Anne Frank Elementary School

2000 Bowler Street, Philadelphia, PA 19115

Addition and Major Renovation

Scope Determination Report

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1.0 General Information

The Anne Frank Elementary School is located at 2000 Bowler Street in Northeast Philadelphia. The site contains multiple buildings, including a Main Building, a Little School House building, and a precast panel modular building. The site is bound by Bowler Street to the Northeast, Clark Street to the Southeast, Lott Street to the Southwest, and Hoff Street to the Northwest; it is surrounded by a residential neighborhood. The entrance of the main school building is located at the Northeast corner of the site. This building layout consists of a 3 story classroom section and a one-story gymnasium and auditorium section. The exterior walls of the main building are composed of brick with exposed concrete columns every 18 feet. Mechanical and electrical equipment are housed in a partial basement and piping is located under the first floor in a large crawl space. The portable concrete modular building was erected adjacent to the gymnasium. The main entrance to the Little School House is located off of Lott Street; however, students travel between the main building and the LSH through the entrance located in the Cafeteria. The LSH is a one story building with slab-on-grade construction, and the exterior walls are also brick.

1.1 Building Data:

Gross Area (SF):	Main Building: 74,500 (3 story)
	Little School House: 26,016 (1 story)
Year Built:	Main Building: 1962
	Little School House: 1998
Enrollment:	1,321
Grade:	K-5

1.2 Project Introduction:

A detailed review of the Anne Frank was conducted with several members of the Capital Programs team. After an assessment of the facility and their educational program it has been determined that a major renovation for the main building and a building addition are necessary for daily operation.

Anne Frank is a K-5 school that serves 1,321 students with (7) Kindergarten classrooms, (8) First Grade classrooms, (8) Second Grade classrooms, (9) Third Grade classrooms, (7) Fourth Grade classrooms, and (7) Fifth Grade classrooms. The main building, LSH, and annex building provide 48 classrooms for the school. With (46) classroom spaces dedicated to general instruction for K-5 students, two classrooms utilized as the library and the computer lab, and music class held in the Auditorium, the school is currently over capacity; therefore, the current school buildings are unable to support designated spaces for the special instruction, such as art, music, health, writing, science, character education.

The lack of space within the school buildings also impacts the locations of the classrooms and the school schedule. There are two Kindergarten classrooms located in the annex building, the LSH contains 12 classrooms that support Kindergarten and First Grade classrooms, and there is a First Grade classroom in the main building. Ideally, the classrooms for each grade would be located adjacent to one another. The Principal indicated that the current cafeteria spaces are also undersized, which requires the school to provide early and late lunch periods.

A two-story addition is necessary to provide Anne Frank Elementary School with more space, and to provide an improved building layout. The addition should connect the main building with the LSH building, and it should include 12 classrooms and an expanded LSH cafeteria space. The 12 classrooms addition would allow the Kindergarten, First Grade, and Second Grade students to be located in the LSH and the adjacent addition, creating a K-2 center. The expanded cafeteria at the LSH will accommodate the increased student population and reduce the number of lunch periods. Classrooms within the main building will be renovated to support third grade through fifth grade classrooms, as well as specialized instruction. The annex building will be demolished after the construction of the addition and major renovations are complete.

2.0 Background

The scope of work is guided by the following key considerations, lists of deficiencies, and recommended actions that define the scope of work in detail. They are divided into the following categories: Environmental, Site, Architectural, Structural, Mechanical/Plumbing, and Electrical.

The project must include multi-prime contracts: General Construction, Site Improvements, HVAC Construction, Plumbing Construction and Electrical Construction. The purpose of this report is to establish and verify costs for each of these contracts.

Most of the scope of work recommended for the main building is due to “deferred maintenance” with building systems exceeding their life expectancy cycles. The scope of work developed for this report is based on information contained within the ongoing “Facility Condition Assessment” and as verified during a tour and survey of the school that included Capital Programs design and construction staff, as well as staff from the School District’s Operations and Maintenance Departments.

3.0 Scope of Work

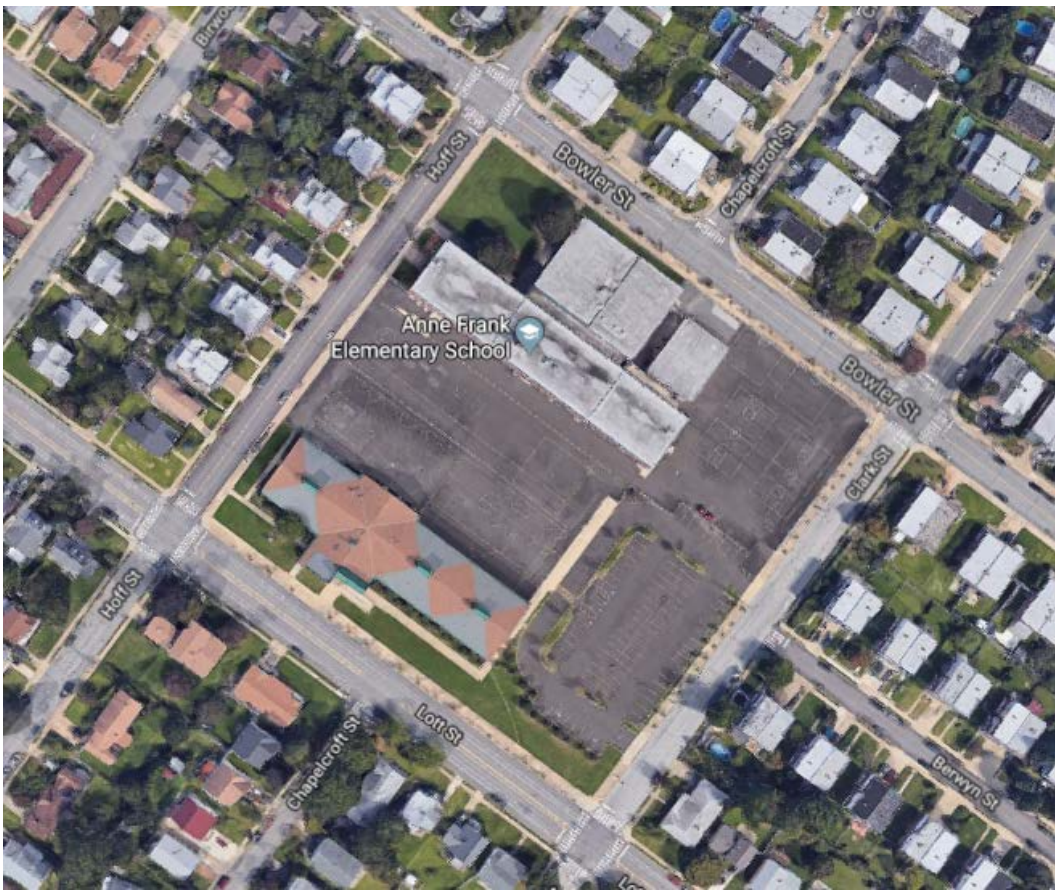
3.1 Environmental

The School District of Philadelphia (SDP) Office of Environmental Management & Services (OEMS) will develop scope of work for remediation services where applicable. Work will involve removal of mold and asbestos containing materials, where applicable, prior to any investigation or repair can occur. Environmental budget and scope of work will also include abatement required for other work described hereinafter.

3.2 Site

A. Exterior Observations

The site is primarily asphalt and contains three buildings: the main school building, a Little School House building (LSH), and a precast concrete modular building. The modular building is approximately 3,500 sf and contains two kindergarten classrooms. The site also contains an extensive asphalt play area between the main building and the LSH, as well as basketball courts near the East edge of the site. Parking is provided at the Southeast corner of the site, and dumpsters are located at the north end of the parking lot. Perimeter fence is chain link, mounted on concrete curbs or retaining walls. The parcel gross area is 252,679 sf, with 213,996 sf of this being impervious area.



Aerial image of the schoolyard.

Representative photo of the east side of the main school building from the main parking area.

Representative photo of the existing Little School House building.

View looking west at expansive asphalt play yard and main school building.

View looking east showing underground storage tanks.

View of existing entry to main school building.

View of existing fence along Bowler Street.

View of existing modular building.

View of existing fence wall along Clark Street.

B. Recommended Actions:

The scope of work includes demolition of the existing modular building and construction of the new addition to house 12 classrooms and an expansion to the LSH cafeteria. The scope will include, at a minimum, site improvements as identified below, but the Design

Consultant shall verify and analyze site to identify other potential improvements or opportunities. It is anticipated that the work will trigger Philadelphia Water Department (PWD) and Pennsylvania Department of Environmental Protection (PADEP) stormwater management regulations. The work will require the construction of a stormwater management system in accordance with PWD regulations and the PADEP regulations. In addition to fulfilling regulatory requirements, SDP would like the Design Consultant to analyze the potential to manage additional stormwater (non-regulated) in order to apply Stormwater Management Incentive Program (SMIP) grant funding. This work will entail coordination to apply for SMIP grant funding from the Water Department. This will involve the preparation of plans and cost estimates, as well as application materials, to fulfil the grant requirements.

I. Demolition:

   a. Demolish modular building and associated concrete foundation.
   b. Disconnect and cap active utilities feeding the modular building including power.
   c. E&S measures must be provided in compliance with Philadelphia Water Department's regulations.

II. Site prep to accommodate new addition:
   a. Excavation, earthwork and grading for new foundation of addition
   b. New foundation for addition(s)
   c. Utility connections and new lines to/from street
   d. Utility connections from ex. building to new addition
   e. Relocation or removal of underground storage tanks

III. Pavement restoration:
   a. Select pavement upgrades where required throughout the site, including full depth patching, mill and overlay, crack filling, and seal coating
   b. Pavement restoration at modular demolition footprint
   c. New dumpster pad per SDP standards

IV. Fence restoration:
   a. Perimeter fencing upgrades may include partial or full replacement or modification of existing. Select repairs may be required for concrete fence base wall.
   b. New dumpster fence enclosure per SDP standards

V. Accessibility:
   a. Addition must be accessible.

VI. Stormwater Management
   a. Stormwater management system to manage regulatory runoff, as well as additional voluntary runoff identified per SMIP grant.

b. Stormwater management system shall be designed per SDP, PWD, PADEP standards
c. Stormwater management requires connection back to the street sewer.

VII. Play and site elements
   a. Design must include recreational and play elements suitable for grades K-5 that have high play value and are low maintenance and cost effective.
   b. Play elements must comply with SDP standards
   c. Benches, trash receptacles and pavement markings should be included in the scope

VIII. Greening
   a. Design shall emphasize canopy tree plantings in select locations to provide shade and beauty.
   b. Limited turf, perennials, and shrubs will be included at key entrances and play areas.

3.3 Architectural

A. New Building Addition

Design of a two-story classroom addition that consists of (12) classrooms and an expanded cafeteria for the Little School House (LSH). Design Consultant shall evaluate potential locations for the addition on the project site. The current proposed location for the addition is at the western edge of the main building, projecting perpendicular from and connecting with the corridor. The addition must be connected to the existing main building at the second floor and to the LSH at the ground floor. The massing or location of the addition must provide an entranceway from Hoff Street to the site interior. The addition must include an elevator and an exit stair tower, student restrooms to serve the expanded cafeteria and the additional classrooms, as well as associated storage and mechanical/electrical/IT rooms. Design must be in compliance with all applicable International, City and Government Agency Codes and Requirements.

Minimum square footage requirements planned for each space is listed below:

Classrooms*	12 required	10,800 SF (900 SF each)
LSH cafeteria expansion	1 required	2,000 SF
Storage	1 required	300 SF
Total		13,100 SF
Circulation	approx. 20% of bld'g space	2,620 SF
Stair	1 req'd (shaft-. 10' x 20')	800 SF
Building Storage	1 req'd	250 SF
Technology closet	1 req'd	100 SF
Elevator shaft	1 req'd	160 SF
Elevator Equip Room	1 req'd	80 SF
Mech/Elect room	1 req'd	500 SF
Student toilets	(calculate quantity)	500 SF
Total – Non-Instructional space		4,850SF

*Classrooms to include VCT flooring, ACT ceilings, 16'-0" of markerboard, 24'-0" of tackboard, (1) interactive panel board, LED lighting, power and data receptacles following SDP's Ideal Classroom Technology Standard, a wireless clock, speakers and a telephone. Corridor and classroom walls should be masonry construction.

B. Building Renovation

I. Exterior Doors

At the main building, the exterior doors are primarily hollow metal steel doors and frames, in poor condition.

Recommended Action:
Replace all exterior hollow metal service doors, egress doors, and frames at main building with 14 ga. insulated metal doors and 12 ga. metal frames.

II. Windows

The original exterior windows were replaced in 1990 with extruded aluminum, double hung, acrylic glazed windows. The windows are in poor condition. The acrylic glazing is dull and cloudy and the perimeter sealant is very deteriorated.

Recommended Action:

Design Consultant shall evaluate if full window systems replacement should be considered or if only the glazing needs to be replaced. If existing windows can be modified, replace existing acrylic glazing at all existing aluminum windows with new insulated glazing units. Existing window sashes and frame to remain. Fix the top panel of double hung window so that the window operates as a single hung window, and replace counter balances to accommodate the additional weight of the new glass unit.

III. Roof

The building roof is an aggregate-surfaced built-up bitumen or modified bitumen system sloped to internal roof drains. The roof construction does not contain parapets.

Recommended action:

Roof appeared to be in fair condition and leaks have not been reported; however, cracking was observed in multiple locations, especially at the roof drains. Design Consultant to evaluate if full roof needs to be replaced or if minor repairs can occur at the roof drains and other damaged areas.

IV. Interior Renovations

Recommended Action:

a. Flooring: Remove existing 9”x9” VAT, 12”x12” VCT tile, and carpet from classrooms. VAT floor tile has been confirmed as asbestos containing. Level existing subfloor and install new Vinyl Composite Tile (VCT) floor. Provide (1) field color and (2) accent colors. Design to be approved by SDP. Design Consultant to determine if flooring can be replaced at cafeteria, gymnasium, and hallways.
b. Ceilings: Scrape existing loose paint, clean and prep existing ceilings for new finish. Paint concrete ceilings, including all surfaces of concrete beams, and paint all exposed piping and conduit (existing and new).
c. Walls: Remove all miscellaneous fasteners, staples, and adhesives at CMU walls and repaint CMU walls. Clean glazed CMU wall base. Remove any movable wall partitions at classroom spaces and replace with metal stud and GWB wall partition, if required.
d. Display Boards: Remove existing chalkboards and other display boards and replace with a minimum of 16’-0” of markerboard and 16’-0” of tackboard (24’-0” is preferred.) Confirm quantity provided is not less than the existing.
e. Smartboards: SDP will survey existing Smartboards and Interactive Panel Boards and provide the Design Consultant with a list of boards that should be salvaged

and a list of the boards to be demolished by the Contractor. SDP will provide and install a new height-adjustable Interactive Panel Board (IPB).

f. Doors: Replace existing classroom entrance doors with wood, narrow lite doors. Provide ADA accessible hardware.
g. Window shades and sills: Remove and replace window shades at all windows in classrooms. Refurbish wood trim and sills at windows.
h. Casework: Remove existing coathooks at alcoves in classrooms. Replace with new coathooks and cabinets above per SDP standards. Evaluate condition of existing metal closet/built-in locker doors to determine if these items can be refurbished and repainted. If metal doors are too damaged, remove and install shelving within new alcove space.
i. Existing sink and casework in existing Art Classroom are in poor condition and must be replaced. New casework amount shall match the existing one.
j. Toilet Rooms: Replace broken or missing toilet accessories and replace all toilet partitions in all bathrooms.
k. See Electrical scope for information regarding electrical upgrades at classrooms.

3.4 Structural

A. Existing Building Structure (main building)

The existing structure of the main building is a three-story reinforced concrete frame system which includes a continuous corridor at the classroom areas. Framing is a one-way cast-in-place reinforced concrete floor and roof slabs supported by cast-in-place reinforced concrete beams and girders that frame into rectangular reinforced concrete columns. In addition, a one-story wing that includes auditorium and recreation spaces abuts the classroom wings. This portion is a structural steel frame consisting of long-span open web steel joists supported by structural steel beams and columns. Floor slabs occurring at grade level for all areas of the building are conventional soil-supported concrete slab-on-grade. A basement area exists at a limited portion of the western classroom wing of the building footprint that includes building supports system mechanical rooms. Remaining classroom wings include crawlspace areas. All building frame components are understood to be in good structural condition. Exterior walls consist of face brick with concrete masonry interior backup multi-wythe construction.

All building columns are supported on reinforced concrete spread footings and basement walls are constructed as reinforced concrete walls supported on continuous footings. Exterior walls at the one-story and crawlspace areas are assumed to be supported on reinforced concrete grade beams based on available plan drawings of the structure.

B. Structure at Building Addition

The proposed addition is anticipated to consist of a multi-story building structure for meeting the space planning requirements identified in this report. It is anticipated that the structure shall be implemented as a column-supported structural steel frame system bearing on spread footing foundation structures. It is also anticipated that all floor areas to occur at grade level shall be implemented as conventional soil-supported concrete slabs.

Current planning for the proposed addition is considering two stories above ground projecting perpendicular from the main building. A partial basement space would be included as an extension of the existing basement space for housing and communicating facility mechanical and electrical equipment supported on concrete pad foundations. It is expected that a passenger elevator will be included as part of the addition that may or may not service the basement level.

3.4 Plumbing Scope of Work

I. The Main Building is equipped with wall hung urinals (flush valve type), wall hung water closets (flush valve type), and wall hung lavatories with wheel handle faucets. There is a water closet, lavatory and hand sink located in each of the kindergarten classrooms. Science classrooms must be equipped with 2 new lab sinks. Many of the original plumbing fixtures remain in service. These fixtures have reached the end of their service life and should be replaced. New fixtures will provide lower water consumption and provide savings on water heating costs. The bathrooms are also equipped with floor drains for the first floor, but not the second or third floors.

II. The Main Building drinking fountains in the corridors and at the restrooms are wall hung fountains. Drinking fountains are typically located at the bathroom groups. There are drinking fountains located in each of the kindergarten classrooms. The cafeteria is also equipped with drinking fountains. The gymnasium is equipped with recessed drinking fountains. Most of the fixtures appear to be the original installed equipment. The replacement of all drinking fountains is recommended as the equipment is approximately 54 years old and beyond its service life.

III. In the Main Building, there are floor set service/mop sinks original and available throughout the building for use by the janitorial staff. Service sinks are located in the vicinity of the bathroom groups and drinking fountains. The sinks appear to have exceeded their service life, and should be replaced. The Cafeteria's food prep/kitchen is equipped with one, double compartment stainless steel sink with wheel handle operated faucets and its sanitary connection is served by a floor mounted grease trap. The kitchen is also equipped with a hand sink. The double compartment wash sink (with lever handles) and hand sink (with lever handles) show signs of normal usage. The grease interceptor shows no signs of rust or corrosion and is accessible for maintenance. Chemicals are injected manually into the sanitizing basin.

IV. There is an emergency shower/eyewash located in the main boiler mechanical equipment room.

V. The Main Building 4" domestic water service piping appears to be mostly soldered copper. Water service enters the building in the basement, without double check backflow preventer (RPZA – reduced pressure zone assembly). The piping is copper

with soldered joints. The distribution piping appears to be original and is at the end of its service life and is recommended to be inspected and repaired as needed.

VI. The Main Building domestic hot water system is produced by a natural gas fired instantaneous Paloma, model PH24-M-DN and is located in the main boiler mechanical equipment room. The water heater is rated for a maximum gas input of 178,000 bthu, minimum 37,000 btuh. The hot water system is equipped with a recirculation pump which circulates water into an existing original domestic hot water storage tank. The water heater appears to be in satisfactory condition and should not need to be replaced for five years. A water softener is located in the boiler room for treating the boiler make up water system, is manufactured by Kisco, and should be replaced.

VII. The sanitary waste piping system in the Main Building is extra heavy cast iron with lead and oakum seals and appears to be the original piping installed in the building. It should be inspected for corrosion. Repair and/or replace sections, as needed. The sanitary system leaves the building by a duplex sewage ejector located in the main boiler mechanical equipment room.

VIII. The rain water drains from the roof are routed through mechanical chases in the building and connect to the underground site drainage system. There are no overflow scuppers for the building since the roof does not have parapets. There is also a duplex sump pump in the main boiler mechanical equipment room for collection of any foundation drainage.

3.5 Mechanical Scope of Work

A. Heating Plant

I. There are two 4,850,000 BTUH +/- low pressure HB Smith steam boilers, located in the basement. The scope of work listed below encompasses the demolition/removal and replacement of the two original low pressure steam boilers and all associated ancillary equipment, located in the basement boiler room.

II. Duplex fuel oil supply pumps are available, however the underground number 2 fuel tank is not in use and has been abandoned. The size of the storage tank is unknown.

III. The 2” natural gas service enters the building in the basement into the main boiler mechanical equipment room and is metered at this point. The natural gas main is welded, black steel piping while the branches are threaded, black steel.

IV. Low pressure steam is generated at 15 lbs. per sq.in or less by two HB Smith 4,850 MBH, cast iron, sectional boilers, model 640 with dual fuel burners. Both boilers are

equipped with Power Flame dual fuel burners, natural gas and number 2 fuel oil, model CR4-GO-30. The boilers appear to have been installed in the early to mid-1990. Both boilers are approaching the end of their service life and should be replaced. At the time of our survey one boiler was down due to nipple leaks in several sections as well as a crack in a section. There is draft control on both boiler flues. There were combustion air dampers and louvers which would serve the boiler room to provide combustion air for the boiler operation above the exit door that leads outside. Burner oil pumps are driven by independent motors. The oil supply to the burner is equipped with dual solenoid valves and strainer/disposable media filter.

V. The Main Building has a few areas which are served by window air conditioning units such as the computer lab and several administration offices and classrooms. The remaining areas of the original 3 story building do not have a central cooling system.

VI. The Main Building steam distribution piping is black steel with welded fittings. The condensate piping is Schedule 80 black steel with threaded fittings. The piping has been in use beyond its service life and will require more frequent attention from the maintenance staff to address pipe/valve failures as time passes. The Design Consultant should hire a qualified contractor to examine the distribution piping and perform additional testing to locate and replace any damaged piping and to further quantify the extent of potential failures. The District should budget for replacing this piping over the next 5 years.

VII. The Main Building boiler feed water is collected by a boiler feedwater pad mounted system and is treated with a combination of chemicals by a water treatment controller. The condensate is returned directly to the boiler feedwater tank and then pumped back to the boiler as there are no condensate receiver tanks. The condensate return piping is black steel with threaded joints. The boiler feedwater assembly is equipped with three pumps and a pump control panel. Some steam traps have been replaced, however others have failed according to the building engineer. It is recommended that Maintenance conduct a steam trap survey to determine the quantity and condition of all steam taps. The boiler feed tank, pumps and associated components are nearing the end of their service life and should be replaced.

VIII. The Main Building's fresh air is admitted into the building through the unit ventilators (manufactured by Nesbitt) and outside air intakes to air handling equipment. Ventilation air is induced into the spaces through the outside air intake grilles located in the building exterior wall which are ducted to the unit ventilators. The existing unit ventilators have surpassed their service life as they are part of the original building installation, and they should be replaced. The new unit ventilators should be designed for quiet operation and equipped with hot water and chilled water coils, and integral heat exchangers, if required. Ventilation air is provided via operable windows in the auditorium and gymnasium. Ventilation is also provided through the air handling unit systems serving

the cafeteria, gymnasium and auditorium, however, the inability to access the building automation system is preventing some of these systems from being operational.

IX. The Main Building uses unit ventilators with steam coils and steam convection in the classrooms and steam console style, sloped top convectors in the hallways, wall mounted heating water convectors in bathrooms and recessed convectors at stairwell entrances to the outdoors. Currently these units are the sole source of heat for these areas. The classrooms are also configured such that over pressurization is mitigated by providing a transfer duct between the classroom space and the corridor. The air is relieved into the corridor and then is transferred to air duct risers which terminate at the roof. The air risers are located at the end of the corridors.

X. The gymnasium in the Main Building is served by a heating and ventilating unit with a steam heating coil. The H & V unit is part of the original building construction, has exceeded its life expectancy and should be replaced. The H&V unit supplies air to the space through an overhead ducted supply system with concentric round diffusers and low return grilles. Additional heating is provided by wall mounted steam convectors just below the windows. Windows can also be opened for natural ventilation. It is recommended to replace these systems with a roof top mounted unit with a similar overhead supply air distribution system and return air ductwork and low return intake grilles which would be protected from damage.

XI. The cafeteria in the Main Building is served by an H & V unit with a steam heating coil. The H & V unit is part of the original building construction, has exceeded its life expectancy and should be replaced. Air is distributed into the cafeteria through sidewall supply diffusers and is returned to the unit through return grilles located on the wall. A roof top mounted unit could be provided with heating and cooling coils as well as ventilation to meet the outside air ventilation requirements for the cafeteria seating area. The kitchen is provided with two exhaust hoods. There is no make-up air unit to serve the exhaust fans. It is recommended that a hood exhaust system be implemented for any equipment which generates heat. This system should be coupled with a heating and ventilating supply air system. Proper air flow pressurization and balancing should be performed for the seating area with respect to the kitchen to maintain the kitchen under negative pressurization.

XII. The auditorium in the Main Building is served by a heating and ventilating unit with a steam heating coil. The H & V unit is part of the original building construction, has exceeded its life expectancy and should be replaced. The H&V unit supplies air to the space through an overhead ducted supply system with concentric round diffusers and low return grilles. Additional heating is provided by wall mounted steam convectors just below the windows. Windows can also be opened for natural ventilation. It is recommended to replace these systems with a roof top mounted unit with a similar overhead supply air distribution system and return air ductwork and low return intake grille.

XIII. The IMC in the Main Building is served by a unit ventilators as the typical classroom is served.

XIV. The Main Building has roof mounted exhaust fans which serve the restrooms. The fans should be replaced. The kitchen hood exhaust fan is also located on the roof. Make up air for the toilet exhaust is transferred via a door grille or transfer duct between the bathroom and the corridor.

XV. The Main Building has an original pneumatic system controls system that has been replaced with a Johnson Control Metasys system. The existing air compressors have been abandoned in place. The Annex is supplied with pneumatic control air from the Main Building. These controls should be replaced and upgraded to DDC system as well. A new building automation system (BAS) with modern DDC modules and communications network should be installed to serve the HVAC systems in the Main Building to improve reliability and energy efficiency. An interface should be provided with the preferred system in use throughout the District.

XVI. The school building is not covered by an automatic sprinkler system.

XVII. Of the two kitchen hoods in the cafeteria one is not equipped with an Ansul fire suppression system. It is recommended to add a fire suppression system to these hoods.

1. Demolition and removal shall consist of, but not limited to the following:

    a. The two existing 4,850 MM BTUH HB Smith low pressure steam boilers located in the original basement boiler room shall be removed along with all appurtenances such as, but not limited to: piping, breeching, condensate pumps, heating tanks, steam tanks, converters, hot water tanks, blow-off tanks, and de-aerators.
    b. Three Steam Heating and Ventilating Units (HVU's). A 14,600 CFM unit for the Auditorium, a 9,000 CFM unit for the Cafeteria, and a 6,750 CFM unit for the Cafeteria and thermostats.
    c. One Domestic Water Boiler
    d. Approximately forty Steam Classroom Unit Ventilators
    e. Ten Unit Heaters and thermostats.
    f. Three Roof Pressure Relief Vents.
    g. Ten Steam Cabinet Unit heaters.
    h. Sixteen Exhaust Fans.
    i. Two Circulating pumps.
    j. All existing low pressure steam lines throughout the school, including but not limited to, the boiler room, common areas, classrooms and all ancillary areas.

2. The new Scope of Work shall consist of, but not limited to, the following new mechanical work:

    a. Furnish and install 2 each new (skid mounted, if possible) 3,000 /4,000 MBTUH condensing boilers with VFD pumps, hydraulic separator, PRV, control panel and all necessary piping appurtenances to properly heat the existing 3-story school building and the newly proposed 2-story addition.
    b. Furnish and install two new 5'x10' concrete mounting pads with mounting brackets for each new boiler, if needed.
    c. Furnish and install two new 18" diameter CPVC/Stainless Steel combustion air inlet/intake pipe and two new 18" diameter CPVC/Stainless Steel exhaust outlet pipe for each new condensing unit.
    d. Furnish and install new unit ventilators with wired control/thermostats for each UV throughout the school and the various classrooms that are malfunctioning. All existing classroom units shall be removed and replaced.
    e. Furnish and install one new 350-400 ton air cooled chiller for the existing school and the new 30,000 SF addition
    f. Furnish and install 3 new 4000 CFM AHU's (approximately 20 to 40 tons each) for heating and cooling for the existing school.
    g. Furnish and install 3 new Pressure relief vents for the existing school.
    h. Furnish and install 10 new hot water cabinet heaters for the existing school
    i. Furnish and install approximately 16 new bathroom exhaust fans for the existing school.
    j. Furnish and install a new gas tank less water heater for the existing school.

B. Piping

The facility has a history of heating/cooling pipe leaks, condensation and failing insulation through moisture saturation of the pipe insulation. Below is a schedule/list of all piping to be replaced with Uponor, Pex "A" (3") diameter pipe or smaller and steel pipe that is greater than 3" diameter, typically installed at the boiler basement location.

Location	***Length***	***Pipe Diameter***	***Mfg.***	***Comments***
1st Floor Exist. School	550 LF	3" dia.	Pex "A"	Mfg. Uponor w/ 2" Insul. Or Equal
2nd Floor Existing School	750 LF	3" dia.	Pex "A"	Mfg. Uponor w/ 2" Insul. Or Equal
3rd Floor Existing School	650 LF	3" dia.	Pex "A"	Mfg. Uponor w/ 2" Insul. Or Equal
1st Floor New School	250 LF	3" dia.	Pex "A"	Mfg. Uponor w/ 2" Insul. Or Equal
2nd Floor New School	250 LF	3" dia.	Pex "A"	Mfg. Uponor w/ 2" Insul. Or Equal
3rd Floor New School	250 LF	3" dia.	Pex "A"	Mfg. Uponor w/ 2" Insul. Or Equal
Boiler Room	300 LF	6-8" dia.	Copper Pipe	USA Grade w/ 2" Insul.

C. Pumps

Replace the 2 pumps with 2 lead/lag pumps for each of the new condensing boilers. Each boiler dual pump package shall be equipped with one Variable Frequency Drive (VFD) controller. This pump package is included in the skid mounted condensing boiler package listed above.

D. Mechanical Equipment for the New Addition

1. Furnish and install 16 new 1000 cfm UV's with outside air louvres per the above scope of work for the classrooms of the existing school.
2. Furnish and install 6 new 150 cfm exhaust fans for the new bathrooms.
3. Furnish and install a new 9 gpm gas tank less water heater for the new bathrooms.
4. Furnish and install a new sprinkler system for the new addition.
5. Furnish and install approximately 500 lf of new copper lines for the bath rooms and fountains for the new addition.
6. Furnish and install approximately 500 lf of new ductile iron sanitary lines for the new addition.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3.6 Electrical Scope of Work

A. Electrical Service and Distribution

The existing electric service is rated at 1200A, 208V/120V, 3 phase and 4 wire. According to PECO energy bills, the peak demand in the past one year was 137.6KW. The main switchboard is in good condition and has spaces that can accommodate new loads.

Main Switchboard Nameplate

Main Switchboard General Arrangement

Insufficient Power Receptacles

Antiquated AV receptacles

Recommendation:

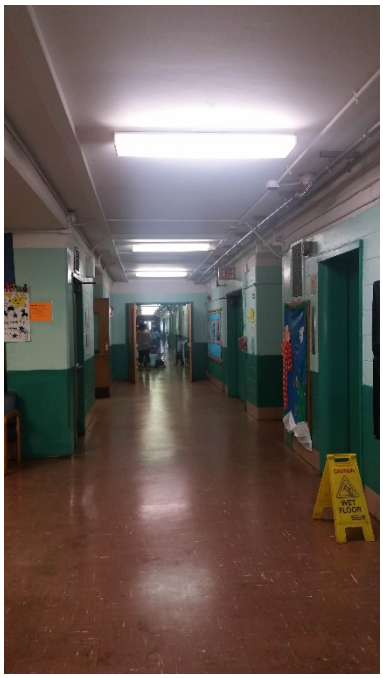
1. Provide new electrical distribution panels from the existing 1200A electrical service and feed new loads in the building addition.

2. Provide new receptacle and lighting panels as needed to modernize the existing classrooms per SDP ideal classroom device layout.
3. Modernize classroom with sufficient power receptacles per school district classroom minimum receptacle layout.
4. Retrofit or replace antiquated electrical panels that can no longer be maintained due to lack of parts and components.
5. Provide electrical connections to architectural and mechanical modifications in this report.
6. The design consultant shall provide detailed survey, floor plans, riser and specifications.
7. The design consultant shall commission a licensed electrician to open switchboard and panels to ensure that the final electrical design is feasible while reusing the existing equipment, devices and circuiting.

B. Lighting

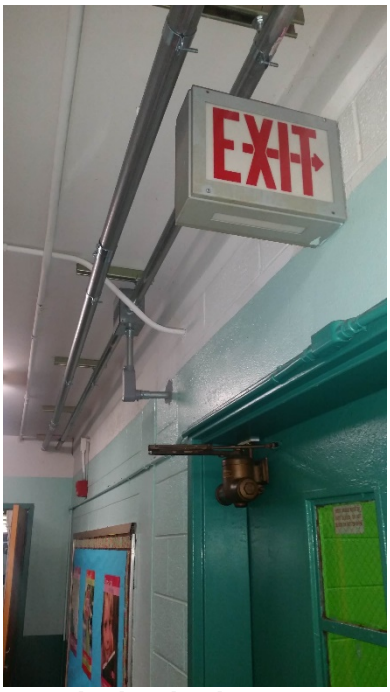
The existing building interior lighting system is mostly fluorescent lights. The exterior lighting system is high intensity discharge type. The exit signs are incandescent or compact fluorescent type.

Typical Classroom Lighting



Typical Hallway Lighting

Typical Exterior Lighting



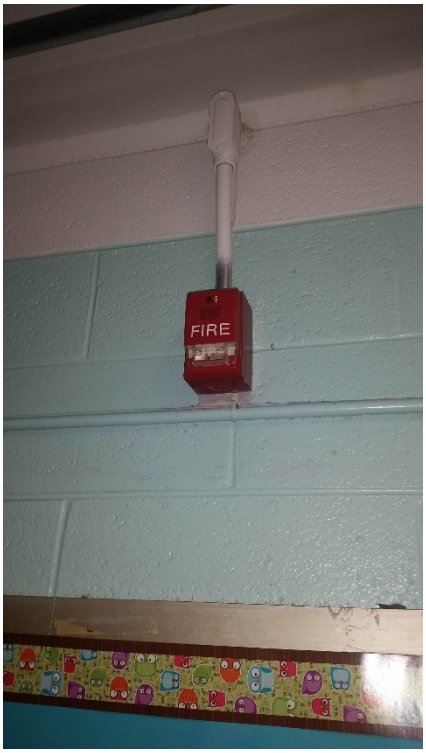
Typical Exit Sign

Recommendation:

1. Replace all incandescent exit signs with white thermoplastic LED exit signs and connect to generator source.
2. Replace lighting fixtures with new LED lighting fixtures throughout the existing building and provide lighting controls to comply with Philadelphia energy code. Provide generator power to sufficient number of lights in egress path to provide illumination as required by code.
3. Replace the exterior HID's with LED's equipped with integral photocells.
4. Provide new LED's in new addition with dimmer controls in classrooms. Each classroom shall have minimum 2 lighting control zones. One zone of dimming control over the Interactive Panel Board and rest of the classroom on the second zone of dimming control.
5. The design consultant shall provide detailed survey, floor plans, riser and specifications.

C. Fire Alarm System

The existing horn and strobe Edwards fire alarm system is in good condition and should be reused in building modernization.



Typical Horn and Strobe

Typical Fire Alarm Pull Station

Recommendation:

1. Provide new fire alarm detection devices and notification devices per code and connect to existing fire alarm system.
2. Provide the building addition with a new addressable voice evacuation fire alarm system including control panel, remote power booster panels, pull stations, speaker/strobes units, smoke detectors, duct detectors, heat detectors, fire alarm wiring, power wiring, remote annunciator panels, etc. The new system shall come with 3 years of warranty, maintenance service and re-certification. Tie new fire alarm system into the existing fire alarm system and program cross tripping.
3. Provide pull stations in high ceiling areas like auditorium and gymnasium in lieu of smoke or heat detectors on high ceiling.
4. Provide pull stations in Main Office, Building Engineer's Office and Boiler Room. The new pull stations shall include a high impact cover (STI) with local alarm by battery.
5. Where heat, smoke or duct detectors are installed in areas that are not readily accessible such as high ceiling, provide remote test switches at location readily accessible to faculty only.
6. The design consultant shall provide detailed survey, floor plans, riser and specifications.

D. Security System

The existing surveillance system was installed in 2017.

Recommendation:

1. Provide a new IP camera system at the addition.
2. Basis of design shall be PELCO.
3. Security system specification shall include at minimum 3 manufacturers.
4. Integrate new surveillance system with the existing surveillance system.
5. The design consultant shall provide detailed survey, floor plans, riser and specifications.

E. Telecommunication System

The majority of existing classrooms only have 2 CAT5E jacks in a single gang box. Wireless access points were installed in classrooms.

Recommendation:

1. Provide telecommunication upgrades including CAT 6 connections in existing classrooms based on school district classroom ideal layout. Existing CAT 5E may remain.
2. Provide 3 CAT6 connections at each new workstation.
3. Construction documents and specifications shall adhere to school IT design guideline and specifications.
4. The contractor shall be responsible for installation of conduits, cables, patch panels and including all terminations and labeling.
5. The design consultant shall provide detailed survey, floor plans, riser and specifications.

F. Synchronized Clock System

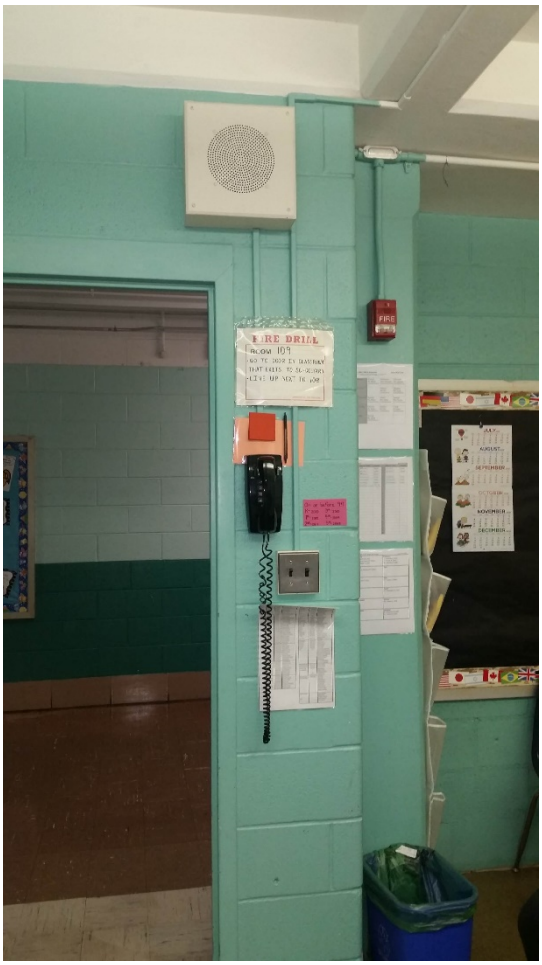
The existing Primex clock system is battery operated. There is a large quantity of clocks that do not work.

Recommendation:

1. Provide a new wireless clocks where required.
2. Provide new batteries for existing clocks.
3. New wireless clocks shall be installed in classrooms, gym, cafeteria, main office, and conference rooms.
4. The design consultant shall provide detailed survey, floor plans, riser and specifications.

G. Phone, Public Announcement and Bell System

The existing phone, public announcement and bell system is operational.



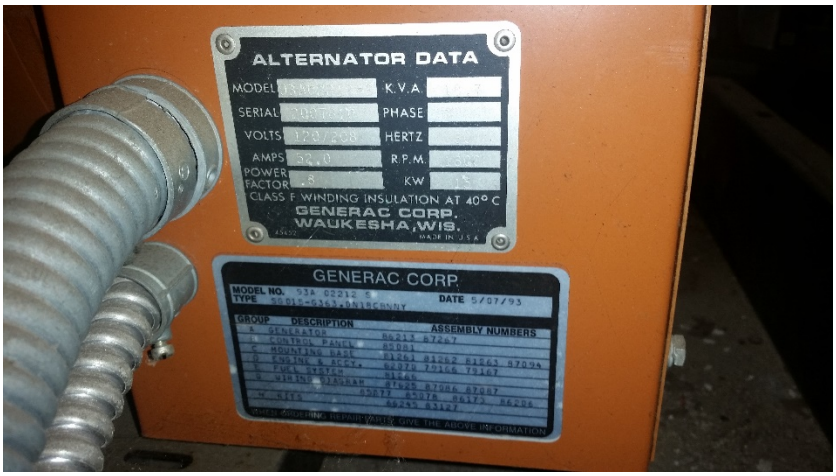
Typical Phone, PA speaker and Bell System

Recommendation:

1. Construction documents shall illustrate where the space is architecturally altered and require the PA speakers to be removed and reinstalled to allow for that modification.
2. Provide new PA speaker system in the new addition and connect to existing PA system.
3. The design consultant shall provide detailed survey, floor plans, riser and specifications.

H. Existing Generator System

The existing natural gas generator is a 15KW, 208V, 3 phase and 4 wire Generac and is operational.



Generator Nameplate

I. Existing Elevator and New Elevator

The existing passenger elevator is antiquated.

Elevator Control Panel

Recommendation:

1. Modernize the existing elevator per industry best practice.
2. The design consultant shall commission an elevator design consultant to provide detailed survey, floor plans, riser and specifications.
3. Provide new ADA compliant elevator in new building addition.