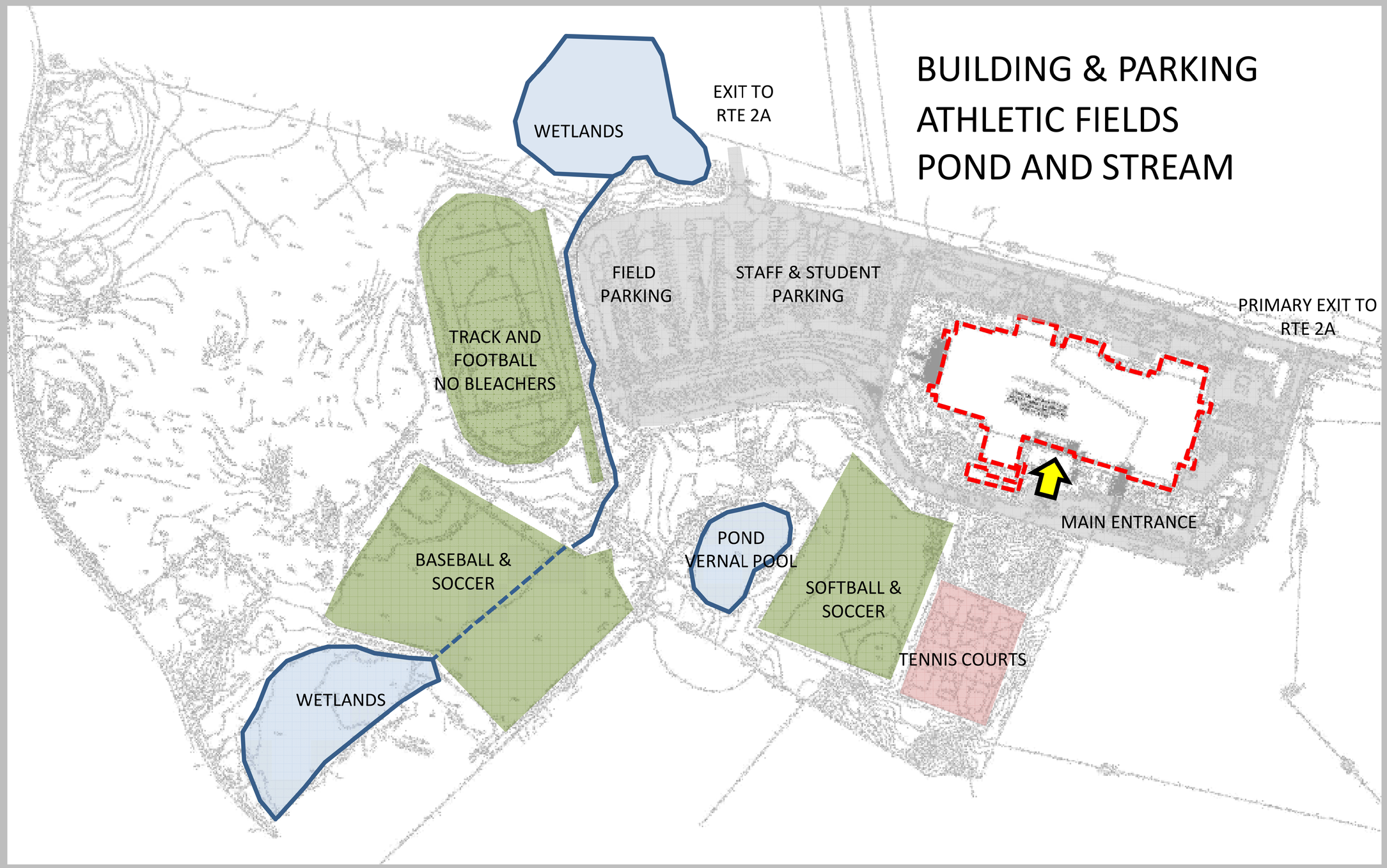
Site Plan: Existing Conditions

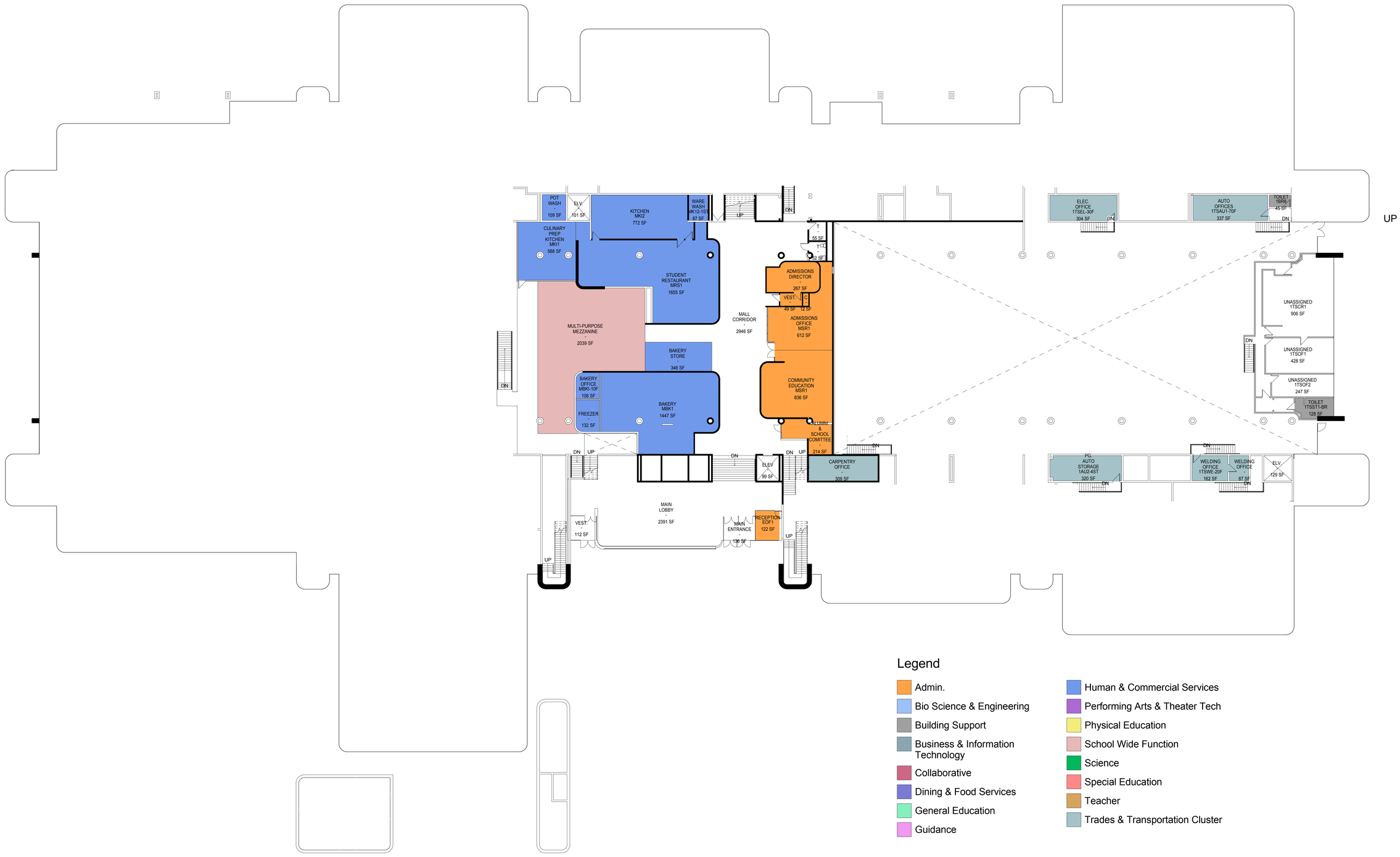


1

LOWER LEVEL PLAN
13001.00
Minuteman Career and Technical High School
Space Use Planning

05/22/13

KAESTLE BOOS associates, inc



Legend

- Admin.
- Bio Science & Engineering
- Building Support
- Business & Information Technology
- Collaborative
- Dining & Food Services
- General Education
- Guidance
- Human & Commercial Services
- Performing Arts & Theater Tech
- Physical Education
- School Wide Function
- Science
- Special Education
- Teacher
- Trades & Transportation Cluster

0' 8' 16' 32'

SCALE: 1/16" = 1'-0"

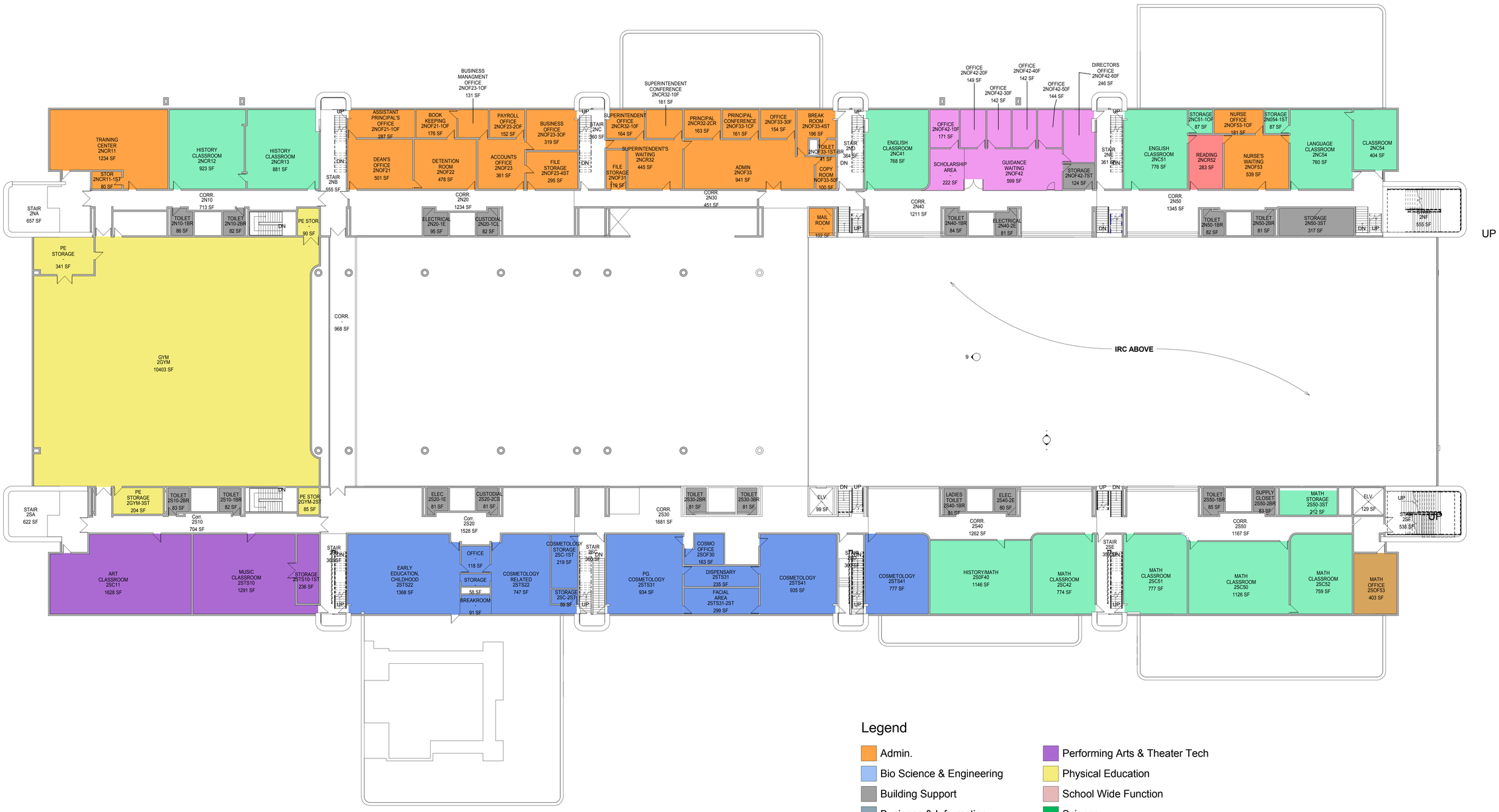
PROJECT TRUE

1.5 MALL LEVEL

13001.00
Minuteman Career and Technical High School
Space Use Planning

05/22/13

KAESTLE BOOS associates, inc



Legend

- Admin.
- Bio Science & Engineering
- Building Support
- Business & Information Technology
- Collaborative
- Dining & Food Services
- General Education
- Guidance
- Human & Commercial Services
- Performing Arts & Theater Tech
- Physical Education
- School Wide Function
- Science
- Special Education
- Teacher
- Trades & Transportation Cluster

0' 8' 16' 32'

SCALE: 1/16" = 1'-0"

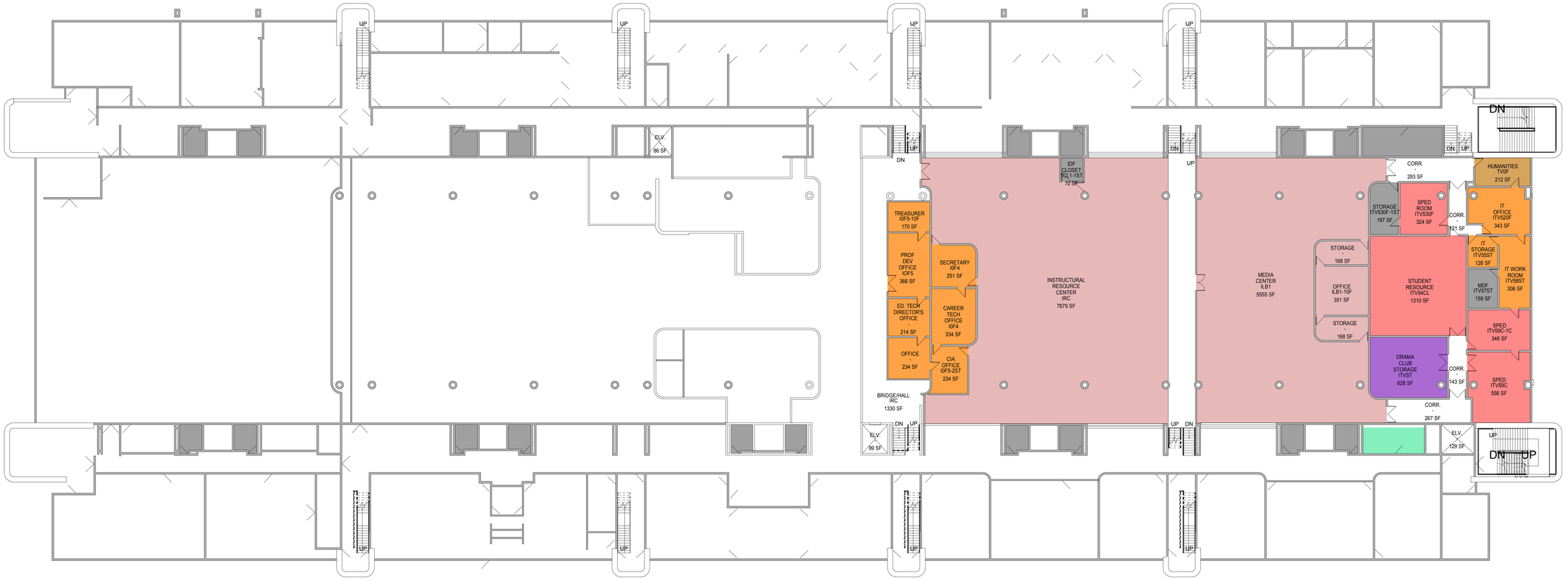
PROJECT TRUE

2

2ND LEVELS
13001.00
Minuteman Career and Technical High School
Space Use Planning

05/22/13

KAESTLE BOOS associates, inc



1 EXIST. IRC
1/16" = 1'-0"

Legend

- Admin.
- Bio Science & Engineering
- Building Support
- Business & Information Technology
- Collaborative
- Dining & Food Services
- General Education
- Guidance
- Human & Commercial Services
- Performing Arts & Theater Tech
- Physical Education
- School Wide Function
- Science
- Special Education
- Teacher
- Trades & Transportation Cluster

0' 8' 16' 32'
SCALE: 1/16" = 1'-0"

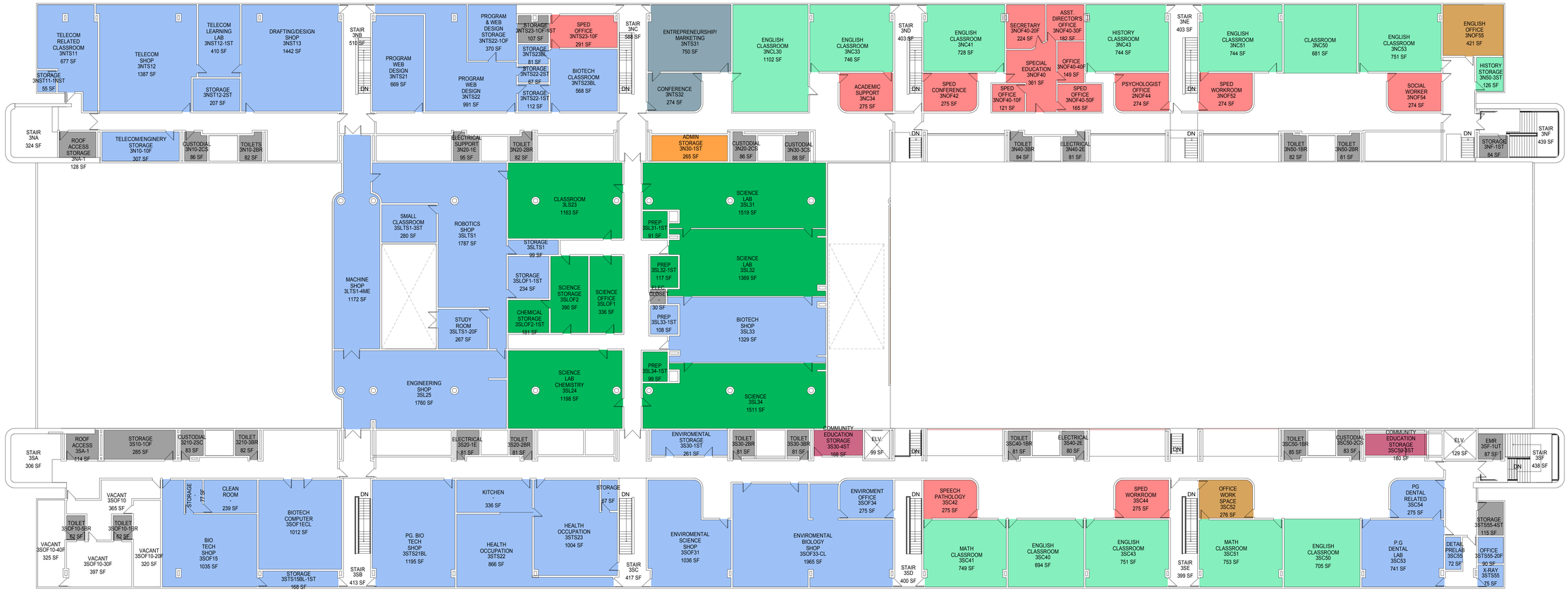
PROJECT TRUE

2.5 IRC LEVEL

13001.00
Minuteman Career and Technical High School
Space Use Planning

05/22/13

KAESTLE BOOS associates, inc



Legend

- Admin.
- Bio Science & Engineering
- Building Support
- Business & Information Technology
- Collaborative
- Dining & Food Services
- General Education
- Guidance
- Human & Commercial Services
- Performing Arts & Theater Tech
- Physical Education
- School Wide Function
- Science
- Special Education
- Teacher
- Trades & Transportation Cluster

0' 8' 16' 32'

SCALE: 1/16" = 1'-0"

PROJECT TRUE

3

3RD LEVEL PLAN
13001.00
Minuteman Career and Technical High School
Space Use Planning

05/22/13

KAESTLE BOOS associates, inc

Minuteman Regional Vocational Technical School
Lexington, Massachusetts

Evaluation of Existing Conditions

a. Executive Summary
b. Building Code Compliance
c. Landscape – Civil Engineering Analysis
d. Architectural Analysis
e. Food Service Analysis
1. Main Kitchen
2. Culinary Arts and Bakery
3. Teaching Kitchen
f. Structural Analysis
1. Building Analysis
2. Seismic Analysis
g. Mechanical Systems Analysis (HVAC, Electrical, Technology)
h. Existing Condition Plans (Fire Protection, Plumbing)
i. Site Environmental Analysis
j. Hazardous Materials Analysis
k. Summary of Recommendations
l. Estimated Cost – Option 1

EXECUTIVE SUMMARY

The following existing conditions reports for Minuteman Regional Vocational Technical School (MMRVTS) provides a detailed analysis of systems related to: Code Compliance (Building and Accessibility), Landscape, Architecture, Food Service, Structural (Building and Seismic), Plumbing, Fire Protection, Mechanical, Electrical, and Technology, Site Environmental, and Hazardous Materials. The purpose of this portion of the study is to evaluate and identify deficiencies of the existing facility as a repair only benchmark for evaluation of other alternatives for renovations, additions, or new construction.

Construction of Minuteman was completed in 1974 and provided approximately 305,000 gross square feet of floor area. The building is rectangular in shape with staggered interior floor levels which allow sunlight to filter from skylights on the roof to lower levels of the building. Large open common spaces, such as the Media Center (called the IRC), gymnasium, cafeteria, and trades hall, occupy the center of the building and are open to the loop corridor serving the perimeter classrooms. Unfortunately, the majority of these perimeter classrooms do not have windows to provide views or natural sunlight; this is also the case for many interior classrooms, such as trades related classrooms and the science labs, which are landlocked and without natural sunlight. Shops are primarily located in the interior of the building and do not provide direct access to the public for interaction and sales. For example, to access the restaurant and bakery one must enter the school and go up a floor level which is difficult considering current security concerns in schools and handicapped accessibility.

As will occur with any school building in continuous use for almost 40 years, several repair and replacement projects have occurred, large and small, in a continuing effort to simply maintain the facility and to adapt to changing educational needs. For example, in 1985 the original built up roof was replaced with a PVC system which was further repaired during the summer of 2008. In 1998, because of the failing condition of the exterior brick veneer, the original brick veneer in the Child Care Area was removed and replaced with an insulated metal panel system to match the metal panel system used on the original building. In 2011, the Trades Hall was completely remediated to comply with building, fire, and life safety codes. Several small projects have occurred in classrooms and administrative areas as educational needs have changed.

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

- Full compliance with handicapped accessibility guidelines, including renovation of existing elevators, replacement of toilet and locker rooms, replacement of building and classroom doors and hardware, providing new room signage, modification of existing casework, access to exterior fields, and replacement of exterior paving and ramps,
- Replacement of paving and sidewalks,
- Replacement of the existing membrane roof and roof penthouses,
- Repair of exterior masonry walls and steel supports,
- Replacement of the metal wall panels on the Third Floor to provide a weatherproof enclosure to provide sunlight and views to interior classrooms,
- Modification of structural framing to meet seismic (earthquake) lateral stability requirements,
- Modification of egress doors, corridors, stair railings and enclosures,
- Replacement of interior floor, wall, and ceiling finishes throughout,
- Installation of a sprinkler system,
- Modification of the recently installed heating and ventilation system,
- A new electrical service including a new fire alarm system,
- Abatement of hazardous lead and asbestos materials,
- Cleaning of drainage structures and detention basins.

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

The code analysis, based on the anticipated cost of repairs and the assessed value of the building, will require that the entire building and site be handicapped accessible and that a sprinkler system be installed. According to the Town of Lexington, the current assessed value of the buildings is $25,000,000 and so the threshold value of the cost triggers for accessibility and fire protection are:

- if the cost of renovations exceeds $7,500,000 (over the current 3 year period), then the entire building and site must be modified to be accessible,
- if the cost of renovations exceeds $8,250,000 (over the current 5 year period), or if the renovation area exceeds 7,500 square feet, then the entire building must be sprinklered.

As the estimated construction cost for repairs exceeds these thresholds (refer to the Option 1 Repair Cost Estimate at the end of the Existing Conditions Evaluation Section), upgrades for both accessibility and fire protection will be required if all recommended repairs are permitted.

The heating and ventilation systems throughout the renovated areas are recommended to be replaced. Aside from the new boiler plant installed in 2009, the majority of HVAC units, such as the air handling units in the roof penthouses, are original to the building and have outlived their useful life. Also, the existing electrical distribution system and plumbing system is original to the building and is beyond its expected useful life. When rooms are renovated to provide accessibility to toilet rooms or to install sprinklers, all associated services and finishes are recommended to be replaced.

While the school building at Minuteman is in Lexington, the site straddles both Towns of Lincoln and Lexington. The property is adjacent to the Minuteman National Historical Park but is not included in the Inventory of Historic and Archaeological Assets of the Commonwealth; Test pits onsite were excavated and analysed by a geotechnical engineer and indicate areas with organic material (peat) below areas of the parking lots. Areas of wetlands exist as well as a vernal pool and a stream which are protected by development setbacks. Copies of deeds showing clear title of the Minuteman Regional Vocational Technical School District as Owner, certification from the Massachusetts Historical Commission, wetlands determinations, and the geotechnical report are included in the Appendix of this section.

An estimated construction cost for repair only is included at the end of the Existing Conditions Evaluation section of the study. The estimated construction cost for repair is $37,783,399 and the project budget value, which includes additional costs for temporary space, design fees, contingency, etc., is $83,676,070.

APPLICABILITY

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

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

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

Chapter 34 *Existing Buildings* in 780 CMR is replaced by reference with the IEBC with Massachusetts Amendments. All buildings in which work is submitted for a Building Permit after February 6, 2011 are required to be reviewed with the 8th Edition of the State Building Code and the 2009 Editions of the IBC and the IEBC. It is assumed that any Building Permits filed for renovation work on the MMRVTS will occur after this date and so conformance with the 8th Edition, and so with the IEBC, will be required. Any new construction must conform with the 8th Edition.

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

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

constructed several decades ago, existing conditions which may be allowed to remain under the requirements of the IEBC may also be in conflict with current life safety standards. Over time since the original construction, life safety standards have been improved in reaction to tragic events. In order to provide life safety conditions in accordance with the most current intent, current IBC and Fire Safety codes and regulations are also used as a basis for judging compliance. All modifications that are required by the IBC but which are discretionary (not necessarily required by the IEBC for this renovation) are listed as a Priority 1B in the recommendations and estimates.

Correcting existing conditions to comply with current Accessibility and Fire Protection requirements is required by the IEBC only when the value of the work exceeds the cost or scope triggers stated in the AAB and the Fire Code. Because this compliance is conditional upon the scope of the renovation work, existing condition upgrades and costs for compliance with these codes are listed as a Priority 1B in the recommendations and estimates.

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

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

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

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

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

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

and MA AAB 12.1 Educational Facilities states:

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

MMRVTS is a public, educational building and is required to be accessible in accordance with 521 CMR.

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

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

As stated in AAB 3.3 (paraphrased):

"3.3 EXISTING BUILDINGS

All additions to, reconstruction, remodeling, and alterations or repairs of existing public buildings or facilities …shall be governed by all applicable subsections in 521 CMR.

3.3.1…,

a. if the work costs less than $100,000, then only the work being performed is required to comply with 521 CMR…,

b. if the work costs $100,000 or more, then the work being performed is required to comply with 521 CMR. In addition, an accessible public entrance and an accessible toilet room, telephone, drinking fountain (if toilets, telephones and drinking fountains are provided) shall also be provided in compliance with 521 CMR…,

3.3.2 If the work performed, including the exempted work, amounts to 30% or more of the full and fair cash value (see 521 CMR 5.00) of the building the entire building is required to comply with 521 CMR. "

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

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

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

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

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

According to the Town of Lexington, the current assessed value of the buildings is $25,000,000 and so the threshold value of the cost triggers for accessibility and fire protection are:

- if the cost of renovations exceeds $7,500,000 (over the current 3 year period), then the entire building and site must be modified to be accessible,
- if the cost of renovations exceeds $8,250,000 (over the current 5 year period), or if the renovation area exceeds 7,500 square feet, then the entire building must be sprinklered.

The cause of the renovation or the source of the funding is not relevant, only the total value of cost for renovations, including demolition. As the renovation cost is presumed to exceed this 30% threshold, the entire site and building must be made to comply with current accessibility codes as part of a renovation of the building.

AGGREGATE TOTAL VALUE OF RECENTLY COMPLETED WORK

Year	Description	Approximate Value
2012	Nurse's Office Renovation	$ 10,000
2011	Replacement of Water Meters/ Backflow Preventers	$ 100,000
2011	Trades Hall Renovation	$ 250,000
2010	Mall Store	$ 10,000
2010	Guidance Office Renovation	$ 10,000
2009	Mechanical Systems Infrastructure/ Boilers	$5,250,000
Total Value of Projects Completed Within the Past 5 Years		$5,630,000
Approximate Value to Cost Trigger for Accessibility Compliance		$2,200,000
Approximate Value to Cost Trigger for Fire Protection		$2,975,000

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

As this study evaluates the existing facility at Minuteman Regional Vocational Technical School, the requirements of the IEBC are used to determine compliance. However, in an effort to evaluate the existing facility for life safety issues, the IBC (780 CMR) will also be used as a reference for specific conditions. In the discussion below, references to specific code sections are noted in each paragraph with parentheses.

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

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

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

***The following discussions regarding Type of Construction, Use Group Classification, and Height and Area Limitations are provided to document the existing facility classification only. These characteristics are not regulated by the IEBC and are not required to be modified to comply with the IBC as a result of renovations.**

(IBC Ch. 6 – Types of Construction)

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

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

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

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

(IBC Ch. 3 – Use and Occupancy)

(IBC 305.1) Primary Use Group: Group E - Educational
(IBC 305.1) Mixed Use Areas: Group A-3 Assembly (Library, Lecture Hall, Cafeteria)
Group A-4 Assembly with seating (Pool, Gym)
Group S-1 Storage (Mechanical Spaces, Motor Vehicles)

(IBC Ch. 5 – General Building Limitations)

Height and area limitations for the existing building are presented below with the assumption that a fire protection (sprinkler) system will be extended throughout the facility. These allowable floor area calculations take advantage of the height and area increases permitted with a fire protection system and also incorporate area increases allowed for additional street frontage.

(Table 503) Based on the presumption that any renovation or new construction for this building will include a sprinkler system, the allowable height may be increased by one story and the allowable area may be increased by 200% . Additionally, as the building perimeter is accessible for fire and rescue vehicles from the road or parking areas on all sides of the building, the maximum allowable area may be increased by 75%. This, combined with the allowable area increase for a sprinkler system will allow an increase in area of 275% above the limitations stated in Table 503. This total area is shown in the last column of the table below.

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

USE GROUP	Total Allowable Height with Additional Increase for Sprinkler System	Allowable Area **per Story** Plus Increase for Sprinkler System and Accessible Perimeter			
		Allowable Area (Table 503)	Sprinkler System Area Increase (+200%)	Accessible Perimeter +75%	Total Allowable Area per Floor with Allowable Increases
A-3	3Stories	9,500 s.f.	+ 19,000 s.f.	+ 7,175 s.f.	+35,625 s.f.
A-4	3Stories	9,500 s.f.	+ 19,000 s.f.	+ 7,175 s.f.	+35,625 s.f.
E	3 Stories	14,500 s.f.	+ 29,000 s.f.	+ 10,875 s.f.	+54,375 s.f.
S-1	3Stories	17,500 s.f.	+ 35,000 s.f.	+ 13,175 s.f.	+65,625 s.f.

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

(Table 508.4) In Table 508.4, Assembly and Educational use groups are not required to be separated by fire rated construction, however, Use Group S-1 is required to be separated from Use Groups A and E with 1 hour fire rated construction if the building is sprinklered and with 2 hour fire rated construction if the building is not sprinklered.

(IBC 508.2.4) However, small rooms used for storage may be considered to be accessory to the primary Use Group provided the aggregate area of the storage rooms is less than 10% of each floor area and less than 10% of the area allowed by Table 503. The storage rooms in this building do not appear to exceed 10% of the actual existing building area (12,900 square feet on Floor 1, 7,422 square feet on Floor 2, and 8,113 square feet on Floor 3) or 10% of the allowable area for the Storage use in Table 503 (6,563 square feet). As it is assumed that the building will be, Storage use areas do not require separation with fire rated walls.

(IBC Table 508.2.5) Vocational shops located in Use Group E are required to be separated by 1 hour fire rated construction ***unless*** the building is protected by a fire protection system. As it is assumed that the building will be protected by a fire suppression system, separation of the vocational area of the building is not estimated in the prioritized list of recommendations.

EXISTING FACILITY FLOOR AREAS AND HEIGHT

FLOOR	ACTUAL FLOOR AREA
1	129,000 square feet
1.5	17,858 square feet
2	74,220 square feet
2.5	28,025 square feet
3	81,130 square feet
TOTAL AREA	305,808 square feet
ACTUAL HEIGHT	3 Stories

Even using the least restrictive Use Group S-1 as a basis for calculation, the existing building still exceeds the allowable floor area limitations by approximately 65,000 square feet on Floor 1. Although most of the building was constructed of non-combustible materials, there are no existing fire walls that make it

possible to separate the building into smaller fire areas which might allow the building to comply with the area limitations. Again, height and area are not required for compliance with renovations to existing buildings according to the IEBC. However, this may become an issue if any additions are proposed in the future.

(IEBC 102.2.2.1 & IBC Chapter 10 - Means of Egress)

Occupancy in the existing facility is determined by actual student population and staff projections provided by MMRVTS. Student population is projected to be 800 students[1] as the worst case (maximum) and total staff population is projected to be 120 persons (88 teaching, 14 Administration, and 18 Food Service and Maintenance staff) for a total occupancy load of 920 persons.

The egress capacity (0.2"/per occupant) for a typical 48-inch wide stairway is approximately 240 occupants. The egress capacity (0.15"/per occupant for sprinklered buildings) for a typical single 36-inch wide egress doorway is approximately 220 occupants. There are 12 egress stairs evenly dispersed throughout the building which can provide a minimum egress capacity of 2,200 persons. Therefore, the existing egress elements are sufficient to provide egress within the building from any location.

IEBC 102.2.2.1 is an amendment by the State of Massachusetts and is supersedes other less restrictive paragraphs in the IEBC. This amendment requires that all existing stairs comply with current requirements of the IBC with regard to the quantity of exit ways on each floor, the width of all exit ways, fire rating, handrails, continuity, etc., to "provide safe and adequate means of egress". Existing egress stairs in the building are not enclosed in required fire rated construction, do not have risers and treads of required dimensions, do not have railings and guards with required height and spacing, do not have required rail extensions, and do not have fire rated doors which comply. All stair conditions must be corrected in accordance with current egress requirements. Skylights currently extend over eight stairs and should be removed with any roof renovations. The skylights are open above the stair walls and do not provide a fire rated enclosure; the stair is essentially open through the skylight to adjacent storage rooms creating a hazardous condition. These eight skylight locations should be in filled with new non-combustible roof construction and the stair enclosure walls fire stopped to the underside of the metal roof deck.

(IEBC 703.2.1 Existing Vertical Openings)

All existing vertical openings connecting 2 or more floors must have an enclosure with a fireresistive rating of 1 hour minimum.

- Exception 6 under this requirement allows vertical openings up to 4 stories in Educational uses which have a fire protection system. If sprinklers are not provided, a renovation will require closing the existing openings between corridors and adjacent assembly spaces, such as the IRC, Mall, and Gym with 1 hour fire rated construction. However, these openings allow day lighting and visibility between floor levels and are part of the character and design intent of the building. These openings could be protected with fire-rated glazing systems (Fire lite) or fire shutters, but this would be very expensive. As this study assumes that a fire protection system will be provided, the cost for installation of fire rated separation walls to enclose vertical openings is not included in the prioritized recommendations spreadsheet.

[1] Student population refers to MSBA projected certified enrollment as approved by the School Committee

(IEBC 703.5.1 Existing Guards)

Existing guards not in compliance with current IBC must be modified or replaced.

Guards at corridor balcony rails are not 42 inches in height and exceed the maximum opening size requirement (for a 4 inch diameter ball). Also, the existing guards in the stairwells are two- pipe rails and are not 42 inches in height and exceed the maximum opening requirement. These guards must be modified or replaced to provide protection to the required height and must comply with the maximum opening requirement. One possible solution is to provide wire mesh panels on the open side of the rails welded to the existing rails. The existing handrails do comply and may remain.

(IBC Table 1016.1 Exit Access Travel Distance)

Occupancy	Without Sprinkler System (feet)	With Sprinkler System (feet)
E	200	250

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

- The existing egress component capacities and the length of exit access travel to the entrance of an exit meet all requirements of the current IBC. The existing school has 12 stair towers which are evenly spaced on the egress path approximately 100 feet apart between each classroom module. This provides egress capacity which far exceeds the current IBC requirements.

(IEBC 705.4 - Means of Egress)

Rooms with an occupancy load of more than 50 persons or with a travel distance of more than 75' to an exit must have 2 separate means of egress.

IBC Table 1015.1 and IEBC 705.4.1.1 require 2 means of egress from Assembly occupancies when the occupant load exceeds 50 persons. When the occupant load exceeds 500 persons, the IBC requires 3 means of egress. The minimum distance between 2 means of egress from a room is required to be 1/3 of the diagonal room dimension if the building is sprinklered. Also, all exit doors must have compliant exit (push bar) door hardware.

Minimum Number of Exits (780 CMR §1015.1)

Area	Occupant Load	Required Number of Exist	Number of Exits Provided
Classrooms	< 50	1	1
Laboratory Classrooms	<50	1	1
Offices	< 50	1	1
Boys and Girls Locker Rooms	<50	1	2
Exercise Rooms	<50	1	2
Kitchens	< 50	1	1

Storage and Mechanical Rooms	< 50	1	1
Assembly IRC	≥50 < 500	2	5
Assembly IRC / Library	≥50 < 500	2	5
Assembly - Gymnasium	≥50 < 500	2	4
Assembly – Cafeteria Lower Seating Area	≥50 < 500	2	4
Assembly - Pool	≥50 < 500	2	4

(248 CMR 2.10 Plumbing Code: Fixtures) Based on the current occupancy of 800 students and 120 staff persons, the plumbing code requires a total of 14 water closets/5 sinks for female students and 5 water closets/5 sinks for male students in this building.

Use Group	**Rate for**	**Occupants**	**Fixtures Required**
E (Education)	Student Male: 1 / 90 Student Female: 1 / 30	800 students (400 Male/400 Female)	Student Male: 5 Fixtures Student Female: 14 Fixtures
	Staff Male: 1 / 25 Staff Female: 1 / 20	120 Staff (60 Male/60 Female)	Staff Male: 3 Fixtures Staff Female: 3 Fixtures
A (Assembly: Pool)	Public Male: 1 / 60 Public Female: 1 / 30	200 spectators (100 Male/100 Female)	Public Male: 2 Fixtures Public Female: 3 Fixtures
A (Assembly: Gym)	Public Male: 1 / 60 Public Female: 1 / 30	850 spectators (posted) (425 Male/425 Female)	Public Male: 8 Fixtures Public Female: 15 Fixtures
A (Assembly: Cafeteria)	Public Male: 1 / 60 Public Female: 1 / 30	500 seats (posted) (250 Male/250 Female)	Public Male: 5 Fixtures Public Female: 9 Fixtures

In the existing facility, there are a total of 42 toilet fixtures (including 26 urinals) for male students and a total of 22 toilet fixtures for female students. Also, there are 8 fixtures for staff and 4 fixtures for public use. Although the existing toilet fixture count exceeds the requirement above for the student and staff populations, none of the student or staff toilets comply with accessibility regulations and only 2 single fixture public toilet rooms on the Mall level are accessible. Modification of these toilet rooms will result in significant loss of toilet fixtures; however, this will probably not decrease the total fixture count below the required quantities. Of more concern is the spacing of the toilet rooms in a large school. The plumbing code requires that facilities be provided within 200 feet and a maximum of 1 floor above or below any occupied space in the building, especially for public assembly spaces like the gym or pool. Vocational schools typically do not have student populations which are evenly divided between male and female students as is required by the Plumbing Code for calculation of fixtures. Fixtures for the male student population in excess of this requirement must be provided as additional fixtures to this

calculation. At MMRVTS, a 60% male student population results in 480 male students and requires a total of 6 fixtures, or one additional fixture to the 5 fixtures required by the Plumbing Code.

For public assembly spaces, the Plumbing Code requires 1 plumbing fixture for 30 female occupants and 1 plumbing fixture for each 90 male occupants. As these spaces are not in use concurrently by the public (during the school day), the toilet fixtures for school use may be used to fulfill this requirement. The closest toilet fixtures are in the locker rooms on Floor 1 adjacent to the Pool, however, the District may not desire for the public to access the student locker rooms to use the toilet facilities. In this case, additional fixtures will need to be provided for this population and access to larger toilet rooms on Floor 1 near the main entrance is recommended.

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

ACCESSIBILITY CODE COMPLIANCE ANALYSIS (521 CMR AAB)

(AAB 3.3.1.b)
Previous renovations exceeding $100,000 for the Trades Hall required that an entrance, water fountain, and toilet room be accessible. Compliance was completed in August 2011.

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

- At least 5%, with a minimum of one of each type of element, in each classroom or laboratory must comply with the following:
  a. Countertops and sinks must comply with 521 CMR §12.2.2.b, §12.2.2.c, and §12.2.2.d.
  b. Accessible storage – at least 50 % of shelf space in cabinet must comply with 521 CMR §6.5 and 521 CMR §6.6 and space must be allowed for the operation of the cabinet doors, so that all cabinets are accessible and usable.
  c. Controls and operating mechanisms must comply with 521 CMR Chapter 39.

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

(AAB 14.4.1) Without fixed seating, distribution of accessible seats may be provided in any location in the room.

(AAB 14.4.3) Without fixed seating, one companion seat may be provided next to each wheelchair seating location as needed.

(AAB 14.5.1) A permanently installed assistive listening system must be provided for all assembly occupancies of more than 50 persons. The minimum number of receivers that needs to be provided must

be equal to 4% of the total number of seats, but no less than two receivers. These systems must be provided in the Library, IRC, Cafeteria, Pool, and Gymnasium.

(AAB Chapter 19 – Recreational Facilities)
(AAB 19.4) Locker rooms must have a 36 inch wide accessible route around all lockers.

- Currently, locker rooms do not comply and must be modified.

(AAB 19.4.1) At least 5% of the lockers, but not less than one, must be accessible and must have locking/opening devices that are operable with a closed fist and mounted no higher than 42 inches from the finished floor.

- Currently, locker rooms do not comply.

(AAB 19.4.2) Where benches are provided there must be a 36 inch wide aisle between benches and lockers and a five foot turning radius near the accessible lockers. Accessible lockers must be identified with a placard displaying the international accessibility symbol

- Currently, locker rooms do not comply.

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

- Clearance for accessible routes is 36" minimum. This is not provided at some classrooms between existing casework and door entrances. Casework should be modified to provide the required accessible route clearance.

(AAB 20.6.1) Objects projecting from walls with their leading edges between 27 inches and 80 inches above the finished floor must not protrude more than 4 inches into walks, halls, corridors, passageways or aisle and must not have sharp edges. Underside of stairs on the first floor does not comply and installation of a guard rail or wall is required.

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

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

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

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

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

(AAB 24.00 - Ramps)
Ramps used to access the Pool deck from the viewing area and egress corridor do not have handrails as required.

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

- All public entrances comply.

(AAB 26.00 – Doors and Doorways)
(AAB 26.1.2)
Illuminated signage identifying accessibility by the use of the international symbol contained within the "exit" sign must be provided at all egress doors in assembly and educational occupancies with an occupancy load of over 150 people. Provide this signage for exits from the Pool, Gym, Cafeteria, and IRC / Library.

(AAB 26.6 – Maneuvering Clearances)
Most of the doors throughout the building provide required pull and push clearances for accessible doors. Where not provided, automatic door operators may be provided to defer modification to the building elements. At toilet rooms, most doors do not provide the opening clearances and must be modified. This will require removal of lockers and reconstruction of the wall beside the door to provide access.

(AAB 26.11 - Door Hardware)
Existing hardware throughout building is not compliant and must be replaced with lever-type hardware.

(AAB 26.1.2 - Exterior Exit Doors)
Assembly areas within the building all exceed the minimum occupancy of 150 persons and must provide an unobstructed accessible route to the exterior. All exterior steps at doors must be provided with ramps for egress.

(AAB 27.00 – Stairs)
(AAB 27.4 – Railings)
All stair railings need to be modified to comply with guardrail requirements. Handrails are 36-inches high and not 42-inches high as required and do not have guards. The wall mounted handrails do not have extensions at the top and bottom.

(AAB 28.00 – Elevator)
(AAB 28.3) 1 passenger and 2 freight elevators are provided. All elevators must be modified to provide compliant signaling devices and call stations.

(AAB 28.7) The passenger elevator cab complies under the exception for existing buildings as the cab exceeds 48" x 48".

(AAB 28.8) All elevators must be modified to provide compliant car control devices and braille signage.

(AAB 30.00 – Public Toilet Rooms)
Existing toilet rooms do not comply with accessibility requirements and should be modified. Total fixture count for these toilet rooms should comply with the requirements of the Plumbing Code and be distributed to serve the Assembly occupancy in the building.

(AAB 30.1)
A minimum of one toilet and sink in each toilet room shall be accessible. Toilet partitions in all toilet rooms are not compliant and no student toilets are currently compliant. Plumbing fixtures do not comply in mounting height or location. Maneuvering clearances are not compliant. Modifications to existing toilet facilities to provide compliant access to fixtures will require deletion of existing fixtures and reduction in overall fixture count. Because of the existing dimensions of the toilet rooms, toilet partitions cannot be installed for privacy and comply with turning radius requirements. As a result, if the existing toilet rooms are modified for reuse, only single fixture rooms without privacy partitions can be provided. This type of room requires that the door be lockable from the inside of the room which is not typically used in student toilet rooms in school facilities.

- Expanding the existing toilet rooms or constructing new toilet rooms in adjacent janitor closets and storage rooms is recommended to create compliant toilet rooms. These may be located along each main corridor at each end of the building.
- In addition, the toilet rooms on the first floor adjacent to the Cafeteria must be enlarged and modified to provide compliant toilets servicing the assembly space.
- Student toilets noted to serve the newly renovated Nurse's space must be renovated to provide single use fixtures. Fixtures in the previous Nurse's location should be demolished. If not demolished, these must be renovated to be accessible.
- Although not currently required by AAB, staff toilets will be regulated under the revised AAB to be published in the near future. It is recommended that existing toilet rooms not used for student toilets be reconstructed to provide single fixture toilet rooms with lockable doors for staff use.
- Public toilet rooms provide in the Automotive shop must be reconstructed to provide compliant clearance and turning radius.

(AAB 31.00 – Public Bathing Rooms)
(AAB 31.7)
Shower stalls in the Locker Rooms do not provide compliant clearances or access and must be modified to provide at least one compliant shower in each room.

(AAB 32.00 - Kitchens)
(AAB 32.1) Commercial kitchens are not regulated by the AAB.

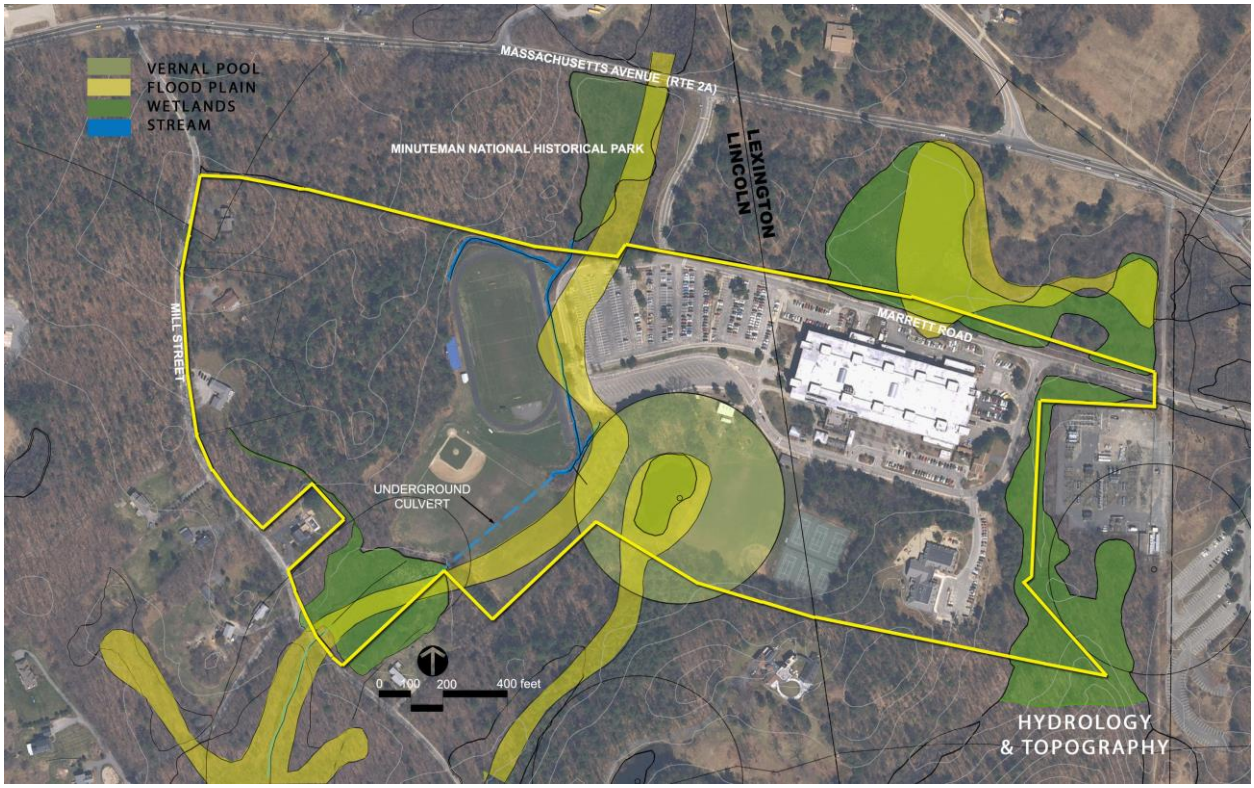
(AAB 36.00 – Drinking Fountains)
(AAB 36.1.1)

Drinking fountains are provided within the building but are not accessible. These must be replaced with new fixtures with 2 level spouts.

(AAB 41.00 – Signage)

(AAB 41.00)

Room signage with braille must be provided at all 'permanent rooms and spaces' as well as code required egress signage. Directional signage, where provided, shall be compliant. Symbols of Accessibility are missing throughout building. Where exit signs indicate an accessible route, if all routes are not accessible, these signs shall include the symbol of accessibility.



Minuteman Regional Vocational Technical School – Hydrology & Topography

SITE

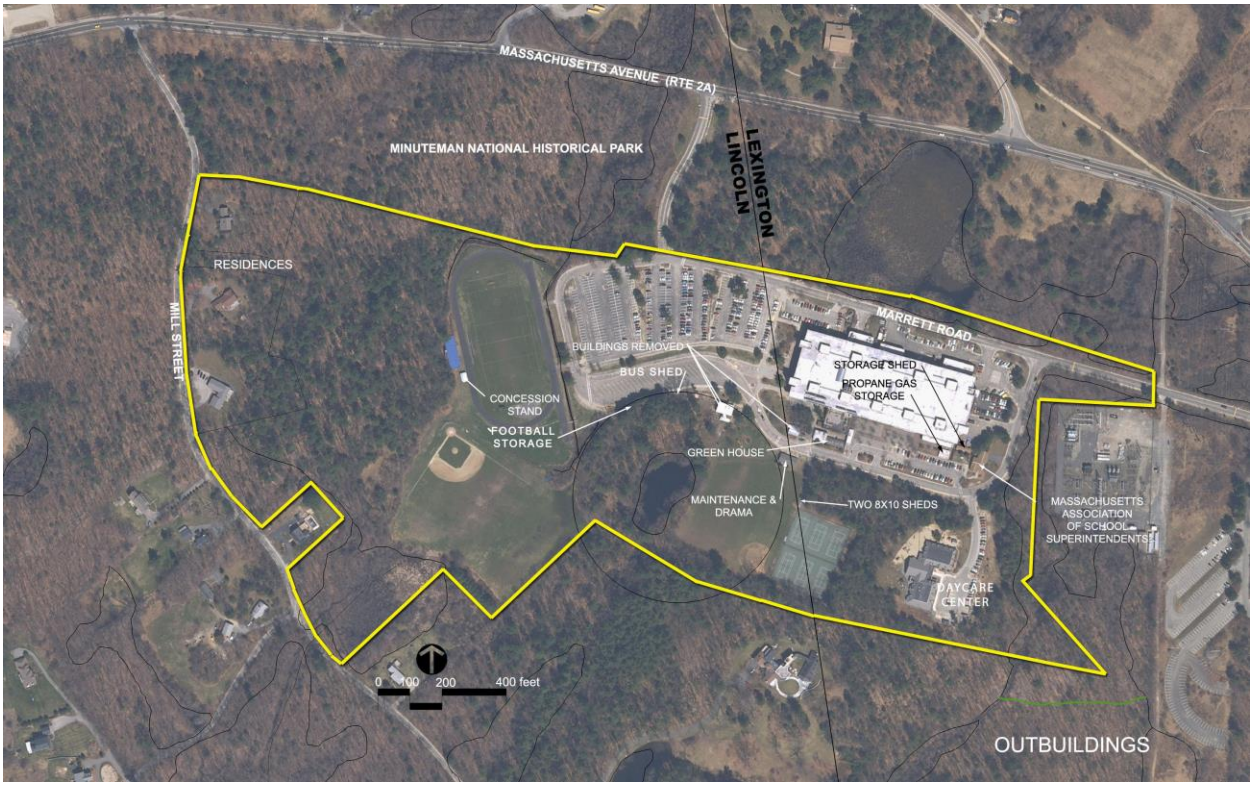
SURROUNDINGS

The 66 acres Minuteman Regional Vocational Technical School site is located on the Lexington - Lincoln town line, just west of the Route 128 artery. The school building is located in Lexington on 13.4 acres while the fields and parking lots are in Lincoln on approximately 44.5 acres. The property is generally rectangular shaped, with the east-west axis being the long dimension. The property is mostly surrounded by woodlands and wetlands. Minuteman National Historic Park borders the school site on the north. South and west of the property are residential properties. East of the property is an electric company depot and the Cranberry Hill office park. Electrical transmission lines and easement, running in a north – south direction, are also located to the east of the site.

Wetlands are described in the Site Development Requirements of this report due to their influence on development of the site.

SITE STRUCTURES

The Main High School building is a three story, 305,000 sf building covering approximately 125,000 sf. The main entrance faces south, away from the main entrance roads, and opens up onto a brick and concrete plaza. Multiple entrances for automotive repair, service and deliveries and egress provide access to all sides of the building. In addition to the main school building, the District utilizes multiple outbuildings on the site. Southwest of the main school building is a wood-framed structure (26’ x 52’) that houses the grounds maintenance equipment and storage for the Arts Department. Adjacent to the tennis courts, two



8'x10' sheds stand, both in relatively new condition. A small wood framed shed in located south of the bus stacking area. This shed (8'x10') is used by the bus Operations Company for storing traffic cones and other equipment used during bus driver training in the adjacent parking lot. Just west of this shed is a metal storage box (40' x 8') with a wood framed gable roof over it, extending out an additional 6' to the south to provide a sheltered area. Both the sheltered area and storage box are used for storage of football equipment. Roof structure is in poor condition with rotting fascia boards. A wood framed concession stand (24' x 12') is located at the west of the track, south of the bleachers. This building has service counters on east side of building and an overhead door on the south side. The fascia boards and the roof are in need of repair. A chemical storage building is located on the north side of the school building and is used by the automotive body shop class. Another masonry chemical/gas storage building in located at the southeast side of the school building, just west of the Massachusetts Association of School Superintendents Office. This structure houses welding gas tanks (oxygen/acetylene) and other tanks and containers used by the school programs.

SHARED ON-SITE USES

Located on the school property but not related directly to the school functions are several residences and a daycare facility. The day care facility, partially constructed by the faculty and students of the Minuteman Regional Vocational Technical School and run by MIT / Lincoln Labs, is south of the main school building. Three residences on the west side of the property are maintained by the school and are now rental properties benefiting the school. The Massachusetts Association of School Superintendents also occupies a residential type building on site, at the southeast corner of the high school. Vehicular access for the day care facility and the Massachusetts Association of School Superintendents office is via school access roads. Residential structures are accessed via Mill Street with no direct access to the School.

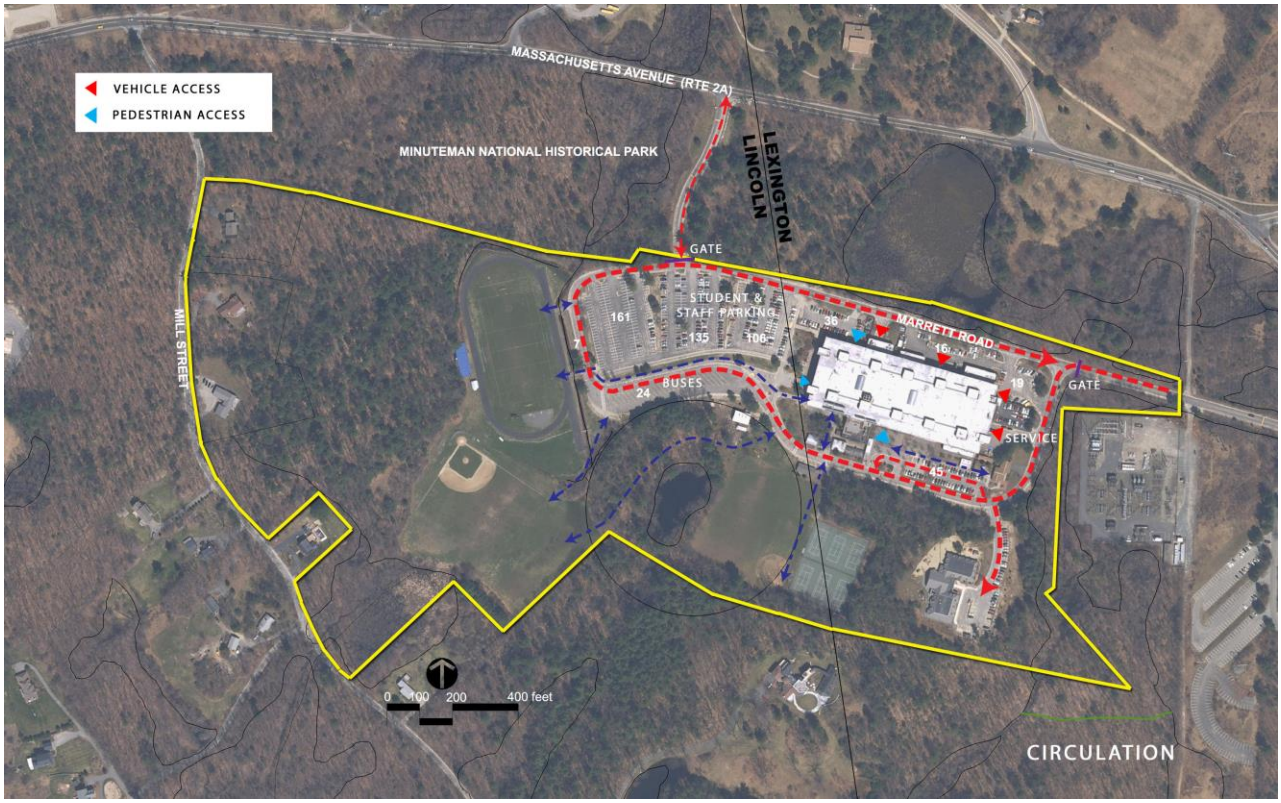
VEHICULAR ACCESS

The school's primary access is from a signalized intersection on Rte. 2A, from the east. The entrance drive is approximately a quarter of a mile long and has several speed bumps installed to keep speeds down on this relatively straight road. The roadway also serves as the access to the office park and the electric company. A metal swing gate is located at the west end of this drive that, if closed, would prohibit access to the school without hindering access to the electric company or the office park. A secondary access to Rte 2A is located north of the main parking area for the school, west of the main building. This access road passes through the National Park property. The access points are closed at 11:00 PM and opened in the morning. One final access point is from a dirt path, connecting the western most field to Mill Street, and exits across from Oakdale Lane. The access road feed the ring road around the school and the parking lots. This ring road provides adequate fire access to all points around the school. Most of the paved roadways are old with the exception of the conference center parking lot. Numerous repairs and patches are apparent. Most paved parking areas and drives are relatively flat and don't appear to be extremely well drained. Road way and parking lot paving is in fair to poor condition. Pavement is crumbling around catch basins and drainage manholes. The paved area outside of the cafeteria is used for outdoor dining by students and is used for limited deliver truck access. This area is lower than adjacent site and according to District Staff is drained via pumps. According to staff, extensive maintenance and operation has been required to keep this pump system operational.

The High School is well served by access drives. The ring road (29'-30' wide) provides access to the building, parking lots and staging areas for the different delivery and shop areas. Parking for staff is located on the north, east and south sides of the building, within the loop road. Service areas on the north and east side of the building are separated from the loop road and adjacent uses by privacy fences or planted hedges. Student parking and parking for sports events are located within the loop road, west of the building. South of the student parking is a large paved area for bus staging in the afternoon as well as bus driver training. Due to the large number of towns the school serves, a total of 32 buses (21 large and nine (9) mini-buses) service the school. In addition, there are numerous vans and cars that transport smaller populations of students to and from outlying towns. These smaller vehicles pickup students at the visitor parking lot loop on the southeast side of the school. Buses transport approximately 450 of the students. Parking is spread around the building but the majority of the spaces are on the west side. The parking table below shows the locations of parking stalls and the disposition of HC parking around the site.

West Staff lot	Northwest staff lot	West Student lot	Front Entrance	Fenced Staff(East)	Automotive (Northeast)	Bus Stacking	Track parking	Total
115	37 (6HC)	300	50(6HC)	23	49	24	8 HC	606 (20HC)

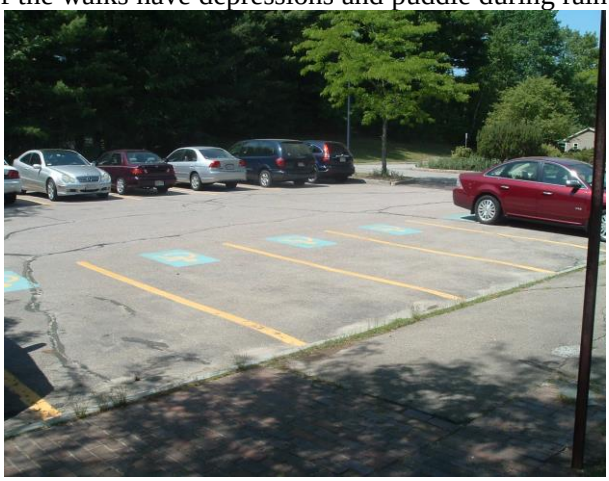
While the parking around the building was utilized, with few spaces empty, the western most lot of the student parking is used infrequently during school operation, but is utilized during field sporting events. The main entrance to the building, which faces south, has adjacent visitor parking. There is a liberal use of brick in the plaza areas and the roadway as well as granite curbing, helping distinguish the area as the main entrance to the school. ADA designated spaces do not meet state codes due to lack of curb cuts, no designated striped loading areas and/or lack of signage. ADA-designated spaces are dispersed around the building and the site, with 8 being located adjacent to the stream, opposite the track. Signage for the site is fair, correctly directing visitors to the different activity areas of the site, though there was no signage to direct visitors to the day care center. Even with site signage, the building's main entrance is not a prominent feature on the site and can be difficult to find.



PEDESTRIAN ACCESS & HANDICAPPED ACCESSIBILITY

Most of the paved surfaces for pedestrian use are asphalt, behind granite curbs. Walks extend around the south and west side of the building. There are walks on the northwest side of the building in the vicinity of the conference center provide access to the parking lots to the west. There are no walks on the east or northeast side of the school nor is there any walk out to Marrett Road or to Route 2A. Most of the walks are in need of replacement, as they have cracked and been sealed repeatedly and are extremely uneven and therefore pose problems as accessible paths. Several of the walks have depressions and puddle during rain

HC parking northwest side of building



HC parking, Main Entrance

events or have settled at back of the curb creating tripping hazards. At the main entrance, stripes of stairs are uneven. A single ramp provides access to the main entrance. There is a brick plaza outside the pool portion of the school with seating and drainage. New picnic tables, benches and trash cans have been placed in this plaza. Drainage basins in this plaza are completely filled with sediment. Due to the sites being mostly level, there are few slope issues that would impede ADA access though it is directly due to poor drainage that has caused much of the heaving and settling of pavements. Most of the door sills for the building are accessible. Curb cuts from street to sidewalk that would allow ADA access from the school to the athletic field are lacking along those existing sidewalk paths that are separated by curbs from the adjacent roadways. Accessible paths and viewing areas are lacking to all of the athletic fields, tennis courts and a track viewing area. Some improvements to the number of ADA provided parking spaces have been completed, but most are non-compliant, since many lack striped loading areas or even access to adjacent sidewalks. The ADA parking spaces for the football field are parallel parking spaces that have no adjacent sidewalk or any loading areas. A major portion of the pedestrian site work would be dedicated to insuring access to the entire site.

OUTDOOR ATHLETIC FACILITIES

The outdoor athletic facilities are located to the south and west of the school. Due to the flatness of the school site and the extensive wetland systems on and around the site, numerous athletic facilities are inundated with water during the spring and other wet times during the year, rendering the fields and courts unusable.

Remediation of drainage/water problems for fields and courts would likely required reconstruction and addition of free draining sub-base material or fill in addition to an under drain system to ensure spring through fall use.

South of the school are six tennis courts (constructed in 1975), a soccer field that plays at 327’ x 194’ and a softball field whose outfield plays over the soccer field. According to District staff, these facilities flood during high water periods. The tennis courts have been seal coated and repainted but large cracks are still visible and make play difficult. Grades to the south and southeast contribute to water flooding the tennis courts. The chain link fence around these courts has been repainted silver but rust is starting to show through the paint in places. Work was done to repair the chain link fence structure though some of the tensioning bars, ties, and other supports are still broken or missing. There is an electrical outlet and a water fountain on the west fence line of the tennis courts. The metal structure of the backstop for the softball field is in fair condition and has also been repainted. The fabric is bent and in need of replacement. West of the soccer field is a wooded area that contains an abandoned rope course.

West of the school are two athletic fields, separated by a drainage swale. The northern field is a turf field, surrounded by an asphalt track. The field is separated from the student parking area by a stream and is accessed from the parking by a small wooden bridge (6’ wide) or a culverted walk. This field is used for football and is 226’ wide from inside edge of track to inside edge. There does not appear to be any type of drainage, either surface or subsurface, for the field. The track is lacking striping of any kind for events and appears that the synthetic surface has worn off. Inside the track, a flagpole, scoreboard, field goals and a paved long jump are located in the D zones. West of the track is the concession stand. The bleachers have been removed as well as the press box as of the last update of this report. The field is lighted, but in a limited manner, with small flood lights that would not be adequate for safely lighting the field for a game.

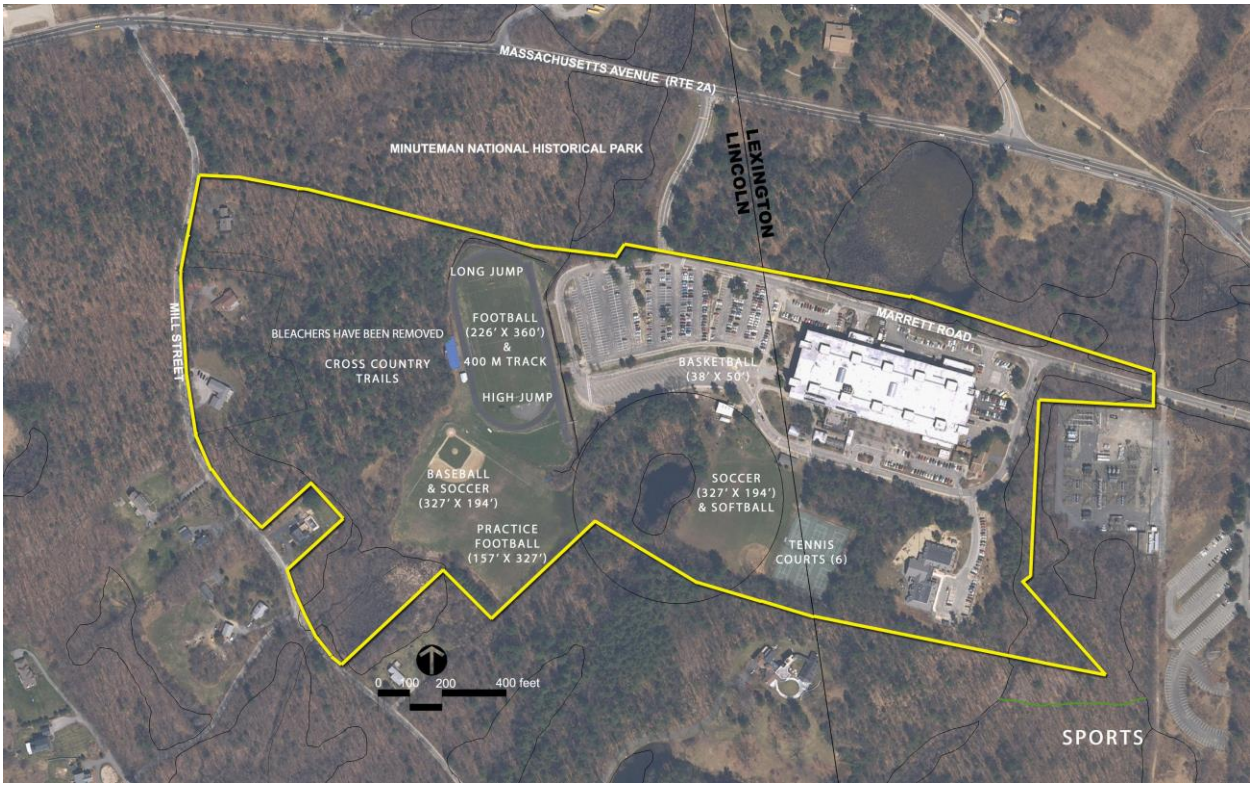
South of the track and football field, a large turf field is used for soccer, baseball and practice football. The football and soccer fields were striped at 157’ x 327’ and 194’ x 327’ respectively. The baseball field

infield is turf and infield mix, though the base lanes are overgrown with weeds. According to District Staff, baseball field is not used in spring very often due to overly wet field conditions caused by poor drainage and groundwater conditions. Two chain link fences, separated by 2' to 3', constitute the backstop. The newer one was constructed in front of a chain link fence that is in poor condition. There are team seating benches alongside both the first base and third base lines. Benches consist of multiple styles of bench and the seating area on the third base line is separated from the field by a swale. The overall field is bisected northeast to southwest by a 36" underground drainage culvert, which is buried just below the surface. The delineation between the soccer and football fields follows the line of the culvert and consists of a grade change of approximately three feet. While the soccer field is relatively smooth, grades in sections of the football field undulate unevenly. These fields are connected to the school by a foot path running through the wooded area and emptying out by the soccer field south of the school. There is evidence that portions of this path are submerged under water during the year. These fields have no lighting.

None of the athletic fields have any under drainage or irrigation. A maintenance program for the fields includes aeration and fertilization.

A series of paths through wooded areas make up a cross country trail.

The complete program for the outdoor athletic activities includes Boy's Lacrosse, Football (Freshman, JV and Varsity), Boys and Girls soccer, Girls softball, Boys baseball & Basketball, Boys Golf (off campus), Boys and Girls Tennis (now off campus) and Boys and Girls Cross country.



LANDSCAPE & SITE AMENITIES

Vegetation around the site is in relatively good health and of a diverse nature. The front entrance of the school is planted with honey locust trees, in planters, all of which appear in good condition. Most of these trees have up lighting. Condition of up lighting was not assessed, but some fixtures appear to have been damaged and abandoned. Two flagpoles are located east of the Main entrance. The outer islands at the main entrance, separating the parking from the loop road, have been planted with shrubs, perennials and annuals and are well maintained. Lighting around the site is adequate, though several of the light poles have been bent and need to be straightened.
West of the school is a brick plaza, which is bordered with mature white pines and a variety of evergreen and deciduous shrubs. These planted areas are designated by landscape timbers. Benches and picnic tables and a small basketball court (38' x 50') constitute the outdoor eating area for the students. Southwest of the school, north of the soccer field, a variety of plants have been recently planted, in an arboretum style. They are planted around the several outbuildings located in this vicinity. Around the rest of the site, mature trees and hedges can be found in landscape islands, mostly used as a separating element between the loop road and the paved service areas. Trees in the student parking lot are protected by metal guardrails, which effectively prevent the parking of cars within the drip lines of the trees, keeping them healthy.

UTILITIES

The Minuteman Regional Vocational Technical School is serviced by both public and private utilities. The school building is serviced by electricity, cable, telephone, domestic water and sewer, natural gas and propane. The sewer system is a combination of force main and gravity lines and is maintained and operated by the District. The system also supports the Minuteman National Monument Visitor Center and the Cranberry Hill Office Building. The system flows via gravity from the west (Visitor Center) to the east (Cranberry Hill) to a pump station in the vicinity of the School's sign at Route 2A.

The water system loops around the building in the loop road. The main water line comes off the main in Marrett Road and consists of a 12" line that runs along the access road of the school. There is also an 8" line that branches off the 12" line and heads towards the MIT Lincoln Lab to the south. Fire flow tests should be conducted in the next plan development phase in order to determine the viability of the existing main from a flow and volume perspective.

Electrical, cable and telephone are also underground in the roadways on the north side of the school. The cable service is provided to the school by Comcast Cable and RCN according to record plans and as-builts. The in-ground sections of the cable service run within and along Marrett Road. The electric service is provided by NStar electric with in-ground electric services running onto the property on the north side coming from Marrett Road. There are also in-ground electric lines running along the east side of the property. The phone service is provided by Verizon and there are no records of any in-ground conduits in the area of the school. Given that the existing High School building is provided electrical, cable, and telephone service in its current use, we do not anticipate any issue with these services, but this should be confirmed by the MEP.

There is an unused underground oil storage tank under the roadway south of the mechanical room. This tank's integrity should be investigated by a Licensed Site Professional (LSP) in the next plan development phase to determine how it should be handled (i.e. removed) going forward. This tank has not been used since the school was converted to natural gas. Propane tanks are located on the north side of the school in the vicinity of the kitchen delivery area. The gas service for the property is provided of the 6" main in

Marrett Road, becoming a 4-inch service as it enters the school's loop road and entering the building from the back / south.

Recommendations:

- Bring all ADA parking, signage, curb cuts and egress paths into compliance.
- Provide ADA accessible routes and viewing areas to all fields and athletic facilities.
- Repair all chain link fence and replace damaged fabric.
- Repair wood fencing at Automotive area.
- Repair guiderails around site ring and entrance roads.
- Repair uneven surfaces in Main Entrance Plaza to provide accessible routes to the building.
- Repair roof and soffits at concession stand to arrest further degradation to the building.
- Remove debris from and around the edge of the pond and remove the tires from the water.
- Rebuild tennis courts, by removing the asphalt pavement and replacing with new.
- Replace all chain link fabric at softball backstop and chain link behind baseball backstop.
- Replace all plaza up-lights at trees.
- Replace all sidewalks and asphalt. Re-align curbs where needed.
- Provide storage for football equipment being left in the fields.
- Remove foundations remaining from old equipment (benches, etc.).
- Clean storm water system
- Provide drainage in tree pits at plaza.
- Repair sign posts and replace signage.
- Repair brick work by basketball courts.
- The pump station's life expectancy (in particular the pumps) should be evaluated / replaced as part of any future project.
- Some of the area drains, and the trench drain by the loading dock, are in poor condition (mainly their rims) and should be replaced / repaired.
- Catch basins with less than 4-foot deep sumps or missing oil hoods should be replaced or upgraded.
- The outlet control structures (flared ends / rip rap in proximity to the wetlands) should be enhanced / replaced as most of them are in poor condition and not protecting the resource areas.
- The resource areas are in need of cleaning / maintenance to remove sedimentation and debris that has gathered over the years.

Additional investigation is recommended:

- Conduct fire flow tests in order to determine the viability of the existing main from a flow and volume perspective to accommodate a fire protection system without a fire pump.
- The existing storm drainage system should be investigated further – possibly via dye testing or via a video camera of the lines.
- Do exploratory testing at all potential hazardous soil areas (underground fuel tanks, hydraulic lifts in building). The integrity of the unused underground oil storage tank and hydraulic fluid storage tank should be investigated by a Licensed Site Professional (LSP).

ARCHITECTURE

This Architectural Existing Facility Evaluation of the Minuteman Regional Vocational Technical School (Minuteman, MMRVTS) includes assessment of the construction and weather tightness of the exterior envelope and of the finish and function of interior elements. General observations common to most areas of the facility are discussed and are further detailed, as necessary, with discussions regarding individual spaces and conditions and in following reports provided by consultants with expertise in other engineering disciplines. Also, although a review of the facility with regard to the Building Code is provided in a separate section of this Study, references to specific Code conditions are included in this section, as well as in sections by other engineering disciplines.

Minuteman was completed and in use by 1974. As will occur with any school building in continuous use for almost 40 years, several repair and replacement projects have occurred, large and small, in a continuing effort to simply maintain the facility and to adapt to changing educational needs. For example, in 1985 the original built up roof was replaced with a PVC system which was further repaired during the summer of 2008. In 1998, because of the failing condition of the exterior brick veneer, the original brick veneer in the Child Care Area was removed and replaced with an insulated metal panel system to match the metal panel system used on the original building. In 2011, the Trades Hall was completely remediated to comply with building, fire, and life safety codes. Several small projects have occurred in classrooms and administrative areas as educational needs have changed.

EXTERIOR ENVELOPE

Exterior Wall Systems

Floor 1:

Exterior wall construction consists of jumbo masonry brick veneer, 1 ¼" airspace, 1 ½" rigid insulation (2 ¾" total cavity space), and CMU backup wall; the entire assembly is 1'-2" thick with either painted cmu, stud and drywall finish, or acoustical panels on the interior surface. There is no air and vapor barrier in the wall envelope, and the rigid insulation is interrupted at certain detail locations.

Floor 2:
The exterior wall construction on the Second Level extends up to the sill of continuous strip windows on the second level. These strip windows are interrupted by masonry wall construction at various locations for stair towers and other multilevel uses. Above the continuous windows, the exterior wall construction consists of a 3 1/8" thick insulated steel sandwich panel system. Typically, the inside surface of these metal panels is the interior finish surface of the exterior wall. This steel panel system, with vertical joints every few feet, is discontinuous, at these joints and at the top and bottom of the wall, and does not provide an effective air and vapor barrier.

Floor 3:
The exterior wall construction on the Third Level consists of a 3 1/8" thick insulated steel sandwich panel system which spans from the Third Level floor support beams to the roof framing and extending above the roof to form a parapet. Typically, the inside surface of these steel panels is the interior finish surface of the exterior wall. This metal panel system, with vertical joints every few feet, is discontinuous, at these joints and at the top and bottom of the wall, and does not provide an effective air and vapor barrier. The metal wall panel is penetrated by only 12 narrow punched windows on each 500 foot long façade. These original window extend from floor to ceiling and pivot a center hinge; because the pivoting windows create a hazardous condition, these have been fastened and no longer provide ventilation.

Because of the discontinuous air and vapor barrier and minimal insulation values, the existing exterior wall construction does not comply with the IECC. Also, the finish on the steel panels has degraded and the panels are rusting. At several locations, water staining from infiltration is visible on the interior surfaces of steel wall panels.

- Recommendation: Because compliance with IECC is not required by the IEBC, the exterior wall construction is not required to be upgraded unless modified. Unless total replacement of the exterior skin is desired to improve thermal efficiency and correct deterioration of the steel panels from rusting, the construction may remain. All locations where the exterior envelope has been penetrated should be individually reviewed and properly flashed and sealed.

The metal wall panels enclose the vast majority of Floor 3 with only about 5% of the wall area open for windows. The windows have been secured in place and do not operate. As a result, many perimeter rooms do not have sunlight or visibility to the exterior and none of the classrooms on Floor 3 have operable windows. As a result of the lack of manual ventilation, several (110) individual air conditioning units have been installed, many through the steel wall panels resulting in leaks and air infiltration.

- Recommendation: Replace the existing windows with new window units with operable sash. Remove steel wall panels to provide new windows to provide sightlines to the exterior and natural sunlight in all perimeter rooms. Further structural analysis will be necessary to determine the quantity of panels which can be safely removed and not adversely affect the structural stability of the wall panels. This analysis may indicate that removal of the entire steel wall panel system and replacement with a new exterior skin with integral operable window system is more cost effective, however, this cost will not be included in the estimate until this scope is determined.

In addition, cracking in the masonry veneer and backup cmu walls are visible throughout the facility. These are further discussed in the structural section of this study and the source of the cracking, whether from settlement and stress, is not determined. These cracks allow air to infiltrate the building, particularly in the stair towers.

- Recommendation: Cracking at exterior veneer should be evaluated over time, as recommended in the Structural section of this study, with the installation of crack monitors to determine if the movement is continuing or if the settlement or stress has subsided.

As the exterior walls have moved from thermal expansion and contraction, the sealant in the masonry expansion joints has failed and in some cases, on the interior of the building, has completely fallen out of the joints providing a source for energy loss and air infiltration.

- Recommendation: Sealant at masonry expansion joints should be replaced to mitigate air infiltration and improve energy efficiency and comfort.

Exterior Aluminum Windows and Storefronts

All exterior windows and storefronts are original to the 1974 building and do not comply with current IECC energy code requirements. The glazing throughout Minuteman is 1" tinted insulated glazing in non-thermally broken aluminum frames. On the second level, the window system is continuous strip windows with operators; on the third level, the window system is individual pivot windows in the metal wall panel system. Neoprene gaskets and seals at glazing have failed in several locations allowing air to infiltrate and causing deterioration of the window systems. The most extreme example of this condition is in the pool area where the sealant is failing and noticeably pulling away from the frame. Failure of these window systems affects the thermal efficiency of the building.

- Recommendation: All existing exterior aluminum windows and entrances should be replaced with new code compliant units to increase thermally efficiency and comfort.

Exterior Doors and Frames

Exterior doors and frames are steel doors in hollow metal frames and aluminum doors in non thermally-broken aluminum storefront framing. Although some of the door hardware has been replaced over time, the doors and door hardware are in poor condition. Doors do not close properly, sometimes not at all, affecting both thermal efficiency and building security. The main entrance doors have had many of their pivot hinges replaces with traditional square butt hinges as these pivot hinges have failed. Thresholds at

exterior doors are not weatherproof and allow infiltration which is deteriorating the concrete flooring. The main entrance, as all exterior doors in the building, does not have an entrance vestibule to control heat loss and air infiltration.




Most of the sectional overhead doors (garage type) are original to the building and are in poor condition from almost 40 years of continued use.

- Recommendation: All existing exterior steel doors should be replaced with insulated door panels with new hardware. All aluminum entrances should be replaced with new aluminum thermally broken doors and storefront frames to increase thermally efficiency and comfort. At the main entrance and main public entrances at the Pool and other locations, interior vestibules should be provided to minimize heat loss and exterior air infiltration. All exterior sectional overhead doors should be replaced with new insulated units to increase thermally efficiency and comfort.

Roof

The original built-up roof was replaced in 1985 with a PVC roof membrane system. This new roof consists of a PVC membrane on 2½" rigid insulation with a vapor barrier on the structural 4½" thick pitched light-weight concrete roof deck. The roof has been a problem for many years and has been patched on multiple occasions. In 2008, when it was discovered that there was extensive water infiltration, the water soaked insulation required replacement. Recently during site visits to update this study, the roof

condition had continued to seriously deteriorate. At some locations, water had infiltrated at roof drains and saturated large areas of the insulation below. In some instances, the insulation had delaminated from both the membrane and the deck and had become completely unfastened. Insulation panels were observed to have moved and stacked one on top of the other in piles apparently moved by the effect of wind uplift and fluttering of the membrane. As this type of delamination can result in catastrophic failure from progressive delamination, the District was alerted immediately. Ballast has been placed as a stopgap measure to temporarily mitigate continued delamination, however, the water infiltration continues. As the insulation becomes water saturated, thermal effectiveness is lost and the roof becomes a great source of heat loss. Also, this water infiltration has created many leaks in the building affecting equipment and disrupting the learning environment. In the Robotics Lab, for example, the continuing leak prevents one portion of the lab from being used as a plastic sheet is needed to funnel the water to a collection barrel. In addition, in the same room, another leak prevents use of a lab table because a water collection barrel is needed after each rain event.

Skylights extend along the roof between the roof mechanical penthouses and are a source of water infiltration. At the penthouse walls, the skylights are not flashed properly and appear to be fastened to the face of the penthouse insulated wall panels. The skylights, in an effort to mitigate the water infiltration, are covered with translucent tarps and duct tape.

At the perimeter of the roof, a parapet is constructed by the extension of the metal wall panel siding and perimeter roof blocking. No overflow scuppers or secondary roof drains exist and water ponds extensively.

- Recommendation: As a primary concern, the entire roof assembly is recommended to be replaced with a new membrane system. Insulation provided must comply with the IECC with a minimum R-Value of 21. New overflow scuppers must be installed at the roof perimeter. At interior roof drains, secondary roof drains must be installed with new rain leader piping extending and penetration the exterior wall of the building. All skylights should be replaced with units which are compliant for thermal efficiency and fall protection. At penthouses, the skylights should be moved away a few feet and the gap infilled with new roofing structure and membrane to allow proper flashing of the penthouse wall. Over stair enclosures, skylights should be omitted and these areas infilled with new roofing structure and membrane to allow proper fire rating of stair enclosures. Eventually, the roof penthouse exterior metal wall panels should be replaced.

OUTBUILDINGS

An outbuilding exists adjacent to the Main Entrance for landscape department. This building is detached from the school building and houses classrooms, a greenhouse, and a fisheries aquatics room. The building is constructed with the same materials as the main building and the condition of the exterior envelope matches that of the main building. In particular, glazing and the associated framing at the greenhouse adjacent to the Landscape Department are stained and deteriorating due to the high humidity levels that occur in that space.

- Recommendation: All existing exterior aluminum windows and entrances should be replaced with new code compliant units to increase thermally efficiency and comfort.

INTERIOR BUILDING ELEMENTS

Interior Walls

Both the original interior corridor walls and the demising partitions are painted concrete block. All interior walls are non-load bearing infill partitions as the building's primary structure is steel column and beams. Please refer to the Structural discussion in another section of this study for a complete description of the building structural system.

Cracking in interior masonry walls and backup cmu walls are visible throughout the facility. These are further discussed in the structural section of this study and the source of the cracking, whether from settlement and stress, is not determined. However, interior masonry walls in the building were not constructed with control joints and are not isolated from the building structure.

Over time, interior walls of different construction have been installed as part of small projects to adapt the building to new educational needs. These walls are constructed of a variety of materials including wood studs, metal studs and concrete masonry. Typically, these walls do not extend through the ceiling plane and rarely are braced to the structure above. As a result, sound transmission between rooms is not controlled and disrupts teaching. Also, as these walls are not laterally braced, they are not compliant with the IEBC for seismic stability and create a dangerous condition during a seismic event. Any walls constructed from wood stud framing are not allowed in Construction Type II-B and should be removed. Wood framed walls were recently replaced with non-combustible framing in the Trades Hall in an effort to provide a safer, compliant environment.

- Recommendation: All masonry partitions which are not laterally braced should extend to the deck above and be braced to the building structure. Cracking at interior masonry walls caused by stress from the building structure should be isolated with control joints and sealant. All wood stud framed walls should be removed and replaced with non-combustible framing and drywall partitions.

Interior Floors

The Lower Level & Lobby Level is 'slab-on-grade' construction. Floor finishes vary from paint in the Trades Hall, carpet in classroom areas, and VCT in common areas. The slabs do not have insulation under the entirety of the floor and so are not compliant with the IECC. Care must be taken when installing new flooring to test for moisture content in the concrete slabs; application of a topical vapor may be necessary to install new flooring and maintain a warranty.

Floor levels 1.5, 2, 2.5, and 3 are 3¼" concrete slabs on 1½" metal floor deck; the assembly has a total thickness of 4¾".

Interior Doors and Frames

Interior doors are solid-core wood or steel in hollow metal frames. Glazing within doors, in borrowed lights, and transoms was originally wired glass however, at some locations glazing has been replaced with plexi-glass or plywood. Most doors are original to the 1974 construction and vary in condition depending on the frequency of use over the years. Doors in spaces (gym, cafeteria, and stairs) which receive the most use are in poor condition while doors in spaces which are not as frequently used (classrooms) are in good condition.

There are several of interior coiling overhead doors (shutters) which are used in the cafeteria to close the Servery from the Cafeteria. These doors are in good condition and good working order.

Door hardware throughout the building has been maintained and repaired several times and is in poor condition. The majority of door hardware is not MAAB/ADA compliant. Hardware original to the 1974 building consists of brass knobs, closers, and panic hardware. The knobs still function but are not compliant. Some of the original closers remain in operation but have exceeded their expected life. Some of the original closers have been disabled leaving remnants of components behind. Many hazardous areas, such as storage rooms and mechanical spaces, must be provided with closers by Code. At fire rated pairs of doors, one door leaf is latched to the other leaf which has a vertical rod exit device. This hardware arrangement creates a hazardous condition: when the vertical rod leaf is opened, the other leaf is no longer latched and is free swinging voiding the fire rating of the door opening. In some locations, because of wall depth or other obstructions, clearance required for accessibility is not provided.

- Recommendation: All interior doors and hardware should be replaced to be accessible. Glazing in rated door openings at doors, sidelites, and transoms should be replaced with fire rated glazing. At fire door pairs, all doors and hardware should be replaced to provide two independently acting door leafs with vertical rod exit devices. At doors which do not provide accessible clearance, such as at toilet room doors, walls must be modified or automatic door operators must be installed to provide compliant access throughout the building.

Interior Finishes

Resilient flooring was used in common areas such as the Mall, the Pool area, locker rooms, and toilet rooms. This floor finish is cracking and delaminating from the slab in some areas. The locker room floors require repair after the removal of locker bases. Moisture content of slabs-on-grade should be performed to determine if high moisture content is causing the tile adhesive to fail.

The lobby floor is an extension of the jumbo brick from the exterior and is in very good condition. The cafeteria and corridors leading up to the shop areas have a unique 4x6 wood flooring system which has been shellacked. This particular flooring system is in great shape considering its age. The shop areas are painted concrete after the Trades Hall renovation in 2011. Classrooms on the lower and upper levels have VCT which is well kept. The kitchen has quarry tile which has been well kept. Carpet was used in some of the classrooms, Administrative offices, IRC/Library, upper cafeteria and corridors and is very worn. Public stairs have rubber treads and risers adhered to the metal pan stair system. The egress stairs have sealed concrete treads and painted risers.






The gym floor has been well maintained and remains in good condition. Moisture from the pool area directly below the gymnasium is discussed in both the Structural and Mechanical systems discussions in this study. Concern is raised because the gym concrete floor may not have a vapor barrier and moisture from the pool area may be migrating through the slab. Chemicals in the water vapor can contribute to deterioration of the concrete and integral uncoated steel reinforcing while moisture condensation below the floor may support the growth of mold.

The majority of the walls are painted CMU which have been well kept. Newer constructed walls are gypsum board on metal studs with vinyl base which have also been well kept.

The toilets and locker rooms have resilient flooring and base, painted CMU walls, and plaster or ACT ceiling mounted in the original acoustical ceiling tracks. The locker room bathrooms have ceramic tile floors, painted CMU walls, and plaster ceilings.

The original ceiling system still exists throughout Minuteman and consists of a lay-in type acoustical panel system that runs continuously from space to space. Water staining is prevalent throughout the ceiling system as a result of roof system failures over the years. Some spaces have updated the ceilings by inlaying new acoustical tile and additional intermediate cross grids into the original grid track. The restaurant on the mall level has an open wooded grid trellis system which is open to the typical ceiling above and is in great shape. Plaster ceilings exist in corridors, toilet rooms and locker rooms of Area A. The plaster ceilings have staining and are flaking in some areas the previously got wet.

- Recommendation: All slabs-on-grade should be tested for moisture content prior to replacement of carpet, VCT, poured epoxy, or ceramic tile flooring. A topical vapor barrier should be installed if the moisture content is higher than allowed for product system warranties.
  Testing of the gym floor and concrete slab should be performed to determine if mold is present and to determine the condition of the concrete slab reinforcement.

Accessories

Toilet partitions have apparently been repainted several times and should be replaced during any renovation. In many instances they improperly divide the toilet rooms and create non-accessible toilet rooms. There is relatively little damage in the Toilet Rooms.

The lockers in the corridors are in good condition, however, many different locker colors and styles exist in the building. Over time, when lockers have been damaged, they have been replaced with other doors and components from other lockers which do not match the original lockers. Lockers in the Male and Female Locker rooms are in fairly good condition. The lockers in the male locker room appear to have been updated from the originals. Handicapped accessible lockers were not identified by placards throughout the building.

Surface mounted fire extinguishers are located throughout the building. They appear to be in good working order and are regularly charged and inspected. Chalkboards were a part of the original installation and occasionally there will be one that is left in a classroom. For the most part marker boards have replaced the chalkboards. Both marker boards and tack boards are the norm at Minuteman. Digital boards are currently being added throughout the facility. Display cases throughout the facility vary from wood to aluminum framed.

The window treatments were not reviewed at this time. There is a lack of natural light in most of the classrooms on the third level.

- Recommendation: Lockers should be replaced with handicapped accessible units. Lockers, where functional, should be electrostatically painted to match.
  Toilet partitions should be replaced to provide accessible toilet rooms.

Equipment

Fixed projectors have been updated in some classroom areas. Occasionally manual projector screens were still in use.

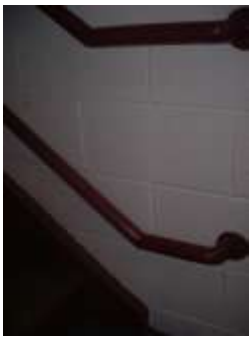
Kitchen equipment appeared to be in good condition and well cared for. Our recommendations are that the food service equipment is reviewed by a specialist and new recommendations be made.

Vertical Circulation

All stairs are a metal pan stair system with concrete treads. Stair treads and risers are not compliant with current code, but are not required to be modified to comply by the IEBC. Wall mounted handrails do not have the required extensions of 1'-11" at the bottom of the run or 12" at the top. Stair enclosures do not align from floor to floor and the fire rating of floors and building structure is not determined. All stair enclosures and penetrations must be firestopped.

In some locations, the area below stairs has been enclosed and is used for storage. This creates a life safety hazard and is in violation of the IEBC.

Guard rails at stairs and balconies throughout the facility are lower than required height and lack fall protection. Existing rails may remain in place and may function as handrails, however, a guard panel must be installed to be 42" above the floor level and to prevent falling through the railing. Guardrails must be modified in accordance with the IEBC.




The main lobby stairs have rubber treads and risers applied to the metal pan stair system. The handrail extensions are also a code violation on these stairs as well.

Almost all of the stair shafts have masonry cracking. Please refer to the structural report for further information.

- Recommendation: At stairways, stair doors and enclosures should be relocated to align on all floors as required by the IEBC. Fire rating of supporting structure must be verified and all walls and penetrations must be firestopped. Guards must be installed on all stair rails and balcony guardrails. Storage areas under stairs and within egress elements must be removed in accordance with the IEBC.

Elevators

Minuteman has three elevators within the facility. There is sufficient elevator access to all levels to comply with AAB and all appear to be in working order. There is a 4000 pound passenger elevators located near the main entrance lobby, an elevator for use by the kitchen and restaurant, and a 6500 pound freight elevator in the Trades Hall and IRC. All the elevators are of adequate size, contain compliant grab bars and door openings, and have been recertified for operation.



Signage and controls are deficient at all elevators. Where the main entrance elevator had adequate signage, the other elevators only had signage on the door jambs and none on the exterior face of the corridor walls that served them. In all of the elevators, the control buttons on the corridor walls were to higher than the required 42" to the center of the panel.



Exterior lanterns which indicate the elevator is in use are located on the control panels however lanterns are required to be a minimum of 2-1/2" in the smallest dimension and mounted with its centerline at 72" above the finish floor. Also, hall chimes for the elevators were not operational as required by AAB.

Inside the cab, the controls were found also to be in violation with AAB requirements. Per AAB, the control buttons are to be mounted between 34" and 48" for frontal approach and 34" and 54" for side approach. The emergency buttons were also found to be on the upper portion of the control panel and are actually required to be at the bottom. Further, the controls are required to have Arabic characters and standard symbols which coincide with each button (i.e., raised star indicating the main level) in addition to Braille.

- Recommendation: All elevators must be modified to provide signaling and controls compliant with AAB. During this renovation, it is highly recommended that the interior cabs be replaced. As the controls and pumps for these elevators are at the end of their expected life, it is also recommended that the pumps and controls be replaced.

Accessibility

The AAB currently regulates publicly accessible spaces, however, the next revision to the AAB will include regulation for staff areas also.

All toilet rooms, except for the toilet rooms in the Mall main level, are not accessible. Doors to toilet rooms do not provide the required approach clearance. Toilet partitions within toilet rooms do not allow the required turning radius and access to toilets and sinks.

An accessible route is not provided in all areas of the building. In some classrooms, clearance between doors and casework does not provide 36" minimum clearance.

All lab casework, in science labs and trade labs, do not provide accessible sinks and tables.

Serveries do not provide continuous tray slides and compliant transaction counters at cashier stations.

Door hardware throughout the building does not provide required hardware leversets.

The ramp in the Pool area does not provide handrails for handicapped access.

- Recommendation: The existing student toilet rooms cannot be modified to provide access for the handicapped in compliance with AAB. All toilet rooms must provide at least one accessible toilet fixture and sink. Student toilet rooms are small, approximately 8' x 9' in size, and required fixture clearances and turning radii which cannot be provided in the existing rooms with a toilet partition installed. Without a toilet partition, these toilet rooms become single fixture open rooms and must have lockable doors for privacy; interior lockable doors are not recommended for student toilet rooms. Construction of new toilet rooms using storage rooms and janitors closets adjacent to the existing toilet rooms is recommended.

  Staff toilet rooms must also be modified; however, these toilet rooms may use lockable hardware with key access and privacy locks.

  Accessible toilet rooms for the public must be provided by modifying the toilet rooms at the Automotive area.

  Also, the toilet rooms on the main level adjacent to the cafeteria should be combined to provide accessible toilets.

  Casework in science and trade labs must be modified to provide accessible stations and accessible routes.

  Handrails should be installed at the ramp at the Pool.

Recommendations:

- Modify existing elevators to provide compliant signaling and control devices.
- Provide fire and acoustical separation at balcony openings between floor levels (not required if building is provided with Fire Protection System).
- Modify guardrails at stairs and balconies to compliant height and opening.
- Install handicap accessible water coolers throughout.
- Modify existing restrooms to be handicapped accessible throughout and reconfigure door/entrances to accommodate handicapped wheelchair approach from the restroom side to the corridor and from corridor to restroom.
- Reconfigure classroom recessed doors to accommodate handicapped wheelchair access from the classroom to the corridor.
- Install handicapped accessible lockers, toilet, sink, urinal and showers in the boy's locker room.
- Install handicapped accessible lockers, toilet, sink and showers in the girl's locker room.
- Replace interior fire doors at stairs with new UL Listed door, frame and hardware to meet fire door requirements and accessibility/egress standards. Replace existing wire glass with fire rated glazing.
- Replace new door hardware at all interior doors.
- Provide assistive listening system in all Assembly areas.
- Provide compliant room signage.
- Provide Assistive listening system at all Assembly spaces.
- Modify existing laboratory casework to provide accessible sinks and lab stations in each classroom.
- Replace existing roofing, provide overflow scuppers and secondary roof drains, replace skylights and modify roofing over stairs.
- Replace penthouse sheathing panels.
- Replace exterior pivot window units, exterior continuous strip windows, and exterior aluminum storefront and entrances.
- Remove existing steel wall panels on the Third Floor and replace with new operable windows.
- Replace Toilet partitions.
- Test slabs on grade for moisture content.

FOOD SERVICE ANALYSIS – MAIN KITCHEN (1st Floor)

On Monday, May 6th and Tuesday May 7, 2013, we visited the above referenced to evaluate the existing condition of the food facility.

Given the existing conditions outlined herein, the food service management and staff should be commended for their efforts in providing nutritional food service and good housekeeping to the greatest extent possible.

Briefly, the following are our findings;

Receiving – Exterior and Interior:

Description/Assessment:

- All food service deliveries and some trash pass through this area, which is unsanitary.
- The receiving area is shared with the main kitchen, culinary arts and the bakery. Deliveries for culinary and baking must to pass through the main kitchen (production and soiled areas) and general corridor to access an elevator to the upper level.
- Flooring at the loading is in poor condition. There is minimal water capture and as a result, water puddles throughout the area. This situation will pose a significant hazard to foot traffic.
- Interior ceilings and floors have degraded and are unsanitary.
- Lighting is poor. Light fixtures lack protective covers and therefore not code compliant.

This area is unsanitary and poses a threat of cross-contamination.

Receiving Exterior: Minimal water capture. Puddles throughout the area. Hazardous to foot traffic.

Receiving Interior: Ceilings and floors have degraded and are unsanitary.

Janitor's Closet and Food Service Laundry:

Description/Assessment:

- This room is congested and undersized for the current needs of the food facility.
- The residential washer and dryer are shared with the culinary arts and bakery program. There is no dedicated waste for the laundry washer to drain into. Unit's waste is piped to an open floor pit at the opposite end of the room.
- There are unfinished ceilings with exposed piping, steel and machinery that render this room impossible to clean.
- Wall surfaces and floors have degraded and are unsanitary.
- Suspended light fixtures collect dust and lack protective covers and therefore not code compliant.

This area is unsanitary and poses a threat of cross-contamination.

J.C. & Laundry: This room is congested. Washer & dryer are shared with Culinary Arts.

J.C. & Laundry: Unfinished ceilings, exposed piping, steel and machinery.

J.C. & Laundry: There is no dedicated waste for the laundry washer to drain into. Unit's waste is piped at the opposite end of the room.

Wall surfaces, floors and pit area have degraded and are unsanitary.

Dry Food & Paper Storage Room:

Description/Assessment:

- This room is congested and undersized for the current program.
- Shelving is constructed of inappropriate materials and inadequate in quantity.
- Some items are stored directly on the floor. This is not code compliant and should be considered unsanitary as it impedes housekeeping efforts.
- Light fixtures lack protective covers and therefore not code compliant.
- Some detergents and custodial items were located in this area. Not code compliant.
- There appears to be evidence of insect/rodent infiltration throughout this area.

All of the above is unsanitary and poses a threat of cross-contamination.

Dry Food & Paper Storage Room: This room is congested.

Dry Food & Paper Storage Room: Shelving is constructed of inappropriate materials.

Dry Food & Paper Storage Room: Some detergents and custodial items were located in this area; not code compliant.

Dry Food & Paper Storage Room: There appears to be evidence of insect/rodent infiltration throughout this area.

Catering/Special Function Storage:

Description/Assessment:

- This room is extremely congested.
- Shelving is constructed of inappropriate materials.
- Some items are stored directly on the floor. This is should be considered unsanitary as it impedes housekeeping efforts.
- Floors have degraded.

All of the above is unsanitary and poses a threat of cross-contamination.

Catering/Special Function Storage: Area is extremely congested. Area is located off the kitchen production area. Wire gate tends to collect dust, unsanitary.

Catering/Special Function Storage: Shelving is constructed of inappropriate materials. Floors have degraded; unsanitary.

Walk-In Refrigerators and Freezers:

Description/Assessment:

- These units are antiquated and undersized to satisfy the current program. As a result, deliveries are required more frequently.
- These units are significantly overcrowded and poorly located operationally.
- Shelving is constructed of inappropriate materials and inadequate in quantity.
- Some items are stored directly on the floor. This is not code compliant and should be considered unsanitary as it impedes housekeeping efforts.
- There are no safety vision panels and no "panic" alarms. This can be a life/safety issue.
- There is no "alert" system to warn of refrigeration failure, which can be very costly due to the potential loss of food products.
- Interior floor finishes and some door thresholds have degraded; unsanitary.
- Lighting is poor.

All the above is unsanitary and poses a threat of cross-contamination.

Walk-In Refrigerators and Freezers:
Shelving is constructed of inappropriate materials; inadequate in quantity; overcrowded.

Walk-In Refrigerators and Freezers:
Units are antiquated and undersized. Significantly overcrowded. Lighting is poor.

Walk-In Refrigerators and Freezers:
Interior floor finishes and some door thresholds have degraded; unsanitary. Some areas are hazardous to foot traffic.

Walk-In Refrigerators and Freezers:
Shelving is constructed of inappropriate materials; inadequate in quantity; overcrowded. Some, insulation at drain piping has deteriorated.

Food Service Offices:
Description/Assessment:

- These spaces are congested. One (1) office is shared with the culinary, secretarial and accounting staff.
- Additional space is required for files, general office equipment, menu planning, staff training and code compliance documentation.

Food Service Staff Toilets & Lockers:
Description/Assessment:

- There are no dedicated staff toilets. Staff utilizes the culinary arts and bakery student toilet facilities. Toilets and lockers are poorly located operationally. Toilets are not handicap accessible.
- Staff lockers are located in a miscellaneous area in one serving area.

Staff Lockers:
Lockers are inconveniently located in a undesignated area.

Staff Lockers:
Quantity of lockers is insufficient for a staff of twelve (12).

Preparation:
Description/Assessment:

- Most table understructures, utensil racks, pot & pan racks, etc. are constructed of inappropriate materials (galvanized steel or painted steel), which have degraded and should be considered unsanitary.
- There is an insufficient quantity of code mandated hand sinks.
- There are no handicap accessible work stations.
- The code mandated three-bay pot sink assembly with drain-boards appears to be adequate, however understructure has degraded.
- Wall surfaces and floors have degraded and are unsanitary.
- There are an inadequate number of floor drains to enhance housekeeping. Some existing floor drains appear to be clogged and drainage is extremely poor.

Preparation: (Continued)
Description/Assessment:

- Fans are used to circulate air. These fans tend to spread dust throughout the entire food facility.

All the above is unsanitary and poses a threat of cross-contamination.

Preparation: There is an insufficient quantity of code mandated hand sinks. Walls have degraded, unsanitary. Scouring pad is used to plug hole at waste pipe.

Preparation: Most table, utensil racks, pot & pan racks, etc. are constructed of inappropriate materials (galvanized steel or painted steel), which have degraded and should be considered unsanitary.

Preparation: Fans are used to circulate air. These fans tend to spread dust throughout the entire food facility. Floors have degraded.

Preparation: The main kitchen is opened to a general corridor. Deliveries for culinary and baking must to pass through the main kitchen (production and soiled areas) and general corridor to access an elevator to the upper level.

Preparation: There are an inadequate number of floor drains to enhance housekeeping. Wall and floors have degraded.

Preparation: Some existing floor drains appear to be clogged and drainage is extremely poor. Floors have degraded.

Cooking Equipment:

Description/Assessment:

- The cooking battery is under-equipped for the current program. Some of the cooking equipment is antiquated, poorly arranged, unsanitary and not energy efficient.
- Exposed piping between and behind the cooking equipment is unsanitary as it is difficult to access for cleaning and maintenance.
- Exposed piping renders this area impossible to maintain as a sanitary environment.
- Floors have severely degraded and are unsanitary.
- Some areas pose a significant hazard to foot traffic.

The above is unsanitary and poses a threat of cross-contamination.

Cooking Equipment: Cooking battery is under-equipped. Some equipment is antiquated and unsanitary.

Cooking Equipment: Exposed piping renders this area impossible to maintain as a sanitary environment.

Cooking Equipment: No splash guards at the griddle. Piping at rear tends to collect dust and grease. Piping is exposed foods being cooked, poses a threat of cross-contamination and fire.

Cooking Equipment: Floors have severely degraded and are unsanitary. Existing trough has degraded and poses a hazard to foot traffic.

Cooking Equipment: Flexible plastic indirect drain piping is inappropriate. Floor drain appears to be clogged and drainage is extremely poor. Hot water puddles throughout this area. This situation will pose a significant hazard to foot traffic.

Cooking Equipment: Floors have severely degraded and are unsanitary. Exposed piping renders this area extremely difficult to maintain as a sanitary environment.

Exhaust Hoods over Cooking Equipment:

Description/Assessment:

- The exhaust assemblies are antiquated and should be considered unsanitary.
- The "grease filters" located in the center of the plenum chamber are inefficient and tend to accumulate grease rather than filter the air stream.
- The grease cannot drain away as there is no "grease capture gutters".
- There appears to be inefficient air movement at these units.
- Fans are used to circulate air. These fans tend to spread dust throughout the entire food facility.

Units are unsanitary and pose a threat of cross-contamination and fire.

Exhaust Hoods over Cooking Equipment: The "grease filters" located in the center of the plenum chamber are inefficient and accumulate grease rather than filter the air stream. No grease capture gutters.

Exhaust Hoods over Cooking Equipment: The exhaust assemblies are antiquated and should be considered unsanitary. Grease and dust build-up is unsanitary and poses a risk of cross-contamination.

Serving Lines:

Description/Assessment:

- There are three (3) separate serving line rooms. Compartmentalized serving lines are operationally inefficient and labor intensive.
- Equipment and arrangement of the serving lines are antiquated. The "traditional" straight serving lines and minimal traffic aisles cause congestion and increased wait time, which negatively affect student participation in the food service program.
- The serving lines do not have code mandated refrigerated cold food serving stations.
- Food protectors and sneeze guards do not comply with current NSF Standards. Some have degraded.
- There is minimal hot and food holding elements to ensure temperature maintenance.
- There are no code required hand sinks in two (2) of the serving rooms. There is an inadequate number of code required hand sinks in the third serving room.

Serving Lines: (Continued)

Description/Assessment:

- Wood cutting boards have degraded, unsanitary and no longer possible to properly clean and sanitize.
- Some table understructures and cabinetry are constructed of inappropriate materials (galvanized steel or painted steel), which have degraded and should be considered unsanitary.
- There are no handicap accessible work, serving and cashier stations.
- Electrical drops are suspended from the ceilings and should be considered unsanitary as it promotes the accumulation of dust and grease. This poses a threat of cross-contamination.
- There are an inadequate number of floor drains to enhance housekeeping.
- In some areas, wall and floors have seriously degraded; unsanitary.

These areas are unsanitary and pose a threat of cross-contamination.

Serving Lines (Pizza/Salad Bar):

No code mandated refrigerated cold food serving station.

Food protectors and sneeze guards do not comply with current NSF Standards.

Electrical drops are suspended from the ceiling, unsanitary. This poses a threat of cross-contamination.

Serving Lines (Pizza/Salad Bar):

There are no dedicated code required hand sinks in this room. A work sink doubles as a hand sink.

Exterior base cabinetry is constructed of inappropriate materials (galvanized steel or painted steel), which have degraded and should be considered unsanitary.

Serving Lines (Grill Station – Full Service):

This area was once occupied by McDonald's. Most space behind the line is under- utilized.

Serving Lines (Grill Station- Full Service):

Serving line is designed for McDonald's service, therefore; most back line equipment is not being utilized.

Serving Lines (Grill Station – Full Service):

Back of the line space is utilized for additional storage of foods and detergents. This is not code compliant.

Fans are used to circulate air. Fans tend to spread dust throughout the entire food facility, unsanitary.

Serving Lines (Grill Station- Full Service):

Detergent storage is located opened to the serving room. Not code compliant.

A deteriorated grease trap located on the floor and degrading walls should be considered unsanitary.

Serving Lines (Grill Station – Full Service):

Open trash receptacles and housekeeping items such as mops, buckets, brooms and detergents were located in this area during serving.

Serving Lines (Grill Station- Full Service):

There appears to be evidence of insect/rodent infiltration throughout this area.

Serving Lines (Grill Station – Full Service):

Serving line operates "McDonald's" style. Each operator acts as order taker, server and cashier. The lines are time consuming and labor intensive.

There is minimal hot and cold food holding elements to ensure temperature maintenance.

Serving Lines (Grill Station- Full Service):

This is the only hand sink located in this room. There are no code mandated hand sinks at the serving line.

Serving Lines (Grill Station – Full Service):
In operable soda system with syrup lines and CO2 tanks. This area is nearly impossible to clean. Unsanitary.

Serving Lines (Grill Station- Full Service):
Leaking syrup lines at soda system. Exposed piping renders this area nearly impossible to clean..

Serving Lines (Grill Station – Full Service):
Exposed piping, conduit and detergents; unsanitary. Additional staff office space is required for files, equipment, etc.

Serving Lines (Grill Station- Full Service):
Walls and ceilings have degraded; unsanitary. Lighting is poor.

Serving Lines (Deli & Hot Food Station):

The serving line does not have code mandated refrigerated cold food serving station.

Electrical drops are suspended from the ceiling; unsanitary. This poses a threat of cross-contamination.

Serving Lines (Deli & Hot Food Station):

There are no dedicated code required hand sinks in this room. A work sink doubles as a hand sink.

Exterior base cabinetry is constructed of inappropriate materials (galvanized steel or painted steel), which have degraded and should be considered unsanitary.

Ware Washing /Pot Washing Area:

Description/Assessment:

- The total ware washing function is currently comprised of one (1) code mandated three-bay pot sink assembly with drain-boards. While this in itself may satisfy "code", it cannot ensure the total sanitation of the large amounts of kitchen ware in use here. The kitchen ware is comprised of large quantities of 18" x 26" sheet pans, cafeteria pans, and miscellaneous pots, pans, bowls and culinary tools.
- Table understructure has degraded and should be considered unsanitary.
- Floor surfaces have degraded and are slippery when wet. Rubber mats are used throughout the food facility to prevent falls. This is unsanitary and hazardous to foot traffic.
- Housekeeping items such as brooms, mops, trash cans, detergents, etc. are located throughout this area.

Ware Washing /Pot Washing Area:

Floor surfaces are slippery when wet. Rubber mats are used throughout the food facility to prevent falls. This is unsanitary and hazardous to foot traffic. Access floor panel is also hazardous to foot traffic.

Table understructure has degraded and should be considered unsanitary.

Ware Washing /Pot Washing Area:

Floors have severely degraded and are unsanitary.

Housekeeping items such as brooms, mops, trash cans, detergents, etc. are located throughout this area.

Pot racks have degraded and should be considered unsanitary.

General Area Conditions:

Description/Assessment:

- Some light fixtures lack protective covers and therefore not code compliant.
- Exposed piping, electric conduit and duct work render some areas almost impossible to maintain as a sanitary environment.
- In most areas, wall surfaces, ceilings and flooring have deteriorated and are in unsanitary condition.
- Fans are used to circulate air in warm weather. These fans tend to spread dust throughout the entire food facility.
- Electrical drops are suspended from the ceiling and should be considered unsanitary as it promotes the accumulation of dust and grease. This poses a threat of cross-contamination.
- There are an inadequate number of floor drains to enhance housekeeping.
- Some existing floor drains appear to be clogged and drainage is extremely poor.

Conclusion

The deficiencies outlined herein may or may not be specific code issues (most are by any interpretation); however all are unacceptable in terms of sanitation, food safety and generally acceptable food service practice. The deficiencies and issues of food cross-contamination should be addressed now and in any future planning. Final determinations are subject to local authorities having jurisdiction.

By design/arrangement, the facility is operationally inefficient and labor intensive. The extremely congested and under-equipped arrangement of the kitchen/serving areas poses a risk of operational safety to food service staff. It is our opinion that there is a considerable risk of cross-contamination, which jeopardizes the health, safety and well-being of students, staff and faculty.

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

For additional information refer to the other sections in this report.

FOOD SERVICE ANALYSIS – CULINARY ART & BAKERY (2nd Floor)

On Monday, May 6th and Tuesday May 7, 2013, we visited the above referenced to evaluate the existing condition of the food facility.

Given the existing conditions outlined herein, the food service management and staff should be commended for their efforts in providing nutritional food service and good housekeeping to the greatest extent possible.

Briefly, the following are our findings;

Receiving – Exterior and Interior:

Description/Assessment:

- All food service deliveries and some trash pass through this area, which is unsanitary.
- The receiving area is shared with the main kitchen, culinary arts and the bakery. Deliveries for culinary and baking must to pass through the main kitchen (production and soiled areas) and general corridor to access an elevator to the upper level.
- Elevator is utilized all food service deliveries and trash for the culinary arts and the bakery programs. This area is unsanitary and poses a threat of cross-contamination
- Flooring at the loading dock is in poor condition. There is minimal water capture and as a result, water puddles throughout the area. This situation will pose a significant hazard to foot traffic.
- Interior ceilings and floors have degraded and are unsanitary.
- Lighting is poor. Light fixtures lack protective covers and therefore not code compliant.
- *For additional photos, please refer to photos in section 3.1.4.h.1*.

This area is unsanitary and poses a threat of cross-contamination.

Receiving Interior 1st Floor: Deliveries must pass through the main kitchen's production and soiled areas to access elevator located in a general corridor.

Receiving Interior – 2nd Floor: This elevator is utilized for all food service deliveries and trash for the culinary arts and the bakery programs. This is unsanitary and poses a threat of cross-contamination.

Janitor's Closet and Food Service Laundry:

Description/Assessment:

- There are no dedicated areas for the culinary arts or bakery, which are both located on the 2nd floor.
- Housekeeping items such as brooms, mops, trash cans, detergents, etc. are located throughout each facility.
- Janitorial and laundry are shared with the main kitchen staff located on the 1st floor near receiving. This area is unsanitary and poses a threat of cross-contamination.
- *Please refer to photos in section 3.1.4.h.1*.

Dry Food and General Storage Room:

Description/Assessment:

- This room in inconveniently located on the 1st Floor. The room is congested and undersized for the current programs.
- Shelving is constructed of inappropriate materials and inadequate in quantity.
- Some items are stored directly on the floor. This is not code compliant and should be considered unsanitary as it impedes housekeeping efforts.
- Light fixtures lack protective covers and therefore not code compliant.
- Walls, floors and ceilings have degraded and are unsanitary.

All of the above is unsanitary and poses a threat of cross-contamination.

Dry Food & General Storage Room: This room is congested. Shelving is constructed of inappropriate materials and inadequate in quantity.

Dry Food & Paper Storage Room: Light fixtures lack protective covers and therefore not code compliant. Walls, floors and ceilings have degraded and are unsanitary.

Refrigerator and Freezer Storage:
Description/Assessment:

Culinary Arts:

- There are no walk-in refrigerators or freezers. All storage is comprised of reach-in units. Storage is undersized to satisfy the current program. As a result, deliveries are required more frequently.

Bakery:

- There is one (1) walk-in freezer is antiquated and unsanitary. There is no safety vision panel and no "panic" alarm. This can be a life/safety issue. There is no "alert" system to warn of refrigeration failure, which can be very costly due to the potential loss of food products. Interior floor finishes have degraded; unsanitary. Walk-in floor is not flush with the bakery finished floor. A portable exterior ramp is used to enter and exit, which makes it extremely difficult to transport mobile racks into the box. This situation poses a significant hazard to foot traffic.
- The balance of storage is comprised of reach-in units, which are antiquated and unsanitary.
- Lighting is poor.

All the above is unsanitary and poses a threat of cross-contamination.

Bakery Walk-In Freezer: Interior floor finishes have degraded; unsanitary.

Lighting is poor.

Bakery Walk-In Freezer: A portable exterior ramp is used to enter and exit, which makes it extremely difficult to transport mobile racks into the box; hazardous to foot traffic.

Food Service Offices:

Description/Assessment:

- The Culinary Arts Lead Teacher's office is inconveniently located on the 1st floor in the main kitchen. Shared with the main kitchen staff.
- The Head Culinary Chef's work area is poorly located. All traffic between preparation, pot washing and cooking must pass through this space. The desk and documents are in an open space. There is no private and secured space for this function.
- The Baker's office shared with an assistant and is congested.
- Additional space is required for files, general office equipment, menu planning, staff training and code compliance documentation.
- Instructor visibility is poor throughout both facilities.

Culinary Office – Head Chef: This area is congested. Desk and documents are open to all production traffic. No provide or secured area.

Culinary Office – Head Chef: All traffic between preparation, pot washing and cooking must pass through this space.

Food Service Staff Toilets & Lockers:

Description/Assessment:

- There are no dedicated staff toilets and lockers. Staff utilizes the restaurant's public toilet facilities.

Culinary Arts & Bakery Student Toilets & Lockers:

Description/Assessment:

- Student toilets and lockers are inconveniently located on the 1st floor in the main kitchen. Toilets are shared with the main kitchen staff. Toilet facilities are not handicap accessible.

Preparation Areas:

Description/Assessment:

- Most table understructures, utensil racks, pot & pan racks, etc. are constructed of inappropriate materials (galvanized steel or painted steel), which have degraded and should be considered unsanitary.
- There is an insufficient quantity of code mandated hand sinks.
- There are no handicap accessible work stations.
- Housekeeping items such as brooms, mops, trash cans, detergents, etc. are located throughout these areas.
- There are an inadequate number of floor drains to enhance housekeeping.
- There are unfinished ceilings with exposed piping, conduit, steel and duct work that render these preparation areas impossible to clean.

All the above is unsanitary and poses a threat of cross-contamination.

Culinary Arts Preparation: Most table understructures are constructed of inappropriate materials (galvanized steel or painted steel), which have degraded and should be considered unsanitary.

Exposed foods. No dedicated dry food storage area.

Culinary Arts Preparation: Patrician walls, unfinished ceilings with exposed piping, conduit, etc. that render these preparation areas impossible to clean.

Culinary Arts Preparation: There are unfinished ceilings with exposed piping, conduit, steel and duct work. Unsanitary and poses a threat of cross-contamination.

Culinary Arts Preparation: Storage is minimal. Some shelving is constructed of inappropriate materials and inadequate in quantity.

Culinary Arts Preparation: Convection oven is not positioned under an exhaust ventilator with fire suppression system. Not code compliant and should be considered a life safety issue. (Final determination for code compliance is subject to local authorities have jurisdiction.)

Storage for kitchen wares is minimal.

Culinary Arts Preparation: There is no code mandated hand sink in this preparation area. The closest hand sink is located in the pot washing area.

Housekeeping items such as brooms, mops, trash cans, detergents, etc. are located throughout this area.

Bakery Preparation: Area is congested.

Most table understructures are constructed of inappropriate materials (galvanized steel or painted steel), which have degraded and should be considered unsanitary.

Bakery Preparation: Top compressor of reach-in is opened to the space where accumulated dust will be caught in any "air stream" and spread around this area.

There are unfinished ceilings with exposed piping, conduit, steel and duct work that render all Bakery areas impossible to clean. Unsanitary and poses a threat of cross-contamination.

Bakery Preparation: Wood-tops are in good condition, however, impossible to be properly sanitized them due the type of wood. No longer NSF compliant.

Bakery Preparation: No dedicated janitorial areas. Housekeeping items such as brooms, mops, trash cans, detergents, etc. are located throughout this area.

Cooking Equipment:

Description/Assessment:

- Culinary Arts: The cooking battery is under-equipped for the current program. All preparation and cooking equipment should offer a wide variety of teaching/learning opportunities as well as current equipment technology and cooking methods. Equipment should not be based solely on production capacity.
- Some cooking equipment is not positioned under the exhaust ventilator with fire suppression system. This is a life safety issue and not code compliant, however, final determination for code compliance is subject to local authorities have jurisdiction.
- The Bakery revolving oven is antiquated but currently operational. Exhaust duct work is discharged above through unfinished ceiling. This should be considered unsanitary. There is no fire suppression system.
- Some cooking equipment is antiquated, poorly arranged, unsanitary and not energy efficient.
- Exposed piping between and behind the cooking equipment is unsanitary as it is difficult to access for cleaning and maintenance. Area extremely difficult to maintain as a sanitary environment.
- There are an inadequate number of floor drains to enhance housekeeping.
- Culinary cook's counter understructure is constructed of inappropriate materials (galvanized steel or painted steel), which have degraded and should be considered unsanitary.
- There is no code mandated hand sink in these areas.
- Walls and some finished ceilings have degraded.

The above is unsanitary and poses a threat of cross-contamination.

Culinary Arts Cooking Equipment: The cooking battery is under-equipped. Some of the cooking equipment is antiquated, poorly arranged, unsanitary and not energy efficient.

Culinary Arts Cooking Equipment: A convection steamer and tilting kettle are not positioned under the exhaust ventilator with fire suppression system. This is a life safety issue and not code compliant, however, final determination for code compliance is subject to local authorities have jurisdiction.

Culinary Arts Cooking Equipment: Fryer is antiquated and not energy efficient.

Exposed piping and conduit between and behind the cooking equipment is unsanitary as it is difficult to access for cleaning and maintenance.

Culinary Cook's Counter: Understructure is constructed of inappropriate materials (galvanized steel or painted steel), which have degraded and should be considered unsanitary.

Electrical line running along the floor to access outlet. This condition will pose a hazard to foot traffic.

Bakery Cooking Equipment: Tilting kettle is not positioned under the exhaust ventilator with fire suppression system. This is a life safety issue and not code compliant, however, final determination for code compliance is subject to local authorities have jurisdiction.

Bakery Cooking Equipment: Revolving oven is antiquated but currently operational. Unit is exhausted above through unfinished ceiling. This should be considered unsanitary. There is no fire suppression system.

Culinary Arts Exhaust Hood over Cooking Equipment:

Description/Assessment:

- The exhaust assembly is undersized and antiquated.
- The "grease filters" located in the center of the plenum chamber are inefficient and accumulate grease rather than filter the air stream.
- The grease cannot drain away as there is no "grease capture gutters".
- There appears to be inefficient air movement at these units and in the kitchen in general.

This unit is unsanitary and poses a threat of cross-contamination and fire.

Culinary Arts Exhaust Hood over Cooking Equipment: The exhaust assembly is undersized and antiquated. Protective covers at light fixtures have degraded.

Culinary Arts Exhaust Hood over Cooking Equipment: The "grease filters" located in the center of the plenum chamber are inefficient and accumulate grease rather than filter the air stream. No grease capture gutters.

Culinary Arts Wait Stations:

Description/Assessment:

- Table understructures and cabinetry are constructed of inappropriate materials (galvanized steel or painted steel), which have degraded and should be considered unsanitary.
- There is an insufficient quantity of code mandated hand sinks.
- There are no handicap accessible work stations.
- There are an inadequate number of floor drains to enhance housekeeping.
- There are unfinished ceilings with exposed piping, conduit, steel and duct work that render these areas extremely difficult to maintain as a sanitary environment.

All the above is unsanitary and poses a threat of cross-contamination.

Culinary Arts Wait Stations: There is an insufficient quantity of code mandated hand sinks. This is the only hand sink located in this area, which includes cooking, some preparation and dishwashing.

There are unfinished ceilings with exposed piping, conduit, steel and duct work. Area extremely difficult to maintain as a sanitary environment.

Culinary Arts Wait Stations: Table understructures and cabinetry are constructed of inappropriate materials (galvanized steel or painted steel), which have degraded and should be considered unsanitary.

Storage for service wares is limited.

Culinary Arts Wait Stations: Counter understructures are unsanitary. Storage is minimal.

Culinary Arts Wait Stations: Counter understructures should be considered unsanitary.

Bakery Service Station:

Description/Assessment:

- Bakery service station is located in an open space. Area cannot be secured. All food, service items and cash must be removed after service.
- There are no code mandated hand sinks. There are no handicap accessible work stations.
- There are unfinished ceilings with exposed piping, conduit, steel and duct work that render these areas impossible to clean.
- Electrical conduit, outlets and line cords are running along the floor hinder housekeeping efforts.

All the above is unsanitary and poses a threat of cross-contamination.

Bakery Service Station: Bakery service station is located in an open space. Area cannot be secured.

Bakery Service Station: Gate is used to secure the back of the house. Gates are difficult to clean; tends to collect dust.

Bakery Service Station:

Electrical conduit, outlets and line cords are running along the floor hinder housekeeping efforts.

Pot Washing Areas:
Description/Assessment:

Culinary Arts:

- The code mandated three-bay pot sink assembly lacks drain-board surfaces and sink compartments are undersized for large kitchen wares. Understructure has degraded.
- All clean activities are located on the soiled end of the pot sink.
- Shelving, wall shelf and pot rack have degraded and are constructed of inappropriate materials.
- Perforated ceiling panels are non-washable and therefore not code compliant.

Bakery:

- The code mandated three-bay pot sink assembly does not provide adequate drain-board surface and sink compartments are undersized for large bake wares. Understructure has degraded. An unsanitary and deteriorating grease trap is located under table.
- There is only one (1) hand sink located in the Bakery's pot wash draing board. No other code mandated hand sink in the Bakery.
- Housekeeping items such as brooms, mops, trash cans, detergents, etc. are located throughout these areas.
- Exposed piping and conduit render this area nearly impossible to maintain as a sanitary environment.
- There are an inadequate number of floor drains to enhance housekeeping.

All the above is unsanitary and poses a threat of cross-contamination.

Culinary Arts Pot Washing Area: All clean activities are located on the soiled end of the pot sink. Shelving, wall shelf and pot rack have degraded and are constructed of inappropriate materials.

Pot table lacks drain-boards and understructure has degraded and should be considered unsanitary.

Culinary Arts Pot Washing Area: There are no dedicated janitorial areas on this level. Housekeeping items such as brooms, mops, trash cans, detergents, etc. are located throughout the facility.

There are an inadequate number of floor drains to enhance housekeeping. No drainage at emergency eye-wash station.

Bakery Pot Washing Area: Area is totally congested. No separation of clean and soiled wares.

The code mandated three-bay pot sink assembly does not provide adequate drain-board surface and sink compartments are undersized for large wares. Understructure has degraded. An unsanitary and deteriorating grease trap is located under table.

Bakery Pot Washing Area: Some detergents are stored exposed under the clean drain-board along with housekeeping items such as brooms and trash cans.

There are an inadequate number of floor drains to enhance housekeeping.

Culinary Arts Ware Washing Area:

Description/Assessment:

- The room is congested and support tables are undersized and antiquated.
- There is no condensate hood over the dish machine to capture heat and steam. This creates an extremely hot and wet environment. There is evidence of mold on the walls, which is a serious health hazard.
- Perforated ceiling panels have degraded and are non-washable and therefore not code compliant.
- There is no code mandated hand sinks in this area.
- Floor surfaces have degraded and are slippery when wet. Rubber mats are used to prevent falls. This is unsanitary and hazardous to foot traffic.
- Exposed piping and conduit render this area nearly impossible to maintain and clean.
- There are an inadequate number of floor drains to enhance housekeeping.
- There appears to be evidence of insect/rodent infiltration throughout this area.

All the above is unsanitary and poses a threat of cross-contamination.

Culinary Arts Ware Washing Area: Soiled dish table is undersized and antiquated. Pre-rinse faucet lacks handles.

Clean wares are located in close proximity to soiled activities.

Culinary Arts Ware Washing Area: Exposed piping and conduit render this area nearly impossible to maintain and clean.

Floor surfaces have degraded and are slippery when wet. Rubber mats are to prevent falls. This is unsanitary and hazardous to foot traffic.

Culinary Arts Ware Washing Area: There is no condensate hood over the dish machine to capture heat and steam.

Culinary Arts Ware Washing Area: Evidence of mold on the walls, which is a serious health hazard.

Culinary Arts Ware Washing Area: There appears to be evidence of insect/rodent infiltration throughout this area.

Culinary Arts Ware Washing Area: Perforated ceiling panels have degraded and are non-washable and therefore not code compliant.

General Area Conditions:

Description/Assessment:

- Some light fixtures lack protective covers and therefore not code compliant.
- In most areas, wall surfaces, ceilings and flooring have deteriorated and are in unsanitary condition.
- Student toilets and lockers are not handicap accessible.
- There are an inadequate number of floor drains to enhance housekeeping.
- There are unfinished ceilings with exposed piping, conduit, steel and duct work that render these areas impossible to clean. Most areas almost impossible to maintain as a sanitary environment.
- In some areas, there are perforated ceiling panels, which are non-washable and therefore not code compliant.
- In the culinary arts ware washing room, there is evidence of mold on the walls. This is a serious health hazard.
- There are an inadequate number of floor drains to enhance housekeeping.
- There appears to be evidence of insect/rodent infiltration throughout this area.
- Exposed piping, electric conduit and duct work render some.

All the above is unsanitary and poses a threat of cross-contamination.

Culinary Arts General Area Conditions: Electrical panels, exposed piping and electric conduit render this area almost impossible to maintain as a sanitary environment.

Culinary Arts General Area Conditions: Walls have degraded. There are open gaps in the wall at piping, which is unsanitary.

Culinary Arts General Area Conditions: There are unfinished ceilings, exposed piping, electric conduit and duct work render most areas almost impossible to maintain as a sanitary environment.

Culinary Arts General Area Conditions: Evidence of mold on the walls, which is a serious health hazard.

Culinary Arts General Area Conditions: There are an inadequate number of floor drains to enhance housekeeping. Mop buckets are dumped in this floor drain located adjacent to a "clean ware" area, unsanitary.

Culinary Arts General Area Conditions: There are unfinished ceilings with exposed piping, electric conduit and duct work above render most areas almost impossible to maintain as a sanitary environment.

Bakery General Area Conditions: Electrical panels, exposed piping and electric conduit render this area almost impossible to maintain as a sanitary environment.

Bakery General Area Conditions: There are unfinished ceilings with exposed piping, electric conduit and duct work above render all areas impossible to maintain as a sanitary environment.

Conclusion

The deficiencies outlined herein may or may not be specific code issues (most are by any interpretation); however all are unacceptable in terms of sanitation, food safety and generally acceptable food service practice. The deficiencies and issues of food cross-contamination should be addressed now and in any future planning. Final determinations are subject to local authorities having jurisdiction.

By arrangement, the facilities are operationally inefficient, labor intensive and do not offer an open landscape design for optimum instructor visibility and teaching environment. The extremely congested and under-equipped arrangement of each facility poses a risk of operational safety to students and instructors. It is our opinion that there is a considerable risk of cross-contamination, which jeopardizes the health, safety and well-being of students, staff and patrons.

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

For additional information refer to the other sections in this report.

FOOD SERVICE ANALYSIS – TEACHING KITCHEN (1st Floor)

On Monday, May 6th and Tuesday May 7, 2013, we visited the above referenced to evaluate the existing condition of the food facility.

Given the existing conditions outlined herein, the food service management and staff should be commended for their efforts in providing nutritional food service and good housekeeping to the greatest extent possible.

Briefly, the following are our findings;

Receiving – Exterior and Interior:

Description/Assessment:

- Please refer to section 3.1.4.h.1.for details and photos of this area.

Janitor's Closet:

Description/Assessment:

- There are no dedicated areas for these functions.
- Housekeeping items such as brooms, mops, trash cans, detergents, etc. are located throughout this area.

Dry Food and General Storage:

Description/Assessment:

- There are no dedicated storage areas.
- Detergents are stored opened to the entire room. Not code compliant.
- All dry food, paper and detergent storage are located throughout this area.

This is unsanitary and poses a threat of cross-contamination.

Dry Food & General Storage Room:

All dry food, paper and detergent storage are located throughout this area.

Detergents are stored opened to the entire room. Not code compliant.

Floors appear to be covered with vinyl tile; the material must be analyzed.

Floor drain located in traffic aisle is hazardous.

Refrigerator and Freezer Storage:
Description/Assessment:

- Refrigerator and freezer storage is minimal and comprised of reach-in units.

Food Service Offices:
Description/Assessment:

- There is no office or desk area. Requirements for this program may not be required.

Staff and Student Toilets & Lockers:
Description/Assessment:

- There are no dedicated staff toilets and lockers. Staff and students utilize the culinary arts & bakery toilet and locker facilities.
- Miscellaneous personal items are located throughout the teaching kitchen.

Preparation Areas:
Description/Assessment:

- Most table understructures, utensil racks, pot & pan racks, etc. are constructed of inappropriate materials (galvanized steel or painted steel), which have degraded and should be considered unsanitary.
- There is an insufficient quantity of code mandated hand sinks.
- There are no handicap accessible work stations.
- Housekeeping items such as brooms, mops, trash cans, detergents, etc. are located throughout these areas.
- There are an inadequate number of floor drains to enhance housekeeping.

All the above is unsanitary and poses a threat of cross-contamination.

Preparation: Most table understructures are constructed of inappropriate materials (galvanized steel or painted steel), which have degraded and should be considered unsanitary.

Preparation: There is an insufficient quantity of code mandated hand sinks. This is the only hand sink in the entire teaching kitchen.

Preparation:

Ceilings and walls appear to be in good condition.

Most table understructures are constructed of inappropriate materials (galvanized steel or painted steel), which have degraded and should be considered unsanitary.

Storage is limited.

Teaching kitchen is accessed through the main kitchen. Main kitchen cannot be secured during evening classes.

Cooking Equipment:

Description/Assessment:

- Most cooking equipment appears to be in good condition.
- Convection oven is antiquated and not energy efficient.
- Exposed piping between and behind the cooking equipment is unsanitary as it is difficult to access for cleaning and maintenance. Area extremely difficult to maintain as a sanitary environment.
- There is no code mandated hand sink in these areas.

The above is unsanitary and poses a threat of cross-contamination.

Cooking Equipment:

Exposed piping between and behind the cooking equipment is unsanitary as it is difficult to access for cleaning and maintenance. Area extremely difficult to maintain as a sanitary environment.

Personal items are stored near open burners. This poses a considerable risk of fire and is a life safety issue.

Exhaust Hoods over Cooking Equipment:

Description/Assessment:

- The hood located over the convection oven is antiquated. Mesh filters located in the plenum chamber are extremely ineffective and accumulate grease rather than filtering the air stream. The grease cannot drain away as there is no "grease capture gutters".
- Hood located over the ranges appears to be in good condition; however, the filters are not efficient. The grease cannot drain away as there is no "grease capture gutters".
- Exposed Ansul piping and conduit is unsanitary as it is difficult to access for cleaning and maintenance.

Exhaust Hoods over Cooking Equipment:
Mesh filters located in the plenum chamber are extremely ineffective and accumulate grease rather than filtering the air stream. The grease cannot drain away as there is no "grease capture gutters".

Exhaust Hoods over Cooking Equipment: Exposed Ansul piping and conduit is unsanitary as it is difficult to access for cleaning and maintenance. Unsanitary.

Pot Washing Area:

Description/Assessment:

- There is no dishwasher for this kitchen. The code mandated three-bay pot sink assembly does not provide adequate drain-board surface, however, sink compartments are undersized for large kitchen wares. Understructure has degraded. An unsanitary and deteriorating grease trap is located under table.
- Housekeeping items such as brooms, mops, trash cans, detergents, etc. are located throughout this area.
- Exposed piping and conduit render this area nearly impossible to maintain as a sanitary environment.
- There are an inadequate number of floor drains to enhance housekeeping.
- Floor surfaces have degraded and are slippery when wet. Rubber mats are used to prevent falls. This is unsanitary and hazardous to foot traffic.

All the above is unsanitary and poses a threat of cross-contamination.

Pot Washing Area:

An unsanitary and deteriorating grease trap is located under table.

Exposed piping and conduit render this area nearly impossible to maintain as a sanitary environment.

Detergents are storage under a clean drain-board opened to food storage areas. Not code compliant.

Rubber mats are used at this wet area to prevent falls. This is unsanitary and hazardous to foot traffic.

General Area Conditions:

Description/Assessment:

- Exposed piping and electric conduit render the kitchen areas almost impossible to maintain as a sanitary environment.
- Floors appear to be covered with vinyl tile; the material must be analyzed.
- There are an inadequate number of floor drains to enhance housekeeping.
- An unsanitary and deteriorating grease trap is located under table.

All the above is unsanitary and poses a threat of cross-contamination.

Conclusion

The deficiencies outlined herein may or may not be specific code issues (most are by any interpretation); however all are unacceptable in terms of sanitation, food safety and generally acceptable food service practice. The deficiencies and issues of food cross-contamination should be addressed now and in any future planning. Final determinations are subject to local authorities having jurisdiction.

It is our opinion that there is a considerable risk of cross-contamination, which jeopardizes the health, safety and well-being of students and instructors.

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

For additional information refer to the other sections in this report.