Municipal Land Use Plan Committee
November 30, 2009

Board of Education

Contents of this packet

1. Salem School enrollment projections for next 10 years
2. Timeline of work that was done to assess needs of school building, leading to establishment of Town Building Committee
3. Educational Specifications to support design of project for renovation of Salem School. Contains:
    a. Summary of instructional and non-instructional needs (as related to facility)
    b. Excerpts from Kaestle Boos Associates architectural assessment of school building (Jan 2009)

New England School Development Council (NESDEC) Enrollment Projections for Salem, CT, grades PK-8

Current enrollment 490 (Oct 2009)

	NESDEC **PK-8**
2010-11	488
2011-12	483
2012-13	475
2013-14	488
2014-15	469
2015-16	462
2016-17	470
2017-18	472
2018-19	481

	NESDEC **PK-4**
2010-11	248
2011-12	243
2012-13	250
2013-14	252
2014-15	261
2015-16	260
2016-17	258
2017-18	260
2018-19	263

	NESDEC **5-8**
2010-11	240
2011-12	240
2012-13	225
2013-14	236
2014-15	208
2015-16	202
2016-17	212
2017-18	212
2018-19	218

Summary of BOE/Town actions to assess Salem School building, prior to establishment of Town Building Committee (2001-2008)

2001-2005: BOE dealing with many long term building issues but the BOE did not have the building expertise to adequate evaluate and prioritize them. We were working based on the crisis of the week:

- Mold in building due to wet areas (roof leaks onto ceiling tiles, ground water intrusion into elevator pit, water collection on roofs by intake ventilation, lack of force ventilation in old building, carpeted rooms vs. tile floors)
- During winter freeze and thaw many leaks in various roofs
- Heating system unable to be adjusted for setback during non use times
- Heating system developing leaks due to shocking of cast iron panels
- Septic system venting into classroom areas
- Electrical distribution that has voltage spikes causing damage to computers
- Lead in drinking water
- Rust and discoloration in water

The Board felt it was important to have a professional evaluation of the overall building and generate a list of items that needed to be fixed and a priority.

August 2006: RFP's reviewed and recommended Moser, Pilon, Nelson (MPN) to BOE as architect to conduct Facilities Assessment study. Contract received from MPN and approved. Assessment study to begin in September.

September 2006: Meeting with architect to begin Facilities Assessment study.

October 2006: Architect conducts facilities walk-through and educational review with school administration.

November 2006: BOE sponsored public forum to answer questions and seek public input with regards to the facilities issue.

February 2007: Architect presents three options for the school building; two as renovate as new, one as new construction. Committee also discussed option of building a Magnet School for larger State construction reimbursement. State Department of Education to be contacted to discuss feasibility with the committee.

March 2007:
Overview of Connecticut Magnet School program and feasibility of a Salem Magnet School. At the February 12, 2007 Facilities Committee meeting, a suggestion was made as to the feasibility of constructing a Magnet School as a viable alternative to offset the renovation costs to the current building. Bill Magnotta gave a brief overview of Connecticut State regulations governing the Magnet School program. Major points consisted of the following:

a. A diverse student population of 75 percent white and 25 percent non-white.
b. Curricula theme must be approved by the state.
c. Construction reimbursement currently at 95%. Also mentioned was other districts expediting construction reimbursement applications due to expected decreases in state reimbursement. Mr. Magnotta did not know if the Magnet School program would be impacted by the expected decreases.
d. Only a maximum of half of the Salem student population could attend the Magnet School.
e. Because of Salem's rural location, placing a Magnet School in Salem would not be cost effective to other towns because of transportation costs.

April 2007:
Architect makes formal presentation to Board of Education, including five options of addressing facilities issues specified in the assessment report. The two additional options (from February) are a 10-year capital plan (completely at Town expense) and renovation with some new additional construction to the existing footprint.

Facilities Committee begins discussion of formulating Education Specifications based on the facilities study recommendation. Programmatic needs information to be submitted for presentation to the BOE by the May 7 regular meeting. Education specifications completion planned for Mid-summer 2007. Prioritization of immediate school capital issues begins.

May 2007: Capital issues prioritization complete. Review of programmatic needs becomes focused on remaining within the existing building footprint.

June 2007: Programmatic needs list presented to the BOE and revised.

July 2007: Committee discusses BOE revision recommendations, including demolition/replacement of the 1940 portion of the school. Historical issues are a concern and are weighed against student health and safety (asbestos, etc.) issues. Discussion includes architect's suggestion to replicate the 1940 building based on replicating being more cost effective than renovating.

Architect discusses project Option A with BOE members. Project timeline also presented to the BOE.

November 2007: BOE chairman conducts 2-hour public forum on the renovation project. Discusses cost feasibility and Town interest of the proposed alternative renovation options, parental concerns, student safety, available parking, appearance (inside and outside) of the renovated building, cost impact of project start delays, and due date of first bond payment.

February 2008: Charge to Town Building Committee approved at Town meeting.

March 2008: Town Building Committee appointed by Board of Selectmen.

EDUCATIONAL SPECIFICATIONS FOR
SALEM SCHOOL

PROJECT RATIONALE

Salem School currently houses students from Pre-K - Grade 8. New England School Development Council (NESDEC) and State enrollment projections indicate that the school enrollment has peaked and will continue to maintain itself at its current level, which for 2009-10 is projected to be approximately 494 Pre-K - Grade 8 students. In a long-range facility planning study prepared by NESDEC, the planned operating capacity of the building is 450 students. Currently, there is sufficient space to provide for 29 classrooms Pre-K - Grade 8. Although all attempts are made to cluster the grade level classrooms as Pre-K, K, 1- 4 and 5-8 this is not always possible due to fluctuations in enrollment. Currently, we maintain three spaces dedicated to special needs classrooms. We have a library media center, one cafeteria/multi-purpose, one dedicated gym, one dedicated elementary music classroom and two dedicated art rooms. Any remaining spaces are used to house our middle grades general music program, instrumental music, health and global language programs. In any given year several of these programs, e.g. health, middle school general and instrumental music and global language, become "on a cart" programs or as in the case of instrumental music take place, when scheduling is possible, in our inadequate band room or on the gym stage.

Architects and engineers have performed a facility assessment by reviewing the existing facilities to evaluate the condition of the physical plant in terms of site and buildings. Salem School was first constructed in 1940, with a series of additions: 1956, 1963, 1973, 1988, and 1994. As a result of our facility study we find that we have to replace and/or modify several of our existing mechanical systems, i.e., heating, electrical.

The site has a current area of 22.63 acres. There is other town owned land adjacent to this property, which provides options for the proposed & future growth such as additions, site utilities, playfields, and parking. Some of these areas may become dedicated to the school.

After this facility review the Board of Education remains committed to maintaining a Pre-K-8 facility on the current site. The building will continue to support community needs as it has to the present date, with the gym and cafeteria spaces being available on a first come first served basis. The building will also be designed to provide for the existing population since at the point of this proposal an increase is not anticipated.

LONG-RANGE PLAN

Renovate the existing pre-1994 building "as-new" making improvements to the buildings structure, mechanical, electrical, life-safety and security systems and physical security.

Facility renovation will allow Salem to:

- Improve academic programs for Salem students;
- Insure safe and appropriate learning environments for Salem students;
- Incorporate current technology into the classroom curriculum;
- Provide "green" technology for sustainable, environmentally-friendly, efficient applications;
- Have the potential to accommodate a full day Kindergarten program.

Salem plans to continue to utilize Salem School in its current capacity, and with appropriate physical plant upgrades, as a Pre-K through 8 school facility for at least the next twenty years.

THE PROJECT

Salem proposes a renovate "as new" construction project to the pre-1994 building at Salem School, as depicted in the attached floor plans. The existing structure poses limitations that will challenge creativity and may require accepting some compromises, particularly in the size of some classrooms. The following space specifications are desired outcomes of the project. The classroom square footage is listed within a range to provide flexibility in accommodating the existing school structure as well as enabling the freedom of design.

EDUCATIONAL SPACES

General Education Classroom (21) 810-1,200 SF

Twenty-one regular education classrooms of approximately 810-1,200 SF are needed to support the student population in the core academic areas. One classroom in each of the fifth – eighth grade levels should be designed as science classroom-labs. Mobile science centers could be brought into the rooms for demonstration purposes and tables or perimeter counter space would serve as lab workstations for students.

These general classrooms should have ample space to permit flexible grouping and regrouping of students, as well as whole class instruction. Sufficient room and teaching stations need to be accessible in the room for two or more teachers to be working simultaneously with students in small groups, or one teacher or assistant providing supportive assistance for one or more students while the classroom teacher is providing direct instruction to the whole class. White boards for teacher and student use should be accessible in different areas of the room. Different types of workstations or "learning" centers may be created in areas within the classroom. Each classroom should have a SMART Board and technology center with 3-4 student workstations and a teacher computer workstation. Storage for instructional supplies within the classroom or in a readily accessible shared location is important to maintain continuity in the flow of instruction. All rooms should be equipped with wireless capability for use of portable laptop labs.

Since our population/grade level configurations vary from year to year, all general classrooms must be flexible and adaptable to different future uses. Cabinetry and other fixtures will need to be carefully designed and easily relocated. Floor space should be maximized to enable the teacher to reconfigure furniture and learning spaces within the classroom. White boards, areas to display student work, projection screens and computer workstations for students and teachers need to be carefully designed and strategically placed in order to facilitate teaching and learning.

The Director of Special Programs should be consulted to determine how and where "sound field systems" and other assistive technology aides should be installed.

In addition to the above, all instructional space should also have the following:

- Tile flooring (preference is for tiles rolled that are heat sealed at seams)
- Connections to the school communication system
- Room darkening shades
- Full data/ voice/ video capacity (*access to a network integrated media distribution system*)

- Electrical outlets, at least one on each wall; additional outlets alongside computer workstations to support peripheral devices
- Wall or ceiling mounted projection screen
- Appropriate heat and ventilation

Computer Lab (1) **650 - 700 SF**

One computer lab is needed. This space should be about 650 SF and have from 24-30 student workstations and one teacher workstation. A ceiling mounted projection device and SMART Boards are important components of the instructional program for this space.

Global Language (2) **800-1,200 SF**

Two classrooms of approximately 800-1,200 SF are needed to support our Global Language program. These Global Language classrooms should have ample space to permit flexible grouping and regrouping of students, as well as whole class instruction. White boards for teacher and student use should be accessible in different areas of the room. Different types of workstations or "learning" centers may be created in areas within the classroom. Each classroom should have a SMART Board and technology center with 3-4 student workstations and a teacher computer workstation. Storage for instructional supplies within the classroom or in a readily accessible shared location is important to maintain continuity in the flow of instruction. All rooms should be equipped with wireless capability for use of portable laptop labs.

Math/Language Arts (1) **500 – 600 SF**

A room needs to be provided for our math and language support staff to prepare curriculum documents and materials. This area requires space for two workstations and desk. Bookshelves and storage cabinets are needed. A circular table and chairs for seating 4-6 people is needed. This room needs to be equipped with wireless capability.

Art (1) **900 - 1,000 SF**

The Art program requires use of a large space. This space should ideally have a great deal of natural light, built-in storage, sinks with appropriate drainage and numerous opportunities to display completed student work and store work in progress. Worktables and stools should be mobile in order to allow teachers the flexibility to re-arrange instructional space according to planned activities. A SMART Board, white board, projection screen and computer workstations need to be strategically located to facilitate teaching and learning. Approximately 150-200 square feet of this space should be allocated for storage of supplies and materials, and storage of works in progress. The area outside the art room should contain tack board and wall-mounted display cases to showcase student work. There is also the need for an area to be designated to house the kiln, either inside or outside of the classroom.

Music (2) **810 SF Classroom / 1,200 SF Band Room**

The General and Instrumental music programs need space that is strategically located and acoustically treated. The rooms should be located near the stage area to the extent possible and practical. Storage for the music library, instruments and music stands needs to be provided. Display boards, SMART Boards with overhead projectors, electronic keyboards, and a projection screen need to be strategically located to facilitate teaching and learning. Multiple electric outlets are required alongside each wall to enable class use of various electronic instruments and devices that support the instructional and learning programs. The instrumental music room should have the capacity to provide for electronic keyboarding instruction.

Special Education Classroom (1) **1,000 – 1,100 SF**

Rooms are needed for teachers and instructional assistants to work with students who have individualized educational plans (IEP) created by planning and placement teams. These rooms should be adaptable to the varied needs of students and their instructional requirements. It is likely that several students will be receiving different types of instruction in the room at the same time. It would not be unusual for several teachers to be working in these rooms simultaneously, along with several instructional assistants. These rooms should have all the features of general classrooms. The furniture in these rooms should be tables and chairs that can be easily moved and configured in a variety of patterns for varying grouping of students.

Physical Therapy / Occupational Therapy (1) **350 - 450 SF**

Space is needed for physical therapy and occupational therapy when a student's needs warrant such instructional support. A room should be dedicated to these functions with ample storage for apparatus and space for large muscle activity. Movable floor mats are required. Specific apparatus should be determined in consultation with teachers, based on the students they are currently serving and those they know will be attending the school in the future.

NON-INSTRUCTIONAL SPACE

Administration/Related Services **3,750 – 4,000 SF**

Conversion of the current front entrance courtyard to interior useable space will provide improved site supervision & security by bringing administrative functions to the front. This space includes:

- 2 Principal's Offices
- 1 School Office (Secretaries/Reception Area)
- 1 Conference Room
- 1 Workroom
- 1 Storage Room
- 2 Guidance Counselor's Offices/Conference Room
- 1 School Psychologist Office
- Health Center that includes:
  - 1 Nurses Office
  - Waiting area
  - Secure medicine and records storage
  - 1 examination room
  - 1 cot room
  - 1 lavatory facility that is ADA code compliant.

Administration **1,900 – 2,000 SF (does not include Main Lobby)**

The administrative area requires office spaces for two school principals, each with a workstation and desk. Bookshelves and storage cabinets are needed. A circular table and chairs for seating 4-6 people is needed. Each office area needs to be equipped with wireless capability, access to the school communication system and a telephone with access to outside and long-distance lines,.

A reception area, office workroom with copying equipment and network printer, supplies storage and ample counter space for collation of multiple projects is needed. The receptionist and secretary need

workstations and access to the school communication system controls. The school security system should be managed from this area.

A conference room with a SMART Board, overhead projector, oval table, and seating for 12-14 adults is needed. The room should have counter space with cabinet storage for supplies and materials. The room should be well lit and acoustically treated to maintain privacy. The room should have a telephone and electrical outlets along each wall to support recoding devices and other electronic equipment. Multiple outlets should be located over the counter space.

Guidance Counselors (2) **750 - 850 SF**

A guidance area needs to be provided that includes space for two offices, a small conference room and a waiting area. These offices need wireless capability, a teacher's computer workstation, a telephone with access to outside and long-distance lines, round table and chairs, and a four-drawer lockable file cabinet. White boards and display capacity on walls are also needed.

Psychologist **150 – 200 SF**

An office with space for testing and counseling of students is needed. This could be a shared space depending upon the ability to manage schedules. This space needs wireless capability, a teacher's computer workstation, a telephone with access to outside and long-distance lines, round table and chairs, and a four-drawer lockable file cabinet. White boards and display capacity on walls are also needed.

Health Services **900 - 1,000 SF**

A room for health services needs to include a reception area, space for records storage, an examining area, an area for cots that could be curtained off from the rest of the area, an ADA complaint lavatory, space to store lifts for disabled persons and an examination table. Two four drawer, lockable files are needed. A lockable storage cabinet for medicines and a refrigerator with a lock or lockable compartment is needed for medicines requiring cold storage.

Faculty Dining and Workrooms **450 - 500 SF**

This space provides a comfortable setting for at least 12-15 teachers to sit around lunch tables. It can also double as a teacher workroom by providing appropriate equipment and storage for preparation of instructional materials. The room should be equipped with a teacher workstation, telephone, copy machine, refrigerator, shelving and closed cabinets. Counter space is needed for sorting and collating materials as well as for using various electrical devices. Several electric outlets are needed on each wall and more should be located over the counter top. A portion of the room should contain a sofa and easy chairs for reading and relaxation.

Storage Areas **(as much storage as practical is desirable)**

Storage areas for instructional supplies need to be strategically located throughout the building for ease of access by teachers who have been allocated space in respective rooms. These spaces should have open shelving at a height that permits easy access. The rooms should be well lit and ventilated to prevent

spoilage of supplies and materials. Space should be set-aside for school-wide equipment and textbook storage.

Custodial storage areas need to be strategically located throughout the building for ease of access and to prevent frequent moving of cleaning equipment and supplies throughout the building and, in particular, up and down stairs.

Gymnasium **1,800 - 2,000 SF**

The Gymnasium shall be expanded to include an additional PE Office, Gymnasium Lobby and Gymnasium Storage to be constructed beneath the existing classroom overhang. A lobby will enhance thermal efficiency, security and promote community use.

FACILITY ASSESSMENT & RECOMMENDATIONS

SITE

Power

Three phase utility power is fed to the building from overhead high voltage lines on Route 85. The service drop is located on a utility pole near the north end of the property and runs underground to a pad mounted transformer located at the northeast corner of the 1973 building.

The pad mounted transformer steps the voltage down to 120/208 Volts, 3 phase, 4 wire for customer utilization and again runs underground to the main electrical room which is located in the lower level of the 1973 building.

Part of an overall electrical system improvement plan will be to upgrade the electrical service & establishing a new location for the main electrical room.

Wastewater Disposal

The school is served by a conventional septic system, which consists of septic tanks, grease traps, an effluent pumping chamber, a dosing siphon and leaching fields. The Salem School's discharge permit was renewed in 2005.

Septic tanks and their access manholes are located in the open area beneath the upper level, in the rear of the school. The leaching system is located in the parking lot behind the school. The parking lot is paved.

Should a septic system expansion be necessary, additional leaching area may be available between existing leaching trenches in the rear parking lot, or if a new leaching area is needed, the existing ball field north of the school may be an acceptable location, pending soils investigations. The ballfield area is higher in elevation and would require pumping. The adjacent "Bowtie" site (Town owned) may also be available, although ground water levels and wetlands may be problematic. Soil testing and design of a leaching system and a permit from the Connecticut DEP would be required.

Pavement and Walks

The site is characterized by bituminous concrete parking areas, driveways and curbs and concrete and bituminous concrete sidewalks.

Total Existing Parking consists of 123 spaces; with total Existing Handicap Parking of 6 spaces that are separated. The new parking arrangement should provide properly accessible handicap spaces.

Buses drop off and pick up along the front of the school, but do not park or remain on site. Another 40+ spaces are available in the adjacent gravel lot on the northern side for event parking. Bus flow should be separated from the parent drop-off and visitors car traffic to promote safe student passage. Traffic to the rear of the school should not cross the front parking areas.

The bituminous concrete parking areas in front of and behind the school are in good condition. A gravel parking area north of the building appears to be in good condition. This area should be improved and paved.

Some of the driveway areas need repair. Some locations in front of the school are in poor condition. Bituminous concrete walks behind the building are in fair to poor condition, and should be removed and replaced.

The integral concrete walk and curb in the front of the building is in good to excellent condition, however the concrete handicap ramp and curb at the main entrance to the building from the driveway is in poor condition. The ramp and curb should be removed and replaced concurrently with repairs to the bituminous concrete driveway.

Storm Drainage

The Salem School site generally slopes from front to back, or west to east from Route 85 to a wetland system associated with Harris Brook. There are two storm drainage systems on the site.

The South drainage system consists of catch basins, yard drains and piping that collects water from the front of the school and discharges it to a stormwater detention pond behind the school. Yard drain grates in the patio in front of the building are metal, and should be replaced with a more durable synthetic product. Concrete may have to be cut and repaired to accommodate this work. Piping is concrete, and larger diameter pipes that discharge to the detention pond were observed behind the school.

The North drainage system, located in the north site driveway and northerly portion of the rear parking lot, collects drainage from a relatively small area. The second, most downgradient catch basin in this system appears to have been originally constructed as a dry well, as large spaces are present between the concrete blocks in the riser structure. A concrete pipe conveys stormwater from this catch basin and discharges it at the bottom of the embankment behind the rear parking lot. This area appears to be an inland wetland, and it drains into a stream that conveys flow from the detention basin. This stream flows into Harris Brook and its wetland system. This wetland system separates the current school site with other town-owned land. Assuming additional building and impervious coverage the storm systems will require re-evaluation of run off and detention.

Recreational Fields

Two playscapes exist on site, developed in 1997-1998 primarily by the Parent Organization with volunteer labor. Compliance with Accessibility standards, and safety standards will be required by the State Dept. of Education. Relocation of the front courtyard playground is desired. The front courtyard should be related to a safe secure area and upgraded to meet current standards.

ARCHITECTURAL

Roof

The total roof area approximates 75,680 SF and is divided into 15 areas and three different types of roofing.

Building Date	Roof Type	Condition	Expected Life/Comments
1940	Shingle roof	Fair-Poor	Building Demolition/replacement
1956	EPDM (rubber)	Poor	Building Demolition/replacement
1963	EPDM	Fair-Poor	0 years, replacement recommended
1973	Modified Bitumen	Fair	Over 20 years
1973 Gym	Same as above		
1988	Same as above	Fair	5+ years, near end of expected life
1994	EPDM	Good	10-15 years

Replacement should occur on the 1940 through 1988 building areas.

Exterior Wall System

The exterior wall system is most generally made up of different types of masonry, both exterior and interior. Earlier building areas do not have insulation, nor a working cavity within the masonry. This can over time provide a means for moisture to penetrate the building. It is desired to achieve an energy efficient, structurally sound, low maintenance exterior at the most cost efficient means which helps preserve the character of the school or theme of the building within the Town.

Bldg Date	Wall Type (Exterior to Interior Finish)	Condition
1940	Stone, vinyl siding over wood frame, wood fiberbd finish	Replace
1956	Brick - No Insul. – CMU (concrete masonry), painted	Replace
1963	Brick - No Insul. – CMU, painted	Replace/Upgrade
1973	Brick - No Insul. – CMU, painted	Replace/Upgrade
1973 Gym	Brick - No Insul. – CMU, painted	Replace/Upgrade
1988	Brick – Rigid Insul. (assumed) – CMU, painted	Replace/Upgrade
1994	Brick / CMU - Rigid Insul. – CMU	Good

We recommend that these walls be repaired as necessary to close any gaps, seal any joints, etc and essentially remain as is.

Window Systems

Windows in the 1940 section are wood sash, single pane, with aluminum storm windows.

The 1956 portion has had the windows replaced with aluminum frames and insulated glazing. That said, they are still quite old and not equal to today's performance.

The 1963 portion has original windows of single pane metal windows with aluminum storm sash added. Each classroom has been retrofitted with one emergency escape window as required by the Fire Safety code in buildings without full sprinkler protection.

The 1973 portion has original windows of aluminum frames and insulated glazing. Some were noted to have failed seals between the panes of glass and should be replaced. The frames do not appear to be thermally-broken and therefore transmit heat loss through the frame. Should a major project develop we would recommend replacement of the full window assembly to realize a consistent level of high performance window systems and consistent appearance for the building exterior.

The 1988 portion has original windows of aluminum frames and insulated glazing. These perform reasonably well and could remain. As a casement style window with a large operating sash, it is common to develop hardware and operational problems over time. The large sash does meet the size requirements for escape windows.

Based on the varied architectural styles of each building and windows, replacement of all windows with high performance frames and glazing, which address ultra violet and heat gain/loss is recommended; and would bring about a more uniform appearance.

Windows frames and sash should be of material that is maintenance free. The provision of glazing in the classroom is both an educational and psychological enhancement because it provides visual relief and outdoor observation opportunities. The provision of windows or glazing does, however, provide for heat loss or gain and a vulnerable point in security. The provision of solar block glazing is desirable and should be considered in each room.

Exterior Door Systems

Doors are most generally of the age matching the age of the building; therefore there is great inconsistency of material, condition, and hardware. Doors generally take a great deal of abuse with the frequency of use, therefore durability of the entire assembly (door, frame, hardware) is important. In recent years, issues of security have brought a new focus to door assemblies, their components, the location and relationship to certain interior spaces and the visibility in exterior areas.

The use of vestibules originally developed to control drafts, are evolving into a means of control for security.

Full replacement to hardware and door assemblies will enable durable construction with new hardware, keyed alike and master keyed; as well as the possible inclusion of electronic latching and monitoring of entries tied to a central control panel.

Interior Finishes

Interior walls are most generally masonry (concrete units of various finishes and some brick), with the notable exception of the 1940 (wood) construction..

The 1940 building is wood framed with a composite wood fiber board on wall surfaces and the original ceilings, currently concealed with newer ceilings suspended below.

Ceilings are generally acoustic panels in a grid suspended from the structure above. A variety of sizes and finishes exist. Systems work such as technology wiring, communications systems, power-lighting, fire alarm, & sprinkler work require full ceiling removal and replacement.

Notable exceptions to suspended ceilings include the Gym, Multi-purpose Room, and the 1963 area where structural metal roof deck, perforated for acoustic performance, exist.

Flooring finishes consist primarily of vinyl composition tile (VCT). Prevalent in the older portions of the facility ('40-'73); VCT was installed over the original vinyl asbestos tile (VAT). Other materials consist of ceramic tile in toilet rooms, a wood flooring system in the Gym, and a cushioned sheet vinyl flooring in the multi-purpose room. Carpeting in the older portions is laid over the original VAT. Whether the carpet or VCT over VAT, removal in large areas requires both layers of flooring to be removed and disposed of together.

Typically within each classroom there is a wall or part of two walls with millwork providing storage for supplies, coat cubbies in the elementary areas, workstation with a computer &/or sink area. Often, the introduction of computers, for both student & teacher has eliminated space, within rooms already too small, and again this is most evident at the younger elementary levels. These conditions are overly crowded and do not meet current accessibility requirements, both in terms of access to an area, or the ability to use the workstation or sink. Some work/computer areas are set up with furniture beyond the original design of the room, which further eliminates open space, critical for younger children's movement in a room. Several areas have been modified, in part to meet accessibility, however the total furniture, bookcases etc still restrict the open plan desired. It is recommended that full removal of these built in systems & a comprehensive redesign based on current and anticipated programs is required.

Still prevalent are chalkboards, which due to chalk dust are not compatible with computer technology. Replacement is recommended with white boards and SMART Boards.

Furnishings are inconsistent. Age, tennis ball feet, and styles appropriate to curriculum, age of students, teamwork and movement within a classroom are issues which argue for replacement of the great majority.

Corridor locker systems within the older portions of the facility have narrow style lockers, which do not accommodate the backpack age and should be replaced.

HAZARDOUS MATERIALS

The current AHERA report for asbestos containing materials, dated December 2008 provides an overview of suspected and known asbestos containing materials within the building. These materials are in the older sections from the 1940 up through the 1973 and possibly the 1988 addition. There is no known or suspected asbestos within the 1994 portion. Asbestos materials are generally concealed or non-friable.

Asbestos should be removed for full building abatement related to a major project with systems replacement and program alterations.

A brief schedule of asbestos containing materials:		
Floor tile and mastic	Non-Friable	28,680 SF
Carpet over Floor Tile & Mastic	Non-Friable	7,200 SF
Fire Door Insulation	Concealed	50units assumed
Window Caulk & Glazing Compound (assumed at 1940-1973)	Non-Friable	Unknown
Cove Molding & Mastic	Non-Friable	5,200 SF
Transite in Lab Hoods	Non-Friable	75 SF
Insulation at Elbows, Fittings, etc.	Concealed	50 LF

Other materials not known to contain asbestos must be suspect and therefore tested prior to any work include gypsum wallboard, plaster, glue daubs behind chalkboards, or glued up acoustic ceiling materials, roofing and roof flashings of bituminous materials, duct insulation, boiler breeching insulation.
Other concerns expressed are for lead solder used on domestic water piping in older sections of the building. While lead solder is no longer permitted, however there is no guarantee that it was not used in later construction or alterations.

STRUCTURAL

ORIGINAL 1940 BUILDING (wood framing) To be renovated

General Building Description: The original school building is a traditional styled wood framed structure with large windows, high-sloped roofs, and stone and wood exterior. The roof structure appears to be a tongue and groove wood roof decking on stick framed wood 2x members at a very steep pitch. The framing is supported by wood framed exterior walls, and by a bearing wall that starts at the floor line and extends up to the ridge. This bearing wall forms the East wall of the main North-South Corridor. The building is to have the main structural systems replaced with steel and masonry.

1956 ADDITION (masonry bearing wall / steel framed roof) To be renovated

General Building Description: This small addition is constructed of brick and block bearing walls on cast concrete foundations. The building has a low flat roof that drains to a few interior drains and to the front to a gutter. The roof for this addition is constructed of rolled metal decking on "Armaco" type bar joists at 48" o.c. (+/-) supported on the exterior and corridor masonry walls. (2) large roof openings, possibly original skylights, were removed and replaced with wood framing infills do not meet structural requirements.

1963 ADDITION (masonry bearing wall / steel framed roof, acoustical exposed deck)

General Building Description: This addition is a single story structure with a limited partial lower level and with a flat roof that is connected to the North side of the 1940 building, and is connected to the 1973 addition. The building is constructed of alternating acoustic deck and standard metal deck on steel wide flange beams, which are supported on masonry bearing walls.

The overall condition of this addition is considered good. If this building is to undergo renovations; the exterior walls should be reviewed based on wind loads, where the windows interrupt the masonry. This condition leaves a "knuckle" in the wall at the masonry/window frame interface. The roof could support new mechanical roof top units with either additional reinforcing or with dunnage framing. New roof openings could be cut for ductwork with minimal reinforcing.

1973 ADDITION (masonry bearing wall, concrete plank roof)

General Building Description: This addition is two stories in height with the upper floor of the 1973 building at the same level as the ground floor of the previous additions. The lower level is built into the sloping grade at the rear of the school, providing a walk out to grade at each level. This addition is an extension of the 1963 additions corridor and is surrounded by the 1988 addition. The 1973 addition is constructed of precast concrete planks for the floor and roof bearing on masonry walls, while the gym roof is constructed of long span precast concrete tees supported on masonry bearing walls. The roof over the classroom wing is constructed of 8" thick hollow core precast Prestressed concrete plank with a 2" thick cementitious topping.

This addition will be the most difficult to modify because of its block and plank construction. Since the walls are hard working bearing wall, new openings will require structural support of the wall and plank above, and the classroom sizes will have to remain fixed. New roof top units can easily be installed on the plank that spans over the corridor, as it has a large strength reserve. New units that may be planned for over the gym or classroom areas will need to be the same weight or less than those that they replace to not overstress the supporting members. New duct/pipe chases can be let in, but may require reinforcing of the precast plank or their supports.

1988 ADDITION

General Building Description: The 1988 addition is, for the most part, a two-story structure that wraps around the 1973 gymnasium. The structure is a flat roof that pitches to interior drains. The addition is constructed of structural steel and concrete floor slab on metal decking. The roof is constructed of metal roof deck. The underside of most of this addition is open to the exterior. The roof framing is structural steel wide flange shapes supporting a typical type "B" metal deck. The steel is pitched to allow drainage, and to allow for a standard insulated roof.

The overall condition of this addition is considered good. The roof could support new mechanical roof top units with either additional reinforcing or with dunnage framing above the existing roof. New roof openings could be cut for ductwork with minimal reinforcing, or the ductwork could be installed above the insulated ceiling below the floor as the ceiling space seem adequate.

MECHANICAL / ELECTRICAL SYSTEMS

Plumbing

Throughout the school there are different vintage plumbing fixtures. In general they are in good condition, considering their age. With the exception of the fixtures in the 1994 portion of the building, the plumbing fixtures do not meet present Code requirement for water saving. Also, there are no handicap accessible fixtures in the building, with the exception of the 1994 Addition. From an accessibility point of view, the only fixtures that will have to be replaced in the 1994 Addition are the emergency showers in the science rooms.

Considering the time when the different domestic water piping systems were installed, it is possible that lead solder was used. The domestic water distribution system shall be replaced throughout the building, except in the 1988 and 1994 Additions.

If the roofs are being renovated on the 1956, 1963, 1973 and 1988 portions of the building, it is possible that a new storm water drain system will have to be installed.

Fire Protection

The current building is not sprinklered. It is desired to add a fire protection system in the renovated portions of the building.

Mechanical

With the exception of the 1994 Addition, the Heating Ventilating and Air Conditioning (HVAC) systems for this building are obsolete, past their expected useful life and running at or close to maximum capacity.

1940-1988 Buildings

The HVAC systems for the rest of the building are in poor condition. There are reports of inadequate ventilation, uneven temperatures and poor indoor air quality.

For this portion of the building, the ventilation is natural type; open windows. This is not appropriate for cold days as the outdoor air can not be tempered.

We recommend that a new mechanical ventilation system be installed. This will improve the indoor air quality, creating a healthier learning environment.

The heating plant consists of two oil fired boilers. These boilers appear to be the original ones. They are still working, but are in poor condition. The boilers do not have spare capacity. The plant is sized such that in order to satisfy the heating demand, both boilers will have to operate. The room does not meet present Code requirements for combustion air and safety (it does not have a second exit). Oil for the boilers is stored in a 10,000gal underground tank, installed in 1987.

The boilers shall be replaced with new more efficient ones. Boilers shall be sized for redundancy and shall have spare capacity to accommodate future loads. The circulating pumps shall be replaced at the same time as the boilers. Consider variable speed pumping for energy efficiency and consider alternative fuel solutions.

The controls for this portion of the building are pneumatic. They are the original controls and at this time they are not operating properly. The control shall be replaced with a new DDC system that will interphase with the one presently installed in the 1994 Addition. This will allow monitoring the entire building from a single location and also will provide a more comfortable environment.

The HVAC system should be controlled by a computerized energy system located in the maintenance/custodial office with access from outside the school. The building will contain “zones” for managing temperature control for day and evening functions.

Connection to external emergency power sources should be provided to keep vital building components and areas functioning in an emergency.

The HVAC system should have the following characteristics:

- Should be able to provide uniform temperature in all areas of the teaching space.
- Should eliminate drafts and cold areas.
- Should provide sufficient ventilation in all rooms and bathrooms.
- Should minimize noise in the classroom from the systems to meet code requirements.
- Should be energy efficient and reliable.
- Should ensure air quality standards; filtering air borne allergens to acceptable levels.

Electrical

Service and Distribution

The building electrical service is 208Y/120 Volts, 3 phase, 4 wire, 1,200 Amp capacity and terminates in a main electrical room in the lower level of the 1973 building adjacent to the boiler room. Preliminary calculations indicate that the service capacity is marginal for a school facility of this size. Any further building additions or the installation of major HVAC equipment would certainly require that the service be upgraded. Service capacity limitations aside, voltage irregularities and other electrical problems have been reported and need to be addressed. There is no TVSS (surge suppression) device on the main distribution section which protects the electrical distribution system against voltage spikes and surges. There is also no single phase protection on the main. This feature would protect three phase motors and other three phase equipment from damage in the event that the utility loses a phase leg causing a partial outage. A digital meter is also lacking on the main distribution section which would be helpful in troubleshooting electrical problems. Finally, the distribution section of the switchboard is almost full and therefore has limited ability to serve new equipment or panelboards.

The existing panelboards (with the exception of the 1994 addition) are of mixed age and condition. Some panels are obsolete and lack adequate space to add branch circuits. Other panels were installed more recently and are equipped with TVSS devices where serving computer equipment. The system is not generally separated out by load types and clean power is not available for all sensitive equipment. Given the age of the distribution system it is likely that the older feeder and branch circuit neutral and grounding conductors are not adequate for the harmonic currents induced by modern day electronic equipment. The panelboards in the 1994 addition are in good condition and have adequate space to add more breakers.

The recommendations for the service and distribution system are as follows:

- Establish a new location for the main electrical room. The room should be adequately sized to accommodate a switchboard with increased capacity and breaker space to handle all building upgrades including additions, air conditioning, and technology improvements of this project.
- Replace the existing panelboards and feeders (with the exception of the 1994 addition). Arrange the system by load types: lighting, motor, convenience power, comport power and emergency power. Provide stable, reliable, stable power to the building systems as needed.
- Replace existing branch circuits where found to be outdated or non code compliant, and as required for renovations. Extend and reconnect existing branch circuits that are to remain to the new branch circuit panelboards. Install new branch circuits as required.

Power in each classroom should come from two sources, one for exclusive use of computers and peripherals and the other for general use. A separate service for the technology infrastructure should be considered.

Standby Power

There is an existing 150KW standby diesel generator with a sub-base fuel tank which was installed during the 1994 project. The capacity of the fuel tank appears to be approximately 500 gallons. A 400 Amp automatic transfer switch (ATS) is located in the 1994 addition boiler room which automatically starts the generator and switches to standby power in the event of a loss of utility power. The generator supplies power to the 1994 boiler plant, limited kitchen equipment, egress lighting in the 1994 addition, the 1963 addition boiler plant, water system, and some limited lighting in the 1973 addition. The generator appears to be adequately sized to handle these loads but may need to be upgraded to handle another addition or to function as a power source for an emergency shelter.

In order for this facility to function as an emergency shelter the following loads would have to be added to the generator:

- All kitchen loads including cooking equipment, ventilation hood, and lighting
- Domestic hot water
- Adequate lighting for areas of the building that will be used during an emergency i.e. egress corridors, multipurpose room, toilet rooms, shower rooms, and any other spaces where people might be permitted to seek refuge in an emergency
- Rooftop unit serving the multipurpose room
- Data and communications equipment

Site Lighting

The existing site lighting consists primarily of shoebox style light standards and low level bollard lighting. There is also a limited number of building mounted floodlights. The shoebox lights have good cutoff control to limit the amount of light spillage onto the road or adjacent properties, and the bollard lights have good spill control as well. The site lights appear to be in good condition and are properly spaced to provide adequate lighting in the driveway and parking areas.

General Building Lighting

The building lighting system consists primarily of fluorescent light fixtures of various styles. The classroom lights in the 1994 addition are suspended linear units which provide both direct and indirect lighting. The rest of the building uses fixtures that provide direct lighting only and consist of surface mounted or recessed lay-in style units. There appears to be some use of occupancy sensors in the 1994 addition for lighting control, but the rest of the building relies primarily on manual switches for lighting control. Some areas have reduced lighting levels, consideration of the levels should be taken into account when considering replacement.

The light fixtures throughout the building have been retrofitted with T8 lamps and electronic ballasts for improved energy efficiency.

Exit signs and emergency lighting consist primarily of self-contained battery operated units. These units are of various styles and condition. In general, the coverage of emergency lighting appears to be somewhat marginal and is lacking in some areas required by code.

As a general recommendation, the lighting system throughout the building should be considered for replacement (with the exception of the 1994 addition). New energy efficient lighting will not only help realize additional energy savings, a properly designed system will provide better quality lighting and will

improve the aesthetic appearance of classrooms and other spaces. Occupancy sensor controls should also be introduced throughout the building for improved energy efficiency.

Fire Alarm System

The building areas 1940-1988 are equipped with smoke detectors throughout the egress corridors. Detection devices are also located in mechanical rooms and other hazardous spaces where there is a likelihood of fire without the benefit of occupants, and therefore a delay in notification. Pull stations are located at building egress doors. A new fire alarm system that is fully addressable and ADA compliant is desired for the building.

COMMUNICATIONS

Telephone

The telephone and cable tv services originate at the same utility pole as the electric service. Cable tv is run overhead to a service mast on the 1973 addition.

The telephone service comes into the building underground. The service appears to rise up in the crawl space below the 1963 addition and distributes from that point to various locations throughout the building.

The telephone system is an older model manufactured by Toshiba but appears to be in good condition. Telephone handsets are located throughout the building including the classrooms. Speakers are located throughout the corridors and in each classroom to accommodate building wide paging and announcements. Utilizing the school LAN is desired in a new communications system.

Master Clock System

The master clock system is a power line carrier type system and is manufactured by Simplex. This type of system sends clock correction signals over the building line voltage wiring. These systems have had reliability problems in the past are not typically used anymore. Either a hard wired system or a newer technology using GPS for clock correction is recommended to replace the existing system.

Video Distribution System

The building is wired for cable television and most classrooms are equipped with televisions. The televisions are equipped with stand-alone combination VCR and DVD players. This is a functional method for video distribution, but much more advanced systems are now available and should be considered as these provide more functionality as a learning tool for the teacher. Overhead video projectors or flat screen televisions might be considered to replace the existing televisions.

Security System – Intrusion Alarm, Access Control, CCTV

The building is equipped with a minimal intrusion alarm, card access and CCTV system, but still lacks the necessary full coverage of these systems. The addition of cameras, card readers, door control and other technology will assist in improving security of the perimeter and entrances.

Coordinated with the technology should be appropriate re-planning to locate staff and administration at the points of entry to observe people approaching and directing people through controlled vestibules prior to access into the school.

Technology

Each classroom has one computer, which is primarily for the teacher's use. This computer should interconnect to the TV or other technology and also to the Media Center from which to draw from the video library. There are typically at least two additional data drops in each classroom, which are intended for student use. These outlets and supporting power are installed in surface Wiremold raceways.

Data closets have been installed where space could be found. Some fiberoptic cable exists, primarily from the street to the servers in the Media Center. Being an older building, dedicated space for technology equipment was not envisioned or planned for. Present data closets typically are not very secure, lack environmental controls, and lack proper working space. Relocation and upgrades to the present data closets should be included in this project.

The District technical advisors should review any renovations to the existing technology infrastructure to ensure that the most advanced and flexible system is being installed. The resulting infrastructure should provide for both wired and wireless connectivity to the LAN, WAN and Internet.

ENERGY CONSERVATION MEASURES

When renovating the mechanical and electrical systems, different strategies may be applied to conserve energy and improve the environment inside the building. Some of the measures that might be considered are:

- Occupancy sensors to control the lighting and the ventilation
- Efficient lighting systems.
- Variable speed pumping that will adjust the amount of water circulated around the building based on the heating demand.
- Energy recovery units that will recover heat from the exhaust air and use it to condition the outside air before is introduced into the building.
- Demand Control Ventilation that will adjust the amount of unconditioned outside air based on the concentration of pollutants inside the building.
- Dual enthalpy economizers for air handling systems that will allow for cooling with outside air.

Energy Conservation Rebate Program

An updated energy conservation rebate program has been recently introduced by CL&P. This project would be evaluated for energy rebate incentives under the 'Energy Conscious Blueprint' program and looks to provide green technologies where possible. Energy conservation measures appropriate for this project might include lighting replacement using high performance T8 lamps and electronic ballasts, extended use of occupancy sensors for lighting and HVAC control, premium efficiency motors, high efficiency HVAC equipment, and VFD's to reduce motor electrical use.

Implementation of energy conservation measures will benefit the project financially in the short term as well as the long term. CL&P will pay a direct rebate to help offset the additional cost of installing energy conservation measures, and the Town will then benefit from lower operational costs over the life of the building.

CODE

Building Height and Area

The current configuration could not be built today based on its size, configuration with courtyard and lack of sprinklers, and construction materials. The 1994 addition is separated from the existing by "Fire Wall" construction, essentially creating two buildings. There are other means which divide the existing into smaller compartments by use of non-combustible materials (masonry walls, concrete floors), and doors across corridors tied into the wall system. Additionally penetrations of pipes, ducts, and conduit are sealed to prevent the spread of smoke and fire. Any proposed additions would further impact the existing and will require separations from the existing by means of construction materials, separation distance or combination of both.

By code adequate plumbing fixtures must be provided, which meet the buildings occupancy, in this case approx. 3,400 people. Typically the state recognizes the impractical nature of meeting this limit and allows for a modification which meets a more realistic number of occupants.

Accessibility

Currently this site provides some components of the ADA "accessible routes" from the parking to the building. Generally, accessibility throughout the building exists for persons with disabilities, which include two elevators and some ramps. There are still numerous issues, such as bleacher seating, access to/from the stage, workstation access, toilet room and toilet fixture access.

Further development of the accessible route is required throughout the building and site providing access to all program areas including playscapes, & ballfields, while provided emergency egress from the building without steps or stairs to the Public Way.

An area of refuge has been provided in the 1994 addition. Similar areas of refuge may be required in other locations, such as the 1973 elevator area, or the 1988 exit stair in the 5th/6th grade area depending upon accessibility of grade level access and number of exits required.

CONSTRUCTION BONUS REQUESTS

Salem Elementary School does not house any of the special programs eligible for a school construction bonus.

School Readiness:	C.G.S. 10-285a(e)--Not applicable.
Lighthouse Schools:	C.G.S. 10-285a(f)--Not applicable.
CHOICE:	C.G.S. 10-285a(g), as amended--Not applicable.
Full-day Kindergarten:	C.G.S. 10-285a(h)--Not applicable.
Reduced Class Size:	C.G.S. 10-285a(h)--Not applicable.
Regional Vo-Ag Center:	C.G.S. 10-65--Not applicable.
Interdistrict Magnet School:	C.G.S. 10-264h--Not applicable.
Interdistrict Cooperative School:	C.G.S. 10-158a--Not applicable.
Regional Special Education Center:	C.G.S. 10-76e--Not applicable.

COMMUNITY USES

Salem Elementary School will be designed to facilitate activities during the school hours, before and after school hours, and throughout the calendar year.

- Daycare care services may be provided in the multipurpose room before and after school
- PTO will use the media center and conference rooms for meetings before and after school; as well, note that they storage space within the building
- The Recreation Department will use the gymnasium for activities evenings when it is not being used by the students
- Boy and Girl Scout programs are run here after school as are several other youth clubs