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B. DEVELOPMENT RESTRICTIONS

C. HISTORICAL REGISTRATIONS

D. PRELIMINARY EVALUATION OF EXISTING CONDITIONS

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A. LEGAL TITLE

The Stoneham High School Site is Town-Owned property.
The Deed is attached at the end of this Section.

BK10891 PG020

P. 6.30
6-
12.30

COMMONWEALTH OF MASSACHUSETTS

MIDDLESEX, ss.

Stoneham, Mass.
July 27, 1965.

The duly elected and qualified Selectmen of the Town of Stoneham, in said Town, of Middlesex County, Commonwealth of Massachusetts, having complied with all the preliminary requirements prescribed by law; and the said Town at a legal Town Meeting, duly called, warned and held, having by a vote of Seven Hundred Thirty-three (733) in favor and Fifty-seven (57) opposed, passed on October 7, 1964, authorizing the taking hereinafter set forth, and made an appropriation of money for the purpose, a copy of which vote is hereto annexed and made a part hereof, and it being necessary and desirable to acquire land for the said purposes, adopts the following order of taking: Ordered that there be and hereby is taken by eminent domain on behalf of said Town for school purposes a certain parcel of land in fee simple with the trees and any buildings thereon situated in Stoneham, and described as follows:

The land shown as Parcel 1 on a Plan of Land in Stoneham, Mass. by George E. Hayes, Civil Engineer, 101 Altamont Avenue, dated February 3, 1964, said plan recorded herewith, and further bounded and described as follows:

Beginning at a drill hole at the northwesterly corner of said parcel at lands now or formerly of Ellen Cody, and Richard A. and Antoinette C. Marks, thence the line runs

Easterly by various courses by land of Richard A. and Antoinette C. Marks, Peter C. Paicos, Philip and Annie Weiss, Trustees Philip Weiss Trust, and Mary L. Coffin, 476.31 feet to a drill hole, thence the line runs

Southeasterly by land now or formerly of Mary L. Coffin, 66.96 feet to a point , thence the line turns to the right and runs

Southwesterly by land now or formerly of Wilbur L. and Lorraine A. Campbell, 127.48 feet, thence the line turns to the right and runs

Northwesterly by land now or formerly of Wilbur L. and Lorraine A. Campbell, 23.65 feet, thence the line turns to the left and runs

Southwesterly by various courses by land now or formerly of Wilbur L. and Lorraine A. Campbell, 439.96 feet to a drill hole, thence the line turns to the left and runs

Southeasterly by land now or formerly of Wilbur L. and Lorraine A. Campbell, 50.51 feet to a drill hole, thence the line turns to the right and runs

Southerly and Southwesterly by various courses by lands now or formerly of Philip and Annie Weiss, Trustees Philip Weiss Trust, Rudolph A. and Marie I. Minghella, James C. Durgin, Phillip A. Nelles, Jr., Town of Stoneham, and Francis F. and Mary I. Peacock, 483.68 feet to a drill hole, thence the line turns to the right and runs

Northwesterly by various courses by land now or formerly of Louis P. Jr. and Alfred T. Drinkwater, Trustees Laura Realty Trust, James A. O'Grady Jr. et als, John R. and Nora M. Carroll, and James A. O'Grady Jr. et als, 620.61 feet, thence the line runs

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SEE PLAN IN RECORD BOOK 2821 PAGE 2

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BK10891 PG021

Northerly by lands now or formerly of Melvina Pitkerwich and Ellen Cody, 375.43 feet to the point of beginning.

Containing 6.75 acres more or less.

We estimate and determine that the damages sustained by any and all persons in this property by reason of this taking are as follows, and we hereby award such damages to the person named as the owner of the property taken, it being understood that if the person named is not the true owner and entitled to damages, the award is made to the true owner of ssid property

NAME	DAMAGES
Philip Weiss and Annie Weiss, Trustees of Philip Weiss Trust, Owner	$12,500.

WITNESS OUR HANDS AND COMMON SEALS THIS 27th DAY OF JULY 1965.

Furio Bracciotti

Edmund J. Moreira

Joseph W. Fallon

Daniel C. Towse

Board of Selectmen of the Town of Stoneham

COMMONWEALTH OF MASSACHUSETTS

MIDDLESEX ss. July 27, 1965.

Then personally appeared the above named Furio Bracciotti, Edmund J. Moreira, Joseph W. Fallon and Daniel C. Towse, Selectmen of Stoneham, and acknowledged the foregoing instrument to be the free act and deed of the Town of Stoneham, Massachusetts.

Before me,

Notary Public

My commission expires November 17, 1967

-2-

BK10891 PG022

WINTHROP A. McCARTHY
TOWN CLERK

TOWN OF
STONEHAM
MASSACHUSETTS

OFFICE OF TOWN CLERK

June 25, 1965

I, Winthrop A. McCarthy, duly elected and qualified Town Clerk of Stoneham, County of Middlesex, Commonwealth of Massachusetts, hereby certify the following is a true copy of Article 2 of the warrant for a special Town Meeting duly called, warned and held in Town Hall on October 7, 1964:

Article 2. To see if the Town will vote to appropriate a sum of money or to allocate a portion of any appropriation that may be made under Article 1 above in order to acquire by purchase or by taking by eminent domain for school purposes the following described parcels of land in Stoneham as shown on the plan of George E. Hayes, Reg. Surveyor, dated February 3, 1964:

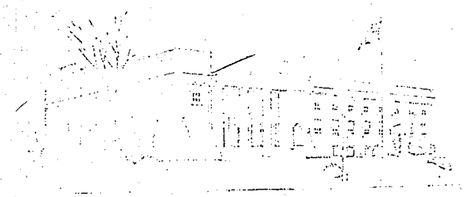
Parcel 1. Land, now or formerly of Philip Weiss Trust comprising about 6.75 acres being boundad and described as follows: northerly by lands now or formerly of Marks, Paicos, Weiss Trust and Coffin about 535 feet; Easterly and Southeasterly by land now or formerly of Campbell, Weiss Trust, Minghella, Durgin, Nolles, Town of Stoneham and Peacock about 1,119 feet; Southwesterly and Westerly by lands now or formerly of Laura Realty Trust, Carroll, O'Grady, Pitkerwich and Cody about 1,000 feet.

Parcel 2. Land, together with the buildings thereon, now or formerly of Melvina Pitkerwich comprising about 6.3 acres being bounded and described as follows: Northerly by lands now or formerly of Burke, Wentzell, Aruda and Cody about 662 feet; Easterly by land now or formerly of Philip Weiss Trust about 350 feet; Southerly by land now or formerly of James A. O'Grady, Jr., Et. Als. 652.60 feet; Westerly by land now or formerly of O'Grady and land of Burke about 466 feet.

Parcel 3. Land, now or formerly of James A. O'Grady, Jr., Et. Als. comprising about 9.8 acres being boundad and described as follows: Northerly by land now or formerly of O'Grady and land of Burke about 726 feet; Easterly by land now or formerly

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BK10891 PG023



WINTHROP A. McCARTHY
TOWN CLERK

TOWN OF
STONEHAM
MASSACHUSETTS

OFFICE OF TOWN CLERK

(2) cont.

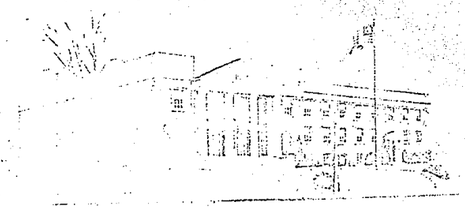
of Melvina Pitkerwich 97.80 feet; Northerly by land now or formerly of Melvina Pitkerwich 852.80 feet; Easterly by land now or formerly of Philip Weiss Trust 221.75 feet; Southeasterly by land now or formerly of John R. & Nora M. Carroll 344.18 feet; Southerly by land now or formerly of George P. & Mary N. Downes 348.86 feet; Westerly by land now or formerly of Clark A. Richardson 317.76 feet; Southerly by land now or formerly of Clark A. Richardson 804.38 feet; Westerly by land now or formerly of Rouillard and land of Masotta 242.66 feet.

Parcel 4. Land, now or formerly of Clark A. Richardson comprising about 8.5 acres being bounded and described as follows: Northerly by land now or formerly of James A. O'Grady, Jr. Et. Al. 804.38 feet; Easterly by land now or formerly of James A. O'Grady, Jr. Et. Als. 317.76 feet; Southerly by land now or formerly of George P. & Mary N. Downes about 91 feet; Easterly by land now or formerly of said Downes about 155 feet; Southerly by land now or formerly of Avellino and land now or formerly of Spadafora about 715 feet; Westerly by land now or formerly of Mitchell and land now or formerly of Palermo about 480 feet.

Parcel 5. Land, now or formerly, of George P. Downes and Mary N. Downes comprising about 2.0 acres being bounded and described as follows: Northerly by land now or formerly of Richardson and land now or formerly of O'Grady about 440 feet; Easterly by land now or formerly of O'Grady about 125 feet; Southeasterly and Southwesterly by land now or formerly of Laura Realty Trust about 370 feet; Southwesterly by land now or formerly of Avellino about 172 feet; Westerly by land now or formerly of Richardson about 155 feet.

Parcel 6. Land, now or formerly of James A. O'Grady, Jr. Et. Als. comprising about 0.4 acres being bounded and described as follows: Northerly by land now or formerly of Carroll about 320 feet; Southeasterly by land now or formerly of Laura Realty Trust about 295 feet; Southwesterly by land now or formerly of Downes about 125 feet.

BK10891 PG024



WINTHROP A. McCARTHY
TOWN CLERK

TOWN OF
STONEHAM
MASSACHUSETTS

OFFICE OF TOWN CLERK

(3) cont.

Parcel 7. Land, now or formerly, of John R. Carroll and Nora M. Carroll comprising about 0.8 acres being bounded and described as follows: Northwesterly by land now or formerly of O'Grady about 344 feet; Easterly by land now or formerly of Weiss Trust about 230 feet; Southerly by land now or formerly of O'Grady about 320 feet.

Parcel 8. Land, together with the buildings thereon, now or formerly of Ellen Cody comprising about 1 acre being bounded and described as follows: Northerly by land now or formerly of the Inhabitants of the Town of Stoneham about 158 1/2 feet; Easterly by land now or formerly of Marks and land now or formerly of Weiss Trust about 255 feet; Southerly by land now or formerly of Pitkerwich about 209 feet; Westerly by land now or formerly of Aruda, Finnegan and Newhook about 243 feet.

The above parcels being an area of land bounded and described as follows: Easterly by land of Marks about 225 feet; Northerly by lands of Marks, Paicos, Weiss Trust and Coffin about 535 feet; Easterly and Southeasterly by lands of Campbell, Weiss Trust, Mitchella, Dungin, Nailes, Town of Stoneham and Peacock about 1,119 feet; Southwesterly by land of Laura Realty Trust about 169 feet; Southeasterly by land of Laura Realty Trust about 572 feet; Southerly by lands of Laura Realty Trust, Avellino and Spadafora about 980 feet; Westerly by lands of Mitchell, Palermo, Rouilland and Masotta about 723 feet; Northerly by lands of O'Grady and Burke about 726 feet; Westerly by land of Burke about 368 feet; Northerly by lands of Burke, Wentzell, and Aruda about 473 feet; Westerly by lands of Aruda, Finnegan and Newhook about 243 feet; Northerly by land of the Town of Stoneham 158.5 feet; comprising about 35.5 acres as shown on a plan by George E. Hayes, Reg. Surveyor, dated February 3, 1964, and that the Selectmen be authorized to acquire said land accordingly.

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BK10891 PG025

TOWN OF
STONEHAM
MASSACHUSETTS

WINTHROP A. McCARTHY
TOWN CLERK

OFFICE OF TOWN CLERK

(4) cont.

I further certify that the following action was taken under Article 2 of the warrant for the said special Town Meeting duly called, warned and held in Town Hall on October 7, 1964, at which time a quorum was present when said Article 2 was before said meeting:

Article 2. VOTED that the Town allocate $100,000 of the sum appropriated by the vote under Article 1 of the warrant for this meeting for acquiring by purchase or by taking by eminent domain for school purposes the following described parcels of land in Stoneham as shown on the plan of George E. Hayes, Reg. Surveyor, dated February 3, 1964:

Parcel 1. Land, now or formerly of Philip Weiss Trust comprising about 6.75 acres being bounded and described as follows: northerly by lands now or formerly of Marks, Faicos, Weiss Trust and Corbin about 695 feet; Easterly and Southeasterly by land now or formerly of Campbell, Weiss Trust, Minichella, Dunphy, Welles, Town of Stoneham and Pancock about 1,119 feet; Southwesterly and Westerly by lands now or formerly of Laura Realty Trust, Carroll, O'Grady, Pitkerwich and Cody about 1,000 feet.

Parcel 2. Land, together with the buildings thereon, now or formerly of Melvina Pitkerwich comprising about 6.3 acres being bounded and described as follows: Northerly by lands now or formerly of Burke, Wentzell, Arruda and Cody about 382 feet; Easterly by land now or formerly of Philip Weiss Trust about 350 feet; Southerly by land now or formerly of James A. O'Grady, Jr., Et. Als. 652.60 feet; Westerly by land now or formerly of O'Grady and land of Burke about 486 feet.

Parcel 3. Land, now or formerly of James A. O'Grady, Jr., Et.Als. comprising about 9.8 acres being bounded and described as follows: Northerly by land now or formerly of O'Grady and land of Burke about 726 feet; Easterly by land now or formerly

BK10891 PG026

TOWN OF
STONEHAM
MASSACHUSETTS

WINTHROP A. McCARTHY
TOWN CLERK

OFFICE OF TOWN CLERK

(5) cont.

of Melvina Pitkerwich 97.80 feet; Northerly by land now or formerly of Melvina Pitkerwich 652.60 feet; Easterly by land now or formerly of Philip Weiss Trust 221.75 feet; Southeasterly by land now or formerly of John R. & Nora M. Carroll 344.13 feet; Southerly by land now or formerly of George P. & Mary N. Downes 348.86 feet; Westerly by land now or formerly of Clark A. Richardson 317.76 feet; Southerly by land now or formerly of Clark A. Richardson 804.38 feet; Westerly by land now or formerly of Rouillard and land of Masotta 242.66 feet.

Parcel 4. Land, now or formerly of Clark A. Richardson comprising about 8.5 acres being bounded and described as follows: Northerly by land now or formerly of James A. O'Grady, Jr. Et. Al. 304.38 feet; Easterly by land now or formerly of James A. O'Grady, Jr. Et. Als. 317.76 feet; Southerly by land now or formerly of George P. & Mary N. Downes about 91 feet; Easterly by land now or formerly of said Downes about 155 feet; Southerly by land now or formerly of Avellino and land now or formerly of Spadafora about 715 feet; Westerly by land now or formerly of Mitchell and land now or formerly of Palermo about 480 feet.

Parcel 5. Land, now or formerly, of George P. Downes and Mary N. Downes comprising about 2.0 acres being bounded and described as follows: Northerly by land now or formerly of Richardson and land now or formerly of O'Grady about 440 feet; Easterly by land now or formerly of O'Grady about 125 feet; Southeasterly and Southwesterly by land now or formerly of Laura Realty Trust about 370 feet; Southwesterly by land now or formerly of Avellino about 172 feet; Westerly by land now or formerly of Richardson about 155 feet.

Parcel 6. Land, now or formerly of James A. O'Grady, Jr. Et. Als. comprising about 0.4 acres being bounded and described as follows: Northerly by land now or formerly of Carroll about 320 feet; Southeasterly by land now or formerly of Laura Realty Trust about 295 feet; Southwesterly by land now or formerly of Downes about 125 feet.

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TOWN OF
STONEHAM
MASSACHUSETTS

WINTHROP A. McCARTHY
TOWN CLERK

OFFICE OF TOWN CLERK

(6) cont.

Parcel 7. Land, now or formerly, of John R. Carroll and Nora M. Carroll comprising about 0.8 acres being bounded and described as follows: Northwesterly by land now or formerly of O'Grady about 344 feet; Easterly by land now or formerly of Weiss Trust about 230 feet; Southerly by land now or formerly of O'Grady about 320 feet.

Parcel 8. Land, together with the buildings thereon, now or formerly of Ellen Cody comprising about 1 acre being bounded and described as follows: Northerly by land now or formerly of the Inhabitants of the Town of Stoneham about 158 1/2 feet; Easterly by land now or formerly of Marks and land now or formerly of Weiss Trust about 255 feet; Southerly by land now or formerly of Pitkerwich about 209 feet; Westerly by land now or formerly of Aruda, Finnegan and Newhook about 243 feet.

The above parcels being an area of land bounded and described as follows: Easterly by land of Marks about 225 feet; Northerly by lands of Marks, Paicos, Weiss Trust and Coffin about 535 feet; Easterly and Southeasterly by lands of Campbell, Weiss Trust, Minghella, Durgin, Nelles, Town of Stoneham and Peacock about 1,119 feet; Southwesterly by land of Laura Realty Trust about 169 feet; Southeasterly by land of Laura Realty Trust about 572 feet; Southerly by lands of Laura Realty Trust, Avellino and Spadafora about 980 feet; Westerly by lands of Mitchell, Palermo, Rouillard and Masotta about 723 feet; Northerly by lands of O'Grady and Burke about 726 feet; Westerly by land of Burke about 368 feet; Northerly by lands of Burke, Wentzell, and Aruda about 473 feet; Westerly by lands of Aruda, Finnegan and Newhook about 243 feet; Northerly by land of the Town of Stoneham 158.5 feet; comprising about 35.5 acres as shown on a plan by George E. Hayes, Reg. Surveyor, dated February 3, 1964, and that the Selectmen be authorized to acquire said land accordingly. YES, 733; NO, 57.

A true copy of the vote taken under Article 2 of the warrant for the Special Town Meeting of October 7, 1964.

Attest: Winthrop A. McCarthy

Town Clerk of Stoneham

B. DEVELOPMENT RESTRICTIONS

There are no extraordinary development restrictions. The project will still need to comply with standard municipal and state requirements. The standard school project is completely viable on the site with the typical permitting requirements standard to Massachusetts.

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C. HISTORICAL REGISTRATIONS

It has been determined by the Town of Stoneham and the Project Team that there are no Historical Registrations, and/or potential local/state requirements at the high school and therefore there is no impact on scope and time regarding this issue. Below refers to the letter from the Historic District Commission to the Stoneham High School Building Committee, regarding the historic status of the high school building.

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

September 15, 2020

John Macero
Superintendent
Stoneham Public Schools
149 Franklin Street
Stoneham, MA 02180

RE: Stoneham High School, 149 Franklin Street, Stoneham, MA; MHC# RC. 68595

Dear Mr. Macero:

Thank you for submitting a revised Project Notification Form (PNF) for the project referenced above, which was received at this office on August 27, 2020. The staff of the Massachusetts Historical Commission (MHC) have reviewed the information submitted and have the following comments.

The proposed project consists of either the renovation of the existing Stoneham High School at 149 Franklin Street in Stoneham, or the full or partial demolition of the existing school and construction of a new school building at the same location. The information provided indicates that the project will use funding from the Massachusetts School Building Authority (MSBA).

Review of MHC's files indicates that the existing Stoneham High School is neither included in MHC's Inventory of Historic and Archaeological Assets of the Commonwealth, nor listed in the National and State Registers of Historic Places. No further review by the MHC is required for the MSBA-funded project.

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

Sincerely,

Linda Santoro
Preservation Planner
Massachusetts Historical Commission

xc: MSBA

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

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D. PRELIMINARY EVALUATION OF EXISTING CONDITIONS / CODE

INTRODUCTION AND PROJECT DESCRIPTION

Perkins & Will has retained Code Red Consultants to provide fire protection and life safety code consulting services for the Stoneham High School feasibility study project located in Stoneham, MA. The project consists of the study of the existing Stoneham High School building to evaluate the potential scopes of work, including a major renovation, addition, construction of a new school, or a combination thereof. It is anticipated that the project will include the demolition of the existing high school and the construction of a new building, with the exception of the existing auditorium and gymnasium which are planned to remain. The code analysis herein will describe the facility as a whole with respect to existing features and elements, however the evaluation of upgrades that may be necessary as part of the project is limited to the gymnasium and auditorium spaces. A high-level summary of anticipated upgrades that would be necessary if the existing building were to remain and undergo renovation is provided at the end of this evaluation.

The original building was originally constructed in 1968, with a small addition consisting of education labs constructed in 1981. The following sections outline the existing building features:

Height & Area: Three stories above grade in height with a footprint area of approximately 80,000 sf and an aggregate area of approximately 149,000 sf.

Use: Contains classroom space, auditorium, gymnasium, library, cafeteria, and supporting MEP spaces.

Occupancy: Educational use, grades 9-12 (Group E), as well as assembly functions in the auditorium (Group A-1), cafeteria (Group A-2), library (Group A-3), and gymnasium (Group A-4). The Group A functions are separated from Group E based on the assumption they are used for municipal/non-school related functions occasionally.

Construction: Non-combustible construction. The original building (including the gymnasium and auditorium) consists primarily of concrete construction, while the addition consists primarily of unprotected steel. The stage in the auditorium appears to be of wood construction.

Vertical Openings: The building contains two unenclosed stairs that connect all three stories of the building.

Fire Alarm System: FCI conventional fire alarm system with smoke detection in the main office only. Audible/visual notification appliances provided throughout, although adequate coverage is not provided in all areas. Manual pull stations provided at exits.

Fire Extinguishers: Fire extinguishers provided throughout building.

Exit Signage: Exit signage provided throughout building.

Emergency Power: Building is served by a natural gas emergency generator that powers exit signage, emergency lighting, fire alarm system, etc.

Fire Protection Systems: No sprinkler system. The building is equipped with a manual dry standpipe system with wall hydrants in the corridors of the building.

Accessibility: The building is primarily not accessible, including the following major deficiencies: non-accessible door hardware, non-accessible toilet and locker rooms, no accessible seating provided in auditorium or gymnasium, non-compliant entrances and exits, non-compliant ramps, and non-compliant stairs. Marked accessible bathrooms were observed, however the rooms/fixtures are not fully compliant with 521 CMR/ADA.

APPLICABLE CODES AND STANDARDS (AS OF JULY 2020)

Building Code	780 CMR - Massachusetts State Building Code 9th Edition, which is an amended version of the 2015 International Building Code (IBC). 780 CMR 34.00 is deleted and replaced by the Massachusetts Existing Building Code (MEBC), which is an amended version of the 2015 International Existing Building Code (IEBC).
Fire Code	527 CMR - Massachusetts Comprehensive Fire Safety Code which is an amended version of the 2015 Edition of NFPA 1, Fire Code with specific updates from the 2018 Edition of NFPA 1.
Plumbing Code	248 CMR 10.00 - Uniform State Plumbing Code.
Electrical Code	527 CMR 12.00 – Massachusetts Electrical Code, which is an amended version of the 2020 Edition of NFPA 70, National Electrical Code.
Mechanical Code	2015 Edition of the International Mechanical Code (IMC) as amended by 780 CMR 28.00.
Energy Code	2018 Edition of the International Energy Conservation Code (IECC) as amended by 780 CMR 13.00.
Elevator Code	524 CMR - Massachusetts Board of Elevator Regulations, which adopts and amends the 2013 Edition of ANSI A 17.1, Safety Code for Elevators and Escalators.
Accessibility	521 CMR - Architectural Access Board (AAB) Rules and Regulations 2010 ADA Standards for Accessible Design
Other	Various National Fire Protection Association (NFPA) codes and standards as referenced by the codes listed above

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EXISTING BUILDING CODE SCOPING REQUIREMENTS
Portions of an existing building undergoing repair, alteration, addition, or a change in use are subject to the requirements of the MEBC. In general, existing materials and conditions can remain provided they were installed in accordance with the code at the time of original installation and are not deemed a hazardous condition by an authority having jurisdiction (AHJ). Work to existing buildings should be performed in accordance with 780 CMR for new construction unless otherwise specified by the MEBC. Alterations to existing buildings are not permitted to reduce the level of safety currently provided within the building unless the portion altered complies with the requirements of 780 CMR for new construction.

Where compliance with the requirements of the 780 CMR is impractical due to construction difficulties or regulatory conflicts, building officials are permitted to approve compliance alternatives. Any compliance alternatives being sought are required to be identified on the submittal documents (MEBC 104.11).

4. Existing Building Code Compliance Method

The MEBC has 3 different compliance methods that can be used to evaluate a renovation project:

Prescriptive Method (MEBC Chapter 4)

Work Area Method (MEBC Chapters 5-11)

Performance Method (MEBC Chapter 14)

Based on the proposed scope of work within the gym and auditorium, this report utilizes the Work Area Compliance Method. The work within these spaces is anticipated to be classified as a Level 3 Alteration (work area exceeding 50% of the total building area), requiring compliance with MEBC Chapters 7, 8, and 9.

The portion of the building that will be constructed as new is required to comply with the requirements of 780 CMR. If the new portion of the building is not separated from the existing gymnasium and auditorium by structurally independent fire walls, it will be classified as an Addition per the MEBC such that the entire structure will be subject to the requirements of MEBC Chapter 11. If separated with fire walls, the new portion of the building will be considered as a separate building from a code perspective such that the requirements of MEBC

Chapter 11 are not applicable. Code requirements stemming from both approaches are outlined in this report and indicated appropriately.

5. Existing Building Code Analysis Approach

The scope of this document is limited to high-level fire protection, life safety, and accessibility code items that may have a major impact on the proposed scope of work and does not address finer-detail code compliance deficiencies. A comprehensive Investigation & Evaluation Report in accordance with 780 CMR Chapter 34 will be completed for the project after advancement of the proposed design. The observations outlined herein are based on visual observations taken by Chris Lizewski, P.E. and Janna Shapiro of Code Red Consultants on July 20, 2020. No destructive inspection or testing occurred. Drawings dated July 1966 and April 1980 were provided to Code Red Consultants and were utilized for this analysis.

The following chapters of this report document the results of our analysis in accordance with the Massachusetts Existing Building Code (MEBC) and the Massachusetts State Building Code (780 CMR). The analysis generally focuses on the alteration or addition triggers. An addition separated from the existing gymnasium and auditorium by structurally independent fire walls will need to comply with the new construction requirements of the applicable codes and standards in Chapter 2 of this document.

Materials already in use in a building in compliance with the requirements of approvals in effect at the time of their erection or installation are permitted to remain unless determined by the building official to be dangerous to life, health, or safety (IEBC 302.3). New and replacement materials are required to comply with the applicable code for new construction except as otherwise permitted by the IEBC (IEBC 302.4).

FIRE PROTECTION/LIFE SAFETY ANALYSIS
This Chapter addresses the overall code compliance approach for the project.

Use and Occupancy Classifications
The building is designed as a non-separated mixed use (780 CMR 508.3). Occupancies within the building include:

Group E, Educational: Classrooms

Group A-1, Assembly: Auditorium

Group A-2, Assembly: Cafeteria

Group A-3, Assembly: Library

Group A-4, Assembly: Gymnasium (with spectator seating)

Group S-1, Moderate-Hazard Storage: General storage

Group S-2, Low-Hazard Storage: MEP Spaces, Food Storage

Hieght, Area and Construction Type

Existing Construction
The existing building consists of non-combustible construction, including concrete in the original building and unprotected steel in the 2-story addition. Given the lack of fire-rated separation between the original building and the addition, the entire building defaults to Type IIB construction due to the presence of unprotected steel.

The portions of the building that are planned to remain as part of the project consist of concrete construction. Since the unprotected steel portion of the building will no longer be present following the proposed demolition, the construction type of the remaining portions can be evaluated independently. It is unknown if the concrete in these areas carries a fire-resistance rating given existing concrete dimensions. Therefore, the construction type is conservatively assumed to be minimally Type IIB, noncombustible unprotected, construction. Further evaluation of the concrete would be necessary to determine if the structure carries a fire-resistance rating.

Height & Area
Due to the sloping site, the building is considered to be 3 stories above grade plane since the floor level of the Ground Floor is more than 12 feet above the finished ground surface along the west side of the building (780 CMR 202). The footprint area of the building is approximately 80,000 sf and the aggregate area is approximately 149,000 sf (including Ground, First, and Second Floors).

The height and area allowances for a fully sprinklered Type IIB building containing Group A-1 and Group A-4 occupancies are as follows:

Height: 3 stories/75 feet

Footprint Area: 31,875 sf

Aggregate Area: 95,625 sf

If the new portion of the building is constructed as a nonseparated addition to the gymnasium and auditorium, the building would exceed the area allowances for a Type IIB building, assuming it is constructed to at least the same size as the existing building. In order to comply with the area allowances, the building is required to be constructed of minimally Type IB (2-hour) construction. This would require either upgrading the fire-resistance ratings of structural elements to 2-hours in the existing gymnasium and auditorium unless it can be confirmed that the existing concrete structure already provides such a rating.

If the new portion of the building is separated from the gymnasium and auditorium with structurally independent fire walls complying with 780 CMR Section 706, the new portion of the building is required to comply with the new construction requirements of 780 CMR Section 503, while the existing portions of the building are unaffected (unless otherwise altered). Assuming the new portion of the building is desired to be constructed to at least the same size as the original building, the new structure is required to be minimally Type IB construction in order to comply with the allowable footprint area. The existing construction of the existing spaces is permitted to remain. If Type II Construction is utilized, fire walls are required to be 2-hour rated; if Type I Construction is utilized, fire walls are to be 3-hour rated.

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For new construction, the height and area allowances for fully sprinklered high school buildings are provided below for reference for varying construction types, assuming nonseparated educational, business, and assembly occupancies (780 CMR Tables 504.3, 504.4, and 506.2).

	Construction Type		
	Type IB	**Type IIA**	**Type IIB**
Max Height Stories	6	4	3
Max Height (feet)	180'	85'	75'
Max Floor Area Unlimited	Unlimited	58,125 ft2	31,875 ft2
Max Aggregate Area	Unlimited	174,375 ft2	95,625 ft2

Table 1: Maximum Allowable Height and Area

The above table includes the limits for the most restrictive occupancy present. A separated mixed-use occupancy, or separated building approach, may be utilized to increase these area allowances depending on the desired program spaces and layouts.

Note that the auditorium stage appears to be primarily of wood construction. Under new code requirements, stages are required to be constructed of materials as required for floors for the construction type of the building in which the stage is located (780 CMR 410.3.1). If there is an upgrade to the auditorium's construction type or if the stage is renovated, it is required to be constructed minimally using noncombustible materials. Rated flooring and supports may be required if the construction type is to be upgraded.

c. Fire Protection Systems

Existing Construction
The existing building is not protected by a sprinkler system. It is expected that the project will consist of a major alteration or addition, requiring full sprinkler protection to be provided throughout the entire building (new and existing) in accordance with NFPA 13 (MEBC 804.2.2 & 904.1; 780 CMR T903.2; MGL ch. 148 s. 26G).

Standpipe
The building is equipped with a manual dry standpipe system with wall hydrants in the corridors of the building near stairs. An exterior fire department connection serves to fill the standpipe system from the front of the building. Alterations are required to be done in a manner that maintains the existing level of fire protection provided (MEBC 703.1). Removal of the standpipe and wall hydrant system would require a written permit from the Stoneham fire department (MGL ch. 148 s. 27A).

Fire Alarm and Detection System
The existing building is currently served by a dated conventional fire alarm system that consists of smoke detection in the main office, audible/visual notification appliances throughout the building (although adequate coverage is not provided in all areas), and manual pull stations. The fire alarm control panel (FCI) is located in an office within the reception office area. As part of the project, the fire alarm system will be required to be replaced with a system that complies with the requirements of NFPA 72 and can support the new addressable components (MEBC 904.2; 780 CMR 907.2.1 & 907.2.3). The system is required to be equipped with an emergency voice/alarm communication system (780 CMR 907.2.1.1 & 907.2.3).

d. Standby/Emergency Power Systems

An emergency power system is required to serve the following building features (780 CMR 2702.2):

Fire alarm and detection systems

Emergency voice/alarm communication system

Exit signage

Means of egress illumination

The existing building is served by an emergency generator, which is permitted to continue to be used provided it is in good working order and is adequately sized to accommodate the above systems. It is our understanding that the generator is original to the building. The emergency power system consists of a 100kW Kohler generator with Waukesha Motor Co natural gas engine.

e. Means of Egress

The following section is intended to note major means of egress requirements that are applicable to the anticipated project scope and includes areas of existing noncompliance based on the new construction requirements that are required to be addressed.

Number of Means of Egress
The existing building is served by numerous exits to grade. Due to the sloping site, many of these exits are via stairs or ramps (noncompliant).

Gymnasium:
The gymnasium is served by 12 exit doors each having a clear width of 39" resulting in a total egress capacity of 2,340. However, the 12 doors are provided in three exit clusters (3 doors in the north wall, 3 doors in the west wall, and 6 doors in the south wall). Due to the door's grouping into 3 distinct exits, the gym is limited to an occupant load of 1,000. If more than 1,000 occupants are desired for functions within the gym, a fourth remote exit is required to be provided (780 CMR 1006.3.1).

Auditorium
Per the place of assembly permit visible within the auditorium, the occupant load of the space consists of 1,059 chairs and approximately 135 occupants on the stage (1,194 total). There is a total of 6 exits that serve the auditorium: 4 doors that each provide approximately 60" of clear width, and 2 doors that provide 33" clear width each. The total egress capacity is 1,530 and is sufficient based on the current arrangement. Note that when a sprinkler system and fire alarm system with voice alarm communication capabilities are provided, the auditorium's capacity will be increased to 2,040 (780 CMR 1005.3). Since more than 4 distinct exits are provided, a capacity greater than 1,000 is permitted (780 CMR 1006.3.1).

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i. Corridors
Corridors (although mostly outside of the anticipated work area) were observed to be constructed of substantial noncombustible construction. Although not labeled, doors were constructed of wood construction with a thickness of 1.75" and containing wired glass vision panels or were substantial hollow core metal doors. The corridor construction therefore appears to meet the requirements for corridors in nonsprinklered educational buildings (780 CMR 1020.1 and MEBC 805.5.1).

As the building will be required to be sprinklered as part of the project, corridor ratings and associated door ratings are not required to be maintained. Phasing of sprinkler protection and removal of corridor ratings will be required to be approved by the AHJ as part of a project maintaining existing corridors.

ii. Lighting
In general, lighting appeared to be sufficient, however, lighting levels were not tested to confirm that they provide minimally 1 ft-cd throughout (780 CMR 1008.2). Additionally, given the unoccupied nature of the school during our survey, lighting was not on in all areas. Within the anticipated work area, several lights in the gymnasium were observed to be nonoperational (confirmed via discussion with school facilities personnel). It should be confirmed that the lighting can provide a minimum of 1 footcandle at the walking surface without exterior/window illumination (780 CMR 1008.2.1). All new portions of the school will be required to be equipped with lighting per 780 CMR 1008.

f. Accessibility

Given the expected scope of work exceeding 30% of the full and fair cash value of the building, the new building and remaining portions of the existing building are required to fully comply with the requirements of 521 CMR, Architectural Access Board regulations (521 CMR 3.2 & 3.3.2).

i. Auditorium

- Seating
The auditorium does not currently contain any accessible seating. Chapter 14 of 521 CMR requires that wheelchair spaces and companion seating be provided in places of assembly with fixed seating. Where the total seating exceeds 500, at least 6 wheelchair spaces plus one additional space for each total seating capacity increase of 100 are required to be provided (521 CMR 14.2). Since there are 1,059 seats currently provided in the lower and upper sections of seating, at least 12 wheelchair spaces are required.

The wheelchair spaces are required to be 60" long and 36" wide and be level (521 CMR 14.3). Where more than 150 seats are provided, wheelchair seating is required to be dispersed throughout all seating areas so as to provide a choice of views comparable to those for the general public (521 CMR 14.4.1). At least one companion seat is required to be provided next to each wheelchair space and designated as such with signage (521 CMR 14.4.3).

In addition to the wheelchair spaces, 1% of all fixed seats (15) are required to be aisle seats with no armrests on the aisle side or with removable or folding armrests. These seats are required to be identified by a sign or marker.

Accessible seating is required to adjoin an accessible route that also serves as a means of egress in case of emergency.

Based on the presence of fixed seating and audio amplification, an assistive listening system is required per 521 CMR 14.5.

- Floor Slope
The slope of the aisles between the seats in the auditorium ranges from 2% to 6%. Any part of an accessible route with a slope greater than 5% is required to be considered a ramp and is subject to the requirements of 521 CMR Chapter 24, including ramp dimensions, handrails, landings, etc. The auditorium aisles are not currently designed as ramps.

- Stage Access
The existing stage is provided with access via two sets of stairs located within the auditorium, as well as an accessible route that is located outside of the auditorium. Where access is provided to the stage from within the place of assembly, an accessible route from the wheelchair seating locations to the stage is required to be provided within the place of assembly. In addition, an accessible route that coincides with the route for performers is required to be provided to the backstage area. Access to the stage is permitted to be via a ramp or wheelchair lift (521 CMR 14.6).

ii. Gymnasium

- Seating
The gymnasium is equipped with retractable bleachers with no built-in accessible seating. Wheelchair seating that is integral to the bleachers is required to be provided (521 CMR 14.1). The wheelchair spaces are required to comply with the requirements outlined above, except that the spaces are not required to be dispersed throughout, but rather located in the rows at the point of entry to the bleacher seating (521 CMR 14.4.1 Exception; ADA 221.2.3.2).

- Locker Rooms
The existing locker rooms located adjacent to the auditorium are not accessible. Accessible features including restrooms, showers, locker areas are required to be provided as part of the project.

- Entrance
The exterior entrances to the portion of the building containing the gym required traversing stairs and noncompliant ramps. Stairs are not permitted along an accessible route. The ramps connecting the sidewalk on the north side of the building exceed a slope of 1:20 and are therefore required to comply with the provisions of 521 CMR Chapter 24 for ramps, including providing landings every 30' and handrails on both sides.

iii. General

- Door hardware
Throughout the building, doors were observed to be equipped with doorknobs. Door hardware that requires tight grasping, tight pinching, or twisting of the wrist to operate is not permitted (521 CMR 26.11.1). As such, doorknobs are not permitted. Existing panic hardware within the gym and auditorium are deemed to comply with these criteria.

- Restrooms
The building contains several non-accessible bathrooms, as well as bathrooms that are marked as accessible but do not fully comply with 521 CMR/ADA due to maneuvering clearances, fixture clearances, etc. All new and remaining student and visitor restrooms are required to comply with the requirements of 521 CMR Chapter 30. Restrooms that are designated for staff only are required to comply with the requirements of ADA Chapter 6.

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Plumbing Fixtures

Plumbing fixtures are required to be provided for the facility in accordance with the requirements of 248.

Program Occupant Load & Building Uses

Separate plumbing fixtures are required to be provided for males and females in sufficient number to accommodate the maximum expected program occupant load of each floor (248 CMR 10.10(18)(1)(ii)).

It is our assumption that the high school is/will be also used for municipal assembly functions in addition to its normal operation as an educational building. The plumbing fixtures provided are required to be in sufficient quantity to adequately serve each of these conditions.

For the educational function, separate plumbing fixtures for (1) building staff (teachers), (2) kitchen staff, and (3) students are required to be provided.

Quantity of Fixtures

The number of fixtures required is determined based on the factors contained in 248 CMR 10.10(18) Table 1 for each of the primary uses under consideration. It is presumed that the educational and public assembly functions will not occur simultaneously, so the fixtures are required to be sized for each function, with the more restrictive governing

	Toilets		Urinals	Lavatories (each sex)	Drinking Fountains
	Male	Female			
Students	1:90	1:30	1/90	1:90	1:75
Teachers	1:25	1:20	33% Sub. Permitted	1:40	-
Kitchen Staff	1:25	1:20	33% Sub. Permitted	1:40	-

Table 5: Plumbing Fixture Factors - Educational Use

	Toilets		Urinals	Lavatories (each sex)	Drinking Fountains
	Male	Female			
Theater	1:30	1:60	50% Sub. Permitted.	1:100	1:1,000
Gym, Library	1:50	1:100	50% Sub. Permitted	1:200	-

Table 6: Plumbing Fixture Factors - Assembly Use

Fixture Arrangement

Students are required to be able to reach the required fixtures within a travel distance of 300 feet and are not permitted to travel up or down a level. Staff are permitted to travel up or down one level to reach required fixtures provided they are within a 300-foot travel distance. Assembly occupants are required to be able to reach the required fixtures within a travel distance of 300 feet and are not permitted to travel up or down a level (248 CMR 10.10(18)).

Energy

If constructed as a separate building, the new portion of the school is required to comply with the requirements of the Stretch Energy Code - 780 CMR 115.00: Appendix AA which is an amended version of the 2015 International Energy Conservation Code and the 2013 Edition of ANSI/ASHRAE/IESNA 90.1.

Additions, alterations, renovations, or repairs to an existing building, building system, or portion thereof are required to conform to the provisions of the 2018 IECC as they relate to new construction without requiring the unaltered portions of the existing building or building system to comply with the 2018 IECC (IECC C501.4). Additions, alterations, renovations, or repairs are not permitted to create an unsafe or hazardous condition or overload existing building systems.

MAJOR UPGRADES REQUIRED IF EXISTING BUILDING UNDERGOES RENOVATION

The following sections highlight the major upgrades that will be required if the existing building is to undergoes renovation rather than demolition:

Sprinkler System

An automatic sprinkler system is required to be provided throughout per MGL ch. 148 s. 26G.

Construction Type

If a change of use occurs to a higher hazard type, or an addition (without separation) is created, the existing structural elements are required to be fireproofed.

Fire Alarm System

A fire alarm system that complies with the requirements of 780 CMR Section 907 and NFPA 72 is required to be provided throughout per MEBC Section 904.2.

Vertical Openings

Enclosure of the existing stairs is required in accordance with MEBC Section 803.2 so as not to create an atrium condition.

Accessibility Upgrades

The entire building is required to be brought into full compliance with 521 CMR. A high-level summary of expected upgrades (beyond those already outlined prior) is below:

All entrances are required to be made accessible and cannot include steps or stairs.

All door hardware throughout is required to be accessible.

All bathrooms are required to be upgraded as none currently meet all accessibility code requirements.

The elevator will need to be studied to confirm if the cab is the largest possible within the existing shaft.

The stairs and associated handrails are required to be upgraded. This includes providing new treads/nosings based on existing abrupt/damaged treads.

Existing ramps on the interior and exterior of the building are required to be altered and provided with handrails.

Floor surfaces (interior and exterior) are required to be corrected to prevent unnecessary changes in level due to damaged concrete and tiling.

Accessible features such as drinking fountains are required throughout.

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Figure 1: Corridor Walls/Wired Glass



Figure 2: Gym Lighting



Figure 3: Inaccessible Seating



Figure 4: Stage Access

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D. PRELIMINARY EVALUATION OF EXISTING CONDITIONS / CIVIL

Nitsch Engineering has performed research of the existing site and anticipated site permitting requirements for Stoneham High School located on Franklin Place in Stoneham, Massachusetts. David M. Conway, P.E. of Nitsch Engineering conducted site visits in July of 2020. Information included in this report was also based on record drawings, Massachusetts Geographic Information System (MassGIS) data and other documents provided by the Owner or gathered by Nitsch Engineering. The record plans include some of the original site plans from 1968. A summary of our observations and findings is described below.

GENERAL SITE DESCRIPTION

Stoneham High School is located at 149 Franklin Street on an approximately 39-acre parcel. An entrance drive, Franklin Place, is the single vehicular entrance to the school. Franklin Place is a boulevard type street, with the opposing directions of traffic separated by a walkway and greenspace. Franklin Place is approximately 900-feet long from its intersection with Franklin Street and the school itself. To the east of the entrance drive are tennis courts and parking lots. There is some parking in front of the school and a paved service drive that circles the school building itself. Athletic fields are located along the west side of the site. Topographically the site slopes from the east to west, with elevations of approximately 190 in the northeast corner of the site and the athletic fields along the west side of the side at elevation approximately 170.

SITE UTILITIES

Storm Drainage

The storm drainage system consists of a catch basin to manhole system typical for its era of construction. Stormwater is collected by the catch basins and directed via stormwater piping to drain manholes forming a network that collects and directs the stormwater off site. Roof drains from the school building tie into this system as well. It is likely that any field subdrainage from the athletic fields connects into this system as well.

The main feature of the stormwater system on the site is a 48-inch diameter storm drain line that runs from north to south through the site. The 48-inch line begins at a headwall located adjacent to the rear of 19 Emerald Court, runs approximately between the soccer and softball fields, continues under the varsity track/football field and discharges just beyond the bleachers. The area beyond the discharge headwall is a wetland in the undeveloped portion of the site leading into the Middlesex Fells. From the school's original construction documents, it appears that the 48-inch line was installed when the site was developed as a school and a stream/ditch the followed a similar path was filled. The 48-inch drain carries flows from areas north of the site, including the Emerald Court neighborhood and the area north of Franklin Street through the site. The storm drainage system on the site ties into the 48-inch drain at various points along its route. The construction documents indicate that the 48-inch drain was laid with a slope of only 0.003 ft/ft.

There appears to be minimal to no stormwater features that attempt to address stormwater quality, rate or volume on site. The catch basins appear to have small sumps to collect sediment and debris but no hoods or tees to eliminate floatables. There was no evidence of stormwater infiltration systems, bio-retention ponds or other water quality features on site. Along the northern edge of the property, adjacent to the residential properties along Emerald Court, there is a series of swales that direct stormwater runoff along the property line and into catch basins that tie into the 48-inch line. The construction documents do not show all the stormwater connections and piping, a thorough site survey should be conducted to confirm the configuration of the system. In addition, the condition of 48-inch line, if it is to remain, should be reviewed by video inspection.

Sanitary Sewer

The school is served by the town sanitary sewer system by way of an 8-inch service from the site connecting to the 8-inch town sewer in Franklin Street. The 8-inch sewer serving the site runs under the entrance drive to a manhole located to the west of the flagpole. Two sewer services from the building, one 6-inch and one 5-inch, direct sanitary flows from the building to the sewer manhole. Elevation of the inverts on the services indicate that one service serves the main floor while the other service (the 6-inch service) serves the lower floor.

The construction documents indicate that the sewer manhole that the services connect to is approximately 17 feet deep from rim to invert. The sewer service piping materials are not indicated, and their condition is unknow. Any portion of the sewer service that are proposed to remain in service should be cleaned and video inspected. There was no indication on the construction documents or field observations of any external grease traps for the kitchen flows.

Water

Original construction documents and field observations indicate that water service to the site and building is by way of a 12-inch water line, located under the entrance drive, that connects to the 10-inch water line located in Franklin Street. The 12-inch line transitions to an 8-inch line that runs around the building with connections at various points for fire hydrants, building services and irrigation connections. The construction documents do not indicate the water pipe material. Common water pipe material during that era of construction were cement lined ductile iron and transite. In general, transite pipe has a shorter life than cement lined ductile iron. Transite is also more difficult to work with than ductile iron as it is more brittle and contains asbestos fibers, Once the type of water line material is confirmed, flow tests and pipe samples can help to determine the condition of the lines.

Natural Gas

The building is served by natural gas, with the gas meter assembly located to the right of the main building entrance. The original construction documents do not indicate the gas service but do indicate the presence of a 10-inch gas main in Franklin Street. The original construction documents do indicate that presence of fuel tanks located in the area adjacent to the current gas meter. No physical evidence of fuel tanks was observed.

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SITE CONDITIONS

Soils
There was clear evidence of ledge throughout the site. Original construction documents indicate that ledge removal was required for construction of the original school building and that the athletic field sit on a combination of ledge cut and fill.

Pavement
The vehicular pavement is in generally poor condition. The parking lots, particularly the lots on the east side of the site have significant cracking. There is visual evidence that pavement repairs. including patching and crack repair, have been undertaken but the pavement is at the end of its useable life. The number of catch basins is low relative to the size of the parking and vehicular areas, which is contributing to the pavement deterioration, especially around the edges of the pavement.



Figure 1; East parking lot showing extensive cracking with some evidence of crack repair.

PRELIMINARY PERMITTING CONSIDERATIONS

Wetlands Protection Act (310 CMR 10.00) and Town of Stoneham Wetland Protection By-Law
The Wetlands Protection Act ensures the protection of Massachusetts' inland and coastal wetlands, tidelands, great ponds, rivers and floodplains. It regulates activities in coastal and wetland areas and contributes to the protection of ground and surface water quality, the prevention of flooding, and the protection of wildlife and aquatic habitat. The Town of Stoneham Wetland Protection By-Law is intended to utilize the Home Rule authority of the municipality to protect additional resource areas, for additional values, with additional standards and procedures stricter than those of the Wetlands Protection Act. A particular example of this higher level of protection Town of Stoneham Wetland By-Law requirement that a continuous strip no less than twenty-five (25) feet in width, untouched and in its natural state, is to be left undisturbed adjacent to those areas meeting the description of a wetland.
A review of the Massachusetts Department of Environmental Protection (MasDEP) wetland layers available on MassGIS indicate wetlands in the southern undeveloped portion of the site and along the northern property line. The northern wetlands consist of a stream running between the homes on Emerald Court and the soccer field (which in turn is culverted through the site). The southern wetlands appear to be Bordering Vegetated Wetlands (BVW) in the southern end of the site, adjacent to where the culver discharges just beyond the bleachers.

Surface Water Supply Protection (310 CMR 22.20)
The MassDEP ensures the protection of surface waters used as sources of drinking water supply from contamination by regulating land use and activities within critical areas of surface water sources and their tributaries.
A review of the MassGIS resource areas indicate that the site is not located within any Surface Water Supply Protection Zone.

Natural Heritage & Endangered Species Program
A review of the online database of the Natural Heritage and Endangered Species Program indicates that the Stoneham High School site is not a Priority Habitat of Rare Species or Estimated Habitats of Rare Wildlife.

National Flood Insurance Program-Flood Insurance Rate Map (FIRM)
A review of the Federal Emergency Management Agency FIRM map for the site indicates that the site is located in a "Other Areas-Zone X", which is listed as areas determined to be outside of the 0.2% annual chance floodplain. The 0.2% annual chance of floodplain is commonly referred to as the 500-year floodplain.

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D. PRELIMINARY EVALUATION OF EXISTING CONDITIONS / LANDSCAPE

We visited the site on July 8th, 2020 early morning to observe the existing conditions throughout the site for the preparation of this report. During our site visit, we met with the Athletic Director, Dave Pignone and the Facilities Director, Kevin Yianacopolus, who showed us the irrigation controller, storage shed and food preparation building for the sports complex. We subsequently reviewed other existing conditions documentation provided by Perkins and Will. This report excludes utilities, drainage, soils, structural, concession food service and traffic.

STONEHAM ASSESSOR'S PARCEL RECORD

Parcel ID: 284-08-134, 284-02-152
Parcel Size: 38.88 acres + 0.75 acres (entrance parcel)
Zoning District: Education

SITE CONFIGURATION

The existing Stoneham High School site is located at 149 Franklin Street with residential neighborhoods surrounding the site and abuts the Middlesex Fells Reservation recreational/ open space to the south. Business and medical-zoned properties exist on the opposite side of Franklin Street.

The high school site consists of two parcels totaling approximately 39.63 acres. The primary 38.88-acre parcel at 149 Franklin Street contains the high school building, vehicular circulation, parking, athletic fields and tennis courts. The secondary 0.75-acre parcel contains the entrance circulation off Franklin Street.

This report is limited to summarizing our observations regarding existing conditions and specifically excludes zoning and regulatory criteria affecting the 39.63-acre parcel.

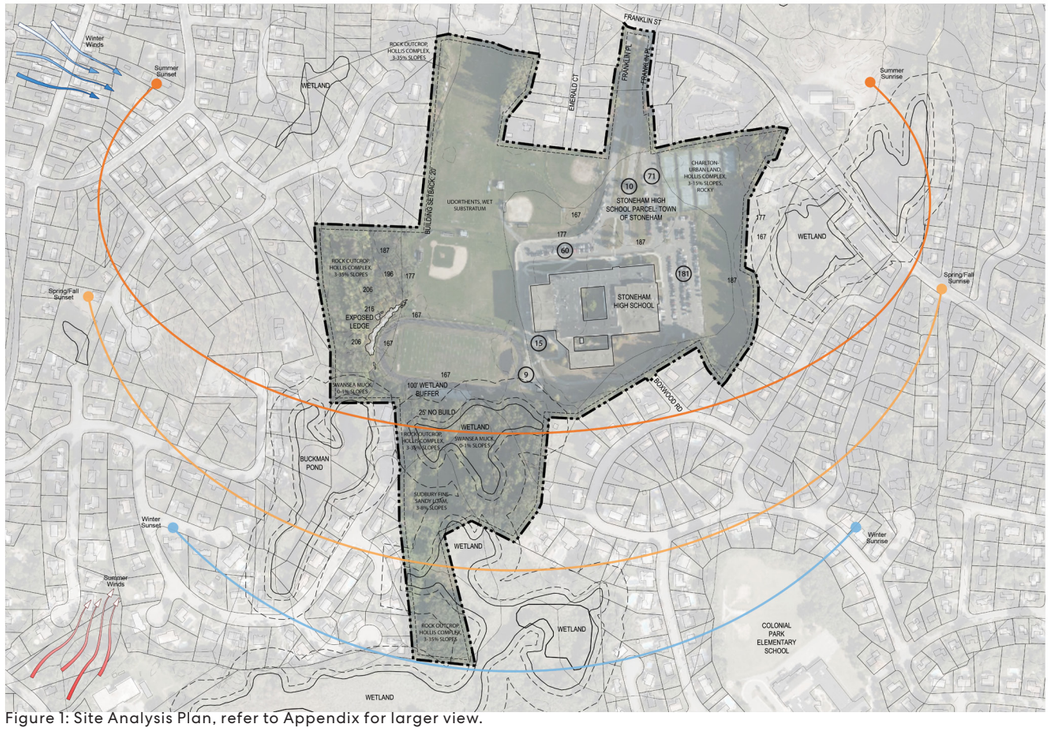


Figure 1: Site Analysis Plan, refer to Appendix for larger view.

SITE LAYOUT & FUNCTION

The existing school building is oriented toward Franklin Street and located near the center of the parcel. The property's highest point is in the northeast corner at the tennis courts (192') and slopes to the lowest point is in the southwest corner at the wetland (164'). There is exposed ledge in the southwestern and northwestern corners of the site next to the soccer field and track.

All vehicular circulation enters and exits at Franklin Street onto Franklin Place which is a one-way loop from north to south. One small bus serves the school daily for SPED student pick up and drop off, which occurs along the north side of the building at the main building entrance. The district owns two white minibuses, which are parked on the SHS grounds and used to for transportation offsite for athletics, field trips, and SPED student learning opportunities. We counted a total of 346 parking spaces on site distributed among 6 different locations with three primary parking areas containing 90% of this total. A 60-space parking lot (including 4 accessible) is located to the north of the building near the softball fields. A second parking lot (71 spaces) where students are encouraged to park is located to the northeast side of the building, near the tennis courts. The largest parking lot (181 spaces, including 1 accessible) is located to the east of the school and south of the tennis courts. There are three other areas to the west/ southwest of the school, including service parking (15 spaces), and parking near the track/concession building (9 total spaces, including 2 accessible). Visitor parking is along Franklin Place (10 parallel spaces).

The formal pedestrian entrance is centered in the median between the vehicular entry and exit along Franklin Place to the north side of the main building entrance and plaza. Informal entrances are at the northwest corner of the site near the far soccer field (connecting to Benjamin Terrace and the Brookmeadows apartments). Informal entrances also exist on the south side of the site, including a trail on the southwestern side leading under the stadium bleachers, through the wetland buffer into a residential neighborhood (Dapper Darby Drive) and a gravel trail on the southeastern side leading to Boxwood Road, which also provides vehicular emergency access. A paved asphalt emergency access fire lane circles the school.

The western portion of the site contains the track and field and other athletic fields. In the northeastern corner of the site there are two multi-purpose fields, primarily used for soccer. South of the soccer fields is a baseball field. East of the soccer field are two softball fields. The track and field are located in the southwestern corner of the site next to exposed ledge. Tennis courts are located in the northeastern corner of the site. Field events are located south of the school (shotput) and in the southeastern corner (discus and javelin). The practice field on the eastern portion of the site is in rough condition and also used for events and overflow parking.

There is a lack of pedestrian-scaled lighting on the site. Primarily, there is roadway lighting along the entry drive and in parking lots and building-mounted lighting. There are some missing light fixtures, which have not been replaced. There is sports lighting at the track, address in more detail in the athletic fields section.

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PHYSICAL CONDITIONS

Following is a summary of our observations with representative photographs.

Aerial View of Main Driveway Entrance to the school site (left) and Entrance Sign





Primary school building entry plaza and sidewalk to a secondary entrance





Asphalt Driveways and Parking Areas with numerous cracks and limited accessibility





Asphalt Driveways and Parking Areas with numerous cracks and limited accessibility





Granite and Asphalt Curbing

Granite curbing is in fair to good condition and exists along sidewalks at the school entrance and sidewalks around the parking lot at the main entrance. Asphalt berms are in poor condition and broken or missing in several locations along the Franklin Place entry drive.

Service Areas (loading on west and kitchen service at east side of school)





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Saul Weiss Memorial Fields (Softball, total of 2 fields) and memorial





Softball bleachers and scoreboard





Fence at soccer field and scoreboard (cut through located to the left of scoreboard)





Recessed baseball dugout (with irrigation controller cabinet) and scoreboard





Concessions building at track facility and memorial





Track and exposed ledge (left) and pathway below bleachers

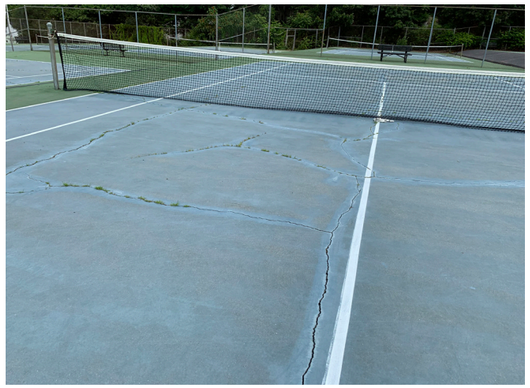




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Tennis courts – cracking pavement and inaccessible conditions





Outdoor café seating at south side of school





Greenhouse and garden beds in small exterior courtyard (left) and landscaping in larger exterior courtyard (right)





ACCESSIBILITY

There is a lack of accessibility throughout the site.

Four accessible parking spaces exist in the parking lot north of the school; however, the access aisles are undersized, and a light pole obstructs the access aisle. There is no accessible route from the parking spaces to the main building entrance. The sidewalk in the landscaped median does not have a curb cut or detectable warning tiles. At the school plaza/main entrance, there is a curb cut and detectable warning.

With the exception of the track and field, there are limited or incomplete accessible routes to existing athletic facilities. At the Saul Weiss Memorial Fields (softball) there is an eroded and incomplete gravel path that is on a steep slope. No access is provided to the fields, bleachers, or dugouts at the softball, soccer, or baseball fields. The dugouts themselves are sunken and not accessible. The baseball and softball bleachers are not accessible and do not include wheelchair seating.

The Rocher-Fillback Track Facility has two accessible parking spaces adjacent to the track. There is an asphalt path to the track and spectators must walk on the track to reach the bleachers. The elevated bleachers and press box are not accessible and do not provide any accessible seating. From the school, there is no complete accessible pedestrian route to the track and field or concession/storage building. The exit from the gymnasium uses the fire lane, which is a steep slope and the science classrooms are at a higher elevation and connected only by a series of stairs.

The tennis courts have one accessible parking space with an access aisle. The asphalt paving at the tennis court gate does not provide sufficient clear space for maneuvering. Of the 8 tennis courts, only 1 is accessible from the parking area. 6 of the tennis courts are elevated on terraces, with cape cod berms and sloped asphalt paving. The other tennis court can be accessed by stairs.

The smaller exterior courtyard has a greenhouse and planting beds. The planting beds are low and are not accessible. The smaller courtyard also contains concrete seating but does not provide accessible seating. The larger courtyard is landscaped only and does not contain any accessible walkways. The outdoor cafeteria seating does not have accessible routes to the picnic tables nor do any tables provide accessible seating.

ATHLETIC FACILITIES

The current athletic facilities are keyed to the diagram below as follows:

1. Soccer/Lacrosse Field #2: Boys Soccer (JV), Girls Soccer (JV), Girls Lacrosse (Varsity and JV), Summer Sports Clinics (Soccer and Lacrosse), Youth Lacrosse
2. Soccer/Lacrosse Field #1: Boys Soccer (Varsity), Girls Soccer (Varsity), Boys Lacrosse (Varsity and JV), Summer Sports Clinics (Soccer and Lacrosse), Youth Lacrosse
3. Saul Weiss Memorial Field #1: Varsity Softball, Summer Sports Clinics, Little League, Youth Softball
4. Saul Weiss Memorial Field #2: JV Softball, Summer Sports Clinics, Youth Softball
5. Leo J. Herlihy Memorial Tennis (8 Courts): Boys and Girls Tennis
6. Baseball Field: Varsity and JV, Summer Sports Clinics, Little League
7. Field Hockey (in outfield of Baseball): Varsity and JV
8. Rocher-Fillback Track Facility: Boys and Girls Outdoor Track, Summer Sports Clinics
9. Long & Triple Jumps
10. Football Field: Varsity and JV
11. High Jump
12. Pole Vault
13. Shot Put
14. Discus
15. Javelin Events and Practice Field

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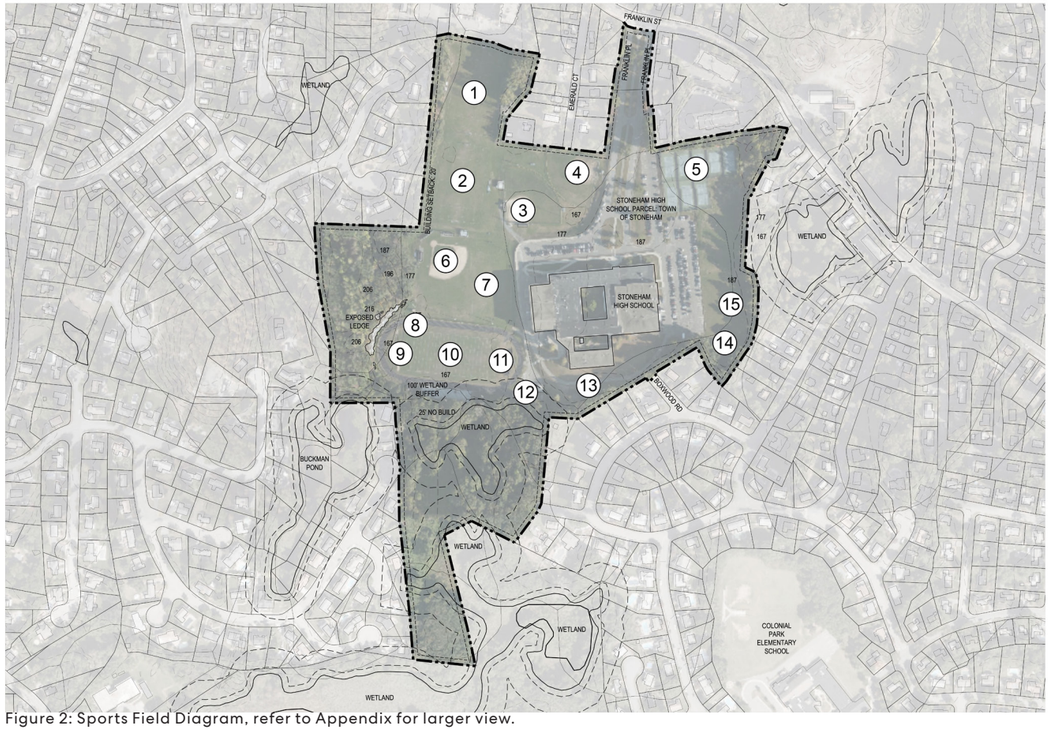


Figure 2: Sports Field Diagram, refer to Appendix for larger view.

The fields on the western side of the school are bordered by woods and higher ground, which provides good protection from low sun angles. However, the baseball field and track and field do not have optimal solar orientation and there are sun glare issues around 5-6 pm. All fields are natural grass with irrigation supplied by the municipal water service, with the exception of the practice field in the southeastern corner of the site, which does not appear to have irrigation.

The Rocher-Fillback Track is in fair condition having been well-maintained. The exposed ledge on the western side was blasted to construct the equal-quadrant 6-lane track. The football field has had sinkhole issues and test pits are recommended to verify whether this is caused by voids in blast rock fill. The football field is natural grass with an irrigation system. The sports lighting around the track is on antiquated wood poles and has wiring issues. A steel frame and aluminum deck bleacher system and wood frame press box are located on the south side of the track facing north. These structures require structural evaluation to determine compliance with current building code. The lack of accessibility will require extensive and costly modifications that along with addressing any structural deficiencies will likely point to replacing these with new systems as the best long-term value. The long and triple jumps are located in the west “D” zone inside the track and the high jump is located inside the east end. Pole vault is located as an extension of the track chute. Shotput is located south of the school and discus and javelin are located in the practice field east of the school.

Storage for the athletic facilities is housed in a pair conex boxes within the track fencing, in the back of the concession building, a small shed at the baseball field and a conex box behind the discus area.

The baseball field is oriented in a southeasterly direction from home plate to second base and partially protected from solar glare other than previously mentioned at 5-6 pm. The irrigation controller is located in a cabinet on the east end of the north dugout at the baseball field. The irrigation reportedly has stainless steel sprinkler risers, with the exception of the northernmost soccer field which has a residential-grade system with plastic sprinkler risers and a shallow water line. The scoreboards reportedly get hit by lightning during storm events and need replacement. We were informed that the Saul Weiss Memorial Fields (Softball, total of 2 fields) were reconstructed in 2002. The baseball and softball fields have various sized aluminum bleachers set on lawn, and galvanized chain link fencing and backstops.
The soccer fields are in fair condition. Test pits showed roadway asphalt fill was used to construct the fields in the 1990s. The fields have settled over time, revealing asphalt pieces. There is exposed ledge near the western side of the fields. The fence along the northern side of the fields is in poor condition.

The tennis courts are located in the northeastern corner of the site and constructed in a terraced formation with asphalt paved slopes and no fencing between the sides of the courts. There is exposed ledge on the north and east sides of the tennis courts. There is cracking on the courts and tripping hazards from asphalt berms and exposed utility rims.

Refer to attached document for a complete summary of the current athletic program provided by school staff.

VEGETATION

The school is adjacent to the Middlesex Fells Reservation and has wetlands and woodlands on the southern end of the parcel. There are some mature trees in undeveloped areas of the site near exposed ledge on the western and eastern sides of the site. An informal pathway on the south side of the site had poison ivy, which can be harmful if touched. The predominant vegetation type on the site is lawn and natural grass fields. There are some ornamental trees along the entrance drive a few mature canopy trees near the school.

This document is intended to serve as a general summary of our observations and information provided to us regarding the use and condition of the existing site facilities. Refer to other sections for information pertaining to existing utilities, drainage, soils, structural and traffic.

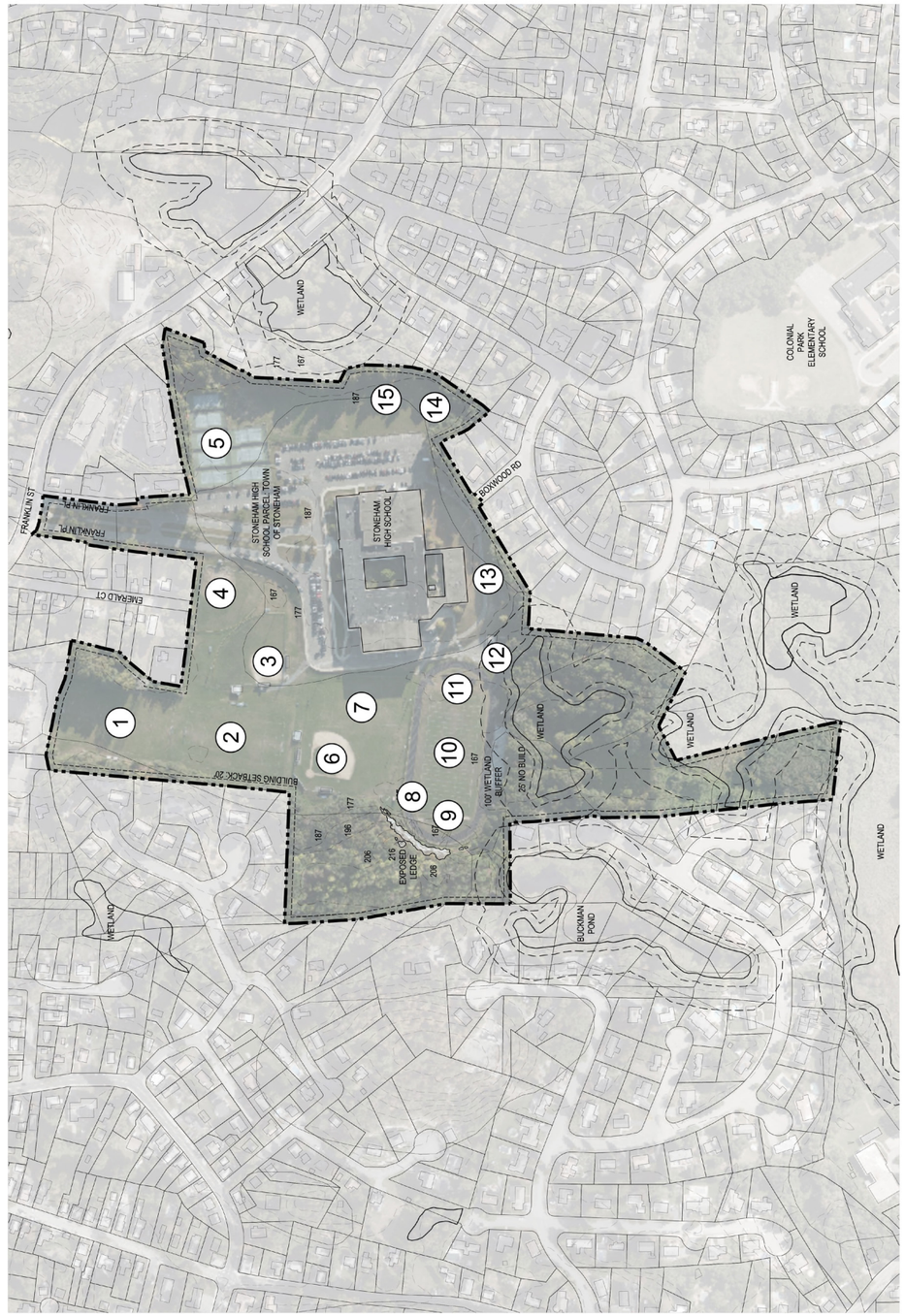
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Appendix A: Site Analysis Plan.



STONEHAM HIGH SCHOOL
SITE ANALYSIS

Appendix B: Sports Field Diagram.



STONEHAM HIGH SCHOOL
SITE ANALYSIS

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Appendix C: Complete summary of the current athletic program provided by school staff.

Sports programs at Stoneham High School

Fall Season August 18 - November 26

Sport	levels	Space used
Cheerleading	Varsity	Robin Hood Gym
Football	Varsity	H.S Football Field (stadium)
	JV	Stadium
	Freshman	Stadium/ Recreation Park
Boys Soccer	Varsity	H.S. Soccer/Lacrosse Field #1
	JV	H.S. Soccer/Lacrosse Field #2
	Freshman	Recreation Park
Girls Soccer	Varsity	H.S. Soccer/Lacrosse Field #1
	JV	H.S. Soccer/Lacrosse Field #2
	Freshman	Recreation Park
Boys Cross Country	Varsity	Colonial Park Elementry School field/Middlesex Fells woods
Girls Cross Country	Varsity	Colonial Park Elementry School field/Middlesex Fells woods
Field Hockey	Varsity	H.S. Baseball outfield
	JV	H.S. Baseball outfield
Golf	Varsity	Unicorn Golf Course / Bearhill Golf Course
Volleyball	Varsity	H.S. Gym
	JV	H.S. Gym
	Freshman	H.S. Gym
Swimming	Varsity	Medford Pool
	JV	Medford Pool

Winter Season November 30 - March 2

Sport	levels	Space used
Boys Basketball	Varsity	H.S. Gym #2 and 3
	JV	H.S. Gym #1
	Freshman	Middle School Gym
Girls Basketball	Varsity	H.S Gym #2 and 3
	JV	H.S. Gym #1
	freshman	Middle School Gym
Gymnastics	Varsity	H.S. Gym #4
Boys Indoor Track	Varsity	H.S Gym #1,2 and 3 use of outside whenever possible, as well as hallways
	JV	Same as Varsity
Girls Indoor Track	Varsity	H.S Gym #1,2 and 3 use of outside whenever possible, as well as hallways
	JV	Same as Varsity
Girls Ice Hockey	Varsity	Stoneham Arena
Boys Ice Hockey	Varsity	Stoneham Arena
	JV	Stoneham Arena

Spring Season March 16 - June 1

Sport	levels	Space used
Baseball	Varsity	H.S. Baseball Field
	JV	H.S. Baseball Field
	Freshman	Recreation Park
Softball	Varsity	H.S. Softball Field #1
	JV	H.S. Softball Field #2
Boys Outdoor Track	Varsity	H.S. Track, Upper Field (cafe)
	JV	H.S. Track, Upper Field (cafe)
Girls Outdoor Track	Varsity	H.S. Track, Upper Field (cafe)
	JV	H.S. Track, Upper Field (cafe)
Boys Tennis	Varsity	H.S. Tennis Courts
Girls Tennis	Varsity	H.S. Tennis Courts
Boys Lacrosse	Varsity	H.S. Soccer/Lacrosse Field #1
	JV	H.S. Soccer/Lacrosse Field #1 (have not officially added)

Appendix B: Sports Field Diagram.

Girls Lacrosse	Varsity	H.S. Soccer/Lacrosse Field #2
	JV	H.S. Soccer/Lacrosse Field #2 (have not officially added)

Other Athletic activities and space used

Weight Room	All	In-season and out of season training all year round. Summer Program (P.E.P.) and P.E. Classes use durign the day all year long.
Summer Sports Clinics Sports are spread out through a 10 week period so we dont compete against each other and can offer soemthing to families throughout the summer.	Baseball	H.S. Baseball Field and Gym
	Softball	H.S softball Field and Gym
	Track	H.S. Stadium and Gym
	P.E. games	H.S. Gym
	Basketball	H.S. Gym
	Volleyball	H.S. Gym
	Flag football	Recreation Park
	Cheer	H.S. Gym
	Soccer	H.S. Soccer/Lacrosse Field #1 and 2
	Lacrosse	H.S. Soccer/Lacrosse Field #1 and 2

AD's Office with Conference room
Locker rooms
Meeting rooms
Coaches Rooms/Offices
Officials Rooms
visitiing team rooms
Storage, Storage, Storage- Inside and out
Equipment room
Washing machine room
Concessions outside and inside

Youth Sports that use our Facilities

Youth Basketball	H.S. Gym
Little league	H.S. Baseball Field and H.S. Softball Field #1
Youth Lacrosse	H.S. Soccer/Lacrosse Fields #1 and 2
Youth Softball	H.S. Softball Fields #1 and 2

We hope when this project is complete we will be able to allow many other town groups the abilty to be here as well. There are some that are asking all the time, but we cant get them time.

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D. PRELIMINARY EVALUATION OF EXISTING CONDITIONS / ARCHITECTURAL

The existing Stoneham High School was built in 1968 as a new public junior high school facility for the town of Stoneham. A senior high school addition to the junior high school was constructed in 1980. Currently, the facility is still owned and run as a high school. The building has been fairly maintained over the past 52 years, but the building enclosure systems and finishes are at the end of their useful life.

Much of the interior within the Stoneham High School have generally not been updated (with exception to the gymnasium and 1980 wing roofs, which were replaced in 1983), leading to worn ceilings, walls, and floors with moderate to minimal damage. Original doors, hardware, floors and lockers are still present in many of the spaces and would require replacement or major repair and refinishing. The classrooms and corridors still have the original VAT (vinyl asbestos tile) flooring, but numerous pieces have been removed and replaced throughout the building. Most flooring shows signs of damage at door locations in main corridors and classroom entries. The VAT does contain asbestos which poses a health hazard and would need to be abated. The main lobby has an interesting large format ceramic tile with a circle pattern which is in good condition. Auditorium flooring is generally worn and past its useful life.

The majority of the interior walls are concrete and exposed brick masonry – which could make selective renovation difficult. The interior CMU and brick masonry walls appear to be in good condition, but plaster walls show signs of moderate to fair signs of damage throughout classrooms and corridors. Most corridors cafeteria and classrooms have ceramic wall tile which is in fair shape except for tile base which is cracked and damaged in many areas and should be replaced. The acoustic ceiling tiles show a large amount of water damage and misalignment throughout entire building. Ceilings in the majority of the school are an asbestos-positive tested application and in need of abatement and complete replacement. Ceilings tiles are frequently falling out of ceilings and need to be contained quickly due to asbestos concerns – even observed a trash bag covering a ceiling hole in kitchen area. The ceiling heights in many spaces including corridors are currently around 8'-0" - 8'-8" in height. Auditorium seating shows signs of excessive use and fabric/cushion is falling apart in vast majority of seating.

The building is a reinforced concrete frame with brick infill. The exposed exterior concrete frame is spalling in many locations and requires some patching and repairs. The brick infill appears to be in average condition. The aluminum window system single-pane glazing which should be replaced to meet the new energy code. The single pane windows that are operable do not have screens and open to a width not allowable by code. The windows in the 1981 addition appear to have water infiltration issues and the caulking at all doors and windows is deteriorated, contains asbestos, and should be removed. The rubber roof is older and has outlived its warranty period.

All windows are original to the time of construction. Most are metal framed and all have single-pane glazing that is not thermally broken. The windows are fixed or awning type. All windows require replacement to meet the Energy Code. Existing curtainwalls do not meet the Energy Code and are rotting and will need to be replaced with all new. The gymnasium has Kalwall window system which is original to the building and has yellowed significantly. This system is worn and is broken in many areas and should be replaced. Many doors have damaged and bent frames so they do not close properly. Because the doors are not on an alarm system it is a constant challenge to keep the building secure. The hollow metal doors and panic hardware are of varying vintages and while operable, they are aging, worn, and should be replaced.











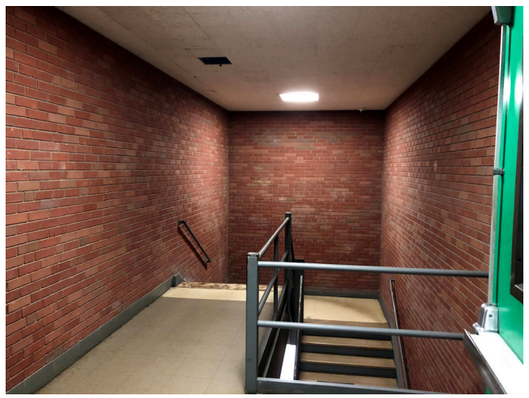


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D. PRELIMINARY EVALUATION OF EXISTING CONDITIONS / STRUCTURAL

The Town of Stoneham, Massachusetts has requested a feasibility study of their existing high school located at 149 Franklin Street, Stoneham. This study is to include the development and evaluation of several alternatives including renovation, partial renovation/addition, and replacement.

The existing high school is a 211,000 square foot building dating from 1968. Built initially as a junior high, the community repurposed the site in 1981 upon completion of added space to the south end of the gym as well as additional classrooms that created a second courtyard on the south side of the building footprint

B+AC has performed a feasibility level structural review of the school building. The focus of the study includes review of the existing conditions relating to the proposed project by visual observation; a review of available structural documents; a summary of the main structural systems; review of the applicable building code requirements for the proposed work and interpret their impact on the existing building structures. The following offers a preliminary discussion on structural review and our interpretation of structural codes as applicable to this project and its implication.

Document Review

We reviewed the following documents for this study:

1. Preliminary Design Study – vol. 1 (163 pages).
   Prepared by Hill Miller Friedlaender Hollander (HMFH), dated March 12, 2018. This report includes an Existing Conditions Structural Report prepared by Foley Buhl Roberts & Associates (FBRA) for HMFH.
2. Preliminary Design Study – vol. 2 (140) pages.
   Prepared by Hill Miller Friedlaender Hollander (HMFH), dated March 12, 2018. This report includes the Structural Option Narratives (dated October 22, 2017) prepared by FBRA for HMFH.
3. Stoneham Junior High School Site and Floor Plan Drawings partial set (6 sheets).
   Prepared by Korslund LeNormand & Quann, dated 1966.
4. Stoneham High School Floor Plan Drawings partial set (5 sheets).
   Prepared by HMFH, dated 1980.
5. Stoneham Junior High Structural Drawing set (12 sheets).
   Prepared by Korslund LeNormand & Quann, dated January, 1966.

A site visit was performed on July 8, 2020 to review existing conditions as applicable to the currently anticipated project scope. Observations were made by a two member team of B+AC and further informed by input from the Stoneham High School Athletic Director and staff. B+AC members were at times accompanied by one member of Perkins & Will. Observations were limited to that which was visible and not obscured by finish treatments. No exploratory work or material testing was done.

The current code applicable to this project is 780 CMR 9th edition which is the Massachusetts amendment to International Building Code 2015 (IBC). IBC Code in turn refers to International Existing Building Code 2015 (IEBC) for existing structures. IEBC is further amended and incorporated in to chapter 34 of 780 CMR.

- **Description of Existing Framing System**
  The existing conditions in the field generally corresponded with the available record construction documents. Signs of minor improvements, modifications, and spot repairs were noted but there are no documents available recording the modifications.

  Stoneham High School is a sprawling campus built on what was originally a gently sloping, thirty-five acre site that has surrounding wetlands. The original building is that of one and two stories built of cast-in-place concrete and precast concrete. Foundations are conventional standard spread footings. At the time of the school's conversion from Junior High to High School in 1981, a one-story steel framed addition was added to the south of the original building and the gym was expanded to the south using concrete elements. Foundations for the addition are also spread footings.

1. Original Building (1968)
   The original school building includes a central, two-story classroom wing (unit B) which surrounds an open courtyard. The auditorium and kitchen/cafeteria spaces (unit A) and a two-story, gymnasium/shop wing (unit C) flank the classroom wing on the east and west sides, respectively.

   Exterior walls of the original building are typically unreinforced masonry with brick veneer (Photo S01). Four expansion joints located within unit B separate the framing into four structurally separate buildings.

   The cafeteria roof construction is a series of 18" deep precast concrete tees spanning north-south. These tees are primarily supported by bearing concrete masonry unit exterior and interior walls but in some instances by reinforced concrete beams and columns. Classroom areas of the original building use typical cast-in-place, reinforced concrete one-way joist slabs with 2-1/2" topping slab for roofing. Joists are supported by integrally cast reinforced concrete beams that are in turn supported by reinforced concrete columns that line each hallway. In some locations, the reinforced joist slabs are supported by concrete masonry unit bearing walls.

   Flooring for the second-floor classrooms are cast-in-place, reinforced concrete, one-way joist slabs. As with the roof, the joists span between bearing concrete masonry unit exterior walls and reinforced concrete beams flanking the central hallway that are in turn supported by reinforced concrete columns.

   First floor flooring is slab on grade with the kitchen being depressed and the auditorium pitched to accommodate seating.

   Spread footing foundations are used throughout the original building for columns, and continuous wall footings support exterior foundation walls. Evidence suggests that sub-surface rock/ledge is near the surface and should be further evaluated for impact on a replacement scenario.

   The original building is from pre-seismic code era. There is no indication of seismic design considerations. The building was designed for 20psf of wind loads. The concrete frame infilled with unreinforced masonry appear to provide lateral stability to most of the buildings.

2. 1981 Expansion Classroom Wing
   The single story 1981 steel framed addition is built with steel stud exterior walls and brick veneer. This addition was designed for a potential future second floor. Steel bracing provide lateral support for the current single story construction. There is no indication if this lateral system can support an addition. Interior partitions are steel stud and drywall.

   There are no clear expansion joints indicated, and the addition does not appear to be structurally independent of the original building. However, where the original corridor turns into the expansion wing, there seems to be a deliberate separation within the new roof decking. Note that this joint does not appear to be executed correctly and would need to be addressed.

   The roof is steel deck spanning open web steel joists (Photo S02). The open web joists are supported by wide

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flange steel girders and steel columns.

3. **Gymnasium**
The gymnasium is of special interest because it presents potential design options, and hence it is discussed separately here. The gym roof consists of 36" deep precast pre-stressed concrete tees running east-west. Details of the precast tees are not known, so any modification or openings through the roof would require further field investigation. This system is used for both the original portion of the gymnasium and the 1981 addition. The tees are supported by cast-in-place reinforced concrete beams and columns in both the original construction and the addition.

A cast in place waffle slab supported by reinforced concrete columns serves as the original gymnasium floor. The waffle slab system does present limitations to modification. Limited opening sizes between the ribs are generally possible. Larger floor penetrations may be possible but will require further review.

The 1981 gymnasium addition first floor decking made use of precast, pre-stressed hollow core concrete plank with concrete topping. The planking is supported by reinforced masonry walls and reinforced concrete foundation walls. Any proposed modification to the floor framing will require further review and framing coordination.

Exterior walls have brick veneer. Interior partition walls are non-load bearing concrete masonry unit walls.

There is no clear indication of a separation joint between the existing and expanded gym structure. This will require careful review for lateral design in the renovation options and in the options where gym structure is retained.

4. **Auditorium**
The auditorium is another component of the building that has special interest. The auditorium roof is framed with 36" deep precast pre-stressed concrete tees running north-south above both the house and stage house. There is a precast system of 18" tees running north-south over the auxiliary spaces similar to that found in the cafeteria, kitchen, and stage right. Precast tees are supported by a combination of reinforced concrete beams and columns or by load bearing walls. There is no stage house fly, and therefore no visible means for associated fly loads.

As noted previously, the first floor of the auditorium is supported by reinforced concrete slab on grade. No traps or pit were noted under or near the stage.

- **Observations of Existing Conditions and Recommendations**
Generally the building appears to be in fair structural condition without signs of significant distress. There are various items that were observed within and surrounding the building that are consistent with the age of the structure and construction type. Each item observed is discussed and italicized recommendations are included next to observations.

1. 1968 Original Building
   a. Expansion joints within classroom wing, unit B, are deliberate but do not appear to be executed correctly across the trades (Photo S03). This would require further investigation. We recommend carrying funds for addressing this at each of the four expansion joints.
   b. There were several incidences of past water intrusion observed through walls, floor or ceiling of the mechanical rooms (Photo S04). The source of the moisture should be identified and addressed. At minimum we recommend sealing these cracks by injection grouting or other suitable means.
   c. There are instances of exposed rebar in the concrete roof structure above the classrooms (Photo S 05). Most of these spalls appear to have been caused during construction and are not structurally significant. These interior spalls may remain unaddressed unless they are active or cause aesthetic issues.
   d. Consistent horizontal cracks were observed at the same vertical height above grade on a series of exterior columns (Photo 06). They appear at locations likely to have been construction joints during original casting in place. We recommend patching and sealing these joints to protect reinforcement bars from elements.
   e. nstances of diagonal cracks along the exterior brick veneer were observed. We recommend repointing of bricks at these locations.
   f. The steel lintels supporting masonry opening appear to be generally in good condition with no substantial rusting. However, based on our experience with buildings of this vintage we recommend carrying an allowance for cleaning and re-painting of lintels.
   g. Cast in place concrete overhang/sunshades run along the length of the building. Horizontal delamination is observed in some of the overhangs (Photo S07) leaving the reinforcement steel susceptible to damage from standing environmental water. We recommend this be repaired in order to slow down the process of deterioration. About 10% of these overhangs may require replacement.
   h. Spalling on exterior faces of concrete columns observed at multiple locations (Photos S08, S09). We recommend patching of the spalled concrete to protect the rebar better.
   i. The retaining wall at the loading dock displays a prominent vertical crack that appear to run through the thickness of the wall (Photo 10). This crack has most likely developed due to displacement incompatibility caused by pressure differential. This crack does not pose structural concern and may be repaired to protect the rebar from the elements.

2. 1981 Expansion Classroom Wing
   a. Considerable water damage at ceiling level is observed in numerous classrooms of the new wing (Photos S11, S12, S13, S14). School staff indicated that most leaks are addressed and that historically there have been more occurrences of leaking than normal with a building of this age.
   b. The roof deck of the addition has a continuous separation where the corridor from the original building turns in to the corridor of the addition. The joint does not appear to be executed properly, potentially leading to failure of roofing elements causing leaks. We recommend this joint be appropriately addressed as part of roof repair/ replacement project.

3. Gymnasium
   a. North columns appear to have been cracked near the top at the connection with the precast tee flanges. It is likely that the connection between the roof frame and the columns were not properly executed causing distress under environmental effects (Photo S15). We recommend that the column

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tops be repaired and the connection detail be corrected.

b. Some unexplained steel members were noticed to have been bolted near the top of some of the north columns near the roof (Photo S16). There are no records for this installation. We recommend that this condition be revisited as the design progresses further.

c. Signs of past leaks were noted, especially from the joint between two precast tees (Photo S17). We believe the leaks have since been addressed.

d. Damp spots are noted at various locations such as locker room ceilings and storage ceilings. This should be investigated further. The probable causes are humidity, condensation from equipment and minor leaks. These issues should be addressed.

e. Exterior framed stairs serving the gym suffer from concrete spalling at multiple locations (Photos S18, S19). Although not an immediate structural concern, we recommend that the rust be thoroughly cleaned off of the reinforcement bars and the spalling concrete be patched and repaired.

f. Spalling, cracked concrete and exposed rebar were observed at multiple spots along the exterior frames (mainly columns) support gym (Photos S20, S21). Some attempts of prior patchwork have also have come undone. Although generally cosmetic in nature, we recommend that the rust be thoroughly cleaned off of the reinforcement bars and the spalling concrete be patched and repaired.

g. Some of the observations and recommendations for common elements such as lintels are not repeated here for brevity.

4. Auditorium

a. There are signs of past water leakage from above on the wall separating the two rear-house seating sections in the auditorium (Photo S22). We understand that the leaks have since been repaired and are no longer active.

b. The upstage wall of the auditorium's stage house reveals indications of notable efflorescence or perhaps water leaking. This is noted on both sides of the stage and is more prominent in the upper half of the wall (Photo S23). The cause of this phenomenon is not very clear. We recommend carrying funds to improve air circulation in this area and repair flashing between the roof and the walls.

c. A notable, near vertical crack in the masonry was observed on the stage left wall of the stage house (Photo S24). The crack does not appear to be moving anymore. We recommend grouting and sealing this crack.

d. Elements such as house fly, trap and pits were not observed. Upgrading the auditorium to modern standards may require structural modifications to accommodate many of these elements.

e. Some of the observations and recommendations for common elements such as lintels are not repeated here for brevity.

Structural Code Review and Compliance

Per the Massachusetts State Building Code 9th Edition alterations, repairs, additions and changes of occupancy of existing structures must comply with the International Existing Building Code 2015 (IEBC 2015) with MA State Amendments. The intent of IEBC is to provide flexibility to permit the use of alternative approaches to achieve compliance with minimum requirements to safeguard the public health, safety and welfare insofar as they are affected by the repair, alteration, change of occupancy, addition and relocation of existing buildings.

Three compliance methods are provided – Prescriptive Compliance Method; Work Area Compliance Method; and Performance Compliance Method. Work Area Method are further classified by Level of Work with three levels; Level 1, Level 2 and Level 3 Work.

Compliance is required with only one of the methods. All the aspects of a project must comply with the chosen compliance method. The code does not allow the requirements from the three compliance methods to be applied in combination with each other.

The objective is to evaluate compliance requirements for each of the three methods provided and select the method that will result in most cost-effective solution for the project. Our recommendations are based on the most cost-effective structural solution. However, the cost implication of compliance method selection should be evaluated by other disciplines – Architectural, Mechanical, Electrical, Plumbing, Fire Protection or other as applicable to the project. We may need to reevaluate the selection of compliance methods to achieve most cost-effective solution overall.

Although the scope of the work is not fully known, based on our observations, we anticipate a full code compliance review corresponding at a minimum to Work Area Method – Level 2. Note that the Work Classification may change depending on how the renovations are phased for each permit.

1. Repairs Code Review

Any proposed repairs will need to be reviewed to assess scope of work in compliance with the 2015 International Existing Building Code with Massachusetts State amendments. Following are preliminary assessments –

The overall repair levels are anticipated to be less than substantial. See recommendations above for anticipated repair scope. This should be further developed and designed as the project design further develops.

2. Renovation Code Review

Any proposed renovation, alteration or addition will need to be reviewed to assess scope of work in compliance with the 2015 International Existing Building Code with Massachusetts State amendments. Following are preliminary assessments –

If roofing replacement is proposed, the code requires that the total weight of the new roofing be compared to existing loads and the structural assessments be performed accordingly. Any new roofing and cladding shall meet the current code wind pressure requirements.

Any new structural frame or structural alteration must meet the current code requirements. We anticipate the structural alterations, if any, will be limited in nature and would not trigger any major code mandated upgrade at this stage.

Note that the masonry wall may need careful review if any alterations are proposed to them. Also, if the project is permitted under Work Area Method – Level 3; the masonry walls may need lateral stabilization and anchoring. Moreover, the lateral system of the building may need to be upgraded for seismic loads and detailing requirements which may add significant cost to the project.

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3. **Addition Code Review**

   No additions are proposed at this point. If additions were to be installed, the structural review will be required per addition section of the code. Based on our current understanding of the existing structure, we recommend that any additions, if proposed, be separated from existing construction by means of expansion joints in order to avoid triggering substantial structural upgrades.

Conclusions

Based on our observations, the existing building framing poses no major structural issues. We recommend that the Work Area Method should be used for this project.

An allowance should be carried for multiple repair items discussed earlier in the report.

Additions if any type should be independent structures separated from existing by using expansion joints.

Structurally substantial alterations or Level 3 alterations will require anchoring of masonry walls to existing diaphragms and seismic upgrade of the entire building.

Limitations

This report has been prepared at the request of Perkins & Will to perform a feasibility level structural assessment for the Stoneham High School MSBA capital project.

B+AC offers no warranty regarding the condition of concealed construction or subsurface conditions beyond what was revealed in our review. Any comments regarding concealed construction or subsurface conditions are our professional opinion, based on engineering experience and judgment, and derived in accordance with current standard of care and professional practice.

All services are performed, results obtained, and recommendations made in accordance with generally accepted engineering practices and principles. B+AC is not responsible for the conclusions, opinions and recommendations made by others based on the information we supply.



Figure S01



Figure S02



Figure S03



Figure S04



Figure S05

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Figure S06



Figure S07


Figure S08


Figure S09



Figure S010



Figure S011



Figure S012


Figure S013


Figure S014



Figure S015

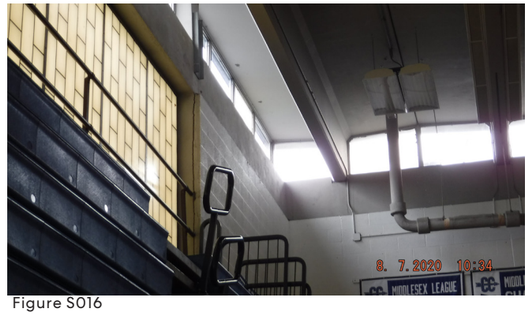


Figure S016

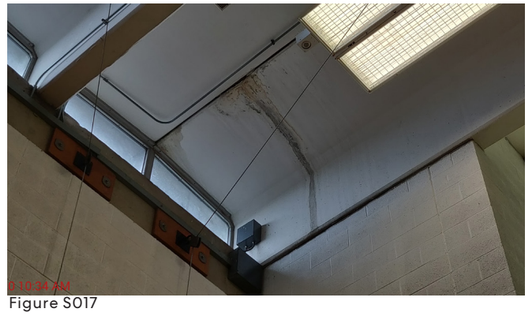

Figure S017

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Figure S018



Figure S019



Figure S020



Figure S021



Figure S022



Figure S023



Figure S024

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D. PRELIMINARY EVALUATION OF EXISTING CONDITIONS / ELECTRICAL

The assessment of the Electrical systems for the school is based on a walk through of the building on July 8, 2020 and the HMFH existing conditions report dated March 12, 2018.
The Electrical systems range from original vintage 1966 to 1980 as part of addition/renovation projects to more recent upgrades. Existing main switchboard being replace with a new switchboard being an example of a more recent upgrade. The service size is adequate for the current usage; however, would not be adequate from both a voltage standpoint and capacity in any renovation program that would update the existing school. Due to the age of the existing wiring and distribution equipment, these should not be re-used. Due to the existing distribution equipment being located throughout the building, any update would require relocation of existing equipment which would require substantial work in extending and splicing of existing circuits. Life safety lighting and exit signs, do not conform with code and would need to be updated. The fire alarm system is not compliant with current code and is in need of an upgrade.
It is our recommendation, taking into consideration the age and general condition of the existing equipment, that the existing fire alarm system be replaced with a new addressable system, existing lighting and lighting controls be upgraded to new energy efficient and code compliant system. Existing electrical distribution equipment needs to be replaced.

- **Electrical Distribution System:**
  There is one service present at the facility. The service is rated at 120/208 Volt, 3 Phase, 4 Wire. The existing main switchboard has a 2000-amp rated electronic trip main circuit breaker. The switchboard is manufactured by Square D and is in good condition. The main switchboard has been recently upgraded. Due to space restraints at existing main switchboard location would prohibit increased distribution equipment at the present location. See figures E1 & E2

  The utility company transformer is located in a locked room adjacent to the Main Electric Room. The site is on one secondary meter located indoors within the Main Electric Room. The service is underground to the utility transformer, and overhead busduct from transformer vault to main switchboard.
  There are electrical sub-panels located throughout the building, both in janitor closets, mechanical spaces and exposed in public areas. The panels are circuit breaker type; and are in poor condition, most are original to the building. Kitchen panel have no shunt trip breakers, or GFCI circuit breakers. None of the outlets in the kitchen were GFCI. The panels are manufactured by Federal Pacific Electric and Gould ITE, with Gould ITE and Federal Pacific Electric both having gone out of business years ago. See figure E3

- **Interior Lighting System:**
  All lighting throughout the building appears to be fluorescent, with recessed 1x4 and 2x2 fixtures in common corridors and surface mounted fixtures in the classrooms, cafeteria and most other spaces. One notable exception would be the theatrical lighting in the theater.

  Light levels appear adequate; however, the fixtures are in poor condition and contribute a substantial amount of glare. See figures E4, E5& E6

  Lighting controls are of the manual type. With keyed toggle switches controlling the common corridor lighting, and normal toggle switches in all other spaces. In any renovation program, lighting controls that comply with the latest energy code shall be provided throughout and all lighting should be replaced with high efficiency LED fixtures.

- **Emergency Lighting System:**
  There is an emergency generator present that services normally off emergency lighting throughout the common corridors, emergency lighting will only come on, if the lighting in the corridor is already switched on. Off hours, with the corridor light normally off, no emergency light would come on. With ATS and electrical panel mounted in main electrical room next to generator, and both being in poor condition. These are are original to the building and should be replaced, at over 50 years, they have outlived their useful life.

  The generator is rated at 100KW / 125kVA, 120/208V, 3 Phase, 4 Wire, diesel fired and is manufactured by Kohler. See figures E7 & E8

- **Site Lighting System:**
  The lighting at the site consists of perimeter lighting which lights the area walkways from the exterior walls of the building, and pole lighting lights the driveway and parking. The perimeter lighting and parking lot lighting are controlled with a time clock in the school's main office. The school also has lighting for the football field, which is controlled via electrical panel in garage, and softball field lighting which is controlled via control panel in field house. The site lighting is in poor condition and inadequate. See figures E9, E10, & E11

- **Fire Alarm System:**
  The fire alarm system is an original FCI Conventional system. The system is obsolete, with limited coverage of notification devices, and no smoke detector coverage in building. Complete smoke detector coverage is required in building with no sprinkler coverage, and this building does not have a sprinkler system. The fire alarm system is an immediate need of replacement. See figures E12 &E13

Most of the perimeter access doors do not appear to be alarmed. The windows are operable and are not alarmed.

- **Video Surveillance System**
  There is a video surveillance system for the entire building perimeter and entry and common areas within the building. The system is connected to a town wide CCTV system. We could not obtain access to the equipment and the manufacturer is unknown at this time.
  See Figures E14 – E16 for additional information.

Preliminary Evaluation of Existing Conditions / Security Systems Assessment

- **Access Control System:**
  The main entry doors are controlled via card access.

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Figure E1 – Main Electrical Switchboard



Figure E2 – Main Electrical Switchboard Main Circuit Breaker



Figure E3 – Example Typical Branch Panel Boards.



Figure E4 – Example Typical Classroom Lighting



Figure E5 – Example Typical Corridor Lighting – 2nd floor

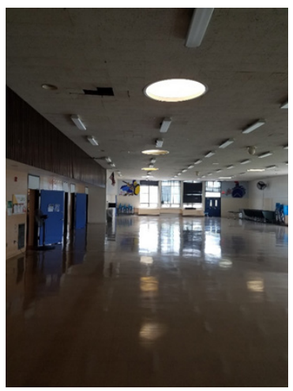


Figure E6 – Example Typical Corridor Lighting Cafeteria



Figure E7 – 100kW Generator

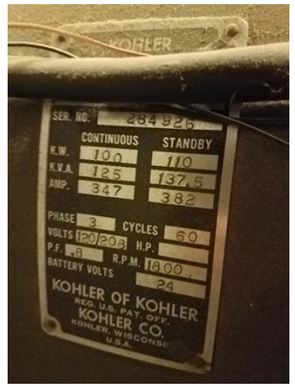


Figure E8 – 50kW Generator Name Plate Information



Figure E9 – Example Typical Wall Mounted Site Lighting



Figure E10 – Example Typical Pole Mounted Site Lighting



Figure E11 – Example Typical Pole Mounted Light for Football Field



Figure E12 – Fire Alarm Control Panel

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Figure E13 – Typical Fire Alarm Devices



Figure E14 – Card Reader at Main Entry Doors



Figure E15 – Typical Perimeter Camera



Figure E16 – Typical Interior Camera

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D. PRELIMINARY EVALUATION OF EXISTING CONDITIONS / HVAC

The assessment of the HVAC systems for the school is based on a walk through of the building on July 8, 2020. There are not any existing HVAC drawings that we are aware of or had received and the HMFH existing conditions report dated March 12, 2018 did not address the HVAC systems. The following evaluation is based only on observations from our site visit.

There are no central cooling systems for the school. Air conditioning is accomplished via an air cooled DX rooftop unit (for a limited administration area), air cooled split type units and window type residential air conditioning units. There is a central heating plant, which consists of four (3) 3 million BTU input (2.75 million BTU output) gas fired condensing boilers that serve hot water baseboard heaters, hot water unit ventilators, heating/ventilating type air handling units and cabinet unit heaters throughout the building. The boilers were installed in 2016 and are good working condition. There are two (2) 15 HP base mounted end suction type hot water pumps. Each boiler also has an associated in line pump to maintain constant water flow through the boiler. See Figures M1 - M3 for additional information.

There does appear to be a pneumatic type control system for the main heating plant. The other systems (exhaust fans, unit ventilators, split AC units, rooftop unit, etc) appear to have local electric type controls. See Figure M4.
With the exception of a few select systems, most of the existing equipment is well past its useful life and should be removed and replaced with new systems that can support any proposed option. Whether or not the new boilers remain will need to be evaluated based on the energy goals of the new project.

The systems for each type of space within the school are described in the following sections.

- **Classrooms and Restrooms**
  Each classroom unit has a heating only unit ventilator. There are some classrooms that have residential type through the wall air conditioning units. Most of the unit ventilators appear to be original to the building. See Figures M5 and M6.

  There are a number of exhaust fans of varying age and condition that provide general exhaust for classroom and common areas as well exhaust fans for restrooms. See Figure M7.

  There are also ceiling mounted heating and ventilating ducted type units that serve the common corridor areas. Based on discussions with one of the building engineers, these units are operational and are not controllable. There are key switches that turn the units on and off but the staff does not have the keys. The units operate when the main heating system is operational.

  There are several specialty classrooms on the 2nd floor west side of the building that have air cooled split type air conditioning units. Each AC unit is either 3 or 3.5 tons. These classrooms include art rooms and special education rooms. The refrigerant piping for each unit is run through an existing outside air or relief air intake hood. This may result in water leakage through the hood and is recommended to be further investigated. See Figures M8 – M10.

- **Gymnasium**
  The Gymnasium space is served by four (4) heating/ ventilating only units. In speaking with one of the building engineers, they have had issues with these units and finding replacement parts for the units. One of the four units appears to have been replaced. See Figures M11 and M12.

- **Locker Rooms & Weight Rooms**
  The Men's and Women's Locker Rooms and Weight Rooms have exhaust systems and make up air systems (heated only). There are also unit heaters within the locker room spaces. See Figures M13 and M14.

- **Cafeteria / Kitchen Area**
  The Cafeteria area is served by heating only unit ventilators. The kitchen area has several kitchen exhaust hoods, make up air is delivered to the space via makeup air fans. It could not be observed if the makeup air is being heated or if its unconditioned air. See Figures M15 - 17.

- **Main Auditorium**
  The Auditorium seating and backstage areas, as well as the auditorium support areas (Practice Rooms and Band/Chorus Room) are served by large, ceiling mounted heating and ventilating units. These units appear to be of the same age and condition of those that serve the gymnasium space. See Figure M18.

- **Library**
  The Library space is served by heating only unit ventilators and has general exhaust grills connected to one of the general exhaust fans located on the roof. See Figure M19.

- **Science Classrooms**
  The Science Classrooms are served by heating only unit ventilators and also have residential type through the wall AC units. In addition, each Science Classroom has two (2) four foot chemical fume hoods, each connected to an associated exhaust fan on the roof. There is no observable mechanical means of make up provided to the spaces for the fume hood exhaust. See Figure M20 for a typical fume hood.

- **Shop Areas**
  There are several shop spaces in the basement area that are been converted to other types of space (ie, baseball hitting net space). These rooms have exhaust systems that appear to have been decommissioned. One of the shop spaces has a large dust collection system. In speaking with one of the building engineers, the equipment has not been operational for a long time. Also, one of the shop spaces has a large welding exhaust hood with several sidewall exhaust fans, which also has not been operational. There is a free standing kiln located within one of the shops (located beneath the welding hood) that does get utilized. It is unclear whether one of the fans gets turned on when the kiln is in operation. See Figures M21 and M22.

- **Administrative Areas**
  A 10 ton air cooled DX, gas heated rooftop unit provides heating and cooling for the administrative areas adjacent to the main entrance to the school. The unit appears to be in good working condition. See Figures M23 and M24 for additional information.

- **Common Areas**
  There are wall mounted and ceiling mounted unit heaters located throughout the building and at entry locations. Many of the units are beyond their useful life. See Figures M25 and M26 for examples.

- **Controls**
  There is a pneumatic system for the main heating plant in the basement mechanical room. All other equipment appeared to have local, electric controls.
  No central BMS system was observed.

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Figure M1 – Gas Fired Condensing Boilers



Figure M2 – Boiler Information



Figure M3 – Heating Hot Water Pumps



Figure M4 – Compressor for Pneumatic Controls



Figure M5 – Typical Heating Only Unit Ventilator



Figure E6 – Example Typical Corridor Lighting Cafeteria



Figure M7 – Typical Exhaust Fans of Varying Age and Condition



Figure M8 – Typical Air Cooled Condensing Unit



Figure M9 – Typical Indoor AC Unit within the Specialty Classroom - Ducted



Figure M10 – Typical Indoor AC Unit within the Specialty Classroom - Ductless



Figure M11 – Typical Gymnasium H/V Unit



Figure M12 – Replaced H/V Unit

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Figure M13 – Locker Room Unit Heater



Figure M14 – Weight Room Supply and Exhaust



Figure M14 – Weight Room Supply and Exhaust



Figure M19 – Typical Library Unit Ventilator



Figure M20 – Typical Fume Hood



Figure M21 – Decommissioned Duct Collection System



Figure M22 – Existing Kiln



Figure M23 – Administration Area Rooftop Unit



Figure M24 - Admin RTU Info

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Figure M25 – Typical Wall Mounted Unit Heater



Figure M26 – Typical Ceiling Mounted Unit Heater

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D. PRELIMINARY EVALUATION OF EXISTING CONDITIONS / FIRE PROTECTION AND PLUMBING

General

This report is based on a July 8, 2020 site visit to Stoneham High School and on conversations with Stoneham High School facilities personnel, It takes into consideration the various systems viewed and current system conditions described by them. A review of previous evaluation reports made available by the town were also reviewed for historical information only.

Fire Protection

Fire protection systems in the form of sprinklers, hose cabinets, etc. do not currently exist at the high school.

The kitchen exhaust hood in the cooking area is also not protected by a sprinkler system,

Massachusetts General Law M.G.L. c.148, s.26G requires that any existing building over 7,500 square feet that undergoes major alterations or modifications must be provided with a sprinkler system.

If the proposed scope of work is considered a major alteration, an automatic sprinkler system will be required for the building.

A fire standpipe system may also need to be considered based on final code review and the final height of the building floor versus the lowest level of vehicular access by fire department equipment.

A hydrant flow test will be required for an evaluation of water supply capacities. A test will need to be performed by a third party with Stoneham Water Department personnel present.

Plumbing

Plumbing Fixtures

Existing water closets throughout the building are predominantly wall mounted, manually operated flush valve type fixtures. The water closets viewed during this site inspection do not appear to be low flow type fixtures which are currently required per the state plumbing code.

Existing urinals throughout the building are predominantly wall mounted, manually operated flush valve type fixtures. The urinals viewed during this site inspection do not appear to be low flow type fixtures. The majority of urinals viewed were not mounted at an ADA height which is a current plumbing code violation.

Existing lavatories throughout the building are predominantly wall hung type fixtures with individual hot and cold water handle mixing faucets. The lavatories viewed during this site visit do not appear to be provided with individual mixing valves to limit the temperature of water provided at the fixture. Current plumbing code requirements limit the temperature of hot water at public lavatories to 110°F. Based on the temperature of hot water being stored and delivered (approximately 140°F) throughout the building, this requirement doesn't appear to be able to be met currently.

Janitor's service sinks throughout the building are predominantly floor mounted type fixtures with wall mounted faucets. These fixtures appear to be in good working order although all of these fixtures are older models and showing signs of age.

Toilet rooms are located on all levels of the school. It does not appear that the current configurations of most of these toilet rooms meet current ADA requirement for fixture types and possibly spacing requirements.

Electric water coolers are a mixture of types. All are wall hung stainless steel types. A couple of units viewed were barrier free, hi-low types with sensor operated bottle fillers.

Individual classroom sinks in Home Economics and Art Rooms are counter mounted, single bowl, stainless steel types.

Faucets are typically gooseneck types with separate hot and cold water handles. These fixtures are older and should be replaced.

Domestic Cold Water System

The building is currently provided with a 6" domestic water service that enters the basement mechanical room. This 6" service immediately reduces down to 4" prior to the water meter and serves all plumbing fixtures in the building. No problems or issues have been reported with this size of service or the current water pressure in the building.

Domestic Hot Water System

The hot water system originates at a gas-fired boiler that provides hot water to an adjacent storage tank. Both the boiler and the storage tank appear to be original to the building and past their useful life. The storage tank appears to have a capacity of 2,800 gallons. The hot water system also has a recirculation system. A man thermostatic mixing valve is present but is older and beyond its useful life.

There is an existing gas-fired storage type water heater that provides hot water to the kitchen only. The storage tank has a capacity of 119 gallons. It does not appear that this hot water system is recirculated or that it has a main mixing valve controlling the temperature of hot water delivered to the kitchen,

All water heaters are original to the building and appear to be past their life expectancy.

Sanitary and Vent System

The original plans indicate the sanitary system is a gravity system. There are a couple of locations throughout the building where the sanitary lines exit to manholes. The sanitary piping that could be viewed was cast iron. There were areas observed where it appeared new piping had been installed. The existing piping appears to be in fair condition.

Storm Drainage

The building storm drainage system consists of roof drains located throughout the various building roof heights. All roof drains observed appeared to be in good condition. All roof drains observed were clear of debris. Internal storm system piping was not visible. The storm system appears to be adequate for the facility at present.

Natural Gas System

A medium pressure gas service is located on the exterior of the building adjacent to the mechanical room. The gas service is equipped with in-line regulators that reduce the gas pressure before entering the mechanical room. Natural gas is provided to heating boilers, domestic water heaters, kitchen cooking equipment, a rooftop mechanical unit, and the science classrooms.

Gas piping that was viewed was black steel with both screwed and welded fittings. Gas piping to boilers that have been in the mechanical room that are no longer in use, have been cut and capped in place. Any gas piping observed appeared to be in fair condition.

Insulation

Hot and cold water piping insulation that was in view is in fair condition. The pipe insulation appears to be fiberglass. In many locations the insulation is either hanging off the piping or has been completely removed from portions of the piping.

Overall, where insulation exists, it is in only fair condition. Due to the age of the building, it can reasonably be assumed that the insulation contains asbestos.

Boys' and Girls' Locker Rooms/Shower Areas

The Boy's Locker Room is in fair condition. The showers are controlled single user control mixing valves at each shower head. The shower areas themselves are a series of wall mounted shower heads on three walls. It could not be determined if the showerheads were a code compliant in terms of water delivery requirements. Within the shower area there are multiple floor drains. This does not meet the current codes. The Massachusetts State Sanitary Code does not allow the water from one shower to cross into another shower area.

The Girl's Locker Room is also in fair condition. The shower room is similar to the Boys' Locker Room showers as noted above.

Kitchen

All cooking equipment in the kitchen is gas-fired. The fixtures within the kitchen appear to be in fair condition.

The three-compartment sink is connected to a code required grease interceptor located on the floor below. Both the sink and interceptor are in fair condition.

The existing dishwasher is not connected to a code required grease interceptor as it should be by code. The unit appears to be in fair condition.

Science Wing

All science classrooms have sinks that are integral to the counters they are in. Lab waste from all sinks is completely separate from the standard sanitary waste system and empties into an exterior limestone chip acid neutralization system located in the courtyard. The lab waste system then connects to the standard waste outside the building.

Hot and cold water to all lab faucets is connected to the same domestic water systems that serve the rest of the building. A separate non-potable water system should be serving this wing and it doesn't appear to exist. The faucets appear to be in fair condition.

Each science room is provided with an emergency shower. These showers do not appear to be served by a tempered water system and are located away from the entry door.

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Currently the state plumbing code requires emergency showers to be fed with tempered water and to be located adjacent to the entry door.

Gas piping is provided to the science classrooms and connects to table mounted gas turrets. Each classroom is equipped with an emergency shut-off valve located in the teacher's instruction table. This is a code violation. The state plumbing code requires an emergency gas shut-off valve to be located within a cabinet at the exit door of each lab.

Code Upgrades

Fire Protection

To comply with current codes, this building will require a complete sprinkler system installation per the Massachusetts State Building Code, Chapter 34. The system would be designed to meet the requirements of NFPA 13 "Installation of Sprinkler Systems" and Chapter 9 of the Massachusetts State Building Code, 780 CMR, "Fire Protection Systems".

A new dedicated 8" sprinkler service, connected to the town water system in the street, should be brought into the building. The exact entrance location will need to be coordinated with the Architect. As the sprinkler service enters the building a Massachusetts approved double check valve backflow preventer assembly, complete with OS&Y valves on the inlet and outlet, will be required.
The alarm check valve for the sprinkler system will be installed on the riser after the double check valve assembly in the water service entrance room. The alarm check valve will be complete with a standard trim package including pressure gauges, retard chamber, 2" main drain, water flow indicator and supervisory switches.

The main feeds out to the system from the alarm check valve will extend out to the building through the first floor ceiling space. The piping will then extend to all areas of the building so that each section of the building and each floor can be divided into separate zones.

Due to the building being only two stories the Massachusetts State Building Code does not require a standpipe system throughout the School. However, regulations governing Auditoriums and Stages will require standpipes at each side of the backstage areas.
The sprinkler system risers will feed the sprinkler system at each floor level. Each floor will be a separate zone. The floor control assembly off of the standpipe which feeds each floor will contain a flow switch and tamper switch. An inspector's test connection will be installed on the floor control valve station. If the stage is greater than 1,000 square feet, then fire department valves are required to be located on each side of the stage.

Sprinkler heads throughout the facility where gypsum or suspended ceiling are installed will be glass bulb, quick response, chrome plated semi-recessed type. In areas where no ceilings are installed brass upright sprinklers will be installed. Where upright sprinklers are subject to potential damage, such as in storage rooms, protective cages will be installed. In areas where it is not possible to run piping above the ceiling the use of sidewall sprinkler heads would be recommended.

Sprinkler piping for the system will be as follows: Piping 2" and smaller shall be schedule 40 black steel with cast iron fittings with threaded joints. Piping 2 ½" and larger shall be Schedule 10 black steel with malleable iron fittings with rolled grooved joints.
All tamper and flow switches installed on the sprinkler system will be connected to the buildings fire alarm system. Each tamper and flow switch will be a dedicated point on the fire alarm system.

The exterior fire department or storz connection for the sprinkler system will be a flush type mounted on the exterior of the building within 100' of a fire hydrant. Final location of the connection will be coordinated with the Stoneham Fire Department. An additional fire hydrant may need to be added on the site to be within the required distance of the fire department connection.
The hydraulic requirements for the building will be as follows: All offices, corridors and the auditorium are considered Light Hazard and the sprinkler system will provide 0.1 gpm per square foot over the most remote 1,500 square feet. All storage rooms and mechanical rooms are considered Ordinary Hazard Group I and the system will provide 0.15 gpm per square foot over the most remote 1,500 square feet. The stage area would be classified as Ordinary Hazard Group II. The sprinkler system in this area would be required to deliver 0.2 gpm per square foot over the most remote 1,500 square feet.

Plumbing

Plumbing Fixtures

The majority of water closets, urinals and lavatories in the building are old and not current water conserving type. Removal of all fixtures is recommended as the existing fixtures have reached the end of their serviceable life. Water closets should be replaced with new low-flow flush valve fixtures (1.6 gpf or less). Urinals should be replaced with 0.25 gpf fixtures. Lavatories should be replaced and new low-flow type faucets (0.5 gpm or less) with temperature limit stops which will deliver water with a maximum temperature of 110°F. ADA requirements will also need to be met during a renovation to the toilet rooms.
The state plumbing code dictates the number of plumbing fixtures required in a building. Minimum plumbing fixture requirements will be determined once the total occupancy numbers for the building have been established based on the final plan layout.

Domestic Cold Water System

The 6" water line that enters the building is the original service to the building. Although the 6" line which feeds the domestic water service appears to be adequate to meet the current building water requirements, this would be a good time to bring in a new 6" dedicated domestic water service since a new 8" service would be brought in to feed the proposed sprinkler system. The installation of a new water meter on the new service would also be recommended.
Provide new dedicated non-potable cold water system to supply the science classrooms. Non-potable cold water system with be provided with a new reduced pressure backflow preventer to protect the main cold water system.

Domestic Hot Water System

The existing water heaters serving the building are original to the building and have passed their useful life expectancy. It is recommended to install new gas-fired storage type water heaters in the same locations as the existing. It is also recommended that redundant water heaters be included in the new system design. This would allow the system to continue to deliver hot water if one of the water heaters were to need service. The water heaters would be sized to serve the existing fixtures as well as any planned additions to the building. A new hot water recirculation system with new recirculation pump should also be supplied to ensure no delay in hot water delivery times.

Provide new dedicated non-potable water heater to supply the science classrooms. Non-potable hot water system with be provided with a new reduced pressure backflow preventer to protect the main hot water system.
Sanitary Waste and Vent System
The sanitary system in the existing building appears to be in fair condition but replacement should be considered may be required as a consequence of a possible fixture count change and probable relocation of fixtures in the renovation plan.
Any new piping would connect to the existing waste and vent piping at a convenient point to be determined by further investigation.

Storm Drainage

The existing building roof drainage appears to be in fair condition but should be replaced. New roof drains should be installed, and piping connected to the existing storm drainage system.
Backwater valves should be installed on all interior storm system piping originating from roof drains on lower roof sections as per the state plumbing code.
Opportunities for the management and /or re-use of the storm water drainage should be explored with the civil engineer to determine if there could be any benefit to the school.

Natural Gas System

Currently the existing gas service is more than adequate to meet the school's demand requirements. Any new gas-fired kitchen equipment can be connected to the existing gas service located just outside of the building near the kitchen.

Insulation

The insulation that currently exists should be tested to determine the extent of any hazardous materials. The

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insulation should be removed and replaced with new fiberglass insulation with an all service jacket. Piping which is not currently insulated should have new insulation installed. Insulation will also need to be provided on waste piping and water piping below handicapped lavatories and sinks.

Hose Bibbs

During any renovation done to the building, the existing hose bibbs in the toilet rooms should be removed and new wall mounted hose bibbs with an integral vacuum breaker and removable tee handle installed.

Cross Connection Control

It appears that the existing hose bibbs and wall hydrants do not have backflow prevention devices. Backflow devices will be integral to all new hose bibbs and wall hydrants installed during the renovation.
All service sink faucets installed during a renovation will also have integral vacuum breakers.
A new reduced pressure backflow preventer assembly should also be installed on the existing 6" domestic water (or on a new service if this is the preferred option) service to further protect the town's domestic water system.

Boys, Girls Locker Room/Shower Areas

All locker room/shower areas should be completely renovated. Floor drains within any new shower stalls should be arranged so that the water from one shower does not enter into the adjacent shower area. New shower valves should be installed with code compliant shower heads. Master mixing valves should be installed at each shower location. Valves shall be provided with limiting stops set to a maximum water temperature delivery of 112°F.

Kitchen

If kitchen renovations include the addition of new or replaced gas-fired equipment, this equipment can be connected to the new gas service located outside the building as noted above.

Any new gas equipment would be fed by gas piping connecting to a master shut-off valve that would be interconnected with the kitchen hood and exhaust system. Gas would only operate as long as the kitchen hood exhaust system is operating.

Additional floor sinks and/or floor drains would be added to any new equipment design to ensure proper drainage throughout the kitchen.

A new underground grease waste system should be designed to handle all waste from kitchen fixtures and floor drains. This system will exit the building separately and connect to a new exterior grease trap.

A new three-compartment sink with new grease trap should be included per state code requirements.

A new dishwasher with accompanying grease trap should also be provided per state code requirements.

A new exterior grease trap, located underground, outside of the kitchen portion of the building will also need to be considered as part of any new design or renovation to the kitchen. Venting of this exterior grease trap should enter back into the school building and exit to the atmosphere above the roof.

Science Wing

If the existing science wing is to be renovated in its current location, all existing lab sinks and faucets should be replaced with new fixtures. Faucets should be low-flow type fixtures with a maximum delivery rate of 0.5 gpm.
The lab waste system should be removed in its entirety and replaced with a new polypropylene acid resistant piping system that empties into a central acid neutralization tank and system. This system would balance the pH of the lab waste and then safely discharge it into the regular sanitary waste system before it connects back to the town's sanitary waste system.

The existing hot and cold water systems serving the science wing should also be removed in their entirety. New protected hot and cold water systems should be created to serve the renovated science wing by installing reduced pressure backflow preventers on the hot and cold water piping designated to serve this area.

The existing main gas piping system serving the science wing could possibly be re-used. This piping should be reconnected to the new gas service in a convenient location. Gas piping to each science classroom should feed an emergency shut-off valve located in a valve box on the wall near the classroom exit door. Piping from this valve would then feed any gas turrets within that classroom only.
All existing emergency showers in the science wing and connections to the cold water system should be removed. A new tempered water system should be created to serve the science wing. A new gas-fired water heater should be installed somewhere within the science wing and be dedicated to the new tempered water system. Water should be stored at 140°F and a master mixing valve should be mounted nearby and set to deliver tempered water to this wing at approximately 70°F-90°F per state plumbing code requirements.

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D. PRELIMINARY EVALUATION OF EXISTING CONDITIONS / FOOD SERVICE

GENERAL OVERVIEW

The Stoneham High School Foodservice Program currently serves a population of approximately 695 students in grades nine through twelve. The original kitchen in mostly intact with minor modification and equipment upgrades done throughout the years. Major infrastructure items such as exhaust hoods and sinks have not change however; some cooking equipment has been upgraded and a newer, but outdated walk-in commodity freezer was installed at the exterior rear of the building. The commodity freezer is located adjacent to the kitchen receiving door. Overall, the kitchen is very clean and finishes are appropriate but they are original and showing signs of normal wear and tear.

Finishes

The original finishes within the kitchen are in good shape. The walls are porcelain tile in good condition with broken tiles at corners where impacts commonly occurred. The Storage room is a painted block wall material with a painted concrete floor. The floor within the kitchen production and serving area is quarry tile finish that is in great shape but patches and some minor failures can be seen.

The ceiling in the kitchen area is a hard gypsum ceiling that is painted but there are some patches, staining, and flaking paint given the amount of time it has been in place. Unfortunately, there is no ceiling in the storage room which by modern health code standards is a violation in that exposed piping is running overhead above stored ingredients.

Dry Goods Storage

The high school kitchen also serves as the main receiving, storage, cooking, and distribution hub for five of the district's lower schools. The lower schools do not have the cooking or storage capacity to perform these functions in house.

The original dry goods storage room is sized at 529 square feet. This is inadequate and as a result a portion of the kitchen adjacent to the tray washing area is being used for dry storage. In total, the dry storage in this kitchen is 1000 square feet. The foodservice director stated that this capacity is adequate and must not be reduced and that it is desirable that all storage be centralized to one common area within the kitchen.

Refrigerated USDA Commodity Food Storage

In addition to dry goods, the high school also serves as the main storage location for district wide frozen commodity food items that are offered by the USDA Commodity Food program. This food storage needs to be stored separately form common food stores. Distributing this storage throughout the lower school system is not an option because the lower schools do not have to storage capacity to receive and store these items. As a result, the high school installed this 512 square foot freezer to accommodate this program. The Foodservice Director has indicated that this is slightly undersized and that the future kitchen design must account for this additional square footage requirement in future programming.

Detailed Observations

The following observation will reference codes and standards. For the purposes of this report when the health code is referenced, we are citing requirements of the Federal Food Code, 2017 addition, published by the FDA as well as the Merged Massachusetts Food Code 2013 addition.
We will also reference the National Sanitation Foundation (NSF). This is an independent governing body that develops standards for foodservice equipment and facility design.
All equipment, in commercial kitchens must be built in accordance to NSF standards as a requirement of the food code

Tray Wash – Figure 1

The tray washing room is well equipped. The walls, floors and lighting are appropriate. Equipment is outdated but functional. The ceiling in this area is a lay in type tile. Some tiles are missing, and staining is visible. Missing tiles must be replaced for code compliance.

Dry Storage – Figure 2

In this image the storage shown here is separate from the main storage room. Due to need part of the kitchen was turned over to storage. Dry goods should not be stored on wood pallets. Proper storage platforms allow for clearing and air flow below the storage in order to be code complaint. Consolidating storage to one area is recommended.

Ceiling - Figure 3

Adjacent to hood were piping is penetrating the hard ceiling large gaps can be seen. The code requires that no gaps be larger than one sixteenth of an inch. These opening become potential access point for vermin. Note the stained ceiling and flaking paint. Flaking pain is a potential hazard as it can contaminate food and be ingested.

Wood Topped Tables

Wood surfaces are not allowed in a kitchen unless it is being used in a specific task as part of baking or other dough processing. Wood surfaces are difficult to maintain in the long term and they require frequent oiling and other maintenance. If not oiled the wood shrinks and splits causing health code violation since the gaps fill with debris and it is not possible to clean and sanitize. In turn this is a health code violation. To mitigate this the existing table have been clad with a plastic laminate. This laminate is an improvement but still not code complaint in a commercial heavy use setting. Damage and worn through the surfaces can be seen. This is the case at other tables as well. All food contact surface materials should be stainless where possible or other appropriate materials. The health code states materials must be durable, easy to clean, and tables must be built to NSF standards for use in a foodservice application.

Hoods Figure 5 & 6

The existing exhaust hoods are type two hoods meaning they are design to exhaust steam and heat only and not built to deal with grease. In the way the hoods are used today these hoods must be type one hood meaning they are designed and build to exhaust grease laden vapors as well. This also requires that the exhaust ducts be liquid tight to prevent grease from migrating outside the duct and becoming a fire hazard. As seen here this exhaust hood does not have a fire suppression system needed for open flam and grease laden vapor cooking. This is the case at multiple other locations. This system must be upgrades and be equipped with a fire suppression system that is tied into a building alarm system.

The lighting levels beneath the exhaust hood are not adequate. The health code requires a minimum of 50-foot candles below the hood and for any area that is being used to prepare food.

Sneeze Guards and Serving Counters – Figure 7

The serving counters shown here are a series of counters joined together to form a serving line. The counters are outdated and do not meet modern food protection sneeze guard standards. The counters are organized into three serving lines that meet in the center and then exit out of the kitchen to the cashier. Modern counters with the latest in food safety are needed.

Main Storage room – Figure 8

The main storage room is missing a finished ceiling. Modern food code does not allow for piping to be run above storage goods. The code requires a ceiling between the piping and the stored goods. The reason for this is that if there is a leak staining of the tile will alert staff of a concern and stored items can be moved to a safe location away from a possible cross contamination. The ceiling offers a layer of protection.

File storage – Figure 9

Foodservice operators are required to keep a backlog of files for a set period of time. This is a USDA requirement because audits are performed from time to time. Without adequate file storage potentially hazardous conditions form where combustible materials are stored in inappropriate locations.

Commodity Freezer

The freezer is outdoors. This food storage is kept separate to other food storage. In any future improvements this storage must be brought inside and adjacent to the other storage so the product can be rotated and handled properly. The health code requires that the travel path between the kitchen and outdoor storage spaces be protected from the weather. In this case it is not.

Food Preparation Sink Piping

The health code requires that the drain piping at food preparation sinks be air gapped to protect the food contact surface, in this case the sink bowl, from cross contamination in the event of a plumbing backup into the sink basin.

Future Foodservice Program Goals

The future serving line improvements must include an adequate amount of mechanical cold pans and appropriate hot holding equipment. Upright refrigerated displays will add

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a level of sophistication and improved service for the students. Quick service pre-made salads, sandwiches, and other offerings would be presented in these display refrigerators, making for faster more convenient service.

The production kitchen must be improved with workstations that are more inclusive of necessary work/preparation accessories such as refrigeration, small equipment, and preparation sinks. Cooking appliances need to be modern, energy efficient, and be equipped with adequate ventilation to provide for a comfortable work environment and safety.

Most critical is when sizing the kitchen, it is essential that the commodity freezer, district storage, and cooking be factored into the overall needed square footage. The commodity storage needs and lower school dry storage needs are in addition to the allowable square footage traditionally found in the MSBA allowance formula. Based on our analysis an additional 1,600 square feet muse be added to the allowable kitchen square footage prescribed by the MSBA allowances. If this facility is expected to cook and distribute stored goods to the five lower schools we recommend a total square footage allowance for the kitchen t not be less than 3,800 square feet.



Figure 1



Figure 2



Figure 3



Figure 4



Figure 5



Figure 6

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Figure 7

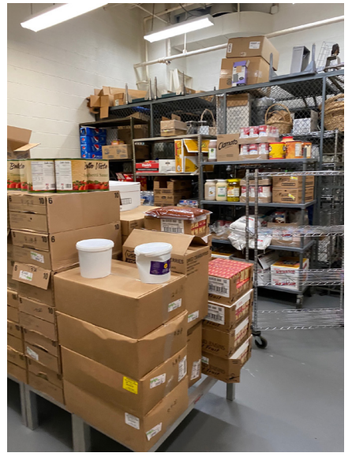


Figure 8

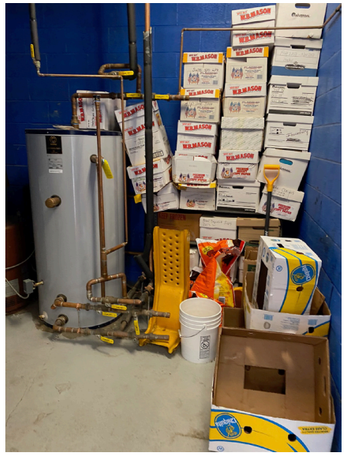


Figure 9



Figure 10



Figure 11

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D. PRELIMINARY EVALUATION OF EXISTING CONDITIONS / TECHNOLOGY

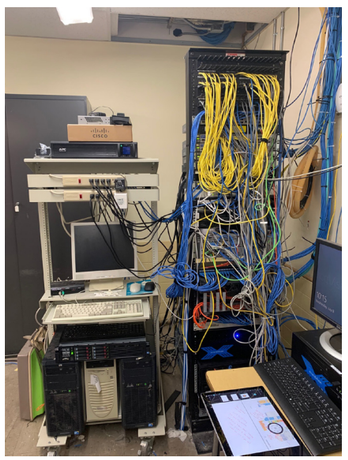
Structured Cabling and Data Communications

MDF and IDFs

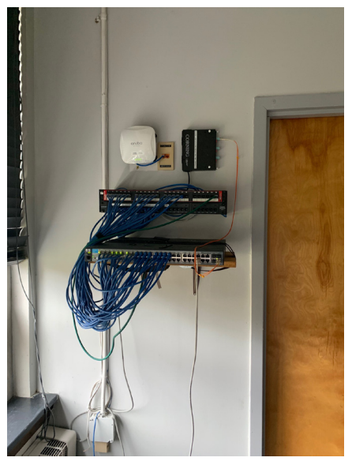
The school facility is served by an MDF/Head End Room on the second floor and four IDFs/Tech Closets. The MDF is the central nervous system of the facility from a data networking perspective. It currently contains the school's network servers and storage, core and edge switches, district-wide and school fiber terminations, network video recorders for security, and network related UPS equipment.

The MDF is in the corner of a larger second floor classroom that appears to have been repurposed as an IT workspace. The IDFs are strategically located in the Library, Guidance, Room 151 and Room 028 to minimize cable distances. Horizontal cabling in the MDF and IDFs are run from the ceilings to the racks mostly exposed with little or no cable management.

The MDF is connected to each IDF via 6-strand OM3 multimode fiber in a star topology. The fiber is armored for added protection. The district fiber, which terminates in its own patch panel, is installed in innerduct.
The IDFs are not dedicated, secure or environmentally treated spaces. Racks are either wall mounted using shelving or freestanding cabinets. MDF and IDF data racks do not appear to be properly grounded.
Any future project must take into consideration the requirement for continued connectivity between and among facilities, and/or the replication of the existing termination points in a new facility. This would involve protection and relocation of the existing fiber and demarcation point during an add/reno project or the installation of new fiber during a new construction project. Dedicated MDF/IDF rooms with proper power and environmental treatments are also recommended.



Second Floor MDF Racks



Typical IDF (Wall Mount)

Horizontal Cabling

Horizontal cabling extends from the MDF/IDFs to indivual outlets and components in classrooms, offices and other spaces in the school. Some of this cabling is also used for security system connectivity. The cabling consists of a combination of different standards including Category 5, 5E and 6. The Categoiry 6 cabling appears to be used for the wireless connectivity for the most part. All data cables are terminated on patch panels (Cat 5, 5E and 6) in the MDF and IDFs and extended to network switch electronics via varying types of patch cables.

Classrooms are generally equipped with two data jacks for general use and one data jack for wireless access point connectivity. Pathways for data cabling are surface mounted in many cases. Cabling for classroom handsets is independent of the data network.

Any future project should include the installation, testing and certification of horizontal cabling based on current acceptable standards at the time of design (currently Cat6A, capable of 10 GbE to the endpoints). Cabling for phones should be consistent with VoIP requirements.

Network Switches and WLAN

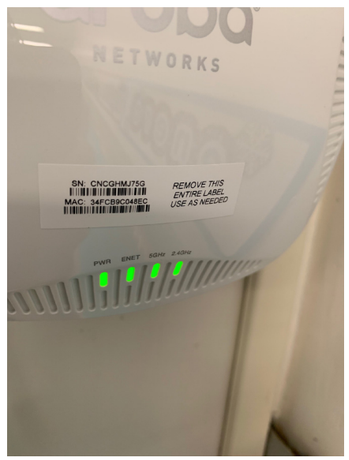
The MDF and IDFs are equipped with network switches by HP ProCurve (now Aruba). The switches are primarily J4903A (2800 series) for general use and J9146A (2900 series) for PoE applications such as wireless APs and security.

The ProCurve 2800 series switches each consist of 44 x 10/100/1000 ports, 4 dual-personality ports for RJ-45 10/100/1000 or mini-GBIC fiber 1000 connectivity, advanced prioritization, and traffic-monitoring capabilities. These switches are currently being utilized for basic routing at the edge of the network with district fiber connected to GBICs in the MDF.
The ProCurve 2900 series switches each consist of 24 x 10/100/1000 ports with PoE and 4 dual-personality ports for RJ-45 10/100/1000 or mini-GBIC connectivity. The 2900 series supports up to four 10-Gigabit (CX4 and/or SFP+) ports.

There are wireless access points in most classrooms and gathering spaces. The access points appear to be Aruba 210 series with dual radios and 802.11ac technology. The APs are typically installed on the walls in classrooms and ceilings of larger spaces such as the Cafeteria.



Typical Classroom WAP



Typical Classroom WAP 2

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Any future project should provide updated networking hardware for the MDF and IDFs based on current technology, with special attention paid to maintaining the functionality of the district-wide network and services. The wireless networking hardware should also be undated to the most current standard. The district appears to have standardized on Aruba for networking and wireless equipment. As such, related products specified in the base bid will likely need to be proprietary.

Classroom AV

Most classroom have a display device of some sort. The systems vary by type and by age and include a combination of vintage ceiling mounted projectors, short-throw projectors, “Smart”: projectors and Smartboards. Most of the audio-visual cabling for the displays is either exposed on run across the floor due to the lack of sufficient pathways and power.

Any future project should provide current classroom technology including interactive flat panel displays and audio reinforcement/voice lift systems. Wireless mirroring should be utilized to the extent possible based on instructional methodology.

Voice Communications

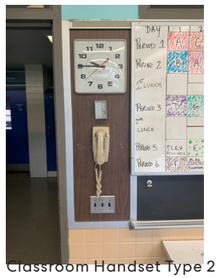
Telephony

The phone system is based on the NEC Univerge platform with both analog and digital endpoints untilized in classrooms and offices. Some classrooms have an analog handset capable of making outsoide calls. Other classrooms have more simplified analog handsets that appear to only serve as a means of communication woth the main office through the intercom system. Classroom phones are typically located adjacent to the corridor doors.

Office are typically equipped with NEC DTZ-12D-3 digital handsets. These handsets are well supported on the NEC Univerge SV9000 and SV8000 Series communications platforms. VoIP technology is not currently utilized at this time.



Classroom Handset Type 1



Classroom Handset Type 2



“Smart” Projector



Short-Throw Projector



AV Cabling

Any future project should expand upon the NEC platform, upgrade to the newest VoIP technology, and standardize on handset types as much as possible. District-wide consolidation and standardization of systems should also be considered.

Distributed Communication and Clock System

The Intercom system is a Bogen Mulitcomm 2000 Series Building Communication System. The system appears to be a replacement of an older (perhaps opriginal) system. All original speakers and cabling were re-used and connected to the Multicomm 2000. The master clock system is a Simplex Master Time Controller. The intercom main equipment is located in a storage room adjacent to the Main Office. The admin console is located at the main reception desk.

Classrooms are equipped with two-way intercom speakers, secondary clocks and handsets (see telephony summary). Much of the equipment is no longer functional and has reached the end of its serviceable life. Many corridor speakers appear to be broken or coming detached from the wall. Many secondary clocks are not functioning. As a result, the school has installed battery operated clocks in many spaces that are not synchronized or integrated.

Any future project should provide new intercom components based on IP technology and a new master time controller and secondary clocks based on current technology. The intercom system should be integrated with the VoIP telephone system.



Typical Office Handset



Bogen Multicomm Intercom



Typical Corridor Speaker

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D. PRELIMINARY EVALUATION OF EXISTING CONDITIONS / THEATER

Introduction
The fine and performing arts are important to the school and town, and the auditorium supports the band, chorale, jazz ensemble, curricular theater arts, and the drama club.
The auditorium and stage are part of the original 1968 middle school building. The auditorium consists of three seating areas—the main seating area extends from the stage to a rear crossaisle and has a capacity of about 800. Behind the crossaisle two lecture room each seat another 135. The lecture rooms can be used independently or connected to the auditorium by movable partitions. With the lecture rooms connected, the auditorium capacity is about 1,100.

The HMFH Preliminary Design Study notes that the auditorium and stage are larger than MSBA guidelines. However, the design of the auditorium is typical of the period in which it was built and compared to current standards it has multiple deficiencies. Renovation of the auditorium would require significant alterations to address these deficiencies.

Accessibility and Building Codes
The auditorium and stage are severely deficient in accessibility, which is not surprising given they were built more than 20 years before the adoption of the ADA.

Main auditorium
The main part of the auditorium is accessible only at the rear crossaisle. The main seating slope is bowl-shaped with slopes varying from flat to 1:11. The front of the auditorium is reached via aisles that follow this segmented slope or via steps at the stage apron. The segmented sloped aisles do not provide an accessible route and reconfiguring the slope to provide an accessible route would adversely impact the sightlines. No accessible route is provided between the auditorium and the stage. No compliant wheelchair spaces are provided.

Lecture rooms
The lecture rooms are not accessible unless the movable partitions are open, and then only the front of the lecture room (where a lecturer would stand) is accessible. Each room has a door to this area from the corridor, but the doors are not compliant. The first row of the seating is elevated 11" above this area and is not accessible. The rear of the seating is entered from the corridor via steps.

Apron and stage
The apron is accessible from the surrounding corridors, and the stage can be accessed from the apron by passing through the proscenium opening. The stage itself can only be entered through a noncompliant door from the corridor or though the loading door which opens directly to the exterior. The arrangement of doors on stage does not appear to meet the code requirement for an exit or exit access doorway on each side of the stage.

Seating and Sightlines
The existing seat width appears to average around 20" as compared to 21 to 22" for contemporary school auditoriums. The row spacing in the main part of the auditorium is 32" which is deficient by current standards. A minimum of 36" is recommended. The rear lecture rooms have 36" row spacing.

Reseating the auditorium to meet current design standards would result in a loss of about 200 seats, reducing total capacity to around 900. These figures do not include seat loss due to the creation of wheelchair spaces and accessible routes as required by the ADA.
The slope of the main seating area is shallow—dropping only 2'-11" over 20 rows. While the bowl shape is an improvement over a constant slope, the sightlines are less than optimal.

Supportive auditorium design
A good school auditorium provides a supportive environment for the student performers, designers, and technicians who are learning their craft. This entails acoustics and visual intimacy as well as the production facility.

Main auditorium
The auditorium has a single seating level and is both wide and long, and therefore does not provide a sense of intimacy or community. The great width (almost 85') does not allow supportive acoustic reflections from the side walls and provides no sense of "embrace" of the performers. The distance from the last row to the stage apron is an extraordinary 117 feet. For comparison, this same dimension at the Dolby Theatre—with more than three times as many seats—is 150 feet.

Lecture rooms
The rear lecture rooms are acoustically decoupled and visually disconnected from the main auditorium. They may be adequate for lectures and similar presentations, but they do not provide acceptable conditions for viewing and hearing performing arts presentations. When the lecture rooms are separated from the auditorium, we strongly suspect that simultaneous use with the auditorium is not possible because of bleed through of sound from one space to another.

Sound and light locks
Vestibules at the auditorium and stage (called sound and light locks) are critical for preventing unwanted noise and light from disturbing performances. The existing auditorium and stage have no vestibules.

Stage
The stage floor area is larger than the MSBA guidelines, but about 300 square feet of stage area has been turned over to storage. The proscenium opening is 35 feet wide. This may be too narrow for some musical ensembles, but even at this width there is little wing space on either side of the opening. Compounding the inadequate wing space is the complete lack of a fly space over the stage. The stage offers little or no opportunity for students to learn and practice stagecraft.

Lighting catwalk
The lighting catwalk above the auditorium is accessed via a ladder in an adjacent electrical closet. The catwalk has been described as "completely dysfunctional," "bouncy," and "little used." A safe and functional front lighting catwalk is needed.

Control room
An open control position has been built at the center rear of the main auditorium. An enclosed room is desired for security and for acoustic separation from the auditorium.

Finishes and Equipment
Several areas of finish are in poor condition. This includes areas of the wood paneling on the auditorium walls and the wood flooring on the stage. The plaster ceiling over the auditorium is in fair condition but does not contribute positively to the acoustic qualities in the space. The fixed seating varies in appearance and age. Most chairs in the main auditorium appear to be older, while the front center section of the auditorium the rear lecture areas have been reseated more recently. All chairs need replacement.
A renovated auditorium would require all new theater equipment. New stage lighting equipment should be LED.

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E. GEOTECHNICAL ASSESSMENT

Lahlaf Geotechnical Consulting, Inc. (LGCI) prepared a geotechnical report presenting the results of the subsurface explorations and a geotechnical evaluation performed by for the proposed Stoneham High School in Stoneham, Massachusetts.

The purpose of the geotechnical services was to perform subsurface explorations at the site and to provide foundation design and construction recommendations. LGCI performed the following services:

- Performed a desk review that included reviewing available information about the site, including the geologic data available from the US Geological Survey, data from the US Department of Agriculture Coordinated, and logs of previous borings advanced at the site by others.
- Coordinated our boring locations with Perkins & Will and with the School staff.
- Marked the boring locations at the site and notified Dig Safe Systems Inc. (Dig Safe) and the Town of Stoneham for utility clearance.
- Engaged a drilling subcontractor to advance seven (7) borings at the site.
- Provided an LGCI geotechnical engineer at the site to coordinate and observe the borings, describe the soil samples, and prepare field logs.
- Submitted two (2) soil samples for laboratory testing.
- Prepared this preliminary geotechnical report containing the results of our preliminary subsurface explorations and our preliminary recommendations for foundation design and construction.

A copy of the Preliminary Geotechnical Report can be found in Appendix D.

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F. ENVIRONMENTAL SITE ASSESSMENT (PHASE I)

SUMMARY

FS Engineers, Inc. (FSE) was retained by Perkins and Will, Inc. (P&W) (Owner's Architect) to conduct an ASTM Phase I Environmental Site Assessment (Phase I ESA) of the property identified as Stoneham High School located at 149 Franklin Street in Stoneham, MA (the "Site").

The Site consists of a single parcel of land occupying 38.88 acres. The Site parcel is listed by the Town of Stoneham as Parcel ID: 8-0-134. The school development includes the building, parking lots, access driveways, athletic fields, and undeveloped land. A Site Location Map is included in Figure 1.

The Site owner is listed on the Assessors property cards as Town of Stoneham, Stoneham High School with a mailing address of 149 Franklin Street, Stoneham, MA 02180.

The Phase I ESA is being performed as part of an existing conditions assessment for a new high school.

FINDINGS

A site reconnaissance was completed on August 6, 2020, by Mr. Farooq Siddique of FSE. The weather was sunny. There were no limiting conditions to the inspection. The Site owner's representative, Mr. Brian McNeil, Facilities Manager, indicated that he had a general knowledge of the site history, and provided historical information and access for the site inspection. Access to the entire Site interior and exterior was provided.

A completed Transaction Screen Questionnaire is provided as Appendix C and photographs of selected Site features are also included. The Stoneham Fire Department files were requested and reviewed. Local records were reviewed online at the Town of Stoneham website. Due to Covid-19 restrictions, a review of files at City Hall was not allowed. A database search of state and federal sources was conducted and reviewed. Based on these investigations the following findings have been reached:

- The site was undeveloped wooded land until approximately 1968 when the existing school was built.
- The existing Site building footprint and layout has remained largely unchanged since 1968. The building has a concrete slab-on-grade foundation, brick/masonry exterior walls, cinder block interior walls, and tiled concrete floors. The building has a total of 248,986 sf of finished area. The school building has driveways around it. Franklin Place connects the main school parking area to Franklin Street. The Site has several outdoor athletic fields surrounding the school building.
- The Site is currently heated by natural gas-fired forced hot water systems. The original heating source was #2 fuel oil which was converted to natural gas in 2010.
- The Site currently has no underground storage tanks (USTs).
- The Site had one former 15,000-gallon UST and one former 500-gallon UST; both USTs were removed in 2010. The USTs were transported to Lawrence, MA for disposal. According to Form UST FP-290R, evidence of a leak was observed from the 500-gallon UST during removal. Supporting documentation including the UST removal permits, Form UST FP-290R, and disposal receipts are included in Appendix B.
- Based on a review of state and government agency databases, there was one reported historical spill incident of pesticide/herbicide on the property in 1985. This case was closed on the date of notification. The Site is listed as a Massachusetts generator of hazardous waste and waste oil. No other release of oil or hazardous materials (OHM) was documented or identified at the property.
- The Site does not use significant quantities of hazardous materials or generate significant quantities of hazardous waste. Minor quantities of waste oil and other automotive fluids used/generated in the maintenance garage are stored in secure storage containers located in the garage, prior to offsite disposal.
- No prior Environmental Site Assessment report(s) for the property were known or available for the Site.
- During the 2010 fuel oil UST removal, evidence of leak was observed around the 500-gallon UST as noted on the FP-290R Form. No notification was made to the MassDEP and no additional documentation regarding the leak was found. In the absence of additional documentation (soil sampling results, UST closure report), this is considered to be a recognized environmental condition (REC #1).

OPINIONS

FSE conducted a Phase I ESA in conformance with 40 CFR Part 312 "Standards and Practices for All Appropriate Inquiries," and ASTM E1527-13 "Standard Practice for Environmental Site Assessments: Phase I Environmental Site Assessment Process". Based on the findings presented in Section 1.1, FSE has the following opinion(s):

- One recognized environmental condition (REC #1) associated with the 500-gallon #2 fuel oil UST removed in 2010 was identified at the Site. No information relative to response actions completed was available in the state and local databases and records reviewed.
- Future construction or demolition activities in the vicinity of the former 500-gallon #2 fuel oil UST may encounter petroleum-impacted soil that would require special handling and disposal.
- No other recognized environmental conditions (RECs), historical recognized environmental conditions (HRECs), controlled recognized environmental conditions (CRECs), or business environmental risks (BERs) were identified at the Site. Mold and wetlands were not identified as significant environmental issues at this Site.
- One recognized environmental condition (REC #1) was identified in connection with the Site. The evidence of a leak from the former 500-gallon #2 fuel oil UST constitutes a recognized environmental condition. The UST removal permit, Form UST FP-290R, and disposal receipt for the 500-gallon #2 fuel oil UST are included in Appendix B. No UST closure report or confirmatory soil sampling results for this UST were found.

A copy of the Phase I Environmental Site Assessment Report can be found in Appendix E.

CONCLUSIONS

FSE has performed a Phase I ESA in conformance with the scope and limitations of 40 CFR Part 312, "Standards and Practices for All Appropriate Inquiries," and ASTM E1527-13 "Standard Practice for Environmental Site Assessments: Phase I Environmental Site Assessment Process". Any limiting conditions, exceptions to, or deletions from, this practice are described in Section 2.0 of the Phase I ESA report. Based on this work, the following conclusions have been reached:

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G. HAZARDOUS MATERIAL ASSESSMENT

1. 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 thirty-two (32) years of experience.

UEC was contracted by Perkins + Will, to conduct the following services at the High School, Stoneham, Massachusetts as part of the feasibility study of the school:

- Asbestos Containing Materials (ACM) inspection and sampling.
- Polychlorinated Biphenyls (PCB's)-Electrical Equipment and Light Fixtures inspection.
- PCB's Caulking inspection.
- Lead Based Paint (LBP) inspection.
- Mercury in Rubber Flooring inspection.
- Airborne Mold inspection and sampling.
- Radon sampling.
- Underground Oil Storage Tanks.

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

Bulk samples analyses for asbestos were performed using the standard Polarized Light Microscopy (PLM) Method in accordance with EPA standard. Bulk samples were collected by a Massachusetts licensed asbestos inspector Mr. Jason Becotte (AI-034963) and analyzed by a Massachusetts licensed laboratory Asbestos Identification Laboratory, Woburn, MA.

Airborne mold samples were analyzed by an EPA trained laboratory EMSL, Woburn, MA.

Radon samples were analyzed by an EPA licensed laboratory AccuStar, Ward Hill, MA.

Samples results are attached.

2. FINDINGS:

Asbestos Containing Materials (ACM):

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

All suspect materials were grouped into homogenous areas. By definition, a homogenous area is one in which the materials are evenly mixed and similar in appearance and texture throughout. A homogeneous area shall be determined to contain asbestos based on findings that the results of at least one sample collected from that area shows that asbestos is present in an amount greater than 1 percent in accordance with EPA regulations. Per the Department of Environmental Protection (DEP) any amount of asbestos found must be disposed as asbestos. No additional suspect and accessible ACM were found during this survey.

Hidden ACM may be found during renovation and demolition activities.

Number of Samples Collected:

Building 1968:

Fifty-seven (55) bulk samples were collected from materials suspected of containing asbestos, including:

Type and Location of Suspect Material

1. Hard smooth wall plaster at room 103
2. Hard smooth wall plaster at room 127A
3. Hard smooth wall plaster at auditorium
4. Hard smooth ceiling plaster at girl's locker room
5. Hard smooth ceiling plaster at boy's locker room
6. Hard smooth wall plaster at training room
7. Hard smooth ceiling plaster at basement
8. Hard textured ceiling plaster at auditorium
9. Hard textured ceiling plaster at auditorium
10. Hard textured ceiling plaster at auditorium
11. Hard textured ceiling plaster at auditorium
12. Hard textured ceiling plaster at auditorium
13. Hard textured ceiling plaster at auditorium
14. Hard textured ceiling plaster at auditorium
15. Soft textured ceiling plaster at band room 139
16. Soft textured ceiling plaster at band room 139
17. Soft textured ceiling plaster at band room 139
18. Soft textured ceiling plaster at band room 139
19. Soft textured ceiling plaster at band room 139
20. Cement column coating at room 103
21. Cement column coating at room 116
22. Cement column coating at room 127A
23. Interior vertical caulking in CMU at gymnasium
24. Interior vertical caulking in CMU at gymnasium
25. Science lab table at room 220
26. Science lab table at room 214
27. Grey sink coating at room 114
28. Grey sink coating at room 114
29. Black sink coating at room 118
30. Black sink coating at room 217
31. Pink sink coating at room 208
32. Pink sink coating at room 211
33. 4" x 4" Ceramic wall tile glue at training room
34. 4" x 4" Ceramic wall tile glue at room 103
35. Interior window glazing caulking at basement hallway
36. nterior window glazing caulking at girl's locker room
37. Window sill at basement training room
38. Window sill at basement room 103
39. Window sill mortar at basement training room
40. Window sill mortar at basement room 103
41. 1' x 1' Acoustical ceiling tile at room 112
42. 1' x 1' Acoustical ceiling tile at room 103
43. 2' x 4' Suspended acoustical ceiling tile at office
44. 2' x 4' Suspended acoustical ceiling tile at band storage room
45. Round light fixture paper at storage entrance
46. Exterior expansion joint caulking
47. Exterior expansion joint caulking
48. Exterior door framing caulking
49. Exterior door framing caulking
50. Exterior unit vent framing caulking
51. Exterior unit vent framing caulking
52. Exterior window framing caulking
53. Exterior window framing caulking
54. Exterior window glazing caulking
55. Exterior window glazing caulking

Sample Results:

Type and Location of Suspect Material	Sample Result
1. Hard smooth wall plaster at room 103	No Asbestos Detected
2. Hard smooth wall plaster at room 127A	No Asbestos Detected
3. Hard smooth wall plaster at auditorium	No Asbestos Detected
4. Hard smooth ceiling plaster at girl's locker room	No Asbestos Detected
5. Hard smooth ceiling plaster at boy's locker room	No Asbestos Detected
6. Hard smooth wall plaster at training room	No Asbestos Detected
7. Hard smooth ceiling plaster at basement	No Asbestos Detected
8. Hard textured ceiling plaster at auditorium	No Asbestos Detected
9. Hard textured ceiling plaster at auditorium	No Asbestos Detected
10. Hard textured ceiling plaster at auditorium	No Asbestos Detected
11. Hard textured ceiling plaster at auditorium	No Asbestos Detected
12. Hard textured ceiling plaster at auditorium	No Asbestos Detected
13. Hard textured ceiling plaster at auditorium	No Asbestos Detected
14. Hard textured ceiling plaster at auditorium	No Asbestos Detected
15. Soft textured ceiling plaster at band room 139	2% Asbestos
16. Soft textured ceiling plaster at band room 139	2% Asbestos
17. Soft textured ceiling plaster at band room 139	2% Asbestos
18. Soft textured ceiling plaster at band room 139	2% Asbestos
19. Soft textured ceiling plaster at band room 139	2% Asbestos

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20. Cement column coating at room 103 2% Asbestos
21. Cement column coating at room 116 2% Asbestos
22. Cement column coating at room 127A 2% Asbestos
23. Interior vertical caulking in CMU at gymnasium No Asbestos Detected
24. Interior vertical caulking in CMU at gymnasium No Asbestos Detected
25. Science lab table at room 220 No Asbestos Detected
26. Science lab table at room 214 No Asbestos Detected
27. Grey sink coating at room 114 15% Asbestos
28. Grey sink coating at room 114 15% Asbestos
29. Black sink coating at room 118 5% Asbestos
30. Black sink coating at room 217 5% Asbestos
31. Pink sink coating at room 208 5% Asbestos
32. Pink sink coating at room 211 5% Asbestos
33. 4" x 4" Ceramic wall tile glue at training room No Asbestos Detected
34. 4" x 4" Ceramic wall tile glue at room 103 No Asbestos Detected
35. Interior window glazing caulking at basement hallway 2% Asbestos
36. Interior window glazing caulking at girl's locker room 2% Asbestos
37. Window sill at basement training room 10% Asbestos
38. Window sill at basement room 103 10% Asbestos
39. Window sill mortar at basement training room No Asbestos Detected
40. Window sill mortar at basement room 103 No Asbestos Detected
41. 1' x 1' Acoustical ceiling tile at room 112 No Asbestos Detected
42. 1' x 1' Acoustical ceiling tile at room 103 No Asbestos Detected
43. 2' x 4' Suspended acoustical ceiling tile at office No Asbestos Detected
44. 2' x 4' Suspended acoustical ceiling tile at band storage room No Asbestos Detected
45. Round light fixture paper at storage entrance 60% Asbestos
46. Exterior expansion joint caulking 2% Asbestos
47. Exterior expansion joint caulking 2% Asbestos
48. Exterior door framing caulking No Asbestos Detected
49. Exterior door framing caulking No Asbestos Detected
50. Exterior unit vent framing caulking No Asbestos Detected
51. Exterior unit vent framing caulking No Asbestos Detected
52. Exterior window framing caulking No Asbestos Detected
53. Exterior window framing caulking No Asbestos Detected
54. Exterior window glazing caulking 2% Asbestos
55. Exterior window glazing caulking 2% Asbestos

Building 1983:
Thirty-six (36) bulk samples were collected from materials suspected of containing asbestos, including:

Type and Location of Suspect Material

1. White/blue 12" x 12" vinyl floor tile at room 147
2. White/blue 12" x 12" vinyl floor tile at room 151
3. Yellow glue for white/blue 12" x 12" vinyl floor tile at room 147
4. Yellow glue for white/blue 12" x 12" vinyl floor tile at room 151
5. Off-white 12" x 12" vinyl floor tile at hallway
6. Off-white 12" x 12" vinyl floor tile at room 143
7. Black mastic for off-white 12" x 12" vinyl floor tile at hallway
8. Black mastic for off-white 12" x 12" vinyl floor tile at room 143
9. 2' x 4' Suspended acoustical ceiling tile at room 143
10. 2' x 4' Suspended acoustical ceiling tile at room 151
11. Interior vertical caulking at hallway
12. Interior vertical caulking at hallway
13. Interior window glazing caulking at hallway
14. nterior window glazing caulking at room 151
15. Joint compound at room 143
16. Joint compound at room 151
17. 4" x 4" Ceramic wall tile glue at room 143
18. 4" x 4" Ceramic wall tile glue at room 149
19. Lab counter top at room 143
20. Lab counter top at room 145
21. Grey sink coating at room 145
22. Grey sink coating at room 151
23. Textured ceiling plaster at girl's locker room
24. Textured ceiling plaster at girl's locker room
25. Textured ceiling plaster at girl's locker room
26. Textured ceiling plaster at girl's locker room
27. Textured ceiling plaster at girl's locker room
28. Exterior door framing caulking
29. Exterior door framing caulking
30. Exterior expansion joint caulking
31. Exterior expansion joint caulking
32. Exterior window glazing caulking
33. Exterior window glazing caulking
34. Exterior window framing caulking
35. Exterior window framing caulking
36. Interior framing caulking for exterior window
37. Interior framing caulking for exterior window

Sample Results:
Type and Location of Suspect Material Sample Result

1. White/blue 12" x 12" vinyl floor tile at room 147 No Asbestos Detected
2. White/blue 12" x 12" vinyl floor tile at room 151 No Asbestos Detected
3. Yellow glue for white/blue 12" x 12" vinyl floor tile at room 147 No Asbestos Detected
4. Yellow glue for white/blue 12" x 12" vinyl floor tile at room 151 No Asbestos Detected
5. Off-white 12" x 12" vinyl floor tile at hallway No Asbestos Detected
6. Off-white 12" x 12" vinyl floor tile at room 143 No Asbestos Detected
7. Black mastic for off-white 12" x 12" vinyl floor tile at hallway 5% Asbestos
8. Black mastic for off-white 12" x 12" vinyl floor tile at room 1435% Asbestos
9. 2' x 4' Suspended acoustical ceiling tile at room 143 No Asbestos Detected
10. 2' x 4' Suspended acoustical ceiling tile at room 151 No Asbestos Detected
11. Interior vertical caulking at hallway No Asbestos Detected
12. Interior vertical caulking at hallway No Asbestos Detected
13. Interior window glazing caulking at hallway 2% Asbestos
14. Interior window glazing caulking at room 151 2% Asbestos
15. Joint compound at room 143 No Asbestos Detected
16. Joint compound at room 151 No Asbestos Detected
17. 4" x 4" Ceramic wall tile glue at room 143 No Asbestos Detected
18. 4" x 4" Ceramic wall tile glue at room 149 No Asbestos Detected
19. Lab counter top at room 143No Asbestos Detected
20. Lab counter top at room 145 No Asbestos Detected
21. Grey sink coating at room 145 No Asbestos Detected
22. Grey sink coating at room 145 No Asbestos Detected
23. Textured ceiling plaster at girl's locker room No Asbestos Detected
24. Textured ceiling plaster at girl's locker room No Asbestos Detected
25. Textured ceiling plaster at girl's locker room No Asbestos Detected
26. Textured ceiling plaster at girl's locker room No Asbestos Detected
27. Textured ceiling plaster at girl's locker room No Asbestos Detected
28. Exterior door framing caulking No Asbestos Detected
29. Exterior door framing caulking No Asbestos Detected
30. Exterior expansion joint caulking No Asbestos Detected
31. Exterior expansion joint caulking No Asbestos Detected
32. Exterior window glazing caulking 2% Asbestos
33. Exterior window glazing caulking No Asbestos Detected
34. Exterior window framing caulking No Asbestos

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Detected

35. Exterior window framing caulking No Asbestos Detected
36. Interior framing caulking for exterior window No Asbestos Detected
37. Interior framing caulking for exterior window No Asbestos Detected

Observations and Conclusions:
The condition of ACM is very important. ACM in good condition does not present a health issue unless it is disturbed. Therefore, it is not necessary to remediate ACM in good condition unless it will be disturbed through renovation, demolition, or other activity.

Refer to the AHERA Management Plan for condition of ACM.

Building 1968:

1. Soft textured ceiling plaster was found to contain asbestos.
2. Cement column coating was found to contain asbestos.
3. Grey sink coating was found to contain asbestos.
4. Black sink coating was found to contain asbestos.
5. Pink sink coating was found to contain asbestos.
6. Interior window glazing caulking was found to contain asbestos.
7. Window sill was found to contain asbestos.
8. Round light fixture paper was found to contain asbestos.
9. Exterior expansion joint caulking was found to contain asbestos.
10. Exterior window glazing caulking was found to contain asbestos.
11. Various types of flooring and mastic were either previously found or assumed to contain asbestos.
12. Generator exhaust insulation was either previously found or assumed to contain asbestos.
13. Tank insulation was either previously found or assumed to contain asbestos.
14. Duct insulation was either previously found or assumed to contain asbestos.
15. Insulation/rope inside sectional boilers was either previously found or assumed to contain asbestos.
16. Heat exchanger insulation was either previously found or assumed to contain asbestos.
17. Hard joint insulation was previously found to contain asbestos.
18. Paper/mastic under hardwood floors was assumed to contain asbestos.
19. Baseboard/glue was previously found to contain asbestos.
20. Glue holding blackboards/chalkboards was assumed to contain asbestos.
21. Glue tabs on fiberglass insulated ductwork was assumed to contain asbestos.
22. Fire curtain was assumed to contain asbestos.
23. Fire doors insulation was previously found to contain asbestos.
24. Transite inside fume hoods was assumed to contain asbestos.
25. Roofing material was assumed to contain asbestos. Roofing material does not have to be removed by a licensed asbestos contractor. However, the Demolition/Roofing Contractor must comply with OSHA regulation during demolition and with state regulations for proper disposal. A non-traditional abatement plan would have to be prepared and submitted to the DEP for approval.
26. Damproofing on exterior and foundation walls was assumed to contain asbestos. The demolition contractor will have to segregate the ACM from non-ACM building surfaces for proper disposal. A non-traditional abatement plan would have to be prepared and submitted to the DEP for approval.
27. Thru-wall flashing was assumed to contain asbestos. The demolition contractor will have to segregate the ACM from non-ACM building surfaces for proper disposal. A non-traditional abatement plan would have to be prepared and submitted to the DEP for approval.
28. All other suspect materials were found not to contain asbestos. Hidden ACM may be found during renovation and demolition activities.

Building 1983:

1. Black mastic for off-white 12" x 12" vinyl floor tile was found to contain asbestos.
2. Interior window glazing caulking was found to contain asbestos.
3. Glue holding blackboards/chalkboards was assumed to contain asbestos.
4. Transite inside fume hoods was assumed to contain asbestos.
5. Exterior window glazing caulking was found to contain asbestos.
6. Exterior vertical caulking in brick was assumed to contain asbestos.
7. Transite panels around exterior soffits were assumed to contain
8. Roofing material was assumed to contain asbestos. Roofing material does not have to be removed by a licensed asbestos contractor. However, the Demolition/Roofing Contractor must comply with OSHA regulation during demolition and with state regulations for proper disposal. A non-traditional abatement plan would have to be prepared and submitted to the DEP for approval.
9. Damproofing on exterior and foundation walls was assumed to contain asbestos. The demolition contractor will have to segregate the ACM from non-ACM building surfaces for proper disposal. A non-traditional abatement plan would have to be prepared and submitted to the DEP for approval.
10. Thru-wall flashing was assumed to contain asbestos. The demolition contractor will have to segregate the ACM from non-ACM building surfaces for proper disposal. A non-traditional abatement plan would have to be prepared and submitted to the DEP for approval.
11. All other suspect materials were found not to contain asbestos. Hidden ACM may be found during renovation and demolition activities.

Site:

1. Sewer pipes were assumed to contain asbestos (Transite).

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

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

PCB's in Caulking:
Observations and Conclusions

Caulking at the 1968 building was assumed to contain PCB's. PCB's are manmade chemicals that were widely produced and distributed across the country from the 1950s to 1977 until the production of PCB's was banned by the US Environmental Protection Agency (EPA) law which became effective in 1978. PCB's are a class of chemicals made up of more than 200 different compounds. PCB's are non-flammable, stable, and good insulators so they were widely used in a variety of products including electrical transformers and capacitors, cable and wire coverings, sealants and caulking, and household products such as television sets and fluorescent light fixtures. PCB's also do not readily evaporate into air but tend to remain as solids or thick liquids. Even though PCB's have not been produced or used in the country for more than 30 years, they are still present in the environment in the air, soil, and water and in our food. EPA requires that all construction waste including caulking be disposed as PCB's if PCB's level exceed 50 mg/kg (ppm).

Testing is not required to be performed by the EPA.

Lead Based Paint (LBP):
Observations and Conclusions

LBP was assumed to exist on painted surfaces. A school is not considered a regulated facility. All LBP activities performed, including waste disposal, should be in accordance with applicable Federal, State, or local laws, ordinances, codes, or regulations governing evaluation and hazard reduction. In the event of discrepancies, the most protective requirements prevail. These requirements can be found in OSHA 29 CFR 1926-Construction Industry Standards,

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29 CFR 1926.62-Construction Industry Lead Standards, 29 CFR 1910.1200-Hazards Communication, 40 CFR 261-EPA Regulations. According to OSHA, any amount of LBP triggers compliance.

Mercury in Rubber Flooring:
Observations and Conclusions:
No rubber flooring exists in the school.

AIRBORNE MOLD and PARTICULATE

Lab ID #	Location	Total Mold Counts/M3	Pollen	Insect Fragment	Hyphal Fragments
132003060-0001	Building 1983, Room 149	8,470	ND	ND	ND
132003060-0002	Building 1983, Room 143	2,440	ND	ND	ND
132003060-0003	Building 1968, Room 223	45,760	ND	ND	ND
132003060-0004	Building 1968, Room 207	4,090	ND	ND	ND
132003060-0005	Building 1968, Trainer's Room	21,880	ND	ND	ND
132003060-0006	Building 1968, Room 112	3,610	20	ND	20
132003060-0007	Building 1968, Room 103	12,910	ND	ND	ND
132003060-0008	Building 1968, Band Room 139	4,610	ND	ND	ND
132003060-0009	Building 1968, Cafeteria	15,850	ND	ND	ND
132003060-0010	Outside	68,060	ND	ND	40

Airborne Mold:
Airborne mold testing was performed utilizing Zefon International Incorporated's Air-O-Cell® sampling device following all manufacturer supplied recommended sampling procedures.
The Air-O-Cell® is a direct read total particulate air sampling device. It works using the inertial impaction principle similar to other spore trap devices. It is designed for the rapid collection and analysis of airborne particulate including bioaerosols. The particulate includes fibers (e.g. asbestos, fiberglass, cellulose, clothing fibers) opaque particles (e.g. fly ash, combustion particles, copy toner, oil droplets, paint), and bioaerosols (e.g. mold spores, pollen, insect parts, skin cell fragments). [1]
The method involves drawing a known quantity of air through a sterile sampling cassette. Subsequent to sampling, the cassette is sealed and transferred to a microbiology laboratory under chain of custody protocol for microscopic analysis. This method counts both viable and nonviable mold spores.

Exterior sample was collected at the rear of the school.

Observations:
There are currently no guidelines or standards promulgated by a government agency or widely recognized scientific organization for the interpretation of airborne mold spore levels. The most commonly employed tool used to assess if mold growth is occurring in a structure is to compare quantities and species of mold outdoors to indoor. If there were more mold indoor, and/or if species were present indoor which were not present outdoors, then growth is occurring, and remediation is recommended.

Indoor airborne mold spore concentrations were found to

1 Zefon International Inc. <www.zefon.com>

AIRBORNE MOLD and PARTICULATE
(Subjective Scales)

Lab ID #	Location	Skin Fragment Density (SFD)	Fibrous Particulates (FP)	Total Background Particulate
132003060-0001	Building 1983, Room 149	1	1	1
132003060-0002	Building 1983, Room 143	1	1	1
132003060-0003	Building 1968, Room 223	1	1	1
132003060-0004	Building 1968, Room 207	1	1	1
132003060-0005	Building 1968, Trainer's Room	1	1	2
132003060-0006	Building 1968, Room 112	1	1	1
132003060-0007	Building 1968, Room 103	1	1	1
132003060-0008	Building 1968, Band Room 139	1	1	1
132003060-0009	Building 1968, Cafeteria	1	1	1
132003060-0010	Outside	1	1	2

Legend: ND - Not Detected

be lower than the outside sample. Based on comparisons with historical data from projects of similar type, building utilization, geographic location and season, the indoor airborne levels are considered high. However, mold types found in the indoor samples were also found in the outside sample in much higher counts which would indicate that outside levels are being migrated to the interior of the school.

Pollen, insect fragments and Hyphal fragments were either not present or low in the samples. Hyphal fragment is a non-reproductive part of the mold.

Total background particulate on all samples was assessed as "1-2" on a scale of 1-5 where 1 is low and 5 is high. Skin fragment density on all samples was assessed as "1" on a scale of 1-4 where 1 is low and 4 is high. The total background levels are measured to determine airborne dust not related to airborne mold. Skin fragments are measured to determine proper housing cleaning.

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Radon:

Number of Samples Collected

Ten (10) air samples were collected at the following locations:

Location of Sample

1. Building 1968, basement football locker room
2. Building 1968, basement trainer's room
3. Building 1968, first floor room 139
4. Building 1968, first floor band room
5. Building 1968, auditorium
6. Building 1968, cafeteria
7. Building 1968, library
8. Building 1968, first floor room 127A
9. Building 1983, first floor room 143
10. Building 1983, first floor room 149

Location of Sample	Sample Result
Building 1968, basement football locker room	0.5 pCi\L
Building 1968, basement trainer's room	0.4 pCi\L
Building 1968, first floor room 139	0.5 pCi\L
Building 1968, first floor band room	0.7 pCi\L
Building 1968, auditorium	0.8 pCi\L
Building 1968, cafeteria	0.4 pCi\L
Building 1968, library	0.9 pCi\L
Building 1968, first floor room 127A	<0.4 pCi\L
Building 1983, first floor room 143	0.9 pCi\L
Building 1983, first floor room 149	0.9 pCi\L

Observations and Conclusions:

The measured radon concentrations of the samples were found to be much lower than the EPA guideline of 4 picoCuris of radon per liter of air (pCi/L). No further action is required based on results.

Underground Oil Storage Tank:

Observations and Conclusions:

There appears to be an existing underground oil storage tank by the 1968 building. No records were found onsite to confirm.

3.0 COST ESTIMATES:

The cost includes removal and disposal of all accessible ACM, other hazardous material, and an allowance for removal of inaccessible or hidden ACM that may be found during renovation or demolition projects.

Location	Material	Approximate Quantity	Cost Estimate ($)
Building 1968:			
Throughout	Various Types of Flooring and Mastic	95,000 SF	380,000.00
	Interior Windows	515 Total	77,250.00
	Interior Window Sill	2,000 SF	20,000.00
	Interior Doors with Windows	105 Total	21,000.00
	Hard Joint Insulation	500 Total	15,000.00
	Hidden Hard Joint Insulation	Unknown	30,000.00
	Coating on Columns	2,000 SF	30,000.00
	Blackboards/Tackboards	300 Total	90,000.00
	Miscellaneous Hazardous Materials	Unknown	50,000.00
	Hidden ACM	Unknown	25,000.00
	Light Fixtures	Unknown	50,000.00
Stage	Fire Curtain	1 Total	7,500.00
Band Room	Soft Ceiling Plaster	1,650 SF	33,000.00
Boiler Room	Thermal Insulation	2,000 SF	75,000.00
	Boilers	2 Total	18,000.00
Various Locations	Sinks	20 Total	2,500.00
	Wood Fire Doors	Unknown	5,000.00
	Round Light Fixtures	4 Total	1,000.00
	Fume Hoods	5 Total	7,500.00
	Glue Tab on Fiberglass Insulated Ductwork	500 SF	5,000.00
Gymnasium	Hardwood Floor, Paper and Mastic	16,000 SF	160,000.00
Weight Room	Hardwood Floor, Paper and Mastic	1,500 SF	15,000.00
Stage	Hardwood Floor, Paper and Mastic	2,000 SF	20,000.00
Exterior	Roofing Materials	150,000 SF1	450,000.00
	Windows	625 Total	156,250.00
	Doors	50 Total	10,000.00
	Unit Vent Grilles	80 Total	8,000.00
	Expansion Joint Caulking	2,200 LF	22,000.00
	Damproofing/Flashing on Walls	2,500 Tons1,2	437,500.00

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Location	Material	Approximate Quantity	Cost Estimate ($)
	Oil Tank	1 Total	25,000.00
Building 1983:			
Throughout	Flooring and Mastic	8,000 SF	32,000.00
	Interior Windows	20 Total	6,000.00
	Blackboards/Tackboards	50 Total	15,000.00
	Miscellaneous Hazardous Materials	Unknown	15,000.00
	Light Fixtures	Unknown	15,000.00
Various Locations	Fume Hoods	4 Total	6,000.00
Exterior	Roofing Materials	15,000 SF[1]	45,000.00
	Windows	75 Total	22,500.00
	Transite Panels	1,500 SF	15,000.00
	Damproofing/Flashing on Walls	1,000 Tons1,2[12]	175,000.00
PCB's Remediation[3]			180,000.00
Estimated costs for PCB's Testing and Abatement Plans Services[3]			50,000.00
Estimated costs for NESHAP Inspection and Testing Services			25,000.00
Estimated costs for Design, Construction Monitoring and Air Sampling Services			251,000.00
General Contractor's Total:			$ 3,100,000.00
C.M at Risk Estimated Total:			$ 3,500,000.00

1 Estimated.

2 Part of total demolition.

3 Should results exceed EPA limit.

DESCRIPTION OF SURVEY METHODS AND LABORATORY ANALYSES:

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

Bulk samples were analyzed by a Massachusetts licensed laboratory Asbestos Identification Laboratory, Woburn, MA.

Airborne Mold:
The samples were analyzed by an EPA approved laboratory EMSL, Woburn, MA.

Radon:
Radon samples were analyzed by an EPA licensed laboratory AccuStar, Ward Hill, MA.

LIMITATIONS AND CONDITIONS:

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

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

Inspection by:



Jason Becotte
Asbestos Inspector
AI-034963

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H. TRAFFIC ANALYSIS

We visited the site on July 8th, 2020 early morning to observe the existing conditions throughout the site for the preparation of this report. During our site visit, we met with the landscape and design team and spoke with the school administration to discuss circulation and access patterns on the site. On September 2nd, 2020, we met with the Town Administrator, DPW Director, Traffic Safety Officer, Director of Community Development and Planning, Police and Fire Chiefs, the Town Clerk and the Superintendent to discuss the management of key access to/from the site, signalization and safety management, interior circulation patterns, parking needs, and phasing considerations.

SCHOOL TRAVEL

A population of 780 people, including 669 students and 111 staff, travel to and from Stoneham High School on a daily basis. Since Stoneham does not have a school bus service for the general population, all students rely on driving, carpooling, pickup/dropoff, and/or active transportation to get to and from the school site. There are three different minibuses which provide travel for Special Education and off-site learning opportunities. Two of these buses are also available for occasional use by request for field trips and off-site athletics.

Stoneham High School will soon engage in a Safe Routes to School study with the State of Massachusetts, which would conduct a school travel survey and examine incentives for encouraging more walking and biking as a means of travel to/from the school. Turning movement counts collected in September 2013 observed that 596 vehicles entered the school site between 6:00 AM and 8:00 AM, indicating that approximately 77% of the 2013 school population arrived by vehicle on that day.

Classes are held from 8:15 AM to 1:37 PM end time (with a 2:50 PM end time on Day 3). Classes used to commence at 7:45 AM and end at 2:25 PM but recently shifted to their current schedule. The shift to 8:15 AM aligns the peak hour of school-generated travel to coincide more closely with the peak hour of general traffic flow on Franklin Street.

Given the school's proximity to the eastern boundary of the Town of Stoneham, the origin of most vehicle trips would come from points west on Franklin Street. The counts collected in September 2013 reinforced this pattern.

ACCESS CONDITIONS

Currently, all vehicular traffic accesses the site via Franklin Place at Franklin Street (pictured in Figure 1). At this intersection, Franklin Street has an eastbound right-turn lane 160-feet long (running between Emerald Court and Franklin Place) and a westbound left-turn lane 130 feet long. Franklin Street is otherwise, typically, a two-lane roadway, with one lane of travel in each direction. Franklin Place has two southbound receiving lanes entering the site and two northbound exiting lanes, one designated for left turns and one designate for right turns. The entering and exiting lanes are divided by a grass median with a center-running sidewalk.

The Franklin Place intersection is managed by a traffic signal but, during school hours, a Traffic Director manages ingress and egress both at this intersection and at the intersection of Franklin Street at Stevens Street/Benjamin Terrace. Officials at the Town confirmed that, while operable, the traffic signal at Franklin Place is out of date and parts can no longer be replaced. A new signal, replacing the original signal, will need to be budgeted as part of the future school project. Town stakeholders also requested the school project to conduct a future study to examine need for an additional signal at the intersection of Franklin Street and Stevens Street/Benjamin Terrace (Figure 2), given the large queue lengths they observe on Stevens Street and the relatively high number of pedestrians that cross Franklin Street at this location.

Stoneham's Traffic Safety Officer indicated that the last count collected by MWRA observed 19,000 cars travelling on Franklin Street a day. Peak hour Turning Movement Counts were last collected for the Franklin Place intersection in September 2013 as part of a Traffic Impact and Access Study. Given counts could not be collected during this study due to the school being closed during COVID-19 social distancing, the 2013 counts were used as the basis for analysis. These numbers were projected to align with the 2018-2019 schoolyear by adjusting for growth in the school's population, shifted school start times, and the local traffic growth between 2013 and 2018.

Approach	Movement	LOS[1]	Delay (s)	Queue (in ft)[2]		
				Capacity[3]	50th Percentile	95th Percentile
Franklin St EB	EB Thru	B	15.3		339	344
	EB Right			160	3	3
Franklin St WB	WB Left	B	18.1	130	14	26
	WB Thru				338	395
Franklin Pl NB	NB Left	F	104.4	340	~451	263
	NB Right			340	8	6
Intersection		D	37.4			

Figure 3 AM Peak Hour Intersection Analysis Results at Franklin Place

Morning peak hour volumes and queues per intersection approach based on these volumes are summarized in Figure 3, Figure 4, and Figure 5. Figure 5 summarizes modelled queue lengths in feet (i.e. how far back cars are stacked at each approach). As can be seen in this figure, turn pocket access is obstructed by eastbound and westbound queues.

VEHICULAR CIRCULATION ON THE SCHOOL SITE

Interior to the site, Franklin Place has two breaks in the median (see Figure 6 for an example of one). The break closer to Franklin Street allows entering traffic to turn left into the parking lot by the tennis courts on the east side of the site. The second break, closer to the school building, creates a circular roundabout path of travel in front of the school entrance and enables for flow between the parking lots on either side of the median. An emergency access path of travel is provided around the entire school site. The path behind the school can be gated off to prevent vehicular cut-through traffic.

WALKING AND BIKING

Stakeholders report that students walking or biking access the site via Franklin Place, but that more students enter and exit on foot enter via three other points including: walking across the sports fields to Benjamin Terrace, following an informal trail connection under the stadium bleachers ending at a driveway off of Dapper Darby Drive, and via the unpaved emergency access point at the end of Boxwood Road.

At the intersection of Franklin Street and Franklin Place, there are three pedestrian crosswalks at the intersection: one across Franklin Street at the end of the median sidewalk and two running parallel to Franklin Street across the entry and exit lanes of the site. The east-west crosswalks across Franklin Place do not have pedestrian signal heads or push buttons. There is no exclusive pedestrian signal phase for any of these three crosswalks. The Franklin Street crosswalk has a pedestrian signal head and push button, but runs concurrently with the northbound left turning vehicles exiting the site.

Currently, the site only has one bike rack, across the street from the school entrance on the median of Franklin Place. The rack is not sheltered from snow and rain, it is rusted frame age, and the "grid" rack model and its siting is not compliant with the recommendations laid out by the Association for Pedestrian and Bicycle Professionals.[4]

Note: Parking, sidewalk and curb ramp conditions, ADA compliance, and other circulation factors are further explained in the Landscape Conditions section of this module.

[1] Level of Service (LOS) calculations performed using Synchro, using Transportation Research Board HCM 2000 methodology.

[2] Queue shown is maximum after two cycles for the 50th and 95th percentiles.

[3] Capacity measured as internal link distance for through lane and/or each respective turn pocket.

[4] https://www.apbp.org/Publications - see "Essentials of Bike Parking: Selecting and Installing Bike Parking that Works (2015)"

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Figure 1 Existing vehicular ingress and egress at Franklin Street at Franklin Place



Figure 2 Franklin Street at Stevens Street / Benjamin Terrace

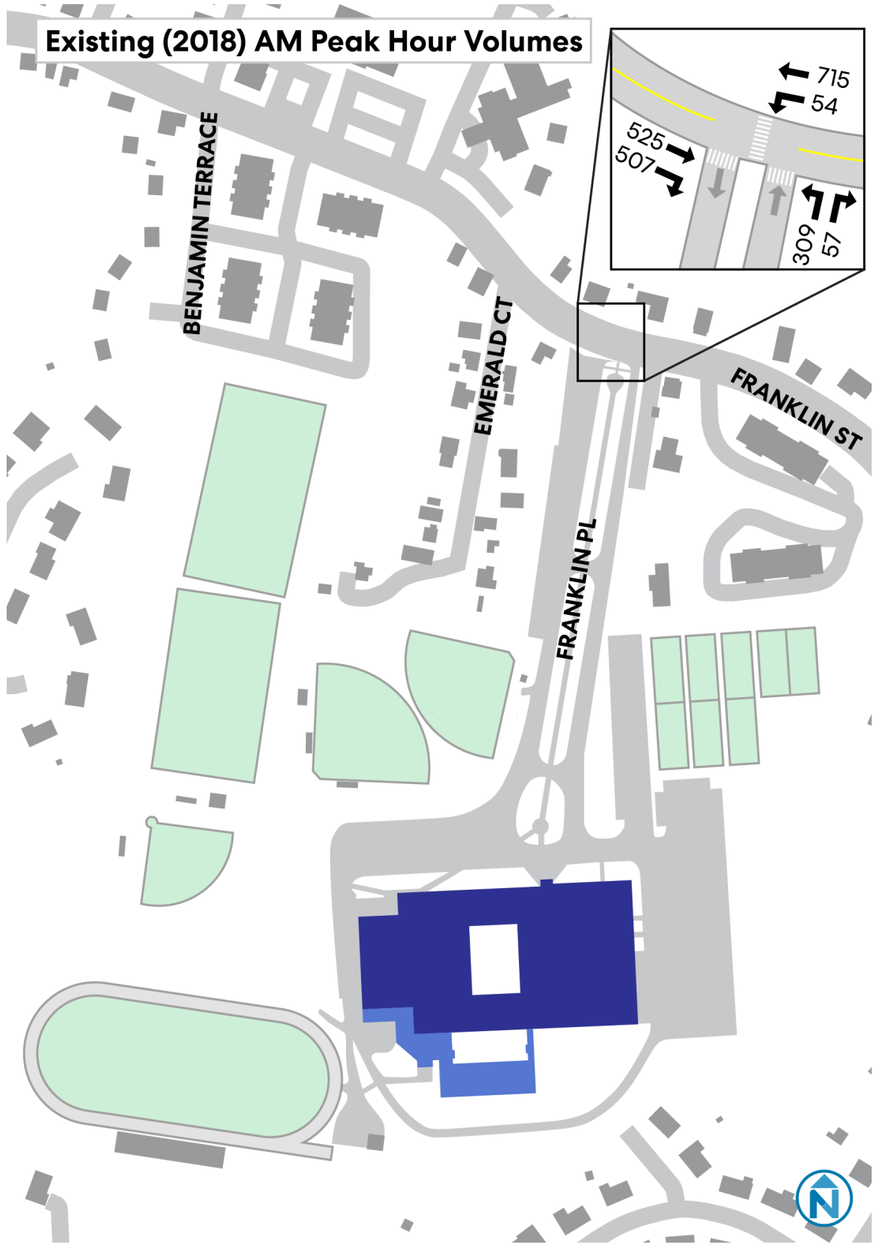


Figure 4 AM Peak Hour Turning Movement Volumes at Franklin Place

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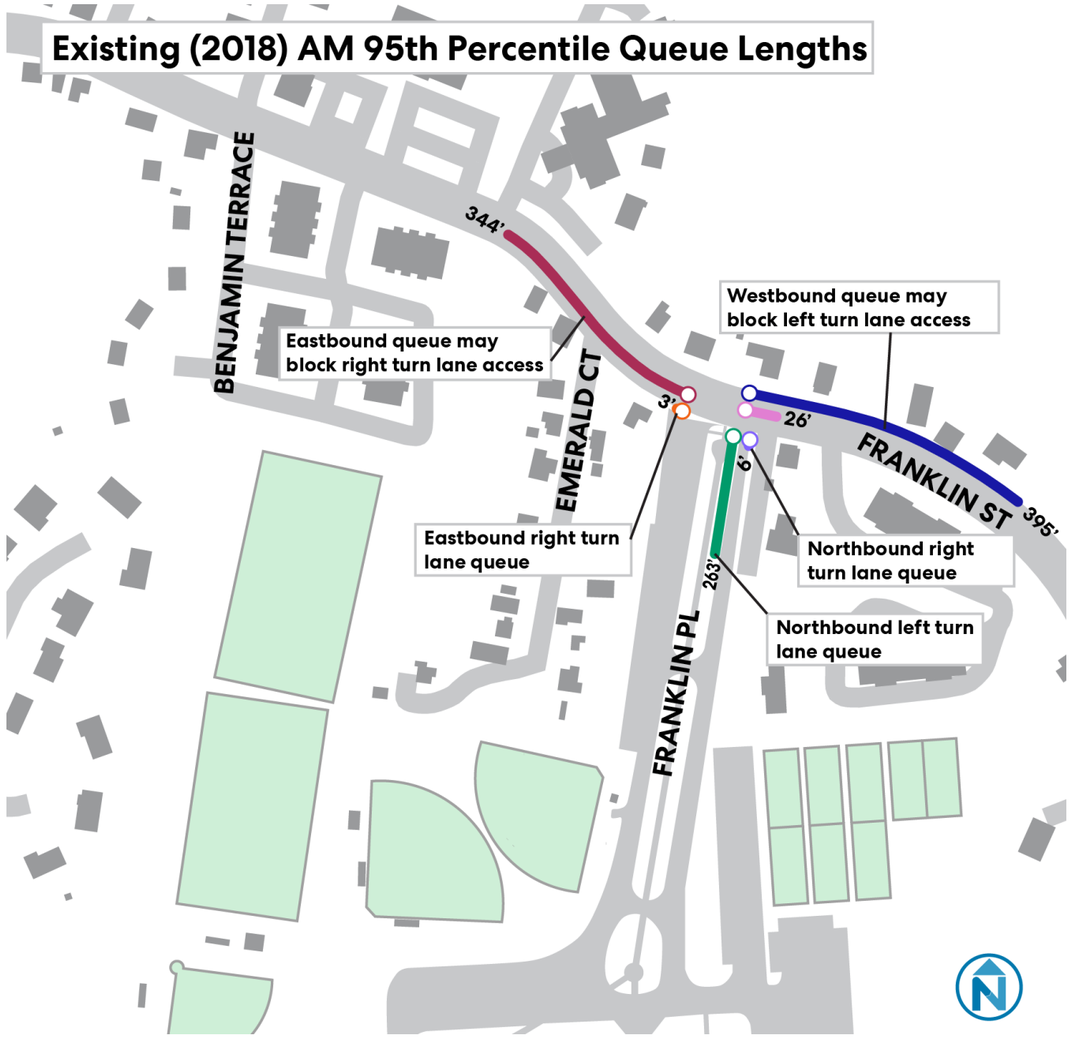


Figure 5 Modeled AM Peak Hour Queue Lengths at Franklin Place



Figure 6 Franklin Place Median



Figure 7 Crosswalk at Franklin Place, Crossing Franklin Street



Figure 8 Grid Bike Rack Across Street from Main School Entrance

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I. EXISTING CONDITIONS BUILDING COMMITTEE/COMMUNITY PRESENTATION

Existing Conditions/ Site Plan

Current Campus

Junior High School (1968)

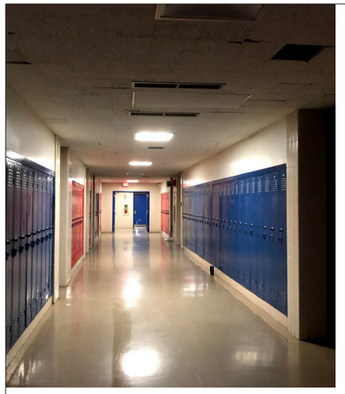
52 YEARS OLD

Senior High School (1980)

40 YEARS OLD

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Existing Conditions/ Landscape: Warner Larson

Parcel ID:
- 284-08-134
- 284-02-152

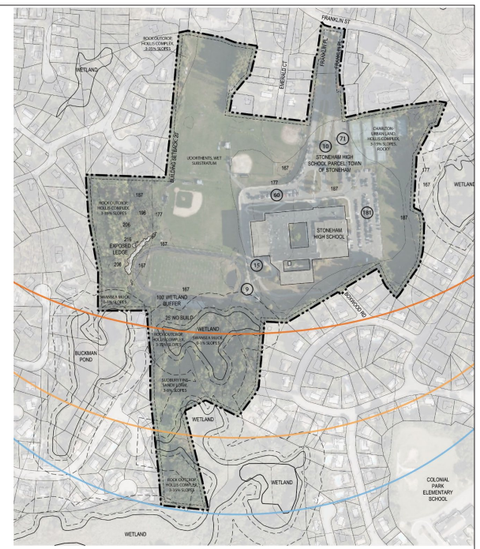
Parcel Size:
- 38.88 acres
- 0.75 acres

Zoning: Education

Physical Conditions
- +/-30' Grade Change
- 194' at Tennis Courts
- 164' at Wetlands

Exposed Ledge

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STONEHAM HIGH SCHOOL
SITE ANALYSIS

Existing Conditions/ Landscape

Site Features

-One-way loop off Franklin St

-3 main parking lots (71, 181, 60 spaces)

-Visitor parking (10 spaces)

-Service parking (15 spaces)

-Track facility parking (9 spaces)

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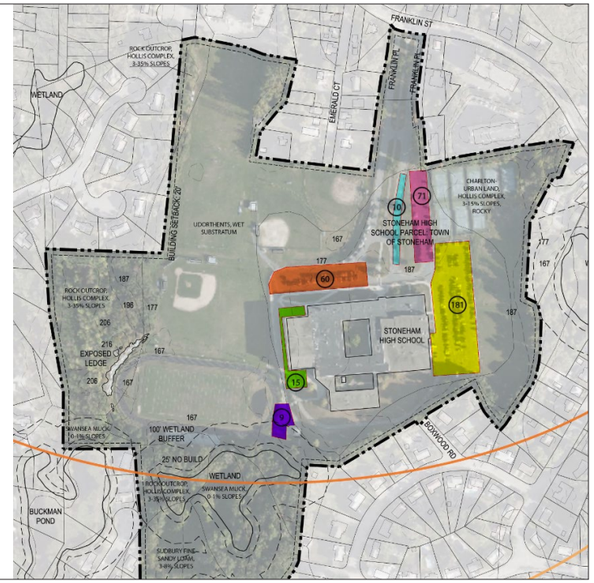


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Existing Conditions/ Landscape

- Significant cracking in asphalt driveway and parking lots

- Granite curbing moderate condition

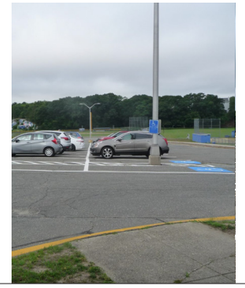
- Asphalt berm in poor condition

- 5 Accessible spaces in total

- Lack of curb cuts and detectable warning







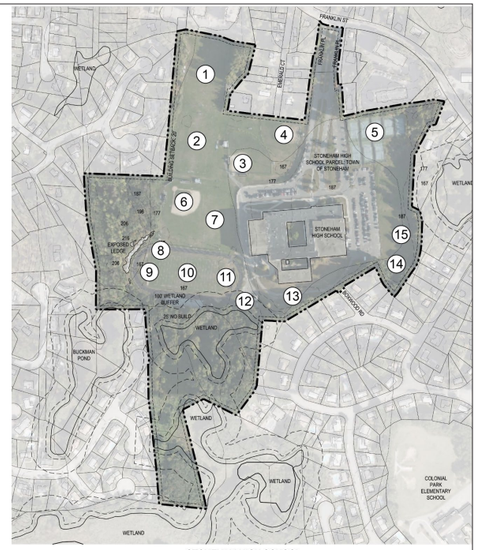


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Existing Conditions/ Landscape

Fields

1 & 2: Soccer/Lacrosse
3 & 4: Softball
5: Tennis Courts
6 & 7: Baseball and Field Hockey
8: Track
9: Long/Triple Jump
10: Football Field
11: High Jump
12: Pole Vault
13: Shotput
14: Discus
15: Javelin and Practice Field



STONEHAM HIGH SCHOOL
SITE ANALYSIS

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Existing Conditions/ Landscape

Leo Herlihy Memorial Tennis Courts/8

-Fair/Poor Condition
-Limited accessibility
-Terraced Configuration

Rocher-Fillback Track Facility

-Bleachers or press box not accessible
-Previous sinkhole issues on football field







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Existing Conditions/ Landscape

Site Lighting

- Primarily roadway lighting
- Lack of pedestrian scaled lighting on site
- Wiring problems with sports lighting

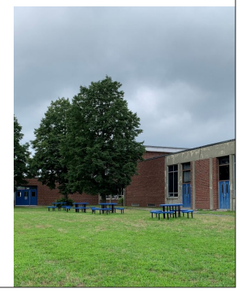
General

- Limited outdoor café seating
- Greenhouse and gardens
- No structured outdoor classrooms
- Limited student use of courtyard









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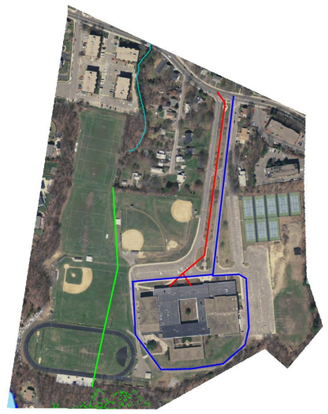
Existing Conditions/
Civil : Nitsch Engineering

Site Utilities

48-inch Storm Drain-Shown in Green
Route could be adjusted, slightly

Sanitary Sewer-Shown in Red
Sufficient capacity
Elevation an issue if construction is on lower fields

Water lines-Shown in Blue
Portions of existing system could be incorporated into new campus configuration



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Existing Conditions/
Code Compliance: Code Red

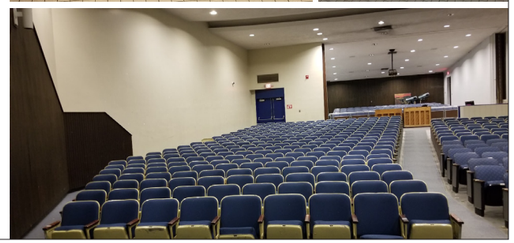
Extensive ADA Upgrades Required:

- Bathrooms
- Locker Rooms
- Entrances
- Auditorium Seating
- Stage Access
- Routes throughout

Construction Type
- Concrete, Unprotected Steel
- Existing insufficient to support addition
- Fire Wall construction







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Existing Conditions/
Structure: B+AC

Structural Conditions
- Floors are cast-in-place concrete

- Roofs are reinforced concrete. Cast-in-place at classrooms. Precast at gym, auditorium, kitchen/café. Steel at classroom addition.

- Spalling and cracking of concrete at multiple locations throughout the building.

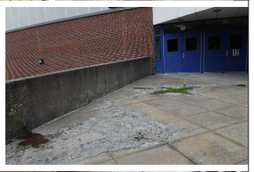
- Minor cracks in masonry. Efflorescence at fly tower back wall

- Many old leaks through roof. Active leaks at the classroom additions potentially due to incorrect execution of joint











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Existing Conditions/
Structure

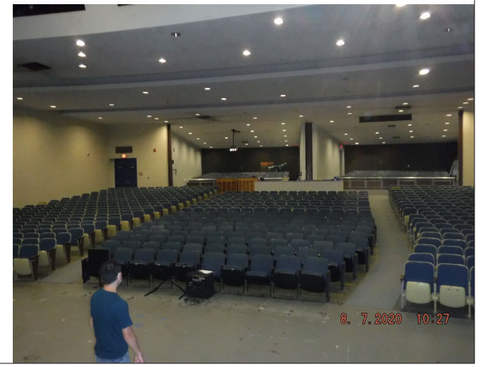
Structural Considerations:
- Seismic bracing may be needed for walls and structure

- Expansion joints may need to be addressed

- Auditorium: No fly tower, trap or pits present. May need framing work

- Gym: Structure displaying signs of aging. Should be repaired to keep. Roof to north column connection needs repairing





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Existing Conditions/
HVAC Systems: Bala Engineering

Classrooms
- Classrooms served by heating only unit ventilators
- Cooling systems consist of local, through the wall AC Units

Auditorium / Gym /Locker Rooms
- Cafeteria
- All spaces served by heating only unit ventilators and air handling systems

Administrative Areas
- Area served by heating and cooling rooftop unit

Recommendations
- All systems, except for the boilers, are well past their useful life.
- Boilers will need to be evaluated based on the energy goals of the project.

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Existing Conditions/
Electrical and Security Systems

Security
- Security systems (access control and CCTV) are in good working condition. System is connected to a town wide system.

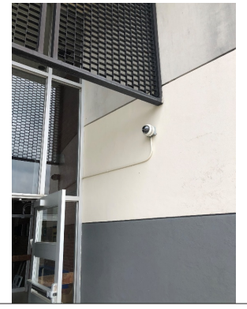
- System should be expanded on for additional coverage.

Recommendations
- All systems are recommended to be replaced.

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Existing Conditions/
Electrical and Security Systems: Bala

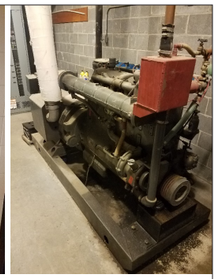
Power
- Electrical Distribution is original to the building and is in poor condition.
- Emergency equipment is well past useful life.

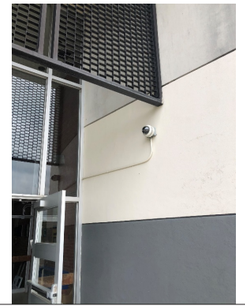
Lighting
- Lighting is fluorescent. Coverage is acceptable but fixtures are in poor condition and create a lot of glare.

Fire Alarm
- Fire alarm system is obsolete.
- System has limited coverage and no smoke detector coverage.

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Existing Conditions/
Fire Protection: Architectural Engineers

No Water Based Fire Protection System in School

Renovations will require a new water service and sprinklers

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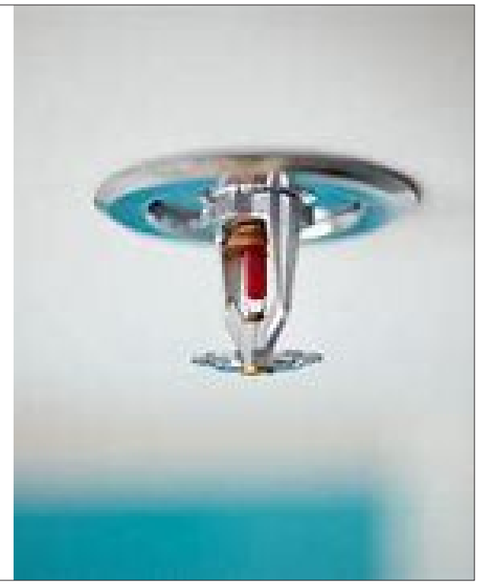
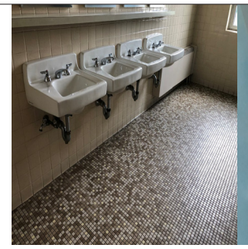


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Existing Conditions/
Plumbing: Architectural Engineers

Plumbing Fixtures
- Old Models Need Replacement
- Manual Faucets & Flush Valves Not Water Saving Types
- Classroom Sinks & Faucets Older models need replacement





Domestic Water System
- Size & pressure of service adequate
- HW Boiler & Storage Tank old equipment needs replacement
- CW & HW Piping Systems and Valves are older and need replacement





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Existing Conditions/
Plumbing

Locker Rooms / Showers
- Gang Shower Area doesn't meet current code requirements
- Need Individual Shower Stalls and multiple floor drains



Kitchen
- Three-bay sink discharges to a Grease Interceptor. Replace.
- Dishwasher does not discharge to a grease interceptor
- Fixtures & floor drains do not connect to an independent grease waste system. Need exterior GT.



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Existing Conditions/
Plumbing

Sanitary Waste System
- Some new piping observed
- Most piping older and needs replacement



Storm Drainage
- Roof drains good condition
- Interior piping is older and should be replaced.



Natural Gas
- Medium pressure gas service meets current building needs.
- Piping system in good condition.

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Existing Conditions/
Plumbing

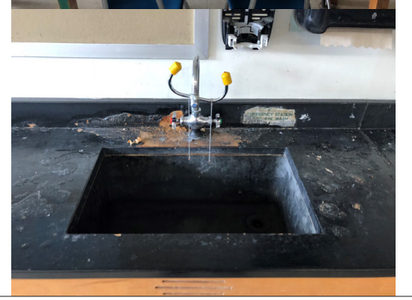
Science Classrooms
- Sink waste connected to an exterior limestone chip neutralization system. No problems reported.

- Lab water not protected from main water system. Need non-potable water systems.

- Emergency showers/eyewashes exist but not on a Tempered Water system. Separate water heater and recirc system required.

- Gas to bench turrets. Move main shut-off valve near door.





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Existing Conditions/
Food Service

Commodity Storage
- The High School supports five lower schools

- The lower schools lack sufficient cook and storage capacity

- Storage capacity has been expanded to the exterior to accommodate storage demands

Exhaust Hoods
- Lack of sufficient lighting

- Missing a hood fire suppression system

- Floors are uneven resulting in hard to clean conditions and tripping hazards

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Existing Conditions/
Building Exterior

Doors
- Damaged and bent frames

- Worn doors and panic hardware

Roofs
- Rubber roofs over 15 years old; some are original from 1968/1980

- Ponding reported to appear on roofs

- Leaking observed at various locations

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Existing Conditions/
Building Exterior: Perkins and Will

Walls
- Spalling exposed concrete structure

- Deteriorated and asbestos containing sealant at doors and windows

- Leaks observed below rising walls on roofs

Windows
- Single-pane aluminum windows not meeting energy code

- Rotting existing curtain walls

- Kalwall system at gym yellowed and is worn out

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Existing Conditions/
Building Interior

Walls
- Damaged tile base at many areas

- Wood paneling in auditorium and cafeteria in poor condition

Flooring
- Vinyl asbestos tiles to be investigated

- Auditorium stage has several large patches

- Gymnasium wood floor in good shape, but does not provide appropriate shock absorption

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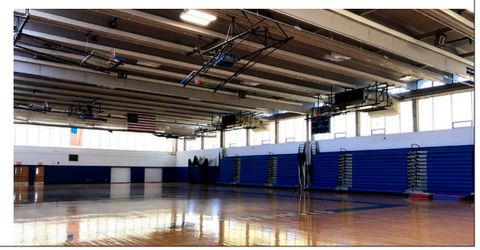


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Existing Conditions/
Building Interior

Ceiling
- Acoustic ceiling tiles (discontinued) in poor shape in many locations

- Water damaged ceilings observed through out the upper levels

- Poor acoustic plaster ceiling at auditorium



Doors
- Roughly 75% of doors not compliant with push/push clearance requirement

Vertical Circulation
- Stairs not code-compliant

- Elevator/lift not code-compliant

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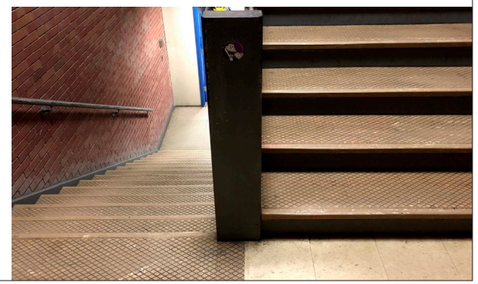


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