

# ***CHENEY SCHOOL BUILDING & BENNET ACADEMY***

## **PHASE I STUDY - APRIL 17, 2013**



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- CHENEY COMPLEX
- BENNET ACADEMY COMPLEX



EXISTING SITE



CHENEY HISTORIC DISTRICT  
(OUTLINED IN RED)

## HISTORY

### North of School Street

The Cheney building, built in 1926 as a technical high school to train students for work in the Cheney Mills. The building has been unoccupied since 2006. The adjacent boiler building, built in 1918, originally served as a central plant for several adjacent buildings. It currently provides heat for the Cheney building and houses a cooling tower for the Bennett Academy. The fire station, built in 1918, was Fire Station No. 4. It now serves the fire department as a meeting room and a storage facility.

### South of School Street

Bennet Academy consists of four separate buildings, Franklin, Bernard, Cone, and the Recreation building connected by a series of overhead, enclosed, pedestrian bridges. Franklin, Bernard, and Recreation were built circa 1916 and the Cone building was built in 1975. As part of major renovation to all four buildings in 2007, the connecting bridges were provided. The building currently houses the entire sixth grade for the district.

In 2012, the School Modernization and Reinvestment Team Revisited (SMARTR) Committee was formed to look at a strategy for long-term investment in the Town of Manchester's educational facilities. The SMARTR committee is comprised of members from the Board of Education and Board of Directors, a Town Building Committee member, and members of the public.

In March of 2013, the firm of Tai Soo Kim Partners, Architects was retained by the Town of Manchester to determine if it was feasible, from an educational and construction perspective, to move all the fifth grade students in the district to the Bennett Academy / Cheney site creating a grade 5 - 6 school. In particular, Tai Soo Kim Partners was tasked with determining if the project as envisioned could satisfy the State Department of Education's requirements for a "Renovation" status project in conformance with C.G.S. 10-282.

## METHODOLOGY

For the purposes of the study, the SMARTR Committee with representation from the Board of Directors, Board of Education, and Town Building Committee provided feedback, through a series of weekly meetings, to the design team.

The process began with three distinct phases, gathering of existing documentation, field surveys of the existing facilities, and interviews with select staff.

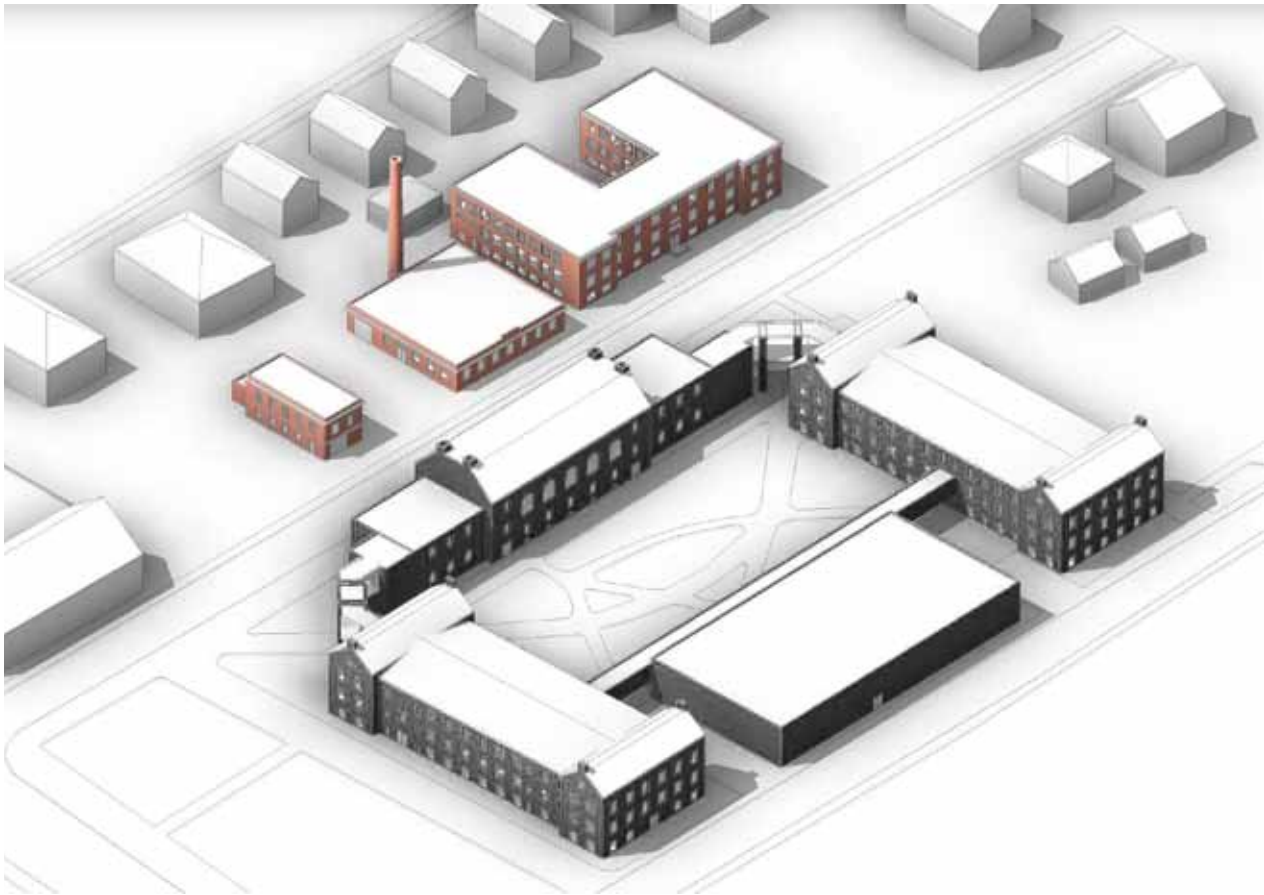
Information was gathered from multiple locations and sources. The following information was utilized:

- Drawings: Manchester Public Works - Cheney Building Floor Plans, date unknown
- Drawings: Manchester Public Works - Fire House Floor Plans, date unknown
- Drawings: Bennett 6th Grade Academy General Construction, 12/2006
- Drawings: Heating Plant-School Buildings, 2/1915 (Partial Set)
- Drawings: Fuss & O'Neill Main Street Utilities, 9/2005
- Drawings: Manchester Drainage Water and Sanitary Plan, 6/1986
- Drawings: Trade School Building Plot Plan, 6/1924
- Drawings: School Street Sewer Map and Profile, 1914
- Bennett School AHERA Asbestos Re-Inspection Report, 10/2008
- Educational Specification Grade 5 Cheney / Bennett Academy Site, 3/2013
- Educational Specification Highland Park, 4/2008
- Bennett Project Site Options Memo, 6/2006

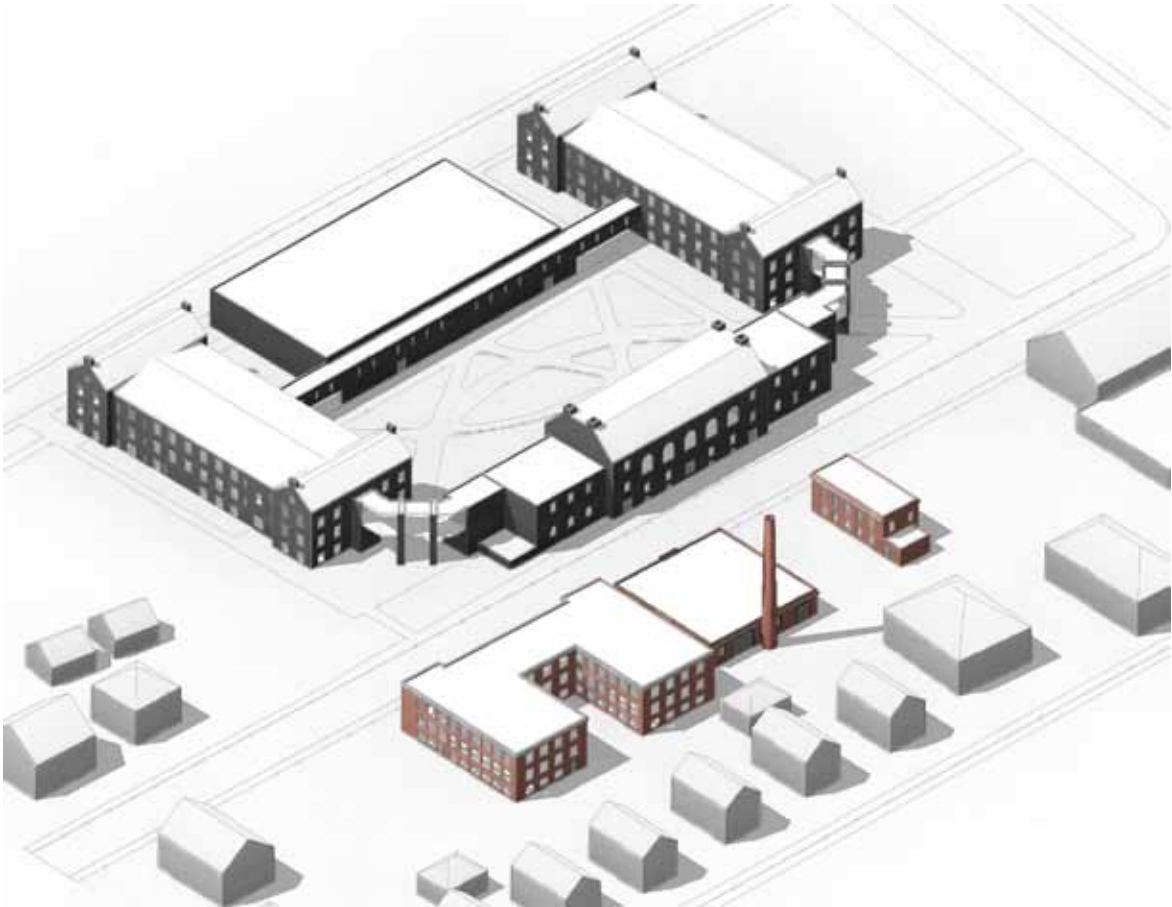
The staff of Tai Soo Kim Partners, Kohler Ronan Consulting Engineers, Macchi Engineers, and Tighe & Bond, over the course of 5 weeks, conducted 10 site visits to examine the existing facility. As part of this investigation, Tai Soo Kim Partners solicited information from the following:

- SMARTR Committee
- Cheney Brothers National Historic District Commission
- Manchester Historical Society
- CT State Historic Commission
- Dr. Richard Kiesel, Superintendent
- Joe Chella, Principal
- Richard Ziegler, BOE Facilities Director
- Chris Till, Manchester Department of Public Works Facilities Director
- Scott Sprague, Director of Parks and Recreation

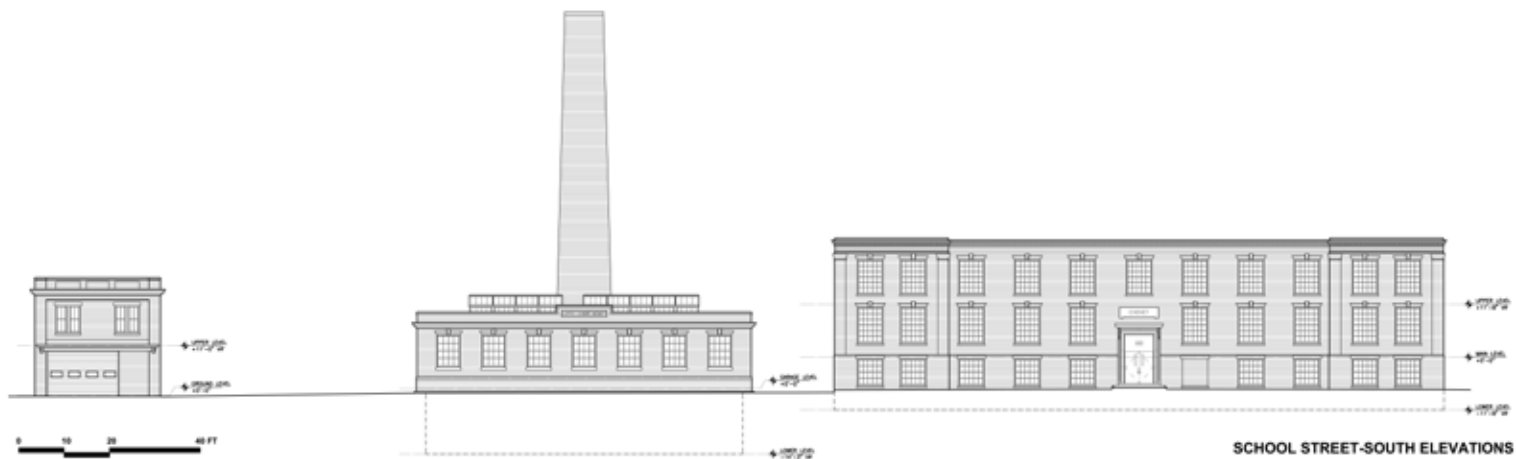




View from the south



View from the north



Fire House

Boiler House

Cheney Building



EXTERIOR ENVELOPE

The Cheney building is a three story structure with an exterior envelope of 16" thick solid brick bearing walls with limestone trim and built-up asphalt roofing. Windows are wood, single pane, double hung. There is a small single wythe CMU storage shed attached to the building in the north courtyard.



3-story Brick Structure with Limestone Trim and Built-up Asphalt Roofing



Wythe CMU Storage Shed

Generally speaking the brick exterior is in good condition. There appears to be no brick spalling or deterioration of the mortar. There are some vines along the north wall of the courtyard that will need to be removed and a fire escape on the east wall of the courtyard that is badly rusted and needs to be removed/replaced.



North Wall of Courtyard - Cheney Building



East Wall of Courtyard - Cheney Building

The limestone lintels and sills are in good condition but soiled. All exterior masonry should be cleaned and limited repointing should be anticipated. Windows are in poor condition with peeling paint, broken glass panes and generally no longer operable. They will require replacement. The lower level window screens are badly corroded and also need to be removed/replaced. The roofing appears to be in satisfactory shape, but roof accessories, e.g. vents, roof hatch, etc, are in poor condition.



Limestone Lintels and Sills - Good Condition but Soiled



Inoperable Windows



Satisfactory Roof Condition / Poor Roof Accessories Condition



II BUILDING CONDITION ASSESSMENT - CHENEY BUILDING

INTERIOR STRUCTURE

The Boiler building is a single story structure that extends approximately 14' below grade and with an exterior of 18" solid brick bearing walls with limestone trim and low slope metal roofing. Windows are wood, single pane, double hung. There is a large 84' tall brick chimney which is no longer used.

In general the main building was found to be in good overall condition. We did not observe any significant signs of structural distress in the exposed bearing walls or timber support members. However, we did observe isolated areas that will require some remedial structural work. These include the following:

- 1) Long term water infiltration through the exterior basement walls has caused deterioration in the masonry and mortar joints within the basement. Correcting this may require that the perimeter of the building be excavated and the basement walls exposed. A new waterproof membrane would then be installed with a new perimeter footing drain. The perimeter of the building would be backfilled with a free draining fill.
- 2) Some water infiltration was observed through the roof at a number of locations. This appears to be concentrated at interior roof drain locations. Based on this, some replacement of damaged tongue and groove roof planking should be anticipated.

The building was last utilized as a school. From a load standpoint the building appears to be functioning for the intended loads. Upgrading the existing main building to meet current seismic requirements should not be required as there is no change in use. However, if significant structural modifications are made to the existing lateral force systems during the renovation, seismic upgrades would then be required. A complete seismic upgrade to a building of this type would be prohibitively expensive and should be avoided.

INTERIOR FINISHES

The exterior walls are painted brick, interior partitions are primarily CMU, drywall, or brick, all painted. Flooring consists of tile, wood strip flooring, VAT, and carpet. Ceilings are typically 2x4 acoustic tile with exposed painted structure in some locations on the third floor.



Typical Interior of Cheney



Ceiling with 2x4 acoustic tile with exposed painted structure

In the lower level, paint is peeling on most of the exterior walls and the wood floor is severely buckled. This is the result of moisture intrusion either through the walls or floor or both. Walls and floors need to be sealed to eliminate water intrusion and all loose paint needs to be removed.

All finishes are in poor condition and should be replaced.



Paint Peeling on Interior Walls



Buckled Wood Floor

HVAC SYSTEMS

The building is heated by a combination of cast iron and finned tube radiators located at the perimeter of each floor level. Steam is provided from the adjacent boiler building. There is no air conditioning or mechanical ventilation. All of this equipment requires replacement.

ELECTRICAL SYSTEMS

The electric service is rated at 600A, 208/120V, 3-phase, 4-wire. It is served by pole mounted transformers located on the opposite side of the road. Service lines cross the road overhead to a pole in front of the building and then drop down the pole and run below grade to the building. This service is antiquated and the secondary conductors appear undersized. This equipment should be replaced. Lighting throughout is in poor condition and should be replaced.

PLUMBING SYSTEMS

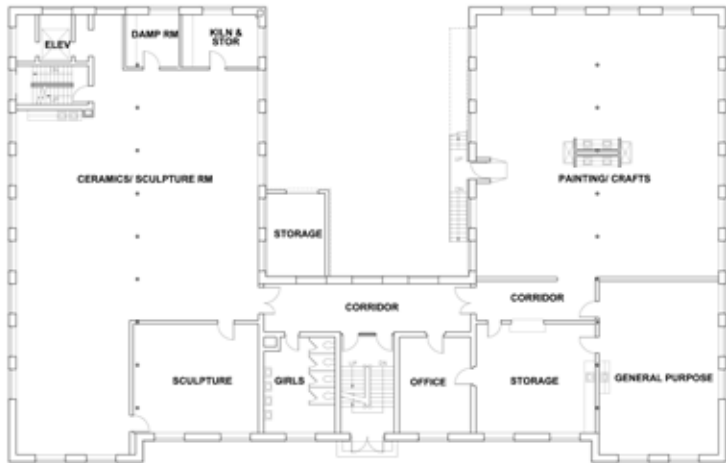
All existing plumbing fixtures should be replaced. The building appears to be served by municipal water and sewer services that enter the building in the meter room at the lower level. These utilities appear to be adequately sized.

FIRE PROTECTION

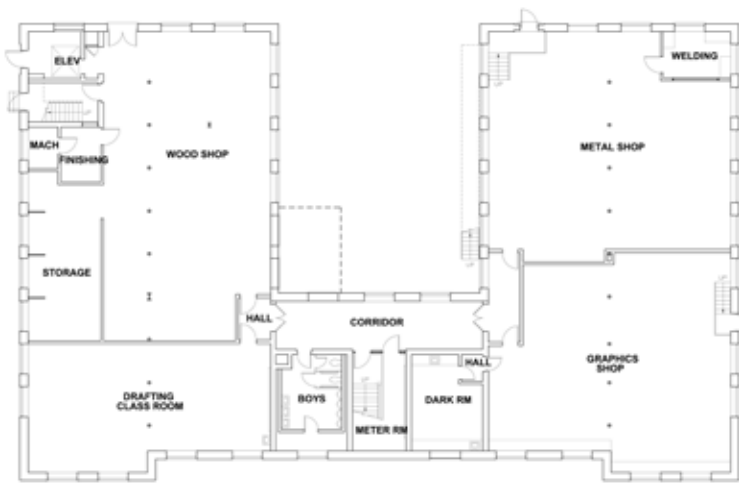
The building appears to be served by a 6" municipal water service for fire protection that enters the building in the meter room at the lower level. This service appears to be adequate.



Upper Level Floor Plan



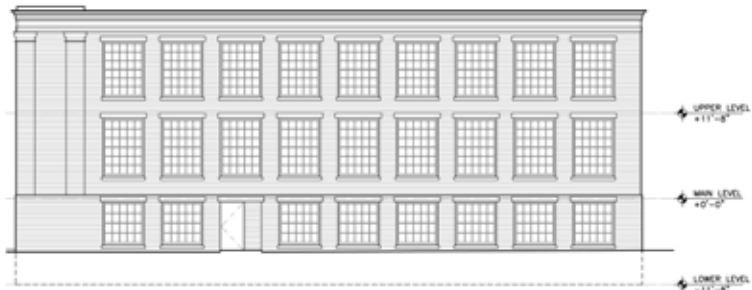
Main Level Floor Plan



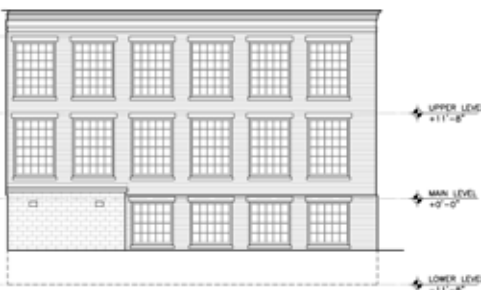
Lower Level Floor Plan



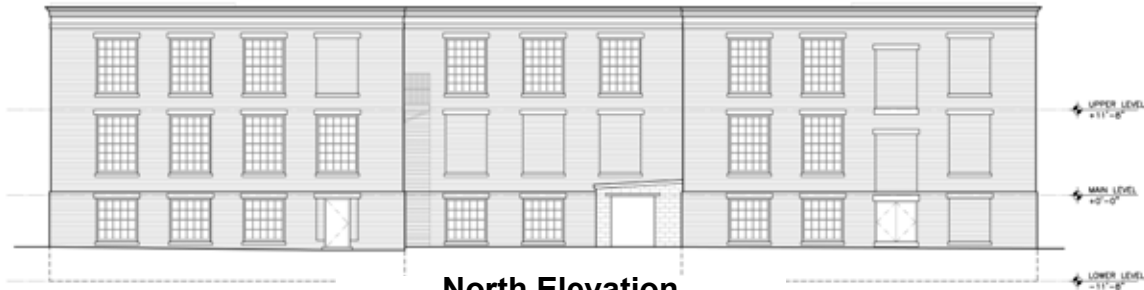
South Elevation



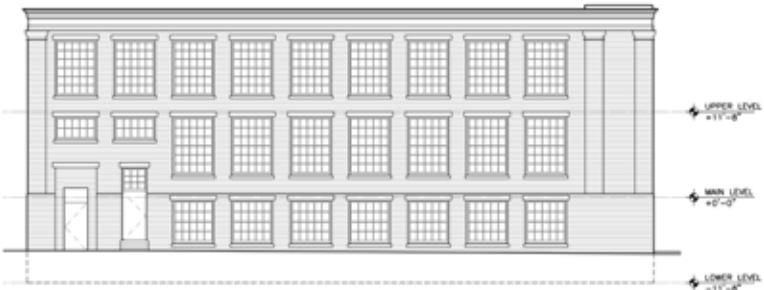
East Elevation



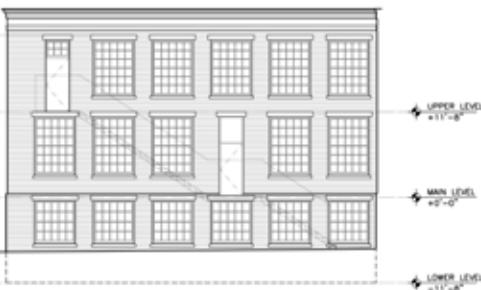
Courtyard East Elevation



North Elevation



West Elevation



Courtyard West Elevation





II BUILDING CONDITION ASSESSMENT - BOILER HOUSE

EXTERIOR ENVELOPE

The building is a 3-story timber and masonry bearing wall structure that contains a partial below grade basement. Typical floor construction is comprised of tongue and groove flooring spanning between heavy timber girders. The girders are supported on both masonry bearing walls and in some areas steel columns. Roof construction is comprised of tongue and groove timber decking that spans between heavy timber girders. The roof is pitched to interior roof drains. There are areas where steel framing had been previously added to reinforce portions of the floors.



Boiler House Exterior

The existing masonry envelope is in fair condition with areas of spalled brick, deteriorated mortar joints, and weathered stone trim. It appears that water had been entering the walls through the stone coping and causing deterioration. At some point, the stone copings were covered with sheet metal caps to correct this problem. This appears to have stabilized the exterior and prevent further deterioration. Spalled brick should be replaced and deteriorated mortar joints repointed.

The low slope metal panel roof system is an unusual assembly that appears intact but has limited life expectancy. The large skylight assembly, is un-insulated and in fair condition.

INTERIOR STRUCTURE



Spalled Brick, Deteriorated Mortar Joints, and Weathered Stone Trim



Low Slope Metal Panel Roof System

The building is a single story, robust structure, comprised of cast in place concrete walls and perimeter masonry bearing walls. The building contains a full basement. The roof is comprised of a series of steel trusses that support a concrete roof system. The rear of the building contains a large smoke stack. Overall the structure is in good overall condition. However, there are isolated areas that require remedial structural work. These include the following:

- 1) Significant deterioration of a concrete lintel above a rear door was observed. The lintel should either be repaired or replaced.
- 2) Water infiltration was observed through the basement walls and roof parapets. Some reconstruction work of the roof parapet masonry should be anticipated.

INTERIOR FINISHES

The interior of the boiler building is absent interior finishes except for some paint of exposed structure. There is a plywood mezzanine on the west side of the building with a spiral stair that connects to the lower level.



Interior of Boiler Building is Absent of Interior Finishes

HVAC, ELECTRICAL, PLUMBING AND FIRE PROTECTION SYSTEMS

The building is heated with steam from a small boiler that also serves the adjacent Cheney building. There is a large cooling tower that serves the Bennet Academy in the northwest corner of the building. There is no air conditioning or mechanical ventilation. The electrical and plumbing systems are antiquated. There is no fire protection system.

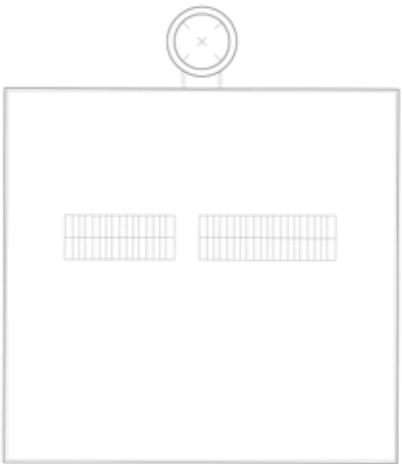


FIRE HOUSE

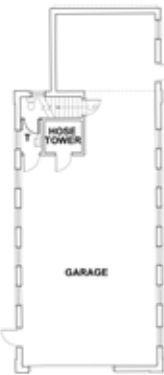


Second Floor Plan

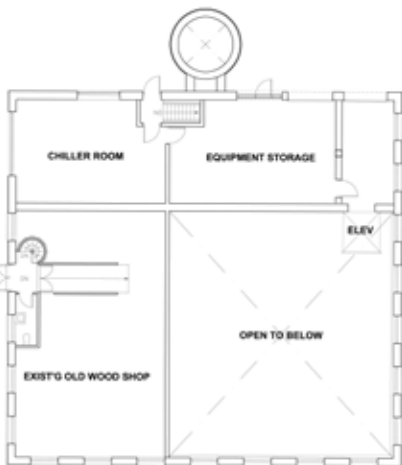
BOILER HOUSE



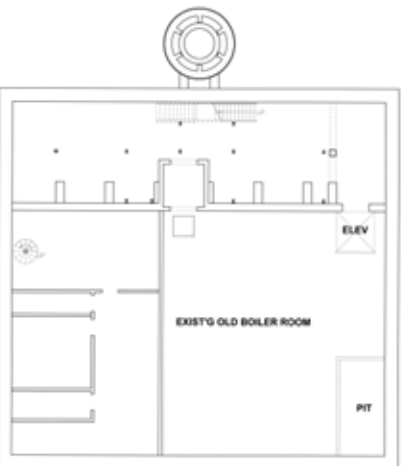
Roof Plan



Ground Floor Plan



Ground Floor Plan



Lower Floor Plan

0 10 20 40 FT

EXTERIOR ENVELOPE

The Fire House building is a two story structure with an exterior envelope of 12" thick solid brick bearing walls, and limestone trim. Windows are wood, single pane, double hung.

The existing masonry envelope is in fair condition with areas of cracked, deteriorated mortar joints, and weathered stone trim. Windows are peeling paint and showing signs of deterioration. Masonry cracks need to be repaired and the exterior cleaned.



2-story Brick Structure with Limestone Trim



Cracked, Deteriorated Mortar Joints & Weathered Stone Trim

INTERIOR STRUCTURE

The building is a 2-story masonry bearing wall structure. Typical construction is comprised of timber framing with tongue and grove flooring. Overall the structure was found to be in good overall condition. However, we did observe that portions of the slab on grade are significantly cracked and will require replacement.

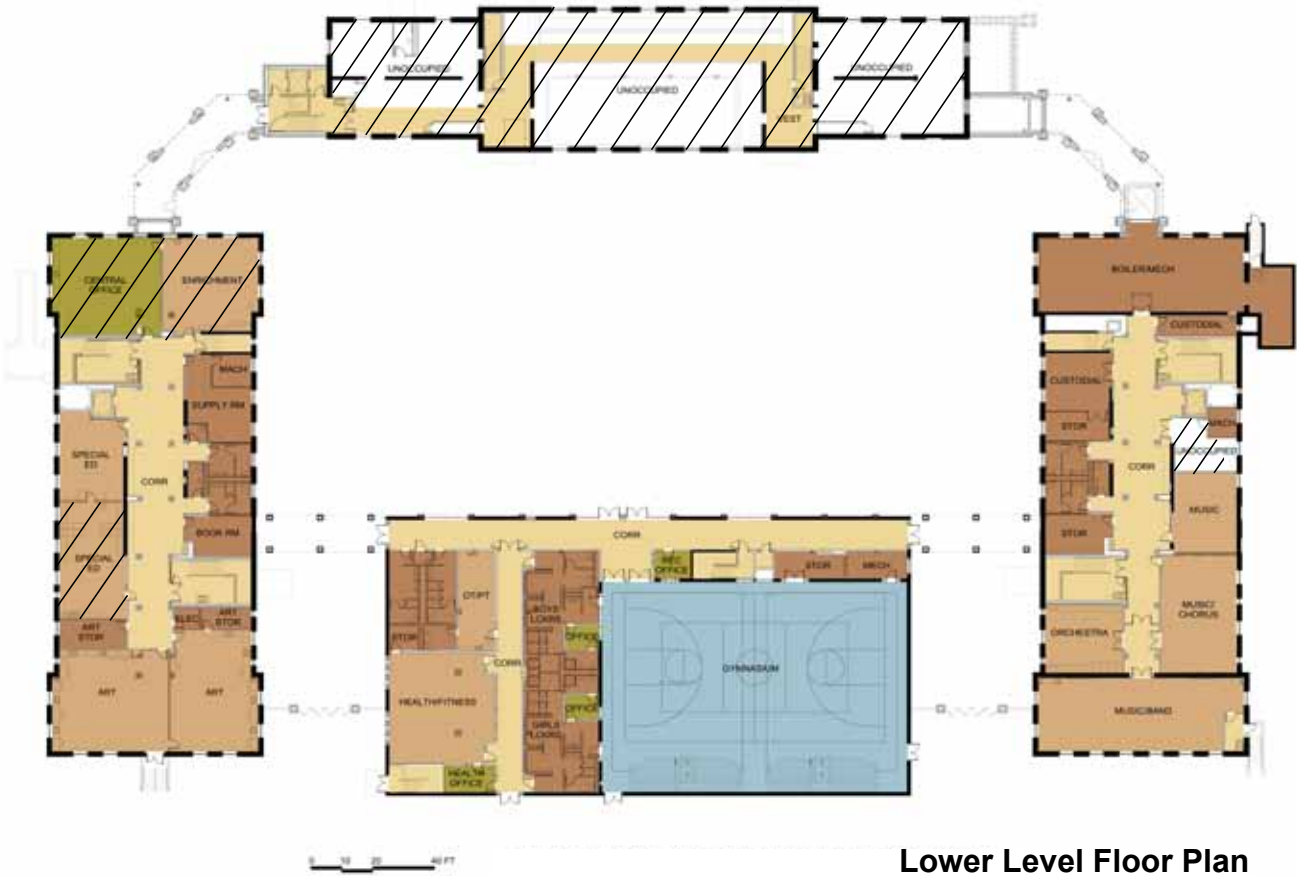
INTERIOR FINISHES

The exterior walls are painted brick, interior partitions are painted drywall. First floor has a sealed concrete floor with exposed wood joists above. Second floor is carpeted. All finishes are in fair condition.

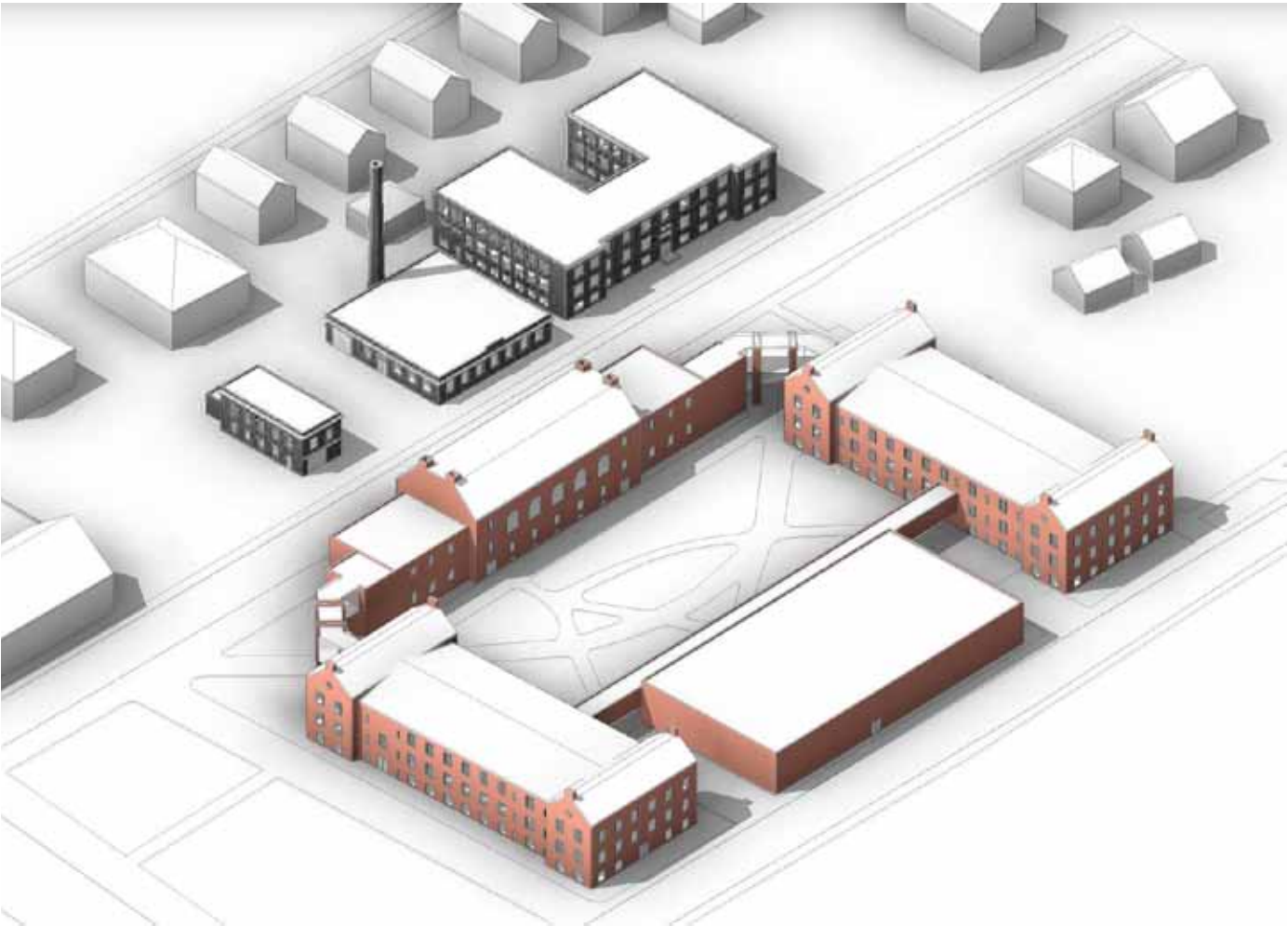
III EXISTING CONDITIONS - BENNET ACADEMY

The Bennet Academy is a recently renovated complex of four separate buildings connected by pedestrian bridges. The 2007 construction project was completed as a “Renovation” project as defined by C.G.S. 10-282. As such, all building systems are essentially new and have a minimum 20 year life expectancy. The only exception is the lower level of the Recreation building which was left unfinished and at one time housed a pool and bowling alley. It is currently used as storage.

- CLASSROOM
- CIRCULATION
- ADMINISTRATION
- UTILITY & SERVICE
- CORE
- UNDER UTILIZED SPACE



Lower Level Floor Plan



View from the south





Interior Corridor



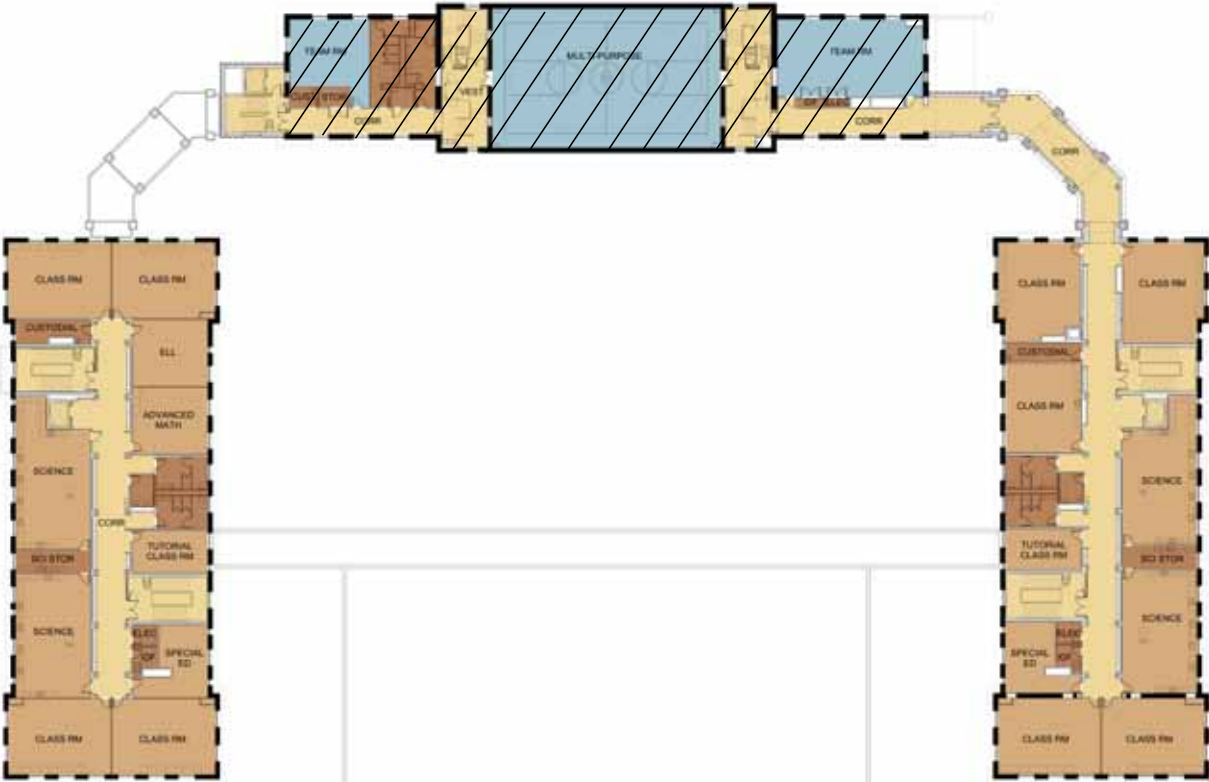
Bennet Academy Exterior



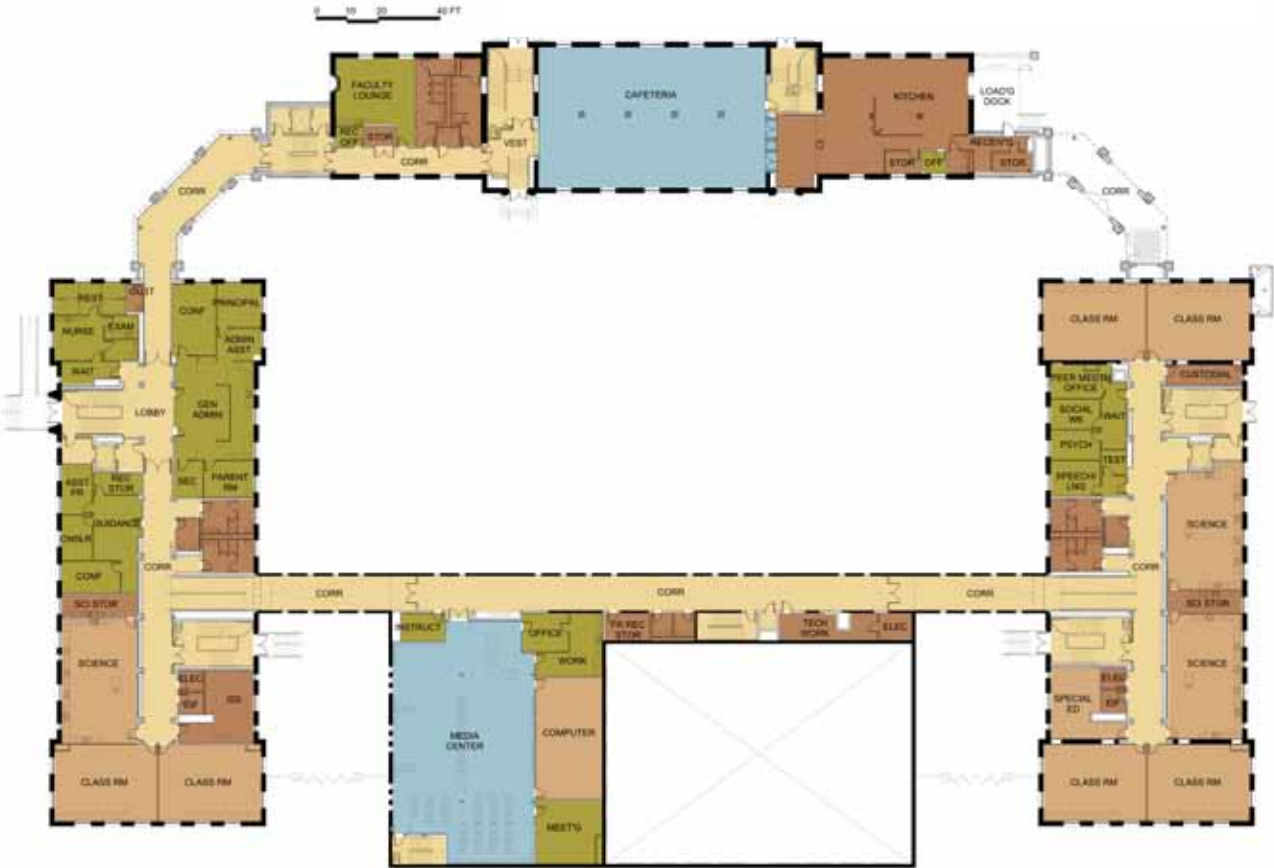
Unoccupied Space Used for Storage

### III EXISTING CONDITIONS - BENNET ACADEMY

- CLASSROOM
- CIRCULATION
- ADMINISTRATION
- UTILITY & SERVICE
- CORE
- UNDER UTILIZED SPACE



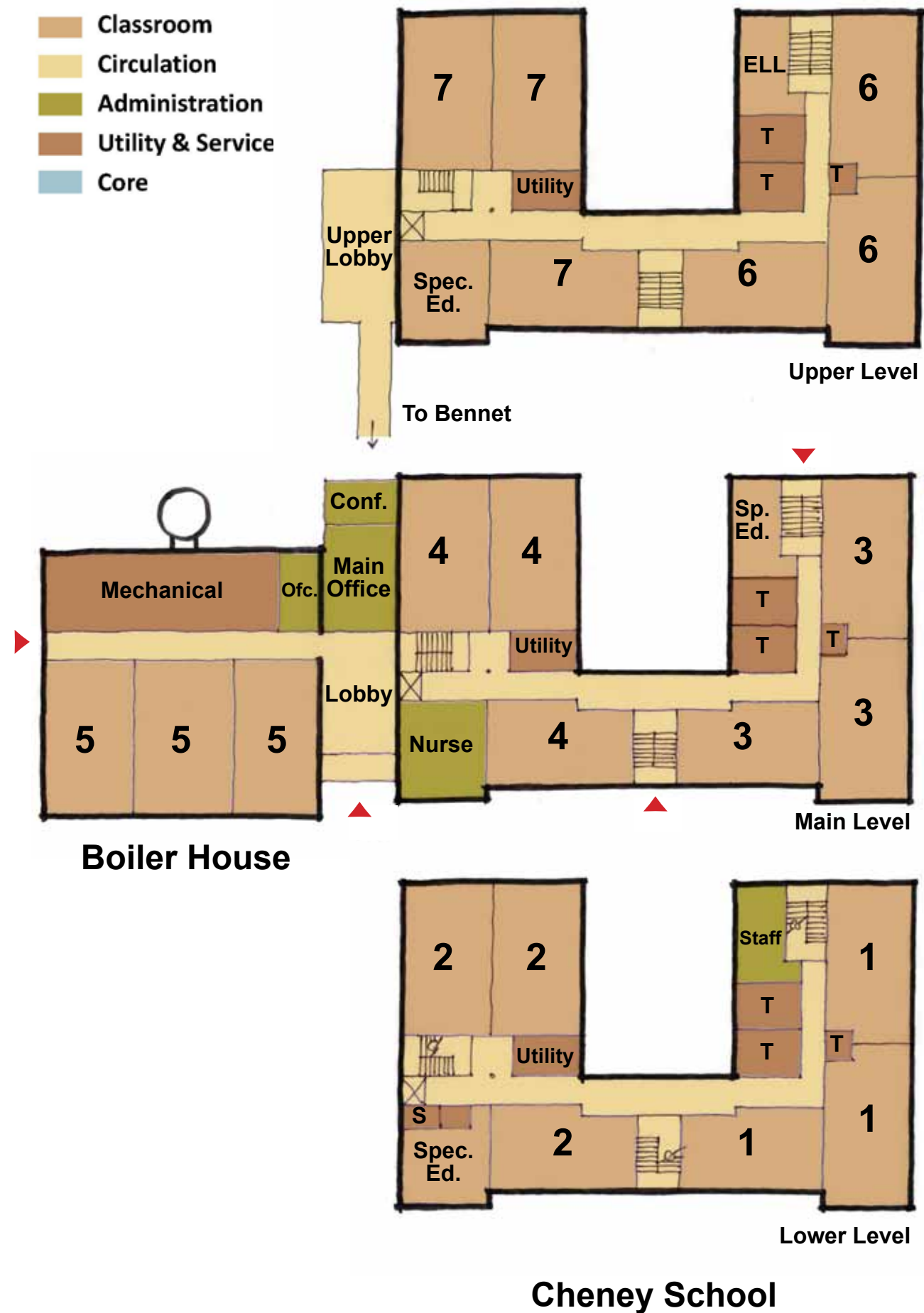
Upper Level Floor Plan



Main Level Floor Plan

2018 – 2019 School Year		
Enrollment Projection	546 Students (Peak Enrollment)	
# of Classrooms Needed	21 – 22 Classrooms @ 23-25 students	
Program	Cheney Complex	Bennet Academy
Classrooms	21 @ 900 SF = 18,900 SF	
Special Education	3 @ 600 SF = 1,800 SF	
General Music		900 SF
Band/Orchestra		800 SF
Art Room		1,400 SF
Staff Room	400 SF	
ELL Classroom	600 SF	
Nurse	500 SF	
Administration Area	1,500 SF	
Cafeteria Expansion		1,800 SF
Sub Total	23,700 SF	4,900 SF
Grossing Factor 1.4	9,480 SF	0
Sub Total	33,180 SF	4,900 SF
Connector to Bennet	2,000 SF	0
Total Required SF	35,180 SF	4,900 SF
Cheney / Boiler SF	31,800 SF	
Net Required SF	3,380 SF	





### Option 1 Massing Model

### Pros

- Salvages Cheney and Boiler Building for new use
- Provides optimal team configuration
- Possible expansion area

### Cons

- Compromised classrooms in boiler building
- Noise concerns from cooling tower
- Greater risk of unknowns in boiler building
- Lobby/Office constrained size/location
- 830 SF +/- classrooms



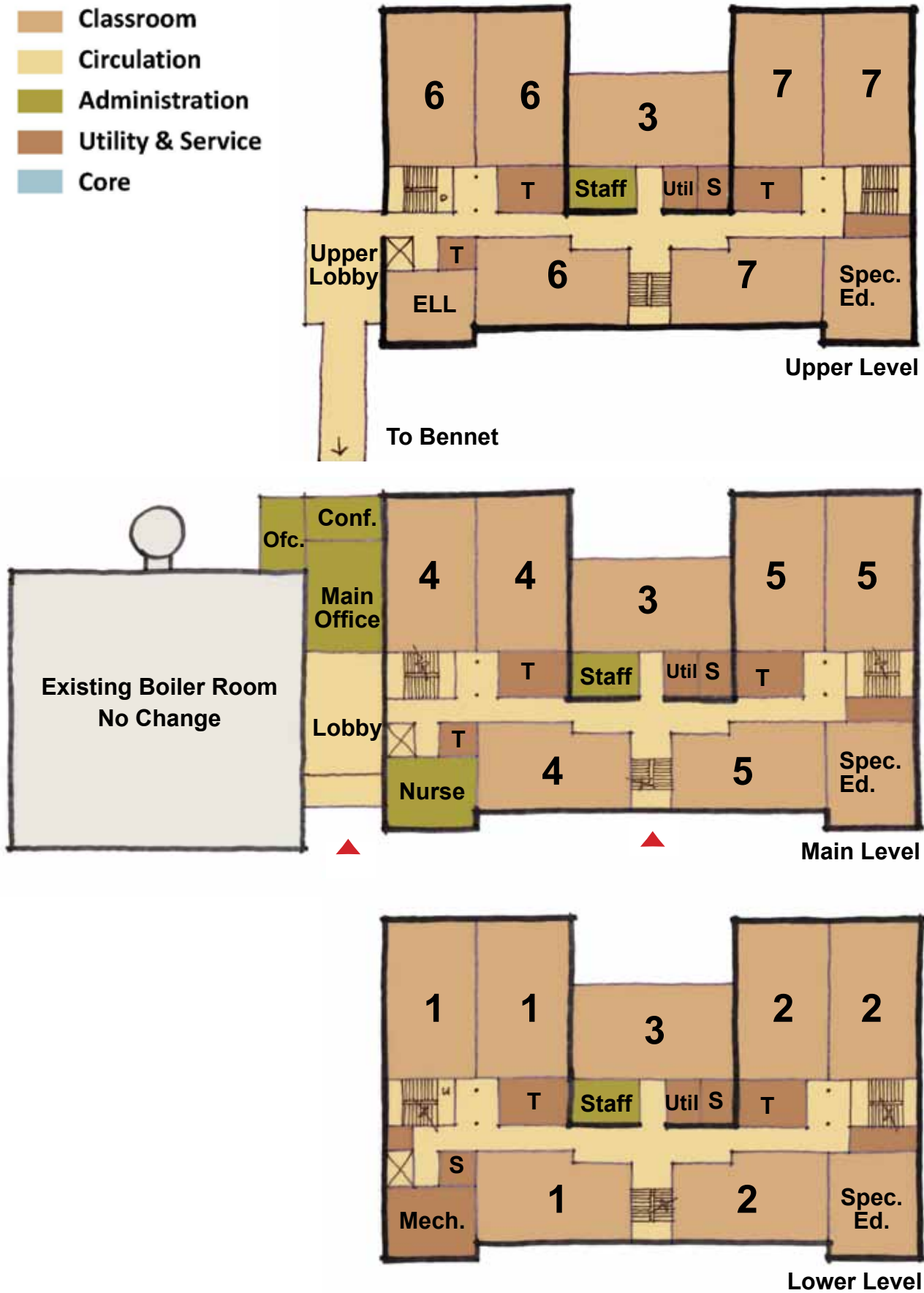
Option 2 Massing Model

Pros

- Salvages Cheney Building for new use
- Possible expansion area in Boiler Bldg
- Compact layout

Cons

- Compromised team configuration
- Lobby/Office constrained size/location
- New building adjacent to deteriorating Boiler House structure
- 830 SF +/- classrooms



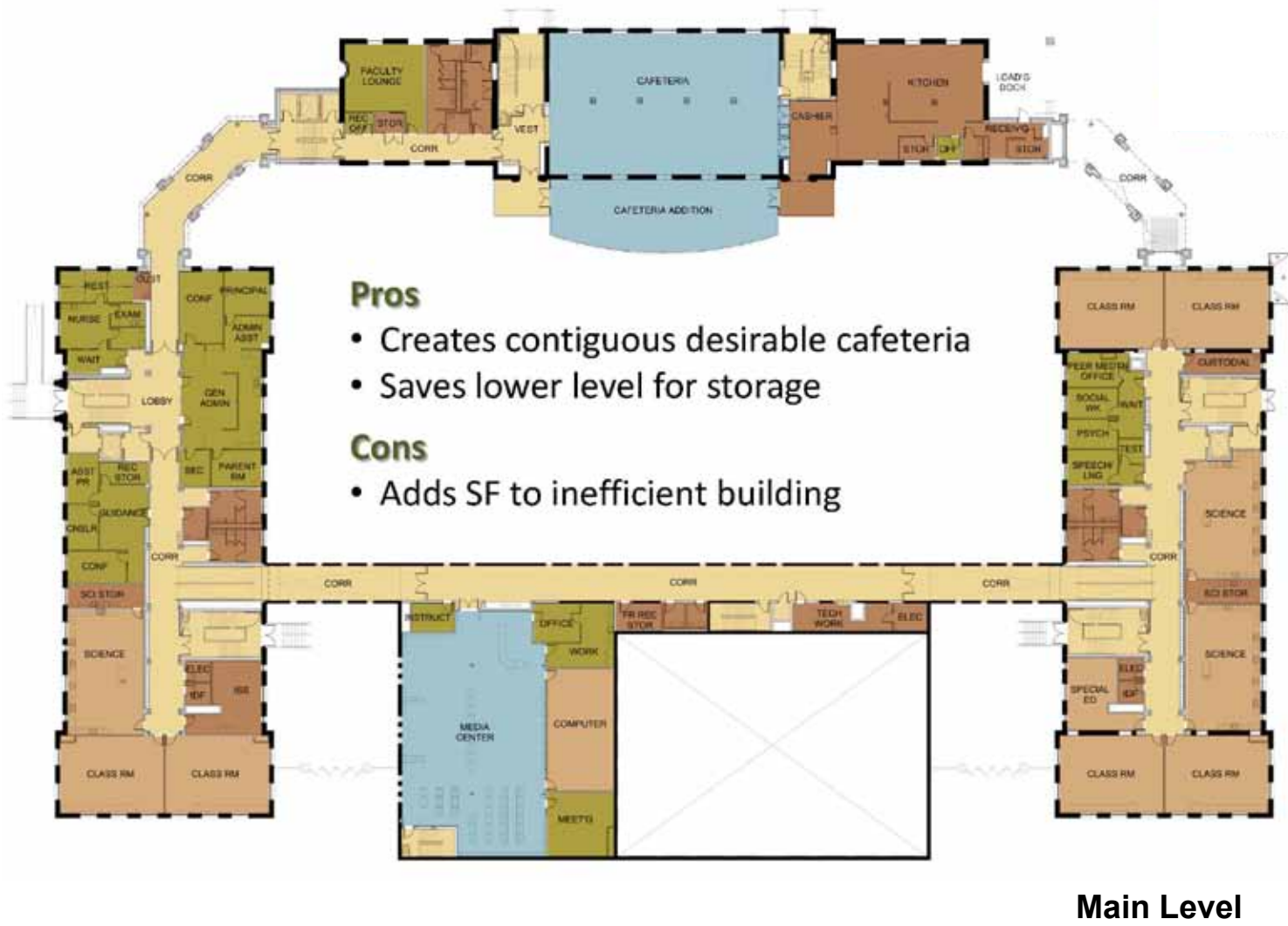
Cheney School



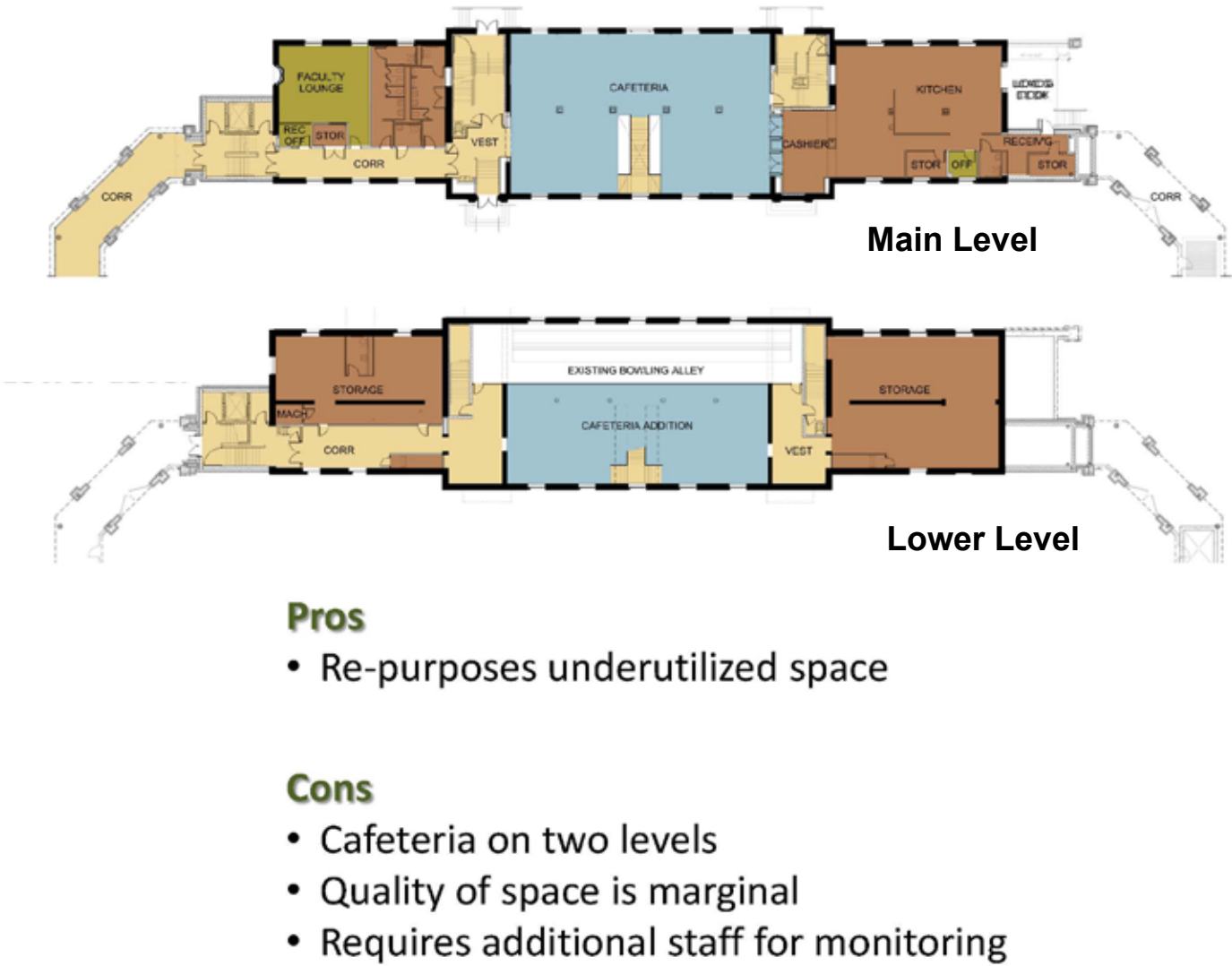


- CLASSROOM
- CIRCULATION
- ADMINISTRATION
- UTILITY & SERVICE
- CORE
- UNDER UTILIZED SPACE

Dining Option 1



Dining Option 2









- CHENEY COMPLEX
- BENNET ACADEMY COMPLEX

EXISTING SITE



## Site Option 1

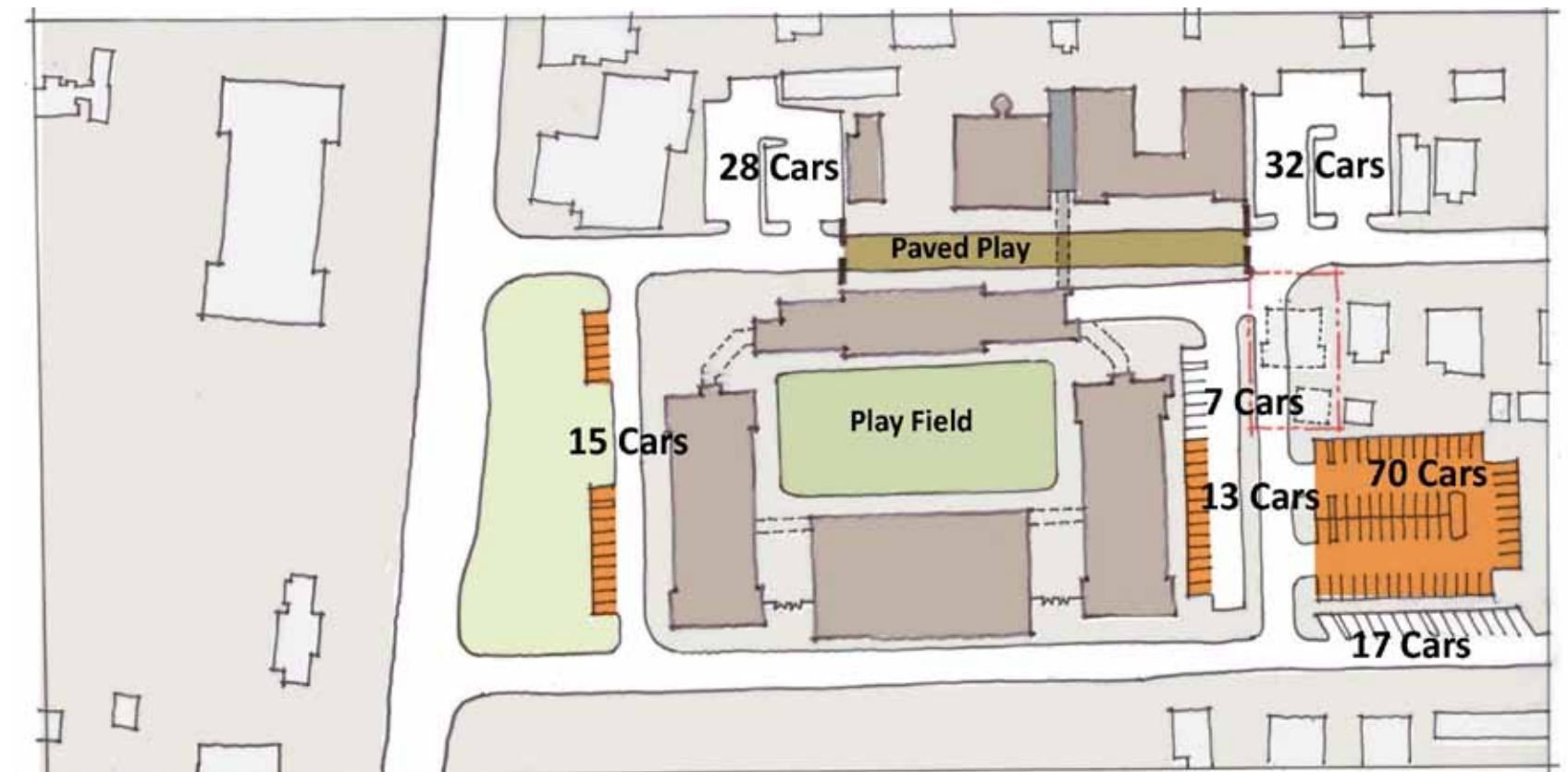
### Pros

- Provides unified campus
- All parking accommodated on site
- Provides adequate parking
- Provides paved and grassy play areas

### Cons

- Loss of U12 size soccer field
- Requires property acquisition
- Requires historic district approval

**Total: 182 Parking Spaces**



## Site Option 2

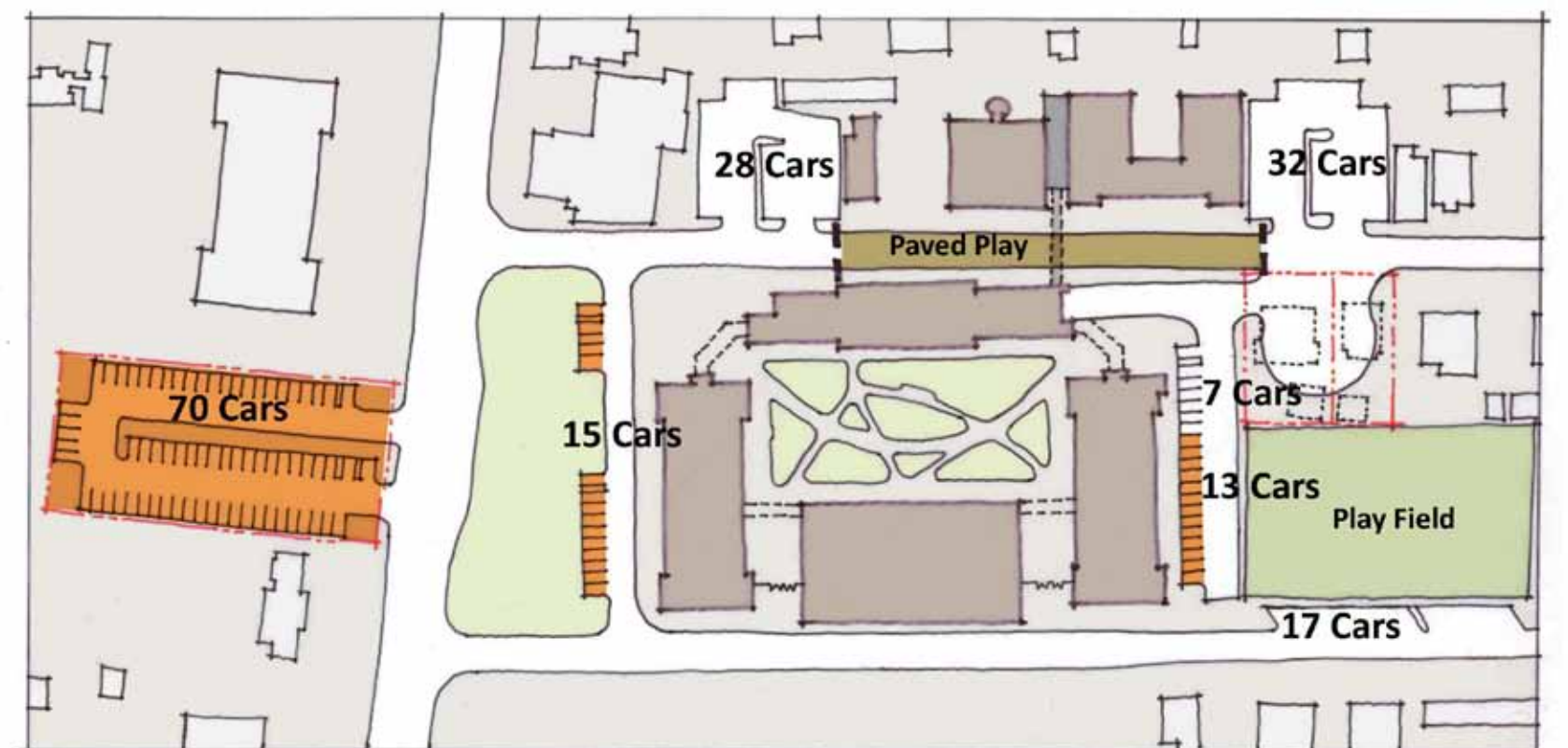
### Pros

- Provides unified campus
- Daily parking accommodated on site
- Provides ample parking
- Provides paved and grassy play areas

### Cons

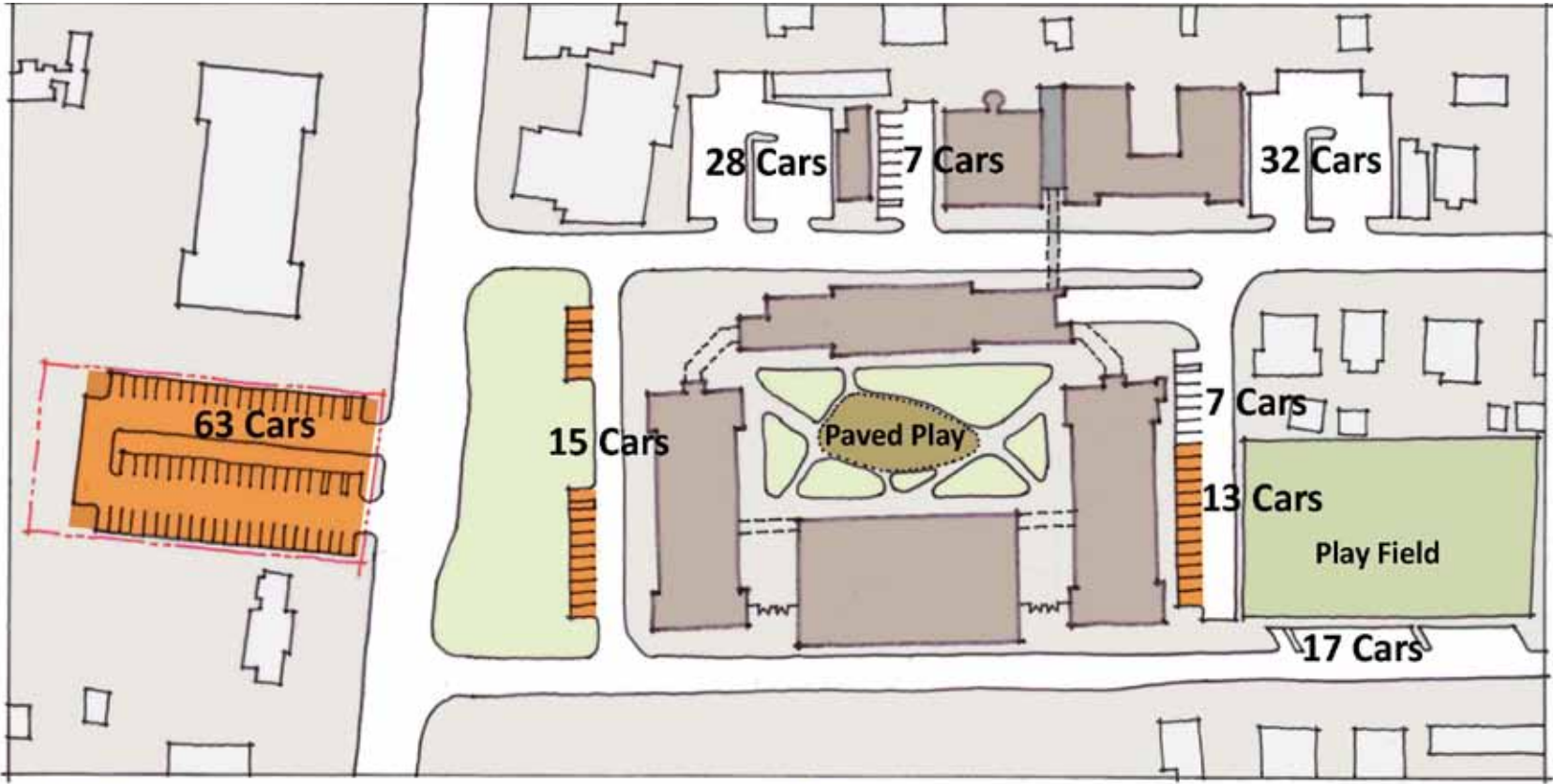
- Event parking across Main street
- Requires property acquisition
- Requires historic district approval

**Total: 182 Parking Spaces**





Site Option 3



Pros

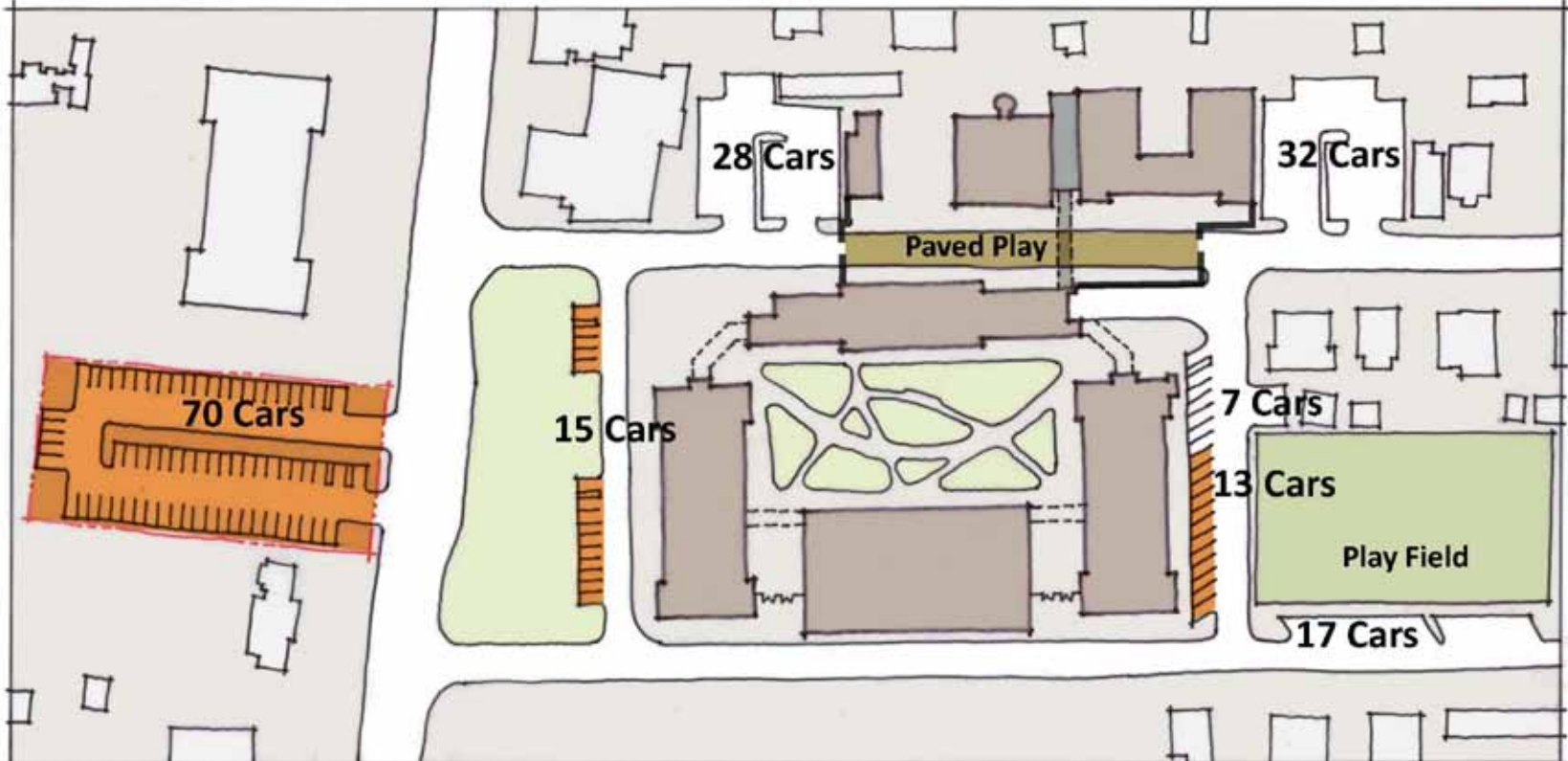
- Minimally disruptive to existing layout
- Daily parking accommodated on site
- Provides ample parking
- Maintains paved and grassy play areas

Cons

- Event parking across Main street
- School street splits campus

Total: 182 Parking Spaces

Site Option 4



Pros

- Minimally disruptive to existing layout
- Provides unified campus
- Daily parking accommodated on site
- Provides ample parking
- Provides paved and grassy play areas

Cons

- Event parking across main street
- Play field across Vine street

Total: 182 Parking Spaces



## Site Option 5

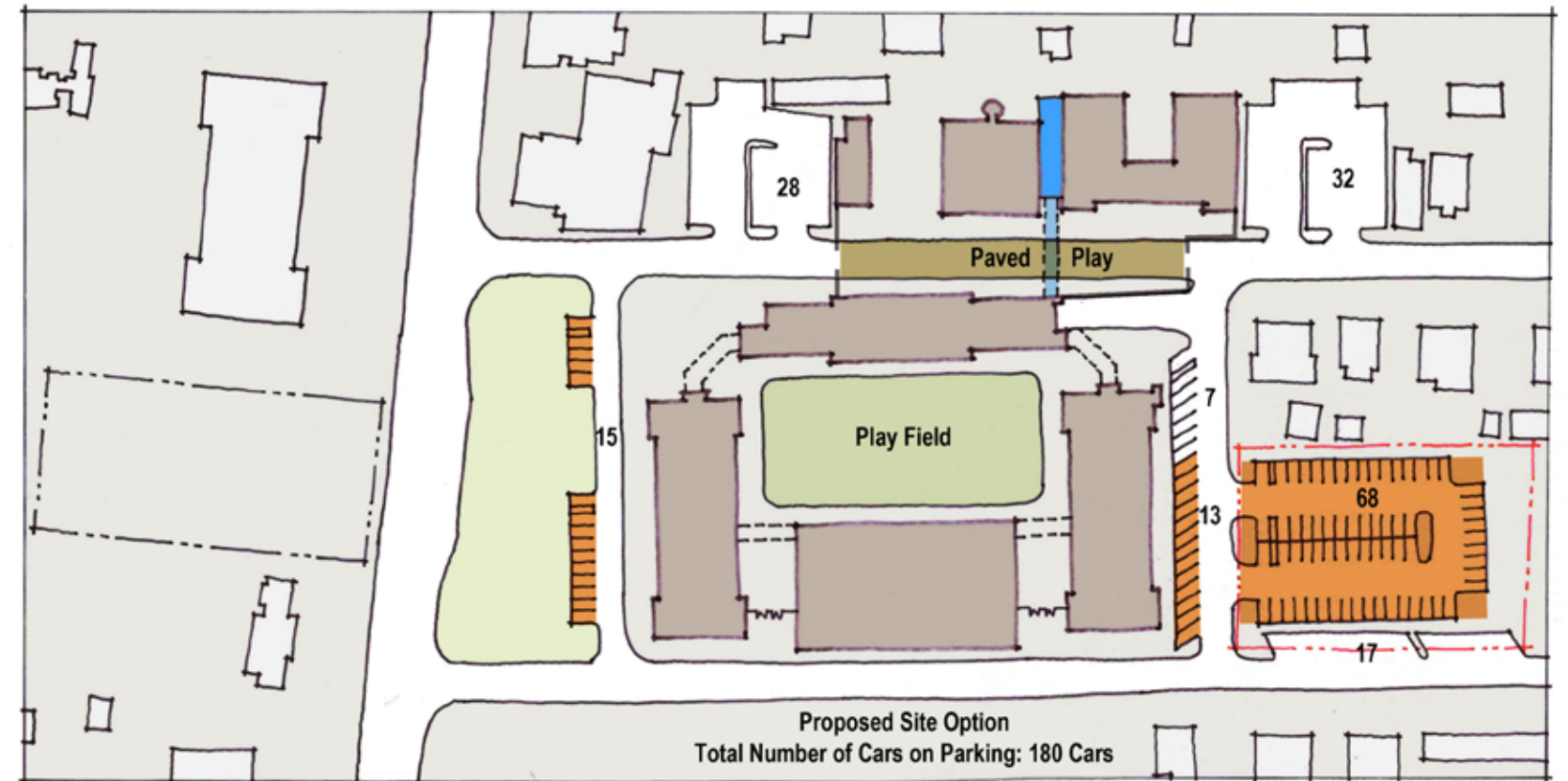
### Pros

- Provides unified campus
- All parking accommodated on site
- Provides adequate parking
- Provides paved and grassy play areas

### Cons

- Loss of U12 size soccer field
- Requires historic district approval

**Total: 182 Parking Spaces**



Estimated State Reimbursement Rate

	Option 1	Option 1A	Option 2	Option 2A	Option 3	Option 3A
Pre-1950						
Cheney SF	25,440	25,440	25,440	25,440	25,440	25,440
Boiler House SF	6,550	6,550	600	600		
Bennet Academy SF	136,277	136,277	136,277	136,277	136,277	136,277
Total SF	168,267	168,267	162,317	162,317	161,717	161,717
SDE Discounted SF	134,614	134,614	129,854	129,854	129,374	129,374
Post-1950						
Bennet Academy SF	24,567	24,567	24,567	24,567	24,567	24,567
Cheney Addition SF	3,200	4,900	6,700	8,400	6,500	8,200
Total SF	27,767	29,467	31,267	32,967	31,067	32,767
Total SDE SF	162,381	164,081	161,121	162,821	160,441	162,141
SDE Reimbursement Factor	0.887	0.878	0.894	0.884	0.898	0.888
Manchester State Reimbursement	65.71%	65.71%	65.71%	65.71%	65.71%	65.71%
SDE Adjusted Rate	58.27%	57.67%	58.73%	58.12%	58.98%	58.36%

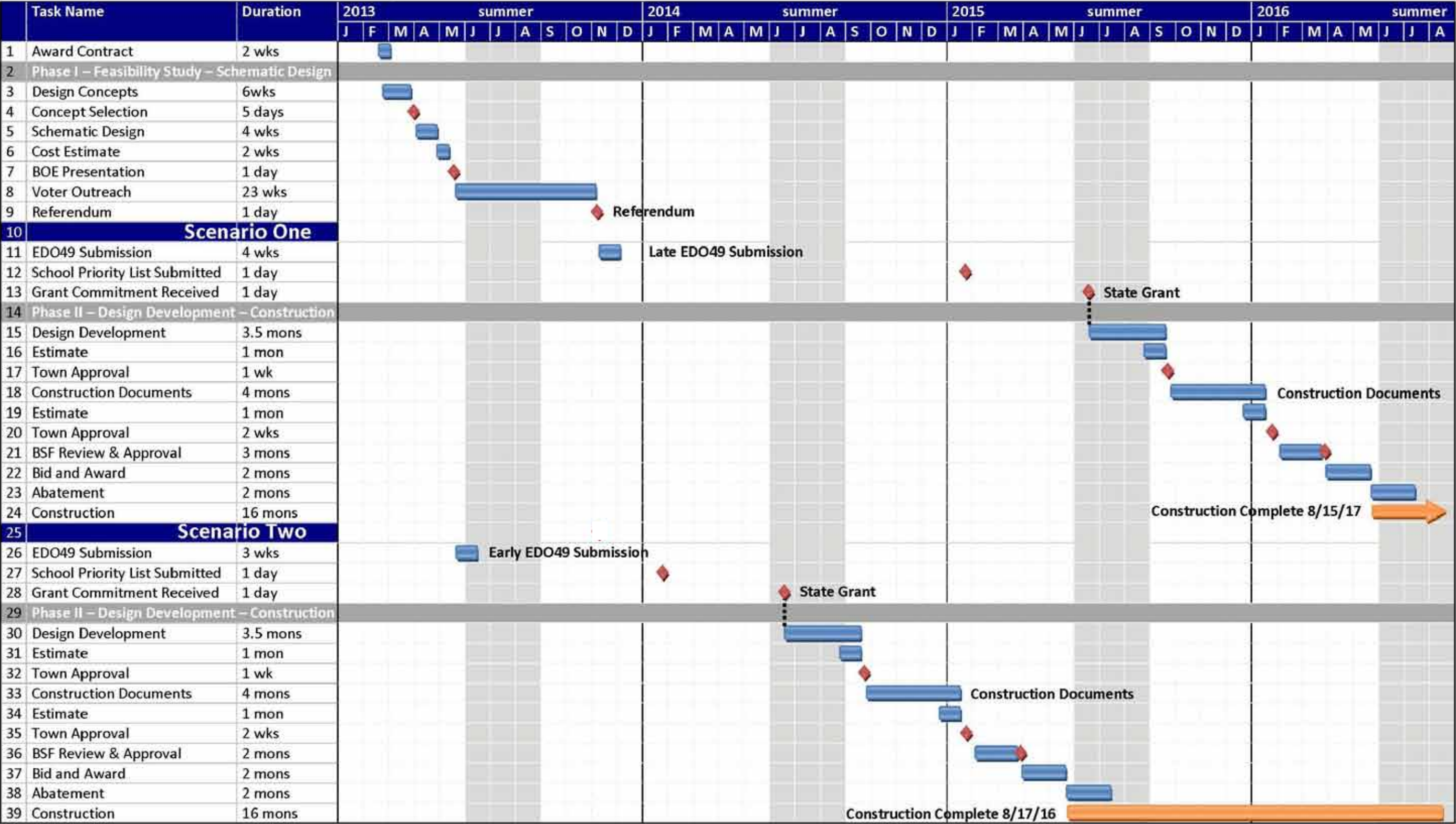
”A” Options Include Bennet Academy Dining Addition

\* For purposes of comparison between options, preliminary cost estimates derived from square foot unit prices were developed. Due to the preliminary nature of the concepts, these estimates only establish orders of magnitude and relative costs. As the cost of all options are within the margin of error of the estimate, the decision on which option(s) to pursue should be based on factors other than cost.

Cost Comparison - Cheney Complex\*

	Option 1	Option 1A	Option 2	Option 2A	Option 3	Option 3A
New Construction	\$1,120,000	\$1,715,000	\$2,345,000	\$2,940,000	\$2,275,000	\$2,870,000
Heavy Renovation	\$8,869,300	\$8,215,900	\$7,828,700	\$7,175,300	\$7,828,700	\$7,175,300
Light Renovation	\$553,500	\$553,500	\$553,500	\$553,500	\$553,500	\$553,500
HAZMAT Allowance	\$125,000	\$125,000	\$110,000	\$110,000	\$125,000	\$125,000
Bldg Demolition Allowance	\$0	\$0	\$0	\$0	\$200,000	\$200,000
Sitework Allowance	\$1,000,000	\$1,000,000	\$1,000,000	\$1,000,000	\$1,050,000	\$1,050,000
Sub Total	\$11,667,800	\$11,609,400	\$11,837,200	\$11,778,800	\$12,032,200	\$11,973,800
Estimate Contingency	\$1,750,170	\$1,741,410	\$1,775,580	\$1,766,820	\$1,684,508	\$1,676,332
Escalation	\$402,539	\$400,524	\$408,383	\$406,369	\$411,501	\$409,504
Bond Costs	\$138,205	\$137,513	\$140,212	\$139,520	\$141,282	\$140,596
CM Fee	\$57,273	\$56,986	\$58,104	\$57,818	\$55,932	\$55,661
CM Reimbursables	\$800,000	\$800,000	\$800,000	\$800,000	\$800,000	\$800,000
Total Construction Cost	\$14,815,987	\$14,745,834	\$15,019,479	\$14,949,326	\$15,125,424	\$15,055,893
Soft Costs	\$3,703,997	\$3,686,458	\$3,754,870	\$3,737,332	\$3,781,356	\$3,763,973
Total Project Costs	\$18,519,984	\$18,432,292	\$18,774,349	\$18,686,658	\$18,906,780	\$18,819,866
Eligible Costs	\$16,902,110	\$16,818,803	\$17,143,757	\$17,060,450	\$17,269,566	\$17,186,998
State Reimbursement	58.27%	57.67%	58.73%	58.12%	58.98%	58.36%
Net Cost to Manchester	\$8,670,515	\$8,732,915	\$8,705,938	\$8,771,785	\$8,721,495	\$8,789,558





- Cost Comparisons are Based on Scenario Two
- Scenario Two Requires Special Legislation

## VIII CONCLUSIONS

### CHENEY COMPLEX

The existing Cheney complex, consisting of the Cheney Building, the Boiler House, and the Fire House are sound structures that are part of the historic fabric and history of Manchester. Although all three buildings are in need of repair to the exterior envelope, and complete renovation of the interiors, the buildings can all be upgraded to current standards and codes without extraordinary measures. A preliminary assessment of potential environmental hazards has yielded the typical concerns that would be expected with building of this age, e.g. asbestos, lead paint, underground fuel oil storage tanks, and possible ground contamination due to leakage from equipment. At this time, none of these concerns appear to be unmanageable or cost prohibitive.

The buildings are all within the Cheney Brothers Historic District. Preliminary discussions with the Cheney Brothers Historic Commission, the Manchester Historic Society, and the CT State Historic Commission have demonstrated a willingness from all parties to be flexible in how the building(s) are adapted to another use. The buildings currently are slowly deteriorating and it is recognized that a successful reuse of some or all of the properties is likely to be the only way to insure any of their survival.

A preliminary educational specification has been generated based on previous models used in town and on discussions with the superintendent of schools and school staff. Based on this preliminary program, a number of planning exercises were undertaken to determine if the existing Cheney complex structures in conjunction with the facilities in the Bennet Academy were adequate to deliver the educational program. In particular, initial analysis determined that there was inadequate space available in the Cheney complex to accommodate the required 5th grade program. Consequently, a review was undertaken to determine which portions of the program could be located in the Bennet Academy, which has surplus square footage available. This review concluded that the music and art portions of the program were best located in the Bennet Academy.

Three options were studied for the Cheney complex. Although initial studies included incorporation of the Fire House, ultimately those studies proved to not be viable and are not included. The three options include incorporating a connecting bridge to the Bennet Academy. The three options are as follows:

Option 1 – Utilizes the Boiler house and the Cheney building with a connecting addition that links the two buildings.

Option 2 – Utilizes only the Cheney building with two additions, one in the courtyard to the north and one between the Boiler house and the Cheney building to the west.

Option 3 – Utilizes only the Cheney building and demolishes the Boiler house to make way for a new addition to the west.

Of the three, Option 2 is least desirable with a compromised team structure and no long term solution to the adjacent Boiler house. Options 1 and 3 are similar in their approach and planning with Option 3 yielding the best solution in terms of planning, future expansion, security, and technical difficulty.

### BENNET ACADEMY

Bennet Academy was examined to confirm that core spaces such as the Library/Media Center (LMC), Cafeteria, Physical Education (PE) spaces and the existing Band/Orchestra room were adequate to support the increased student population. Of these spaces, the PE and LMC were determined to be adequate. The current cafeteria is too small to service the increased student population in three lunch waves. An additional 1800 SF will be required to adequately seat 1/3 of the student population. The existing kitchen may also require some upgrades or expansion. The existing Band/Orchestra room is also inadequate to accommodate a full band or orchestra. At approximately 1700 SF it needs an additional 300 – 800 SF to perform adequately. This poses difficulties as the current space is bounded on all sides by structural bearing walls. A planning exercise was undertaken to try and identify an alternate location for this space and the associated music classrooms. The only area of the building that could accommodate this program was the small gymnasium on the third floor of the Recreation Building. However, because this space is critical to the park and rec programs offered daily on this site, this option was abandoned. Alternatively, the existing bearing wall is shown being partially removed and new support steel will be required. Though difficult, this work can be accomplished.

Bennet Academy was also examined to locate areas where a new art room and general music classroom could be located to serve the 5th grade. In both cases these spaces were found on the lower level in areas that are currently underutilized. Work necessary to create these spaces is limited.

### SITE / PARKING

The impact of the 5th grade on site circulation and parking was examined. In general, site circulation currently functions well although buses cue along School Street, a public street, and it would be desirable to cue them on site if possible. Parking is currently adequate with approximately 85 spaces available. Unfortunately visitor parking is currently designated along Wells Street in the far southeast corner of the site whereas the school entrance is in the far northwest corner of the site. Closer visitor parking is desirable. The 5th grade, with an additional 30 staff and 500 students, will require additional parking spaces, 95 optimally, 50 minimum.

Five Options for the site were studied. All options include visitor parking in the green space along Main Street adjacent to the school entrance:

Option 1 – Adds parking across Main Street on a town owned lot and where current paved play exists along what was once Vine Street. Paved play is relocated to the courtyard of Bennet Academy.

Option 2 – Adds parking across Main Street on a town owned lot and where current paved play exists along what was once Vine Street. School Street is gated and only available for bus pick-up and drop-off. To allow turn around for vehicles coming west on School Street, two properties are acquired. Paved play is relocated to the gated area of School Street.

Option 3 – Adds parking in the play field to the east and where current paved play exists along what was once Vine Street. The play field is relocated to the courtyard of Bennet Academy and the Paved play is relocated to the gated area of School Street. To allow through traffic from west bound vehicles on School Street, one property has been acquired and a connecting drive has been added from School Street to Wells Street.

Option 4 – Adds parking across Main Street on a town owned lot and where current paved play exists along what was once Vine Street. Vine Street is re-established and School Street is gated and only available for bus pick-up and drop-off. Paved play is relocated to the gated area of School Street.

Option 5 – Adds parking in the play field to the east and where current paved play exists along what was once Vine Street. Vine Street is re-established and School Street is gated and only available for bus pick-up and drop-off. The play field is relocated to the courtyard of Bennet Academy and the Paved play is relocated to the gated area of School Street.

Of the five, Options 2 and 3 require property acquisition, which is undesirable and resisted by the Cheney Brothers National Historic District Commission. Option 1 does not improve on the current bus cueing on a public street. Options 4 and 5 are most desirable and should be pursued further.

For purposes of comparison between options, preliminary cost estimates derived from square foot unit prices were developed. Due to the preliminary nature of the concepts, these estimates only establish orders of magnitude and relative costs. As the cost of all options are within the margin of error of the estimate, the decision on which option(s) to pursue should be based on factors other than cost.

It is the conclusion of this study that there are no profound obstacles with the existing facilities that should prevent the Town of Manchester from proceeding with schematic design to better define the program, scope of work, and actual costs associated with relocating all the 5th graders in the district to the Cheney/Bennet Academy site.











**DRAFT**  
**EDUCATIONAL SPECIFICATIONS**

**BENNET / CHENEY SCHOOL  
SCHOOL STREET  
MANCHESTER, CT**

April, 2013



## INTRODUCTION

The Manchester Board of Education has developed these educational specifications as required by the Connecticut State Department of Education. The educational specifications are to accommodate a grade K-5 elementary school for 375 students. These specifications define the objective, activities, programs, and space requirements of the facility so the educational goals can be met. While the specifications provide the foundation for a successful school design, continued communication between the architect and the school staff is necessary. In this sense, the specifications provide an opportunity for continued dialogue concerning the needs of the school, leading to the most effective building design possible.

The size and features of the spaces described in the Educational Specifications reflect the criteria necessary to support the educational program. Existing spaces and equipment that marginally meet the criteria of these specifications will be considered for reuse and appropriately incorporated into the project.

## **MISSION OF MANCHESTER SCHOOLS**

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The mission of the Manchester Public Schools is to assure that students become responsible citizens who will be successful in a rapidly changing world.

Through an active partnership of students, school personnel, families and the community, the Manchester Public Schools encourage learning from birth through graduation and beyond.

As partners, we strive to create safe and inclusive schools defined by support for individual needs, respect for differences, integrity, and pride.

We are committed to excellence in teaching and learning.

We strongly value each student's capacity for high educational achievements.

We empower students by helping them to attain the knowledge, skills, and values needed for success.

### **BELIEFS**

We believe that:

- A commitment to life-long learning begins at birth and extends beyond high school graduation.
- Schooling is a partnership that includes and values the family and the community.
- Every individual in the school-community-family partnership deserves respect.
- Every student deserves to learn in a school that is safe, supportive, and welcoming to diversity and individual differences.
- Students of all abilities are capable of higher academic achievements.
- Higher achievement results from high educational expectations, rigorous student programs and enthusiastic teaching and learning.
- An excellent education leads to graduation with skills, knowledge and values that exemplify a successful and contributing citizen.
- Excellence in teaching and learning requires a continuing commitment to staff support and professional development.
- We must fund our schools adequately and distribute funds equitably across schools and programs.
- The Manchester Public Schools will be recognized as an educational leader known for progress and innovation.



## **MANCHESTER PUBLIC SCHOOLS STRATEGIC DIRECTIONS**

We will...

### **Accountability for Success**

Implement high standards for teaching and learning, and hold staff accountable for empowering students to be successful in the classroom and beyond.

### **Access to Resources**

Expand the capacity of the Manchester Public Schools to meet expectations by increasing the resources of the school system.

### **Promote Family Participation**

Fully support and involve families as partners in encouraging their children's life-long learning.

### **Developing Attitude, Behavior, Character**

Create a positive climate for learning that emphasizes appropriate attitudes, high standards of behavior, and the development of character and responsibility.

### **Build Student Ownership**

Increase student ownership, involvement, and commitment to learning.

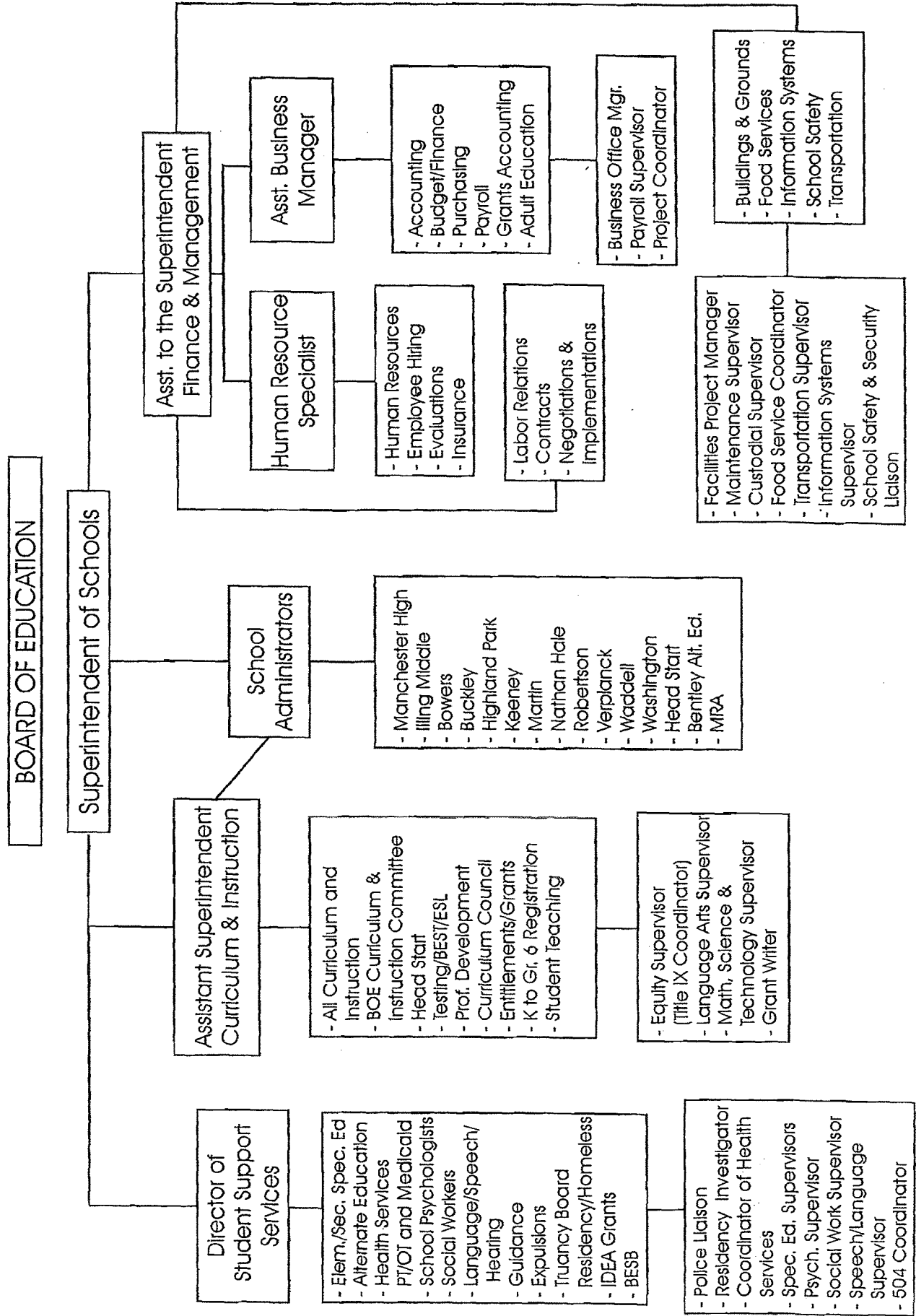
### **Ready the Children for School**

Assure readiness for learning by expanding pre-kindergarten programs.

### **Reexamine Tradition and Structure**

Evaluate and, where needed, implement new organizational structures to address the needs of students and their families.

# MANCHESTER PUBLIC SCHOOLS ORGANIZATIONAL CHART





## STRATEGIC OBJECTIVES

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The renovation, repair and retooling of our schools for the twenty-first century will focus on ten key areas:

1.     **Health**  
Cleanliness and hygiene support better health and must be advanced by the condition of the buildings. Adequate and age appropriate bathrooms must be provided. Medical services must be rendered in a clean, comfortable, accessible and well-equipped office.
2.     **Security and Safety**  
All fire, security, lighting and communication systems must be up to date. The site must safely accommodate pedestrian and vehicular traffic. This is paramount in the protection of our valuable investments.
3.     **Code Compliance**  
The schools must be upgraded to meet or exceed all applicable codes.
4.     **Technology**  
We must prepare children to live the twenty-first century using twenty-first century educational technology fundamentals for today and beyond.
5.     **Space and Facilities**  
To support education and creativity, students, and teachers must have appropriate facilities and space within which to learn, plan and share ideas.
6.     **Accessibility**  
The schools are community places and must be accessible to all students, staff, teachers, administrators, parents, friends, and visitors. We all share in the schools, and must all be able to enjoy their use.
7.     **Efficiency**  
All alterations and modifications will be energy efficient, durable, and conducive to ongoing maintenance.
8.     **Comfort**  
To encourage high levels of learning, the environment must be pleasant and easy to work in. This means that the comfort of students, teachers, administrators, staff and visitors must be taken into account.
9.     **Communication**  
As partners with parents in the education of their children, we must provide ample resources to support communication between the administration, teachers, students, volunteers, and parents, as well as the community at large.
10.    **Aesthetics**  
The appearance of the schools must support the goal of excellence and provide a welcoming atmosphere.

## **SUMMARY**

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The intent is to move all 5<sup>th</sup> grade students in the district to the Bennet / Cheney Academy Site. This will result in an increase of 500 5<sup>th</sup> students at the Bennet / Cheney Academy Site plus the already projected 421 6<sup>th</sup> grade students for the year 2017-18.

Classrooms should be organized in groups of three with one of the three classrooms designated as a science classroom.

The following identifies the major elements to be incorporated into the Bennet / Cheney Academy Site to accommodate the 5<sup>th</sup> grade program.

### **Systems:**

1. Complete fire alarm and sprinkler system.
2. Integrated electronic communication system. A telephone/intercom and computer network connections in addition to capacity for streaming cable and satellite in each office and classroom.
3. Air-conditioning in all new construction and in substantially renovated areas. Comply with Ct High Performance Schools requirements for energy efficiency.
4. Water fountains and lavatories throughout all new construction.
5. All instructional spaces should have access to natural light and ventilation, including operable windows.

### **General Classrooms**

1. Adequate power to support current and future technology needs.
2. Computer drops and wireless capability.

### **Special Education and ELL Classrooms**

1. Adequate power to support current and future technology needs.
2. Computer drops and wireless capability.

### **Science Classrooms**

1. Two sinks, one of which should be in a teachers demonstration table, and extra storage space for ongoing, hands on, science activities.

### **Art Classroom**

1. Four sinks distributed around the perimeter of the room.
2. Ample storage for supplies.
3. Areas for display of both two and three dimensional art.
4. Separate kiln room with appropriate ventilation.

### **Music Classroom**

1. Adequate power to support electronic keyboards.

### **Band/Orchestra/Chorus**

1. Space adequate to house 140 musicians.
2. Adequate instrument storage for both band and orchestra instruments.
3. One sink.
4. Acoustically treated for instructional purposes.



#### Administration

1. Adjacent to the 5<sup>th</sup> grade area entrance.
2. Office for assistant principal.
3. Space for three clerical staff.
4. Conference room.
5. Work/copy/mail room.
6. Waiting area.
7. Acoustical isolation for office and conference room.

#### Guidance

1. Office for one guidance counselor.

#### Nurse

1. Adjacent to the 5<sup>th</sup> grade area entrance.
2. HC accessible toilet.
3. One sink.
4. Space for two cots.
5. Office with good visibility to student areas.
6. Waiting area.

#### Staff/Work Room

1. Work counter w/ sink.
2. Provisions for a large copy machine.
3. Room for a work table.

#### Custodial

- 1 Adequate custodial closets with service sinks throughout.

#### Cafeteria

1. Capacity to accommodate all students in three lunch waves.

#### Library

1. Existing to remain.

#### Gymnasiums

1. Existing to remain.

#### Main Administration

1. Existing to remain.

#### Site Development

1. Separate traffic patterns for buses and cars.
2. Parking for 135 cars minimum.
3. Athletic fields – Existing to remain.

#### Miscellaneous Considerations

1. Minimize travel distances between rooms.
2. Provide community access to the school with respect to walking/parking areas.

## **GENERAL CLASSROOMS**

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### *A. Program Objectives*

LANGUAGE ARTS

MATHEMATICS

READING

SCIENCE

SOCIAL STUDIES

HEALTH

### *B. General Description*

Classrooms shall be a minimum of 900 square feet (net)

High Achievement for all students

Teamwork and Collaboration

Science and Technology

Community Interaction/Global Perspective

### *C. Activities to be Housed*

Each student should have a home base classroom that provides large group instruction, small group interaction, and opportunities for individual enrichment. Each student should have immediate access to computer and other technologies that enhance instruction. The teachers should have the means to present lessons in multiple formats, including television, overhead projectors, and computer presentations.

### *D. Person to be Housed*

One classroom teacher and a maximum class size of 22-25 students depending upon grade level.

### *E. Furniture and Equipment to be Housed*

1. One sink in each room
2. Five computer stations
3. Marker boards and bulletin boards
4. Teacher Closet
5. Space for student coats and boots
6. Storage cabinets for teacher resource material
7. Bookshelves



# MUSIC

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## *A. Program Objective*

To develop in students an appreciation and knowledge of music to increase their enjoyment, critical analysis, creativity and cultural awareness.

## *B. General Description*

The music program provides instruction twice per cycle to each classroom group. Students learn to sing in groups and use simple music instruments as an integral part of the curriculum. Orchestra and band instrumental lessons are offered. Individual or group lessons are scheduled during the day in order to help students develop proficiency in a particular musical instrument.

## *C. Activities to be Housed*

Music Classroom – 1,000 square feet. Activities to be housed include singing, listening, playing in large and small groups, watching/recording, ensemble rehearsals, and creative movement.

Band/Orchestra/Chorus Room – 2,500 square feet. Activities to be housed include rehearsals for 140 students musicians or 200 choral members.

## *D. Furniture and Equipment to be Housed*

Piano, music stands, and musical instruments . Two networked computer stations per room, synthesizer, electronic keyboards, and CD/tape players with amplifier and speakers. Stackable tables and chairs.

## *E. Special Requirements*

Music instruction requires soundproofing, lockable storage for instruments and small electronic equipment, and one sink in each room. Bulletin boards and markerboards, with half marked with musical staves. Pull down projection screens.

## **SPECIAL EDUCATION – L/D RESOURCE ROOM**

### *A. Program Objective*

To provide specially designed instruction to students who qualify for special education services and who remain in mainstream classes for part of their educational day.

### *B. General Description*

Students with identified special education needs are scheduled into the resource room for assistance and support as specified in individual education plans established by the Planning and Placement Team. Special education resource rooms should not be less than 400 square feet in area.

### *C. Activities to be Housed*

Activities to be housed include individual and small group instruction, individual testing and computer assisted instruction.

### *D. Persons to be Housed*

One special education teacher, an aide, and groups of 2-12 students.

### *E. Furniture and Equipment to be Housed*

Student work tables and chairs, teacher work table and chairs, marker boards, projection screen, display boards, open shelving, lockable cabinetry including file drawers and storage closet, 2 computer stations with printers on the computer tables.

### *F. Special Requirements*

All computer stations should be networked. Special education resource rooms should have basic furnishing and equipment similar to those in the general classrooms.



## **SPECIAL EDUCATION – SPEECH THERAPY/RELATED SERVICES**

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### *A. Program Objective*

To help students with speech, language or hearing impairments reach maximum levels of development by offering services, which are designed to develop communication skills. To assist students who require related services such as occupational and physical therapy to meet individual education plans.

### *B. General Description*

The services of a part-time speech and language specialist are available to diagnose, assess, treat, and remedial students with delayed language, hearing impairment, and articulation problems. Speech/language rooms should have a minimum of 400 square feet of area. The services of a part-time occupational and/or physical therapist as needed.

### *C. Activities to be Housed*

Activities to be housed include individual testing and individual and small group speech therapy.

### *D. Persons to be Housed*

Speech therapist and individual or small groups of 2-12 students.

### *E. Furniture and Equipment to be Housed*

Testing materials, secure and fireproof files, table/desk telephone, unbreakable mirror, audio equipment, marker board, and two computer stations.

### *F. Special Requirements*

Soundproofing and privacy.

## **ADMINISTRATION**

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### *A. Program Objective*

To provide leadership, coordination and support for the instructional program and related services.

### *B. General Description*

A satellite general office space is required to serve the 5<sup>th</sup> grade area of the school. Space for an assistant principal, clerical staff, and conference space for 10 are needed. A public reception area must be large enough to accommodate normal traffic of visitors, students, and staff.

### *C. Activities to be Housed*

Activities include telephone and personal reception, filing and record keeping, preparation and distribution of materials, school wide and individual area communication, and conferences with students, parents, and staff.

### *D. Persons to be Housed*

Individuals to be housed include one assistant principal and two secretaries.

### *E. Furniture and Equipment to be Housed*

Furniture and equipment should include office and visitor furniture, storage, files, office machines, including one networked computer at each desk, public address system, telephone system, alarm system control panel, copy machine and supply storage, teacher mailboxes, kitchenette with sink and storage.

### *F. Special Requirements*

Requirements include secure storage of records and petty cash, coat closet, toilet room and visibility of entrance area.



## **CUSTODIAL AND MAINTENANCE SERVICE**

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### *A. Program Objective*

To provide an aesthetically pleasant, operationally safe, healthy, and economically efficient environment to enhance the learning process.

### *B. General Description*

The custodial office and workspace should accommodate storage of custodial and maintenance supplies, a small inventory of replacement parts, a desk for paper work, and a lockable cabinet for tools. The workspace should be near the school's point of delivery or loading dock. Fire alarm annunciator panel shall be in close proximity.

### *C. Activities to be Housed*

Moderate repairs, furniture assembly, repairing and cleaning custodial equipment, uncrating, changing clothes, showering, eating lunch, paperwork.

### *D. Persons to be Housed*

The anticipated number of custodians would reach three maintenance mechanics.

### *E. Furniture and Equipment to be Housed*

Desks, files, benches, storage cabinets, clothing lockers, lunch table, and telephone and intercom. A shower/toilet room should be provided for custodial use.

### *F. Special Requirements*

Ample storage space fire rated for combustible materials must be provided for a minimum of 3 months custodial supplies. Separate lockable secure area must be provided for plumbing, electrical, and hardware supplies.

Custodial supply closets and sink shall be located on each floor and separate building wing. Storage space is required for chairs, desks, tables, cabinets, and other equipment not in use. Separate storage is required for instructional supplies, books, paper, etc. accessible by staff.

## NURSE

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### *A. Program Objective*

To provide assistance to sick students and carry out the preventive health activities as required by the district and state.

### *B. General Description*

The health suite should be adjacent to the administrative offices. It should be a quiet area reserved for health services and not shared with other personnel. The health suite requires a waiting area, nurse's desk, examining room with a sink and dressing room, rest and/or isolation area.

### *C. Activities to be Housed*

Routine and special physical examinations, screening students with respect to vision, hearing, height, weight, and immunization. Dental hygiene. First aid measures. Rest and isolation for ill students. Record keeping.

### *D. Persons to be Housed*

One nurse, Physician and ill students.

### *E. Furniture and Equipment to be Housed*

Separate and secure cabinets and safe for medication, supplies, health records; scale, first aid supplies, sink, refrigerator, cots for students, examination table, emergency equipment.

### *F. Special Requirements*

Accessible toilet and sink.

## **FACULTY WORK ROOM**

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### *A. General Description*

To provide spaces for teachers to prepare and store materials, to prepare lessons, to confer with colleagues and to communicate by telephone with parents. A minimum of 300 square feet of space is required.

### *B. Activities to be Housed*

Lesson preparation and conferences with colleagues, storage of materials, telephone communication with parents.

Large centrally located space designed to function as a multi-purpose room for material preparation including researching and downloading from electronic data bases, word processing, production of paper copies or transparencies, duplication, and creation of display materials.

### *C. Persons to be Housed*

15 teachers

### *D. Furniture and Equipment to be Housed*

Work table and chairs, bulletin board, one computer workstation, facsimile machine, copier, and any equipment for production of materials that is not included in the Library Media Center.

### *E. Special Requirements*

Facility workrooms should be acoustically treated to ensure quiet conditions for lesson preparation, telephone conferences, etc.



## COMMUNITY USE

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### GOAL

To increase and maximize the use by the general public of Town/Board of Education facilities.

Community groups, adult evening school and civic functions will utilize facilities for meetings, fund raising events and large gatherings. The gymnasium, library media center, auditorium, and computer labs are specific facilities, which will have extensive community use. All should have convenient and secure external access.

- Planning for community recreational needs in conjunction with the development of school plants requires much cooperation among the various municipal agencies and officials involved.
- Realistically, this facility will be functioning in service on a year-round basis. Therefore, we recommend full air-conditioning service to some appropriate areas (i.e. technology, art, lab, library media center).
- The building should be zoned so that a given area could be segregated from the rest of the building in order to provide security to the rest of the building.
- The toilet facilities should be located in the unsecured area of the school in order to support community use during non-school hours.
- Site should include adequate playing fields for school and community use.

## **SYSTEMS**

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### **A. INTEGRATED ELECTRONIC COMMUNICATION SYSTEM**

1. Each normally occupied teaching space, office, staff lounge, administrative spaces, boiler room, kitchen, and receiving area shall be linked by telephone and speaker which provides public address, emergency, outside line access and internal communications.
2. All spaces shall receive emergency call announcements.
3. Ability to switch all calls to specific telephone after hours.
4. Ability to access intercom system from system from outside the school.
5. Ability to limit out of local area calls from specific phones.
6. High volume "night bells" for telephone system.
7. All offices and teaching spaces to be equipped with networked computers for staff members.
8. All classrooms to have networked computer communications.
9. Television reception in all classrooms and capacity for transmission.
10. Capacity for satellite reception and access to remote sources of information.
11. Coaxial, data and telephone cabling to accommodate programmatic needs and district technology plan.

### **B. CLOCK AND SPEAKER SYSTEM**

All normally occupied areas shall have a clock showing hours and minutes connected to a master clock. The master clock shall automatically correct and adjust to the correct time. Clock system may be integrated with the other communications systems. Clock system shall be state of the art equipment.

### **C. FIRE ALARM/SECURITY**

School shall be equipped with a fully code compliant fire detection, alarm and limited sprinkler system. All equipment shall be state of the art and shall be integrated into the presently installed system in the existing building. Components of the fire alarm system shall be such that one factory authorized service provider can service both the existing and new system. Remote annunciator panels showing location of the source of the alarm shall be located near the administrative area and front door of the school and custodial office. Upon activation of an alarm an evacuation signal shall be transmitted throughout the school and a signal transmitted to a central station monitoring service. Alarm shall signal until manually reset. Sprinkler heads shall be carefully located and positioned to prohibit tampering.

Alarms shall be easily heard throughout the building and visual alarms shall be provided as per code.

All required fire extinguishers should be placed into recessed cabinets with the doors to such cabinets equipped with audible local alarms.

Intrusion alarms will be located at entrance doors, common areas, and perimeter rooms with windows.

#### D. H.V.A.C. System

The heating, ventilating and air conditioning system shall be carefully and thoroughly studied by a competent mechanical engineering firm so that only most reliable, flexible, and energy efficient system is provided.

If the existing boiler plant is deemed to have enough capacity for the additional building, or if the new boiler plant is provided there must be a standby reserve capacity and redundancy to provide heat and hot water if the primary source fails or requires service during the heating season.

Alternate source of hot water for domestic use shall be provided for summer operation so major boilers may be shut down during non-heating season.

#### E. PLUMBING

Building shall exceed all minimum code requirements for number of toilet fixtures, sinks and drinking fountains.

All fixtures shall be duty, vandal resistant design. Local service valves and isolation valves shall be provided. Adequate clean outs shall be provided. Piping shall run in accessible pipe chases. Valves shall be ball valves. Toilet partitions shall be extreme duty, vandal resistant, with heavy-duty hardware. Fixtures shall be wall hung. Building shall be divided into sections with isolation and drain valves in each section.

#### F. ELECTRICAL DISTRIBUTION

Each normally occupied space shall be furnished with numerous electrical convenience outlets located throughout the space to permit flexibility of room layout and eliminate use of extension cords. Power in each classroom shall be from a minimum of two sources, one for exclusive use of computers and the other for general use. Outlets in corridors and storage areas shall be located on not greater than 50-foot centers to permit ease in use of vacuums and floor machines.

Each electrical distribution panel shall have 25% free space to add future circuits.

Exit and egress emergency lighting shall be provided.

All three phase motors shall have phase protection.



All exit signs shall be L.E.D. type with cast housing and lexan lenses.

New electrical panels with surge protection.

#### G. ENERGY CONSERVATION

The new building and existing annex building shall be integrated and connected into the existing Honeywell energy management computer system.

The new building plans shall be reviewed by Northeast Utilities and shall comply in so far as possible with their Energy Conscious Construction rebate program.

#### H. HARDWARE

All hardware shall be extra heavy duty and shall be in so far as possible the same brands and type as in the existing building. Keying shall be mastered with restricted key blanks.

All panic devices shall be rim type with removable mullions at exterior doors rather than vertical rod type all doors such as stair well doors, corridor smoke doors, etc., shall be held open with magnetic devices connected to the fire alarm system.

#### I. ELEVATOR

If an elevator is provided it shall be of the size and capacity to accommodate an automatic floor scrubbing machine and movement of desks, furniture and equipment.

## ENVIRONMENT

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### 1. Objective

To ensure that the environment for learning and working is safe, effective, efficient and aesthetically pleasing and that the building is in harmony both with the existing structure and the neighborhood at large.

### 2. General Description

The building shall have an open, inviting atmosphere, characterized by natural light, adequate ventilation, open spaces and functional effectiveness in all design features, furnishings and equipment.

### 3. Special Requirements or Considerations

#### General

Every entry wall shall have a hard floor finish and recessed mats. All visitors must be visible to main office personnel. All outer doors other than front entrance must prevent access from the outside during the school day as well as after school hours.

#### Air Quality

All new construction and substantially renovated existing areas shall be air-conditioned. This will permit comfortable year-round use by the school community as well as the community at large.

#### Windows

All windows should be operable, with screens. All new windows should include room darkening window treatment. Windows should abate loss of heat.

#### Lighting

All lighting shall be designed to maximize student learning and personal comfort and minimize energy consumption.

#### Flooring

The majority of the building should have vinyl composition tile (VCT) including specialized areas such as cafeteria and kitchen, science, art, toilets, storage, corridors and entries. Carpeting will be provided in offices, music rooms and the Media Center. Gyms will have wood flooring. Durable, easy-to-clean, comfortable and sound-absorbing flooring should be employed in all non-carpet areas.

## **SITE DEVELOPMENT**

---

### *A. Size, Location, and Physical Characteristics*

1. There shall be adequate parking spaces to accommodate both the existing and expanded school. The intent is to provide the required number of parking spaces stipulated in the Town of Manchester Zoning Ordinance.
2. There shall be district parking areas and traffic flow to accommodate buses during loading and unloading, delivery vehicles and access to loading dock, employee parking and visitor parking. There should be a separate parent pick-up area.
3. Loading platform shall accommodate food delivery for the kitchen and general supplies and equipment for do not have to be moved through the kitchen.
4. Adequate lighting shall be provided for evening use of the building along sides of the school, walkways and parking areas.
5. Access for disabled individuals shall be provided per ADA standards.
6. Interior courtyards shall be designed and landscaped to be reasonably maintenance free.
7. Entire site shall be landscaped to be pleasing for the school's occupants and neighbors as well as being easily and efficiently maintained.
8. Consideration shall be made to provide east in snow plowing and provisions should be made to accommodate snow piles.

### *B. Ingress and Egress*

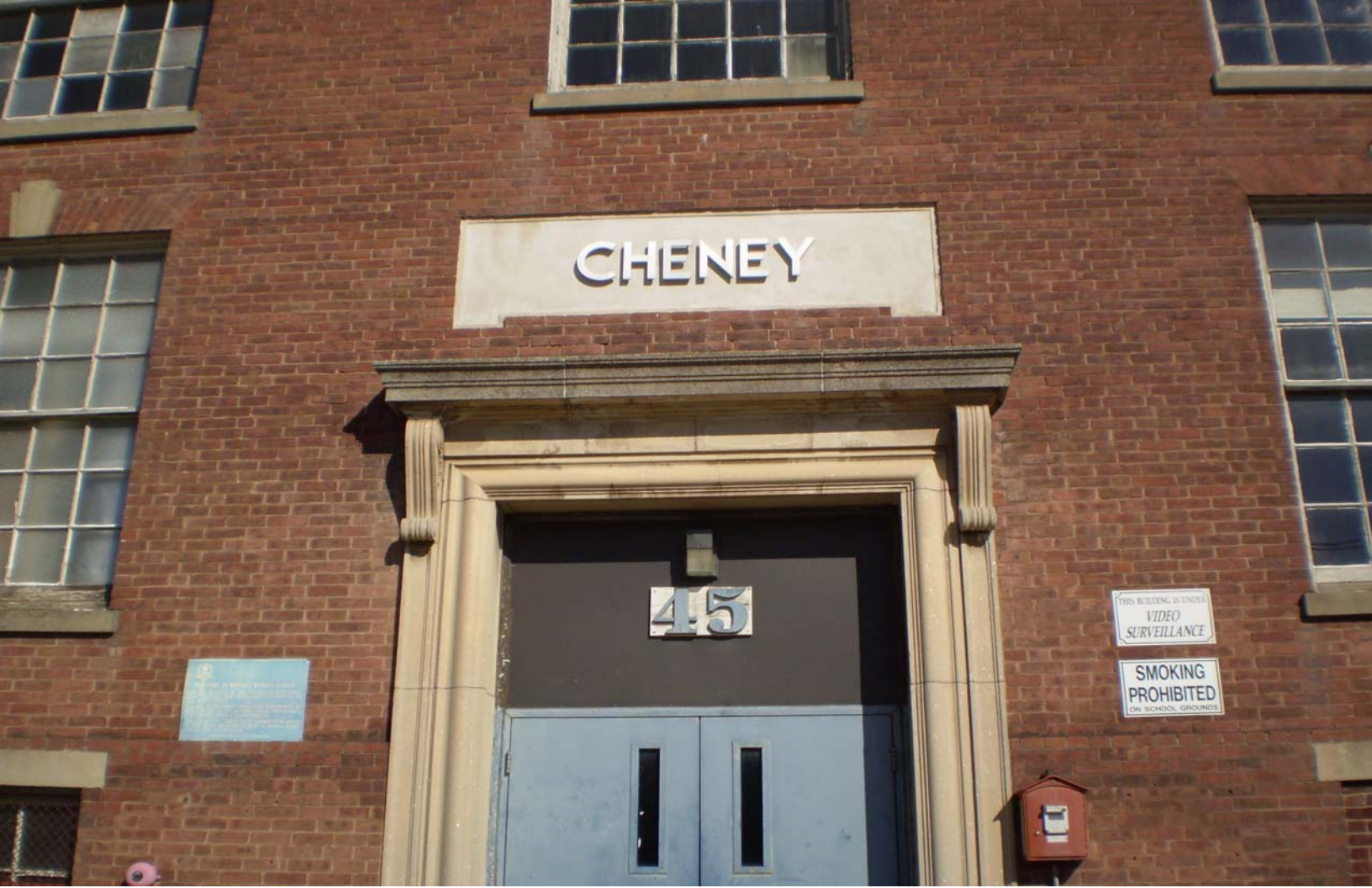
Traffic flow should be improved to minimize impact on regular traffic on Porter Street (Egress) and Ferguson Street (Ingress). Walking patterns shall be designed to minimize crossing vehicular traffic as much as possible.

### *C. Bus Loading and Unloading*

This area should be separate and distinct from the parking areas and parent pick-up area, and shall accommodate the full compliment of buses and vans, which service the school.

### *D. Outdoor Educational Program*

The site shall accommodate the physical education program of the school and appropriate community use after school hours. Fields shall accommodate a variety of sports. Multiple outdoor play areas should be developed around the building to serve varying size groups of students.



**Tighe&Bond**

**Cheney and Bennet Schools**

**1151 Main St**

**Manchester, CT**

## **Phase I Environmental Site Assessment**

Prepared For:

Tai Soo Kim Partners, Architects  
Hartford Square West  
146 Wyllys Street – Suite 1-203  
Hartford, CT 06106

March 2013



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## Section 9

# Summary and Recommendations

### 9.1 Summary

Tighe & Bond has performed a Phase I Environmental Site Assessment in general conformance with the scope and limitations of ASTM Practice E 1527-05 and CTDEEP Site Characterization Guidance Document at the Bennet Academy (1151 Main Street), Cheney Building (41 School Street), Heating Plant (39 School Street) and the former Fire Station No. 4 (19 School Street) (the site). Any exceptions to or deletions from, this practice are described in Section 10.1 of this report. This assessment has revealed the following AOCs:

- **AOC-1 Heating Plant Boiler Room:** Potential impacts to soil, groundwater and building materials (concrete) from historical use of the boiler room. Staining was observed on the floor around the air compressors and oil lines coming into the boiler. The boiler room also contains a water pit used for blow off from the boiler. Constituents of Concern (COCs) include extractable petroleum hydrocarbons (ETPH), volatile organic compounds (VOCs), semi-volatile organic hydrocarbons (SVOCs), polychlorinated biphenyls (PCBs) and metals.
- **AOC-2 Heating Plant Storage Areas:** Potential impacts to soil, groundwater and building materials (concrete) from historic and current use of the storage areas. There is staining on the floor in the storage rooms, coal storage area and evidence of hazardous materials including paint and oil cans, used oil drains, batteries, light bulbs, deteriorated drums, and Freon. COCs include ETPH, VOCs, SVOCs, PCBs, and metals
- **AOC-3 Heating Plant UST AREA:** A 15,000-gallon heating oil UST is located outside the heating plant. Evidence of a second UST or a former UST was also observed. COCs include ETPH, VOCs, and PAHs.
- **AOC-4 Cheney Building Former Metal Shop:** Potential impacts to soil, groundwater, and building materials (concrete) from historic activities in the former metal shop. Staining was not observed on the floor; however, the floor has been retiled. COCs include ETPH, VOCs, PAHs, and metals
- **AOC-5 Cheney Building Wood Shop:** Potential impacts to soil, groundwater, and building materials from activities in the wood shop, specifically the staining room. Staining was observed on the floor in the wood shop and in the staining room. COCs include ETPH, VOCs, SVOCs, and metals.
- **AOC-6 Cheney Building Mechanical Room:** Potential impacts to soil, groundwater, and building materials (concrete) from activities in the mechanical room. The mechanical room contains a tank with used hydraulic oil as well as 5 gallon buckets of hydraulic oil. There is staining on the floor in the room. COCs include ETPH, VOCs, SVOCs, PCBs, and metals.
- **AOC-7 Cheney Building Storage Shed:** The storage shed is used to store gasoline and lawn mowing equipment. There is a 300-gallon storage tank in poor condition with staining on the floor beneath it. COCs include ETPH, VOCs, PAHs, and lead.
- **AOC-8 Bennet Academy UST area:** There is record of three different tanks located at this site. There were no environmental reports indicating that the UST



graves were sampled when old tanks were removed. COCs include ETPH, VOCs, and PAHs.

- **AOC-9 Bennet Academy Mechanical Room**: The mechanical room in the Bennet Academy houses a water treatment area, dry transformer, glycol feed for the water circulation system, and other mechanical equipment. A glycol leak was observed during the site inspection. The floor was not stained at the time of the visit but the floor had been poured with new concrete. COCs include ETPH, VOCs, SVOCs, PCBs, Glycols, and Metals.
- **AOC-10 Bennet Academy Tunnels**: An underground utility tunnel network connects the buildings to each other. There was staining observed on the floor of the tunnel and radon monitoring devices placed throughout. COCs include ETPH, VOCs, SVOCs, PCBs, and Metals.
- **AOC-11 Fire Station No. 4 Floor Drains**: There are two floor drains on the floor of the fire station. The floor drains collect fluid and sediment and have a pipe connection at the bottom. COCs include ETPH, VOCs, SVOCs, PCBs, and Metals.

Tighe & Bond has performed this Phase I Site Assessment in general accordance with guidelines described in ASTM E1527-05 and CTDEEP Site Characterization Guidance Document to identify AOCs and COCs at this site in a manner consistent with standard practice in the industry. However, as indicated in the ASTM standard, "No environmental site assessment can wholly eliminate uncertainty regarding the potential for AOCs in connection with a property. Performance of this practice is intended to reduce, but not eliminate, uncertainty regarding the potential for AOCs in connection with a property, and the practice recognizes "reasonable limits of time and cost."

## 9.2 Recommendations

A Phase II Environmental Site Assessment is recommended to determine if releases of COCs (ETPH, VOCs, SVOCs, PCBs, and Metals) have occurred at the AOCs and have impacted soil, groundwater, and building materials (concrete) at the site. The objective of the Phase II ESA would be as follows:

- Determine if releases of COCs have occurred at the AOCs
- Determine if remediation will be required to meet the requirements of the Bureau of School Facilities
- Evaluate potential soil, groundwater and building materials management requirements during renovation activities.

2902801-1  
March 28, 2013



Randall Luther  
Tai Soo Kim Partners  
285 Farmington Avenue  
Hartford, CT 06105

Re: **Hazardous Building Material Screening Report  
Cheney School, Heating Plant and Fire House  
19, 39, and 41 School St, Manchester, CT**

Dear Mr. Luther:

In accordance with our proposal dated March 5, 2013, Tighe & Bond has completed a Hazardous Building Materials Screening (HBMS) for the Former Cheney School (41 School St), Boiler Plant (39 School St), and Fire House (19 School St). The purpose of the inspection was to determine if hazardous building materials (HBMs) are associated with building components that will be impacted during proposed renovation activities. These materials include but are not limited to; floors, walls, ceilings, roofs fields and window components. The inspection also included a visual evaluation for universal wastes and lead based paint.

## **Screening Summary**

The HBMS was conducted by State of Connecticut licensed inspectors, James Webb of Tighe & Bond on March 13 and 14, 2013. Copies of inspector licenses are included in Appendix A. The HBMS was limited to the large quantity building materials which included floors, walls, ceilings and window systems of the Cheney School, Boiler Plant and Fire House. A walk through and visual inspection was conducted at the Bennet School. According to information included in the 2008 Asbestos Hazard Emergency Response Act (AHERA) report for the Bennet School, all asbestos containing materials (ACM) were abated in 2007. Roof sampling for was not performed during this screening. Sampling of the roof fields should be done as part of a Supplemental Hazardous Building Materials Inspection (HBMI) if the project moves forward.

The inspection included sampling of suspect ACM, lead-based paint screening using an X-Ray Florescent (XRF) analyzer, sampling of caulking and glazing compound materials for analysis of polychlorinated biphenyls (PCBs), and a visual inspection for the presence of PCB, di (2-ethylhexyl) phthalate (DEHP), mercury, or chlorofluorocarbon containing equipment. The inspection was limited to visible and accessible materials. Minor selective demolition activities were conducted as part of this inspection. The following is a description of field activities conducted during the inspection:

## **Suspect Asbestos-Containing Material Sampling**

A total of 28 different types of suspect asbestos containing materials were observed and sampled including sheetrock, joint compound, floor tile and mastic, cove base and mastic, ceiling tiles, boiler insulation and boiler brick, wood window glazing compounds, window frame caulk, sink undercoating and other miscellaneous materials. Sampled materials are listed in Tables 1 and 2 (Appendix B). Up to two samples were collected of each suspect material as part of the asbestos identification screening. Samples were submitted to EMSL Laboratories in Wallingford, Connecticut for asbestos analysis via Polarized Light Microscopy (PLM) using EPA approved protocol in accordance with accreditation of the National Institute



of Standards and Technology (NIST). During inspection activities the sample locations, types of material, and quantities were recorded. Homogenous materials were noted when observed.

### **Lead-Based Paint Screening**

Lead based paint (LBP) screening was conducted using an Innov-X X-Ray Florescent (XRF) analyzer. The XRF is an instant read instrument that measures lead content of painted surfaces in milligrams per square centimeter. All of the painted building components such as walls, floors, and door systems for each target room were screened with the XRF and measurements were recorded as part of the inspection. Component and surface locations were identified by side designations represented by the letters "A", "B", "C", and "D". The "A" side is considered the door/entrance side to the data closets with the "B", "C", and "D" side following in a clockwise order.

### **PCB Sampling of Caulk and Glazing Compounds**

Samples were collected of caulking and glazing compounds observed during the inspection. Three different types of caulking and one type of glazing compound were observed. Up to two samples of each different type of material were collected as part of the PCB identification screening. These samples were submitted to Phoenix Laboratories of Manchester, Connecticut for analysis of PCBs utilizing the EPA 3540C Soxhlet Extraction and SW 846 8082 analytical method.

### **Visual Inspection for PCB/DEHP, Mercury, and Chlorofluorocarbon Containing Equipment**

A visual inspection for lighting ballasts, transformers, electrical switches, small electrical motor capacitors, and other items that could contain PCBs/DEHP was conducted. The inspection also included identification of mercury vapor lamps, other components known to contain mercury, and compressors with the potential to contain chlorofluorocarbons.

## **Findings and Conclusions**

### **Asbestos Sampling Results**

During the course of the inspection, a total of 29 bulk samples of suspect ACM were collected and 29 samples were analyzed. Some materials were found to be homogeneous to each room (i.e. sheetrock, floor tile, ceiling tiles, etc). USEPA defines any material containing more than 1% asbestos as an asbestos containing material. Five types of material were found to be asbestos containing materials (ACM) including floor tile and mastic, sink undercoating, window glazing compound, boiler insulation, and metal window glazing compound on doors. Additionally one sample was analyzed using the TEM NOB method. The TEM NOB analyses method confirmed the wood sash window glazing compound from the Fire House to be Non-ACM or <1% asbestos containing. Laboratory reports from EMSL are provided in Appendix C.

Previous sampling had been conducted at the Cheney School during prior AHERA inspections documented in 1990 and 1999. The following building materials were found to contain asbestos during those inspections; resilient floor tile and mastic, fire doors, pipe insulation and mudded pipe fittings, mastic behind wall boards and transite panels. Refer to Table 1 for a summary of asbestos containing materials previously sampled.

## **Lead-Based Paint Screening Results**

A total of 57 readings were collected during the lead-based paint screen of the Cheney Building, Power Plant and Fire House. Lead-based paint is typically defined as containing greater than 1.0 mg/cm<sup>2</sup> of lead. XRF readings were recorded ranging from 0.0 mg/cm<sup>2</sup> to >5.0 mg/cm<sup>2</sup> during the inspection.

A total of 40 readings were collected from the Cheney Building. High levels of lead based paint were identified on interior brick walls, interior foundations, interior and exterior wood window frames and sashes, structural steel, and plaster walls.

A total of 11 readings were collected from the Power Plant. High levels of lead based paint were identified on the exterior wood window/door frames and sashes and interior concrete walls of the Power Plant.

A total of 6 readings were collected from the Fire House. High levels of lead based paint were identified on the exterior wood window/door frames and sashes and interior brick walls of the Power Plant.

Due to the presence of high levels of lead based paint within the Cheney School, Power Plant, and Fire House further recommendations and planning will be required to address lead based paint removal or encapsulation.

US Department of Safety and Health Administration (OSHA) assumes any detectable level of lead in paint requires worker task specific exposure monitoring. If these surfaces identified to contain low levels of lead will be impacted by cutting, grinding or other dust generating activities a worker task specific exposure assessment should be conducted by the contractor in accordance with OSHA 29 CFR 1926.62 to confirm lead dust is not being generated. Refer to Table 3 for a detailed list of painted surfaces screened and XRF measurements recorded.

## **PCB Sample Results for Caulk, Putty, and Sealant Compounds**

A total of 10 samples were submitted for analysis of PCBs (four different types of materials). All of the samples analyzed were found to be Non-PCB containing. Concentrations detected ranged from <0.75 parts per million (ppm) to <0.82 ppm.

Materials containing PCBs at concentrations greater than 50 ppm and 1 ppm are regulated by EPA and the Connecticut Department of Energy and Environmental Protection (CTDEEP), respectively. Materials with PCB concentrations less than or equal to 1 ppm are not regulated and can be disposed of as general construction waste. Refer to Table 4 for a detailed list materials sampled for PCBs. Laboratory analytical reports for PCB sampling are provided in Appendix D.

## **Visual Inspection for PCB/DEHP, Mercury, and Chlorofluorocarbon Containing Equipment**

Each of the rooms, hallways, and waiting areas were observed to have fluorescent light fixtures. Each of these fixtures is assumed to contain ballasts that may contain PCBs and fluorescent tubes that contain mercury vapor. Additional universal wastes observed during the inspection included thermostats and emergency exit signs that may contain mercury vapor. If these fixtures are to be removed as part of renovation activities they should be properly handled and disposed in accordance with existing State and Federal regulations. An evaluation of existing electrical equipment for hazardous materials was not conducted as part of the inspection. No obvious signs of leaking PCB/DEHP containing equipment such as wet transformers, electrical switches, or small electrical motor capacitors were observed during the inspection. Furthermore, air conditioning units with the potential to contain



chlorofluorocarbons such as Freon was observed during the inspection. Refer to Table 5 for a summary of universal waste inventory.

## Limitations

Additional HBMI work will be required to determine actual materials and quantities for abatement and renovation, which was outside the scope of work for this HBMS. To meet EPA sampling identification standards, additional samples of suspect asbestos and suspect PCB containing materials is required before conducting any renovation activities.

We have developed a preliminary order of magnitude cost estimate of \$300,000 for abatement of HBMs that were identified during this Screening. This estimate includes a supplementary investigation of hazardous building materials, abatement design and specifications, abatement monitoring and the removal/disposal of universal wastes (refer to Table 6). Note, this cost estimate will increase if additional HBMs are found during the supplement investigation. We recommend technical specifications be developed to facilitate proper removal and disposal of these materials prior to renovation activities.

If you have any questions, please contact me at (860)704-4761 or [jtolsen@tighebond.com](mailto:jtolsen@tighebond.com).

Very truly yours,

**TIGHE & BOND, INC.**



James T. Olsen, LEP  
Senior Project Manager, Associate

Enclosures:

- Appendix A - Inspector Licenses
- Appendix B - Table 1 Summary of Asbestos Containing Materials
- Table 2 Summary of Non-Asbestos Containing Materials
- Table 3 Summary of XRF Lead Screening Results
- Table 4 Summary of PCB Sampling Results
- Table 5 Summary of Universal Wastes
- Appendix C - EMSL Asbestos Laboratory Analytical Reports
- Appendix D - PCB Laboratory Analytical Reports