Jan 28, 2019

New Fairfield Schools – Facility Assessment
Consolidated School

DRAFT SUMMARY
The following represent the categories of greatest concern from our preliminary findings:

Consolidated School:

SITE:

1. Inadequate, overcrowded parking & poor paving conditions
2. Inadequate site drainage
3. Inadequate site lighting
4. Lack of ADA site circulation compliance around the building
5. Inadequate well system

BUILDING:

6. Lack of energy efficiency of exterior walls and glazing, spaces are cold and drafty (lack of wall and ceiling insulation)
7. Cracking & leaks between building additions, structural issues in kindergarten area, and active roof leaks
8. Aging of exterior materials including concrete, masonry, roofing
9. Aged toilet rooms including finishes, partitions & fixtures
10. Kitchen & servery space and equipment inadequate
11. Stage is accessible via a lift
12. Elevator (1989) needs upgrade, ADA compliance an issue due to layout of building
13. Lack of door pockets for classrooms results in egress issues in some corridors
14. Aged interior finishes including flooring, ceramic tile, wood paneling
15. Lack of natural light in cafeteria and ELC reading center
16. Circuitous paths, illogical layout, and many re-purposed spaces not conducive to educational facility design
17. Lack of collaboration, meeting and storage space
18. Potential non-compliance with code requirements for attic / ceiling, egress and plumbing fixtures
19. Groundwater issues cause flooding, including in a lower level electrical switch area

MEP SYSTEMS:

20. Building is not fully sprinklered
21. HVAC system for cafeteria & auditorium is end of life
22. Unit ventilators are too loud for learning and office environments
23. Central battery system needs replacement

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NEW FAIRFIELD CONSOLIDATED SCHOOL
MEP EXISTING CONDITIONS REPORT

January 22, 2019

FIRE PROTECTION SYSTEM

There is no existing fire protection system in the building. The installation of fire sprinklers throughout the building is recommended. The system could either be supplied by an on-site storage and pump system or, ideally, the building should be fed by a municipal water service if feasible.

PLUMBING SYSTEMS

The sanitary system in the building discharges to an on-site sewage ejector that pumps the waste to the septic system at Meeting House Hill Elementary School.

Domestic water is provided by an on-site well system. The well system not only serves Consolidated School but also serves the church on the abutting property and Meeting House Hill Elementary School. The well system consists of two drilled wells and two bladder-type well tanks located in the small pumphouse building near Gillotti Road. A 3" water service is provided from the pumphouse to the lower level of the building. The 3" water service connects to a partially buried 2,000-gallon hydropneumatic tank that was installed during the 2000 renovation and additions project. Although the tank and well system are in good condition, the storage tank does not provide enough capacity to contain a full day supply of water and inherently poses the potential threat of catastrophic failure. Although plans were prepared in 2017 to address these concerns by providing an additional 3,000-gallons on-site storage and converting the existing hydropneumatic tank to an atmospheric tank, this project was not implemented. Ideally, the building should be fed by a municipal water service if feasible.

Domestic hot water is provided by a PVI combination direct oil-fired and indirect water heater installed during the 2000 renovation and additions project. Although the water heater is in good condition, its operation is compromised during the warmer months as there appears to be insufficient draft at the existing masonry chimney to properly vent the combustion products. The building has a master thermostatic mixing valve on the domestic hot water with two recirculation pumps that maintain the hot water supply to the fixtures that
are in good condition.

Plumbing fixtures are a mixture of various vintages, but all are well maintained and in good working order.

No problems with the domestic water, storm water and sanitary sewer piping were reported.

HVAC SYSTEMS

The existing heating system is comprised of two Smith HE oil-fired boilers. One boiler was installed during the 2000 renovations and additions project and the other was installed in 2010. Both are in very good condition. Three sets of redundant pumps supply heating water to the building; one set was installed

during the 2000 renovations and additions project and the other two appear vintage to their prior building additions. Although the two older sets of pumps are well maintained, as evidence by their longevity, they should be replaced. Fuel oil is supplied by a 10,000-gallon underground tank, installed during the 2000 additions and renovations project.
Classrooms are heated by a combination of hydronic baseboard radiation and unit ventilators. In addition to heating, the unit ventilators supply fresh air to the classrooms which is then exhausted by common roof mounted exhaust fan systems. The baseboard radiation the original 1940's building and late 1940's addition along with all the unit ventilators, were installed during the 2000 renovations and additions project and are in very good condition, however the unit ventilators are inherently noisy. Although the baseboard radiation in the 1956 and 1968 additions are vintage to their construction, they are in good condition.

The gymnasium, multipurpose room, cafeteria and are heated and ventilated by central station air handling units. The unit serving the gymnasium was installed during the 2000 renovations and additions project and is in good condition. The units serving the multipurpose room and cafeteria are original to the 1968 building construction. Although well maintained, the units are operating well beyond their service life and should be replaced.

Air conditioning in the building is limited to the main office, lobby and library. The direct-expansion split systems that provide cooling to these areas were installed during the 2000 renovations and additions project and are in good condition.

HVAC equipment is controlled by a direct digital control system that was installed during the 2000 additions and renovations project. Although a hardware and software upgrade is recommended, the system is fully functional.

ELECTRICAL SYSTEMS

The Main Electrical Service is a 1200A, 208/120V service with a Bolt-Loc main disconnect switch and a circuit breaker type distribution section. The service was installed during the 2000 renovation and is in good condition. Distribution panelboards throughout the building are of various vintages, corresponding with the year of building addition. The original 1940 panelboards were replaced during the 2000 renovation. The panelboards are well maintained, and no problems were noted with the existing equipment.

Lighting throughout the building is either recently installed LED lighting fixtures, or fluorescent fixtures with LED retrofit lamps. These upgrades are recent, and no problems were noted with the lighting fixtures. Emergency lighting is achieved via dual-head battery units, with the exception of the 1968 addition where recessed gimbal emergency lights are supplied via a central battery system. Although the central battery system is well maintained, it is beyond its service life. It is recommended that emergency lighting in the 1968 addition be upgraded to self-contained emergency battery units.

The building's Fire Alarm System is a fully addressable system with detection throughout the building that was installed during the 2000 renovation. The system includes voice evacuation. The system appears to be in good working condition.

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Consolidated School
Existing Site Conditions Report

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PROJECT NO.:	70529.00
DATE:	January 21, 2019

Eastern Parking Lot (parent pick-up) and Pedestrian Entrance

Asphalt and curbing: The main access drive that provides the core means of ingress and egress to the main entrance of the school for parents is in fair condition and looks recently established. (Figure 1) Minor longitudinal cracking is present which is an onset to alligator (fatigue) cracking. Alligator cracking can be seen in localized areas throughout the parking area. Repeated vehicular loading and lack of drainage in these areas can lead to moisture infiltration which can worsen the issue. Pavement is patched for new drainage structures.


Figure 1

Sidewalks and ADA accessibility: Overall, sidewalks leading up to the school are in fair condition with some cracking present. Concrete expands and shrinks with changes in moisture and temperature. Expansion joints used to prevent cracking are present, but additional joints could have been used to reduce possible cracking. There are no detectable warning strips embedded in the concrete accessibility ramps which presents a hazard to impaired pedestrians. Expansion joints against the building needs replacement. (Figure 2) Additionally, although handicap ramps are present they are not code compliant.


Figure 2

General drainage and structures: There are no apparent drainage issues directly in front of the main entrance. Connecting all the school's roof leaders directly into the storm water system would be the most ideal situation to avoid drainage issues. Some sediment has built up around depressions at catch basins in the parking lot. (Figure 3) Built up sediment and depressions adjacent basins make the system inefficient. The landscape planters abutting the walkway have a stone band near the foundation of the school with a geotextile fabric. This stone band allows water to recharge the water table. It is not ideal to guide water against structures, however, this is more desirable that pooling against the building. Drainage at the planters are not sufficient due to of excess sediment discharging from them. (Figure 4)


Figure 3


Figure 4

Sight distances and circulation: Overall, the current parking lot is designed with acute angles with a one-way drive aisle. These angles create sight visibility challenges

which are particularly dangerous at an elementary school where students are not as visible.

Figure 5

Utilities: Utilities in this area include but, are not limited to: sewer, fiber optic cable, gas, electric underground, and a separated maintenance shed for electric equipment.

Features and Aesthetics: Singular benches are located at the main entrance alongside a flag pole. Landscaping retaining walls surrounding this area are in good condition with an aesthetically pleasing stone façade. Weep holes at the retaining walls are working properly. To the north, steel bollards with a chain link rail delineate the parking area from the playground area. The timber guided rail at the eastern side of the parking lot is in poor condition due to possible collisions with vehicles. (Figure 5). There is significant parking lot lighting however, there is no pedestrian lighting. The lights appear to be functional but would likely require replacement as part of a renovate-as-new project or as a project requiring site redevelopment to address the drop-off and circulation issues.

Figure 6

Landscaping: Turf is in fair condition. Plantings are used in elevated planters and planting beds with plastic edging. Plantings are sparse around the main entrance. Existing plantings in this area include but, are not limited to: *Euonymus fortune (*wintercreeper euonymus), *Cornus florida* (flowering dogwood), *Pinus strobus* (white pine), *Juniperus horizontalis* (creeping juniper), *Sciadopitys verticillata* (umbrella pine), *Thuja occidentalis* (American arborvitae), etc.

Figure 7

Terraced Courtyard and Main Pedestrian Entrance

Sidewalks and ADA accessibility: Overall, sidewalks leading up to entrances are in fair condition with cracking present. There are multiple concrete accessibility ramps which allows access to impaired pedestrians.

General drainage and structures: There are no apparent drainage issues within the vicinity of the courtyard. A stone band abuts the foundation of the school, allowing water to recharge the water table. It is not ideal to guide water against structures, however, this is more desirable that pooling against the building. Not all roof leaders are connected directly into the system. Some unconnected roof leaders outlet directly onto the concrete sidewalk. Connecting the school's roof leaders directly into the storm water system would be the most ideal situation to avoid drainage issues. Some roof leaders are needed in some areas as seen in Figure 6 where roof runoff is staining the sidewalk.

Features and aesthetics: Overall, this area is aesthetically pleasing with a multitude of plantings, visually-pleasing retaining walls, some seating and a well-maintained lawn. The elevated height of this courtyard gives a great sense of space and protection from the parking lot. There are some picnic tables available for seating. The stairs leading up to the courtyard show some signs of distress such as chipping of concrete and repairs. In addition, the stairs railings and metal stair nosing need replacement due to rusting. (Figure 7) There is no pedestrian lighting.

Landscaping: Turf is in good condition. Planting placement is arbitrary and sometime sparse. Existing plantings in this area include but, are not limited to: *Acer saccharum* (sugar maple), *Pyrus calleryana* (callery pear), *Prunus subhirtella*

(higan cherry), *Picea pungens* (Colorado blue spruce), *Abies fraseri* (Fraser Fir), Rhododendron, *Taxus* × *media* (yew), *Juniperus chinensis* (Chinese juniper), *Ilex verticillate* (common winterberry), etc.

Bus Access Road and Staff Parking

Asphalt and curbing: The main access drive that provides the core means of ingress and egress for buses to pick-up and drop-off students is in fair condition with minimal bituminous edge cracking at the curb. (Figure 8) Edge cracking is a result of poor drainage and lateral support, strong frost heaves, and inadequate setting time for the aggregate. There is some concrete curbing that needs repair.

Figure 8

Sidewalks and ADA accessibility: Overall, sidewalks leading up to the school are in fair condition with cracking present. At the west-facing side of the building there are air vents exposed at the sidewalks which causes a tripping and heat hazard to pedestrians. (Figure 8) There is an ADA accessible ramp located at the southern-facing side of the building which is in good condition. (Figure 9) However, there are no detectable warning strips embedded in the concrete accessibility ramps which presents a hazard to impaired pedestrians. Furthermore, sidewalks transition from concrete to bituminous causing cracking in some areas due to the change in material. In the back of the building, an accessible parking spot for staff is not easily accessible due to a dumpster and lack of ramp with detectable warning strip. (Figure 10)

Figure 9

Figure 10

General drainage and structures: New drainage structures are apparent in the recently paved parts of the road. Much of the storm water discharges north into the forest where a culvert outlets to a brook and wetlands. Riprap is located between the woods and west of the road to prevent runoff from eroding the side of the steep slope. The riprap is in good condition and looks recently established. (Figure 11) Roof leaders are not connected to the storm drainage system in the back of the building.

Figure 11

Sight distances: The means of egress at Ball Point Road has minimal sight line issues in either direction.

Utilities: Air conditioning units located south of the building are enclosed and protected from pedestrians. Electrical transformers located south of the site are protected from possible vehicular collisions with bollards.

Features and aesthetics: The stairs leading up to the southern side of the school shows some signs of distress such as chipping of concrete and repairs. In addition, the stair's and ramp's railings and metal stair nosing need replacement due to rusting. (Figure 9) There is some concrete paver edging along the sidewalk at the southern sidewalk. There is no pedestrian lighting.

Landscaping: Turf is minimal but, is in good condition where it exists. Existing plantings in this area include but, are not limited to: *Platanus* × *acerifolia* (London plane tree), Rhododendron, etc.

North Parking (Satellite Lot)

Asphalt and curbing: In general, the parking lot displays some pavement distress. (Figure 12) Alligator (fatigue) cracking can be seen in localized areas throughout the parking area. Many drainage structures have been replaced which has led to pavement repair in these areas. In other areas, the parking lot looks recently paved and there is some asphalt over existing structures, causing a slight high point. (Figure 13) Most curbing is bituminous, and some has been replaced.

Sight distances and circulation: Geometry and layout of the lot could be more efficient. Eliminating single bay parking stalls and rearranging drive aisles could possibly fit more parking. The means of egress at Ball Pond Road has minimal sight line issues in either direction.

Sidewalks and ADA accessibility: Sidewalks are primarily bituminous with cracking. (Figure 14) There are no detectable warning strips embedded in the concrete accessibility ramps which presents a hazard to impaired pedestrians. At the south corner of the parking lot, an accessible parking spot is not easily reachable due to a storage unit, field gate and lack of ramp with detectable warning strip.

General drainage and structures: Some storm drainage structures are updated, others are not. In other areas, depressions in the asphalt are directly next to storm grates. These depressions accumulate sediment and make drainage inefficient or very poor. A majority of stormwater from the western portion of the site outlets to a brook northwest of the school. (Figure 15)

Site features and aesthetics: Galvanized chain link fencing at the eastern side of the parking lot is in fair condition. The railing leading down to the parking lot is bent and is need of replacement of at least just that section. (Figure 16) There is a pedestrian bridge that traverses the brook east of the site which separates the school and the adjacent property. This bridge would possibly be a security issue depending on its purpose. (Figure 17) The parking lot has no lighting.

Landscaping: Turf needs replacement around the gravel access drive and is fair in other areas. Existing plantings in this area include but, are not limited to: *Tilia cordata* (littleleaf linden), etc.

Figure 12

Figure 13

Figure 14

Figure 15

Figure 16

Figure 17

Septic System

The septic system consists of septic tanks (Figure 18), d-boxes, piping and a pump system that pumps all flow from the Consolidated School to the Meeting House School, located to the west. The Meeting House School septic system consists of a Wastewater Treatment Plant that is permitted by CT DEEP and was repaired in 2013 as part of that schools Renovate-as-New project.

Figure 18

Based on discussions with Facility Personnel, the DEEP permit for Consolidated School is current and in good standing. There are no known issues with the septic system (smells, clogs, backup, etc.) at the Consolidated School. Due to the current permit, age of the system, and known functionality of the system, we recommend continued utilization of the existing system as part of any school renovations, as long as the total flow is within the permitted level.

Well System

The original well system consisted of a well pit located in the original basement structure built in 1941. Subsequent to the basement well, an outdoor well was constructed adjacent the Consolidated School to provide potable water to the Meeting House School. In 1993, the basement well was repurposed to provide irrigation to the adjacent ballfields but not potable water. At that time, an additional outdoor well was constructed near the other outdoor well to replace the basement well.

Figure 19

Currently, the two (2) outdoor wells, located south of the Consolidated School, are interconnected. One (1) well is located in the lawn area and the other is located inside a pump house facility (Figure 19). The pump house facility contains two (2) pumps that pump water to both the Meeting House School and Consolidated School, as well as two (2) private properties located between the schools. Well pressure for Consolidated School is achieved exclusively through the well pumps as there is no atmospheric tank. There is a 1,350-gallon hydro pneumatic storage tank (Figure 20) in the basement of Consolidated School that was constructed through the basement bulkhead.

Figure 20

CT DPH performed a sanitary survey of the well system in 2016 and found the wells to have a combined pumping capacity of 26 - 40 GPM. The report identified no minor or significant deficiencies.

Based on discussions with Facility Personnel, the well system is not capable of providing the required school demand during the day. It is common for the school to experience a drop in pressure and flow to water fixtures located throughout the school. If one of the wells were to fail, it would cause a significant problem. Given the age of the well infrastructure, as well as the apparent inability to meet current school demand at times, we recommend the following upgrades be a part of any future school renovation project:

- Continue to utilize the existing basement well exclusively for irrigation.
- Utilize the other two (2) existing wells for potable water and add capacity by constructing one (1) or more wells, dedicated for potable water. A water demand analysis would be required to determine the amount of additional wells that should be considered.

- Replace all exterior and interior piping, wiring, tanks, pumps, meter assemblies, and all other associated appurtenances.