	Structural Peer Review			$7,000		
	Furnishings, Furniture & Equipment			$420,000		MSBA Guideline
	Technology Equipment			$420,000		MSBA Guideline
	Reproduction /Miscellaneous			$25,000		
	Legal/Advertising			$15,000		
	Material Testing			$50,000		
	Owner's Contingency			$1,958,400		7.5% of all costs
	Estimated Owner's Costs				**$5,813,400**	
Total Project Cost					**$28,849,650**	

DAEDALUS

Davis Thayer Elementary School
Franklin, MA

May 22, 2013

Study Estimate

Architect:
Kaestle Boos Associates, Inc
325 Foxborough Blvd.
Foxborough, MA 02035
(508) 549-9906

Project Manager:
Daedalus Projects Incorporated
112 South Street, Boston, MA 02111
161 Exchange Street, Pawtucket, RI 02860
(617) 451 2717 (401) 721 0811

INTRODUCTION

Project Description:

- The project consists of the renovation of the existing building that is 50,589 GSF. There also is an addition to the building that is 11,340 GSF.
- Addition is a steel framed structure with metal floor decks & concrete slabs, steel frame roofing system
- The project includes sitework, parking, demolition of existing prefabricated building, and hazardous waste abatement

Project Particulars:

- Study drawings and the existing conditions report dated April 12th & 22nd, 2013, provided by Kaestle Boos Associates, Inc. and their consultants
- Construction start date of Summer 2014
- Detailed quantity takeoff from these documents where possible
- Daedalus Projects, Inc. experience with similar projects of this nature

Project Assumptions:

- The project will be publicly bid to no less than three (3) General Contractors under Chapter 149
- Our costs assume that there will be at least three subcontractors submitting unrestricted bids in each sub-trade
- The total construction cost reflects fair construction value of this project in a competitive bidding market
- Unit rates are based on current dollars
- An allowance for escalation to start of construction at a rate of 3.5% per year has been carried in the main summary
- Subcontractor's markups have been included in each unit rate. Markups cover the cost of field overhead, home office and subcontractor's profit
- General Conditions and Requirements cover for: site office and/or overheads, personnel, final cleaning, etc.
- Fee is calculated on a percentage basis of direct construction cost
- Design and Pricing Contingency is an allowance for unforeseen design issues, design detail development and specification clarifications

Project Exclusions:

- Design fees and other soft costs
- Interest expense
- Owner's project administration
- Construction of temporary facilities
- Relocation expenses
- AV equipment excluded
- Printing and advertising
- Site or existing condition surveys and investigations
- Utility company back charges during construction
- Work beyond the boundary of the site
- Testing & commissioning
- Specialties, loose furnishings, fixtures and equipment beyond those noted
- LEED Certification submission and process

Davis Thayer Elementary School
Franklin, MA
61,929 GSF

MAIN SUMMARY

			TOTAL	COST/SF
Direct Trade Costs				
Site Development			$520,661	
New Construction	11,340	GSF	$5,135,482	$452.86
Renovation Building	61,929	GSF	$6,772,425	$133.87
Hazardous Waste			$550,000	$8.88
Direct Trade Cost SubTotal			**$12,978,568**	**$209.57**
Design and Pricing Contingency	12.00%	$12,978,568	$1,557,428	$25.15
Trade Cost SubTotal			**$14,535,996**	**$234.72**
General Conditions and Markups				
General Conditions and Requirements	10.00%	$14,535,996	$1,453,600	$23.47
Insurance	1.10%	$15,989,596	$175,886	$2.84
GC Bonds	0.65%	$16,165,481	$105,076	$1.70
Fee	3.00%	$16,270,557	$488,117	$7.88
Estimated Construction Cost Total			**$16,758,673**	**$270.61**
Escalation	3.50%	$16,758,673	$586,554	$9.47
Estimated Construction Cost Total, Including Escalation			**$17,345,227**	**$280.08**

Davis Thayer Elementary School

SITE SUMMARY

Franklin, MA

0 GSF

ELEMENT	TOTAL
02 41 00 Demolition	$53,067
02-EXISTING CONDITIONS	**$53,067**
31 10 00 Site Clearing & Preparation	$41,990
31 20 00 Earth Moving	$36,612
31 25 00 Erosion and Sedimentation Controls	$2,620
31-EARTHWORK	**$81,222**
32 12 16 Asphalt Pavement	$35,888
32 14 00 Unit Pavement	$44,108
32 16 00 Curbs	$35,025
32 17 23 Pavement Markings	$3,021
32 18 00 Playground	$57,000
32 30 00 Site Improvements	$25,500
32 31 13 Chain Link Fences and Gates	$26,971
32 92 00 Turf and Grass	$28,760
32 93 00 Plants	$6,600
32-EXTERIOR IMPROVEMENTS	**$262,872**
33 10 00 Water Utilities	$15,000
33 30 00 Sanitary Sewerage Utilities	$20,000
33 40 00 Storm Drainage Utilities	$50,000
33 50 00 Gas Service	$3,500
33 70 00 Electrical Utilities	$35,000
33-UTILITIES	**$123,500**
Subtotal Carried To Main Summary	**$520,661**

	ELEMENT	QUANTITY	UNIT	UNIT RATE	COST
7	**02-SITEWORK**				
8					
9	**02 41 00 Demolition**				
10	Demolish existing portable classrooms	**5,282**	SF		See Building
11	R & D existing wood ramp and stair at portable class	**1**	LS	$1,500.00	$1,500
12	Sawcut existing pavement	**587**	LF	$5.00	$2,935
13	Remove bituminous concrete paving	**12,549**	SF	$1.00	$12,549
14	Remove existing concrete pavement	**3,530**	SF	$1.50	$5,295
15	Remove existing chainlink fence	**256**	LF	$7.00	$1,792
16	Remove backstop	**124**	LF	$10.00	$1,240
17	Remove existing infield	**9,090**	SF	$1.50	$13,635
18	Remove picnic table/bench	**4**	EA	$50.00	$200
19	Remove existing playground structures	**3**	EA	$500.00	$1,500
20	Remove existing playground finish	**2,327**	SF	$1.00	$2,327
21	Remove double swing gates allowance	**2**	EA	$200.00	$400
22	Remove existing stair	**49**	SF	$3.00	$147
23	Remove existing stair and ramp	**208**	SF	$3.00	$624
24	Remove existing curb	**489**	LF	$7.00	$3,423
25	Protect existing playground equipment during construction	**1**	LS	$2,000.00	$2,000
26	Misc. demolition other than above	**1**	AL	$3,500.00	$3,500
27	**02 41 00 Demolition Total**				**$53,067**
28					
29					
30	**31-EARTHWORK**				
31					
32	**31 10 00 Site Clearing & Preparation**				
33	Clear & grub	**1**	AL	$5,000.00	$5,000
34	Existing tree protection	**1**	AL	$700.00	$700
35	Construction fence for addition building allowance	**324**	LF	$10.00	$3,240
36	Construction fence for site construction allowance	**700**	LF	$10.00	$7,000
37	Construction fence for renovation building allowance	**380**	LF	$10.00	$3,800
38	Double construction gate	**2**	EA	$2,000.00	$4,000
39	Temporary construction entrance	**2**	LS	$6,500.00	$13,000
40	Wash down/re-fuelling/parking allowance	**1,500**	SF	$1.50	$2,250
41	Inlet protection	**1**	LS	$1,500.00	$1,500
42	Temp signs	**1**	LS	$1,500.00	$1,500
43	**31 10 00 Site Clearing & Preparation Total**				**$41,990**
44					
45	**31 20 00 Earth Moving**				
46	Strip and stockpile existing topsoil (depth 6") allowance	**234**	CY	$7.00	$1,640

	ELEMENT	QUANTITY	UNIT	UNIT RATE	COST
47	Site cut and fill allowance	**396**	CY	$7.00	$2,771
48	Cut and fill of sidewalk	**332**	CY	$8.00	$2,658
49	Cut and fill roadway and parking lot	**703**	CY	$8.00	$5,622
50	Cut and fill of play area surfacing	**141**	CY	$8.00	$1,126
51	Soil export allowance	**366**	CY	$16.00	$5,850
52	Gravel base to roadway & parking lot	**532**	CY	$25.00	$13,292
53	Gravel base to sidewalks and paving	**146**	CY	$25.00	$3,654
54	**31 20 00 Earth Moving Total**				**$36,612**
55					
56	**31 25 00 Erosion and Sedimentation Controls**				
57	Silt fence allowance	**374**	LF	$5.00	$1,870
58	Haybales for stockpile soil allowance	**150**	LF	$5.00	$750
59	**31 25 00 Erosion and Sedimentation Controls Total**				**$2,620**
60					
61					
62	**32-EXTERIOR IMPROVEMENTS**				
63					
64	**32 12 16 Asphalt Pavement**				
65	Bituminous concrete pavement parking lot	**6,607**	SF	$2.75	$18,169
66	Bituminous concrete pavement Parent drop off	**6,443**	SF	$2.75	$17,718
67	**32 12 16 Asphalt Pavement Total**				**$35,888**
68					
69	**32 14 00 Unit Pavement**				
70	Concrete paving sidewalks allowance	**7,176**	SF	$5.50	$39,468
71	Concrete pad allowance	**1**	LS	$3,500.00	$3,500
72	Curb cuts allowance	**3**	EA	$380.00	$1,140
73	**32 14 00 Unit Pavement Total**				**$44,108**
74					
75	**32 16 00 Curbs**				
76	Curb allowance	**1,401**	LF	$25.00	$35,025
77	**32 16 00 Curbs Total**				**$35,025**
78					
79	**32 17 23 Pavement Markings**				
80	ADA markings at Field school base project	**3**	EA	$75.00	$225
81	Parking stall markings	**30**	EA	$35.00	$1,050
82	Pedestrian cross walk markings	**123**	SF	$2.00	$246
83	Misc. pavement marking	**1**	AL	$1,500.00	$1,500
84	**32 17 23 Pavement Markings Total**				**$3,021**
85					
86	**32 18 00 Playground**				

	ELEMENT	QUANTITY	UNIT	UNIT RATE	COST
87	New paved play area (Rubberized Play surface)	**3,800**	SF	$15.00	$57,000
88	**32 18 00 Playground Total**				**$57,000**
89					
90	**32 30 00 Site Improvements**				
91	Bike racks allowance	**1**	LS	$1,500.00	$1,500
92	Metal trash receptacles	**3**	EA	$800.00	$2,400
93	Wood & steel bench	**3**	EA	$1,200.00	$3,600
94	Traffic signs	**1**	LS	$1,500.00	$1,500
95	Repair existing retaining wall allowance	**1**	LS	$1,500.00	$1,500
96	Misc. site improvement	**1**	LS	$15,000.00	$15,000
97	**32 30 00 Site Improvements Total**				**$25,500**
98					
99	**32 31 13 Chain Link Fences and Gates**				
100	New 4" chain link fence allowance	**279**	LF	$19.00	$5,301
101	Guard rail at new paved play area	**195**	LF	$45.00	$8,775
102	New double swing gates allowance	**2**	EA	$1,800.00	$3,600
103	Pedestrian gate allowance	**2**	EA	$500.00	$1,000
104	Replace fence at Dean college property line allowance	**237**	LF	$35.00	$8,295
105	**32 31 13 Chain Link Fences and Gates Total**				**$26,971**
106					
107	**32 92 00 Turf and Grass**				
108	Screen and spread topsoil	**234**	CY	$7.00	$1,640
109	Mulch allowance	**5**	CY	$40.00	$200
110	New lawn	**10,687**	SF	$0.40	$4,275
111	Re-established front lawn	**19,918**	SF	$0.35	$6,971
112	Re-established lawn	**44,783**	SF	$0.35	$15,674
113	**32 92 00 Turf and Grass Total**				**$28,760**
114					
115	**32 93 00 Plants**				
116	Larger trees	**2**	EA	$800.00	$1,600
117	Middle size tree	**5**	EA	$500.00	$2,500
118	Ground cover allowance	**1**	AL	$2,500.00	$2,500
119	**32 93 00 Plants Total**				**$6,600**
120					
121					
122	**33-UTILITIES**				
123					
124	**33 10 00 Water Utilities**				
125	Water service allowance	**1**	AL	$15,000.00	$15,000
126	**33 10 00 Water Utilities Total**				**$15,000**

	ELEMENT	QUANTITY	UNIT	UNIT RATE	COST
127					
128	**33 30 00 Sanitary Sewerage Utilities**				
129	Sewer service allowance	**1**	AL	$20,000.00	$20,000
130	**33 30 00 Sanitary Sewerage Utilities Total**				**$20,000**
131					
132	**33 40 00 Storm Drainage Utilities**				
133	Storm drainage allowance	**1**	AL	$50,000.00	$50,000
134	**33 40 00 Storm Drainage Utilities Total**				**$50,000**
135					
136	**33 50 00 Gas Service**				
137	Trenching and backfill only for new service line allowance	**100**	LF	$35.00	$3,500
138	**33 50 00 Gas Service Total**				**$3,500**
139					
140	**33 70 00 Electrical Utilities**				
141	Site electrical allowance	**1**	AL	$35,000.00	$35,000
142	**33 70 00 Electrical Utilities Total**				**$35,000**
143					
144		**TOTAL TO SUMMARY**			**$520,661**

Davis Thayer Elementary School
Franklin, MA
11,340 GSF

ADDITION SUMMARY

ELEMENT	TRADE COST	COST/SF
03 30 00 Concrete	$175,397	$15.47
03-CONCRETE TOTAL	**$175,397**	**$15.47**
04 20 00-Unit Masonry Assemblies	$446,224	$39.35
04-MASONRY TOTAL	**$446,224**	**$39.35**
05 12 00 Structural Steel Framing	$238,300	$21.01
05 15 00 Stud Shear Connectors	NIC	
05 31 00 Steel Decking	$45,616	$4.02
05 50 00 Metal Fabrications	$65,459	$5.77
05 81 00-Expansion Joint Systems	$16,254	$1.43
05-METALS TOTAL	**$365,629**	**$32.24**
06 10 00 Rough Carpentry	$67,869	$5.98
06 20 00 Finish Carpentry	$15,475	$1.36
06 40 00 Architectural Woodwork	$79,350	$7.00
06-WOODS & PLASTICS TOTAL	**$162,694**	**$14.35**
07 16 13 Waterproofing and Dampproofing	$36,390	$3.21
07 21 00 Thermal Insulation	$148,849	$13.13
07 26 00 Vapor Retarders	$152,295	$13.43
07 50 00-Roofing	$177,255	$15.63
07 84 00 Firestopping	$15,000	$1.32
07 92 00 Joint Sealants	$14,000	$1.23
07-THERMAL & MOISTURE PROTECTION TOTAL	**$543,789**	**$47.95**
08 11 13 Hollow Metal Doors and Frames	$10,950	$0.97
08 14 16 Flush Wood Doors	$9,350	$0.82
08 31 00 Access Doors and Panels	$1,500	$0.13
08 33 00-Overhead Cooling Doors	$6,500	$0.57
08 43 13 Aluminum-Framed Storefronts	$316,140	$27.88
08 44 13 Glazed Aluminum Curtain Walls	$609,200	$53.72
08 51 13 Aluminum Windows	$685,350	$60.44
08 71 00 Door Hardware	$22,200	$1.96
08 80 00 Glazing	$11,000	$0.97
08-OPENINGS TOTAL	**$1,672,190**	**$147.46**
09 20 00 Gypsum Wallboard Systems	$255,971	$22.57
09 30 00 Tile	$35,856	$3.16
09 51 00 Acoustical Ceiling	$43,981	$3.88

Davis Thayer Elementary School
Franklin, MA
11,340 GSF

ADDITION SUMMARY

ELEMENT	TRADE COST	COST/SF
09 65 00 Resilient Flooring	$29,753	$2.62
09 90 00 Paints and Coatings	$35,714	$3.15
09-FINISHES TOTAL	**$401,275**	**$35.39**
10 10 00 Visual Display Boards	$57,370	$5.06
10 14 00 Signage	$18,371	$1.62
10 20 00-Exterior Louvers	$1,200	$0.11
10 21 13 Toilet Compartments	$0	
10 28 13 Toilet Accessories	$1,000	$0.09
10 44 00 Fire Protection Specialties	$1,350	$0.12
10 51 13 Metal Lockers	$0	$0.00
10-SPECIALTIES TOTAL	**$79,291**	**$6.99**
11 31 00 Appliances	$1,700	$0.15
11 40 00 Food Service Equipment	$25,000	$2.20
11 52 13 Projection Screens	$5,000	$0.44
11 66 23 Gymnasium Equipment	$0	$0.00
11-EQUIPMENT TOTAL	**$31,700**	**$2.80**
12 24 00 Window Shades	$45,690	$4.03
12 48 13 Entrance Floor Mats & Frames	$7,315	$0.65
12-FURNISHINGS TOTAL	**$53,005**	**$4.67**
14 24 00-Hydrulic Elevators	$190,000	$16.75
14-CONVEYING SYSTEMS TOTAL	**$190,000**	**$16.75**
21 00 00 Fire Protection	$42,525	$3.75
22 00 00 Plumbing	$100,000	$8.82
23 00 00 HVAC	$419,580	$37.00
21-23 MECHANICAL TOTAL	**$562,105**	**$49.57**
26 00 00 Electrical	$362,880	$32.00
26-ELECTRICAL TOTAL	**$362,880**	**$32.00**
31 30 00 Building Excavation	$47,304	$4.17
31 40 00 Shoring and Underpinning	$42,000	$3.70
31- EARTHWORK TOTAL	**$89,304**	**$7.88**
Subtotal Carried To Main Summary	**$5,135,482**	**$452.86**

ADDITION DETAIL

	ELEMENT	QUANTITY	UNIT	UNIT RATE	COST
8	Basement	**321**	**SF**		
9	Main Level	**10,397**	**SF**		
10	Second Level	**310**	**SF**		
11	Third Level	**312**	**SF**		
12	Total Addition	**11,340**	**GSF**		
13					
14					
15	**03-CONCRETE**				
16					
17	**03 30 00 Concrete**				
18	*Slab-on-Grade*				
19	Concrete 4" thick	**135**	CY	$115.00	$15,525
20	WWF -10% overlap	**11,437**	SF	$0.75	$8,578
21	Place and finish	**10,397**	SF	$2.00	$20,794
22	*Slab on deck; 4 -1/2" normal weight*				
23	Concrete	**17**	CY	$115.00	$1,955
24	WWF - 10% overlap	**1,037**	SF	$0.75	$778
25	Place and finish	**943**	SF	$2.00	$1,886
26	*Continuous footings; 2' 2" x 12" deep*				
27	Concrete	**29**	CY	$115.00	$3,335
28	Rebar w/dowels	**2,465**	LBS	$0.85	$2,095
29	Formwork	**680**	SF	$8.00	$5,440
30	Place and finish	**29**	CY	$75.00	$2,175
31	*Frost walls*				
32	Concrete	**53**	CY	$115.00	$6,095
33	Rebar	**6,625**	LBS	$0.85	$5,631
34	Formwork	**2,720**	SF	$8.00	$21,760
35	Brick shelf	**340**	LF	$7.00	$2,380
36	Place and finish	**53**	CY	$75.00	$3,975
37	*Basement Walls*				
38	Concrete	**23**	CY	$115.00	$2,645
39	Rebar	**3,450**	LBS	$0.85	$2,933
40	Formwork	**1,080**	SF	$8.00	$8,640
41	Place and finish	**23**	CY	$75.00	$1,725
42	*Spread footings*				
43	Concrete	**43**	CY	$115.00	$4,945
44	Rebar	**3,655**	LBS	$0.65	$2,376
45	Formwork	**779**	SF	$8.00	$6,232
46	Place and finish	**43**	CY	$75.00	$3,225
47	Pier/pilaster; 2' 0" sq w/40#/lf rebar	**26**	EA	$500.00	$13,000

ADDITION DETAIL

	ELEMENT	QUANTITY	UNIT	UNIT RATE	COST
48	*Miscellaneous items*				
49	Elevator pit	**1**	EA	$3,500.00	$3,500
50	Vapor barrier	**10,917**	SF	$0.30	$3,275
51	Allow for concrete pads and bases	**1**	LS	$5,000.00	$5,000
52	Minor dewatering during construction	**1**	LS	$3,500.00	$3,500
53	Concrete general conditions	**1**	LS	$12,000.00	$12,000
54	**03 30 00 Concrete Total**				**$175,397**
55					
56					
57	**04-MASONRY**				
58					
59	**04 20 00-Unit Masonry Assemblies**				
60	CMU elevator shaft	**1,776**	SF	$18.00	$31,968
61	Brick exterior (40% exterior)	**12,184**	SF	$34.00	$414,256
62	**04 20 00-Unit Masonry Assemblies Total**				**$446,224**
63					
64					
65	**05-METALS**				
66					
67	**05 12 00 Structural Steel Framing**				
68	Structural Steel	**28**	TON	$3,200.00	$89,600
69	Structural Steel Roof	**23**	TON	$3,400.00	$78,200
70	Columns	**17**	TNS	$3,200.00	$54,400
71	Allow for connections	**3**	TNS	$3,700.00	$11,100
72	Moment connections	**1**	AL	$5,000.00	$5,000
73	**05 12 00 Structural Steel Framing Total**				**$238,300**
74					
75	**05 15 00 Stud Shear Connectors**				
76	Shear Studs				NIC
77	**05 15 00 Stud Shear Connectors Total**				**NIC**
78					
79	**05 31 00 Steel Decking**				
80	Metal floor deck	**930**	SF	$3.65	$3,395
81	Acoustical deck roof at cafeteria	**2,675**	SF	$5.00	$13,375
82	Metal roof deck	**8,242**	SF	$3.50	$28,846
83	**05 31 00 Steel Decking Total**				**$45,616**
84					
85	**05 50 00 Metal Fabrications**				
86	Metals for elevator	**1**	LS	$5,000.00	$5,000
87	Miscellaneous metals in exterior closure	**30,459**	SF	$1.00	$30,459

ADDITION DETAIL

	ELEMENT	QUANTITY	UNIT	UNIT RATE	COST
88	Miscellaneous metals	**1**	LS	$30,000.00	$30,000
89	**05 50 00 Metal Fabrications Total**				**$65,459**
90					
91	**05 81 00-Expansion Joint Systems**				
92	Floor expansion joint	**109**	LF	$38.00	$4,142
93	Exterior wall expansion joint	**156**	LF	$45.00	$7,020
94	Roof expansion joint	**134**	LF	$38.00	$5,092
95	**05 81 00-Expansion Joint Systems Total**				**$16,254**
96					
97					
98	**06-WOODS & PLASTICS**				
99					
100	**06 10 00 Rough Carpentry**				
101	Blocking at doors	**472**	LF	$2.50	$1,180
102	Installation of doors	**32**	EA	$125.00	$4,000
103	Rough carpentry for interiors	**1**	LS	$17,000.00	$17,000
104	Rough carpentry for exteriors	**30,459**	SF	$1.50	$45,689
105	**06 10 00 Rough Carpentry Total**				**$67,869**
106					
107	**06 20 00 Finish Carpentry**				
108	FRP to kitchen walls	**820**	SF	$8.50	$6,970
109	Miscellaneous finish carpentry	**11,340**	SF	$0.75	$8,505
110	**06 20 00 Finish Carpentry Total**				**$15,475**
111					
112	**06 40 00 Architectural Woodwork**				
113	Nurse's Exam Room				
114	Nurse's exam room upper cabinets	**20**	LF	$180.00	$3,600
115	Nurse's exam room work surface	**20**	LF	$150.00	$3,000
116	Nurse's exam room base cabinets	**20**	LF	$200.00	$4,000
117	Bathroom counters	**3**	LF	$250.00	$750
118	Casework at Principal's Office	**1**	LS	$11,000.00	$11,000
119	Casework at Assistant Principal Office	**1**	LS	$6,000.00	$6,000
120	Casework at Admin. Office	**1**	LS	$14,000.00	$14,000
121	Casework at Files Room	**1**	LS	$8,000.00	$8,000
122	Casework at Lobby	**1**	LS	$5,000.00	$5,000
123	Casework at Conference room	**1**	LS	$5,000.00	$5,000
124	Casework at Cafeteria	**1**	LS	$19,000.00	$19,000
125	**06 40 00 Architectural Woodwork Total**				**$79,350**
126					
127					

ADDITION DETAIL

	ELEMENT	QUANTITY	UNIT	UNIT RATE	COST
128	**07-THERMAL & MOISTURE PROTECTION**				
129					
130	**07 16 13 Waterproofing and Dampproofing**				
131	Dampproofing to frost and basement walls	**5,980**	SF	$5.50	$32,890
132	Waterproofing at elevator pit	**1**	LS	$3,500.00	$3,500
133	**07 16 13 Waterproofing and Dampproofing TOTAL**				**$36,390**
134					
135	**07 21 00 Thermal Insulation**				
136	Insulation below slab on grade	**10,917**	SF	$2.50	$27,293
137	Rigid insulation to frost and basement walls	**5,980**	SF	$2.50	$14,950
138	Exterior wall rigid insulation	**30,459**	SF	$3.50	$106,607
139	**07 21 00 Thermal Insulation Total**				**$148,849**
140					
141	**07 26 00 Vapor Retarders**				
142	Air barrier	**30,459**	SF	$5.00	$152,295
143	**07 26 00 Vapor Retarders Total**				**$152,295**
144					
145	**07 50 00-Roofing**				
146	Roofing system including insulation	**11,437**	SF	$13.75	$157,255
147	Walkway pads	**1**	LS	$5,000.00	$5,000
148	Roof accessories	**1**	LS	$15,000.00	$15,000
149	**07 50 00-Roofing Total**				**$177,255**
150					
151	**07 84 00 Firestopping**				
152	Firestopping	**1**	AL	$6,000.00	$6,000
153	Fireproofing to stair, elevator, and exposed steel	**1**	AL	$9,000.00	$9,000
154	**07 84 00 Firestopping Total**				**$15,000**
155					
156	**07 92 00 Joint Sealants**				
157	Interior caulking	**1**	LS	$7,000.00	$7,000
158	Exterior caulking	**1**	LS	$7,000.00	$7,000
159	**07 92 00 Joint Sealants Total**				**$14,000**
160					
161					
162	**08-DOORS & WINDOWS**				
163					
164	**08 11 13 Hollow Metal Doors and Frames**				
165	Exterior door HM, pair complete	**1**	PR	$1,500.00	$1,500
166	Interior HM Frames- Single	**18**	EA	$250.00	$4,500
167	Interior HM Frames- pair	**9**	EA	$300.00	$2,700

ADDITION DETAIL

	ELEMENT	QUANTITY	UNIT	UNIT RATE	COST
168	Single HM door and Frames	**3**	EA	$450.00	$1,350
169	Double HM door and frame	**1**	PR	$900.00	$900
170	**08 11 13 Hollow Metal Doors and Frames Total**				**$10,950**
171					
172	**08 14 16 Flush Wood Doors**				
173	Interior glass door; pair - corridor	**1**	PR	$1,500.00	$1,500
174	Interior vestibule door; pair	**3**	PR	$700.00	$2,100
175	Interior door, single	**15**	EA	$250.00	$3,750
176	Interior door, pair	**4**	PR	$500.00	$2,000
177	**08 14 16 Flush Wood Doors Total**				**$9,350**
178					
179	**08 31 00 Access Doors and Panels**				
180	Access doors	**5**	EA	$300.00	$1,500
181	**08 31 00 Access Doors and Panels Total**				**$1,500**
182					
183	**08 33 00-Overhead Cooling Doors**				
184	Overhead coiling grille at sever	**1**	EA	$6,500.00	$6,500
185	**08 33 00-Overhead Cooling Doors Total**				**$6,500**
186					
187	**08 43 13 Aluminum-Framed Storefronts**				
188	Aluminum storefront (10% exterior)	**3,046**	SF	$90.00	$274,140
189	*Aluminum Entry Doors Including Hardware:*				
190	Exterior Aluminum entry doors including hardware	**3**	PR	$7,000.00	$21,000
191	Interior Aluminum entry doors including hardware	**3**	PR	$7,000.00	$21,000
192	**08 43 13 Aluminum-Framed Storefronts Total**				**$316,140**
193					
194	**08 44 13 Glazed Aluminum Curtain Walls**				
195	Curtainwall (20% exterior)	**6,092**	SF	$100.00	$609,200
196	**08 44 13 Glazed Aluminum Curtain Walls Total**				**$609,200**
197					
198	**08 51 13 Aluminum Windows**				
199	Windows (30% exterior)	**9,138**	SF	$75.00	$685,350
200	**08 51 13 Aluminum Windows Total**				**$685,350**
201					
202	**08 71 00 Door Hardware**				
203	Hardware	**32**	SET	$600.00	$19,200
204	Card access	**1**	LS	$3,000.00	$3,000
205	**08 71 00 Door Hardware Total**				**$22,200**
206					
207					

ADDITION DETAIL

	ELEMENT	QUANTITY	UNIT	UNIT RATE	COST
208	**08 80 00 Glazing**				
209	Glazing in doors	**1**	AL	$5,000.00	$5,000
210	Allow for interior glazing	**1**	LS	$6,000.00	$6,000
211	**08 80 00 Glazing Total**				**$11,000**
212					
213					
214	**09-FINISHES**				
215					
216	**09 20 00 Gypsum Wallboard Systems**				
217	Interior of exterior	**11,856**	SF	$3.75	$44,460
218	6" Metal stud back-up	**12,184**	SF	$7.50	$91,380
219	Gypsum sheathing	**11,856**	SF	$3.50	$41,496
220	Corridor partitions	**2,917**	SF	$12.00	$35,004
221	Standard partitions	**4,003**	SF	$7.50	$30,023
222	Demising partitions	**648**	SF	$10.00	$6,480
223	Plumbing chase wall	**344**	SF	$12.00	$4,128
224	Allowance for soffit	**1**	LS	$3,000.00	$3,000
225	**09 20 00 Gypsum Wallboard Systems Total**				**$255,971**
226					
227	**09 30 00 Tile**				
228	Ceramic tile floor - Toilets	**138**	SF	$15.00	$2,070
229	Ceramic tile wall - Toilets	**172**	SF	$15.00	$2,580
230	Ceramic tile base	**15**	LF	$10.00	$150
231	Quarry tile flooring	**1,616**	SF	$18.00	$29,088
232	Quarry tile base	**164**	LF	$12.00	$1,968
233	**09 30 00 Tile Total**				**$35,856**
234					
235	**09 51 00 Acoustical Ceiling**				
236	ACT ceilings	**7,900**	SF	$4.50	$35,550
237	Acoustic ceiling tile, washable, Kitchen	**1,627**	SF	$4.75	$7,728
238	Acoustic ceiling tile, moisture resistant, Toilets	**148**	SF	$4.75	$703
239	**09 51 00 Acoustical Ceiling Total**				**$43,981**
240					
241	**09 65 00 Resilient Flooring**				
242	VCT flooring - Lobby, corridors, admin office	**7,698**	SF	$3.50	$26,943
243	Resilient base	**1,405**	LF	$2.00	$2,810
244	**09 65 00 Resilient Flooring Total**				**$29,753**
245					
246	**09 90 00 Paints and Coatings**				
247	Paint GWB walls	**27,680**	SF	$1.00	$27,680

ADDITION DETAIL

	ELEMENT	QUANTITY	UNIT	UNIT RATE	COST
248	Painted concrete floors	**587**	SF	$1.25	$734
249	Paint HM frames	**36**	LVL	$50.00	$1,800
250	Paint doors and frames	**5**	LVL	$100.00	$500
251	Miscellaneous painting	**1**	LS	$5,000.00	$5,000
252	**09 90 00 Paints and Coatings Total**				**$35,714**
253					
254					
255	**10-SPECIALTIES**				
256					
257	**10 10 00 Visual Display Boards**				
258	Writeable surface (8'5" x 5')	**19**	EA	$530.00	$10,070
259	Writeable surface (20' x 5')	**22**	EA	$1,250.00	$27,500
260	Tackboards (4' x 6')	**41**	EA	$300.00	$12,300
261	Miscellaneous markerboards and tackboards	**1**	LS	$7,500.00	$7,500
262	**10 10 00 Visual Display Boards Total**				**$57,370**
263					
264	**10 21 13 Toilet Compartments**				
265	No works anticipated in this section				
266	**10 21 13 Toilet Compartments Total**				
267					
268	**10 20 00-Exterior Louvers**				
269	Elevator vent	**1**	EA	$1,200.00	$1,200
270	**10 20 00-Exterior Louvers Total**				**$1,200**
271					
272	**10 14 00 Signage**				
273	Building directory	**1**	EA	$3,500.00	$3,500
274	Bronze dedication plaque	**1**	EA	$2,500.00	$2,500
275	10" high cast black alum letters, school name	**1**	EA	$5,000.00	$5,000
276	Building signage allowance - based on floor area	**11,340**	SF	$0.65	$7,371
277	**10 14 00 Signage Total**				**$18,371**
278					
279	**10 51 13 Metal Lockers**				
280	No works anticipated in this section				$0
281	**10 51 13 Metal Lockers Total**				**$0**
282					
283	**10 44 00 Fire Protection Specialties**				
284	Fire extinguishers - Fully recessed/non-rated	**3**	EA	$450.00	$1,350
285	**10 44 00 Fire Protection Specialties Total**				**$1,350**
286					
287					

ADDITION DETAIL

	ELEMENT	QUANTITY	UNIT	UNIT RATE	COST
288	**10 28 13 Toilet Accessories**				
289	Toilet room accessories - private	**2**	EA	$500.00	$1,000
290	**10 28 13 Toilet Accessories Total**				**$1,000**
291					
292	**11-EQUIPMENT**				
293					
294	**11 31 00 Appliances**				
295	Microwave oven	**1**	EA	$400.00	$400
296	Refrigerator	**1**	EA	$1,200.00	$1,200
297	Installation	**2**	EA	$50.00	$100
298	**11 31 00 Appliances Total**				**$1,700**
299					
300	**11 40 00 Food Service Equipment**				
301	Relocated existing food service equipment equipment	**1**	AL	$25,000.00	$25,000
302	**11 40 00 Food Service Equipment Total**				**$25,000**
303					
304	**11 52 13 Projection Screens**				
305	Electrical operated screens at Cafeteria	**1**	EA	$5,000.00	$5,000
306	**11 52 13 Projection Screens Total**				**$5,000**
307					
308	**11 66 23 Gymnasium Equipment**				
309	No works anticipated in this section				$0
310	**11 66 23 Gymnasium Equipment Total**				**$0**
311					
312					
313	**12-FURNISHINGS**				
314					
315	**12 24 00 Window Shades**				
316	Window shades; exterior	**9,138**	SF	$5.00	$45,690
317	**12 24 00 Window Shades Total**				**$45,690**
318					
319	**12 48 13 Entrance Floor Mats & Frames**				
320	Entrance floor mats & frames	**209**	SF	$35.00	$7,315
321	**12 48 13 Entrance Floor Mats & Frames Total**				**$7,315**
322					
323					
324					
325					
326					
327					

ADDITION DETAIL

	ELEMENT	QUANTITY	UNIT	UNIT RATE	COST
328	**14-CONVEYING SYSTEMS**				
329					
330	**14 24 00-Hydrulic Elevators**				
331	Elevator, 4 stops	**1**	EA	$190,000.00	$190,000
332	**14 24 00-Hydrulic ElevatorsTotal**				**$190,000**
333					
334					
335	**21, 22, 23-MECHANICAL**				
336					
337	**21 00 00 Fire Protection**				
338	Sprinkler Coverage	**11,340**	SF	$3.75	$42,525
339	**21 00 00 Fire ProtectionTotal**				**$42,525**
340					
341	**22 00 00 Plumbing**				
342	Plumbing allowance	**1**	LS	$100,000.00	$100,000
343	**22 00 00 PlumbingTotal**				**$100,000**
344					
345	**23 00 00 HVAC**				
346	HVAC allowance	**11,340**	SF	$37.00	$419,580
347	**23 00 00 HVACTotal**				**$419,580**
348					
349					
350	**26-ELECTRICAL**				
351					
352	**26 00 00 Electrical**				
353	Electrical allowance	**11,340**	SF	$32.00	$362,880
354	**26 00 00 ElectricalTotal**				**$362,880**
355					
356					
357					
358					
359					
360					
361					
362					
363					
364					
365					
366					
367					

ADDITION DETAIL

	ELEMENT	QUANTITY	UNIT	UNIT RATE	COST
368	**31- EARTHWORK**				
369					
370	**31 30 00 Building Excavation**				
371	Basement excavation	**131**	CY	$9.00	$1,177
372	Slab on grade excavation	**466**	CY	$9.00	$4,198
373	Elevator pit excavation	**1**	EA	$2,500.00	$2,500
374	New strip foundation excavation	**302**	CY	$9.00	$2,720
375	Spread footing excavation	**212**	CY	$9.00	$1,911
376	premium for ledge removal allowance	**30**	CY	$100.00	$3,000
377	Backfill with selected material from on site	**520**	CY	$9.00	$4,683
378	Disposal off site	**591**	CY	$18.00	$10,647
379	Gravel base to building	**424**	CY	$25.00	$10,590
380	Perimeter foundation drain	**367**	LF	$16.00	$5,878
381	**31 30 00 Building Excavation Total**				**$47,304**
382					
383	**31 40 00 Shoring and Underpinning**				
384	Underpinning to the existing foundation for new construction	**30**	CY	$1,400.00	$42,000
385	**31 40 00 Shoring and Underpinning Total**				**$42,000**

Davis Thayer Elementary School
Franklin, MA
50,589 GSF

RENOVATION SUMMARY

ELEMENT	TRADE COST	COST/SF
02 41 19 Selective Structure Demolition	$228,687	$4.52
02-EXISTING CONDITIONS TOTAL	**$228,687**	**$4.52**
03 30 00 Concrete	$232,017	$4.59
03-CONCRETE TOTAL	**$232,017**	**$4.59**
04 23 00 Masonry Repair	$105,000	$2.08
04-MASONRY TOTAL	**$105,000**	**$2.08**
05 12 00 Structural Steel Framing	$77,000	$1.52
05 15 00 Stud Shear Connectors	$2,310	$0.05
05 31 00 Steel Decking	$15,015	$0.30
05 50 00 Metal Fabrications	$185,973	$3.68
05 81 00-Expansion Joint Systems	$0	$0.00
05-METALS TOTAL	**$280,298**	**$5.54**
06 10 00 Rough Carpentry	$112,001	$2.21
06 20 00 Finish Carpentry	$252,945	$5.00
06 40 00 Architectural Woodwork	$387,160	$7.65
06-WOODS & PLASTICS TOTAL	**$752,106**	**$14.87**
07 16 13 Waterproofing and Dampproofing	NIC	
07 21 00 Thermal Insulation	NIC	
07 26 00 Vapor Retarders	NIC	
07 50 00-Roofing	$0	$0.00
07 84 00 Firestopping	$11,000	$0.22
07 92 00 Joint Sealants	$35,000	$0.69
07-THERMAL & MOISTURE PROTECTION TOTAL	**$46,000**	**$0.91**
08 11 13 Hollow Metal Doors and Frames	$20,500	$0.41
08 14 16 Flush Wood Doors	$11,550	$0.23
08 31 00 Access Doors and Panels	$5,400	$0.11
08 33 23 Overhead Coiling Doors	NIC	
08 43 13 Aluminum-Framed Storefronts	$0	$0.00
08 44 13 Glazed Aluminum Curtain Walls	$0	$0.00
08 51 13 Aluminum Windows	$0	$0.00
08 71 00 Door Hardware	$75,800	$1.50
08 80 00 Glazing	$20,700	$0.41
08-OPENINGS TOTAL	**$133,950**	**$2.65**
09 20 00 Gypsum Wallboard Systems	$225,309	$4.45

Davis Thayer Elementary School
Franklin, MA
50,589 GSF

RENOVATION SUMMARY

ELEMENT	TRADE COST	COST/SF
09 30 00 Tile	$75,885	$1.50
09 51 00 Acoustical Ceiling	$172,274	$3.41
09 64 66-Resilient Wood Flooring	$60,915	$1.20
09 65 00 Resilient Flooring	$202,073	$3.99
09 68 00 Carpeting	$0	$0.00
09 80 00 Acoustic Treatment	$11,163	$0.22
09 90 00 Paints and Coatings	$141,683	$2.80
09-FINISHES TOTAL	**$889,302**	**$17.58**
10 10 00 Visual Display Boards	$43,500	$0.86
10 21 13 Toilet Compartments	Included	
10 14 00 Signage	$43,883	$0.87
10 51 13 Metal Lockers	$100,000	$1.98
10 44 00 Fire Protection Specialties	$2,277	$0.05
10 65 00-Operable Panel Partition	$0	$0.00
10 28 13 Toilet Accessories	$45,440	$0.90
10-SPECIALTIES TOTAL	**$235,099**	**$4.65**
11 52 13 Projection Screens	$28,015	$0.55
11 31 00 Appliances	$0	$0.00
11 40 00 Food Service Equipment	$0	
11 66 23 Gymnasium Equipment	$41,900	$0.83
11-EQUIPMENT TOTAL	**$69,915**	**$1.38**
14 24 00-Hydrulic Elevators	$0	$0.00
14-CONVEYING SYSTEMS TOTAL	**$0**	**$0.00**
21 00 00 Fire Protection	$50,589	$1.00
22 00 00 Plumbing	$360,000	$7.12
23 00 00 HVAC	$1,770,615	$35.00
21-23 MECHANICAL TOTAL	**$2,181,204**	**$43.12**
26 00 00 Electrical	$1,618,848	$32.00
26-ELECTRICAL TOTAL	**$1,618,848**	**$32.00**
Subtotal Carried To Main Summary	**$6,772,425**	**$133.87**

RENOVATION DETAIL

	ELEMENT	QUANTITY	UNIT	UNIT RATE	COST
8	Renovation area	**50,589**	**SF**		
9					
10	**02-EXISTING CONDITIONS**				
11					
12	**02 41 19 Selective Structure Demolition**				
13	Demolish existing portables classroom	**55,344**	CF	$0.75	$41,508
14	Demo bleachers - gymnasium	**1,191**	SF	$5.00	$5,955
15	Demo existing partitions	**12,398**	SF	$3.50	$43,393
16	Demo ramp & stairs - 1st floor	**226**	SF	$3.00	See site
17	Demo toilet compartments	**728**	SF	$3.50	$2,548
18	Double door open	**2**	EA	$700.00	$1,400
19	Premium double door removal	**7**	EA	$100.00	$700
20	Premium single door removal	**46**	EA	$50.00	$2,300
21	R & D existing gymnasium ceiling	**2,843**	SF	$2.00	$5,686
22	R & D existing floor and ceiling	**22,727**	SF	$2.75	$62,499
23	R & D existing ceiling	**9,000**	SF	$1.50	$13,500
24	Remove single door	**3**	EA	$120.00	$360
25	Remove double door	**7**	EA	$150.00	$1,050
26	R & D existing bathroom	**1,282**	SF	$5.00	$6,410
27	Allow for selective demolition at existing library	**2,313**	SF	$6.00	$13,878
28	Cut & patch	**1**	LS	$7,500.00	$7,500
29	Miscellaneous demolition other than above	**1**	LS	$20,000.00	$20,000
30	**02 41 19 Selective Structure Demolition Total**				**$228,687**
31					
32					
33	**03-CONCRETE**				
34					
35	**03 30 00 Concrete**				
36	New concrete flooring at gymnasium	**3,557**	SF	$10.00	$35,570
37	Allowance for concrete leveling	**48,666**	SF	$3.50	$170,331
38	Allow for concrete pads and bases	**1**	LS	$5,000.00	$5,000
39	*Slab on deck; 4 -1/2" normal weight*				
40	Concrete	**41**	CY	$115.00	$4,715
41	WWF - 10% overlap	**2,541**	SF	$1.00	$2,541
42	Place and finish	**2,310**	SF	$6.00	$13,860
43	**03 30 00 Concrete Total**				**$232,017**
44					
45					
46	**04-MASONRY**				
47					

RENOVATION DETAIL

	ELEMENT	QUANTITY	UNIT	UNIT RATE	COST
48	**04 23 00 Masonry Repair**				
49	Masonry repoint and repair at exterior wall allowance	**5,000**	SF	$16.00	$80,000
50	Rebuilt chimney above roof	**1**	LS	$25,000.00	$25,000
51	**04 23 00 Masonry Repair Total**				**$105,000**
52					
53	**05-METALS**				
54					
55	**05 12 00 Structural Steel Framing**				
56	Structural Steel for library infill allowance	**14**	TON	$5,500.00	$77,000
57	**05 12 00 Structural Steel Framing Total**				**$77,000**
58					
59	**05 15 00 Stud Shear Connectors**				
60	Shear stud allowance	**462**	EA	$5.00	$2,310
61	**05 15 00 Stud Shear Connectors Total**				**$2,310**
62					
63	**05 31 00 Steel Decking**				
64	Metal floor deck	**2,310**	SF	$6.50	$15,015
65	**05 31 00 Steel Decking Total**				**$15,015**
66					
67	**05 50 00 Metal Fabrications**				
68	Steel railing modified at existing stair	**6**	FLT	$3,500.00	$21,000
69	Stair treads modified	**6**	FLT	$2,500.00	$15,000
70	Metals for elevator incl. pit ladder & sills see addition building				Included
71	Replace coping at parapet allowance	**157**	LF	$150.00	$23,500
72	Miscellaneous metals	**50,589**	SF	$2.50	$126,473
73	**05 50 00 Metal Fabrications Total**				**$185,973**
74					
75	**05 81 00-Expansion Joint Systems**				
76	See addition building				
77	**05 81 00-Expansion Joint Systems Total**				**$0**
78					
79					
80	**06-WOODS & PLASTICS**				
81					
82	**06 10 00 Rough Carpentry**				
83	Blocking at doors	**779**	LF	$2.50	$1,948
84	Door Installation	**71**	EA	$125.00	$8,875
85	Rough carpentry allowance	**50,589**	SF	$2.00	$101,178
86	**06 10 00 Rough Carpentry Total**				**$112,001**
87					

RENOVATION DETAIL

	ELEMENT	QUANTITY	UNIT	UNIT RATE	COST
88	**06 20 00 Finish Carpentry**				
89	Miscellaneous finish carpentry	**50,589**	SF	$5.00	$252,945
90	**06 20 00 Finish Carpentry Total**				**$252,945**
91					
92	**06 40 00 Architectural Woodwork**				
93	Classrooms:				
94	Classroom upper cabinets	**448**	LF	$180.00	$80,640
95	Classroom work surface	**448**	LF	$150.00	$67,200
96	Classroom base cabinets	**448**	LF	$200.00	$89,600
97	Perimeter shelving	**560**	LF	$50.00	$28,000
98	Art, Music and Health Rooms:				
99	Art, Music and Health room upper cabinets	**84**	LF	$180.00	$15,120
100	Art, Music and Health room work surface	**84**	LF	$150.00	$12,600
101	Art, Music and Health room base cabinets	**84**	LF	$200.00	$16,800
102	Resource Room, Teacher Workroom, and Adj. Counsel:				
103	Rec. room work Surface	**112**	LF	$150.00	$16,800
104	Rec. room base cabinets	**112**	LF	$200.00	$22,400
105	Media Center casework	**1**	LS	$20,000.00	$20,000
106	Bathroom counters	**72**	LF	$250.00	$18,000
107	**06 40 00 Architectural Woodwork Total**				**$387,160**
108					
109					
110	**07-THERMAL & MOISTURE PROTECTION**				
111					
112	**07 16 13 Waterproofing and Dampproofing**				
113	No work in Waterproofing and Dampproofing section				NIC
114	**07 16 13 Waterproofing and Dampproofing Total**				**NIC**
115					
116	**07 21 00 Thermal Insulation**				
117	No work in Building Insulation section				NIC
118	**07 21 00 Thermal Insulation Total**				**NIC**
119					
120	**07 26 00 Vapor Retarders**				
121	No work in Air Barrier section				NIC
122	**07 26 00 Vapor Retarders Total**				**NIC**
123					
124	**07 50 00-Roofing**				
125	No works shown in this section				$0
126	**07 50 00-Roofing Total**				**$0**
127					

RENOVATION DETAIL

	ELEMENT	QUANTITY	UNIT	UNIT RATE	COST
128	**07 84 00 Firestopping**				
129	Firestopping penetrations, partitions, etc.	**1**	AL	$11,000.00	$11,000
130	**07 84 00 Firestopping Total**				**$11,000**
131					
132	**07 92 00 Joint Sealants**				
133	Interior caulking and sealants	**1**	LS	$35,000.00	$35,000
134	**07 92 00 Joint Sealants Total**				**$35,000**
135					
136					
137	**08-DOORS & WINDOWS**				
235					
236	**08 11 13 Hollow Metal Doors and Frames**				
237	Single HM frames	**16**	EA	$225.00	$3,600
238	Double HM frames	**13**	EA	$250.00	$3,250
142	Double HM door and frame at stairs	**4**	PR	$900.00	$3,600
143	Single HM door and Frames	**11**	EA	$450.00	$4,950
144	Double HM door and frame	**5**	PR	$900.00	$4,500
145	Premium for fire rating	**8**	LEAF	$75.00	$600
146	**08 11 13 Hollow Metal Doors and Frames Total**				**$20,500**
147					
148	**08 14 16 Flush Wood Doors**				
149	Single wood door	**16**	EA	$275.00	$4,400
150	Double wood door	**13**	PR	$550.00	$7,150
151	**08 14 16 Flush Wood Doors Total**				**$11,550**
152					
153	**08 31 00 Access Doors and Panels**				
154	Access doors	**18**	EA	$300.00	$5,400
155	**08 31 00 Access Doors and Panels Total**				**$5,400**
156					
157	**08 33 23 Overhead Coiling Doors**				
158	No overhead coiling doors anticipated in this section				NIC
159	**08 33 23 Overhead Coiling Doors Total**				**NIC**
160					
161	**08 43 13 Aluminum-Framed Storefronts**				
162	No works anticipated in this section				$0
163	**08 43 13 Aluminum-Framed Storefronts Total**				**$0**
164					
165	**08 44 13 Glazed Aluminum Curtain Walls**				
166	No works anticipated in this section				$0
167	**08 44 13 Glazed Aluminum Curtain Walls Total**				**$0**

RENOVATION DETAIL

	ELEMENT	QUANTITY	UNIT	UNIT RATE	COST
168					
288	**08 51 13 Aluminum Windows**				
288	No works anticipated in this section				$0
289	**08 51 13 Aluminum Windows Total**				**$0**
172	**08 71 00 Door Hardware**				
173	Hardware for new door	**71**	SET	$600.00	$42,600
174	Hardware for existing door	**47**	SET	$600.00	$28,200
175	Allow for card access	**1**	LS	$5,000.00	$5,000
176	**08 71 00 Door Hardware Total**				**$75,800**
177					
178	**08 80 00 Glazing**				
179	Glazing in doors allowance	**1**	AL	$3,200.00	$3,200
180	Sliding glass doors allowance	**1**	EA	$7,500.00	$7,500
181	Allow for interior glazing	**1**	LS	$10,000.00	$10,000
182	**08 80 00 Glazing Total**				**$20,700**
183					
184					
320	**09-FINISHES**				
321					
322	**09 20 00 Gypsum Wallboard Systems**				
323	Interior of exterior wall	**21,849**	SF	$3.75	$81,934
324	Corridor partitions	**2,553**	SF	$12.00	$30,636
325	Standard partitions	**2,910**	SF	$7.50	$21,825
191	Demising partitions	**5,141**	SF	$10.00	$51,410
192	Plumbing chase wall	**472**	SF	$12.00	$5,664
193	Infill door opening	**192**	SF	$20.00	$3,840
338	Allowance for soffit	**1**	LS	$30,000.00	$30,000
339	**09 20 00 Gypsum Wallboard Systems Total**				**$225,309**
340					
340	**09 30 00 Tile**				
341	Ceramic tile floor - Toilets	**1,628**	SF	$15.00	$24,420
342	Ceramic tile wall - Toilets	**3,081**	SF	$15.00	$46,215
342	Ceramic tile base	**375**	LF	$10.00	$3,750
342	Threshold	**12**	EA	$125.00	$1,500
342	**09 30 00 Tile Total**				**$75,885**
342					
342	**09 51 00 Acoustical Ceiling**				
342	ACT ceilings	**36,552**	SF	$4.50	$164,484
342	Acoustic ceiling tile, moisture resistant, Toilets	**1,640**	SF	$4.75	$7,790
350	**09 51 00 Acoustical Ceiling Total**				**$172,274**

RENOVATION DETAIL

	ELEMENT	QUANTITY	UNIT	UNIT RATE	COST
351					
351	**09 65 00 Resilient Flooring**				
352	VCT flooring - classroom, corridors, admin office	**47,038**	SF	$3.50	$164,633
353	Resilient base	**6,445**	LF	$2.00	$12,890
212	Resilient Stair Treads and Risers	**1,100**	LFR	$15.50	$17,050
213	Resilient flooring at landings	**1,000**	SF	$7.50	$7,500
214	**09 65 00 Resilient Flooring Total**				**$202,073**
215					
216	**09 64 66-Resilient Wood Flooring**				
217	Wood athletic flooring - gym	**3,557**	SF	$15.00	$53,355
218	Wood base - gym	**256**	LF	$10.00	$2,560
219	Gym Floor striping	**1**	AL	$5,000.00	$5,000
220	**09 64 66-Resilient Wood Flooring Total**				**$60,915**
222					
223	**09 68 00 Carpeting**				
224	(Carpet is included with VCT quantity and dollars)				
224	**09 68 00 Carpeting Total**				**$0**
226					
226	**09 80 00 Acoustic Treatment**				
227	Acoustic panels - gymnasium	**893**	SF	$12.50	$11,163
228	**09 80 00 Acoustic Treatment Total**				**$11,163**
229					
230	**09 90 00 Paints and Coatings**				
231	Paint GWB walls	**44,385**	SF	$1.00	$44,385
232	Exposed structure (ceiling) - painted; gymnasium	**4,038**	SF	$1.65	$6,663
233	Exposed structure (ceiling) - painted	**831**	SF	$1.35	$1,122
234	Painted concrete floors	**787**	SF	$1.25	$984
414	Paint existing doors and frames	**47**	EA	$150.00	$7,050
415	Paint HM frames	**42**	EA	$50.00	$2,100
416	Paint doors and frames	**29**	EA	$120.00	$3,480
417	Miscellaneous painting	**1**	LS	$75,900.00	$75,900
239	**09 90 00 Paints and Coatings Total**				**$141,683**
240					
241					
242	**10-SPECIALTIES**				
243					
244	**10 10 00 Visual Display Boards**				
245	White boards	**38**	EA	$500.00	$19,000
246	Tackboards	**38**	EA	$250.00	$9,500
247	Miscellaneous markerboards and tackboards	**1**	LS	$15,000.00	$15,000

RENOVATION DETAIL

	ELEMENT	QUANTITY	UNIT	UNIT RATE	COST
248	**10 10 00 Visual Display Boards Total**				**$43,500**
249					
250	**10 21 13 Toilet Compartments**				
252	Toilet partition stall		EA	$1,100.00	Included
252	Toilet partition stall, ADA		EA	$1,400.00	Included
253	Urinal screen		EA	$650.00	Included
254	**10 21 13 Toilet Compartments Total**				**Included**
255					
256	**10 14 00 Signage**				
257	Building directory	**1**	EA	$3,500.00	$3,500
258	Allow for dedication plaque	**1**	EA	$2,500.00	$2,500
259	Allow for Lettering, school name	**1**	EA	$5,000.00	$5,000
260	Building signage allowance - based on floor area	**50,589**	SF	$0.65	$32,883
261	**10 14 00 Signage Total**				**$43,883**
262					
263	**10 51 13 Metal Lockers**				
264	Lockers; allow	**400**	EA	$250.00	$100,000
265	**10 51 13 Metal Lockers Total**				**$100,000**
266					
267	**10 44 00 Fire Protection Specialties**				
268	Fire extinguishers - Fully recessed/non-rated	**5**	EA	$450.00	$2,277
269	**10 44 00 Fire Protection Specialties Total**				**$2,277**
270					
271	**10 65 00-Operable Panel Partition**				
272	No works anticipated in this section				
273	**10 65 00-Operable Panel Partition Total**				**$0**
274					
275	**10 28 13 Toilet Accessories**				
276	Toilet room accessories and compartments - gang	**6**	EA	$7,000.00	$42,000
277	Toilet room accessories - private	**6**	EA	$500.00	$3,000
278	Janitor mop shelf	**4**	EA	$110.00	$440
279	**10 28 13 Toilet Accessories Total**				**$45,440**
280					
281					
282	**11-EQUIPMENT**				
283					
284	**11 52 13 Projection Screens**				
285	Motorized projection screen	**2**	EA	$7,500.00	$15,000
286	Manual projection screens	**19**	EA	$685.00	$13,015
287	**11 52 13 Projection Screens Total**				**$28,015**

RENOVATION DETAIL

	ELEMENT	QUANTITY	UNIT	UNIT RATE	COST
288					
289	**11 31 00 Appliances**				
290	No work anticipated for food service equipment				$0
291	**11 31 00 Appliances Total**				**$0**
292					
293	**11 40 00 Food Service Equipment**				
294	No work anticipated for food service equipment				
295	**11 40 00 Food Service Equipment Total**				
296					
297	**11 66 23 Gymnasium Equipment**				
298	Electrically operated basketball glass backstops	**2**	EA	$6,000.00	$12,000
299	Fixed basketball glass backstops	**4**	EA	$3,500.00	$14,000
300	Volleyball assembly; recessed sleeves, removable poles,	**1**	SET	$1,500.00	$1,500
301	Wall protection in Gym- Assumed 6' high	**1,200**	SF	$12.00	$14,400
302	Bleachers				NIC
303	**11 66 23 Gymnasium Equipment Total**				**$41,900**
304					
305					
306	**14-CONVEYING SYSTEMS**				
307					
308	**14 24 00-Hydrulic Elevators**				
309	Elevator				See Addition
310	**14 24 00-Hydrulic Elevators Total**				**$0**
311					
312					
313	**21, 22, 23-MECHANICAL**				
314					
315	**21 00 00 Fire Protection**				
316	Sprinkler Coverage	**50,589**	SF	$1.00	$50,589
317	**21 00 00 Fire Protection Total**				**$50,589**
318					
319	**22 00 00 Plumbing**				
320	Plumbing allowance	**1**	LS	$360,000.00	$360,000
321	**22 00 00 Plumbing Total**				**$360,000**
322					
323	**23 00 00 HVAC**				
324	HVAC allowance	**50,589**	SF	$35.00	$1,770,615
325	**23 00 00 HVAC Total**				**$1,770,615**
326					
327					

RENOVATION DETAIL

	ELEMENT	QUANTITY	UNIT	UNIT RATE	COST
328					
329					
330					
331					
332	**26-ELECTRICAL**				
	26 00 00 Electrical				
	Electrical allowance	**50,589**	SF	$32.00	$1,618,848
	26 00 00 Electrical Total				**$1,618,848**

FLI Environmental

858 Washington Street
Dedham, MA 02026
Phone 781.251.0040
Fax 781.251.0901

40 CFR 763
THREE YEAR AHERA ASBESTOS RE-INSPECTION
SUMMARY REPORT

FRANKLIN PUBLIC SCHOOLS

DAVIS THAYER ELEMENTARY SCHOOL

Reinspection Date: November 23, 2010
Report Date: December 19, 2010

Asbestos Inspector: _____
Richard K. Bowen
Massachusetts Inspector # AI 061044

Management Planner: _____
Richard K. Bowen
Massachusetts Management Planner # AP 061044

DAVIS THAYER ELEMENTARY SCHOOL

I. Summary of Previous Abatement Response Actions: None Identified - not applicable

II. Summary of Asbestos-Containing Building Materials (ACBMs):

Material	Previous Homogeneous Area #
1. Flue breeching insulation (18"-25" dia.)	T-04
2. Cementitious fitting insulation (2"-6" dia.) - except boiler room	T-01
3. 12" x 12" Olive/green floor tile and mastic	M-12
4. 12" x 12" white splined acoustical ceiling tile	M-05
5. 12" x 12" tan floor tile and mastic and mastic	M-02
6. Various colored 12" x 12" floor tile and mastic	M-09

III. Summary of Findings and ACBM Classification:

A. Damaged or Significantly Damaged Thermal System Insulation ACM:

1. Cementitious Fitting Insulation (2"-6" dia.)

Homogeneous Area # T-01: Previous Estimated Quantity: 2 Fittings

Previous Assessment: Good condition
Current Assessment: Damaged

Friable, asbestos-containing cementitious fitting insulation is present throughout the school. The asbestos insulation on valves, tees, fittings is present on domestic water and steam heating fiberglass insulated lines. The cementitious fittings are damaged in the following exposed areas:

Basement:
Boiler room Entrance – Adjacent to the water meter

B. Damaged Friable Surfacing ACM: None identified - not applicable

C. Significantly Damaged Friable Surfacing ACM: None identified - not applicable

D. Damaged of Significantly Damaged Friable Miscellaneous ACM:

1. Olive/Green 12" x 12" Floor Tile and Mastic (Spot Damage)

Homogeneous Area # M-12: Previous Estimated Quantity: 525 SF

Previous Assessment: Damaged
Current Assessment: Damaged

Nonfriable, asbestos-containing 12"x12" olive green floor tile and mastic is present in the school. The asbestos 12" x 12" floor tile and mastic is in generally good condition. However, there is spot damage in the basement.

E. ACBM with Potential for Damage (Good Condition):

1. Flue Breeching Insulation

Homogeneous Area # T-04: Previous Estimated Quantity: 144 SF

Previous Assessment: Good condition
Current Assessment: Good condition

Friable, asbestos-containing flue breeching insulation is present off two new, metal boilers in the boiler room. The asbestos breeching insulation has been previously wetwrapped (repaired) and is in good condition.

2. Cementitious Fitting Insulation (2"-6" dia.)

Homogeneous Area # T-01: Previous Estimated Quantity: 445 Fittings

Previous Assessment: Good condition
Current Assessment: Good condition

Friable, asbestos-containing cementitious fitting insulation is present throughout the school. The asbestos insulation on valves, tees, fittings, is in generally good condition. The fitting insulation is present on domestic water and steam heating fiberglass insulated lines. The cementitious fitting is present in the following exposed areas:

Basement:
Electrical room, gym storage room, Boiler room, 2 stairwell landings, gym at ceiling HVAC units

First Floor:
Kitchen at back wall, Cafeteria, Kindergarten
Assumed above plaster ceilings and suspended ceiling tiles

Second and Third Floors:
Assumed above plaster ceiling and suspended ceiling tiles
Attic mechanical room along side wall

3. 12" x 12" White Splined Ceiling Tile

Homogeneous Area # M-05: Previous Estimated Quantity: 1,631 SF

Previous Assessment: Good Condition
Current Assessment: Good condition

Friable, assumed asbestos-containing 12" x 12" white spline ceiling tile is present in the 2nd level Media room (Library) and work room on the high ceiling, as well as entrances and stairwells. The assumed material is in good condition and is inaccessible at this time.

4. Tan 12" x 12" Floor Tile and Mastic

Homogeneous Area # M-12: Previous Estimated Quantity: 525 SF
Current Estimated Quantity: 1,000 SF

Previous Assessment: Good condition
Current Assessment: Good condition

Nonfriable, asbestos-containing 12"x12" tan floor tile and mastic is present in the school. The asbestos 12" x 12" floor tile and mastic is in generally good condition and is present in the following areas:
2nd floor:

Title One Room R22; Classroom 23C, Service Rooms (Storage closets) 19, 20, 21

3rd floor:

Storage Rooms 31, 32, 33, 34, 35, 36

5. Various Colored 12"x 12" Floor Tile and Mastic

Homogeneous Area # M-09: Previous Estimated Quantity: 3,450 SF

Previous Assessment: Good condition
Current Assessment: Good condition

Nonfriable, asbestos-containing 12"x 12" brown, blue and other colored floor tile and mastic is present on the first floor of the school. The asbestos 12" x 12" floor tile and mastic is in generally good condition and is present in the following areas:

Reflection Road office #13, Conference room #12, Cafeteria, food service storage room, Title One room #11

F. ACBM with Potential for Significant Damage: None identified - not applicable

G. Other ACBM: None identified - not applicable

IV. Notes/Comments:

1. Additional locations containing the 12" x 12" tan floor tile were identified during this assessment. Locations and approximate quantities have been updated.
2. Additional locations containing the 12" x 12" white splined ceiling tiles were identified during this assessment. Locations and approximate quantities have been updated.
3. Pipe insulation and fitting insulation may be present (enclosed) above plaster ceilings and within wall chases and columns.
4. All carpeted rooms are assumed to have asbestos floor tile and mastic beneath.
5. Enclosed asbestos materials may be present within inaccessible areas including the metal boiler and metal fire door within the boiler room.

V. Recommended Response Actions:

1. The damaged fitting insulation at the entrance to the boiler room should be repaired with rewettable fiberglass cloth or abated.
2. The damaged floor tile in the basement should be repaired.
3. Remaining ACBMs and Locations within the School:

   Include all other ACBMs that are in good condition, including flue breeching insulation, cementitious fitting insulation, 12"x 12" floor tile and 12" x 12" splined ceiling tile into the school's Management Plan and operations and maintenance (O&M) program. The

ACBMs listed herein should not be damaged or impacted in any manner. ACBMs should be handled and/or abated only by trained, licensed asbestos personnel.

4. Removal of asbestos materials should be performed by a licensed Contractor prior to renovation or maintenance work that may impact the ACBMs.

FLI Environmental

858 Washington Street
Dedham, MA 02026
Phone 781.251.0040
Fax 781.251.0901

40 CFR 763
THREE YEAR AHERA ASBESTOS RE-INSPECTION
SUMMARY REPORT

FRANKLIN PUBLIC SCHOOLS

PARMENTER ELEMENTARY SCHOOL

Reinspection Date: November 22, 2010
Report Date: December 19, 2010

Asbestos Inspector: _____
Richard K. Bowen
Massachusetts Inspector # AI 061044

Management Planner: _____
Richard K. Bowen
Massachusetts Management Planner # AP 061044

PARMENTER ELEMENTARY SCHOOL

I. Summary of Previous Abatement Response Actions: Not applicable

II. Summary of Asbestos-Containing Building Materials (ACBMs): Not applicable

III. Summary of Findings and ACBM Classification:

1. Damaged or Significantly Damaged Thermal System Insulation ACM: **None identified - not applicable**
2. Damaged Friable Surfacing ACM: **None identified - not applicable**
3. Significantly Damaged Friable Surfacing ACM: **None identified - not applicable**
4. Damaged of Significantly Damaged Friable Miscellaneous ACM: **None identified - not applicable**
5. ACBM with Potential for Damage (Good Condition): **None identified - not applicable**
6. ACBM with Potential for Significant Damage: **None identified - not applicable**
7. Other ACBM: **None identified - not applicable**

IV. Notes/Comments:

1. The Parmenter School was completely renovated in the late 1980's and early 1990's. Additionally, a new wing was constructed. The original school building was completely abated of accessible, interior ACMs. Each ACM listed in the original Management Plan has been removed and replaced. The crawlspace was inspected and found to contain fiberglass pipe insulation.

2. Roof drain piping in the gym and cafeteria was found to be fiberglass insulated.

3. New ceiling tile and floor tile was identified throughout the School.

V. Recommended Response Actions:

1. Any suspect materials not previously sampled and listed in the original Management Plan should be sampled and analyzed for its asbestos content.

CHAIN OF CUSTODY

STOP C 1ST (+)
A2 → E

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

Town/City: Franklin, MA Building Name: Davis Thayer Elementary School

	Sample	Result	Description of Material	Sample Location
	1		Wood Fire Door Type I	gym SW
	2		Wood Fire Door Type I	cafe dd
	3		2x2 SAT-I	2nd FL mc
	4		SAT-I	2nd FL crm
	5		SAT-I	1ST FL STAFF Rm
	6		1-1 SAT	SW
	7		glue daub #6	SW
A	8		E OFF FG	bsmt coach
A	9		E OFF FG	Boiler rm
A	10		E OFF FG	pre-Boiler rm
A	11		E OFF FG	2nd FL crm, AC
	12		Duct insul	Boiler rm
	13		2x2 ash SAT	Kitchen
	14		damproofing on Terra Cotta wall	ATTIC
B	15		Thick Black paper under hdwd?	2nd FL crm 23-B
B	16		Thick Black paper under hdwd?	3rd FL crm 35
	17		Blown-in insulation	ATTIC
C	18		adhesive on metal duct	ATTIC
C	19		adhesive on metal duct	cafeteria storage
	20		carpet glue	Library

Reported By: [signature] Date: 12/28/12 Due Date: 1/3/12

Received By: [signature] Date: 1/2/13

CHAIN OF CUSTODY

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

Town/City: Franklin, MA Building Name Davis Thayer Elementary

	Sample	Result	Description of Material	Sample Location
D	21		12"x12" Lime Green VT	SW Landing, UC
E	22		mastic #21	" " " "
D	23		12"x12" Lime Green VT	Gym SW, bsmt
E	24		mastic #23	" " " "
	25		12"x12" chocolate VT	2nd FL storage
	26		mastic #25	" " "
	27		16"x16" VT	CAFE hall
	28		12.12 chocolate - VT	Resource-12
	29		mastic #28	Resource-12
	30		ceiling pla (CP)	2nd FL c'rm
	31		wall pla (WP)	2nd FL c'rm #27
	32		CP	2nd FL main corr.
	33		Joint compound (JC) wall	3rd FL mc (wall edge)
	34		WP	2nd FL c'rm
	35		CP	cafe storage
	36		JC wall	2nd FL c'rm (Dickinson)
	37		WP	Library storage
	38		JC on gyp wall for #37	Library storage
	39		gyp wall #37	" " "
	40		WP	c'rm 31

Reported By: [signature] Date: 12.28.12 Due Date: 1/3/12

Received By: ---------- Date: ----------

CHAIN OF CUSTODY

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

Town/City: Franklin, MA Building Name Dean Thayer Elem.

Sample	Result	Description of Material	Sample Location
41		JC caulk edge #40	c'rm #31
42		New win fr for new win	Exterior from 3rd FL
43		new win fr for new win	exterior side
44		grille caulk	(Front) exterior
46		2nd Layer Floor	cafe

Reported By: Len Bua Date: 12/28/12 Due Date: 1/3/12

Received By: ---------- Date: ----------

Asbestos Identification Laboratory
165U New Boston St., Ste 271
Woburn, MA. 01801
Bulk Asbestos Analysis by Polarized Light Microscopy
EPA Method: 600/R-93/116

NVLAP®
Lab Code: 200919-0

January 3, 2013

Universal Environmental Consultants
12 Brewster Road
Framingham, MA 01702

RE: Batch 1434
Results of Asbestos Project: Davis Thayer Elementary School, Franklin, MA

Dear Ammar M. Dieb,

Asbestos Identification Laboratory has completed the analysis of the bulk samples Work Received: 1/2/2013 from your office. These results represent the bulk samples from the above-referenced project. :

The information and analysis contained in this report have been generated using the EPA /600/R-93/116 Method for the Determination of Asbestos in Bulk Building Materials. Materials or products that contain more than 1% of any kind or combination of asbestos are considered an asbestos containing building material as determined by the EPA. This Polarized Light Microscope (PLM) technique may be performed either by visual estimation or point counting. Point counting provides a determination of the area percentage of asbestos in a sample. If the asbestos is estimated to be less than 10% by visual estimation of friable material, the determination may be repeated using the point counting technique. The results of the point counting supersede visual PLM results. Results in this report only relate to the items tested. This report may not be used by the customer to claim product endorsement by NVLAP or any other U.S. Government Agency.

- NVLAP Lab Code: 200919-0
- Massachusetts Certification License: AA000208
- State of Connecticut, Department of Public Health Approved Environmental Laboratory Registration# PH-0142
- State of Maine, Department of Environmental Protection Asbestos Analytical Laboratory License Number LB-0078(Bulk) LA-0087(Air)
- State of Rhode Island and Providence Plantations Department of Health Certification: AAL-121

Thank you Ammar M. Dieb for your business.

Michael Manning
Owner/Director
(781)932-9600

Asbestos Identification Laboratory
165U New Boston St., Ste 271
Woburn, MA. 01801
Bulk Asbestos Analysis by Polarized Light Microscopy
EPA Method: 600/R-93/116

NVLAP®
Lab Code: 200919-0

Results Table

Sample ID	Lab ID	Material	Sample Location	Analytical Results
1	21603	Wood Fire Door Type II	Gym S.W.	Amosite=30%
2	21604	Wood Fire Door Type I	Café Dd	Chrysotile=10% Amosite=20%
3	21605	2x2 SAT-I	2nd Fl Mc	No Asbestos Detected
4	21606	SAT-I	2nd Fl Crm	No Asbestos Detected
5	21607	SAT-I	1st Fl Staff Rm	No Asbestos Detected
6	21608	1.1 [AT]	SW	No Asbestos Detected
7	21609	Glue Daub # 6	SW	No Asbestos Detected
8	21610	E Off FG	Bsmt Coach	No Asbestos Detected
9	21611	E Off FG	Boiler Rm	No Asbestos Detected
10	21612	E Off FG	Pre-Boiler Rm	No Asbestos Detected
11	21613	E Off FG	2nd Fl Crm, AC	No Asbestos Detected
12	21614	Duct Insul	Boiler Rm	Chrysotile=70%
13	21615	2x2 Ash SAT	Kitchen	No Asbestos Detected
14	21616	Damproofing on Terra Cotta Wall	Attic	No Asbestos Detected
15	21617	Thick Black Paper Under Hdwd?	2nd Fl Crm 23-B	No Asbestos Detected
16	21618	Thick Black Paper Under Hdwd?	3rd Fl Crm 35	No Asbestos Detected
17	21619	Blown-in Insulation	Attic	No Asbestos Detected
18	21620	Adhesive on Metal Duct	Attic	Chrysotile=3%
19	21621	Adhesive on Metal Duct	Cafeteria Storage	Did Not Analyze

Asbestos Identification Laboratory
165U New Boston St., Ste 271
Woburn, MA. 01801
Bulk Asbestos Analysis by Polarized Light Microscopy
EPA Method: 600/R-93/116

NVLAP
Lab Code: 200919-0

Results Table

20	21622	Carpet Glue	Library	No Asbestos Detected
21	21623	12"x12" Lime Green VT	SW Landing, UC	Chrysotile=2%
22	21624	Mastic # 21	SW Landing, UC	Chrysotile=10%
23	21625	12"x12" Lime Green VT	Gym SW, Bsmt	Did Not Analyze
24	21626	Mastic # 23	Gym SW, Bsmt	Did Not Analyze
25	21627	12"x12" Chocolate VT	2nd Fl Storage	Chrysotile=2%
26	21628	Mastic # 25	2nd Fl Storage	Chrysotile=10%
27	21629	18"x18" VT	Café Hall	No Asbestos Detected
28	21630	12.12 Chocolate-II	Resource-12	Chrysotile=2%
29	21631	Mastic # 28	Resource-12	Chrysotile=5%
30	21632	Ceiling Pla (CP)	2nd Fl Crm	No Asbestos Detected
31	21633	Wall Pla (WP)	2nd Fl Crm # 27	No Asbestos Detected
32	21634	CP	2nd Fl Main Corn	No Asbestos Detected
33	21635	Joint Compound (JC) Wall	3rd Fl Mc (Wall Edge)	No Asbestos Detected
34	21636	WP	2nd Fl Crm	No Asbestos Detected
35	21637	CP	Café Storage	No Asbestos Detected
36	21638	JC Wall	2nd Fl Crm (Dickinson)	No Asbestos Detected
37	21639	WP	Library Storage	No Asbestos Detected
38	21640	JC on Gyp Wall for # 37	Library Storage	No Asbestos Detected
39	21641	Gyp Wall # 37	Library Storage	No Asbestos Detected
40	21642	WP	Crm 31	No Asbestos Detected
41	21643	JC at Wall Edge # 40	Crm # 31	No Asbestos Detected
42	21644	New Win Fr for New Win	Exterior Frm 3rd Fl	No Asbestos Detected
43	21645	New Win Fr for New Win	Exterior Side	No Asbestos Detected
44	21646	Grille Caulk	Front exterior	Chrysotile=3%
45	21647	2nd Layer Floor	Café	Chrysotile=3%

Asbestos Identification Laboratory
165U New Boston St., Ste 271
Woburn, MA. 01801
Bulk Asbestos Analysis by Polarized Light Microscopy
EPA Method: 600/R-93/116

NVLAP
Lab Code: 200919-0

Results for Client Project: Davis Thayer Elementary School, Franklin, MA, Batch# 1434

Work Received: 1/2/2013 Date Sampled: 12/28/2012 Results Sent: 1/3/2013 10:22:51 AM

Field_ID: 1 Material: Wood Fire Door Type II Color: White Location: Gym S.W. Sample# 21603 NON=070 ASBESTOS DETECTED AMO=030

Field_ID: 2 Material: Wood Fire Door Type I Color: White Location: Café Dd Sample# 21604 NON=070 ASBESTOS DETECTED CHR=010 AMO=020

Field_ID: 3 Material: 2x2 SAT-I Color: Gray Location: 2nd Fl Mc Sample# 21605 MNW=030 CEL=060 NON=010 None Detected

Field_ID: 4 Material: SAT-I Color: Gray Location: 2nd Fl Crm Sample# 21606 MNW=030 CEL=060 NON=010 None Detected

Field_ID: 5 Material: SAT-I Color: Gray Location: 1st Fl Staff Rm Sample# 21607 MNW=040 CEL=040 NON=020 None Detected

Field_ID: 6 Material: 1.1 [AT] Color: Gray Location: SW Sample# 21608 MNW=040 CEL=040 NON=020 None Detected

Field_ID: 7 Material: Glue Daub # 6 Color: Brown Location: SW Sample# 21609 NON=100 None Detected

Field_ID: 8 Material: E Off FG Color: Gray Location: Bsmt Coach Sample# 21610 MNW=045 NON=055 None Detected

Field_ID: 9 Material: E Off FG Color: Gray Location: Boiler Rm Sample# 21611 MNW=045 NON=055 None Detected

Field_ID: 10 Material: E Off FG Color: Gray Location: Pre-Boiler Rm Sample# 21612 MNW=050 NON=050 None Detected

Field_ID: 11 Material: E Off FG Color: Gray Location: 2nd Fl Crm, AC Sample# 21613 MNW=040 NON=060 None Detected

Field_ID: 12 Material: Duct Insul Color: Gray Location: Boiler Rm Sample# 21614 NON=030 ASBESTOS DETECTED CHR=070

Field_ID: 13 Material: 2x2 Ash SAT Color: Gray Location: Kitchen Sample# 21615 MNW=090 NON=010 None Detected

Field_ID: 14 Material: Damproofing on Terra Cotta Wall Color: Black Location: Attic Sample# 21616 NON=100 None Detected

Field_ID: 15 Material: Thick Black Paper Under Hdwd? Color: Black Location: 2nd Fl Crm 23-B Sample# 21617 CEL=075 NON=025 None Detected

Field_ID: 16 Material: Thick Black Paper Under Hdwd? Color: Black Location: 3rd Fl Crm 35 Sample# 21618 CEL=080 NON=020 None Detected

Field_ID: 17 Material: Blown-in Insulation Color: Gray Location: Attic Sample# 21619 CEL=098 NON=002 None Detected

Field_ID: 18 Material: Adhesive on Metal Duct Color: Gray Location: Attic Sample# 21620 NON=097 ASBESTOS DETECTED CHR=003

Field_ID: 19 Material: Adhesive on Metal Duct Color: Location: Cafeteria Storage Sample# 21621 Did Not Analyze

Field_ID: 20 Material: Carpet Glue Color: Yellow Location: Library Sample# 21622 NON=100 None Detected

Field_ID: 21 Material: 12"x12" Lime Green VT Color: Green Location: SW Landing, UC Sample# 21623 NON=098 ASBESTOS DETECTED CHR=002

Field_ID: 22 Material: Mastic # 21 Color: Black Location: SW Landing, UC Sample# 21624 NON=090 ASBESTOS DETECTED CHR=010

Field_ID: 23 Material: 12"x12" Lime Green VT Color: Location: Gym SW, Bsmt Sample# 21625 Did Not Analyze

Field_ID: 24 Material: Mastic # 23 Color: Location: Gym SW, Bsmt Sample# 21626 Did Not Analyze

Field_ID: 25 Material: 12"x12" Chocolate VT Color: Tan Location: 2nd Fl Storage Sample# 21627 NON=098 ASBESTOS DETECTED CHR=002

Field_ID: 26 Material: Mastic # 25 Color: Black Location: 2nd Fl Storage Sample# 21628 NON=090 ASBESTOS DETECTED CHR=010

Field_ID: 27 Material: 18"x18" VT Color: White Location: Café Hall Sample# 21629 NON=100 None Detected

Field_ID: 28 Material: 12.12 Chocolate-II Color: Tan Location: Resource-12 Sample# 21630 NON=098 ASBESTOS DETECTED CHR=002

Field_ID: 29 Material: Mastic # 28 Color: Black Location: Resource-12 Sample# 21631 NON=095 ASBESTOS DETECTED CHR=005

Field_ID: 30 Material: Ceiling Pla (CP) Color: Multi Location: 2nd Fl Crm Sample# 21632 NON=100 None Detected

Field_ID: 31 Material: Wall Pla (WP) Color: Multi Location: 2nd Fl Crm # 27 Sample# 21633 NON=100 None Detected

Field_ID: 32 Material: CP Color: Multi Location: 2nd Fl Main Corn Sample# 21634 NON=100 None Detected

Field_ID: 33 Material: Joint Compound (JC) Wall Color: White Location: 3rd Fl Mc (WallEdge) Sample# 21635 NON=100 None Detected

Field_ID: 34 Material: WP Color: Multi Location: 2nd Fl Crm Sample# 21636 NON=100 None Detected

Field_ID: 35 Material: CP Color: Multi Location: Café Storage Sample# 21637 NON=100 None Detected

Field_ID: 36 Material: JC Wall Color: White Location: 2nd Fl Crm (Dickinson) Sample# 21638 NON=100 None Detected

Field_ID: 37 Material: WP Color: White Location: Library Stoarge Sample# 21639 NON=100 None Detected

Field_ID: 38 Material: JC on Gyp Wall for # 37 Color: White Location: Library Stoarge Sample# 21640 NON=100 None Detected

Field_ID: 39 Material: Gyp Wall # 37 Color: Gray Location: Library Stoarge Sample# 21641 CEL=010 NON=090 None Detected

Field_ID: 40 Material: WP Color: White Location: Crm 31 Sample# 21642 NON=100 None Detected

Field_ID: 41 Material: JC at Wall Edge # 40 Color: White Location: Crm # 31 Sample# 21643 NON=100 None Detected

Field_ID: 42 Material: New Win Fr for New Win Color: White Location: Exterior Frm 3rd Fl Sample# 21644 NON=100 None Detected

Field_ID: 43 Material: New Win Fr for New Win Color: White Location: Exterior Side Sample# 21645 NON=100 None Detected

Field_ID: 44 Material: Grille Caulk Color: Gray Location: Front exterior Sample# 21646 NON=097 ASBESTOS DETECTED CHR=003

Field_ID: 45 Material: 2nd Layer Floor Color: Brown Location: Café Sample# 21647 NON=097 ASBESTOS DETECTED CHR=003

End of Report

Legend (All sample results represent percentages EX: 001 = 1%) TR(Trace) = < 1%
Asbestos Minerals: Chrysotile=CHR, Amosite=AMO, Crocidolite=CRO, Actinolite=ACT, Tremolite=TRE, Anthophylite=ANT
Fibrous Materials: Fiberglass=FBG, Mineral Wool=MNW, Cellulose=CEL, Hair=HAR, Synthetic=SYN, Other=OTH, Non-Fibrous=NON

Proposed Space Summary- Elementary Schools

FILL IN SCHOOL NAME HERE	Existing Conditions			PROPOSED									MSBA Guidelines (refer to MSBA Educational Program & Space Standard Guidelines)			
				Existing to Remain/Renovated			New			Total						
ROOM TYPE	ROOM NFA[1]	# OF RMS	area totals	ROOM NFA[1]	# OF RMS	area totals	ROOM NFA[1]	# OF RMS	area totals	ROOM NFA[1]	# OF RMS	area totals	ROOM NFA[1]	# OF RMS	area totals	Comments
CORE ACADEMIC SPACES			0			0			0			0		0	0	
(List classrooms of different sizes separately)																
Pre-Kindergarten w/ toilet													1,200		-	1,100 SF min - 1,300 SF max
Kindergarten w/ toilet													1,200	0	-	1,100 SF min - 1,300 SF max
General Classrooms - Grade 1-6													950	0	-	900 SF min - 1,000 SF max
SPECIAL EDUCATION			0			0			0			0			500	
(List rooms of different sizes separately)																
Self-Contained SPED													950	0	-	8% of pop. in self-contained SPED
Self-Contained SPED - toilet													60	0	-	
Resource Room													500	0	-	1/2 size Genl. Clrm.
Small Group Room / Reading													500	1	500	1/2 size Genl. Clrm.
ART & MUSIC			0			0			0			0			0	
Art Classroom - 25 seats													1,000	0	-	assumed schedule 2 times / week / student
Art Workroom w/ Storage & kiln													150	0	-	
Music Classroom / Large Group - 25-50 seats													1,200	0	-	assumed schedule 2 times / week / student
Music Practice / Ensemble													75	0	-	
HEALTH & PHYSICAL EDUCATION			0			0			0			0			6,300	
Gymnasium													6,000	1	6,000	6000 SF Min. Size
Gym Storeroom													150	1	150	
Health Instructor's Office w/ Shower & Toilet													150	1	150	
MEDIA CENTER			0			0			0			0			2,020	
Media Center / Reading Room													2,020	1	2,020	
DINING & FOOD SERVICE			0			0			0			0			3,000	
Cafeteria / Dining													0	1	-	2 seatings - 15SF per seat
Stage													1,000	1	1,000	
Chair / Table / Equipment Storage													200	1	200	
Kitchen													1,600	1	1,600	1600 SF for first 300 + 1 SF/student Add'l
Staff Lunch Room													200	1	200	20 SF/Occupant
MEDICAL			0			0			0			0			310	
Medical Suite Toilet													60	1	60	
Nurses' Office / Waiting Room													250	1	250	
Examination Room / Resting													100	0	-	
ADMINISTRATION & GUIDANCE			0			0			0			0			1,865	
General Office / Waiting Room / Toilet													300	1	300	
Teachers' Mail and Time Room													100	1	100	
Duplicating Room													150	1	150	
Records Room													110	1	110	
Principal's Office w/ Conference Area													375	1	375	
Principal's Secretary / Waiting													125	1	125	
Assistant Principal's Office													120	0	-	
Supervisory / Spare Office													120	1	120	
Conference Room													250	1	250	
Guidance Office													150	0	-	
Guidance Storeroom													35	1	35	
Teachers' Work Room													300	1	300	
CUSTODIAL & MAINTENANCE			0			0			0			0			1,900	
Custodian's Office													150	1	150	
Custodian's Workshop													375	1	375	
Custodian's Storage													375	1	375	
Recycling Room / Trash													400	1	400	
Receiving and General Supply													200	1	200	
Storeroom													200	1	200	
Network / Telecom Room													200	1	200	
OTHER			0			0			0			0			0	
Other *(specify)*																
Total Building Net Floor Area (NFA)			0			0			0			0			15,895	
Proposed Student Capacity / Enrollment															0	
Total Building Gross Floor Area (GFA)[2]															-	
Grossing factor (GFA/NFA)			#DIV/0!									#DIV/0!			0.00	

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

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

Architect Certification

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

Name of Architect Firm: _____

Name of Principal Architect: _____

Signature of Principal Architect: _____

Date: _____