

HAMPDEN-WILBRAHAM REGIONAL SCHOOL DISTRICT
EXISTING CONDITIONS and FEASIBILITY STUDY
THORTON W. BURGESS and WILBRAHAM MIDDLE SCHOOL

WILBRAHAM MIDDLE SCHOOL



SITE EVALUATION

Site Access, Parking and Fields

Existing Conditions

The existing Middle School site is located on the east side of Stony Hill Road approximately two (2) miles west of the Town Center, and consists of approximately 63 acres of mostly developed land, with open level playing fields directly adjacent to the road leading to the moderate to heavily sloped building site beyond. The site is bounded on the east by heavily wooded conservation land and wetlands, and to the north, south and west by residential development. Stony Hill Road in Wilbraham is a moderate to heavily traveled two-way, twenty-four foot wide road with safety signage for the school access drive, and the primary north/south route extending from Boston Road (Rt. 20) to the residential heart of Wilbraham, as well as Hampden and East Longmeadow further to the south. The existing school access drive is an unlit, two-way, twenty-four foot wide, 750 foot long road for the exclusive use of school traffic during school hours, and providing vehicular access to the two (2) existing paved parking area for approximately 110 vehicles. Pedestrian sidewalks are located on the west side of Wilbraham Road and the south side of the existing access drive. The existing drive is also used by the community for access to public soccer fields located to the south of the site during non-school hours.

Hampden-Wilbraham Regional School District
Middle School Study ~ 2 September 2015

JLS Architects
7 Rice Drive
Wilbraham, MA 01095

HAMPDEN-WILBRAHAM REGIONAL SCHOOL DISTRICT
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Deficiencies

The existing Middle School access drive and parking areas are original to the site and are in very poor condition, with significant areas of deteriorated, damaged and/or missing asphalt paving and curbs.

Recommendations

Renovation:

If the status of WMS is maintained as a single middle school serving the Town of Wilbraham, the existing asphalt access drive except the newly widened area at Stony Hill Road, parking lot and curbing, and storm drainage structures are deteriorated beyond repair and should be removed and replaced in their entirety as budgets allow. Existing playfields require minimal repair except for normal wear and tear.



Consolidation:

If WMS were to be selected as the location of a consolidated middle school serving the Towns of Hampden and Wilbraham, the resulting increase in student and staff population should prompt prudent consideration of correction of all existing deficiencies in a planned and regularly funded program for the most efficient long term operation and maintenance of the existing building

- Removal and replacement of all existing asphalt paved areas and curbing, traffic circulation and parking, including increased parking capacity to serve increased student and staff population.
- See Building Evaluation and Mechanical System Evaluations of this Report for detailed evaluation and recommendations for existing building architectural and mechanical systems.

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Water and Sanitary Utilities

Existing Conditions

The existing building is served by Town of Wilbraham water and sanitary sewer systems.

Deficiencies

See Mechanical System Evaluations of this Report for detailed evaluation of existing building utilities.

Recommendations

Renovation: If the status of WMS is maintained as a single middle school serving the Town of Wilbraham, the existing water and sanitary systems are expected to require little modification except for possible repair or replacement of deficiencies as described in Part C3 of this Report

Consolidation: If WMS were to be selected as the location of a consolidated middle school serving the Towns of Hampden and Wilbraham, the resulting increase in student and staff population should prompt prudent consideration of correction of all existing deficiencies in a planned and regularly funded program for the most efficient long term operation and maintenance of the existing building.

- Modification and upgrading of the existing water and sanitary systems for connection of new toilets serving any proposed modular space

Electrical Utility

Existing Conditions

The existing building is served by 3-phase overhead utility power located in Stony Hill Road.

Deficiencies

The existing electrical utility serving the building, including utility poles, disconnects, risers, underground utility power feeder, and pad mounted transformer are original to the building.

Recommendations

Renovation: If the status of WMS is maintained as a single middle school serving the Town of Wilbraham, the existing electric utility is expected to require little modification except for possible repair or replacement of deficiencies as described in Mechanical System Evaluation of this Report

Consolidation: If WMS were to be selected as the location of a consolidated middle school serving the Towns of Hampden and Wilbraham, the resulting increase in student and staff population should prompt prudent consideration of correction of all existing deficiencies in a planned and regularly funded program for the most efficient long term operation and maintenance of the existing building

- Modification and upgrading of the existing water and sanitary systems for connection of new toilets serving any proposed new modular space

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Traffic Evaluation

Existing Conditions

The alignment of Stony Hill Road at the intersection of the school drive consists of an uphill sloped approach from the north and a gentle level curve from the south. These conditions provide safe sight distances of less than 200 feet in both the north and south directions. The existing school access drive was recently improved at the intersection with Stony Hill Road to provide left and right turn exit lanes, and in its current configuration safely provides sufficient width, alignment, capacity, and turning radii for safe and efficient vehicular and pedestrian traffic for current levels of student buses and parent drop off as noted below.

Arrival and Departure Traffic Counts

Note: The following evaluation of existing traffic conditions are based on site observations conducted during daily arrival and departure times

Date:	8 June 2015	9 June 2015
Time:	1:50 - 2:10	7:00 - 7:45
Vehicles:	Buses: 12 + 1	12 + 3
	Vans: 3	1
	Staff: 61	44
	Parents: 41	114

Deficiencies

As detailed above during the 30-45 minute arrival and departure times at the existing site, fourteen (14) buses and an average of seventy-eight (78) passenger vehicles visit the site daily.

Recommendations

Renovation

If the status of WMS is maintained as a single middle school serving the Town of Wilbraham, new vehicular traffic control markings, including designated bus and parent drop off/pick up lanes should be included in parking area upgrades recommended above, and as budgets allow.

Consolidation

If WMS were to be selected as the location of a consolidated middle school serving the Towns of Hampden and Wilbraham, the resulting moderate increase in student and staff population should prompt prudent consideration of correction of all existing deficiencies in a planned and regularly funded program for the most efficient long term operation and maintenance of the existing building.

- Increased parking capacity to serve increased student and staff population, including separate designated bus and parent drop off/pick up lanes and staff and visitor parking areas, to maintain safe and secure traffic flow during critical arrival and departure times.

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BUILDING EVALUATION

GENERAL DESCRIPTION

The existing Wilbraham Middle School is a split level, single and two-story, steel framed and masonry infill with exterior brick masonry structure constructed in 1968. The existing building encompasses an area of approximately 94,000 gross square feet on the two levels. The main level of the building contains core spaces, including Kitchen/Cafeteria, Auditorium, and Gymnasium and Fitness Room with associated locker and storage areas, as well as Administration and Conference spaces, Band/Choral, Art, Science and Technology, Health, Computer Labs, Media Center, miscellaneous educational and faculty work areas, student toilets and Boiler Room. The two story rear portion of the building contains General Classrooms, Science Laboratories, Special Education Classrooms, and miscellaneous educational and faculty work areas organized in a Team Teaching orientation. The existing building plan is moderately efficient, with central double loaded corridors and stairs and an elevator serving the rear two story portion of the building. The building is in overall fair condition, with selected areas and materials showing greater deterioration.

General Note: The following assessments of existing conditions are based upon visual inspection of exposed and readily accessible building systems and components. Comprehensive direct examination and confirmation of concealed existing conditions, including but not limited to structural and mechanical system components, is limited due to the presence of existing floor, wall, and ceiling construction.

A. EXISTING CONDITIONS

1. BUILDING ENVELOPE

a. EXTERIOR WALLS

Existing Conditions

Exterior walls of the existing building are comprised of double wythe construction, with concrete block in-fill between structural steel framing with exterior face brick. The existing masonry walls have no air cavity or insulation within the composite wythes of block and brick.



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Deficiencies

Despite the inherently inefficient nature of wall construction described above, the existing exterior masonry walls are in overall fair condition. However, there exists a note worthy lack of masonry control joints around the building perimeter which when combined with the lack of an internal wall cavity and internal flashing preventing entrapped moisture from being redirected to the exterior, numerous areas of spalling, cracking, and efflorescence on the exterior face are evident. Cracks in the face brick are open to the elements allowing water infiltration. Also, due to no wall insulation, during periods of cold outside temperatures the dew point is located at an undetermined point within the existing masonry, causing condensation to occur within the masonry wall. These are inherent systemic problems which will continue to occur and can result in long-term deterioration of the exterior masonry walls. In addition, though the thermal mass of the existing exterior walls acts to moderate outside air temperature extremes, the lack of exterior wall insulation fails to comply with current building and energy code requirements.

Recommendations

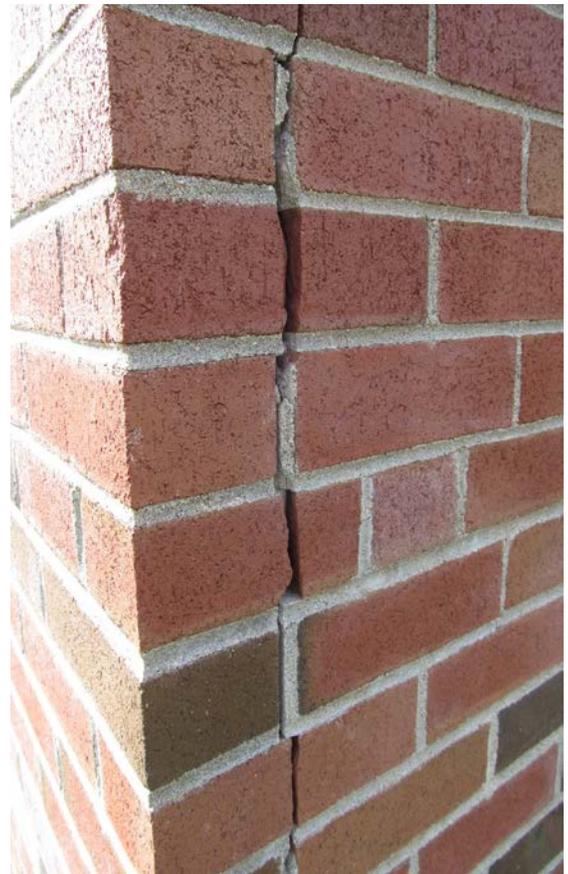
Renovation

If the status of WMS is maintained as a single middle school serving the Town of Wilbraham, selected areas of existing exterior masonry should be repaired or replaced to correct current continuing deficiencies and minimize future masonry deterioration as budgets allow.

Consolidation

If WMS were to be selected as the location of a consolidated middle school serving the Towns of Hampden and Wilbraham, the resulting moderate increase in student and staff population should prompt prudent consideration of correction of all existing deficiencies in a planned and regularly funded program for the most efficient long term operation and maintenance of the existing building

- All exterior walls be insulated at the interior face to maximize energy efficiency
- New masonry exterior control joints be installed around the entire building perimeter in accordance with current accepted building standards.
- The existing masonry chimney be repaired, repointed, and recaulked in its' entirety



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B. WINDOW AND DOOR SYSTEMS

Existing Conditions

The main and secondary exterior entrances of the building are comprised of the original hollow metal (steel) doors and frames. Exterior windows are the original fixed and awning type, single glazed non-thermally broken aluminum units with un-insulated aluminum infill panels and air intake louvers set within the original aluminum frames.

Deficiencies

Exterior entrances are in poor condition with varying degrees of missing and/or damaged operating hardware and deteriorated weatherstripping. The large majority of exterior doors are too narrow and do not meet current accessibility requirements. Exterior windows are in fair to poor condition with minimal insulating value and selected units with non-functioning operating hardware.

Recommendations

Renovation

If the status of WMS is maintained as a single middle school serving the Town of Wilbraham, selected existing exterior doors should be repaired or replaced to correct current continuing deficiencies and provide safe and secure building access and egress as budgets allow.

Consolidation

If WMS were to be selected as the location of a consolidated middle school serving the Towns of Hampden and Wilbraham, the resulting moderate increase in student and staff population should prompt prudent consideration of correction of all existing deficiencies, including removal and replacement of existing exterior doors and windows in their entirety, in a planned and regularly funded program for the most efficient long term operation and maintenance of the existing building



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C. ROOF SYSTEM

Existing Conditions

The existing building is covered with a single-ply, polyvinyl chloride (PVC) membrane, with copper counter and cap flashing at roof-to-wall and penetration locations, and aluminum fascia. Individual roof areas are drained via four (4) inch roof drains at selected locations of pitched to drain areas, with aluminum gutters and downspouts at the Gymnasium sloped roof.



Deficiencies

The existing roof membrane is in fair condition with selected areas of deteriorated seams, ponding water, and missing or poorly installed roof-to-wall flashing. While adequate, existing roof drain locations serve greater than the currently recommended roof area.

Recommendations

Renovation

If the status of WMS is maintained as a single middle school serving the Town of Wilbraham, selected damaged areas of the existing roofing and flashing and visibly damaged or missing roof system components should be professionally repaired or replaced to correct current continuing leaking into the building, with resulting negative impact on indoor air quality (IAQ), as budgets allow.



Consolidation

If WMS were to be selected as the location of a consolidated middle school serving the Towns of Hampden and Wilbraham, the resulting moderate increase in student and staff population should prompt prudent immediate consideration of correction of all existing deficiencies in a planned and regularly funded program for the most efficient long term operation and maintenance of the existing building

- Removal and replacement of existing roofing insulation, single ply membrane, flashing and accessories in their entirety, and installation of new
- Installation of additional roof drains with overflow capability in accordance with current plumbing code requirements.

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2. BUILDING INTERIOR

A. WALLS

Existing Conditions

Interior walls throughout the existing building, with the exception of more recently installed gypsum drywall demising partitions, consist of the original painted concrete block, structural glazed tile, and brick veneer.

Deficiencies

Interior walls throughout the existing building are in overall fair condition, with several selected areas of significant cracking of concrete block and structural glazed tile due to differential expansion rates between structural glazed tile and concrete block back-up, combined with the noteworthy lack of adequate masonry control joints. Also, due to the age of the existing building masonry walls are not designed for current building code seismic requirements.



Recommendations

Renovation

If the status of WMS is maintained as a single middle school serving the Town of Wilbraham, selected damaged areas of existing interior walls should be professionally repaired, as budgets allow.

Consolidation

If WMS were to be selected as the location of a consolidated middle school serving the Towns of Hampden and Wilbraham, the resulting moderate increase in student and staff population should prompt prudent immediate consideration of correction of all existing deficiencies in a planned and regularly funded program for the most efficient long term operation and maintenance of the existing building:



- New interior masonry control joints be installed in accordance with current accepted building standards.
- Modification of interior partitions to address educational program deficiencies
- Compliance with current seismic code requirements.

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B. CEILINGS

Existing Conditions

Exposed ceilings throughout the existing building consist of a variety of materials, including exposed painted structure and roof, painted cement plaster, and suspended metal grid with lay-in acoustical ceiling tile at varying heights.

Deficiencies

Existing ceilings located throughout the building are in overall fair to good condition with selected individual areas exhibiting damaged or missing components.

Renovation

If the status of WMS is maintained as a single middle school serving the Town of Wilbraham, selected damaged areas of existing ceilings could be repaired on an as needed basis following completion of roof repairs described above, as budgets allow, *except*, existing water damaged ceilings should be removed immediately, the source of water infiltration repaired, and ceilings replaced to improve indoor air quality (IAQ).



Consolidation

If WMS were to be selected as the location of a consolidated middle school serving the Towns of Hampden and Wilbraham, the resulting moderate increase in student and staff population should prompt prudent immediate consideration of correction of all existing deficiencies in a planned and regularly funded program for the most efficient long term operation and maintenance of the existing building:

- Selective removal and replacement as required for completion of recommended modifications of existing MEP equipment (See Part C3 of this Report for detailed information)
- Selective removal and replacement as required for modification of interior partitions to address educational program deficiencies



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C. FLOORS

Existing Conditions

Existing floor finishes consist of a variety of materials, including wood flooring at the Gymnasium and Stage, vinyl composition tile (VCT), vinyl asbestos tile (VAT), carpet, ceramic tile and quarry tile.

Deficiencies

With limited exceptions, existing floor finishes throughout the existing building are in fair to poor condition, exhibiting varying degrees of deterioration beyond what could be considered normal wear and tear.

Recommendations

Renovation

If the status of WMS is maintained as a single middle school serving the Town of Wilbraham, selected damaged areas of existing flooring could be repaired on an as needed basis following completion of roof repairs described above, as budgets allow, *except*, existing water damaged flooring and accessories should be removed immediately, the source of water infiltration repaired, and materials replaced to improve indoor air quality (IAQ).

Consolidation

If WMS were to be selected as the location of a consolidated middle school serving the Towns of Hampden and Wilbraham, the resulting moderate increase in student and staff population should prompt prudent immediate consideration of correction of all existing deficiencies in a planned and regularly funded program for the most efficient long term operation and maintenance of the existing building:

- Selective removal and replacement as required for completion of recommended modifications of existing MEP equipment (See Part C3 of this Report for detailed information)
- Selective removal and replacement as required for modification of interior partitions to address educational program deficiencies



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D. DOORS

Existing Conditions

With limited exception, interior doors and operating hardware are original construction. Corridor and stairwell doors are partially glazed with wire glass. Interior doors at classrooms and offices are the original hollow metal (steel) frames with solid core wood doors with single glazed glass vision panels. Door hardware is a variety of original and replacement units, with no lever handles observed.

Deficiencies

All interior doors throughout the building are in fair to poor condition, exhibiting varying degrees of functional and operational deficiencies, including damaged, missing, or obsolete hardware. The large majority of existing doors and selected door openings throughout the building are narrower than required to meet current handicapped code requirements.

Recommendations

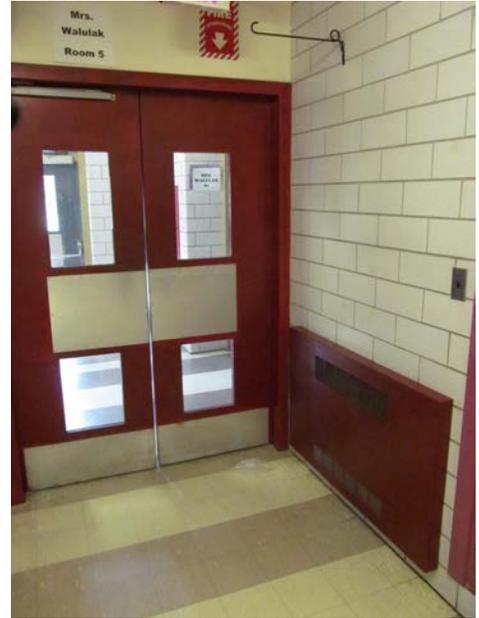
Renovation

If the status of WMS is maintained as a single middle school serving the Town of Wilbraham, selected damaged doors could be replaced on an as needed basis and selected doors removed and replaced to better comply with current ADA, MAAB, and Building code requirements.

Consolidation

If WMS were to be selected as the location of a consolidated middle school serving the Towns of Hampden and Wilbraham, the resulting moderate increase in student and staff population should prompt prudent immediate consideration of correction of all existing deficiencies in a planned and regularly funded program for the most efficient long term operation and maintenance of the existing building:

- Remove and replace all existing interior doors and operating hardware in their entirety, including selected wall removal, wall door openings relocated or enlarged with new frames, doors and hardware to comply with current ADA, MAAB, and Building code. As part of any proposed future addition/renovation, all existing interior doors and hardware must be replaced, and in a number of locations frames and doors must be removed in their entirety, wall openings enlarged, and new frames, doors and hardware installed as required to comply with current ADA, MAAB, and Building code requirements.



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e. KITCHEN

Existing Conditions

Existing food service equipment is industry standard, stainless steel, electric and low pressure natural gas fired, and in overall good condition with no reported malfunctioning equipment. The Kitchen prepares and serves lunch during three (3) servings. See the Mechanical Section of this Report for detailed evaluation of the kitchen exhaust hood, and related mechanical, plumbing and electrical systems.



Deficiencies

The existing food service equipment is in overall fair condition, well maintained, and subject to ongoing repairs and replacement. See Part C3 of this Report for detailed evaluation of the kitchen exhaust hood, and related mechanical, plumbing, electrical and life safety systems.

Recommendations

Renovation or Consolidation

Whether WMS remains a single middle school serving the Town of Wilbraham, or, is selected as the location of a consolidated middle school serving the Towns of Hampden and Wilbraham, the resulting moderate increase in student and staff population should prompt prudent immediate consideration of correction of all existing deficiencies in a planned and regularly funded program for the most efficient long term operation and maintenance of the existing building:

- Existing food service equipment will be removed and replaced on an individual, as needed basis
- See Part C3 of this Report for detailed evaluation of the kitchen exhaust hood, and related mechanical, plumbing, electrical and life safety systems.

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f. HANDICAPPED ACCESSIBILITY

Existing Conditions

The existing building, as originally designed and constructed, fails to comply with the letter and intent of current ADA, MAAB, and Building Code accessibility requirements. See the Mechanical Section of this Report for detailed evaluation of related mechanical, plumbing, electrical and life safety systems.



Deficiencies

With the exception at one (1) pair of main entry doors and selected student toilet room doors, numerous locations throughout the existing building restrict handicapped accessibility, including but not limited to, all exterior and interior doors, Auditorium Stage, elevator and two-story classroom wing north and south metal fire escapes that fail to comply with current ADA, MAAB, and Building Code accessibility requirements.

Recommendations

Renovation or Consolidation

Whether WMS remains a single middle school serving the Town of Wilbraham, or, is selected as the location of a consolidated middle school serving the Towns of Hampden and Wilbraham, the resulting moderate increase in student and staff population should prompt prudent immediate consideration of correction of all existing deficiencies in a planned and regularly funded program for the most efficient long term operation and maintenance of the existing building, and as required to comply with current ADA, MAAB, and Building code requirements:

- Remove and replace existing interior doors and operating hardware in their entirety, including selected wall removal, wall door openings relocated or enlarged with new frames, doors and hardware
- New vertical circulation (ramp or chairlift at Auditorium Stage)
- Replacement of elevator controls
- See Part C3 of this Report for detailed evaluation of related mechanical, plumbing, electrical and life safety systems.

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g. MISCELLANEOUS EQUIPMENT

Existing Conditions

Not included in the evaluation of existing systems above, the building components listed below are original to the building and equally necessary as the systems described above for the effective operation of an efficient, modern and educationally sound middle school.

1. Gymnasium equipment (not including recently installed bleachers and scoring system)
2. Auditorium seating
3. Technology infrastructure
4. Toilet room privacy partitions
5. Wood casework and millwork
6. Student lockers



Deficiencies

While generally useable, existing miscellaneous equipment throughout the building is in fair to poor condition, exhibiting varying degrees of deterioration beyond what could be considered normal wear and tear. with selected locations failing to comply with current ADA, MAAB and Building Code requirements. Ironically, while the technology system serves the school well, the existing electrical system is at if not over, its original design capacity. See the Mechanical Section of this Report for detailed evaluation of related mechanical, plumbing, electrical and life safety systems.

Recommendations

Renovation

If the status of WMS is maintained as a single middle school serving the Town of Wilbraham, selected improvements to miscellaneous equipment could be implemented on a regular periodic basis as budgets allow.

Consolidation

If WMS were to be selected as the location of a consolidated middle school serving the Towns of Hampden and Wilbraham, the resulting moderate increase in student and staff population should prompt prudent immediate consideration of correction of all existing deficiencies in a planned and regularly funded program for the most efficient long term operation and maintenance of the existing building:

- Replacement of existing miscellaneous equipment to provide effective operation of an efficient, modern and educationally sound middle school



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MECHANICAL/ELECTRICAL SYSTEMS EVALUATION

FIRE PROTECTION

Existing Conditions:

- The building is not currently served by an automatic sprinkler system.
- The existing kitchen hood is not fitted with a chemical extinguishing system.

Recommendations

Renovations The current Massachusetts State Building Code requires all buildings of Use Group E – Educations, to be equipped throughout with an automatic sprinkler system and further require all stage and auditorium spaces to be equipped with a stand pipe system. The National Fire Code requires all commercial cooking hoods to be protected by a chemical extinguishing system. This existing building does not meet current code requirements. Under Chapter 34 of the current Massachusetts State Building Code, existing buildings in Use "E" are not required to be retrofitted unless they are substantially renovated or undergo a change in use.

Unless the building is substantially renovated, the current codes do not require the building to be retrofitted with automatic sprinklers and/or stand pipes; however, because of the proven life saving benefits of these systems, this office would recommend retrofitting the entire building in the near future regardless of renovation plans.

Consolidation If WMS were to be selected as the location of a consolidated middle school serving the Towns of Hampden and Wilbraham, the resulting increase in student and staff population would require the following minimum work be undertaken immediately to ensure effective operation of an efficient, modern and educationally sound middle school:

- Extend a new 3" dedicated fire service water line and 3" sprinkler water pipe alarm valve to the new modular building and connect to the modular building sprinklers. Assuming the modular building will be separated from the existing WMS no sprinklers will be required in the existing building at this time.

PLUMBING

Existing Conditions:

The existing plumbing systems are over 40 years old and are at the limit of their useful life. The building is currently served by a 4" ductile iron water service located in the Boiler Room. The water service is equipped with a 3" water meter and a 3" main feed to the building.

The sewage disposal is a gravity type system to outside of the building and then is pumped to the town drainage system. The majority of the water piping is copper and most sanitary, waste, vent, and drain piping is cast iron and/or copper.

With the exception of few fixtures installed as part of a handicapped upgrade, the remaining fixtures in the building do not meet current ADA or water conservation regulations. The existing fixtures are china and/or enameled cast iron and were installed as part of the original construction.

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The building's domestic hot water is provided by Rheem indirect water heater model G82-156 which serves the kitchen. State water heater model SUF-100199, which serves the building, is piped to a 1,500 gallon storage tank. There is a single mixing valve in the Mechanical Room in the domestic hot water system. The building's hot water system is equipped with a hot water recirculation pump.

There is gas service entering the building outside the kitchen. This gas main serves the boilers and hot water heaters.

The Kitchen has gas fired equipment. There is a grease trap located at the dishwasher, and at the three-bay sink.

Storm drainage for the building consists of cast iron roof drains and cast iron piping. The storm drainage piping for the most part was concealed in walls and above ceilings.

Deficiencies:

- In general, the Plumbing fixtures are original to the construction of 1968 and have exceeded their useful life.
- The fixtures do not meet current accessibility and water conservation standards.
- Drainage piping appears to be in good condition and main runs of piping where adequately sized and could be reused in a major renovation.
- The water piping system due to its age was constructed with lead containing solder.
- In terms of the water conservation fixtures, their use is governed by the provisions of the Plumbing and Building Code. Essentially, the code does not require these fixtures be upgraded, but, where new fixtures are installed, as may be required by other codes or concerns, then the new fixtures need to be water conserving types of fixtures.
- The question of accessibility is somewhat more complex. The impact on the Plumbing is fairly simple but can be rather expensive.
- The Mass. Architectural Access Board Regulations are found at 521 CMR and as relates to Plumbing, provide as follows:
 - The level of Plumbing Compliance is determined by the value of total work being performed.
 - If the total work is less than \$100,000.00 and if this work were to include any Plumbing, then the Plumbing Work would need to comply.
 - If the total work is less than \$100,000 and less than 30% of the full and fair cash value of the building, then an accessible toilet and drinking fountain must be part of the work.
 - If the cost of the work exceeds 30%, then all of the existing and new Plumbing Facilities need to be accessible.
- The existing sewage pumps are almost 50 years old and have exceeded their useful life
- There are signs of failure in the recirculating hot water system and the piping and pumps should be replaced. The existing master mixing valve on the building's hot water supply is in poor condition.
- The Kitchen grease waste system should be upgraded to meet current Massachusetts Plumbing Code and Title V.

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Recommendations

Renovations

- Replace existing plumbing fixtures with new water conservation units
- Renovate plumbing to meet ADA compliance
- Replace existing domestic water mixing valve
- Replace existing domestic water recirculation pump
- Replace all water piping with lead free joints
- Replace sewer, drain and vent pipes above ground
- Replace existing sewage pumps- provide stand by power
- Replace all science room emergency shower and eye wash stations to meet current codes

Consolidation If WMS were to be selected as the location of a consolidated middle school serving the Towns of Hampden and Wilbraham, the resulting increase in student and staff population would require the following minimum work be undertaken immediately to ensure effective operation of an efficient, modern and educationally sound middle school:

- Connect the modular class room building bathrooms to the existing 4" sanitary sewer line and 1 ½" cold water line. Provide a new 40 gallon electric water heater for the modular building

MECHANICAL

Existing Conditions:

The HVAC systems currently serving the Wilbraham Middle School were primarily installed as part of the original construction and are approximately 47 years old. The only notable system upgrades are the replacement of the original boiler. The building systems are described as follows:

Heat for the building is provided by two (2) hot water boilers, one existing and one newer boiler installed in 2001. The boilers are Burnham cast iron sectional boilers with Powerflame dual fuel burners. Each boiler operates at a pressure of 40 psig and has a gross output of 3868 MBH. The collective boiler plant capacity provides approximately 80 BTU per square foot of building area. Oil for the boilers is stored in a 10,000 gallon underground storage which was installed in 1991 and is fitted with a lead detection system.

- Combustion Air: Combustion air is provided to the boiler room through a single wall mounted louver with motorized dampers. The louver is fitted with a motor operated dampers is interlocked with the boiler start controls.
- Breeching: Breeching from each boiler is through a welded black steel ducting system which communicates overhead and terminates in a masonry chimney. We could not verify if a flue liner is installed, however, we did determine that the chimney is of adequate capacity and height for the combustion gases served.

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- Automatic Temperature Controls: Automatic temperature controls are DDC. The control system was installed as part of an upgrade project in 2001 and is in fair condition.
- Kitchen Cooking Exhaust Hood: The kitchen area is provided with a single island type exhaust hood located over the centrally located cooking area. The hood is provided with removable cartridge filters. The hood was not provided with any lighting control. The exhaust hood is controlled by a manual switch which starts a roof mounted exhaust fan. Makeup air for the exhaust system is through unit ventilators. The kitchen hood is of the proper size and mounting height for the cooking area served and does operate. The exhaust fan was originally installed in 1968 and has exceeded its maximum serviceable life.
- Administration Area: The administration area is heated by a finned radiation located along the exterior wall which is controlled by individual wall mounted thermostats. There was limited mechanical ventilation systems installed. Although this condition does meet minimum code requirements for the exterior spaces, there were internal areas that are not provided with adequate ventilation. This condition is not code compliant and should be improved upon. A small ducted air handling unit with a DX coil provides limited air conditioning to the administration area. As noted above, this unit has no mechanical ventilation.
- Communicating Corridors: The communicating corridors which circulate throughout the entire building were provided with a limited amount of exhaust air. This entire condition is considered not code compliant and should be improved upon. The corridors were provided with a limited amount of convection heat of which is controlled by wall-mounted thermostats. All convectors and radiators were noted to have slight surface soiling and slight damage and do appear adequate in maintaining reasonable space temperature control. Based purely on age, the entire system should be upgraded.
- Entrances & Vestibules: The entrance lobby was provided with a single cabinet heater of which is undersized for the area served particularly during frequent use of the exterior doors. This condition should be improved upon.

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- Public Toilet Areas: The common public toilet areas are provided with a series of wall mounted exhaust registers located generally adjacent to the plumbing fixtures. All wall exhaust registers were noted to be extremely antiquated; many of which were damaged. We did note that there was no makeup air provided for the exhaust systems. The exhaust registers communicate to roof mounted exhaust fans through a galvanized sheet metal exhaust system, all of which is original to the building and in excess of 46 years old. Heating of the spaces is through various wall mounted convectors which tie into the low-pressure steam distribution system which are controlled by wall mounted thermostats. All heaters were noted to be antiquated, had slight surface soiling, however, do operate and maintain reasonable space temperature control.
- Cafeteria: The Cafeteria area is served by two central station air handling units located in a mezzanine mechanical room located above the stage. This unit is fitted with a fresh air intake and return duct, hot water heating coil with valve control, filters, supply fan, and return air. We could not determine if the outside ventilation dampers in this unit are operating correctly, however, considering their age and general state of disrepair, it does not appear that code required ventilation is adequately provided to the space. The entire volume of the air originally designed for the space as well as outside air is not adequate to achieve the space ventilation requirement. Located on opposite interior wall is a wall exhaust register which communicates to a roof mounted exhaust. This system is designed to provide code minimum ventilation air and should only operate when the exhaust hoods are not operating, however, we could not confirm if this operational sequence is in place.
- Auditorium: The auditorium and library space are each served by dedicated central air handling units. The air handling unit that serves the auditorium is located above the ceiling in the auditorium and is accessible by the cat walk system. The library unit is located above the ceiling of the storage room. Each unit is fitted with hot water coil and operable fresh air and return air dampers.
- Gymnasium: The gymnasium is served by two central station air unites, one located in the storage room and one in the gymnasium on opposite sides of the room. Each unit is fitted with hot water coil and operable fresh air and return air dampers connected to a ducted supply, return and fresh air. Adjacent to each air handling unit is a ducted exhaust system with a roof mounted exhaust fan. Due to age and condition, it was not possible to verify if the fresh air/ventilation was operable.
 - Locker Rooms: The locker rooms are each served by dedicated central station air handling units located above the ceiling of each space. Both units are fitted with hot water heating coils, and operable fresh air and return air dampers. Each locker room is also served by ducted exhaust systems and dedicated exhaust fans mounted on the roof.

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- Typical Classroom: Each classroom is heated and ventilated by a dedicated vertical unit ventilator. Each unit ventilator is fitted with a hot water heating coil, and operable fresh air and return air dampers. Exhaust air from each classroom is provided by vertical unit exhausters located on the same wall as the unit ventilator.

Deficiencies:

In general, with the exception of one new boiler and some limited controls, the existing HVAC systems currently serving this building are over 46 years old have exceeded its useful life. All of the unit ventilators and air handling units are original equipment and have exceeded their life expectancy.

Other than the boilers, which are replacements of the original units, all of the remaining boiler room equipment is original and in poor condition. Additionally, the gas-fired water heater does not have a dedicated combustion air system.

The existing oil storage fiberglass tank is original to the building and has far exceeded its life expectancy. The oil tank/system is fitted with a leak detection system and tank inventory/gauge. Oil supply and return piping is single-wall steel pipe and fittings. It is recommended that the tank be replaced with a modern double-wall FRP tank.

All of the existing heating hot water systems are original and in poor condition. There are numerous locations throughout the building where the piping insulation is missing or damaged. The entire piping system should be replaced at the time of building renovation.

All of the AHU's and unit ventilators are original and in poor condition. It is suspected that many of the UV's fresh air dampers are no longer operational.

All of the building's toilet and general exhaust systems are original and in fair condition. It is assumed that the systems are not operating at design capacity.

There are numerous code violations at the kitchen grease exhaust hood/system, including a lack of the required fire suppression system, lack of manual pull stations, hood does not cover all of the grease producing cooking equipment and there is no make-up air during hood operation. Based on the current cooking equipment layout the existing hood should be replaced with a larger hood that is equipped with the appropriate fire suppression and make-up air systems.

The original temperature control systems are original to the building and have failed with age. The system is not capable of meeting the demands of current energy codes or modern HVAC systems and equipment.

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Recommendations:

Renovations Due to the age and deteriorating condition of the existing HVAC systems this office recommends a complete replacement of all systems and equipment with the exception of the boilers. Since the boilers are in good condition they could possibly be re-used if the building were to be renovated.

Consolidation If WMS were to be selected as the location of a consolidated middle school serving the Towns of Hampden and Wilbraham, the resulting increase in student and staff population would require the following minimum work be undertaken immediately to ensure effective operation of an efficient, modern and educationally sound middle school:

- Extend a new gas line to the modular classroom building to serve the gas fired roof top units furnished with the modular classroom building

ELECTRICAL AND TECHNOLOGY

Existing Conditions:

Power Distribution:

The service consists of a General Electric 208Y/120 volt, three phase, 4 wire switchboard with two main service switches. One service switch is rated for 450A to serve the kitchen equipment. The second service switch is rated for 800A serving an 800A distribution section that serves the rest of the building. The distribution system consists of seven 3 pole circuit breakers serving sub-panels and two 20A, single pole circuit breakers for the exit lights and for the central battery unit serving remote low voltage emergency light heads throughout the building. The seven panelboards are located throughout the building. The panelboards appear original to the building and were manufactured by general electric. The circuit breakers for the equipment are no longer being manufactured. The existing service and distribution appears to be in working order. However, the switchboard, panelboards and associated breakers are at the end of their rated life. The service capacity appears to be sufficient for the existing facility but may be inadequate for moderate expansion.

Lighting:

The general lighting consists of both fluorescent and incandescent light fixtures with 4' T8 lamping for most common areas. Incandescent fixtures are utilized in closets, smaller rooms and mechanical spaces. Corridor lighting is generally surface mounted fixtures with prismatic lenses. The light levels meet current code but appear to be low. The Gymnasium and Cafeteria lighting does not appear to be original to the building. There appears to have been a lighting upgrade utilizing highly reflective fluorescent fixtures in those two spaces that appear to be very efficient. Exterior lighting consists of a mixture of incandescent and high intensity discharge lighting. The exterior lights are manually controlled by light switches near the exit door. The corridor lights in each classroom wing are controlled by a single switch control. The light fixtures in the classrooms are controlled by occupancy sensors. Lighting control in the corridors and exterior do not meet current code for automatic control.

Emergency Lighting:

The emergency lighting system is original to the building consisting of a central battery unit with remote light heads. The central battery was manufactured by Hampden Engineering Corporation (Model Number EM-BC2-8). The style and quantity of remote light heads are insufficient to provide the minimum light levels to meet current code. The exterior egress doors do not have emergency lighting on the outside of the doors as required by current code. The boiler room exterior exit door does not have an exit sign. A number of existing exit signs were not functioning properly.

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Fire Alarm:

The fire alarm system is not original to the building. The fire alarm system consists of manual pull stations located at the corridor egress doors and egress doors from other spaces to the outside, smoke detectors in corridors and selected other spaces, horn and/or strobe units in most occupiable spaces, heat detectors in high heat spaces such as the boiler room, an annunciator in the main front entrance vestibule and control panel in the storage room adjacent to the cafeteria and gymnasium. The fire alarm system is a Gamewell addressable system.

Although the fire alarm system is fairly new, the spacing and locations of strobes do not meet current code.

The existing fire alarm system was not removed after the new system was installed and placed in operation. The existing pull stations that are obsolete are still in their original locations and can be mistakenly pulled when a fire condition occurs. This is a life safety concern and should be addressed immediately.

The kitchen hood does not have a fire suppression system that is monitored by the fire alarms system.

Special Systems:

The security system control panel is located in the storage room adjacent to the cafeteria and gymnasium. The security system has card key access at the building main entrance with surveillance camera, mag-lock and intercom. Occupancy sensors provide unauthorized area motion sensing detection. Door contacts monitor the custodian's entrance.

Each classroom has a cable television outlet.

The clock system control panel is not original to the building. The original clock system was retrofitted with a newer clock system by Standard Time with LCD display.

The sound system is a Bogen Multicon 2000. The age of the system is indeterminate based on visual inspection. The speakers are surface wall mounted in the corridors and are flush mounted in a speaker/clock mounting assembly. The existing system speakers appear to have been maintained for use with the new head-end.

Auditorium:

The existing stage lighting system consists two rows of multi-color light strips with three colors in an alternating pattern. The platform sound system consists of a portable sound mixer/amplifier cabinet with two large wall mounted speaker assemblies.

Technology:

The telephone system service entrance is located in the storage room between the Cafeteria and the Gymnasium with 110 punch down blocks.

Telephones are wall mounted in each classroom.

The data rack is located in the storage room between the Cafeteria and the Gymnasium with horizontal copper cable distribution to each classroom, office and similar space. Wing A has a data rack serving that wing utilizing a fiber optic cable to the main data rack. Each classroom has three data back box locations with two data jacks per back box.

Emergency Power:

There is no emergency or stand-by generator system located at the school.

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Recommendations

Renovations Recommendations for the Electrical systems are based on code compliance and the age and condition of the systems.

Replace main service distribution, panelboards, and associated feeders.

Replace existing incandescent light fixtures with fluorescent or LED light fixtures. The proposed light fixtures will result in a reduction of energy consumption by approximately 80% for each fixture.

The exit signs should be replaced with new battery back-up exit signs meeting current code for letter stencil dimensions and direction chevrons. The proposed exit signs should be LED type which would reduce the energy consumption of each exit sign by approximately 90%.

The original central battery emergency light system should be removed. A new central battery emergency light system with all new remote light heads or self-contained emergency lights should be provided throughout the school to ensure that all egress and assembly spaces have a minimum of one footcandle of illumination when the normal power is lost.

Normal lighting should be replaced with HID or compact fluorescent on the exterior side of each exit and emergency lighting should be provided at the exterior side of each required exit as required by current code.

The need for additional receptacles should be reviewed with the school to ensure that current and future needs will be satisfied. New wall mounted receptacles should be provided at all locations where extension cords are being used to provide power in classrooms where an insufficient quantity of receptacles exists to eliminate the code violation of extension cords being used as a permanent connection for equipment.

Add a fire suppression system to the kitchen hood and reconfigure the power to all equipment under the hood with shunt trip function to shut down power upon hood suppression system activation. Monitor the fire suppression system with the fire alarm system. Provide ground fault protection for all 20A and 15A single pole circuits in the kitchen.

Relocate and add fire alarm horn/strobe units in the corridors to meet current code.

Remove the existing fire alarm system that has been abandoned.

Test incoming phone lines and replace lines that do not meet signal test requirements.

Need and function of the clock system, security system, CATV system, and the sound system should be reviewed with the school board for operational requirements and modifications.

Consolidation If WMS were to be selected as the location of a consolidated middle school serving the Towns of Hampden and Wilbraham, the resulting increase in student and staff population would require the following minimum work be undertaken immediately to ensure effective operation of an efficient, modern and educationally sound middle school:

Install a new 200 amp, 3 pole breaker in the existing 1600 amp MDP and extend a feeder to the new power and lighting distribution panel in the new modular classroom building.