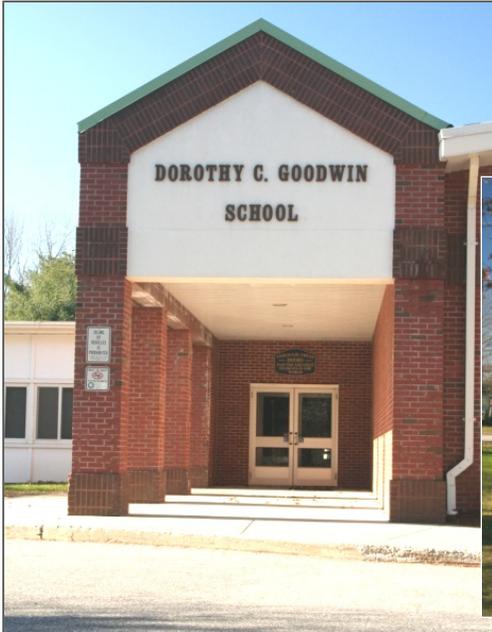


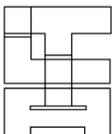


**Mansfield**  
Connecticut

# FOUR SCHOOLS RENOVATION PROJECT MANSFIELD, CT



January 9, 2008



**THE LAWRENCE ASSOCIATES**

ARCHITECTS / PLANNERS, P.C.

1075 TOLLAND TURNPIKE • MANCHESTER, CONNECTICUT • 06042

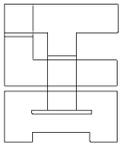
TEL: (860) 643-2161

FAX: (860) 643-4373

E-MAIL: LAWRENCE.ASSOC@SNET.NET



Drumey Rosane Anderson, Inc.  
41 Mechanic Street, Windsor, CT 06095  
Tel: 860-687-1850  
Fax: 860-688-5237



# THE LAWRENCE ASSOCIATES

ARCHITECTS / PLANNERS, P.C.

1075 TOLLAND TURNPIKE • MANCHESTER, CONNECTICUT • 06042

TEL: (860) 643-2161

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## FOUR SCHOOLS RENOVATION PROJECT MANSFIELD, CT

January 9, 2008

### TABLE OF CONTENTS

	PAGE NUMBER
<b>INTRODUCTION</b>	
Existing Conditions Analysis	i - 1
<b>1.0 DOROTHY E. GOODWIN ELEMENTARY SCHOOL</b>	
1.1 Architectural	1 - 1
1.2 Site	1 - 5
1.3 Mechanical	1 - 9
1.4 Plumbing & Fire Protection	1 - 12
1.5 Electrical	1 - 13
1.6 Floor Plan	A-1
<b>2.0 SOUTHEAST ELEMENTARY SCHOOL</b>	
2.1 Architectural	2- 1
2.2 Site	2 - 6
2.3 Mechanical	2 - 9
2.4 Plumbing & Fire Protection	2 - 12
2.5 Electrical	2 - 13
2.6 Floor Plan	A-2
<b>3.0 ANNIE E. VINTON ELEMENTARY SCHOOL</b>	
3.1 Architectural	3 - 1
3.2 Site	3 - 6
3.3 Mechanical	3 - 9
3.4 Plumbing & Fire Protection	3 - 12
3.5 Electrical	3 - 13
3.6 Floor Plan	A-3
<b>4.0 MANSFIELD MIDDLE SCHOOL</b>	
4.1 Architectural	4 - 1
4.2 Site	4 - 7
4.3 Mechanical	4 - 11
4.4 Plumbing & Fire Protection	4 - 15
4.5 Electrical	4 - 17
4.6 Floor Plans	A-4 & A-5
<b>5.0 HAZARDOUS MATERIALS – ALL SCHOOLS</b>	
5.1 Hazardous Materials Summary	5 - 1

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## INTRODUCTION

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### EXISTING CONDITIONS ANALYSIS

The four school buildings operated by the Town of Mansfield include three elementary schools housing grades PK through 4 and one middle school for grades 5 through 8. The elementary schools are Dorothy C. Goodwin, Southeast and Annie E. Vinton Schools; the middle school is called the Mansfield Middle School.

The buildings have been very well maintained and the staff providing such services reflects pride in the appearance and operation of the buildings. However, as identified in this report, many of the major building systems are at, or approaching, the end of their useful life expectancy. If not addressed as a part of a planned, systematic upgrading, breakdown and/or failure of these component systems can be anticipated on an ongoing basis.

The three elementary schools were subject to additions and renovations in 1990 but this work did not replace or change significantly the original, mid-1950's core infrastructures. Generally speaking, most municipal schools in Connecticut undergo such replacements/renovations every 20 ± years, thus indicating the need to plan for these improvements at this time. Additionally, significant changes over the past few decades in teaching methods, equipment, resource materials, computers and technology have required modifications to the traditional classroom – both in size and arrangement. Satisfying these requirements along with other program needs for additional space and relocated functions will be major components of the recommended solutions for this project.

During the summer and fall of 2007, a series of on-site visits, inspections and observations were made by the Architect, Site, Mechanical and Electrical Engineering Consultants for purposes of preparing this existing conditions report. While conducting day-long “programming” sessions at all four schools, additional comments from staff about the existing conditions and systems operations were noted and incorporated in this summary. The observations and comments are summarized and often generalized, especially when repetitive conditions, materials, features and equipment were apparent in similar spaces.

Professional judgment was used in evaluating current conditions and making statement pertaining to the remaining useful life of those materials, systems and equipment. This information was gathered and documented for use as a baseline and comparative purposes.

The mechanical, electrical, plumbing and fire protection (MEP/FP) systems for the three elementary schools and the middle school were evaluated to confirm their type, capacity, age, energy efficiencies and condition. The information is intended to determine the remaining useful life of these systems in order to make decisions regarding seeking a “like new status” with the state of Connecticut as well as determine if the mechanical systems can support future program changes such as increased floor area.

## **INTRODUCTION**

---

Included in the report are past operational and performance issues of existing system configuration, condition and types to determine if different system types and configurations would perform better and be easier/less expensive to maintain, repair and/or replace.

After working with the Superintendent, school principals, school staff and building committee, considered in the report are special environmental issues such as temperature, air quality, noise, lighting, ventilation, sound reinforcement and educational technology support for incorporation into the project.

The report intends to aid the town staff, building committee and architects to define the technical approach and desired outcomes of changes to the buildings as well as the MEP/FP systems and specifically define the relative importance of the following:

- Initial cost
- Reliability criterion
- Needed flexibility requirements
- Performance levels
- Operational costs

1.0 DOROTHY C. GOODWIN ELEMENTARY



## 1.1 ARCHITECTURAL

### GENERAL INFORMATION

### DOROTHY C. GOODWIN ELEMENTARY SCHOOL

<b>CONSTRUCTED:</b>	1955
<b>ADDITIONS:</b>	1990
<b>ACREAGE:</b>	12.00
<b>SQUARE FOOTAGE:</b>	37,864
<b>GRADES:</b>	PK - 4
<b>ENROLLMENT:</b>	202

#### BUILDING STRUCTURE:

Original building was constructed using a combination of masonry bearing walls with some steel columns, steel trusses and open web joists with bulb tees supporting a Tectum roof deck. The 1990 additions were constructed using steel beams and columns and steel roof deck spanning between the supporting structural steel members. Both the original construction and the addition have concrete slab on-grade floors. Perimeter concrete utility tunnels are located in portions of the original building. Visual observations did not reveal any significant deterioration of the building's structural system other than an occasional minor crack due to expansion and contraction or differential settlement. These are not considered a safety hazard.

#### EXTERIOR ENVELOPE:



**Exterior Walls** - The exterior walls of the 1955 original building consist of a wood-framed curtain wall type system with non-insulated transite panels over 1/2" plywood and replacement aluminum windows. Where visual access was available, it did not appear that there was insulation of any significant thickness backing the transite panels over 1/2" plywood. Some of the end walls at the classrooms wings and the higher walls surrounding the Gymnasium / Cafeteria were constructed using concrete masonry units as a backup and brick veneer on the exterior surface. Based on the building's original age, it does not appear likely that there is insulation between the two wythes of masonry.



The exterior walls of the 1990 additions were constructed using concrete masonry unit (CMU) backup and brick exterior. Wall sections from the construction documents used to build these additions indicate 2" of rigid polystyrene insulation between the two wythes of masonry.

## 1.1 ARCHITECTURAL



**Windows** - New aluminum windows with insulating glass were installed in both the original building and in the new additions when these were constructed in 1990. It was noted in some spaces that the insulating glass seals have failed evidenced by condensation and fogging between the two glass panes. The size of operable units appears to meet current codes for rescue and ventilation requirements. Shading devices consist of Venetian blinds.



**Doors** - Exterior doors were mainly aluminum and aluminum frames with single glazing and appear to be in fairly satisfactory condition.



**Roof** - The entire building received a new roof when the 1990 additions were constructed. The roof is a single-ply EPDM (rubber) fully adhered .060" membrane manufactured by Firestone. The membrane has markings indicating it was manufacturer in "6-90". There is evidence of insulation fasteners projecting up in several areas, thus creating potential stress and tear points. Internal roof drains were located around the rooftop air conditioning units over the offices. The roof pitches to exterior gutters connected to downspouts and an underground storm drainage system. Repair work was being performed on the roofing during the day of observation. Drawings indicate the presence of 2½" of rigid insulation beneath the EPDM membrane and on some portions of the roof, tapered insulation adds to this thickness. A standing seam metal roof occurs over the new entranceway to the school.

### INTERIOR FINISHES & FIXTURES:



**Interior Walls** - Corridor walls are a combination of brick veneer and glazed CMU (mainly in the original building) and painted CMU in the new additions. Classrooms and other smaller teaching spaces are generally painted CMU construction. Some gypsum board partitions were noted in the Office and Nurse's areas.



**Floors** - Nearly all of the floors that were originally asbestos-containing tiles have been replaced with fairly new Vinyl Composition Tile (VCT) flooring materials with resilient base. In those spaces containing the glazed CMU walls, the bottom course if a cove based glazed CMU. A sheet rubber floor with a resilient base is located in the Multi-Purpose Room, carpet with resilient base is found in the Library/Media Center and Music Rooms while the Kitchen, Toilet Rooms and Custodial Spaces have ceramic tile with ceramic tile base.

## 1.1 ARCHITECTURAL



**Ceilings** - Most spaces have had 2' x 4' suspended acoustical panel ceilings installed when the 1990 additions and renovations were constructed. Exceptions include the Multi-Purpose Room (Gym/Cafeteria) space where the original, exposed Tectum roof deck is visible directly above the painted exposed steel framing. The ceiling in the Kitchen was noted as a perforated 2' x 4' acoustical panel.



**Classroom Casework** - Throughout the building, the casework is stained wood with plastic laminate countertops and backsplashes. Some painted shelves were noted in the original building with stained wood base cabinets and plastic laminate countertops. It was noted in many locations that wear and deterioration were showing on both vertical surfaces of the cabinetry and the plastic laminate countertops and edgings.



**Doors and Frames** - In the original building most of the doors are solid core wood with solid core wood frames and some wood transom panels above. In the new additions solid core wood doors have been installed in hollow metal frame with wire glass.

### BUILDING & FIRE CODES:

**Construction Type** - Building is Type III B construction (in accordance with 2003 IBC).

**Corridor Walls** - Spot checking indicated that Corridor walls had been extended to the underside of the roof deck above, thus providing a smoke-tight condition and the 30-minute fire rating. Materials appear to be steel studs and gypsum board.

**Stage Curtain** - A label was not observed indicating this to be fire resistant. Further checking and coordination with facility staff will be required.

## 1.1 ARCHITECTURAL

### ADA / ACCESSIBILITY:



**Exterior Entries** - It did appear that most of the exterior doors had level platforms and ramps leading to the adjacent sidewalk. However, the ramp at the south end did not have the code-required handrails on either side and the exit to the west does not interconnect with paved sidewalks leading to a public way.

**Toilet Facilities** - Some of the Boys and Girls Toilet Rooms have been modified to provide accessible fixtures based on previous codes. These facilities do not comply with current standards for turning radii, clearances, accessibility or types of fixtures.

**Access to Platform (Stage)** - A wheelchair lift was added during the 1990 additions and renovations project to make the platform accessible.

**Signage** - Tactile (Braille) signage is now required for all spaces.

**Door Handles** - Door handles throughout the original building are not the lever type while the spaces added during the most recent additions do contain lever handles.

### FREE- STANDING GREENHOUSE:



**Existing Structure** - A free-standing greenhouse structure is located to the west side of the building with no physical attachment other than electrical service. There is no paved walkway and the structure is used mainly during warm weather since it lacks an appropriate heating system. Positive comments were heard about the activities and programs, which are beneficial to the educational environment. Incorporating this space into a more permanent component of a school building project was noted as being desirable.

### HAZARDOUS MATERIALS:

**Vinyl Asbestos Tile** - A removal and replacement project was undertaken several years ago, which removed nearly all of the original vinyl asbestos floor tiles. New vinyl composition tile (VCT) was installed throughout the corridors, classrooms and other locations and these new materials are in fairly good condition. A comprehensive survey and sampling was not undertaken and there may be some original VAT in some smaller spaces.

**Asbestos Pipe Insulation** - Based on the age of the original building construction, it can be assumed that hidden within or behind existing construction, some asbestos pipe and insulation will be found. If renovations open up these partitions and concealed spaces, it will be necessary to undertake a hazardous materials abatement program, remove the materials and replace with new insulation.

## 1.2 SITE

**DRIVEWAY ACCESS:**



The school is accessed from 4 curb cuts on Hunting Lodge Road. Hunting Lodge Road is a low volume residential road. The parking lot on the north side of the school site has a single driveway/curb cut, there is a loop for bus access with a dedicated entrance and exit on Hunting Lodge Road (2 curb cuts) and there is a fourth driveway primarily for maintenance that is located between the parking lot and the bus access loop. The sight lines to the north (left) from the parking lot and maintenance driveway are limited and could be improved by adjusting the grade of Hunting Lodge Road to the north to eliminate the high point in the road that restricts the sight distance.

**BUS CIRCULATION:**

Buses access the school via a dedicated bus loop with an entrance and exit directly to Hunting Lodge Road.

**PAVEMENT CONDITION:**



The pavement throughout the school site is in fair condition. There are some cracks (more severe in locations), and there is heavy aggregate showing. Cracks should be sealed and a pavement over-lay installed or the pavement should be reclaimed and new pavement installed. Settlement of the pavement was observed adjacent to the concrete curb within the bus drop off area. The pavement in this area should be removed and new pavement installed. The concrete curb should be repaired as required.

**SIDEWALK CONDITION:**



The sidewalks on the site consist of concrete sidewalks in the front of the school and bituminous sidewalks around the side and to the rear of the school. The concrete sidewalks along the front of the school are in fair condition. The sidewalk along the bus drop off area is too narrow and should be widened. The concrete ramps on the school site do not meet standards for design and handicap warning surfaces and should be upgraded. The bituminous walks around the side and rear of the school are in poor condition in many locations. There are some areas along the south side of the rear of the school where heavy roots have totally disrupted the sidewalk surface. In these areas, either the trees should be removed, or the sidewalks repaired with the expectation of needing regular maintenance.

**PARKING FACILITIES:**

There is a separate parking lot for the school. Access to the school is via two stairways. The parking lot contains approximately 71 parking spaces. There are two additional handicap parking spaces accessed from the maintenance driveway. The parking lot is accessed via a separate driveway, and does not conflict with the bus circulation pattern. Consideration should be given to installing signage to direct visitors to the parking lot when approaching the school from the north.

## 1.2 SITE

**PEDESTRIAN CIRCULATION:**

The buses drop off students in front of the school via a dedicated loop. The sidewalk on the drop off loop is limited in extent and width, and needs to be widened to meet current standards. The two handicap spaces are laid out such that access from the western space requires passing behind the eastern vehicle and does not meet code. Access from the parking lot is via one of two sets of stairs. The access from the front (eastern) stairs is across the entrance drive to the maintenance area and is striped as a cross walk. The access from the rear set of stairs (western) is across the paved maintenance area and is not striped. This area should be striped as a crosswalk between the stairs and the entrance door.

**UTILITIES:**

The site is serviced by on-site wells and septic. Two on-site wells with storage tanks were recently installed. The electric service is via overhead lines into the site. The school is equipped with a backup generator.

**STORM DRAINAGE:**



The only piped storm drainage on the site is a collection system for the school's roof leaders. The majority of the pavement from the parking lot and the bus loop drain overland to Hunting Lodge Road, which along the school frontage has a piped storm drainage system. The rear (western) end of the parking lot drains overland to the west, and the paved play area on the southern side of the school generally drains overland to the south and west. The overland flow from the parking lot and the overland flow from the bus loop have caused erosion along the edges of the pavement near Hunting Lodge Road. In the areas of erosion, curbing should be installed to prevent erosion of the adjoining lawn areas both within the school property and along the Hunting Lodge Road frontage. Additional storm drainage structures and piping may also be required. All roof gutters and down spouts that are damaged should be repaired to prevent runoff from the roof from passing over sidewalk areas. There is an erosion problem from runoff on the south paved play area where it drains to the southwest down a slope onto the lower play fields. This should be repaired by constructing a stable channel on the slope from riprap, or a similar measure.

## 1.2 SITE

### ACCESSIBILITY:



There are two handicapped parking spaces on the school site. The spaces are located on the north side of the maintenance drive and require pedestrians to cross the drive to access the school. Pedestrians from vehicles in the western space are required to cross behind a vehicle in the eastern space, which does not meet code. These two spaces should be reconfigured to be in compliance. From the south side of the maintenance drive, access to the school is via a ramp and concrete sidewalk. There is a sloped concrete walk into the west side of the school in the vicinity of the green house. This walk does not connect to the adjacent bituminous walk to the south as required by code. The walk should be reconfigured to provide access to the sloped concrete walk and greenhouse. There is a ramp on the south side of the building that appears to be too steep to meet handicapped code regulations. This ramp should be reconfigured to be in compliance.

### LANDSCAPING:

**General Condition** - Upper Parking Area- Parking lot vegetative screening is in relatively good shape. The center island is in need of minor grade adjustment to achieve positive drainage and allow a better lawn to be established. Lawn areas are stabilized. However, due to the State restrictions placed on the use of herbicides on elementary school grounds, they would be considered fair, as weeds are abundant throughout (plains, dandelions, crabgrass, clover, etc.). Newly planted shrub beds are in need of maintenance (weeding) and the dead planting material should be removed and replaced. As newer planting masses are created, the use of more deer resistant plantings should be considered. Surface cleanup and mowing around the underground water tank should be considered. Mature shrubs on slope need maintenance and pruning.

As burning bushes (*Euonymus alatus*) are considered an invasive species to the State of Connecticut, all existing plantings should be considered for removal and replacement with a more native planting material.

Although the nature trail(s) were not observed, the area at the trailhead could be improved to handle the class gatherings before continuing into the woods.

**Front Entrance Area** - Trees are in good shape. Lawn area is stabilized, however as with the upper parking area, its condition is only fair.

## 1.2 SITE

**PLAYSCAPES:**



**General Condition:** The play structures are in good shape for play. Access ramp to school does not appear to meet the ADA accessibility requirements for slope. The picnic table and sand pile area should be considered for replacement. The enclosure for the aquatic pond area needs to be addressed for compliance with accessibility codes and whether or not the fence meets local and state codes depending on the depth of the pool. One should consider ADA accessibility to pond enclosure.

Existing climber should be considered for replacement.

Cracks in bituminous pavement play area should be weeded, repaired and sealed. Overall condition is good. All painted markings are in fair condition.

Lower playscape areas are not ADA accessible. The safety area for one swing set needs to be addressed. All of the bark play surface areas need to be cleaned and raked. All divots/holes in bark safety surface should be filled in. The Goodwin Playscape is in good condition; however, it has one step unit in disrepair and should be replaced. Other maintenance considerations should be weeding, repair of edging, and painting of the rusted and damaged metal pieces. After the site was visited, it was reported that the Town removed portions of the existing playscape.

**BALL FIELDS:**

**General Condition** - The large lower multi-purpose field to the back of the school appears to be in good shape. The quality of lawn would be considered fair. It appears to be vegetatively screened from residential neighbors and has vehicle or emergency access from Birch Road. Better vehicle accessibility would require Birch Road directional signage adjusted at chained entrance. The multi-purpose field area is not ADA accessible.

## 1.3 MECHANICAL

### FUEL SERVICE:



**Heating System** - Dual fuel systems are used for heating. There is a 10,000 gallon #2 fuel oil tank and a two inch natural gas service. The boiler burners can be switched between fuels. The piping for the gas service is steel and copper is used for the fuel oil piping. There is no gage or leak detection for the oil tank. Both fuel distribution systems are 30+ years old. It is recommended to replace the fuel tank with a new fiberglass double walled tank equipped with leak detection and fuel gauge. The fuel pumping system is 19 years old. It is recommended to replace the fuel pumps with a new energy efficient duplex system with containment. Both boilers are from 5 to 10 years old and manufactured by Weil McLain. One is 2957 MBH and the other is 3755 MBH. There is no asbestos insulation. Both boilers appear to be adequate for present and current needs.

### BOILERS:



Both boiler burners are dual fuel and approximately 5 to 10 years old. One is manufactured by Webster and the other by Power Flame. Both boiler burners appear to be adequate for present and current needs. The combustion air is provided through a gravity damper located in the boiler room wall. The capacity and condition appear to be adequate for current needs. The boiler has multiple breeching with 12 inch connections and barometric draft. It is of adequate size, in good condition, raises no energy efficiency issues and is suitable for continued existing use

### BOILER BURNER:



There are three expansion tanks installed above the two boilers and they appear over 30 years old. It is recommended to replace the expansion tanks and piping with a new blow down tank system. The chimney is masonry with stainless steel lining. It is of adequate size, in good condition, raises no energy efficiency issues and is suitable for continued existing use. The original control valves are pneumatic and changed to electronic as maintained. It is recommended to replace all pneumatic equipment with digitally controlled Johnson controls. The heating distribution piping is copper with fiberglass insulation outside the crawl spaces. It varies in age from original to 5 years old. While some is of adequate size, in good condition, raise no energy efficiency issues and is suitable for continued existing use, older pipe based on age and condition should be replaced.

### BREECHING:



The radiators are 30+ years old fin tube cabinet type. It is recommended to replace the radiators based on age and condition.

# 1.3 MECHANICAL

## WATER PUMPS & PRESSURE TANKS:



**Domestic Water** - Domestic and water for the hydronic systems is provided by two new wells drilled in 2007 to replace the original wells. Two new 5000 gallon in ground water storage tanks were also installed. The water system is of adequate size, in good condition, raises no energy efficiency issues and is suitable for continued existing use.

Water pressure and volume are maintained through two variable speed water pumps on each well and pressure tanks. All water distribution is through copper piping. The pumps and piping are of adequate size, in good condition, raises no energy efficiency issues and are suitable for continued existing use.

## WATER PUMPS VFD'S:



There is one domestic water pump and two circulating pumps for the hydronic system. The pumps are 5 years. They are of adequate size, in good condition, raise no energy efficiency issues and are suitable for continued existing use.

There is an 86 gallon domestic water heater and a 300 gallon hot water storage tank in the boiler room. The large tank is 30+ years. It is recommended to replace the domestic hot water system with a central dual fuel fired system.

## PUMPS:



## HOT WATER TANK:



## 1.3 MECHANICAL

### 6 TON RTU:



**Ventilation and Air Conditioning** - A 12 year old 6 ton roof top unit provides cooling for the offices through a ducted air distribution system. It is recommended to replace the RTU based on its age and condition.

Roof top unit ventilators provide exhaust for the Kitchen and Gymnasium. They are approximately 15 years old. It is recommended to replace them based on their age and condition.

Supply air for the gymnasium is provided by two roof mounted intake louvers and associated supply fans. Inside the gym, supply air is ducted to supply grills. The gym is exhausted through two roof mounted power ventilators and through two exhaust grills. The Gym ventilation system is part of the 1989 addition and is the subject of many complaints due to the noise it generates when operating. It is recommended to replace the existing system based on its age and condition with a new energy efficient system.

### UNIT VENTILATORS:



One roof top unit ventilator provides exhaust for two classrooms through ducts and grills. Make up air is provided through operable sash windows. It is recommended to replace these systems with a dedicated outside air system (DOAS) and heat recovering unit ventilators.

### OPERABLE WINDOWS:



### CLASSROOM VENTILATORS:



## 1.4 PLUMBING & FIRE PROTECTION

**PLUMBING:**

The Goodwin School building plumbing system is from two periods of installation. The original equipment installed when the school was built is now over 45 years old and the second installation was part of the 1989 additions. Some equipment and fixture replacements during a 1989 renovation are now 18 years old.

**BATHROOM FIXTURES:**



Bathroom fixtures vary in age from 19 to over 45 years old. Fixtures are predominately vitreous china. It is recommended to replace sinks, urinals and toilets based on age and condition with code compliant models.

The septic system has two 5000 gallon tanks and leaches under the soccer field. The septic tanks and leaching field appear to be in fair condition, adequately sized and suitable for continued use.

**SEPTIC:**



The cast iron and PVC sanitary waste piping system and the galvanized steel and PVC vent piping systems are original to the building or installed in the 1989 renovation. There are no complaints about their condition or reliability. Galvanized piping showing signs of rust and damaged piping of any adjacent material should be replaced.

**FIRE PROTECTION:**

There is no automatic sprinkler system in the school. According to the Connecticut State Building Code [F] 903.2.2 Group E an automatic sprinkler system shall be provided for any new additions or if a “renovate like new” project were undertaken.

## 1.5 ELECTRICAL

### MAIN ELECTRICAL SERVICE:



The school's main electrical service is a 3 phase 800-amp service with an 800 amp MDP and smaller branch circuit panels. The electrical equipment is in a crawl space adjacent to the boiler room and well tank room. It is not compliant with current egress code requirements. Circuit breakers in the MDP are newer than the panel. Some newer panels serve branch circuit loads, but most panels, including the MDP and main service switch are original. (1950's). All panels are full or almost full. Classrooms are in need of more 120v outlets. It is recommended to replace the entire electrical service into a full height room with code compliant egress. Locate the new room on the main level near the existing electrical equipment. Add more circuit breaker panel boards and branch circuits throughout the school.

### GENERATOR:



**Emergency Power** - The existing 50-kW generator and manual transfer switch are old and do not provide power to all emergency systems during a power failure. Identify power panels, equipment and services that require emergency power and collect them for switching to emergency power when normal power fails. It is recommended to replace the generator, ATS and add emergency panel boards for emergency circuits.

### INTERIOR LIGHTS:



The lighting fixtures are 19-years old, are mostly 2' x 4' recessed light fixtures in suspended ceilings, with T-8 lamps and ballasts. There are no longer older ballasts containing PCB's in any fluorescent fixtures. The fixtures are nearing their maximum service life, with repairs common. The T-8 lamp is energy efficient compared to old T-12 lamps, but newer light fixtures offer less glare and more efficiency. It is recommended to replace some, if not all of the fixtures to provide better lighting quality and reduce energy consumption.

### GYM & STAGE LIGHTING:

The stage lighting system is limited. Some spotlights are mounted to the ceiling, but are up too high to be aimed for individual productions. Clusters of PAR-38 spotlights are located above the stage, on 120v wall mounted dimmer controls. The controls for stage lights are not flexible enough to put on the variety of stage productions done in the school. A portable light board is available, but the school needs more plug outlets around the gym perimeter. Most Gym lights are adequate, and protected from gym activities. It is recommended to replace the hanging incandescent lights with physically protected higher efficiency fixtures. The back stage lights need secondary controls at the front of the stage. The projection screen also needs a second set of controls on the gym wall perimeter.

## 1.5 ELECTRICAL

**OCCUPANCY SENSORS:** The recent energy audit and upgrade added occupancy sensors to the building. Many of them failed, with some already replaced. It is recommended to replace any defective sensors and infrared occupancy sensors with dual technology types.

**EMERGENCY LIGHTS:** Many of the battery operated wall packs with single or twin heads found throughout the school are not charging properly. Replace the batteries and/or chargers if necessary. The spacing and position of the emergency fixtures are not code compliant for illumination levels. Reposition, add, replace and re-circuit as necessary the existing emergency lighting system fixtures and bring up to code.

**EXIT LIGHTS:** Exit signs have many problems. They are old and many do not work at all. Many did not respond to the test switch and are not wired to the area lighting circuits. It is recommended to reposition, add, replace and re-circuit as necessary the existing exit lighting fixtures and bring up to code.

**EGRESS LIGHTS:** Although some exits have lights at the exterior side of the door, as a wall washer from the soffit, most exits have no egress lights. Code now requires egress lights at all legal exits. IT is recommended to reposition, add, replace and re-circuit as necessary the existing egress lighting fixtures and bring up to code.

**BUILDING PERIMETER LIGHTS:** Sodium and metal halide wall-packs and incandescent fixtures mounted on the building light the perimeter. Some are new and some are original from the 1960's. Old mechanical time clocks control exterior lights. It is recommended to replace the older fixtures with energy efficient wall packs and replace time clocks with "photocell on" "time clock off" control system.

**PARKING LOT LIGHTING:** Down lighting fixtures on 20-foot poles, illuminate the parking lot. Evaluate illumination levels and correct as necessary to bring levels up to IES recommended levels. It is recommended to replace time clocks with "photocell on" "time clock off" control system.

**INTERCOM SYSTEM:** The existing intercom system is old and mostly abandoned. It is recommended to replace the existing intercom system and its intra-room wall telephones with a new telephone system with intercom features.

## 1.5 ELECTRICAL

**CLOCKS SYSTEM:** With the exception of the replacement of the master station, the original Simplex correctable clock system is still in place. Most of the original correcting clocks still in place do not work and battery clocks replaced the rest. It is recommended to install a new synchronized clock system.

**DATA SYSTEM:** CAT-5 data racks and patch panels located throughout the school serve computer stations in most rooms. The well-maintained system is in good working order. It is recommended to allocate an air-conditioned space for a main server; and provide Main Communication Equipment Rooms and Intermediate Communication Equipment Rooms as required.

**CCTV, VIDEO:** Most classrooms have a TV and cable hook-up for CCTV. The system is in working order.

**TELEPHONE SYSTEM:** The existing telephone system is in good working order. The height restrictions of the existing electrical room preclude its use for future telephone equipment. It is recommended to provide Main Communication Equipment Rooms and Intermediate Communication Equipment Rooms as required.

**SECURITY SYSTEM:** Presently the main office has a local security system. It is recommended to provide a new video camera system incorporating door access and motion detector security with any future renovation project.

**VIDEO INSTRUCTION STATIONS:** Most classrooms are equipped with modern white board instruction stations and ceiling mounted projection systems. It is recommended to include the same equipment and corresponding data systems in future renovations.

**FIRE ALARM SYSTEM:** The fire alarm system is a very old Simplex 2001 8-zone system. Devices are not ADA compliant. No strobes were included with the system. No voice evacuation is included with the existing system. It is recommended to install a new addressable fire alarm system to bring fire systems up to current ADA and NFPA requirements.



# 2.0 SOUTHEAST ELEMENTARY SCHOOL



## 2.1 ARCHITECTURAL

### GENERAL INFORMATION

### SOUTHEAST ELEMENTARY SCHOOL

<b>CONSTRUCTED:</b>	1955
<b>ADDITIONS:</b>	1990 - 4 Relocatable Classrooms
<b>ACREAGE:</b>	16.00
<b>SQUARE FOOTAGE:</b>	33,053 - Original 4,800 - Relocatables
<b>GRADES:</b>	PK - 4
<b>ENROLLMENT:</b>	243

#### BUILDING STRUCTURE:

Original building was constructed using a combination of masonry bearing walls with some steel columns, steel trusses and open web steel joists with bulb tees supporting a Tectum roof deck. The 1990 additions were constructed steel joists and beams with some steel columns and some masonry bearing walls and steel roof deck spanning between the supporting structural steel members. Both the original construction and the addition have concrete slab on-grade floors. Perimeter concrete utility tunnels are located in portions of the original building. Visual observations did not reveal any significant deterioration of the building's structural system other than an occasional minor crack due to expansion and contraction or differential settlement. These are not considered to be a safety hazard.

The four Relocatable classrooms are constructed of a structural steel framework and exterior walls and roofing fabricated from steel studs with an exterior painted masonite wall finish.

#### EXTERIOR ENVELOPE:



**Exterior Walls** - The exterior walls of the 1955 original building consist of a wood-framed curtain wall type system with non-insulated transite panels over 1/2" plywood and replacement aluminum windows. Where visual access was available, it did not appear that there was insulation of any significant thickness backing the transite panels over 1/2" plywood. Some of the end walls at the classrooms wings and the higher walls surrounding the Gymnasium / Cafeteria were constructed using concrete masonry units as a backup and brick veneer on the exterior surface. Based on the building's original age, it does not appear likely that there is insulation between the two wythes of masonry.

## 2.1 ARCHITECTURAL



The exterior walls of the 1990 additions were constructed using concrete masonry unit (CMU) backup and brick exterior. Wall sections from the construction documents used to build these additions indicate 2" of rigid polystyrene insulation between the two wythes of masonry.



**Windows** - New aluminum windows with insulating glass were installed in both the original building and in the new additions when these were constructed in 1990. It was noted in some spaces that the insulating glass seals have failed evidenced by condensation and fogging between the two glass panes. The size of operable units appears to meet current codes for rescue and ventilation requirements. Shading devices consist of Venetian blinds.



**Doors** - Exterior doors were mainly aluminum and aluminum frames with single glazing and appear to be in fairly satisfactory condition.



**Roof** - The entire building received a new roof when the 1990 additions were constructed. The roof is a single-ply EPDM (rubber) fully adhered .060" membrane manufactured by Firestone. The membrane has markings indicating it was manufactured in "11-89" and portions in "06-90". There is evidence of insulation fasteners projecting up in several areas, thus creating potential stress and tear points. Internal roof drains were located throughout the non-pitched roof areas. The roof pitches to exterior gutters connected to downspouts and an underground storm drainage system. Drawings indicate the presence of 2½" of rigid polystyrene insulation beneath the EPDM membrane and on some portions of the roof, tapered insulation adds to this thickness. Some ponding was noted by standing water and evidence of residue left where previous moisture had evaporated. A standing seam metal roof occurs over the new entranceway to the school.

### INTERIOR FINISHES & FIXTURES:



**Interior Walls** - Corridor walls are a combination of brick veneer and glazed CMU (mainly in the original building) and painted CMU in the new additions. Classrooms and other smaller teaching spaces are generally painted CMU construction. Some gypsum board partitions were noted in the Office and Nurse's areas.

**Floors** - Nearly all of the floors that were originally asbestos-containing tiles have been replaced with fairly new Vinyl Composition Tile (VCT) flooring materials with resilient base. In those spaces containing the glazed CMU walls, the bottom course is a cove based glazed CMU. A sheet rubber floor with a resilient base is located in the Multi-Purpose Room, carpet with resilient base is found in the Library/Media Center while the Kitchen, Toilet Rooms and Custodial Spaces have ceramic tile with ceramic tile base.

## 2.1 ARCHITECTURAL



**Ceilings** - Most spaces have had 2' x 4' suspended acoustical panel ceilings installed when the 1990 additions and renovations were constructed. Exceptions include the Multi-Purpose Room (Gym/Cafeteria) space where the original, exposed Tectum roof deck is visible directly above the painted exposed steel framing. The ceiling in the Kitchen was noted as a perforated 2' x 4' acoustical panel.



**Classroom Casework** - Throughout the building, the casework is stained wood with plastic laminate countertops and backsplashes. Some painted shelves were noted in the original building with stained wood base cabinets and plastic laminate countertops. It was noted in many locations that wear and deterioration were showing on both vertical surfaces of the cabinetry and the plastic laminate countertops and edgings.



**Doors and Frames** - In the original building most of the doors are solid core wood with solid core wood frames and some wood transom panels above. In the new additions solid core wood doors have been installed in hollow metal frame with wire glass.



### BUILDING & FIRE CODES:

**Construction Type (Original Building)** - Building is Type III B construction (based on 2003 IBC).

**Construction Type (Relocatable Classrooms)** - Relocatable Classrooms are Type V A Construction (in accordance with 2003 IBC).

**Corridor Walls** - Spot checking indicated that Corridor walls had been extended to the underside of the roof deck above, thus providing a smoke-tight condition and the 30-minute fire rating. Materials appear to be steel studs and gypsum board.

**Stage Curtain** - A label was not observed indicating this to be fire resistant. Further checking and coordination with facility staff will be required.

## 2.1 ARCHITECTURAL

### ADA / ACCESSIBILITY:



**Exterior Entries** - It was noted that all of the exterior entries appeared to provide level platforms and full accessibility to the paved walkway surrounding the school.

**Toilet Facilities** - Some of the Boys and Girls Toilet Rooms have been modified to provide accessible fixtures based on previous codes. These facilities do not comply with current standards for turning radii, clearances, accessibility or types of fixtures.

**Access to Platform (Stage)** - A wheelchair lift was added during the 1990 additions and renovations project to make the platform accessible.

**Signage** - Tactile (Braille) signage is now required for all spaces.

**Door Handles** - Door handles throughout the original building are not the lever type while the spaces added during the most recent additions do contain lever handles.

### FREE- STANDING GREENHOUSE:



**Existing Structure** - A free-standing greenhouse structure is located to the south side of the building outside the existing library area. There is no paved walkway and the structure is used mainly during warm weather since it lacks an appropriate heating system. Positive comments were heard about the activities and programs, which are beneficial to the educational environment. Incorporating this space into a more permanent component of a school building project was noted as being desirable. If expansion in the form of new construction for a centralized library/media center occurs in the vicinity of the existing library, it may be necessary to relocate this existing greenhouse.

## 2.1 ARCHITECTURAL

**HAZARDOUS MATERIALS:**

*Vinyl Asbestos Tile* - A removal and replacement project was undertaken several years ago, which removed nearly all of the original vinyl asbestos floor tiles. New vinyl composition tile (VCT) was installed throughout the corridors, classrooms and other locations and these new materials are in fairly good condition. A comprehensive survey and sampling was not undertaken and there may be some original VAT in some smaller spaces.

*Asbestos Pipe Insulation* – Based on the age of the original building construction, it can be assumed that hidden within or behind existing construction, some asbestos pipe and insulation will be found. If renovations open up these partitions and concealed spaces, it will be necessary to undertake a hazardous materials abatement program, remove the materials and replace with new insulation.

## 2.2 SITE

**DRIVEWAY ACCESS:** The school has three curb cuts on Route 89, a low to medium volume state road. Two of the curb cuts provide access for a dedicated loop for bus drop off and the third curb cut provides access to parking areas on the east side of the school. The sight lines from the bus exit onto Route 89 and from the parking lot curb cut appear to be adequate.

**BUS CIRCULATION:** The bus circulation pattern consists of a dedicated loop off of Route 89 for the bus drop off area. The loop appears to be limited in size.

**PAVEMENT CONDITION:** The pavement throughout the school site is in fair condition, though within the paved play area on the west side of the site there are areas with poor pavement condition. Cracks should be sealed and a pavement over-lay installed or the pavement should be reclaimed and new pavement installed. Curbing should be repaired as required.

**SIDEWALK CONDITION:**



The sidewalks on the site consist of concrete sidewalks in the front of the school and bituminous sidewalks around the side and to the rear of the school. The concrete sidewalks on the front of the school are in fair condition. The concrete walks at the bus drop off area are too narrow and do not meet current design standards. In addition, the curb along this drop off area is too low and provides a trip hazard. The concrete curb ramps on the site do not meet standards for design and handicapped warning surfaces. The front concrete walks should be widened and repaired as required. The curb ramps should be reconfigured to meet present design standards. The sidewalks along the eastern side of the site are striped off from the adjoining pavement without any grade separation. These walks should be separated from the paved parking areas with some method to protect pedestrians. The bituminous walks along the side and rear of the building should be repaired as required.

**PARKING FACILITIES:** There is a separate parking lot for the school accessed directly from Route 89. The parking lot contains approximately 66 parking spaces including 2 handicapped spaces. There is a large gravel parking area immediately to the east of the paved lot for the adjoining athletic fields.

**PEDESTRIAN CIRCULATION:** The buses drop off students in front of the school via a dedicated loop. The sidewalk on the drop off loop is limited in extent and width and would need to be widened to meet current standards. The two handicapped parking spaces are provided with access over pavement striped off from vehicular traffic. There is a separate drop off area on the east side of the school that appears to be for parents to drop off children.

## 2.2 SITE

**UTILITIES:** The site is serviced by on-site wells and septic system. The on-site wells with storage tank were recently installed. The electric service is via overhead lines into the site. The school is equipped with a backup generator.

**STORM DRAINAGE:** The only piped storm drainage on the site is a collection system for the roof leaders from the school building, and a single drain in the eastern parking lot. The majority of the paved areas drain overland. There is a yard drain in the southeast corner of the school building that appears to be set too high to be effective. This drain should be lowered.

**ACCESSIBILITY:**



There are two handicapped parking spaces on the site. The spaces are located on the east side of the site within the parking areas. The spaces are striped into the paved areas and access is via the adjoining pavement. There is no grade separation between the access to the school from these areas and the adjoining pavement. Measures should be provided to separate the pedestrians from vehicles such as providing wheel stops on the parking spaces and curbing or fencing along the walkways.

**LANDSCAPING:**

**General Condition** Overall appearance of school is good. Overgrown and dead shrubs or trees should be removed and or replaced. Lawn areas are stabilized. However, due to the State restrictions placed on the use of herbicides on elementary school grounds they would be considered fair, as weeds are abundant throughout (plaintain, dandelions, crabgrass, clover, etc.).

As burning bushes (*Euonymus alatus*) are considered an invasive species to the State of Connecticut, all existing plantings should be considered for removal and replacement with a more native planting material.

Mulch pile between green house and school should be relocated to minimize building moisture concerns. Positive drainage may be a building concern at the fenced in garden area where garden mulch may be a concern for the school building.

Nature trail and “out of bounds” were not reviewed.

Several areas adjacent to parking lot curbing need to be re-graded for positive slope and stabilized with new lawn.

## 2.2 SITE

**PLAYSCAPES:** Cracks in bituminous pavement should be repaired and re-sealed. Safety padding protection for the basketball posts should be replaced or repaired to work properly. Maintenance of bark mulch at swings should be done to achieve consistent bark mulch depth is required. Remove all pine cones, rocks and debris. Play structures are in excellent shape and accommodate both the 2-5 year old students and the 5-12 year old students. Play area edging is in need of minor adjustments to the existing grades. Minor bituminous pavement repair is required at the entrance to the 2-5 year play area. A question is always raised as to whether or not pedestrian access through the perimeter chain link fencing is acceptable for student control during recess. This should be addressed.

The small all-purpose field in back has a chain link back stop that is in need of replacement. Small infield should be dressed up to minimize safety issues.

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**BALL FIELDS:** Existing review of school play areas did not include the little league fields and football field maintained by the Town of Mansfield adjacent to the school.

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## 2.3 MECHANICAL

### FUEL OIL PUMPS:



**Heating System** - The fuel oil system consists of a steel underground fuel oil storage tank (size is unknown at this time) (UST), base mounted fuel oil transfer pump set and copper supply & return piping. It should be noted that the fuel oil piping is not run within containment. The fuel oil system including UST is at the end of its useful life. We are told that the UST is almost 20 years old. We recommend replacement of this entire system with the following:

1. New double wall fiberglass UST (Size to be determined) located closer to the boiler room than presently located.
2. New fuel oil supply & return piping run within containment.
3. New fuel oil supply & return piping run within the boiler room.
4. New UST leak detection and inventory monitoring system.

The fuel oil pump set appears to be original to the building. It is recommended to replace the fuel oil pump within the boiler room and all copper piping and add containment.

### COMBUSTION AIR DAMPER:



Combustion air serving boiler room is provided by means of louvers and gravity ventilators. The layout & arrangement appears to satisfy code requirements; however, size of free area needs to be checked.

### BOILER BURNER:



The Powerflame model BCCR3-0 oil burner on boiler 1 has a low fire / high fire rate of 7.4 GPH / 25.5 GPH. The Carlin oil burner model 1150 FFD on boiler 2 has a high fire rate of 20 to 35 GPH and a low fire of 12-15 GPH. The school staff indicates some issues with burner controls. Further review of burner operation and controls is necessary to ascertain what burner operation deficiencies exist and by which controller.

### BOILERS:



The boiler plant consists of two oil fired hot water cast iron sectional boilers. B-1 is Newer Burnham sectional providing 2570 MBH Hot Water Boiler. Boiler B-2 is an HB Smith and is approximately 22 years old with a 3098 MBH capacity. Both boilers appear to be in good condition. Replacement is not recommended solely on condition or age.

The current heating distribution system consists of three constant flow inline pumps, pneumatic & thermal motor (Danfoss) control valves, baseboard radiation, built in place convectors, unit heaters, heating ventilators (multi purpose room).

### HOT WATER PUMPS:



**Pumps:** The existing inline pumps appear to be in fair condition; however, they are approaching the end of their useful life.

**Piping Distribution:** The current hot water distribution system appears to be original construction and has been modified over the years as necessary to suit changes & modifications. The majority of the distribution piping is run within the existing pipe tunnels.

## 2.3 MECHANICAL

### HOT WATER PIPING:



**Terminal Heating Units:** The classrooms are served by built in place convector units located along the perimeter of the building. These units are piped together in a manifold loop system that is not easily retrofitted or modified. Control of space temperature is via thermal motor/ Danfoss control valves.

**Heating/Ventilating Units:** The multi purpose room is heated & ventilated using two horizontal heating and ventilating units. The equipment appears to be original construction and is at the end of its useful life.

### HOT WATER VALVES:



**Condition & Recommendations:** In general, the hot water distribution system is old and at the end of its useful life. Terminal heating equipment appears to be original construction vintage and is not easily modified/ altered to meet current building needs. Changes in the classroom space(s), needs and ventilation system will have a direct impact on this equipment also. Our current recommendation is to provide new heating distribution equipment including pumps and piping. The new equipment would be coordinated with any and all classroom modifications. Piping layout would be revised to include individual zone control.

### HVAC CONTROL SYSTEM:



**HVAC** - The existing HVAC control system consists of combination of pneumatic, electro-mechanical and direct digital controls. The boilers are controlled by an existing digital controller (Allerton Technologies) while the distribution system uses pneumatics and electro-mechanical devices.

**Condition & Recommendations:** The existing pneumatic system appears to be original construction and is at the end of its useful life. The existing direct digital control only serves the boilers. We recommend that the existing direct digital controller be expanded to serve the entire HVAC system including but not limited to the following:

1. Boiler(s) and pumps
2. Exhaust & supply fans
3. Terminal heating equipment (Individual Room Control)
4. Ventilating Units

Central Air conditioning is not provided in this building; however, the office area is air conditioned using ductless split air conditioning units. It is our understanding that some spaces are air conditioned using window units.

**Recommendations:** We recommend that the town review the need for air conditioning of spaces for this building and based on need, an air conditioning and appropriate system will be recommended / presented.

## 2.3 MECHANICAL

The existing ventilation system serving the majority of the building consists of an exhaust system and operable window sash. Air from the space is exhausted while outside air enters the space by infiltration (cracks & openings). This system does not have sufficient capacity to meet the current ventilation code. Additionally, by nature of this system occupied spaces are kept at a negative pressure with respect to outside and adjacent unoccupied areas of the building (such as pipe tunnel & attic).

Recommendations: We recommend that the existing ventilation system be completely overhauled and new equipment be provided to meet current code and standards for ventilation. Each area of the building would be ventilated using a dedicated outside air system (DOAS) that would be sized to meet the current code occupancy levels. This unit would supply "space neutral" ventilation air to the occupied space(s) of the building and provide space pressurization control (slightly positive).

The existing kitchen exhaust hood appears to be in fair condition and operates; however, it does not meet the current code. Current kitchen exhaust systems are required to have make-up air supplied directly to the space. The existing hood is of short circuit design and does not meet this requirement.

Recommendations: We recommend replacement of the kitchen exhaust hood and the addition of a new kitchen make-up air system that will meet the code requirements and coordinate with the kitchen equipment requirements.

## 2.4 PLUMBING & FIRE PROTECTION

### PLUMBING:

The existing plumbing fixtures located throughout the building are old and are at the end of their useful life. Many do not meet current building code standards or ADA. We recommend that these fixtures be replaced and coordinated with the overall renovation project.

### DOMESTIC HOT WATER:



The existing domestic hot water system consists of an oil fired hot water heater (backup & summer operation) and storage tank with tank-less hot water heaters located within the boilers (winter operation).

Recommendations: We recommend that the existing storage tank be removed from service along with the tank-less coils and be replaced with an indirect hot water storage tank system. We recommend that the backup water heater remain in place and be connected to the new indirect storage tanks.

The existing kitchen fixtures are connected to two grease traps located within the kitchen. These traps are at the end of their useful life and in fact, one trap is currently abandoned in place, as it does not work. These traps do not meet current regulations.

We recommend that new grease traps be provided and coordinated with any kitchen renovation scope of work. Depending on the fixtures connected, an interior or exterior grease trap will be required to meet current regulations.

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### FIRE PROTECTION:

There is no automatic sprinkler system in the school. According to the Connecticut State Building Code [F] 903.2.2 Group E an automatic sprinkler system shall be provided for any new additions or if a “renovate like new” project were undertaken.

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## 2.5 ELECTRICAL

### ELECTRICAL SERVICE:



The electrical service is 800 amps, 208 volts, three phase. There are two basic generations of distribution panels in the building. The first generation is original to the building construction and is manufactured by GE. The second generation of power panels was installed in the 1989 code update project and is manufactured by Square D. The main distribution panel does not have expansion capacities for additional breakers. The GE panels have safety issues with the bus bars being too close to the panel cover. These panels also have no room for expansion. The Square D panels have some room for expansion, but no safety issues. Branch circuit panels are full. Classrooms need additional 120v outlets, since existing circuits often become overloaded and cause circuit breakers to trip.

### GENERATOR:



The existing 50 kva generator is too small to provide back-up power to all necessary emergency systems. It currently provides back-up power to the heating and water systems only. It is recommended that future and existing computer server rooms and critical lighting areas be added to this or a larger generator.

### INTERIOR LIGHTING:



The prevalent lighting in the school is recessed parabolic fluorescent light fixtures with T8 lamps and electronic ballasts. This lighting was installed in the 1989 code update project and is in good condition. Most of the old ballasts were replaced recently.

### GYM AND STAGE LIGHTING:



The stage lighting system is limited. Some spotlights are mounted to the ceiling, but are up too high to be aimed for individual productions. Clusters of PAR38 spotlights are located above the stage, on 120v wall mounted dimmer controls. The controls for stage lights are not flexible enough to put on the variety of stage productions that are done in the school. A portable light control board is available, but the school needs more plug outlets around the gym perimeter for it. Most Gym lights are adequate, and protected from gym activities, but the hanging incandescent can lights get hits from balls, and should be replaced with protected lights. The back stage lights need secondary controls at the front of the stage. The projection screen also needs a second set of controls on the gym wall perimeter.

## 2.5 ELECTRICAL

### OCCUPANCY SENSORS:



The recent energy audit and upgrade added occupancy sensors to the building. Many of them failed, with some already replaced. It is recommended that all sensors be tested, and defective ones replaced with dual technology sensors in their place.

### EMERGENCY LIGHTING:



The existing emergency lighting has been upgraded recently by town staff due to failures of all existing fixtures. Currently most fixtures are one to two years old. In some areas the distances between emergency lights is too great to provide code required light levels in the event of a power failure.

### EXIT LIGHTS:



Exit signs are not old, but every one tested for battery back up failed to light. It is recommended that all exit signs be tested, and defective ones replaced.

### EGRESS LIGHTS:



Most exit areas on the original building and added wings do not have egress lights. The one found (picture) was broken. It is recommended that all exit areas have new code compliant egress lights installed.

### BUILDING PERIMETER:



Sodium wall packs are found along the building perimeter. Some have cracked lenses. They operate on a mechanical time clock. It is recommended that all building perimeter lights be tested, and replaced as necessary.

## 2.5 ELECTRICAL

### PARKING LOT LIGHTS:



Sodium lights on 15' poles are found in the parking lot. These are controlled by mechanical time clocks. It is recommended that all parking area lights be tested, and replaced as necessary. Any new parking areas should have similar lights added.

### INTERCOM SYSTEM:



The existing intercom functions are done through the existing telephone system, with additional equipment added to power ceiling mounted PA speakers in the corridors. The original Bogan PA system, with wall mounted phone sets, has been abandoned. It is recommended that the entire intercom system be inspected, with defective parts replaced, or incorporate the intercom function into a new telephone system that meets the occupant needs.

### CLOCKS:



The original Simplex correctable clock system is still in place, with a few correctable clocks still working. The Simplex master clock unit was recently replaced, but the new unit does not work well. Many of the time correcting clocks have been replaced with battery units.

### DATA SYSTEMS:



Existing CAT5 and CAT6 data system wiring comes into a cramped book storage closet, to a series of patch panels. The servers are located in a closet next to the computer lab, which is also used as a storage closet. It is recommended that space be allocated for a main server, and the space is correctly air conditioned. The existing storage closet now used for both telephone and data systems should be converted to a server room, with air conditioning added, and new space created for storage.

### CCTV, VIDEO:



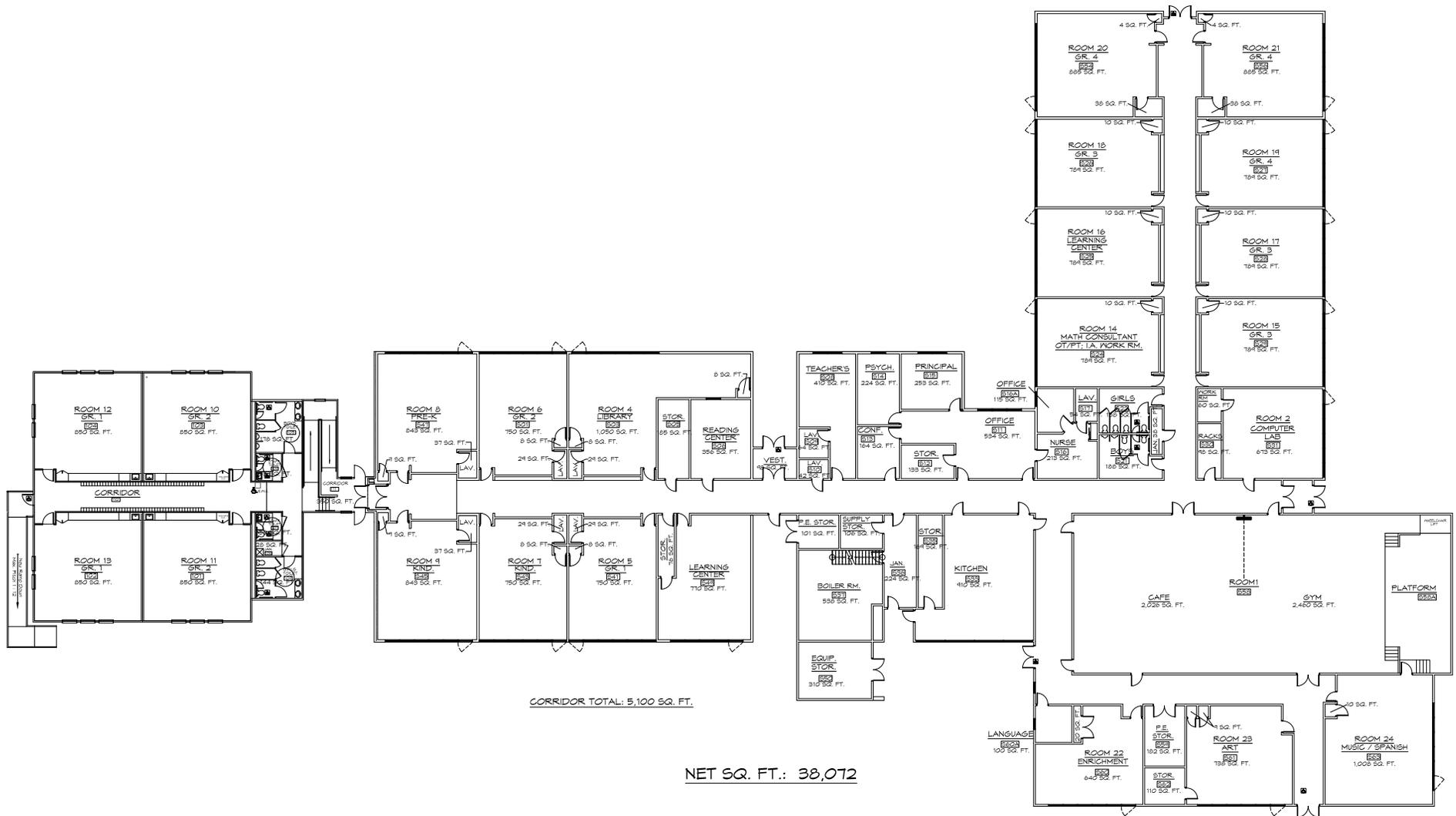
Most classrooms have a TV and cable hook-up for CCTV. The system is in working order. It is recommended that HD compatible distribution amplifiers be added as the existing system is expanded.

## 2.5 ELECTRICAL

### FIRE ALARM:



The existing fire alarm system had the FACP replaced recently, but all pull stations, horns and flashing lights are old and not code compliant. The existing system is a non-addressable, multi-zone system. This system is nearing the end of its life expectancy. There are common failures of devices on the system. Currently the remote annunciator panel does not work. It is recommended that the entire system be replaced with a code compliant addressable fire alarm system.



PROPERTY TITLE: THE LAWRENCE ASSOCIATES  
 475 North Main Street, Wallingford, CT 06495  
 TEL: 203-261-1111 FAX: 203-261-1112  
 WWW.LAWRENCEASSOCIATES.COM

PROJECT TITLE: SOUTHEAST ELEMENTARY SCHOOL  
 135 WARRENVILLE ROAD  
 MANSFIELD, CT

DRAWING TITLE: FLOOR PLAN

DATE: 3/23/10  
 DRAWN: 01/09/08

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

A-2

**3.0 ANNIE E. VINTON ELEMENTARY SCHOOL**



### 3.1 ARCHITECTURAL

GENERAL INFORMATION	ANNIE E. VINTON ELEMENTARY SCHOOL
CONSTRUCTED:	1951
ADDITIONS:	1990
ACREAGE:	22.00
SQUARE FOOTAGE:	35,654
GRADES:	PK - 4
ENROLLMENT:	263

**BUILDING STRUCTURE:** Original building was constructed using a combination of masonry bearing walls with some steel columns, open web steel joists, concrete joists and wood trusses with bulb tees supporting a Tectum roof deck. The 1990 additions were constructed using steel beams, girders and columns and open web steel joists and steel roof deck spanning between the supporting structural steel members. Both the original construction and the addition have concrete slab on-grade floors. Perimeter concrete utility tunnels are located in portions of the original building. Visual observations did not reveal any significant deterioration of the building’s structural system other than an occasional minor crack due to expansion and contraction or differential settlement. These are not considered to be a safety hazard.

**EXTERIOR ENVELOPE:**



**Exterior Walls** - The exterior walls of the 1951 original building consist of a wood-framed curtain wall type system with non-insulated transite panels over ½” plywood and replacement aluminum windows. Where visual access was available, it did not appear that there was insulation of any significant thickness backing the transite panels over ½” plywood. Some of the end walls at the classrooms wings and the higher walls surrounding the Gymnasium / Cafeteria were constructed using concrete masonry units as a backup and brick veneer on the exterior surface. Based on the building’s original age, it does not appear likely that there is insulation between the two wythes of masonry.

The exterior walls of the 1990 additions were constructed using concrete masonry unit (CMU) backup and brick exterior. Wall sections from the construction documents used to build these additions indicate 2” of rigid polystyrene insulation between the two wythes of masonry.

### 3.1 ARCHITECTURAL



**Windows** - New aluminum windows with insulating glass were installed in both the original building and in the new additions when these were constructed in 1990. It was noted in some spaces that the insulating glass seals have failed evidenced by condensation and fogging between the two glass panes. The size of operable units appears to meet current codes for rescue and ventilation requirements. Shading devices consist of Venetian blinds.



**Doors** - Exterior doors were mainly aluminum and aluminum frames with single glazing and appear to be in fairly satisfactory condition.



**Roof** - The entire building received a new roof when the 1990 additions were constructed. The roof is a single-ply EPDM (rubber) fully adhered .060" membrane manufactured by Firestone. The membrane has markings indicating it was manufactured in "10-89". Internal roof drains were located throughout the non-pitched roof areas. The roof pitches to exterior gutters connected to downspouts and an underground storm drainage system. Drawings indicate the presence of 2½" of rigid insulation beneath the EPDM membrane and on some portions of the roof, tapered insulation adds to this thickness. Some ponding was noted by standing water and evidence of residue left where previous moisture had evaporated. A standing seam metal roof occurs over the new entranceway to the school.



### 3.1 ARCHITECTURAL

#### INTERIOR FINISHES & FIXTURES:



**Interior Walls** - Corridor walls are a combination of brick veneer, glazed CMU (mainly in the original building), and painted CMU in the new additions. Classrooms and other smaller teaching spaces are generally painted CMU construction. Some gypsum board partitions were noted in the Office and Nurse's areas.

**Floors** - Nearly all of the floors that were originally asbestos-containing tiles have been replaced with fairly new Vinyl Composition Tile (VCT) flooring materials with resilient base. In those spaces containing the glazed CMU walls, the bottom course if a cove based glazed CMU. A sheet rubber floor with a resilient base is located in the Multi-Purpose Room, carpet with resilient base is found in the Library/Media Center while the Kitchen, Toilet Rooms and Custodial Spaces have ceramic tile with ceramic tile base.

**Ceilings** - Most spaces have had 2' x 4' suspended acoustical panel ceilings installed when the 1990 additions and renovations were constructed. Exceptions include the Multi-Purpose Room (Gym/Cafeteria) space where the original, exposed Tectum roof deck is visible directly above the painted exposed steel framing. The ceiling in the Kitchen was noted as a perforated 2' x 4' acoustical panel.

**Classroom Casework** - Throughout the building, the casework is stained wood with plastic laminate countertops and backsplashes. Some painted shelves were noted in the original building with stained wood base cabinets and plastic laminate countertops. It was noted in many locations that wear and deterioration were showing on both vertical surfaces of the cabinetry and the plastic laminate countertops and edgings.

**Doors and Frames** - In the original building most of the doors are solid core wood with solid core wood frames and some wood transom panels above. In the new additions solid core wood doors have been installed in hollow metal frame with wire glass.

### 3.1 ARCHITECTURAL

**BUILDING & FIRE CODES:**

**Construction Type** - Building is Type III B construction (in accordance with 2003 IBC).

**Corridor Walls** - Spot checking indicated that Corridor walls had been extended to the underside of the roof deck above, thus providing a smoke-tight condition and the 30-minute fire rating. Materials appear to be steel studs and gypsum board.

**Stage Curtain** - A label was not observed indicating this to be fire resistant. Further checking and coordination with facility staff will be required.

**ADA / ACCESSIBILITY:**



**Exterior Entries** - It did appear that most of the exterior doors had level platforms and ramps leading to the adjacent sidewalk. The exit at the south end of the classroom wing as well as the entry near the recess at the Computer Room contains steps and do not comply with current accessibility requirements.

**Toilet Facilities** - Some of the Boys and Girls Toilet Rooms have been modified to provide accessible fixtures based on previous codes. These facilities do not comply with current standards for turning radii, clearances, accessibility or types of fixtures.



**Access to Platform (Stage)** - A wheelchair lift was added during the 1990 additions and renovations project to make the platform accessible.

**Signage** - Tactile (Braille) signage is now required for all spaces.

**Door Handles** - Door handles throughout the original building are not the lever type while the spaces added during the most recent additions do contain lever handles.

**FREE- STANDING GREENHOUSE:**



**Existing Structure** - A free-standing greenhouse structure is located a further distance away from the existing building than at the other two elementary schools south and east of the main building. There is no paved walkway and the structure is used mainly during warm weather since it lacks an appropriate heating system. Positive comments were heard about the activities and programs, which are beneficial to the educational environment. Incorporating this space into a more permanent component of a school building project was noted as being desirable.

## 3.1 ARCHITECTURAL

**ENRICHMENT BUILDING:**



*Existing Structure* – This is a free-standing structure constructed in 1968 separated from the school building by several hundred feet. Students must walk to this facility, which presents problems during inclement weather. It is electrically heated and has had a history of roof leaks according to staff. It provides a broad range of programs including instruction and exploratory programs for excelling students.

**HAZARDOUS MATERIALS:**

*Vinyl Asbestos Tile* - A removal and replacement project was undertaken several years ago, which removed nearly all of the original vinyl asbestos floor tiles. New vinyl composition tile (VCT) was installed throughout the corridors, classrooms and other locations and these new materials are in fairly good condition. A comprehensive survey and sampling was not undertaken and there may be some original VAT in some smaller spaces.

*Asbestos Pipe Insulation* – Based on the age of the original building construction, it can be assumed that hidden within or behind existing construction, some asbestos pipe and insulation will be found. If renovations open up these partitions and concealed spaces, it will be necessary to undertake a hazardous materials abatement program, remove the materials and replace with new insulation.

## 3.2 SITE

### DRIVEWAY ACCESS:

The school is accessed from a single driveway on Route 32, a medium volume state road. The sight lines from the driveway appear to be adequate, although it appears at normal traveling speed for vehicles coming from the north, there is limited reaction time after the driveway and sign are observed to slow down to enter the site for vehicles unfamiliar with the school's location. Advance signs should be maintained to alert approaching motorists of the school.

### BUS CIRCULATION:



The bus circulation pattern consists of buses entering the school via the common driveway and then entering a separate on-site loop area for drop off of students. The buses then enter the parking area in order to turn around to leave the school via the single driveway. There is a large open paved area where the buses turn to enter the parking areas. This area should be reconfigured to minimize the wide-open paved area and help control vehicle movements through this area.

### PAVEMENT CONDITION:

The pavement throughout the school site is in fair condition. The parking and driveway are in fair to good condition. The paved play area has the most severe pavement cracks. Cracks should be sealed and a pavement over-lay installed, or the pavement should be reclaimed and new pavement installed. Curbing within the school site should be repaired as required.

### SIDEWALK CONDITION:



The sidewalks throughout the school site are generally concrete and in fair condition, though there are some walks in poor condition particularly along the front of the school on the south end and on the south side of the school. These walks should be repaired as required. The sidewalks along the bus drop off area are too narrow to meet present design standards, and should be widened. There is a ramp on the southeast corner of the building that appears to exceed handicapped accessibility standards for slope.

### PARKING FACILITIES:

There are approximately 94 parking spaces on site including 3 handicapped spaces. The parking areas along the front of the site in the area of the bus drop off will interact with the bus circulation. The circulation pattern in this area should be re-worked to minimize the potential for interaction between the buses and parked vehicles.

## 3.2 SITE

**PEDESTRIAN CIRCULATION:**



The buses drop off students in front of the school via a separate loop area. The sidewalk on the drop off loop is limited in width, and would need to be widened to meet current standards. Generally, the handicapped spaces appear to meet code. Access from the front parking areas requires crossing the bus maneuvering areas. Parking in the rear of the school requires walking along the drive aisle in some locations for a distance without sidewalks, etc.

**UTILITIES:**

The site is serviced by on-site wells and septic system. The on-site wells with storage tank were recently installed. The electric service is via overhead lines into the site.

**STORM DRAINAGE:**

There is very little piped storm drainage on site. There is a catch basin in the rear paved play area. Generally, the storm runoff from the parking areas drain overland. Some indication of ponding of storm runoff was noted in the rear play area, and there was one catch basin and storm piping stored on site in this area. The overland drainage along the south side of the building consists of a paved swale that appears to discharge directly onto abutting property. The drainage in this area should be re-worked to provide an acceptable discharge location.

**ACCESSIBILITY:**



There are three handicapped parking spaces on the site. Two of the spaces serve the school, and the third space serves the separate building to the rear (east) of the school. All three spaces appear to generally conform to present regulations in regards to slope of pavement, ramp design, etc. Pavement markings, signage, etc. would need to be adjusted to meet present regulations. Along the south side of the front of the school, there are concrete sidewalks with stairs within the walks to adjust for elevation. These stairs, including a single step into the building in this area, do not meet accessibility guidelines. This area should be reconfigured to provide handicapped access. There is an entrance on the south end of the building with only stairs for access. This entrance should be reconfigured for handicapped accessibility with a ramp.

## 3.2 SITE

**LANDSCAPING:** *General Condition* - Overall appearance of school is good. Overgrown and dead shrubs or trees should be removed and or replaced. Lawn areas are stabilized. However, due to the State restrictions placed on the use of herbicides on elementary school grounds, they would be considered fair, as weeds are abundant throughout (plaintain, dandelions, crabgrass, clover, etc.).

As burning bushes (*Euonymus alatus*) are considered an invasive species to the State of Connecticut, all existing plantings should be considered for removal and replacement with a more native planting

**PLAYSCAPES:** The old wood play structure (1989) is in fair condition. Some vertical posts are in need of repair. Wood always has an issue with slivers. Treated wood edging and sand safety surface should be considered for replacement. Slider has worn out rubber straps, which need to be replaced. Several metal pieces are rusting and/or are in need of re-painting. Some of the tire elements should be replaced. Existing wooden benches need to be sanded and re-painted or replaced. Play area bark needs maintenance and raking. The swings have several chains that are in need of replacement. Plans are underway to replace this wood playscape with a new one constructed with metal and plastic components.

The enclosure for the aquatic pond area needs to be addressed for compliance to accessibility codes and whether or not the fence meets local and state codes depending on the depth of the pool. One should consider ADA accessibility to pond enclosure.

**BALL FIELDS:** Softball field back stop and fencing is in fair to poor condition. Replacement should be with a material with all fabric, knuckled top and bottom. Home plate should be adjusted. All exposed rocks should be removed and surface repaired and stabilized for lawn restoration.

Soccer field is in fair to good condition. There are some areas where exposed rocks should be removed and final grade repaired and stabilized for lawn restoration.

Bituminous play area needs cracks repaired and sealed. Repainting of play elements as required.

### 3.3 MECHANICAL

**BOILER 1:**



**Heating System** - #2 fuel oil stored in a 3000 gallon underground single wall metal tank is used for heating and hot water. A 100 gallon propane gas tank stores fuel for cooking. The oil tank was installed in 1989 and has no gauge, leak detection or containment for fuel lines. Fuel levels are measured using a dip stick. It is recommended to replace the fuel tank with a new 10,000 gallon fiberglass double walled tank equipped with leak detection and fuel gauge.

**BOILER ONE BURNER:**



Burner one is a high/low fire Carlin 25.5 GPH installed and burner two is a Powerflame duel fuel with a 25.5 GPH flow rate. Both burners are 19-years old as are the boilers. Both burners were under water in 1995 when the floor drains backed up. The burners show no signs of rust and are in good condition.

**HEAT EXCHANGER:**



Boilers one and two are Burnham 2120 MBH installed in 1989. Both boilers produce steam for two heat exchangers located in the boiler room converting to hot water for the hydronic heating system run throughout the school. Both boilers have been partially underwater during a floor drain backup in 1995. Neither contains asbestos. Boiler controls are predominately manufactured by Honeywell. Boilers show signs of rust but neither boiler needs replacement and may have twenty more years left in them.

There is a multiple breeching for boilers one and two. Both boilers have round 12" breeching with barometric draft with a 16" chimney connection. The breeching was installed in 1989 and is in fair condition. There is no asbestos insulation. There is combustion air dampers gravity system. Draft is controlled through a barometric damper on each breeching.

**CONDENSATE TANK AND PUMPS:**



The chimney is 8 feet above the roof line and constructed of brick. It still has the original liner. The chimney is adequate for present use.

The distribution piping for the hot water system is copper and the distribution piping for the steam heating system is steel. The steam piping is over 30 years old. Both piping systems are insulated with fiberglass where visible.

The steam condensate returns into an 80 gallon insulated tank with duplex hot water return pumps. It is recommended to remove condensate system when new hydronic system is installed.

### 3.3 MECHANICAL

**NEW WELLS:**



**Domestic Water** - Domestic and water for the hydronic systems is provided by two new wells drilled in 2005 to replace the existing wells. Two new 5000 gallon in ground water storage tanks were also installed. The water system is of adequate size, in good condition, raises no energy efficiency issues and is suitable for continued existing use.

Water pressure and volume are maintained through two variable speed water pumps on each well and pressure tanks. All water distribution is through copper piping. The pumps and piping are of adequate size, in good condition, raises no energy efficiency issues and is suitable for continued existing use.

**PRESSURE TANKS:**



A 19 year old 50 gallon oil fired water heater located in the boiler room supplies domestic hot water. Based on its existing condition and age it is recommended that it be replaced.

**ROOF TOP UNIT:**



**Ventilation and Air Conditioning** - A 6 ton Roof Top Unit provides air conditioning for the school offices through a manually balanced ducted distribution system. Based on its age and condition it is recommended to replace this unit.

Supply air for the gymnasium is provided by two roof mounted intake louvers and associated supply fans. Inside the gym, supply air is ducted to supply grills. The gym is exhausted through two roof mounted power ventilators and through two exhaust grills. The Gym ventilation system is part of the 1989 addition and is the subject of many complaints due to the noise it generates when operating. It is recommended to replace the existing system based on its age and condition with a new energy efficient system.

**INTAKE AIR AND VENTILATOR:**



One roof top unit ventilator provides exhaust for two classrooms through ducts and grills. Make up air is provided through operable sash windows. It is recommended to replace these systems with a dedicated outside air system (DOAS) and heat recovering unit ventilators.

Pneumatic thermostats and other controls used throughout the school building are original equipment. As these fail, they are replaced with electronic equipment by Johnson Controls. It is recommended to replace all of the pneumatic controls with Johnson electronic controls.

### 3.3 MECHANICAL

**SUPPLY AND EXHAUST DUCTS:**



A hood with an exhaust fan ducted to the roof is mounted over the gas range. There is a second exhaust fan and a makeup air fan for the kitchen. The equipment is 19 years old. Based on its age and condition it is recommended to replace the hood, ducts and fans.

A center divider converts the gymnasium into an all purpose room and cafeteria. Each of these two rooms is ventilated with one half of the gymnasium system described above. It is recommended to replace as describe above.

**KITCHEN HOOD:**



### 3.4 PLUMBING & FIRE PROTECTION

**PLUMBING:**

The Annie Vinton school building plumbing system is from two periods of installation. The original equipment installed when the school was built is now over 45 years old and the second installation was part of the 1989 additions. Some equipment and fixture replacements during a 1989 renovation are now 18 years old.

**SEPTIC SYSTEM:**



Bathroom fixtures vary in age from 19 to over 45 years old. Fixtures are predominately vitreous china. It is recommended to replace sinks, urinals and toilets based on age and condition with code compliant models.

**WATER PIPING:**



The septic system has two 5000 gallon tanks and leaches under the soccer field. The septic tanks and leaching field appear to be in fair condition, adequately sized and suitable for continued use.

The cast iron and PVC sanitary waste piping system and the galvanized steel and PVC vent piping systems are original to the building or installed in the 1989 renovation. There are no complaints about their condition or reliability. Galvanized piping showing signs of rust and damaged piping of any adjacent material should be replaced.

**FIRE PROTECTION:**

There is no automatic sprinkler system in the school. According to the Connecticut State Building Code [F] 903.2.2 Group E an automatic sprinkler system shall be provided for any new additions or if a “renovate like new” project were undertaken.

## 3.5 ELECTRICAL

### ELECTRICAL SERVICE:



The school's main electrical service is a single phase 1,000 amps service with a 1,200 amp MDP#1 and smaller 400 amp MDP#2 panel. The MDP #2 panel is one year old and is used to power to the new well pumps. The single-phase service is inadequate and impedes expansions. The cramped electrical room does not meet current code requirements. The branch circuit panels are very old and mostly full, with many original ones dating back to 1952 or to 1965 in the South Wing. Classrooms and other spaces are in need of additional 120v outlets.

It is recommended to replace the entire electrical service with 3-phase power into a code compliant room on the main level. Add new panelboards throughout the school. Older single-phase branch circuit panels in good condition can be re-fed from a new 3 phase MDP, with all new panels at 3-phase for new loads.

### GENERATOR:



The existing 50-kW generator and manual transfer switch are old and do not provide power to all emergency systems during a power failure. Identify power panels, equipment and services that require emergency power and collect them for switching to emergency power when normal power fails. It is recommended to replace the generator, ATS and add emergency panel boards for emergency circuits.

### INTERIOR LIGHTS:



The lighting fixtures are 19-years old, are mostly 2' x 4' recessed light fixtures in suspended ceilings, with T-8 lamps and ballasts. There are no longer older ballasts containing PCB's in any fluorescent fixtures. The fixtures are nearing their maximum service life, with repairs common. The T-8 lamp is energy efficient compared to old T-12 lamps, but newer light fixtures offer less glare and more efficiency. It is recommended to replace some, if not or all of the fixtures to provide better lighting quality and reduce energy consumption.

### STAGE LIGHTING:

The stage lighting system is made of a few clusters of PAR38 spotlights, controlled by wall mounted 120v slide switch dimmers. For what the elementary school uses the stage for, this arrangement is adequate.

### 3.5 ELECTRICAL

**OCCUPANCY SENSORS:**



The recent energy audit and upgrade added occupancy sensors to the building. Many of them failed, with some already replaced. It is recommended to replace any defective sensors and infrared occupancy sensors with dual technology types.

**EMERGENCY LIGHTS:**



Many of the battery operated wall packs with single or twin heads found throughout the school are not charging properly. It is recommended to replace the batteries and/or chargers if necessary. The spacing and position of the emergency fixtures are not code compliant for illumination levels. Reposition, add, replace and re-circuit as necessary the existing emergency lighting system fixtures and bring up to code.

**EXIT LIGHTS:**

Exit signs have many problems. They are old and many do not work at all. Many did not respond to the test switch and not wired to the area lighting circuits. It is recommended to reposition, add, replace and re-circuit as necessary the existing exit lighting fixtures and bring up to code.

**EGRESS LIGHTS:**

Although some exits have lights at the exterior side of the door, as a wall washer from the soffit, most exits have no egress lights. Code now requires egress lights at all legal exits. It is recommended to reposition, add, replace and re-circuit as necessary the existing egress lighting fixtures and bring up to code.

**BUILDING PERIMETER LIGHTS:**

Most are new; some are original from the 1960's. Sodium wall-packs and incandescent down lights are found around the building. Old mechanical time clocks control exterior lights. It is recommended to replace older fixtures with energy efficient wall packs. Time clocks should be tested, and repaired or replaced if necessary.

## 3.5 ELECTRICAL

**PARKING LOT LIGHTING:**



Down lighting fixtures on 20-foot poles, illuminate the parking lot. Evaluate illumination levels and correct as necessary to bring levels up to IES recommended levels. It is recommended to replace time clocks with “photocell on” “time clock off” control system.

**INTERCOM SYSTEM:**



The existing Bogan intercom system is old but still in daily use. The speakers in the existing wall telephones are inadequate to speak between rooms because they are small and not clear. It is recommended to inspect the entire intercom system and replace defective parts or incorporate the intercom function into a new telephone system that meets the occupant needs.

**CLOCK SYSTEM:**



With the exception of replacement of the master station, the original Simplex correctable clock system is still in place. Most of the original correcting clocks still in place do not work and battery clocks replaced the rest. It is recommended to install a new synchronized clock system.

**DATA SYSTEM:**

CAT-5 data racks and patch panels located throughout the school serve computer stations in most rooms. The well-maintained system is in good working order. It is recommended to allocate an air-conditioned space for a main server and provide Main Communication Equipment Rooms and Intermediate Communication Equipment Rooms as required.

**CCTV, VIDEO:**

Most classrooms have a TV and cable hook-up for CCTV. The system is in working order. It is recommended to add HD compatible distribution amplifiers as the existing system expands.

**TELEPHONE SYSTEM:**



The existing telephone system is in good working order. The height restrictions of the existing electrical room preclude its use for future telephone equipment. It is recommended to provide Main Communication Equipment Rooms and Intermediate Communication Equipment Rooms as required.

### 3.5 ELECTRICAL

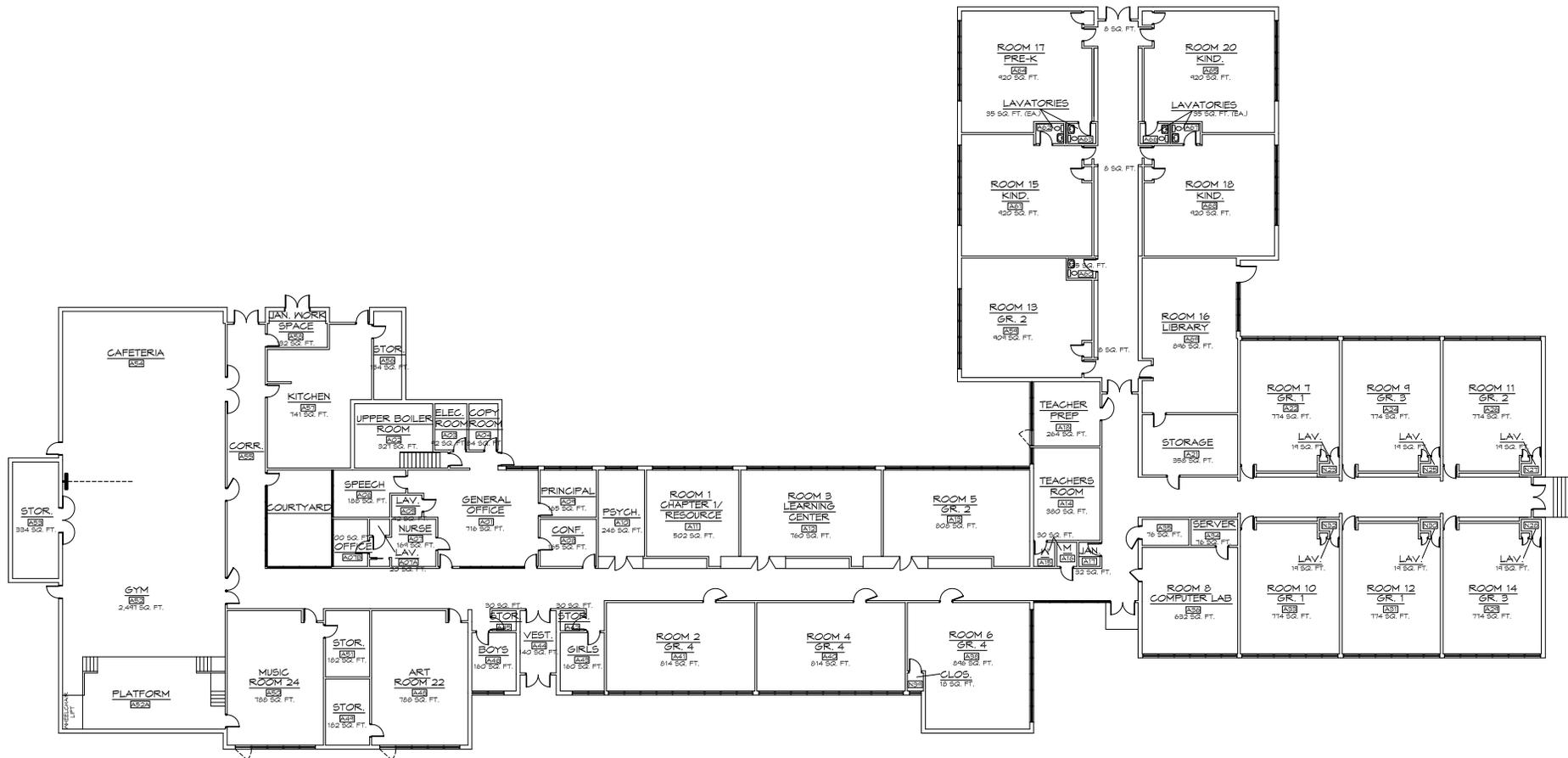
**SECURITY SYSTEM:** Presently the main office has a local security system. It is recommended to provide a new video camera system incorporating door access and motion detector security with any future renovation project.

**VIDEO INSTRUCTION STATIONS:** Most classrooms are equipped with modern white board instruction stations and ceiling mounted projection systems. It is recommended to include the same equipment and corresponding data systems in future renovations.

**FIRE ALARM SYSTEM:**



The fire alarm system is a combination of old and new. The new being a new Silent Knight model SK-5208 FACP installed last year. It is an 8 zone non-addressable system. Not replaced are most of the pull stations, flashing lights and horns. The system has no voice evacuation, no interface to kitchen hood, and no exterior notification. Notification devices are not ADA compliant. It is recommended to install a new addressable fire alarm system to bring fire systems up to current ADA and NFPA requirements.



CORRIDOR TOTAL: 5,450 SQ. FT.

NET SQ. FT.: 34,520

## 4.0 MANSFIELD MIDDLE SCHOOL



## 4.1 ARCHITECTURAL

### GENERAL INFORMATION

### MANSFIELD MIDDLE SCHOOL

**CONSTRUCTED:** 1969

**ADDITIONS:** 1996 - 4 Relocatable Classrooms  
1999 - Library/Media Center Addition

**ACREAGE:** 30.00

**SQUARE FOOTAGE:** 114,364 - Original + 1999 Addition  
3,974 - Relocatables

**GRADES:** 5 - 8

**ENROLLMENT:** 600

#### BUILDING STRUCTURE:



Original building and the newer Library/Media Center Addition were constructed using concrete footings, continuous concrete foundation walls, a structural steel frame with steel beams, girders and trusses to support the floors and roof construction. Most of the interior classrooms, corridors and similar demising walls were constructed using CMU with some locations having brick veneer exposed in accent panels and columns. Both the original construction and the addition have concrete slab on-grade floors. Visual observations around the exterior walls did not reveal a significant deterioration, cracking or similar evidence of problems with the building's structural system. However, interior CMU walls were noted in several locations as having horizontal and vertical cracks on exterior walls. Most likely, this is a result of differential settlement and/or shrinkage and can be repaired by cleaning out the mortar joints and applying a resilient sealant.

The four Relocatable classrooms are constructed of a steel framework with infill wood stud walls, a wood truss roof and interior walls with wood framing.

#### EXTERIOR ENVELOPE:



**Exterior Walls** - The exterior walls of the 1969 original building were constructed using exterior brick veneer, air space, and 2" rigid insulation with a backup wythe of CMU on the interior. Spandrel panels at the base of windows and between first and second level windows was constructed using brownstone panels. In the Library/Media Center Addition, the exterior walls were constructed almost completely with exterior face brick, air space 1" rigid insulation and backup CMU for the interior wythe.

## 4.1 ARCHITECTURAL



An overhang extends around the exterior walls in many locations. This is constructed using a painted metal vertical ribbed fascia, which was noted as requiring painting and showing rust penetration, most particularly on the south wide. The underside of this overhang contains a transite (cement asbestos board) panel secure to the underside of the roof overhang structural system.



The exterior walls of the Relocatable Classrooms consist of 2" x 4" wood studs with 3½" fiberglass batt insulation (R-11), gypsum board interior surface with an exterior surface of textured plywood.



**Windows** - Windows in the original building are fabricated from aluminum materials with insulated glass, appearing to be 3/8" total thickness. It was observed that the seals in many locations have failed by the formation of condensation and streaking of moisture between the panes. A date stamp of /85 was noted in some units. The configuration of most of the original building's windows do not conform to current building and fire safety code requirements for Rescue and Ventilation units in each classroom.

Windows for the Library/Media Center are constructed using more energy-efficient aluminum windows with insulated glass. The windows in the Relocatable Classrooms are also aluminum-framed with insulated glass but of a much lower quality construction and insulating value.



**Doors** - Exterior doors were mainly hollow metal in hollow metal frames with non-insulated wire glass in adjacent vision panels.

**Roof** - The roof of the original building consists of a white reinforced Stevens Hi-Tuff EP PVC membrane over rigid insulation. There are built-in gutters with drains at regular intervals but no slope in the gutter trough between the drains. This creates pockets of standing water where leaves and debris collect. In some locations, standing water was noted on both the high and lower side of the gutter trough.



The roof on the Relocatable Classrooms is a single-ply EPDM (rubber) roof membrane fully adhered to rigid insulation on the wood roof deck below. There is 6" (R-19) fiberglass batt insulation below the deck.

## 4.1 ARCHITECTURAL

### INTERIOR FINISHES & FIXTURES:



**Interior Walls** - Corridor walls are a combination of painted CMU with some brick veneer accents. Student paintings are prominently featured on the light, neutral colored painted surfaces in many locations. Metal lockers line corridor walls in many locations and appear to be in fairly good condition.

**Floors** - Corridor floors are almost exclusively VCT with resilient base with the exception of the corridor directly in front (east) of the Auditorium, which has carpet. Carpet is also located in the Music and Choral Rooms. Toilet Rooms and Custodial Spaces have ceramic tile with no base. The new Library/Media Center, Computer Rooms and associated spaces have carpet on the floors with resilient base. The Kitchen and adjacent spaces with food service operations have 4" square quarry tile floors with no base. The Gymnasium has a wood floor.

**Ceilings** - Most classrooms, corridors and teaching spaces have 2' x 4' suspended acoustical panel ceilings. Layers of 6" batt fiberglass insulation have been placed over these acoustical ceilings in many classrooms and teaching spaces in an effort to conserve energy. This was noted while attempting to push up ceiling tiles and check for continuity of corridor walls. The new Library/Media Center has 2' x 2' suspended acoustical panels and the Gymnasium has expose steel trusses with the underside of the original Tectum deck exposed below. Ceiling panels in many of the corridors were noted as being uneven with some nicked corners and some evidence of minor vandalism. The ceiling in the Kitchen appears to be a 2' x 2' non-perforated suspended acoustical panel, most likely complying with code requirements to be washable.

## 4.1 ARCHITECTURAL



**Classroom Casework** - Throughout the building, most of the casework has been constructed with stained wood base and wall cabinets and plastic laminate countertops and backsplashes. Similar construction was used in the Science Laboratories except for the use of solid, black resinous laboratory countertops and backsplashes. In some locations the wear and deterioration was showing on the vertical surfaces of the wood cabinetry and the plastic laminate countertops and the edgings. Some of the science rooms appear to have newer casework and are in better condition.



**Doors and Frames** - Throughout the entire building doors are solid core wood mounted in hollow metal frames with wire glass vision panels and lites in the doors. Some doors, especially around stairways, show evidence of considerable traffic and wear and tear. Doors between corridors and some stairways were noted as not having positive latching devices and only push/pull plates.



## 4.1 ARCHITECTURAL

### BUILDING & FIRE CODES:

**Construction Type (Original Building)** - Building is Type III B construction (based on 2003 IBC).

**Construction Type (Relocatable Classrooms)** - Relocatable Classrooms are Type VB Construction (in accordance with 2003 IBC).

**Corridor Walls** - Spot checking indicated that corridor walls have been extended to the underside or the roof deck and/or structure above, thus providing a smoke-tight condition and the 30-minute fire rating. In those areas in which this construction was observed, materials used were gypsum board and likely steel studs.

**Stage Curtain** - A label was not observed indicating this to be fire resistant. Further checking and coordination with facility staff will be required.

### ADA / ACCESSIBILITY:



**Exterior Entries** - Most of the exterior doors have level platforms and/or ramped sidewalks leading to the adjacent walkways.

**Toilet Facilities** - Some of the Boys and Girls Toilet Rooms have been modified to provide accessible fixtures based on previous codes. These facilities do not comply with current standards or turning radii, clearances, accessibility or types of fixtures.

**Access to Stage** - Access is available by using the side entrances along the main corridor.



**Signage** - Tactile (Braille) signage is now required for all spaces. It was also noted that some Toilet Rooms (both staff and student) have the international symbol for accessibility but the room and fixtures do not comply with accessibility codes.

**Door Handles** - Door handles throughout the original building are not the level type while spaces added during the construction of the more recent Library/Media Center do contain level handles.

## 4.1 ARCHITECTURAL

### HAZARDOUS MATERIALS:

*Vinyl Asbestos Tile* - A removal and replacement project was undertaken several years ago, which removed nearly all of the original vinyl asbestos floor tiles. New vinyl composition tile (VCT) was installed throughout the corridors, classrooms and other locations and these new materials are in fairly good condition. A comprehensive survey and sampling was not undertaken and there may be some original VAT in some smaller spaces.

*Asbestos Pipe Insulation* – Based on the age of the original building construction, it can be assumed that hidden within or behind existing construction, some asbestos pipe and insulation will be found. If renovations open up these partitions and concealed spaces, it will be necessary to undertake a hazardous materials abatement program, remove the materials and replace with new insulation.

## 4.2 SITE

### DRIVEWAY ACCESS:

The school is accessed from a single main driveway on Maple Street, and a second driveway from Maple Street that traverses through the athletic areas prior to connecting to the paved play area/parking lot on the south side of the school. Maple Street is a light volume local road. Sight lines from the main entrance appear to be adequate. As part of the regular maintenance of the facility, the decorative trees along the school's frontage will need to be kept trimmed to ensure adequate sight distances.

### BUS CIRCULATION:

The bus circulation pattern consists of buses entering the school via the main common driveway from Maple Street. There is a separate internal loop within the site for the bus drop off. Within this loop, there is limited parking for 12 vehicles including two designated handicapped spaces. This parking will provide the potential for conflict between passenger vehicles and buses in this area. Consideration should be given to relocating these twelve parking spaces unless their use is scheduled so as not to conflict with bus movements.

### PAVEMENT CONDITION:

The pavement throughout the school site varies in condition. Within the entrance roadway area, the pavement is in good to fair condition. On the north side of the site within the parking area, the pavement is in fair to poor condition with severe cracking of pavement in areas. On the south side of the school within the paved play area/parking lot, the pavement is in fair to poor condition. Cracks should be sealed and a pavement over-lay installed, or the pavement should be reclaimed and new pavement installed. Curbing should be repaired as required.

### SIDEWALK CONDITION:



The sidewalks on the site consist of concrete sidewalks in the front of the school and bituminous sidewalks around the side and to the rear of the school. The concrete sidewalks along the front of the school are in fair condition, and are approximately 10' wide. Some repairs of the concrete sidewalks are required. The bituminous walks around the side and rear of the school are in fair to poor condition. These walks should be repaired/replaced as required. In particular, any missing sections of walk such as at the southeast corner of the school should be repaired.

## 4.2 SITE

### PARKING FACILITIES:

The parking facilities for this school consist of 12 parking spaces, including 2 handicapped spaces, in front of the school. A parking lot on the north side of the school, which can accommodate approximately 74 vehicles, also includes 1 handicapped parking space, and the play area/parking lot on the south side of the school, which is only partially striped for parking.

### PEDESTRIAN CIRCULATION:



The buses drop off students in front of the school via a dedicated loop. The sidewalk on the drop off loop is approximately 10' wide, and appears to be of sufficient width to meet present standards. Access to the school from the northern parking lot is via a concrete walk along the front of the school.

### UTILITIES:

The site is serviced by on-site wells and septic. New on-site wells with a new storage tank are in the process of being installed. The electric service is via overhead lines along the side of the site. The school is equipped with a backup generator.

### STORM DRAINAGE:

There is a fairly extensive piped storm drainage system on the school site with a portion of the site draining to a surface storm basin along the south side of the site. The storm drainage structures appear to be in fair to poor condition within the north side of the site and poor condition along the south side of the site. The storm drainage basin appears to be in good condition. Prior to any pavement installation, the storm drainage structures should be repaired/replaced as required.

### ACCESSIBILITY:



There are two handicapped parking spaces in front of the site that are accessed via the bus loop. In order to utilize these parking spaces, a vehicle needs to traverse across the sidewalk in front of the school. In order to access the western space, a pedestrian would need to cross behind the eastern space. As such, these handicapped parking spaces do not meet regulations and could provide a danger to anyone walking on this sidewalk when a vehicle is entering or exiting these spaces. The handicapped parking space within the northern parking lot requires crossing of the drive isle without any striping or other protection, does not meet present regulations, and needs to be reconfigured. This space also does not include any post signage as required. Pavement markings need to be adjusted on all spaces also.

## 4.2 SITE

### LANDSCAPING:

**General Condition** - Landscaping: Lawn areas are stabilized. However, due to the State restrictions placed on the use of herbicides on middle school grounds, they would be considered fair, as weeds are abundant throughout (plaintain, dandelions, crabgrass, clover, etc.). Existing shrub beds are in need of maintenance (weeding & pruning) and the dead planting material should be removed and replaced with new planting material.

**Front** - Entrance cheek wall slate capstones are in need of being re-mortared. The grade change of retaining wall at entrance requires guard rail consideration by code. Rain splash guard at wall should be repaired in several areas. The Peace Garden is in good condition, however more maintenance should be considered. The garden should be ADA accessible. Consider re-location of bicycle rack.

**Side** - Slope under construction and should have erosion control fencing installed until slopes are stabilized. Parking lighting is minimal and should be designed to meet current code requirements. Remove debris from within the tree line.

**Back** - Lawn to be renovated. Exposed tree roots should be covered and stabilized with new lawn. The roof drip line in this area requires the splash guard to be adjusted and made larger.

Several dead trees should be removed. Existing concrete retaining wall should have guard rail on the top portion to meet code requirements. Positive drainage away from modular building should be created and surface stabilized.

### BALL FIELDS:

**Upper Ball Field** - All-purpose field is in good shape, however the condition of the grass would be considered fair. There does not appear to be any drainage concerns and all areas appear to have a positive cross- slope for drainage. Remove all exposed rocks or boulders.

**Lower Ball Fields** - The baseball and softball fields are surrounded with a bituminous running/walking surface that is in good shape. The softball field needs minor edging repair and minor clay infield adjustments. Fencing fabric to either side of softball backstop is distressed and should be replaced as well as bottom fence rail added. All fabric should be knuckled (top and bottom protective fence guards for fencing). Polyethylene protective fence guards should be considered for the softball field. The baseball infield needs minor grading adjustments; fencing fabric should be replaced. Polyethylene protective fence guards should be considered for the baseball field. Pedestrian access to ball fields to be verified if present bituminous walk is ADA compliant for slope. One concern is the apparent roof drainage of a portion of the school building discharging down curbed walk. Storm drainage should not discharge on or across sidewalks.

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## **4.2 SITE**

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*Tennis Courts* - The four (4) tennis courts are in fair condition. Recent re-stripping has been done. The perimeter fencing is in poor condition and should be considered for replacement as should the net posts/concrete anchors and center net anchors. The surfacing is in fair to poor condition, the cracks should be repaired, and re-surfacing provided.

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# 4.3 MECHANICAL

### 1999 ADDITION:



LIBRARY ADDITION RTU



OFFICE SUITE SPLIT SYSTEMS

The 1999 addition is comprised of the library/media center, school offices, computer labs, tech offices, library classroom, toilet rooms, boiler room, and corridors are heated, ventilated and air conditioned from a packaged roof top unit with a looped glycol heating coil, a 30-ton DX cooling unit, 12000 CFM supply fan and a 12000 CFM exhaust fan. Supply air ducted to variable air volume boxes and returned through exhaust grills provides ventilation to the 1999 addition. There are hot water unit heaters in the library/media center, the boiler room and a hot water cabinet unit heater in the corridor. The 30-ton packaged roof top unit is 8 years old and due for replacement in 7 more years. Mounted on pads outside the principal's office are a Fujitsu split DX system and a Mitsubishi split heat pump system for heating and cooling the principal's office suite. These split systems installed in 1999 are due for replacement in 7 more years.

### BREECHING:



**Boiler Room and Fuels** - The boiler room added with the 1999 addition contains two identical Burnham cast iron boilers of 580 MBH each. Boiler controls are by Honeywell and the hydronic piping system uses a glycol solution. The boilers provide heating to the 1999 addition packaged roof top unit, fin tube radiation, cabinet unit heaters and heat pump unit ventilators. The boilers are not large enough nor can they be expanded to heat the entire school after the removal of the electric baseboard radiation heaters and the electric heat pumps.

The addition of a new boiler room (building) is required to handle the added hot water load caused by the removal of electric heat from the building. The new boilers can handle the whole building by adding heat exchangers in the existing boiler room and possibly use the existing boilers for backup. By providing a natural gas service, the possibility of condensing boilers exists so sizing the new hydronic baseboard radiators for the Dt of condensing boilers is necessary.

## 4.3 MECHANICAL

**BOILER:**



Fuel for the boilers is #2 oil stored in a 2000-gallon in ground tank as part of the 1999 addition. The tanks are equipped with gauging and leak detection. It is of adequate size for its present use. Recommended is additional fuel oil capacity to accommodate new boilers required with the elimination of electric baseboard heat and electric water heaters. Natural gas is available in the neighborhood and extending a line to the school will offer dual fuel availability (#2 oil/natural gas) for boilers and roof top units, which will increase the efficacy of renovations and offer an economical hedge for fuel price fluctuation.

**CLASSROOM ANNEX:**



The Classroom annex comprised of four classrooms and connected to the main school building by an enclosed corridor is heated and cooled by 4 packaged roof top units. These units are due for replacement in 7 years. It is recommended to replace them with packaged roof top units with either a gas burner or a hot water coil for heating.

**AUDITORIUM ROOF TOP UNITS:**



**Auditorium** - The auditorium is heated, ventilated and air-conditioned from two identical Trane packaged roof top units with 350,000 BTU gas fired heaters, 18-ton DX cooling units, 7200 CFM supply fans with exhaust back through the unit. Ducted into the auditorium is supply air and returned through exhaust grills. These units installed in 1996 need replacement. Propane provided from a town owned underground propane tank to gas burners in the roof top units provide heat for the auditorium. It is recommended to supply the replacement units with natural gas if available and remove the propane tank.

## 4.3 MECHANICAL

### CAFETERIA HEAT PUMPS:



*Cafeteria* - Roof mounted split system electric heat pumps heat the cafeteria. Roof-mounted fans provide ventilation. The heat pumps are 16 years old and not as energy efficient as heating with oil or gas. It is recommended to replace the cafeteria heating and ventilation system with an indirect glycol package roof top unit with DX cooling.

### KITCHEN PACKAGED ROOF TOP HEAT PUMP UNIT:



*Kitchen* - A Carrier packaged roof top heat pump unit with electric supplemental heating, heats, cools and supplies outside air to the kitchen. This equipment is over 30 years old. It is recommended to replace the unit with a packaged roof top unit using hydronic or gas fired heating. A recently installed wall mounted refrigeration unit cools and circulates inside air for supplemental kitchen cooling. A roof top kitchen hood fan exhausts the kitchen. It is recommended to replace the hood exhaust fan, which is over 30-years old. A roof top condensing unit installed in 1994 comprises part of the walk in cooler refrigeration system. It is recommended to replace the walk in cooler refrigeration system based on age and condition.

### HOOD EXHAUST FANS:



### SUPPLEMENTAL KITCHEN COOLING UNIT:



## 4.3 MECHANICAL

### MUSIC ROOM ROOF TOP UNIT:



**Instrument Music Room** - The instrumental music room is heated, ventilated and air conditioned by two Trane packaged roof top units with electric heat, 6 ton DX cooling units and supply fans with exhaust back through the unit. Supply air ducted into the music room returns through exhaust grills in the auditorium. The unit installed in 1992 needs replacement. It is recommended to replace the music room packaged roof top unit with a packaged roof top unit using hot glycol heating with DX cooling and supply air fan.

### BATHROOM EXHAUST:

Bathrooms and classrooms are mechanically exhausted and ducted to the roof. They appear adequately sized, raise no energy efficiency issues and are suitable for continued existing use.

### PLENUM EXHAUST FAN:



**Gymnasium** - In a plenum adjacent to the gymnasium is a supply fan with electric an electric heating coil for ventilating and heating the gym, exercise room and locker rooms. Ceiling fans are mounted in the gym for circulating air. This ventilation equipment is over 30 years old. It is recommended to replace the motor with an energy efficient high power factor motor and install hydronic heating.

### ELECTRIC BASEBOARD HEATERS:

**Classrooms** - Electric baseboard heating provide space heating for the main building classrooms. There is no air conditioning. Ventilation is through operable sash windows and unit ventilators. It is recommended to replace these systems with a dedicated outside air system (DOAS) and heat recovering unit ventilators. It is recommended to replace electric baseboard heating with hydronic piping and base board radiators.

## 4.4 PLUMBING & FIRE PROTECTION

### PLUMBING:

The middle school building plumbing system is from two periods of installation. The original equipment installed when the school was built is now 45 years old and the second installation was part of the 1999 addition. Some equipment and fixture replacements during a 1989 renovation are now 18 years old.

### ONE OF TWO WATER STORAGE TANKS:



**Water Supply** - The middle school water supply is from two recently drilled wells. A new pump building built in 2007 houses water pumps, pressure tanks and related electrical equipment including variable frequency drives for maintaining proper water pressure.

### HUBBELL 350 GALLON WATER HEATERS:



**Hot and Cold Water Distribution Piping** - The hot and cold water distribution piping is copper and varies in age, the oldest being 45 years old and the most recent 1-year old. There is no need to replace the copper piping or service valves based on age unless they show signs of oxidation by green discoloration, it leaks or is damaged. Shower mixing valves are recommended for replacement due to age and malfunctioning conditions. There is no evidence of polybutylene piping for the domestic water distribution system. However, if found, it should be replaced with copper piping.

There are two Hubbell 350 gallon electric water heaters over 30 years old and two 66-gallon HO Smith electric water heaters 15 years old that provide domestic hot water. The existing electric water heaters have exceeded their useful life and are less economical to operate than oil or gas fired units. It is recommended to replace the existing electric water heaters with a central indirect hot water tank heated from the boilers.

### VENT PIPING:



**Sanitary Waste and Vent System Piping** - The cast iron and PVC sanitary waste piping system and the galvanized steel and PVC vent piping systems are original to the building. There are no complaints about their condition or reliability. Galvanized piping showing signs of rust and damaged piping of any adjacent material should be replaced.

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## 4.4 PLUMBING & FIRE PROTECTION

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**REST ROOM AND  
SHOWER FIXTURES:**

It is recommended to replace the plumbing fixtures in the original school building with specification grade equipment including vitreous china sinks, toilets and urinals, and adding infrared sensor actuators for faucets and flush valves. The plumbing fixtures in the library addition and classroom annex building are less than ten years old and can remain.

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**FIRE PROTECTION:**

There is no automatic sprinkler system in the school. According to the Connecticut State Building Code [F] 903.2.2 Group E an automatic sprinkler system shall be provided for any new additions or if a “renovate like new” project were undertaken.

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## 4.5 ELECTRICAL

### ELECTRICAL SERVICE:



The original 4,000-amp 480-volt 3-phase system installed in 1969 provides electrical service to the school buildings. The system is old but in good working order. The 3 phase 3,000 amp 480 volt Main Distribution Panel and the newer 1,600-amp 480-volt distribution panels are both full, with no spare capacity to add additional circuits. Branch circuit panels are mostly full. A new service with pad-mounted transformer became necessary with the addition of portable classrooms. Future building additions will require additional electrical service.

Future electrical service is available by re-configuring the existing 4,000 Amp service when electrical heating loads are eliminated. Elimination of electric heat frees enough power to handle many new loads and a future renovation project.

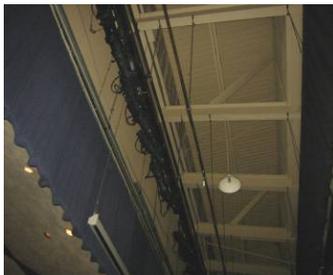
The existing electrical service is adequate after removal of electric heat and the addition of a few distribution panels and circuit breaker panel boards.

### GENERATOR:



The existing 20 kW generator and manual transfer switch dates back to 1969, and are much too small to be of much use. Implementation of a comprehensive plan that will determine which power panels, equipment and services stay in case of a power outage is required. Additions of new automatic transfer switches (ATS's), a generator and emergency power equipment panel(s) connected to new distribution panel boards will feed existing and future critical loads.

### STAGE LIGHTING:



Relatively new are the stage lights and Strand Stage Lighting Dimmer panel. This equipment is in excellent condition and not addressed for any upcoming renovation project. However, it is recommended to upgrade the stage audio systems.

## 4.5 ELECTRICAL

### OCCUPANCY SENSORS:



The recent energy audit and upgrade added occupancy sensors to the building. Many of them failed, with some already replaced. It is recommended that a program be developed to test all sensors and replace defective ones with dual technology sensors.

### EMERGENCY LIGHTS:



The school is equipped throughout with twin head battery operated emergency light packs. Many of them are not charging properly, and need new batteries, or be replaced. Light levels do not meet code minimum in some places based on observed spacing. It is recommended to replace inadequate battery operated emergency light packs and rewire 120-volt circuits to meet existing code requirements.

### EXIT & EGRESS LIGHTS:

Exit signs have many problems. They are 38 years old and many do not work at all. Many did not respond to the test switch. Current code requires wiring them to the area lighting circuit. It is strongly recommended to replace and rewire all of the exit lights for purposes of code compliance.

Egress lights – Although some exits have lights at the exterior side of the door, as a wall washer from the soffit, most have no egress lights. Code now requires egress lights at all legal exits. It is strongly recommended to install new egress lighting for purposes of code compliance.

### BUILDING PERIMETER LIGHTS:



Building perimeter light fixtures vary in age with some being new and some being original from 1969. The exterior lights are sodium wallpacks and metal halide wallpacks around the building while incandescent wall wash lights the transite soffits.

The exterior building and grounds shall be evaluated for lighting to meet IES illumination levels. Coordinate walking path and parking lot lighting for proper levels. Add new fixtures as required and replace all 1969 fixtures. Replace transite and roof soffit lights. Currently they are un-maintained due to the asbestos transite around them.

No parking lot lights exist now. Parking lot and driveway lighting should be installed in existing and new areas to IES recommended levels.

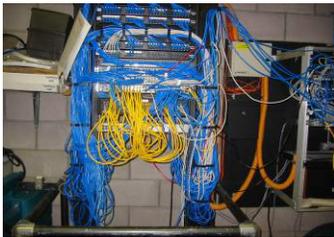
## 4.5 ELECTRICAL

### INTERCOM SYSTEM:



The existing intercom system is in working order with occasional malfunctions. It is a combination of 1969 speakers, wiring and amplifiers, with a few new parts added. Many of the ceiling speakers have shorted out and one entire wing was not in operation during recent fieldwork. It is recommended to replace the entire intercom system possibly incorporating it into the new telephone system.

### DATA SYSTEM:



CAT5 data racks and patch panels located throughout the school, many of which are crammed into storage rooms, serve personal computer stations found in most offices and classrooms. The system works well and maintained routinely. Provide dedicated, air-conditioned Main and Intermediate Communication equipment rooms for the structured cable system. The existing system can be improved and expanded, with equipment moved to dedicated server rooms. Additional storage space may also be necessary if racks remain in storage rooms converted to server rooms. A structured cabling system is recommended for installation throughout the school.

### CLOCK SYSTEM:



With the exception of replacement of the master station, the original Simplex correctable clock system is still in place. Most of the original correcting clocks still in place do not work and battery clocks replaced the rest. A new synchronized clock system is recommended for installation.

### CCTV, VIDEO:



Most classrooms have a TV and cable hook-up for CCTV. The system is in working order. It is recommended to add HD compatible distribution amplifiers to the existing system.

## 4.5 ELECTRICAL

### TELEPHONE SYSTEMS:



The existing PBX system works well. Wall mounted phones are dated. It is recommended that the existing system be upgraded to include new wall phones that carry intercom messages and switchable to a local larger speaker. The only reason the old PA system is still used is to make school announcements.

### SECURITY SYSTEM:

Presently the main office has a local security system. Many large schools now include video cameras and door-lock security systems. It is recommended that a new video camera system be included in any future renovation projects with door access and motion detector security systems.

### VIDEO INSTRUCTION STATIONS:

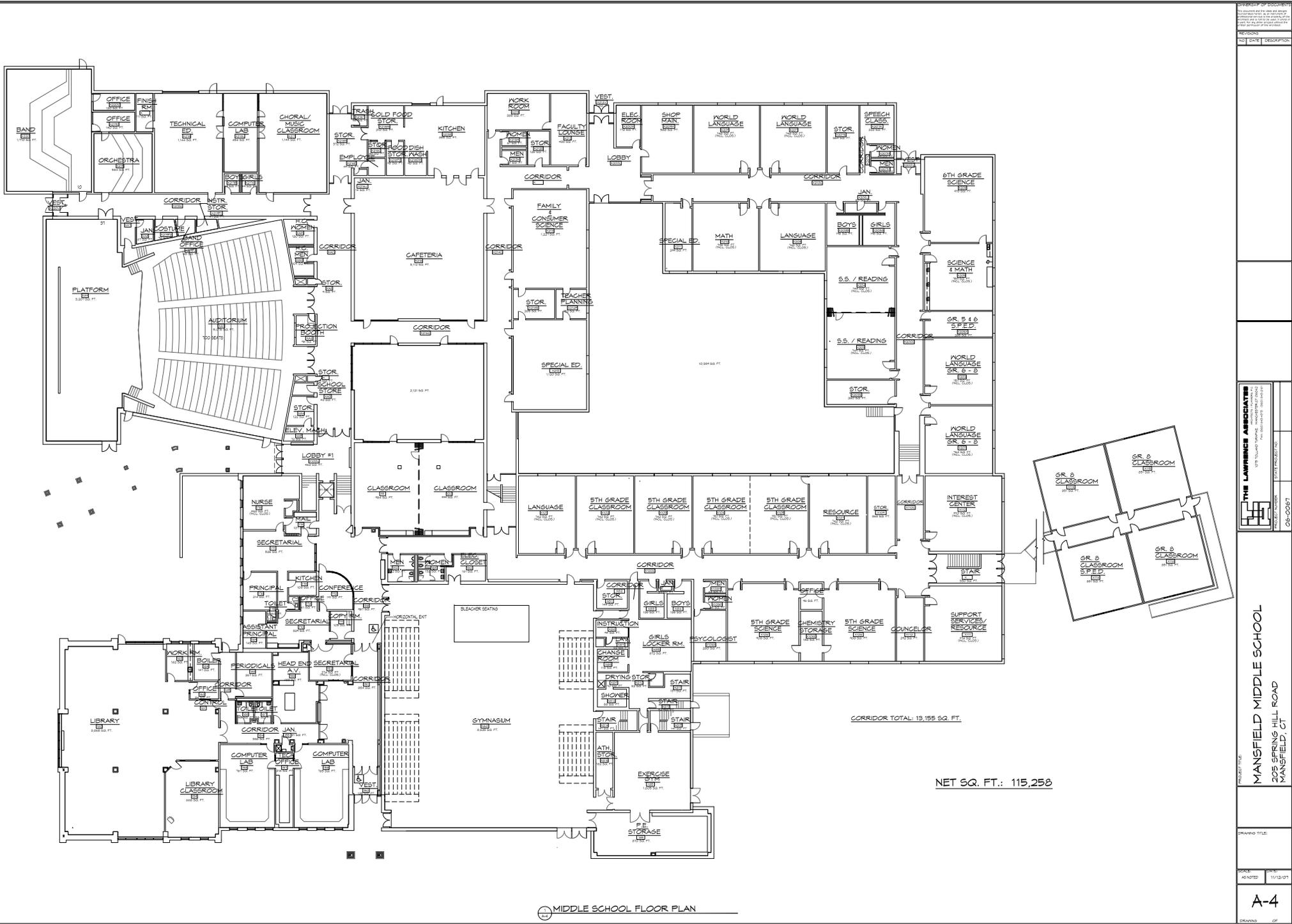


Modern white board instruction stations and ceiling mounted projection systems are in most classrooms. Equip additional classrooms with similar video and white board instruction stations, with necessary expansions to data systems.

### FIRE ALARM SYSTEM:



The fire alarm system is a Notifier AFP-400, installed about 15 years ago. It has 13 zones, with connections to the kitchen hood and duct smoke detectors. Devices are not ADA compliant. It is recommended to install a new addressable fire alarm system to bring fire systems up to current fire code and ADA standards.



MIDDLE SCHOOL FLOOR PLAN

NET SQ. FT.: 115,258

CORRIDOR TOTAL: 13,155 SQ. FT.

PROJECT TITLE <b>MANSFIELD MIDDLE SCHOOL</b> 205 SPRING HILL ROAD MANSFIELD, CT	
DRAWING TITLE <b>MIDDLE SCHOOL FLOOR PLAN</b>	SCALE AS SHOWN
DATE 11/12/07	DRAWING NO. <b>A-4</b>
PROJECT NO. <b>06-0087</b>	
ARCHITECT <b>THE LAWRENCE ASSOCIATES</b> 475 TRACY AVENUE, SUITE 100 WESTPORT, CT 06894 TEL: 860.439.1234 FAX: 860.439.1235	
DESIGNER NO. DATE DESCRIPTION	

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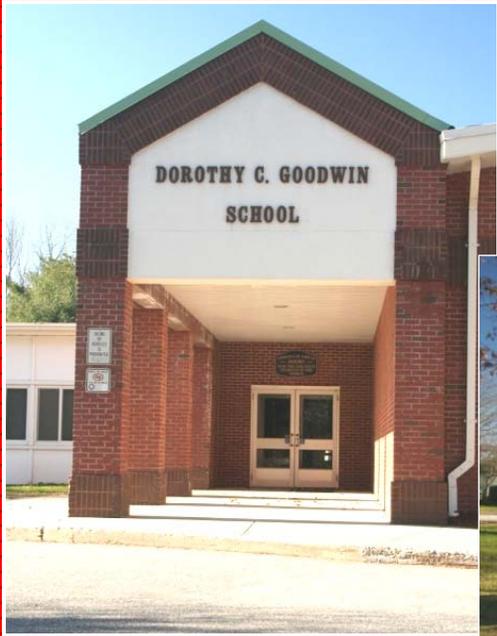
MIDDLE SCHOOL - UPPER LEVEL FLOOR PLAN  
 1/5 3/32"=1'-0"

CORRIDOR TOTAL: 3,363 SQ. FT.

DIVISION OF DOCUMENT <small>This document and the data and drawings herein are the property of the client and are not to be distributed, copied, or used for any other purpose without the written consent of the architect.</small>		
NO.	DATE	DESCRIPTION
<b>THE LAWRENCE ASSOCIATES</b> <small>205 SPRING HILL ROAD          MANSFIELD, CT 06250          TEL: 860-339-1111          FAX: 860-339-1112</small>		
PROJECT TITLE <b>MANSFIELD MIDDLE SCHOOL</b> 205 SPRING HILL ROAD MANSFIELD, CT		DRAWING NO. <b>06-0067</b>
DRAWING TITLE <b>MIDDLE SCHOOL - UPPER LEVEL FLOOR PLAN</b>		SCALE <b>1/5 3/32"=1'-0"</b>
DATE <b>11/12/07</b>		DRAWING OF <b>A-5</b>

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# 5.0 HAZARDOUS MATERIALS – ALL SCHOOLS



## 5.1 HAZARDOUS MATERIALS SUMMARY

### HAZARDOUS MATERIALS

All of the four Mansfield schools had asbestos flooring and pipe insulation in them when built, along with many other asbestos products. Abatement projects were done in the late 1980's to remove friable pipe insulation and projects were completed in the 1990's and as recently as 2007 in the Middle School to remove asbestos containing 9x9 floor tile and mastic.

#### *Remaining Asbestos Containing Materials – Confirmed*

- Transite wall panels under and above windows in older wings, all 3 elementary schools
- Transite roof soffits, many areas of Middle School
- 9 x 9 floor tile, Annie Vinton KG

#### *Remaining Asbestos Containing Materials – Suspected – Need to be Sampled*

- Mastic behind chalk boards, other locations
- Window and building caulking
- Roofing tar & asphalt tile
- Thermal System Insulation inside walls, fixed ceilings
- Inside boilers not recently replaced (Vinton & Southeast)

All of the schools will need a NESHAPS level inspection and some additional sampling prior to renovations. Although some samples have been taken, not all types of suspect materials were sampled.

Lead sampling will also be required prior to major renovations. Any lead painted surfaces, plus PCB found in old light ballasts and mercury in fluorescent light tubes will be addressed during the construction Phase of the project and be a component part of the overall hazardous materials abatement.