REGIONAL SCHOOL DISTRICT 18
Lyme & Old Lyme

Facility Study – Consolidated School

August 15, 2021

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Existing Conditions Survey

1.0 Overview:

Lyme Consolidated School is located at 478 Hamburg Rd in Lyme, CT. The original school was built in 1934 and has gone through several renovations and additions throughout the years, it currently houses the towns K-5 students. The school is located in the northern portion of Lyme in a wooded area on a campus that also houses the Lyme Town Hall and Public Library, directly off route 156. The latest large-scale renovation / addition work was completed in 2000.

Original and subsequent additions to the school have been constructed out of a masonry design with CMU and Stone veneer finishes. The school is predominately a single-story design with the exception of the gymatorium and cafeteria which are stacked on top of each other. The school houses classrooms, a gymatorium, administrative offices, media center, and cafeteria. Due to its single story design the building is relatively spread out with corridors running long. The building is situated on a relatively flat portion of the site with minimal grade changes around the building and the site sloping down away from the western portion of the building leading to the Eightmile River.

Figure 1.01: Lyme Consolidated School Aerial Photograph

This report contains an architectural systems conditions analysis, accompanied by photographs, a building systems and infrastructure report, and finally a site and utilities evaluation.

A summary of the major concerns of the building, MEP systems, and site are as follows:

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Section 1: Architectural & Interiors

- Aging of exterior materials – CMU deterioration, control joint cracking
- Aged interior finishes including flooring and ceramic tile
- Aged classroom millwork
- Deteriorating exterior hollow metal door frames
- Layout not conducive to current secured entry standards
- Potential non-compliance with code requirements, egress, and plumbing fixtures
- Outdated technology and design

Section 2: Building Systems & Infrastructure

- Structural
- Mechanical
- Plumbing
- Electrical

Section 3: Site & Site Utilities

1.1 Exterior Wall & Roof Assembly:

Masonry: The original exterior wall assembly is a masonry backup with stone exterior veneer. Subsequent additions were designed an constructed with a CMU backup and CMU veneer. The CMU and stone has been maintained over the years and appears to be in good condition. There are some small areas of staining on the CMU façade and one exterior stair wall that is failing. At the original building where there is wood trim and wood exterior siding there is noticeable wear, chipping and pealing paint and overall aging of some the of the wood features.

Windows: The windows were replaced in a 2000 renovation project. They are double hung aluminum windows that are a more traditional design. The windows appear to be in good shape and have been maintained well. No cracked glazing was noticed or broken seals. The exterior aluminum flashing appears in good shape as well.

Wall Insulation: Based on the existing construction documents and age of the building the CMU and stone exterior wall assemblies appear to have no insulation within them and only minimal if any air cavities. The existing exterior wall construction does not meet current Energy Code insulation standards and should be addressed to make the building more energy efficient.

1.2 Roofing, Waterproofing, & Insulation:

Review of the insulation and envelope protection systems was limited to the visible external components. Many of these protective systems are installed within the walls, below grade, and within the roof construction interstitial space.

Roof Assembly: The roof is a mix of flat PVC roofing as well as sloped asphalt architectural shingles. Both roof systems appear to be in good condition with general maintenance and repairs occurring over time. Photovoltaic panels have also been installed on most flat portions of the roof as seen in the aerial image above.

Insulation: As mentioned above in the exterior wall section, the exterior walls on the existing building are a concern for their insulating value. It appears that a majority of the walls are masonry based with a stone veneer or CMU veneer. There appears to be minimal insulation if any and the mass of the wall is what is currently providing any sort of thermal barrier. Roof insulation has been added during the reroofing projects providing thermal coverage at the roof plane.

1.3 Doors, Windows & Hardware:

Interior doors appear to be in fair shape and are consistent throughout the building. Hardware and doors were updated as part of the 2000 project and are in reasonable shape. Exterior hollow metal doors have begun to weather and are showing signs of rusting and deterioration. The main entrance doors are an aluminum storefront system and appear to be in ok condition.

Interior Doors: Interior doors are generally wood with a veneer finish and ½ height vision windows, they appear to be in good condition. The doors were replaced during the 2000 renovation of the building. Doors appeared to still be in working order and functional. Door hardware appears to be fully functional and consistent with today's standards.

Exterior Doors: Exterior doors located at primary egress areas (Main Entrance, Corridors, etc.) are a mix of hollow metal and aluminum. The aluminum storefront systems have held up better than the hollow metal ones. The main entrance storefront is in fair condition with the frames and doors being in good condition but the sill and weatherstripping deteriorating or in poor condition. The classrooms have direct doors out to the exterior and many of these doors are showing signs of rust and deterioration. The rust is causing the paint to peal and the transom window above to fail.

Windows: As noted previously in the 1.1 Exterior Wall section the windows were replaced in 2000 and are generally in good condition and have been maintained well both from the inside and outside of the building. The building does not have central air conditioning however and window units have been installed in the windows for every exterior room. Since the windows weren't designed to house a window unit the sashes remain open providing a break in both the thermal envelope and acoustical separation from outside noise. Transom windows above the exterior doors and within the hollow metal frames are starting to fail as the hollow metal frames start to rust and deform.

1.4 Interior Finishes:

There are a wide variety of finishes at Lyme Consolidated School in a range of conditions. General maintenance of the building has been good throughout the years given the age of some of the finishes still in the building. Many areas are showing signs of wear and tear over the years and given the age and condition of most of the existing finishes, some consideration should be given to update areas of the building with new materials that would be consistent throughout the school

Flooring:

- *Vinyl Tile:* Much of the school is vinyl tile that appears to be in good condition. Many of the tiles have been maintained with minimal cracking or damage noted.
- *Ceramic Tile:* In lavatories, the ceramic tile floors also appear to be in good condition with no noticeable cracked or broken areas. Grout damage or discoloration was minimal and consistent with the age of the tile.
- *Rubber Floors:* The small stage area that is part of the gymnasium has a wood floor system. The wood floor generally looks to be in good shape and condition for the use that it receives.
- *Rubber Floor:* The gymnasium space just recently received a new rubber floor system. The flooring is in great condition with no visible issues or concerns.

- *Entrance Mat Systems:* As per the Connecticut high performance building standards, 3-part entrance mat systems are required to minimize particulars and maintain indoor air quality. Lyme Consolidated uses a mix of walk off matts as well as portable surface mats. The exterior of the main entrance is currently being redone and it is suggested to include the first part of the entrance mat system within this exterior design.

Wall Finishes: A majority of the wall finishes in the school is gypsum board. These walls have been painted and patched over the years and are predominantly in good condition. Outside corners of heavily trafficked areas showed increased damage and repair work. Other wall finishes include painted CMU which is in good condition but is more prone to exposed conduit and reworked exposed raceway.

Ceiling Systems: Ceiling products age more quickly than others and require consistent replacement. Often these systems are replaced completely with lighting upgrades or mechanical installations. The ceilings at Lyme Consolidated seem to generally be in good condition. As expected, there are some areas where the ceiling should be replaced such as stained and damaged tiles in portions of the classrooms, and corridors; this most likely has been caused by ongoing maintenance or IT work in the school. There also seem to be more dated ceiling tiles in certain spaces that might benefit from the new acoustic properties provided by the newer tile designs.

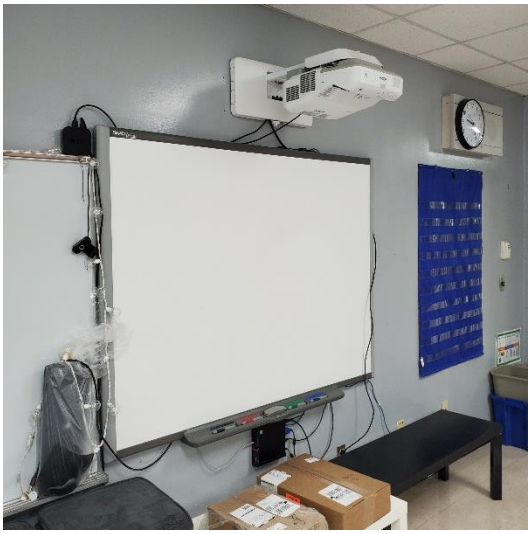
Interior Wood Casework:

The condition of the existing cabinets and millwork in the building appears to be in good condition. They have been maintained well over the years with minimal damage or broken pieces noted. Some rooms seem to have more dated pieces of millwork and cabinets that would benefit from being updated. These older pieces have worn over time, no longer meet current codes and do not function as they were originally designed.

1.5 Specialties & Equipment:

Visual Display Surfaces: The district maintenance and IT programs have updated the teaching walls in the classrooms to have smartboards and short throw projectors accessed by a desktop computer. As with all retrofits of a building this age, it is difficult to find a clean solution with power, data, and AV cables.

Instructional Surfaces: Classrooms are equipped with at minimum one marker board and tack board system. Some classrooms have additional marker board spaces that are utilized as supplemental instructional spaces.



1.0 INTRODUCTION

Lyme Consolidated School is located at 478 Hamburg Road (Route 156) in Lyme, Connecticut, and serves grades K-5. The school facility is located on a 6.0-acre parcel identified by the Town of Lyme as parcel I.D. 29-16, and is in an RU-80 Zone. The school site is accessed from a driveway at Hamburg Road located on the east side of the site. A diagram of the site is included herein as Figure 1.

This report presents the results of a facilities study that focused in exterior "site" elements of the school, and is organized into two main components as follows:

- Site operational conditions, including site ingress/egress, interior vehicle circulation, and general site security considerations; and
- Site physical plant, including utilities, driveways and parking facilities, pedestrian facilities, and exterior Handicapped Accessibility.

Code references utilized in this facilities study include the 2018 Connecticut State Building Code, and as referenced therein, the 2015 International Building Code (IBC) and International Code council (ICC) A117.1 (2019). It should be noted that this facility assessment did not include a complete code assessment of the "site" elements of the school facility. Rather, this assessment included a code "screening" with select items being evaluated. It is also important to note that these code items were compared to the codes currently in effect, and it is recognized that significant portions of the construction at the school pre-dated these codes. Ultimately, the local building official maintains authority for code items, and in the case of a public educational facility, the Connecticut State Department of Education, with regards to accessibility.

2.0 SITE OPERATIONAL CONDITIONS

2.1 Site Ingress/Egress and Interior Vehicle Circulation

Routine access to the school is from a single driveway at Hamburg Road located on the east side of the site. From this location, vehicles access parking (Lot 1 or Lot 2) or either of two one-way drop-off/pick up lanes (Drive and Drive 2) at the front of the school. Lot 1 is a 35-space lot with two rows of parking. Lot 2 is a 7-space lot in a single row. In Lot 2, vehicles park "nose-in" and exiting the easternmost parking spaces requires backing-out into Drive 1. Accessible parking spaces are in Lot 1 (two spaces) on its southern end.

Because school was not in session at the time of the facilities study, BSC interviewed school staff to gain an understanding of school bus and parent vehicle routes, including ingress/egress, circulation and student drop-off/pick-up. Buses discharge students in front of the school in Drive 1 then proceed through Lot 1 to exit the school. From that location, students access the building primarily at Door 3. Private vehicle drop-off is accomplished with vehicles using Drive 2, then proceeding through Lot 1 to exit the school. The location of Drive 2 requires pedestrians to cross Drive 1 to access the school. It is assumed that there are no walkers (non-bus/non drop-off).

2.2.1 Recommendations

The school facility, including the building, drives and parking areas, occupies most of the site. This, coupled with site topography, affords few options to reconfigure the drop-off/pick up lanes. School representatives indicate that additional parking is needed on the campus. Limited options exist to provide this additional parking, but the area of Lot 2 could be considered for expansion. This would require relocation of the generator. A second concern that was raised is the lack of vehicle queuing space during pick-up/drop-off. At times, vehicles are stopped on Hamburg Road as they wait to enter the school. Options for utilizing Lot 1 as a private vehicle queuing area could be explored. This would require modifications to expand Lot 1, which, due to the topography (sloping downward to the east, towards Hamburg Road) would be costly.

2.2 Site Security

BSC conducted a basic review of general site (exterior) security considerations such as site access controls, physical barriers, vehicle access/building proximity, lighting, surveillance systems, interior to exterior sight lines, vegetation, etc. The review did not include a review of the schools' School Security and Safety Plan or similar plans. The security checklist is included in the "Tables" section of this report.

3.0 SITE PHYSICAL PLANT

3.1 Utilities

BSC interviewed the Region 18 Director of Facilities and Technology to gain an understanding of utility services currently in use at the school, including on-site utilities and directly-associated off-site utilities This included information regarding the nature of these facilities and if any associated deficiencies have been noted. The school is served by the following utilities:

- Electricity: Local utility provider
- Back-Up Electricity: On-site generator (liquid fuel).
- Gas: None.
- Propane: None.
- Water Supply - Regional School District 18 wells (2 wells). These wells also supply the Lyme Town Hall (located to the east of the school) via a dedicated line from the Lyme Consolidated School building.
- Sanitary Sewage: Two subsurface disposal system on-site (north and east).
- Telephone: Local utility provider.
- Data: Local utility provider.
- Storm Drainage: On-Site system, "traditional" stormwater management, includes connection to State system in Hamburg Road.

Based on the information received from Region 18, no deficiencies in "site" utility systems serving the school facility have been identified. No obvious deficiencies or apparent failures (e.g. damage, obvious signs of failure, etc.) were observed at the time of the site visits portion of the study.

Site lighting appeared to be in a state of good repair. No photometric study was done to assess exterior lighting levels.

It was noted that the emergency generator, located on the east side of the building adjacent to Lot 2, is not protected by bollards and is not surrounded by any type of protective enclosure. The pad-mounted electrical transformer is located on the south side of the school and is surrounded by a chain link fence. It was also noted that tires have been placed around the two water supply wells. It is recommended that these tires be replaced with tamperproof steel protective enclosures that protect the wellhead, but do not provide opportunities for animal nesting.

3.2 Driveways and Parking Facilities

BSC conducted a general visual assessment of the existing driveways and parking areas to review 1) the condition of bituminous pavement, and 2) the condition of associated ancillary features such as pavement markings and signage. Photographs

3.2.1 Bituminous Pavement

To document the existing condition of the bituminous pavement, BSC utilized an approach to the assessment that focused on three major indicators: 1) surface defects, 2) surface deformations, and 3) cracking. The table below summarizes these pavement defects along with the specific nature of each defect that was considered.

Pavement Defect Classifications

Surface Defects	Ravelling and loss of surface aggregate
	Flushing
Cracking	Block Cracking
	Fatigue (Alligator) Cracking
	Longitudinal (Linear) Cracks
	Transverse Cracks
	Edge Cracks
	Slippage Cracks
	Joint Reflection Cracks
Surface Distortion or Deformation	Rippling and Shoving
	Rutting
	Distortion/Depression
	Potholes

Based on subjective observations guided by the defined types of pavement defects, the bituminous pavement was assigned into one of five categories, based on the observed conditions:

- "Satisfactory" (best condition).
- "Fair" (functional, with only minor repairs, such as crack sealing, required to maintain condition).
- "Poor" (functional, but repairs are needed to maintain condition or restore the pavement to "Fair" condition. Without repairs, the pavement will quickly deteriorate to "Serious" condition).
- "Serious" (functional, but generally beyond the point where basic repairs can restore the pavement to "Poor" or "Fair" condition. Repairs will only serve to maintain function; plan for pavement replacement).
- "Failed" (pavement is considered non-functional).

BSC segregated the access drives and parking areas into defined areas, which are depicted on Figure 1. The results of the pavement assessment are indicated in the table below. Photographs that support the pavement assessment are included in the "Photographs" section of this report.

Pavement Condition Summary

Area	Classification	Commentary
Drive 1	Fair	Crack repairs recommended.
Drive 2	Fair	Crack repairs recommended; Cut/repair large crack at south end.
Lot 1	Fair	Crack repairs recommended
Lot 2	Fair	Crack repairs recommended

3.2.1.1 Findings

Overall, the pavement condition on the campus can be classified in the "Fair" category at present. Globally, the pavement exhibits signs of weathering (loss of asphalt binder material over time) and is considered "aged". In general, few pavement surface defects were noted. The surface defects that were noted are localized and typical for older pavement systems.

A combination of transverse cracking and longitudinal cracking was noted to varying degrees in all areas observed. These cracks are indicative of the pavement material's age. Some block cracking was also observed, which is also a function of the pavement's age. Pavement seams that have cracked at the edges of patching, presumably for utility installations, was also observed in several locations (e.g. Lot 2 and Drive 1). Some areas of localized pavement deterioration/fatigue cracking were noted, including locations where block cracking, longitudinal crack or transverse crack propagation has occurred. In these areas, it is probable

that progressive block cracking has allowed water to penetrate the base, resulting in localized structural compromise, which in-turn causes further pavement degradation/cracking. Based on the overall condition of the pavement at the school, these areas are not indicative of a global base failure.

Some of the cracks observed have been treated with asphaltic crack sealer while other areas of cracking have not been treated. It was also noted that some of the previously treated/sealed cracks exhibit signs of additional crack expansion/sealing failure, including the presence of grassy vegetation. An example of this is a large crack at the southern end of Drive 2.

In general, very few surface deformations were noted. Again, this suggests that global structural failure of the pavement system's granular base is not an issue.

3.2.1.2 Recommendations

The life cycle of bituminous pavement systems in not linear. Depending on design life (unknown) and preventive maintenance, a typical pavement condition trend is for a slight deterioration following initial construction followed by a levelling off period, where the deterioration condition slows relative to elapsed time. The period of slower deterioration is when most of the desired condition, use, and life of the pavement system occurs. At the end of the "leveling off" period, there is a transition point, after which the deterioration of the pavement will accelerate towards a "failed" state. Typically, if preventive maintenance is performed before the transition point is reached, the life and use of the pavement can be extended within the leveling off period. Also, any major restoration work, such as overlay, that is done before a pavement deteriorates below the transition point usually costs substantially less than would be required if the rehabilitation work is delayed, due to the better condition of the pavement system.

Because the pavement system is approaching or at the transition point, the following actions are recommended to monitor and maintain the pavement system at the school to extend its useful life to the extent practicable.

- A Routine Maintenance Program should be implemented and revisited on (at least) an annual basis. This maintenance program should incorporate the following:

  1) Monitoring of cracks.
  2) Frequent and consistent removal of vegetation and debris from cracks.
  3) Removal of debris (sand, etc.) from the pavement surface.
  4) Crack sealing.
  5) Surface sealing; (select areas or full coverage).

  The primary goal of the maintenance program is to minimize the infiltration of water into the pavement base material (as noted above). Cracks offer numerous routes for water entry into the base section. In general, water will flow directly into cracks that are over 1/8-inch in width. Cracks below this width also allow water intrusion, primarily through a "pumping" mechanism, that is essentially created when water is forced into the cracks by the passage of vehicle tires. Once water enters the pavement base, freeze-thaw cycles impose stresses on the pavement matrix that result in crack propagation and additional crack formation.
- Funding should be allocated for localized repairs (removal and patching) when warranted. These localized repairs should target areas where localized pavement deterioration/fatigue cracking is significant, including locations where block cracking, longitudinal crack or

transverse crack propagation has occurred, and where this deterioration has resulted in potholes.

- Coordination with the recommendations of other aspects of this facilities study should be noted to avoid expending maintenance efforts on pavement areas that may be subject to reconfiguration or replacement as a result of other repair or mitigation efforts.

3.2.1.3 Service Life

The pavement system is considered "aged". In general, with ongoing monitoring of pavement conditions and implementation of a consistent maintenance program, the pavement system on the campus could be extended beyond 2025. If maintenance measures are not undertaken, a noticeable acceleration in pavement deterioration will likely occur within the next two to three years as water penetrates the cracks and freeze-thaw cycles accelerate pavement deterioration.

Well-constructed asphalt pavement can typically last 20 years before requiring a major rehabilitation or full-depth reconstruction. Surface treatments or thin overlays every 7-10 years can extend a pavement system well beyond that range.

3.2.2 Pavement Markings and Signage

Pavement markings and signage were generally observed across the school site. These facilities include crosswalks, stop bars, vehicular signs (stop, do not enter, etc.) and parking signs (accessible parking signs, student drop-off/pick-up signs, etc.). Select example photographs of these facilities are included in the "Photographs" section of this report.

3.2.2.1 Pavement Markings

Overall, pavement markings are in "Fair" condition. All pavement markings show signs of wear and/or discoloration, to varying degrees, with some being affected by crack sealing material. Pavement markings at accessible parking spaces or generally in "Satisfactory" condition, although as indicated herein, as marked, are not code compliant (refer to Section 3.4).

3.2.2.2 Signage

Overall, site signage is in "Fair" condition, although some signs are heavily faded or on posts that are damaged. All signs observed were metal sheeting on metal posts. Signs are mounted on a combination of U-channel and tube-type posts. All posts are ground penetration type configurations. No breakaway-type mounts were observed. Sign mounting height varied across the site. Several accessible parking signs are not mounted at the correct height (refer to Section 3.4). It should be noted that sign retroreflectivity testing was not conducted during the study.

3.2.2.3 Recommendations

Based on the anticipated rate of deterioration, funding should be allocated for the re-painting of existing pavement markings within 3 to 5 years. Directional arrow pavement markings should be added at the school's main driveway, and at Drive 1 and Drive 2 to clarify the intended one-way direction of vehicle movement.

Site signage that is heavily faded or on damaged posts should be replaced (for example, on the north side of the site driveway). Other signs should be monitored for degradation and replaced as needed. The District should also select a standard sign type, mounting type, and post type to facilitate upkeep

and maintenance. It is recommended that all signs be aluminum backing with retroreflective sign face sheeting, in conformance with the Manual on Uniform Traffic Control Devices (MUTCD). It is recommended that signposts be galvanized steel, either U-channel steel or square steel tube, with all sign mounting systems utilizing anti-theft measures. Sign location and mounting heights should conform with MUTCD or Connecticut State Building Code as applicable.

A pavement markings and signage maintenance program should be established to create a defined framework for the ongoing monitoring, maintenance of these important facilities. This program will also provide a vehicle through which funding can be incrementally allocated to maintain these facilities in a state of good repair. The pavement markings and signage maintenance program should generally include the following:

- Inventory of all pavement markings and signage, including type and location.
- Conducting annual condition inspections of pavement markings and signage.
- Conducting bi-annual retroreflectivity inspections of signs using industry standards.
- Maintenance-related activities/corrective actions, including sign cleaning, vegetation control, anti-theft measures and sign support adjustments.
- Maintenance-related activities/corrective actions, including those done in response to damaged, deteriorated, or obscured pavement markings or missing, damaged, deteriorated, or obscured signs.

3.3 Pedestrian Facilities

BSC conducted a general visual assessment of exterior "site" sidewalks, walkways, plazas and stairs to document their existing condition. BSC segregated these facilities into defined areas based on their location relative to the school building and/or key building features, which are depicted on Figure 1. Photographs that support the assessment of pedestrian facilities are included in the "Photographs" section of this report. Many aspects of the pedestrian facilities assessment directly relate to handicapped accessibility, which is address in Section 3.4 of this report.

The assessment classified the existing condition of the various walking surfaces into one of three primary categories, based on the observed condition of the surface material:

1) "Acceptable"
2) "Needs Repair"
3) "Needs Replacement"

The sidewalks and walkways at the school are constructed of bituminous pavement. Overall, the pavement condition of the sidewalks and walkways can be classified in the "Acceptable" category at present. Globally, the pavement material exhibits signs of weathering (loss of asphalt binder material over time). Transverse cracking was noted to varying degrees in all areas observed. These cracks are indicative of the pavement material's age. In general, few pavement surface defects were noted. A summary of pedestrian facilities assessed is provided in the table below.

Pedestrian Facilities Condition Summary

Walking Area	Condition	Commentary
1-Front Sidewalk	Acceptable	- Clean and repair cracks as needed. -Monitor for cracks; monitor for settlement.
2-Sidewalk at Lot 1.	Acceptable	- Clean and repair cracks as needed. - Monitor for cracks; monitor for settlement.
3-Walkway on north side of school.	Acceptable	- Clean and repair cracks as needed. - Monitor for cracks; monitor for settlement.

4-Walkways along west and south side of school.	Acceptable	- Clean and repair cracks as needed. - Monitor for cracks; monitor for settlement.
5-Walkway to recreations areas/athletic field.	Acceptable	- Clean and repair cracks as needed. - Monitor for cracks; monitor for settlement.
Site Stair 1	Acceptable	- No top landing. - Handrail does not continue to slope for the depth of one tread beyond the bott om riser (IBC 1014.6). - Recommend detailed condition and code inspection of stair and rails.
Site Stair 2	Acceptable	- No top landing. - Handrail does not continue to slope for the depth of one tread beyond the bottom riser (IBC 1014.6). - Recommend detailed condition and code inspection of stair and rails.
Stair 1 “S1”	Physical material condition Acceptable (see commentary)	- New August 2021 - Handrail does not continue to slope for the depth of one tread beyond the bottom riser (IBC 1014.6). - Recommend detailed condition and code inspection of stair and rails.
Stair 2 “S2”	Physical material condition Acceptable (see commentary)	- Main entrance to original building. - No handrails. - Recommend detailed condition and code inspection of stair and rails.
Stair 3 “S3”	Stairs need repair or replacement; Railings need Replacement	- Spalling concrete on top landing. - Riser height differences exceed 3/8 inches. - Handrails are rusted; welded connections show cracks. - Top handrail (east) extension is less than 12 inches (IBC 1014.6). - Recommend detailed condition and code inspection of stair and rails.
Stair 4 “S4”	Stairs are part of building system.	- Recommend detailed condition and code inspection of stair and rails by licensed architect.
Stair 5 “S5”	Stairs are part of building system.	- Recommend detailed condition and code inspection of stair and rails by licensed architect.
Stair 6 “S6”	Stairs are part of building system.	- Recommend detailed condition and code inspection of stair and rails by licensed architect.
Stair 7 “S7”	Stairs are part of building system.	- South railing is damaged. - Recommend detailed condition and code inspection of stair and rails by licensed architect.

At such time the District determines that the sidewalks and walkways have reached the end of their serviceable life, it is recommended that some replacement facilities be constructed with concrete (for example, the higher capacity front sidewalk “1”). Although higher in cost, concrete is a highly durable and stable material that can have a serviceable life beyond 20 years of installed and maintained properly. The sidewalks could be replaced in a phased manner, with a prioritization based on condition (and projected condition over time) and use volume.

The stair systems reviewed appear to be not in compliance with 2018 Connecticut State Building Code, specific to the items indicated in the table. IBC and ANSI A117.1 contain numerous items applicable to stairs and handrails. This study included a code “screening” and not a complete code assessment of the stair systems. Based on the findings, it is recommended that a complete code inspection of stairs and rails be conducted so the District can have a full understanding of their status relative to all applicable code items.

3.4 Exterior Handicapped Accessibility

BSC conducted a general assessment of exterior "site" handicapped accessibility at the Site relative to the 2018 Connecticut State Building Code. BSC conducted a visual assessment of each area along with notations and photo-documentation. The assessment included the following:

- Assessment of accessible parking spaces counts.
- Assessment of accessible parking spaces.
- Assessment of passenger loading zones.
- Assessment of "Accessible Routes". A select number (sample set) of longitudinal and cross slopes were measured using a digital level ("smart-level").
- Assessment of ramp systems.

3.4.1 Accessible Parking Spaces - Counts

The site contains a total of 42 parking spaces distributed between Lot 1 (35) and Lot 2 (7). Key code provisions considered during the facilities study relative to the number of accessible parking spaces include:

- 2018 Connecticut State Building Code, 2015 International Building Code, Section 1106: Where more than one parking facility is provided on a site, the number of parking spaces required to be accessible is calculated separately for each parking facility.
- 2018 Connecticut State Building Code, 2015 International Building Code, Section 1106.1: The number of accessible parking spaces required is based on the number of parking spaces provided.
- 2018 Connecticut State Building Code, 2015 International Building Code Section 1106.5, (CT Amended): For every six or fraction of six accessible parking spaces, at least one shall be a van-accessible parking space.
- 2018 Connecticut State Building Code, 2015 International Building Code, Section 1106.6: Accessible parking spaces shall be located on the shortest accessible route of travel from adjacent parking to an accessible building entrance. In parking facilities that do not serve a particular building, accessible parking spaces shall be located on the shortest route to an accessible pedestrian entrance to the parking facility. Where buildings have multiple accessible entrances with adjacent parking, accessible parking spaces shall be dispersed and located near the accessible entrances.

A summary of parking spaces and required accessible parking spaces is summarized as follows:

Lot	Space Count	Required Accessible Parking Spaces, Car (2015 IBC 1106.1)	Required Accessible Parking Spaces, Van (CTSBC Amd 1106.5)	Actual Accessible Parking Spaces, Car	Actual Accessible Parking Spaces, Van	Notes
1	35	1	1	2	0	At south end of Lot 1.
2	7	See notes	See notes	0	0	No accessible route to building from this lot.

3.4.2 Accessible Parking Spaces - Configuration

The following table provides a summary of the evaluation of accessible parking spaces on the site. Tables with specific data summarized in comparison with the 2018 Connecticut State Building Code, 2015 International Building Code and ICC A117.1 are provided in the "Tables" section of this report.

Lot	Accessible Parking Space Number	Designation	Does the Space Comply with 2018 CTSB?	Notes
1	1(e)	PC	No	- No van space. - Insufficient Access Aisle width for shared configuration (car and van require 96 inches minimum). - No connection to Accessible Route. Access Aisle ends at curb. - Incorrect signage. - Slope exceeds 1:48 (2%).
1	2(w)	PC	No	No van space. - Insufficient Access Aisle width for shared configuration (car and van require 96 inches minimum). - No connection to Accessible Route. Access Aisle ends at curb. - Incorrect signage. - Slope exceeds 1:48 (2%).

Notes:
1) Progression of multiple spaces in numbered sequence denoted by compass heading (n/s/e/w).
2) "PC" denotes passenger car accessible parking space; "V" denotes van accessible parking space.
3) "NC" denotes a non-code item but noted for best management.

3.4.3 Passenger Loading Zones

The site contains one passenger loading zone, identified on Figure 1 as "PL 1". Passenger loading zone PL 1 is located at the front of the school, towards its southern end. Based on its location, it appears to provide access to Door 3.

Key provisions 2018 Connecticut State Building Code considered during the facilities study relative to passenger loading zones includes Section 1106 of the 2015 International Building Code and Section 503 of ICC A117.1. A table that summarize the specific elements of these codes and findings at passenger loading zone PL1 is included in the "Tables" section of this report. PL1 appears to be non-complaint relative to the codes referenced.

3.4.4 Accessible Routes

A screening was conducted of Accessible Routes based on the location of handicapped parking, passenger loading zones, curb ramps and building access/egress ramp systems. The screening was completed relative to key components of ICC A117.1, Chapter 4 and 2018 Connecticut State Building Code amendments. As a screening, a complete code review was not conducted, particularly with regard to key slopes. Rather, a select number (sample set) of longitudinal and cross slopes were measured using a digital level ("smart-level"). BSC segregated these facilities into defined areas based on their location relative to the school building and/or key building features, which are depicted on Figure 1. Photographs that support the assessment of pedestrian facilities are included in the "Photographs" section of this report. A summary of Accessible Routes assessed is provided in the table below.

Accessible Routes Screening Summary

Accessible Route	Commentary
1-From accessible parking to Door 1 or Door 3.	- Access Aisle ends at driveway- No connection to Accessible Route (ICC A117.1 502.4.1). - Curb ramp at PL1 running slope exceeds 1/12 (8.33%) (ICC A117.1 405.2). - Curb ramp does not have a top landing (ICC A117.1 406.7).
2-From Drive 1 to Door 1 or Door 3.	- Curb ramp in front sidewalk running slope exceeds 1/12 (8.33%) (ICC A117.1 405.2). - Curb ramp does not have a top landing (ICC A117.1 406.7).
2-From PL1 to Door 3.	- PL1 not compliant. See Passenger Loading Zone table. - Curb ramp running slope exceeds 1/12 (8.33%) (ICC A117.1 405.2). - Curb ramp does not have a landing (ICC A117.1 406.7).
3- R1 at front of building.	- Ramp handrails do not extend horizontally above the landing 12 inches minimum beyond the top and bottom of ramp run (ICC A117.1 505.10.1).
4- R2 at Doors 15 and 16.	- Ramp does not have edge protection complying with ICC A117.1 405.9. - Ramp handrails do not extend horizontally above the landing 12 inches minimum beyond the top and bottom of ramp run (ICC A117.1 505.10.1).
Exterior areas for assisted rescue	Exterior areas for assisted rescue should be confirmed and identified to comply with IBC 1009.7 which requires that these areas be accessed by an accessible route from the area served. Where the exit discharge does not include an accessible route from an exit located on the level of exit discharge to a public way, an exterior area of assisted rescue should be confirmed and identified on the associated exterior landing.
Public Access	- Curb ramps at Lot 1 crosswalk running slope exceeds 1/12 (8.33%) (ICC A117.1 405.2) and ramps do not have a top landing (ICC A117.1 406.7). - No Site arrival points per CT Bld Amd Code 1104.1, "At least one accessible route within the site shall be provided from public transportation stops, accessible parking and accessible passenger loading zones, and public streets or sidewalks to the accessible building entrance served."

3.4.5 Recommendations

It is recommended that a comprehensive review of accessible parking spaces and their corresponding accessible routes be conducted. The assessment should include an evaluation of available space to provide an accessible route to the front sidewalk. Passenger loading zone PL1 and the curb ramp on the front sidewalk should be reconstructed with the correct slopes and landings. It is also recommended that a detialed inspection of all pedestrian ramps/railing be accessed for condition and code compliance. Additionally, an accounting of accessible routes, including those that are associated with egress only and exterior areas for assisted rescue, should be conducted so a detailed assessment can be conducted to determine all areas of non-compliance. This would allow for a corrective strategy to be developed commensurate with the appropriate funding. Additionally, directional signage for accessibility should be provided to direct pedestrian to accessible building access points.

3.5 Recreation/Play Areas

3.5.1 General Assessment

A general overview was conducted of the playground/play areas. This did not include any type of playground inspection or assessment of play equipment. A summary of the overview is provided below.

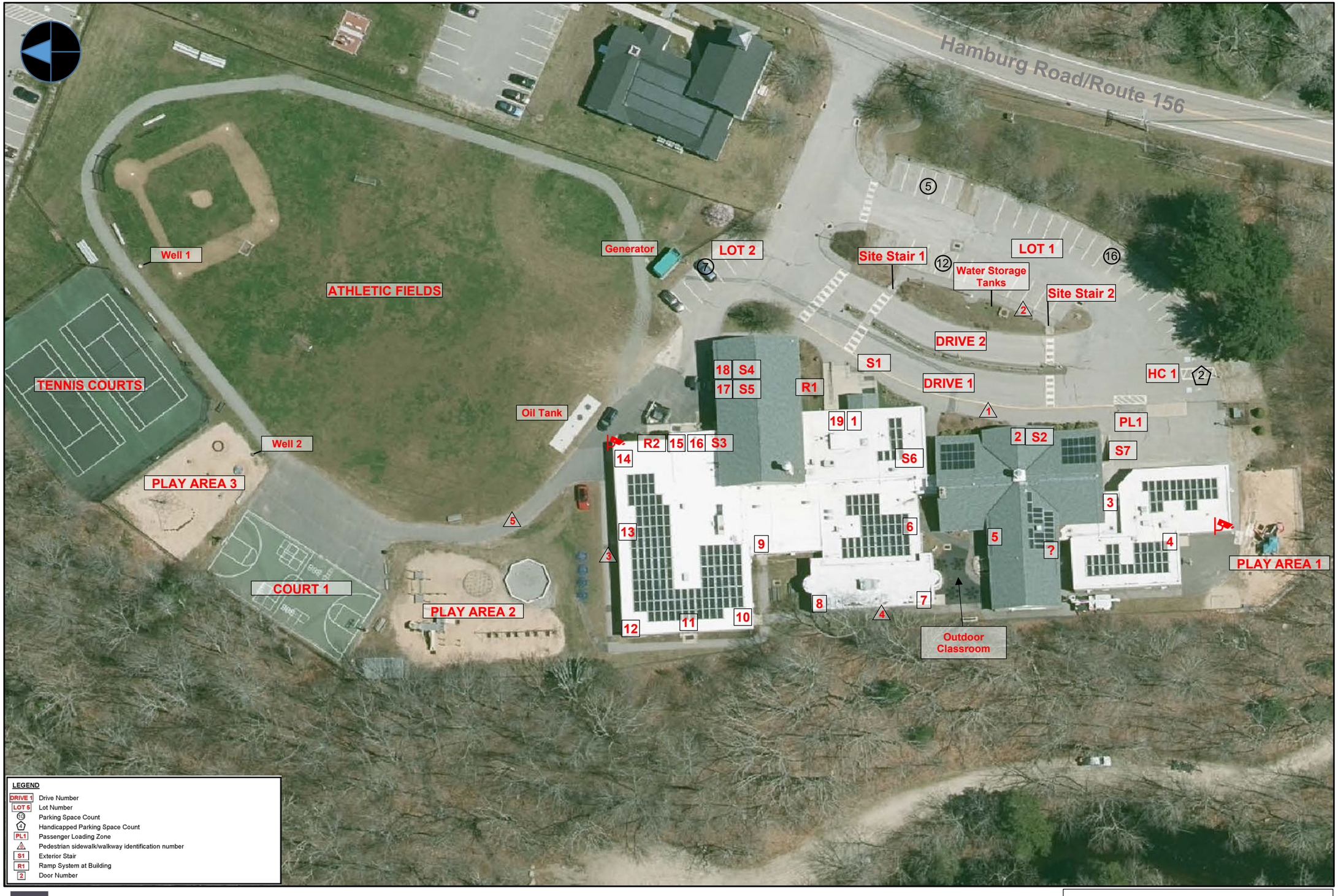
Area	Commentary
Play Area 1	- Located at south end of school building. - Recommend inspection of play equipment by a qualified inspector. - Recommend de-compact/dress/replace playground mulch to applicable standards as needed.

Play Area 2	- Located at north end of school building. - Recommend inspection of play equipment by a qualified inspector. - Recommend de-compact/dress/replace playground mulch to applicable standards as needed.
Play Area 3	- Recommend inspection of play equipment by a qualified inspector. - Recommend de-compact/dress/replace playground mulch to applicable standards as needed. - See notes regarding well (Section 3.1). Provide separation between play area and well.
Court 1	- Clean and repair cracks. - Plan for resurfacing and re-striping.
Tennis Courts	-Under construction at tie of site visit.
Baseball Field	- Remove vegetative growth within infield and base paths. - Spectator seating (bleachers) does not include accessible viewing area. - See notes regarding well (Section 3.1). - Monitor for animal damage.
Multi-Purpose Field	- Monitor for animal damage.

3.5.2 Accessibility

School Districts are "public entities" as defined by Title II. 42 U.S.C. § 12131(1) and are therefore subject to the requirements of Title II of the Americans with Disabilities Act of 1990 (ADA). This requirement extends to playgrounds and their associated access for children with disabilities under Title II of the ADA, 42 U.S.C. §§ 12131–12134, and the United States Department of Justice's implementing regulation, 28 C.F.R. Part 35. Bituminous walkway "5" was spot-checked for running slope and cross slope and appears to comply with ICC A117.1 Section 403.3 in this regard. A second bituminous walkway originating at the northeast corner of the school building near Door 12 has slopes that exceed the maximum allowed under ICC A117.1 Section 403.3. It is recommended that the District conduct a review of their specific obligations in all regards to the school's outdoor facilities, and conduct a detailed assessment of accessible routes/accessibility relative the school's recreation/play areas to determine all areas of non-compliance. This would allow for a corrective strategy to be developed commensurate with the appropriate funding.

FIGURES



BSC GROUP
Transportation ▪ Energy ▪ Land Development

FIGURE 1 - SITE DIAGRAM

Region 18/Lyme-Old Lyme School
Lyme Consolidated School
478 Hamburg Road, Lyme, CT

PHOTOGRAPHS

Bituminous Pavement

Main driveway intersection Hamburg Road, looking west.

Lot 2 looking north. Generator at edge of Lot 2 visible in background with no vehicle protection.

Lot 1 looking north. Various cracks visible in pavement.

Drive 2 looking northeast.

Drive 2 at south pedestrian crossing, large crack visible extending through pavement and bituminous curbs.

Drive 2 looking south at pedestrian crossing.

Example of previously repaired crack in bituminous pavement.

Example of localized fatigue cracking.

Block cracking with additional cracks propagating.

Typical pavement markings.

Typical site sign.

Damaged signs along entrance drive, looking west.

Pedestrian Facilities

Bituminous sidewalk along the school's front (looking south). Accessible parking and PL1 visible beyond.

Bituminous sidewalk along west side of Lot 1 (looking. south).

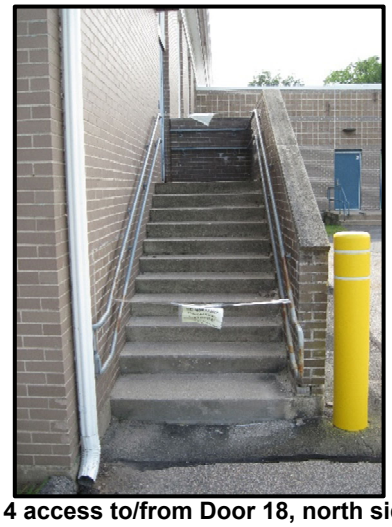
Typical bituminous walkway along west side of building.

Typical bituminous walkway system providing access at various locations, west side of building.

Bituminous walkway providing access to Play Area 2 and 3, Court 1, tennis courts and athletic fields.

Stair 1 and Ramp 1 at front of school, under construction at time of visit.

Stair 3 at Doors 15 and 15, on east side of school building. "Ramp 2" visible at right.



Stair 4 access to/from Door 18, north side of gymnasium.

Stair 3, top handrail extension (north rail).

Stair 6 providing access to basement area. Same configuration as Stair 5 (opposite side of this wing).

Site stairway "Stair 1" looking east. Stairway lacks a landing complying with 2015 IBC 1011.6.

Site stairway "Stair 2" looking northeast. Stairway lacks a landing complying with 2015 IBC 1011.6.

Accessibility

Accessible parking "HC1" at the south end of Lot 1. Two spaces at his location.

Passenger laoding zone "PL1" at front of school. See Passenger loading zone sheets in "Tables".

Curb ramp at crosswalk, north end of Lot 1. Ramp is not in compliance with ICC A117.1, 406 (opposing ramp same).

Curb ramp at front of school along bus lane. Ramp is not in compliance with ICC A117.1, 406.

Ramp R2 providing access to Doors 15 and 16.

Outdoor seating area, west side of school. Accessible Routes should be confirmed for exterior areas and doors.


141"
73½"
169"
2.6%
1.3%
2.4%
1.9%
E
S
W
N
Lyme School "HC1"

Recreation

Play Area 1 looking east.

Play Area 2 looking northeast. Bituminous walkway does not comply with ICC A117.1 403.3 (slopes).

Play Area 3 looking north. Well No. 2 visible on right. New tennis court construction visible in background.

Basketball court "Court 1" looking north.

Cracks in basketball court surface. Previous repairs apparent.

Gravel track at baseball field. Bleacher system, 1 of 2.

TABLES

TABLE 1 - SITE SECURITY CHECKLIST

Location: Lyme Consolidated School

Address: 478 Hamburg Road (RT 156), Lyme, CT

Date:

	Item	Yes	No	Not Applicable	Not Assessed	Notes
Grounds and Building Exterior						
1	Graffiti is promptly documented/photographed then removed after discovery.				X	
2	All trash and recycling dumpsters are located outside a child's travel area and equipped with plastic covers in place of steel covers that could cause injury.		X			Located near building access points.
3	All trash and recycling dumpsters are either enclosed in a designated service area or surrounded on three sides by a high wall, preferably a see-through, climbing-resistant fence, and provided with a securable gate.	X				Chain link fence with privacy slats.
4	All trash and recycling dumpsters and their enclosures are positioned so that they cannot be used as ladders for gaining access to the school roof.	X				
5	A marquee or sign clearly indicating the school's name is visible from the road.	X				
6	The exterior numbers are clearly visible from a distance of at least 50'.	X				Un-numbered doors should be numbered/labeled.
7	Access to the roof is restricted (no climbable plantings or architecture).	X				
8	Speed limits are posted at all entrances.		X			
9	Walkways are in good repair.	X				See discussion of pedestrian facilities
10	Walkways are cleared of snow and ice during periods of inclement weather.				X	
11	Covered walkways and adjoining posts, structures, walls, planters, or other building features do not provide climbing access to adjoining windows, roofs, or other upper-level areas.			X		
12	Covered walkways and their surroundings are adequately lit to promote visual surveillance while in use.			X		
13	Windows in occupied areas of the building overlook walkways for natural surveillance.	X				Some windows
14	Exterior entrance canopies and walkways are engineered to withstand high winds and seismic activity.				X	
15	Fire hydrants are clearly visible.		X			None
16	Grounds are fenced in appropriate areas.	X				Generally open campus; some fencing.
17	Grounds are adequately lit and school boundaries clearly marked.	X				
18	Grounds are visually separated from adjacent properties.	X				Few areas; generally open
19	Gates, if present, are secured when not in use.			X		
20	The perimeter of the school building is monitored by direct visual sitelines or surveillance cameras.	X				Cameras at two locations.
21	Mechanical, electrical, and other equipment on ground level is surrounded by a protective enclosure.		X			Transformer enclosed; generator not enclosed.
22	Electrical panel access doors are locked.	X				
23	Landscape surrounding the school is tidy, trimmed, and structured to enhance visibility of windows, doors, etc. and minimize chance of suspicious visitors hiding.		X			Some landscaping is obscuring windows and provides hiding space (vicinity of Doors 9 and 10).

SITE SECURITY CHECKLIST (CONT.)

	Item	Yes	No	Not Applicable	Not Assessed	Notes
24	Basement windows are protected from unauthorized entry by security grills or window well covers.			X		Basement is accessed via stairs/doors.
25	Access beneath portables is restricted with grates, fencing, siding, or other material, which such minimal spaces are suitable for hiding people, contraband, weapons, or incendiary or explosive devices.			X		No portables.
26	All portables are secured to their location; consistent with local wind resistance requirements and building regulation.			X		
27	All portables are labeled/numbered.			X		
28	Areas surrounding portables are adequately lighted.			X		
29	Portables are surrounded by fencing requiring use of the school's main entry.			X		
30	All exterior doors have non-removable hinge pins.	X	X			Some doors do not.
31	Exterior doors are sized and arranged to reduce congestion and avoid crowding.	X				
32	Exterior doors have narrow windows, sidelights, fish-eye viewers, or cameras to permit seeing who is on the exterior side.		X			Most doors are configured with windows (some are not). Most are large "full view" style, including upper and lower panes.
33	Window and sidelights are sized and located so that if they are broken, vandals cannot reach through and open a door from the inside.		X			Most doors are configured with windows (some are not). Most are large "full view" style, including upper and lower panes.
34	Exterior doors are airtight. Airtight doors not only improve energy efficiency but they retard interior contamination during a hazardous chemical or other harmful outdoor release.				X	
35	Exterior doors are designed and certified to resist thrown and wind-blown objects.				X	
	Buses and Parking					
36	The bus loading zone is visible from the main office or monitored by staff.	X				Appears to be visible from office.
37	Unattended buses do not create a visual obstacle or hinder emergency access.				X	
38	Fire zones, bus unloading and drop off zones are clearly marked.	X				
39	Student drop off and pick up areas are clearly marked.		X			
40	Staff members are required to obtain parking decals or some other form of identification to authorize parking on school property.				X	
41	High School students are required to obtain parking decals or some other form of identification to authorize parking on school property.			X		
42	Someone is assigned to check for unregistered vehicles in parking areas.				X	
43	Access points for parking lots are gated.		X			
44	Parking lots are bordered by a wall, chain link fence, or some physical barrier.		X			
45	Parking lot signs direct staff, students, and visitors to designated parking areas.		X			
46	Parking lots can be viewed from the building or monitored by security.	X	X			Partial visibility due to topography.
47	Bicycle parking can be viewed from the building or monitored by security.			X		No bicycle parking noted.

SITE SECURITY CHECKLIST (CONT.)

	Item	Yes	No	Not Applicable	Not Assessed	Notes
	Play and Outdoor Recreation Areas					Play Area 1, 2,3, Court 1, Tennis Courts and athletic fields.
48	Recreation/practice areas are fenced to restrict unauthorized access.		X			Open (all); Fence along woodlines.
49	Fences are in good condition and without gaps.	X				
50	Low-hanging tree branches are removed from the playground area.			X		
51	Painted and preserved surfaces are in good and safe condition.			X		None observed.
52	Playground surfaces are free of excess water buildup.	X				None observed.
53	Sandboxes are clean of debris and covered at night to prevent access by animals.			X		None observed.
54	Unsafe and/or obsolete playground equipment has been removed from activity use. (i.e. old wooden teeter-totters, wooden swing seats, high un-railed metal slides, dome-style jungle gyms, etc.)			X	X	
55	All equipment is anchored firmly, including footings below ground surface which are not exposed.				X	
56	Playground attendants (teachers/staff) are clearly designated (vests, etc.), and first aid kits are on hand during recess hours.				X	
57	Landscape around field areas, playground, and outdoor recreation areas minimize potential for injury/hiding.	X				
58	Vehicular access, except emergency vehicles, is restricted around play area.		X			Play Area 2,3, Court 1 and athletic fields open.
59	Play apparatus are free from sharp edges, and protruding or loose bolts or screws.				X	
60	Playground edging is well-maintained and away from fall area of equipment.			X		
61	Ground cover is adequate to provide protection from falls.			X		
62	Ground cover is free from holes and worn trenches.			X		
63	Outside drinking fountains are vandal-resistant by design, such as being wall-mounted and made of durable materials.			X		Recommend protection of water wells (2)
64	Hard-surface play areas are located far enough from classrooms to protect windows and avoid being a classroom distraction.	X				
65	Benches/bleachers are well maintained (painted with no signs of rust or splinters)	X				

TABLE 2 - DOOR CHECKLIST

Location: Lyme Consolidated School
Address: 478 Hamburg Road, Lyme, CT
Date:
By: Kurt Prochorena

		Door		Landing				
DOORI.D.	**Accessible Route (Y/N)**	**Door Type**	**Width (Inches)**	**Dim A (Inches)**	**Dim B (Inches)**	**Running Slope %**	**Cross Slope %**	**NOTES**
1	Y	a	35	35	60+	1.8	0.7	Two sets of double doors at main entrance (measurement is each door); windows. At R1 and S1.
2	N	a	36	66	60+	NM	NM	Double doors at original main entrance. Stairs.
3	Y	a	35	35+	60+	0.7	0.1	Concrete landing; double doors w/two handles L&R top and bottom glass.
4	Y	a	35	26	60+	1.8	0.3	Single door; exterior approach handle right; glass top and bottom.
5	Y	a	36	33	60+	1.9	0.1	Single door; exterior approach handle right; glass top; two side windows.
6	Unknown	a	36	10	NM	0.7	0.3	"Faculty Room"; Direct to bit walkway; exterior lock with static handle; no glass. If egress landing is insufficient.
7	Y	d	35	26	60+	1.9	0.1	Single door; exterior approach handle right; glass top and bottom.
8	Y	d	35	25	60+	1.6	0.1	Single door; exterior approach handle left; glass top and bottom. 90-Degree turn to path; windows (top/bottom); not compliant with 4042.3.2 "c"
9	Y	a	34	25	60+	2.4	0.2	Single door; exterior approach handle left; no glass. Blocked by vegetation.
10	Y	a	34	29	60+	2.2	0.2	Single door; exterior approach handle right; no glass.
11	Y	a	38.5	54	60+	2	0.5	Double doors (measurement is each door) w/handle each door; windows.
12		a	34	27	60+	2.2	0.4	Single door; exterior approach handle left; no glass. Deterioration of sill at door, differential exceeds 1/4-inch.
13	Y	a	34	26	60+	2	0.2	Single door; exterior approach handle left; no glass. Significant deterioration at edge of concerete landing.
14	Y	a	34	27	60+	2.3	0.3	Single door; exterior approach handle left; no glass.
15	Y	a	35	60+	60+	0.7	0.6	Double doors (measurement is each door) w/handle each door; windows. At S3 and R2.
16	Y	a	35	11	60+	0.7	0.3	Single door; exterior approach handle left; no glass. At S3 and R2.
17		NA	36					Single door; exterior approach handle right; no glass. Bottom of stairs/basement access.
18		a	39	32	52.5	0.2	0.1	Single door; exterior approach handle left; no glass. At top of exterior stair; Gymnasium.
19		a	41		60+			Two sets of double doors at main entrance (measurement is each door); no windows. At S1 and R1.
Blank		a	35	40+	60+	2.3	0.3	No label. Single door; exterior approach handle left; no glass. Sidelight.

Notes:
1) For doors/landings that are not part of an Accessible Route (to the door/from the door) refer to 2015 IBC 1010.1.5 and 1010.1.6.
2) "EO" indicates egress only door type - Compliance with ICCA.117.1 404 not required at exterior; landing must be 44 inches in path of travel.
3) Door Types per ICC A.117.1 404- a,b,c,d,e,f,g or Recessed (R) a,b, c.
4) For Dimension "A" and "B" refer to ICC A 117.1 Figures 404.2.3.3, 404.2.3.5, and 404.2.5. For landings that are not part of an Accessible Route, refer to 2015 IBC 1010.1.5 and 1010.1.6 for landings.
5) "DD" denotes double door. Where no center jamb is present, record total width. Where center jamb is present, record width of each door.
6) Dimension A is cross dimension; Dimension B is path of travel dimension.

TABLE 3

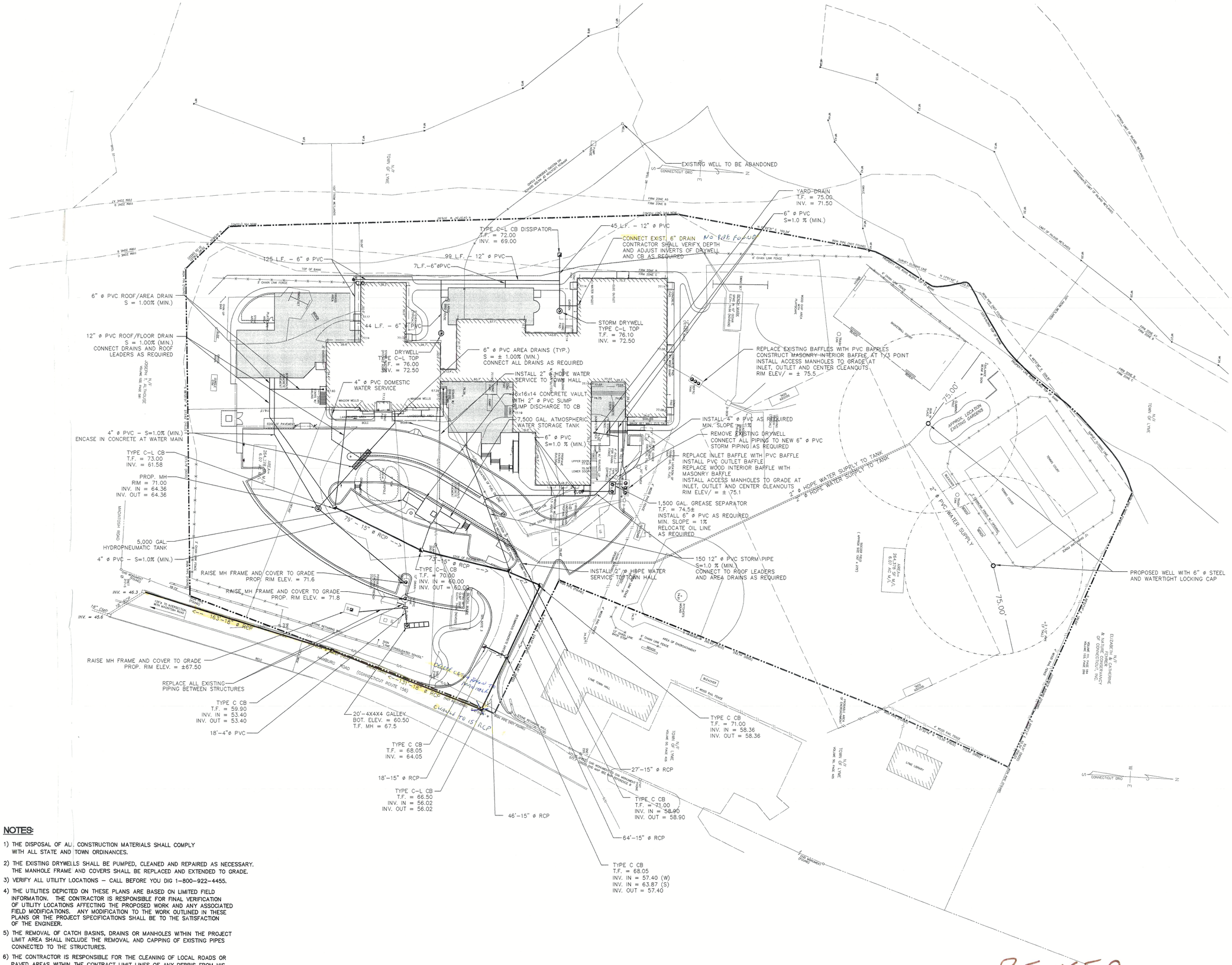
Passenger Loading Zones
References:
2018 Connecticut Building Code
2015 International Building Code
Accessible Useable Buildings and Facilities ICC A117.1-2009

Location: Lyme Consolidated School
Address: 478 Hamburg Road, Lyme, CT
Date: August 2021
By: Kurt Prochorena

Location: Passenger Loading Zone 1 (PL1), Main Entrance

Item	Requirements	IBC 2015 Code Reference	Code Requirement	Complies?	Notes
Passenger Loading Zones	Accessible	1106.7	Passenger loading zones shall be accessible.	See ICC A117.1	
Item	**Requirements**	**ICC A117.1- 2009 Code Reference**	**Code Requirement**	**Complies?**	**Notes**
Vehicle Pull-up Space Size	Dimensions	503.2	Passenger loading zones shall provide a vehicular pull-up space **96 inches minimum in width and 20 feet minimum in length**.	(Yes) / No	1) Complies but not ideal - located within travel way of bus drop; 2) Potential vehicle conflict with backout from accessible parking.
Access Aisle	Access Aisles	503.3	Passenger loading zones shall have an adjacent access aisle complying with Section 503.3.	Present? (Yes) / No	See 503.3 this sheet
Access Aisle, Location	Location	503.3.1	Access aisles shall adjoin an accessible route. Access aisles shall not overlap the vehicular way.	Yes (No)	
Access Aisle, width	Width, Dimension	503.3.2	Access aisles serving vehicle pull-up spaces shall be **60 inches minimum in width**.	(Yes) / No	60 inches wide
Access Aisle, length	Length, Dimension	503.3.3	Access aisles shall be **20 feet minimum in length**.	Yes / (No)	218 inches long
Access Aisle, marking	Markings	503.3.4	Access aisles shall be marked so as to discourage parking in them.	(Yes) / No	White cross hatch
Access Aisle, floor surfaces	Slope	503.4 1	Vehicle pull-up spaces and access aisles serving them shall comply with Section 302 and shall have **slopes not steeper than 1:48 (2%)**.	(Yes) / No	Vehicle space and access aisle less than 2%; Curb ramp not compliant.
Access Aisle, floor surfaces	Level	503.4 2	Access aisles shall be at the same level as the vehicle pull-up space they serve.	(Yes) / No	Bituminous pavement, continuous.
Floor Surfaces	Surface type	302.1	Floor surfaces shall be stable, firm, and slip resistant, and shall comply with Section 302. Changes in level in floor surfaces shall comply with Section 303.	(Yes) / No	Bituminous pavement.
Openings	Dimensions	302.3	Openings in floor surfaces shall be of a size that does not permit the passage of a 1/2 inch diameter sphere, except as allowed in Sections 407.4.3, 408.4.3, 409.4.3, 410.4, and 805.10. Elongated openings shall be placed so that the long dimension is perpendicular to the predominant direction of travel.	Yes No (NA)	

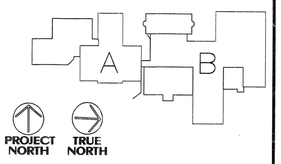
APPENDICES



NOTES:

1) THE DISPOSAL OF ALL CONSTRUCTION MATERIALS SHALL COMPLY WITH ALL STATE AND TOWN ORDINANCES.
2) THE EXISTING DRYWELLS SHALL BE PUMPED, CLEANED AND REPAIRED AS NECESSARY. THE MANHOLE FRAME AND COVERS SHALL BE REPLACED AND EXTENDED TO GRADE.
3) VERIFY ALL UTILITY LOCATIONS – CALL BEFORE YOU DIG 1–800–922–4455.
4) THE UTILITIES DEPICTED ON THESE PLANS ARE BASED ON LIMITED FIELD INFORMATION. THE CONTRACTOR IS RESPONSIBLE FOR FINAL VERIFICATION OF UTILITY LOCATIONS AFFECTING THE PROPOSED WORK AND ANY ASSOCIATED FIELD MODIFICATIONS. ANY MODIFICATION TO THE WORK OUTLINED IN THESE PLANS OR THE PROJECT SPECIFICATIONS SHALL BE TO THE SATISFACTION OF THE ENGINEER.
5) THE REMOVAL OF CATCH BASINS, DRAINS OR MANHOLES WITHIN THE PROJECT LIMIT AREA SHALL INCLUDE THE REMOVAL AND CAPPING OF EXISTING PIPES CONNECTED TO THE STRUCTURES.
6) THE CONTRACTOR IS RESPONSIBLE FOR THE CLEANING OF LOCAL ROADS OR PAVED AREAS WITHIN THE CONTRACT LIMIT LINES OF ANY DEBRIS FROM HIS CONSTRUCTION ACTIVITIES. WATER FOR DUST CONTROL SHALL BE CONTINUOUSLY AVAILABLE AND SHALL BE APPLIED FOR DUST CONTROL AS ORDERED BY THE ENGINEER. ANY REQUIRED CLEANING OF ROADS OR DUST CONTROL SHALL BE AT THE CONTRACTORS EXPENSE.
7) THE CONTRACTOR SHALL INSTALL REPAIR AND REPLACE (AT HIS OWN EXPENSE) ANY SEDIMENTATION/EROSION CONTROLS AS ORDERED IN ADDITION TO THOSE SHOWN ON THE PLANS. SEE BELOW.

REUISED



KEY PLAN

FOR ALL ABBREVIATIONS, SYMBOL LEGENDS GENERAL NOTES AND WALL TYPES SEE SHEETS RO.01 & RO.02

REVISIONS

DATE	MARK	DESCRIPTION
AUGUST 28, 2000		ISSUED FOR STATE DEPT. OF EDUCATION REVIEW
DECEMBER 20, 2000		ISSUED FOR BIDDING AND CONSTRUCTION PURPOSES

ADDITIONS AND RENOVATIONS TO LYME CONSOLIDATED SCHOOL

ROUTE 156
LYME,
CONNECTICUT
06371

STATE PROJ. #218-030EA

Macchi Engineers
44 Gillett Street Phone: (860) 549-6190
Hartford, Connecticut 06105

KAESTLE BOOS ASSOCIATES, INC. ARCHITECTS

DRAWN BY: SPN
CHECKED BY:
SCALE: 1"=50'

SITE UTILITY PLAN

PROJECT NO.: 00010
DRAWING NO.: SU-1
DATE: AUGUST 16, 2000

BACK COVER

MACCHI ENGINEERS, LLC

Diversified Structural and Civil Engineering Services

MICHAEL PLICKYS, P.E.
JOHN BROCHU, P.E.
DOUGLAS CAMP, P.E.

July 28, 2021

Ms. Angela Cahill, AIA
QuisenberryArcariMalik,LLC
195 Scott Swamp Road
Farmington, CT 06032

Re: Structural Engineering Evaluation
Consolidated School
478 Hamburg Road
Lyme, CT 06371

Dear Angela,

Pursuant to your request, on 7/23/21 Macchi Engineers conducted a cursory visual inspection of the above referenced facility. The purpose of our inspection was to determine the general overall structural condition of the facility and provide recommendations for repairs where required. Our inspection included walking the facility along the interior and exterior. No finishes were removed during our inspection, therefore only those areas exposed to view were inspected. Our work also included a review of the available structural drawings.

Existing Conditions:

The original building is comprised of a single-story timber structure with an attic area that mainly houses mechanical equipment. Upon entering the attic area, it was observed that the original roof structure was reframed with heavy timber. The Town of Lyme stated that the original structure was constructed around 1934, but no existing drawings were available. Additions were made to the original building in 2002 which included a single-story classroom wing to the west, a media center to the north, as well as administrative offices between the original building and the gymnasium. Said additions were constructed with steel wide flange members and steel columns. Roof decking consists of metal roof deck with an EPDM roofing membrane everywhere besides the original structure and gymnasium. The original structure and gymnasium have an asphaltic shingle roof. Photovoltaic panels are located on the original structure as well as each addition.

Field Observations:

Our inspection indicates that overall, the existing building structures are in good overall condition. We did not observe any signs of significant structural distress in the perimeter walls, exterior walls, interior finishes, floors, or roofs. About an inch of water was observed in the basement area of the original structure which is likely due to recent heavy rains. Exterior

Ms. Angela Cahill, AIA
QA+M

July 28, 2021

stairs adjacent to the gymnasium were severally deteriorated and require replacement. See Photo 1. Moisture infiltration has caused multiple brick spalls and efflorescence staining which also can be seen in Photo 1. Several control joints caulking appeared to be starting to crack and dry rotted. Also, several locations along the exterior walls required repointing of the CMU. The original structure's exterior walls were comprised of stone and mortar. The exterior walls appeared to be in satisfactory condition with no signs of distress. Note that we were unable to access the roofs to review the condition of the roofing systems.

There should be limited removal of existing lateral elements, and expansion joints should be provided between any existing buildings and proposed additions.

If you have any questions, please do not hesitate to call.

Sincerely,
MACCHI ENGINEERS, LLC

Johnathan A Hurlburt, P.E.
Structural Engineer
JobsAct\Lyme Schools\Consolidated School\structural evaluation.doc

Encl.

PHOTO 1: 7/23/2021 - Exterior stairs at gymnasium

MECHANICAL, ELECTRICAL, PLUMBING AND FIRE PROTECTION NARRATIVE

APPLICABLE CODES AND STANDARDS

The mechanical, electrical, plumbing, and fire protection systems will be reviewed in conformance with the requirements of the following codes and regulations and all applicable local authority requirements.

- 2018 Connecticut State Building Code
- 2015 International Building Code (IBC)
- 2015 International Existing Building Code (IEBC)
- 2015 International Mechanical Code (IMC)
- 2015 International Energy Conservation Code (IECC)
- Portions of the 2015 International Fire Code (IFC)
- Illuminating Engineering Society Lighting Handbook (IESNA), 10th Edition.
- NFPA, Latest Versions.
- ASHRAE 90.1.

EXECUTIVE SUMMARY

The hot water heating plant for the facility was installed in 2000 and is in fair condition. The majority of mechanical rooftop equipment and exhaust fans are due for replacement, while the piping and ductwork within the building are in fair condition. Domestic water heaters are due for replacement. Fire sprinkler piping and systems are in fair condition but only serve limited areas. Several issues with the building will be identified below.

Electrical infrastructure is in good operating condition overall. The majority of systems are well maintained with the exception of some upgrades which are recommended below.

MECHANICAL SYSTEMS

Heat Generation

1. Heating for the building is generated by two oil fired boilers manufactured by HB Smith. The boilers are 20 years old and nearing their approximately 25 year useful life. Regular maintenance appears to be occurring based on maintenance notes on the units.

2. Hot water circulation pumps are base mounted constant speed end suction pumps which appear to be regularly maintained. Any changes to the hot water heating plant should include upgrade to newer pumps with variable speed drives for energy efficiency.

3. Hot water system uses a propylene / glycol water solution.

4. Oil for the boiler and water heater systems is circulated through a duplex Webster oil pump set. This appears to be 20 years old and nearing its useful life expectancy.

5. Hot water piping for the building exists both in tunnels and above ceilings. The majority of piping was replaced 20 years ago and is fair condition. Heating piping has a useful life of 40-50 years which this may be coming close to.

Heating Hot Water Boiler Plant

Piping in Tunnel

Space Heating

1. Heating throughout the occupied portions of the building is provided by a combination of unit ventilators, perimeter radiation, cabinet unit heaters and rooftop heating and ventilating units. The majority of the indoor heating devices are in fair condition, but will need to be replaced in the near future. The outdoor rooftop units will be addressed in a later section.

Unit Ventilator Serving a Classroom

Ventilation / Exhaust Systems

1. Five rooftop units, unit ventilators and multiple exhaust fans provide ventilation to the building. RTU-5 serves the gym and is new. The other four rooftop units serve administration offices, special education spaces and the media center and include cooling. These units are over 20 years old and appear to be in poor condition. Casings for each unit are rusted and showing signs of wear. A typical rooftop unit has an approximately 20 year useful life which these are beyond. In addition, the motor efficiency, filter quality, and other features are not meeting today's standard for schools. Lastly, cooling or dehumidification systems are strongly recommended for modern schools.

2. Ventilation of the classrooms and toilet rooms is served by multiple exhaust fans in the attic. The fans are over 20 years old and appear to be in fair to poor condition. A typical fan has an approximately 20 year useful life which these are beyond.

Exhaust Fans in the Attic

Cooling

1. Certain areas of the building are served by packaged rooftop units; refer to Ventilation section above. In addition, several split AC units are located throughout the school to serve IT closets, specific classrooms, etc. These units appeared to be in fair condition and operational at the time of survey.

2. Window AC units are evident throughout the school. A significant amount of energy is being used on localized units without timed controls which can run 24/7 if not carefully monitored. Also, maintenance costs are utilized to maintain, install, and store these window units. It is strongly recommended that future projects consider a more substantial cooling system with better efficiency and maintainability.

Controls

1. Controls were observed to generally be within the 20 year age dating back to the previous renovation. This included Direct Digital Control (DDC) capabilities for all equipment with additional manual override switches in some areas. Numerous control cabinets serving the CT Controls Systems were observed to be in fair condition. Controls software changes regularly and should be reviewed with the CT Controls to ensure the latest security and efficiency upgrades are being applied. Controls hardware, devices, and wiring generally has a 20-30 year useful life. Any future renovations should include replacement of controls hardware and upgrade to a newer DDC platform. Existing systems can be integrated into the new platform if partial renovations occur.

ELECTRICAL SYSTEMS

Electrical Service

1. The Main Service Switch and distribution section is rated at 1600A, 120/208V, 3-phase, and is manufactured by General Electric. The main switchgear is approximately 20 years old and is in good condition. All panelboards and conduits within the electrical room appear to be clean, dry, and well labeled. Switchgear which is well maintained has a useful life of 30-50 years or more.

Main Switchboard at Electrical Room

2. The PV on the roof is generated at 480V and is stepped down in voltage to 208V by a single transformer in the basement.

3. No lightning protection was observed in the facility.

4. There is an emergency generator on property between the school and Town Hall which serves both buildings. Power from the generator enters the school and is controlled by a Cummins automatic transfer switch. The output of the transfer switch is an emergency distribution panel. The transfer switch and panelboards are in good condition.

Emergency Generator

Electrical Distribution

1. The Main Service Switch and distribution section feed branch panels located throughout the building. Feeders are in conduit/EMT. Branch circuits are in armored cable, where these could be observed. Wiring within the attic and tunnels appears to be in conduit and is well protected.

2. Most of the electrical equipment (branch panelboards, disconnect switches, motor starters, etc.) appears to be dating back to the renovation 20 years ago. Panelboards are located throughout the building in concealed and exposed areas. All panelboards directories which could be observed appeared to be well labeled.

Lighting

1. Interior lighting in classrooms, corridors and office areas is generally LED type. Lighting control in classrooms is a combination of wall switches and occupancy sensor controls. The majority of the building uses recessed 2 x 2 and 2 x 4 LED fixtures installed in ACT ceilings.

2. All lighting observed in the facility appears to be energy efficient LED and in good condition.

3. Emergency lighting appears to be accomplished with lighting on the generator.

4. Exterior building mounted light fixtures and site lighting appear to be LED and in good condition.

Emergency Lighting

1. The use of exit signage in most areas of the building appeared to be compliant with current codes. Much of the exit signage is made up of backlit, code compliant, LED lighted signs with battery backup.

PLUMBING SYSTEMS

Plumbing Services

1. Domestic Water is served from a well pump on site and storage tanks/filters/ pressure controls in the basement. The storage tanks are 20 years old and nearing their approximately 25 year useful life.

Well Water Storage Tanks

2. Storm:
    a. Much of the building's storm water lands on pitched roofs and is captured by an exterior gutter system. No centralized storm piping was observed in the field or indicated on existing drawings.

Plumbing Fixtures

1. Plumbing fixtures within the building are generally of the 20 year age from the previous renovation. Fixtures appeared to be clean, well maintained, and in fair condition with a 30 year useful life.
2. In general plumbing fixtures are as follows:
    - Water Closets in gang bathrooms are wall mounted, vitreous china with manual flush valves.
    - Urinals are wall mounted, vitreous china with manual flush valves.
    - Lavatories serving single use bathrooms and in gang bathrooms are wall mounted vitreous china with manual faucets. Tailpiece and trap are missing ADA compliant insulation and guard in some locations.
    - Electric drinking fountains are surface mounted and appear to be in good condition.
    - Classroom sinks are top mount stainless steel, with manual faucets. These fixtures appear to be in good condition.

Water Cooler with Bottle Filler

Domestic Hot Water Systems

1. Domestic hot water is generated by two oil fired water heaters manufactured by AO Smith. The water heaters are 20 years old and nearing their approximately 25 year useful life. Regular maintenance appears to be occurring
2. Two hot water mixing stations exist in this room. One serves general hot water at 110 degrees, and the other serves kitchen hot water at 140 degrees. Each service is served by a hot water recirculation pump which appear to be in fair condition.

Fuel Fired Water Heaters

FIRE PROTECTION SYSTEMS

Limited Area Sprinkler

1. Limited area sprinklers are installed at various storage rooms in the building. The sprinklers are fed off the cold water piping with a backflow prevention device, gate valve with tamper switch and flow switch connected to the fire alarm system.

END OF REPORT