## Facility Condition Assessment Summary Report

*This report provides a summary of the Facility Condition Index (FCI) value of a school facility and select major building systems. The FCI calculation represents the cost of needed repairs divided by the replacement value. The FCI is a numerical value of condition and helps to identify the need for renewal or replacement of specific parts of the facility. The FCI is particularly useful when comparing similar facilities within the same portfolio.*

## Roxborough High School

| | | | |
|---|---|---|---|
| Governance | DISTRICT | Report Type | High |
| Address | 6498 Ridge Ave. | Enrollment | 631 |
| | Philadelphia, Pa 19128 | Grade Range | '09-12' |
| Phone/Fax | 215-487-4464 / 215-487-4843 | Admissions Category | Neighborhood |
| Website | Www.Philasd.Org/Schools/Roxborough | Turnaround Model | N/A |

## Building/System FCI Tiers

**Facility Condition Index (FCI) = Cost of Assessed Deficiencies / Replacement Value**

| < 15% | 15 to 25% | 25 to 45% | 45 to 60% | > 60% |
|---|---|---|---|---|
| **Buildings** | | | | |
| Minimal Current Capital Funding Required | Refurbish Systems in building | Replace Systems in building. | Building should be considered for major renovation. | Building should be considered for closing/replacement. |
| **Systems** | | | | |
| Perform routine maintenance on system | System requires minor repairs | System should be studied to determine repair vs. replacement. | System is nearing end of its life expectancy and should be considered for replacement | System should be replaced as part of the Capital Program |

## Building and Grounds

| | FCI | Repair Costs | Replacement Cost |
|---|---|---|---|
| **Overall** | **21.56%** | **$26,370,437** | **$122,293,293** |
| Building | 21.88 % | $26,351,584 | $120,425,050 |
| Grounds | 01.01 % | $18,853 | $1,868,243 |

## Major Building Systems

| Building System | System FCI | Repair Costs | Replacement Cost |
|---|---|---|---|
| **Roof** (Shows physical condition of roof) | 89.16 % | $2,032,921 | $2,280,000 |
| **Exterior Walls** (Shows condition of the structural condition of the exterior facade) | 06.23 % | $645,789 | $10,368,000 |
| **Windows** (Shows functionality of exterior windows) | 00.00 % | $0 | $6,604,800 |
| **Exterior Doors** (Shows condition of exterior doors) | 63.98 % | $178,114 | $278,400 |
| **Interior Doors** (Classroom doors) | 00.00 % | $0 | $902,400 |
| **Interior Walls** (Paint and Finishes) | 44.89 % | $948,343 | $2,112,400 |
| **Plumbing Fixtures** | 00.00 % | $0 | $3,244,800 |
| **Boilers** | 00.00 % | $0 | $4,480,800 |
| **Chillers/Cooling Towers** | 43.76 % | $2,570,790 | $5,875,200 |
| **Radiators/Unit Ventilators/HVAC** | 18.98 % | $1,958,209 | $10,317,600 |
| **Heating/Cooling Controls** | 22.01 % | $713,105 | $3,240,000 |
| **Electrical Service and Distribution** | 141.77 % | $3,300,516 | $2,328,000 |
| **Lighting** | 30.57 % | $2,544,281 | $8,323,200 |
| **Communications and Security** (Cameras, Pa System and Fire Alarm) | 01.79 % | $55,741 | $3,117,600 |

*Please note that some FCIs may be over 100% because there are times when replacing a building system requires that other building systems be upgraded to complete the installation. A FCI of 0.0% represents that there are no current deficiencies with the associated system.*

School District of Philadelphia

# S603001;Roxborough

Final

## Site Assessment Report

January 31, 2017

PARSONS

# Table of Contents

## Site Executive Summary

The organization of this report, as displayed in the Table of Contents, follows the structure of the associated eCOMET database. The overall node for each school campus begins with the letter "S", which indicates the "Site" label. Each Site is comprised of separate "Building" and "Grounds" nodes; their asset names begin with the letters "B" and "G" respectively. Information rolls up to the Site node from the Building and Grounds nodes. This Site report combines facility information with subsections for the Buildings And Grounds nodes.

The basis for the evaluation of condition is the functional systems and elements of a building and grounds organized according to the UNIFORMAT II Elemental Classification. The grouping of these systems and elements and applying a current replacement value to them develops a representative building cost model. Cost Models are typically developed for similar building types and functions. Evaluation of systems and their elements takes into account their current replacement values, life cycles, installation dates and next renewal dates. Systems and their elements that are within their useful lives are further evaluated to identify current deficient conditions that may have a significant impact on a system's or element's remaining service life, and to determine if they are beyond their predicted expected life. The system's or element's current replacement value is based on RS Means Commercial Cost Data.

Following are the cost model's system details for this facility. The Replacement Value is the amount needed to replace the property of the same present value. The Current Repair Amount, also known as Condition Needs, represents the budgeted contractor installed costs plus owner's soft costs for the repair, replacement or renewal for a component or system level deficiency. It excludes contributing costs for other components or systems that might also be associated with the corrective actions due to packaging the work. Facility Condition Index (FCI) is an industry-standard measurement calculated as the ratio of the repair costs to correct a facility's deficiencies to the facility's Current Replacement Value. Condition Index (CI) for a system is calculated as the sum of a the deficiencies divided by the sum of a system's Replacement Value (both values include soft-cost) expressed as a percentage ranging from 0% 100%.

| | |
|---|---|
| Gross Area (SF): | 240,000 |
| Year Built: | 1924 |
| Last Renovation: | |
| Replacement Value: | $122,293,293 |
| Repair Cost: | $26,370,436.66 |
| Total FCI: | 21.56 % |
| Total RSLI: | 58.61 % |

**Description:**

Facility Assessment

December 2015

School District of Philadelphia

Roxborough High School

6498 Ridge Ave.

Philadelphia, PA 19128

240,000 SF / 1,603 Students / LN 06

GENERAL

The Roxborough High School is one of the older schools in service to the Philadelphia communities and has several dedication plaques to

stakeholders in this schools history. This school is identified as B603001 and was originally designated as the Roxborough Public High School. This facility is located at 6498 Ridge Ave., and serves the Roxborough, Manayunk, and Germantown sections of Philadelphia, PA. The late Gothic Revival design of the rectangular-shaped, concrete and steel-framed building includes brick facades with a concrete foundation. Constructed in 1924 the school has had no major additions.

The main entrance faces the Northern exterior facing Ridge Avenue. This School serves students in grades 9 to 12 and has a basement with three stories consisting of a total gross square footage of 240,000 GSF.

This school has several classrooms, a library, kitchen and student commons, three Gyms, Auditorium and cafeteria, with supporting administrative spaces. Science, Music, Mechanical Arts, Art Department and R.O.T.C.

There are three sections of this school complex included in this report. The main building, Stadium and Field House.

The information for this report was collected during site visits on November 30 and December 1, 2015.

Mr. Derrick Warren, previous Building Engineer, and Mr. Everett Tyson, current Building Engineer, accompanied the assessment team on a tour of the school and provided detailed information on the building systems and maintenance history. Ms. Dana Jenkins, Principal, also shared information about the school with the assessment team.

Architectural / Structural Systems

The exterior brick surfaces are generally in fair to good condition for their age. In some locations, bricks have cracked or spalled and should be replaced. The repointing of deteriorated mortar joints is also recommended, using mortar of a similar color and consistency as the original. Following the detailed examination of the brick and repair of mortar construction joints, the entire building should be pressure washed to remove stains and embedded pollutants. If moisture is found to be penetrating the masonry facade, the application of a spray sealant to the suspected exterior masonry surface is recommended.

Most of the exterior windows have been upgraded from the original applications. As indicated in the photos the new system is a double pane aluminum framed application. The new window system is expected to have a normal life cycle that extends beyond the outlook of this report.

The exterior doors are metal applications with metal frames. The exterior door system for this school is a very high traffic system. Most of the doors are in fair condition but are aging at a faster rate than expected based on traffic and condition. The service doors on the roof have expired and failed compromising access to elevator rooms and tower rooms. The exterior door system, store front and service doors are recommended for upgrade.

There are a number of roof sections and different roof elevations ranging from the main roof to the addition roof. Parapet heights, coping materials, and the height of the flashing also varies in different sections. The main roof is a built up application that was installed in the early 1990'S. The other built up roofs have not conclusive installation dates and have been seal coated several times to extend the life cycle of the application. During the time of the inspection it was reported that several leaks are active and a consistent repair program is consuming efforts to maintain the roof. Considering the age and condition of the roofing systems, universal upgrades are recommended. Remove and replace all roof sections. This deficiency is expected to be completed as part of an exterior effort coordinated with other recommendations included in this report.

Special consideration for those that may be physically challenged was a main factor in the construction of the additions of this school but not the main building. This schools additions design is a good example for the district as the needs of the physically challenged appear to have been paramount. Currently there is are two compliant entrances at grade. The path of travel is clear from this access points as the interior path of travel is supported by interior ramps, elevator, some compliant signage, restrooms amities, compliant door hardware, hand rails and guard rails to meet the needs of the physically challenged. The main building will require several upgrades to meet the needs of the physically challenged.

The original lobby has a special design that has been modified to support access to the main lobby and addition. The finish is marble walls, stirs, and custom designed ceilings with open stairs on either side leading to the second floor while the main level leads to the auditorium. Care should be taken to ensure that this historic lobby remains as clean and well maintained in the feature as it was the day of the inspection.

A large portion of the interior corridor, exit stair doors are not code compliant. Several doors are typically wood or metal in metal frames with transom lites or sidelights, glass glazing. The older doors are generally in good condition considering the age of the application. To restore the door finishes, universal upgrades are required for the older door applications. Remove and replace original door systems with new code compliant fire rated door system.

There are several transom lites and sidelights constructed into hallway wall systems. It is recommended that the lites and sidelights be removed

and replaced with a fire rated wall construction. The deficiency provides a budgetary consideration to correct the hallway, transoms, lites and sidelights.

As indicted in the photos the wall failure and penetrations have not been conducted with the latest code in mind. This deficiency provides a budgetary consideration to build a fire rated wall or fill to enhance this oversight. This deficiency is expected to be coordinated with other interior efforts.

There are two abandoned gang restrooms on the floors that are not being used. The restrooms are original and the marble, wooden or missing partitions show the excessive problems with the restrooms. These restrooms warrant unique renovations to restore the systems to modern operations options and service to the school. Accessibility legislation requires that goods, amenities, and services offered in buildings, such as restrooms, be generally accessible to all people. There are no compliant restrooms located in this school. A unisex, compliant restroom should be added on each of the eight floors. Recommended modifications include the construction of new single occupancy restrooms in existing academic areas to accommodate requirements. This involves adding two new partitions to enclose 50 square feet of area and installing a door with hardware, ceramic tile and plaster surfaces, suspended ceilings, plumbing fixtures, electrical fixtures, piping, HVAC equipment, and accessories for each new restroom. Also, the renovation of the existing restrooms and modification to new layouts and floor plans to support modern designs and requirements for ADA legislation.

Lab casework and countertops are located in the science classroom. They vary in design and degree of deterioration. The lab equipment was reported to have been upgraded in 2010 with selective replacement of both base cabinets and countertops. The new cabinetry is expected to have a life cycle that exceeds the review of this report.

There are several movable partitions that remain in classrooms. These wall systems are no longer used and in most cases cannot be used due to damage or wall modifications to support classroom needs. This deficiency provides a budgetary consideration to remove and replace the wall systems with universal removal of the existing movable partitions and upgrades to a permeate wall systems.

Interior doors are typically wood in wood frames with transom lites, sidelights, wired glass glazing. Other interior doors include wooden glass pane doors with original wooden pane frames, hollow metal in hollow metal frames at stairwells and exit ways. Doors are generally in good condition considering the age of the application. This system was reported to have been upgraded in the early 2000's. There are no recommendations warranted at this time.

There are several tack boards in the hallways for student displays. The systems are beyond the expected service life for this application. Remove and replace tack boards is recommended.

The classroom chalk boards are covered with temporary white boards in several rooms. There are several classrooms with the original chalk boards. This system is beyond its expected life and universal upgrades are warranted. Remove and upgrade chalkboards to new marker board systems.

There is no directional signage and room signage is a custom design in places and scarce or painted with no consistency in others. Accessibility signage criteria have been established for the physically challenged. These include mounting heights, contrast and finish, raised and Braille characters and pictograms, and character proportions and heights. It is recommended that compliant signage be installed throughout the building.

Current requirements for stairs indicate that they have graspable handrails on both sides, that the rails have a specific end geometry, and that the handrails continue horizontally at the landings. In addition, guardrails must prevent the passage of a 4 inch diameter sphere (6 inches in the triangle formed by the lower rail and tread/riser angle). Although the stairs are compliant with the code enforced at the time of construction until a major renovation occurs, they are deficient in handrail and guardrail design relative to current standards. Future efforts should include comprehensive stair railing removal and replacement upgrades.

There are painted walls, trim, and some painted ceilings in this building. Sections of the building, some textured concrete surfaces have been painted as well. The interior finishes are in fair to poor condition depending on the location of the finish. For example due to recent roof leaks over the auditorium several areas will require repair and repainting. Also, sections of the fifth floor are damaged due to neglect. This school will require an almost continuous program of renewal of the applied finishes to maintain an acceptable appearance. Cyclical painting should be considered for a standard approach to maintaining the quality of the interior finishes. It is recommended that all previously painted surfaces be repainted according to established cycles for this occupancy and use type. Minor repairs should be completed before work begins. The abandoned section of the fifth floor is expected to require major repairs and additional efforts to restore the finishes. This effort is expected to be coordinated with other mechanical electrical efforts in order to prevent overlapping efforts.

The marble and wall tile finishes are in very good condition and no issues surfaced during the time of the inspection. There are no recommendations required at this time.

The interior carpet finish was installed approximately in 2014 and is in very good condition. No issues surfaced therefore no recommendations are required at this time.

This school has sections of 12x12 floor tile that represents upgrades and abatement of the 9x9 tile, several sections of 9x9 vinyl finish remains in some of the classrooms and common areas. Suspected asbestos containing materials (ACM) are believed to be limited to the original vinyl floor tile and mastic. While currently sound and manageable in place, future renovation efforts should include provision to test and abate any and all ACM.

The classrooms and auditorium in this school have a wood floor finish that appears to be from original construction. As indicated in the photos the floors in the basement level were under water during the time of the inspection as a result of a water line leak discovered during the inspection. Also, on the third floor the wooden floor under the 12x12 tile floor was saturated with water as a result of a backed up condensation line. Other sections of wooden flooring is showing signs of age such as the effects of sanding and refinishing with yearly cleaning and waxing with some repairs. Most of the floor finish is in fair condition however, the finish is beyond its expected life cycle. It is recommended that the wooden floor finish be removed and replaced with an in kind finish.

The ceiling finish is a mix of 12 x 12 ceiling grid, painted and 2 x 4 Acoustical tile finish. Ceilings have been repaired in several areas and is in good condition considering the age of the application and the current condition of the school. The ceiling finish is expected to require upgrades to support the recommended mechanical electrical efforts in this report. This deficiency provides a budgetary consideration for removal and replacement of the current ceiling finish to a new acoustical tile finish. Considering the recommended mechanical and electrical upgrades this effort should be completed as part of an overall renewal program for the school. No work should be considered until after the recommended exterior efforts are complete.

The school stage has a stage curtain assembly that appears to be from the original construction. Modern applications are typically fire-proof applications with adjustable tracks and electric support for operation. The curtains are torn in a few section and the track is not functioning properly, overall the system is in poor condition. It is recommended that the curtain and track system be upgraded to a new system. Special care should be considered in regards to modern fire proofing for the new installation.

The fixed seating for this school is from the original construction. The systems are in fair condition considering the age and usage. This project provides a budgetary consideration for universal upgrades for the fixed seating and furnishing of this school. Ensure that ADA requirements are followed with the new seating layout.

MECHANICAL SYSTEMS

PLUMBING- Plumbing fixtures are standard china commercial quality with wall mounted lavatories, urinals and water closets. Lavatories have dual wheel handle faucets and urinals and water closets have recessed manual flush valves with lever operators. Custodial areas have cast iron service sinks or mop basins. There are dual level stainless steel water coolers with integral refrigeration in corridors and some counter top stainless steel sinks in break areas. Science classrooms have lab equipment with integral sinks and some emergency eye wash/showers. Domestic water is heated by an eighty gallon AO Smith gas water heater in the basement mechanical room with a small inline circulating pump, installed in 2003. Kitchen waste is piped through an above floor grease trap. A duplex sump pump is in the mechanical room for ground water removal. An Alyan duplex booster pump system is in the addition mechanical room. The domestic water system includes a water softener.

Water piping has been replaced since the original installation with copper in 2007. Sanitary, waste, vent and rainwater piping is original installation hub and spigot cast iron. The building has two water services, one in each of the building elements. The original building has a three inch service into the generator room. This line does not have a backflow preventer. The second service is a six inch line in a mechanical room on the lower level near the gymnasium. This line has a backflow preventer and is connected at Pechin St. Gas service is an eight inch line with pressure boost system located in the original building generator room.

The water heater should be serviceable for fifteen years. The cast iron piping has exceeded the anticipated service life. Rainwater and vent piping should continue functioning, but the sanitary and waste piping should be inspected to determine condition and replace damaged portions. Plumbing fixtures and most of the domestic water supply piping were replaced in 2007 and should be serviceable twenty seven more years for fixtures and seventeen years for distribution.

HVAC-Heating is generated by three HB Smith Mills 650 one hundred seventy hp sectional cast iron low pressure steam gas/ oil fired boilers in the basement mechanical room. The boilers have Power Flame burners with separate oil pumps and were installed in 1991. There is a Shipco boiler feed pump/ condensate receiver with four 1 ½ hp pumps. A chemical feed system treats make up water. There are combustion air louvers with dampers and a field fabricated boiler vent into a brick chimney. Oil is stored in two oil storage tanks. Tank gauges indicate both are ten thousand gallons and one is empty. A duplex fuel oil pump system in an adjacent room provides circulation.

The original building is heated by steam and the addition has a hot water heating system. Steam piping is insulated welded black steel and reportedly has leaks throughout the building. A mechanical room near the intersection of the two structures contains two Armstrong shell and tube heat exchangers and three Armstrong inline hot water pumps. Hot water piping is insulated black steel with screwed or welded fittings. Classrooms and some other areas have unit ventilators, with steam coils in older units and hot water coils in newer units. A renovation project in 2007 replaced both the steam and hot water unit ventilators with AAF units. Other areas requiring heat are served by steam or hot water radiators. Some radiators in corridors have sheet metal covers that are secured with several screws that must be removed entirely to access control valves. These should be modified to provide a small maintenance access panel. There are two inoperable house fan systems in basement fan rooms that provided ventilation to large spaces. The gymnasium has eight free blow suspended heating and ventilating units. The old gymnasium now used by Army ROTC has an inoperable heating and ventilating unit.

There is no central air conditioning. Two new HVAC systems were installed on the roof in 2007 for the IMC and computer lab. Each of these systems has a Mcquay exterior air handling unit with steam heating coil and DX cooling coil, connected to Carrier air cooled condensing units. The units are 7 ½ and 12 1/2 tons. There are some window air conditioners with most located in the addition. There is cooking in the kitchen and a wall canopy exhaust hood with fire suppression system. Mechanical toilet exhaust and other building exhaust is provided by six centrifugal roof ventilators. Some science classrooms on the third floor have fume exhaust hoods.

There are older pneumatic controls that are inoperable as well as new digital controls. The control air compressor in the mechanical room runs continuously due to leaks in the compressed air piping throughout the building. As part of the 2007 renovation new digital control valves were installed on existing steam radiators. All the 2007 unit ventilators have digital controls. There is a Honeywell Symmertre building automation system with a computer terminal in room 205. The system could not demonstrate some control functions during this survey, and apparently training and operation verification should be addressed.

The steam distribution piping and radiators are from original construction and should be replaced based on age and condition. The boilers and boiler feed pump were installed in 1991 and should be serviceable at least ten more years. Unit ventilators, the hot water system and the two roof mounted HVAC systems were installed in 2007 and should have remaining life of sixteen years. The recommendation for this report is to provide a chilled water system sized to air condition the auditorium and cafeteria, and not the entire building, with main piping sized to accommodate classroom air conditioning in the future if unit ventilators are replaced to provide heating and cooling.

FIRE PROTECTION - There are no sprinklers in this building.

ELECTRICAL SYSTEMS

Electrical Service-- The building is served by PECO Energy Company with two underground 4.16 kV services, ROX 133 and ROX 134, to utility-owned medium voltage line circuit breakers in Mechanical Room 006 via utility metering transformer cabinets for each service entrance. Each 4.16 kV service supplies a 577 kVA, 4.16 kV-120/240V, 2 phase, 3 wire transformer that feeds a 2500A (estimated), 120/240V, 2 phase switchboard with a tie circuit breaker. The equipment is not provided with manufacturer's nameplate identifying rating. One of the main circuit breakers feeds Panelboard MDP#2, a three section Federal Pacific Electric 750A knife blade fusible panelboard that is obsolete. The other main circuit breaker feeds Panelboards MDP1A and MDP1B, each rated 1200A, 120/240V, 1 phase, 3 wire, that were installed in 2007.

There are seven (7) phase converter transformers that feed kitchen equipment panelboard, Boiler Room panelboards, automatic transfer switch for the standby power system, auditorium dimmer panel, elevator and other equipment.

Except for Panelboards MDP1A and MDP1B, all of this equipment has reached the end of its useful life and needs to be replaced within the next 3 to 5 years. The existing service size does not have adequate capacity to serve the increased electrical demand for the addition of central air conditioning equipment. This report includes replacement of the existing 120/240V, 2 phase, 5 wire distribution system with a 208/120V, 3 phase, 4 wire package unit substation to serve the existing building loads, thereby eliminating the need for five phase converter transformers. A second 480/277V, 3 phase, 4 wire package unit substation would be provided to serve the central air conditioning equipment and larger mechanical loads.

A major renovation project was completed in 2007 but did not include replacement of panelboards on the floors. There are 27 panelboards throughout the building that are beyond their useful service life. Many of these panelboards are manufactured by Federal Pacific Electric and are obsolete. The two (2) 400A recessed panelboards in the kitchen are Westinghouse and the two (2) 100A recessed panelboards in the gymnasium are Federal Pacific Electric.

Receptacles-- Generally, most classrooms are provided with only a few duplex receptacles, especially at the front of the room. This report includes a budgetary allowance to provide 6 to 8 additional receptacles using a surface metal raceway system in each classroom that has not been provided with added receptacles (estimate 70 classrooms). A budgetary allowance is also included for replacement of 100 duplex receptacles throughout the building that need to be replaced because of age or condition.

Receptacles in the kitchen were not ground-fault circuit-interrupting (GFCI) type, as required by NFPA 70, National Electrical Code (NEC), Article

210.8 (B). Replace 12 duplex receptacles in the kitchen with GFCI type is included in this report.

Receptacles located within 6 feet of sink locations in science labs were observed to be GFCI type and in compliance with NEC.

Lighting--The renovation project completed in 2007 provided lighting upgrades in several areas of the building, including corridors on all floors, IMC, Auditorium and approximately 12 classrooms. However, there are several 2x4 fluorescent troffers in classrooms and corridors, mostly in the 1970's wing addition, that are missing door frames and acrylic lenses. A budgetary allowance is included in this report for providing 30 door frames and lenses on those fixtures. All other areas with fluorescent fixtures, including remaining classrooms, kitchen, cafeteria, locker rooms, Boiler Room, Basement mechanical rooms and most rooms on the Ground Floor of the 1970's addition have T12 lamps, and are beyond their useful life. There are also incandescent fixtures in some rooms, such as the storage room in the kitchen, which should be replaced with a more energy efficient lamp source, either fluorescent or LED.

The gymnasium is illuminated with (48) 400W metal halide industrial fixtures. Fixtures were replaced in 2007 and appear to be in good condition with a remaining useful life of approximately 12 years.

The auditorium was remodeled in 2007 with new house and stage lighting, theatrical lighting and Strand dimming system.

Lighting in classrooms is controlled by multiple light switches; there are no occupancy sensors for lighting control.

Exterior lighting fixtures are located at exit discharges. Fixtures are typically wall mounted above the door. Wall mounted high intensity discharge floodlighting fixtures are located around the perimeter of the building. Fixtures appear to be in fair condition, with an estimated remaining life of 5 to 8 years. On the south side of the building there are surface mounted lighting fixtures under the overhangs at both the floor and roof. These fixtures were reported to not be operational and most likely have been replaced with wall mounted floodlighting fixtures. These fixtures should be removed and their outlet boxes provided with weather-tight cover plates.

Fire Alarm System-- The fire alarm system is an Edwards Systems Technology EST 2 system. The fire alarm control panel (FACP) was replaced in 2007 and is located in Mechanical Room 006. The system consists of pull stations and audible/visual notification appliances throughout most of the building, including restrooms and classrooms. There are some classrooms, multiple occupancy rooms and restrooms that do not have notification appliances. An allowance for adding 30 audible/visual notification appliances is included in this report. Smoke detectors are located in elevator lobbies and machine room for elevator recall, and at corridor doors provided with magnetic door hold-open devices for door release upon detection of smoke. Remote annunciator panels are located at the main entrance and in the Building Engineer's Office. An additional remote annunciator panel should be provided in the Main Office. The system was reported to be less than 10 years old and is expected to have 10 years remaining life before replacement.

Telephone/LAN-- A telephone and data outlet is provided in each classroom. Wireless access points are provided in classrooms, offices, auditorium, gymnasiums and other areas for Wi-Fi service throughout the entire school. The Main Distribution Frame (MDF) is located on the First Floor. Intermediate Distribution Frames (IDFs) are located as needed to limit station cabling to the maximum allowable length.

Intercom/Paging/Sound Systems-- The paging system is accessed through the telephone system. Paging amplifiers and volume attenuators are located in MDF Room to provide paging interface with the telephone system. Each classroom has a ceiling recessed or wall mounted paging speaker. There arealso ceiling recessed paging speakers in the corridors, kitchen and cafeteria. Horn type speakers are provided in the gymnasiums and on the exterior of the building. This paging system is estimated to have a remaining useful life of 8 to 10 years.

Clock and Program System--There is a Primex wireless GPS master clock system with synchronized battery-operated clocks in classrooms, offices, cafeteria, gymnasium and throughout building the building. The paging speakers are used for program announcements. The clock and program systems are estimated to have remaining lives of 10 to 12 years.

Television System--The original television system is obsolete no longer used and has been replaced with smart boards, internet and overhead projectors in the classroom. Most of the wall mounted television monitors were abandoned in place in classrooms, cafeteria and other rooms rather than removed. Removal of unused television monitors is recommended.

Video Surveillance and Security Systems-- The video surveillance system equipment is located in School Police Room 137A. The system includes 110 video surveillance cameras, including seven (7) exterior cameras, eight (8) monitors and seven (7) digital video recorders (DVRs). Video surveillance cameras provide coverage of corridors, stairwells, cafeteria, gymnasium and site. The video surveillance system appears to be in good condition with an estimated remaining useful life of 10 years.

Security motion sensors are located in corridors, typically at each stairwell.

Emergency Power System-- There is a Kohler 45 kW/56.2 kVA, 208/120V, 3 phase, 4 wire, diesel fueled standby generator located in the

Basement. The generator feeds three (3) 200A plug-in fusible type emergency lighting panelboards through a Generac GTS 200A automatic transfer switch (ATS). The generator, ATS and emergency panelboards are beyond their useful life. Consideration should be given to replacing the generator with a larger rating to supply the elevators with standby power.

There is also a 40 kW/50 kVA, 208/120V, 3 phase generator that serves the IT system for the School District that is located adjacent to the standby generator for the building. The Core Site system includes a bypass-isolation automatic transfer switch, 45 kVA isolation transformer and panelboard. The system was installed in 2011.

Emergency Lighting System / Exit Lighting-- Emergency egress and exit lighting fixtures are served from the emergency lighting panelboard. Exit signs are incandescent type. It was observed that many of the exit signs that were damaged, in poor condition, or not illuminated. All exit signs should be replaced with LED type. This deficiency includes adding exit signs where they are missing.

Lightning Protection System-- There is no lightning protection system for this building.

Conveying Systems-- The building has two hydraulic electric passenger elevators. Elevator No. 1 is located in the 1970's building addition. Elevator No. 2 was installed in 2007 and serves two floors in the IMC. Both elevators have separate safety switches for cab lighting wired on emergency power. Both elevators are in good condition, with a remaining life of more than 20 years.

GROUNDS

The sidewalk system has been upgraded in several areas and is on a program of replacement. Several sections have been replaced each year and this program is expected to continue as part of a maintenance cycle. With this in mind there are no recommendations required at this time.

The trash dumpster is located south of the main building enclosed by site fencing but open to students. The exterior services are not protected. Upgrades to protect the exterior services and trash area is necessary for the safety of the students and the general public. Construction of a secure lockable dumpster area is recommended.

This school has a perimeter fence surrounding the service parking and loading dock area. The fence is in good condition. This fence system does not require upgrades at this time.

The parking area has assigned parking and markers for approved activity areas. The curb cuts for access to the sidewalks that lead to the ADA main entrance. The parking play lot is in good condition and there are no recommendations required at this time.

This school has limited landscaping with a few mature trees and small sections of turf. The landscaping is in good condition and is on a program of renewal. There were no issues that surfaced during the time of the inspection therefore no projects or recommendations are required at this time.

There is a small retaining wall that is made of stone that surrounds the older section of the school. The retaining wall is in good condition. There are no recommendations required at this time.

Site Lighting-- The site is illuminated only from building mounted floodlighting fixtures. There are no site lighting poles.

Site video surveillance system--There are seven (7) exterior video surveillance cameras that are mounted around the perimeter of building to provide coverage of the entrances, parking and site. Cameras are in good condition. No recommendations at this time.

RECOMMENDATIONS

- Replace auditorium seating
- Remove and replace stage curtain
- Remove and replace suspended acoustic ceilings

- Remove and replace wood flooring
- Remove VAT and replace with VCT
- Repair and repaint all interior walls
- Replace inadequate or install proper stair railing
- Replace missing or damaged signage
- Remove and replace tack boards
- Remove and replace interior rated doors
- Remove and replace chalk boards
- Install fire rated walls and door where required
- Remove and Replace Built Up Roof
- Remove and replace exterior doors
- Repair cracks in masonry
- Build secure trash dumpster enclosure
- Provide an eighty ton chilled water system with air cooled package chillers on the roof with pumps, piping and controls. Connect to new air handling units.
- Install NFPA wet pipe automatic sprinkler system in entire building, including fire service, piping sprinkler heads, standpipes and fire pump if required.

- Inspect old cast iron sanitary piping including camera observation and replace damaged sections.

- Provide a new central station air handling unit for the auditorium with hot and chilled water coils, filters, outside and return air dampers, hydronic valves and controls, blower and motor. Connect to hot and chilled water systems and control system.

- Provide a new central station air handling unit for the cafeteria with hot and chilled water coils, filters, outside and return air dampers, hydronic valves and controls, blower and motor. Connect to hot and chilled water systems and control system.

- Install backflow preventer in existing three inch water service.

- Remove service entrance equipment, including utility medium voltage line circuit breakers, two (2) 577 kVA transformers and the double-ended 2500A, 120/240V, 2 phase, 5 wire Main Switchboard and 750A Panelboard MDP#2. Replace with new utility switchgear, a 1500 kVA, 5000A, 208/120V, 3 phase, 4 wire package unit substation to serve the existing building loads, thereby eliminating the need for five phase converter transformers. Provide 1500 kVA, 2500A, 480/277V, 3 phase, 4 wire package unit substation to serve central air conditioning equipment and larger mechanical loads.

- Remove a total of seven (7) phase change transformers: one (1) 150 kVA, two (2) 100 kVA, three (3) 50 KVA and one (1) 45 kVA; feed equipment from 208/120V switchboard. Replace 600A Panelboard BP, 200A knife blade panelboard in Boiler Room, 100A Panelboard BB, 400A Kitchen panelboard in Mechanical Room 006, and 100A night light panelboard.

- Replace 27 panelboards located throughout the building, including replacing feeder conductors.

- Provide surface metal raceway system with 6 to 8 duplex receptacles in each of 70 classrooms.

- Provide budgetary allowance for replacement of 100 duplex receptacles throughout the building that need to be replaced because of age or condition.

- Receptacles in the kitchen were not ground-fault circuit-interrupting (GFCI) type, as required by NFPA 70, National Electrical Code (NEC), Article 210.8 (B). Replace 12 duplex receptacles in the kitchen with GFCI type.

- Provide a budgetary allowance for replacement of missing door frames and acrylic lenses on 2x4 fluorescent troffers in classrooms and corridors, mostly in the 1970 building addition.

- Replace fluorescent fixtures and branch wiring for fixtures that have obsolete T12 lamps, including classrooms that have not been upgraded, kitchen, cafeteria, locker rooms, Boiler Room, Basement mechanical rooms and most rooms on the Ground Floor of the 1970's building addition (classrooms 60,580 SF, kitchen 3,060 SF, cafeteria 9,040 SF, mechanical 12,000 SF, Ground Floor 18,000 SF, administrative, faculty, offices and support 11,240 SF).

- Remove exterior surface mounted lighting fixtures that are located under the overhangs on the south side of the building and provide weather-tight cover plates on outlet boxes. Fixtures are no longer used and have been replaced with surface mounted floodlighting fixtures.

- Provide allowance for adding (30) audible/visual fire alarm notification appliances in classrooms, multiple occupancy rooms and restrooms that are missing devices. Add fire alarm remote annunciator panel in the Main Office.

- Remove existing 40 kW standby generator system equipment and replace with generator sized for all emergency egress and exit lighting and hydraulic elevators (estimated size is 150 kW).

- Replace all exit signs with LED exit signs and add exit signs where missing (estimate replacing 121 exit signs, adding 24 exit signs).

**Attributes:**

**General Attributes:**

| | | | |
|---|---|---|---|
| Active: | Open | Bldg Lot Tm: | Lot 5 / Tm 1 |
| Status: | Accepted by SDP | Team: | Tm 1 |
| Site ID: | S603001 | | |

## Site Condition Summary

The Table below shows the CI and FCI for each major system shown at the UNIFORMAT classification Level II. Note that Systems with lower FCIs require less investment than systems with higher FCIs.

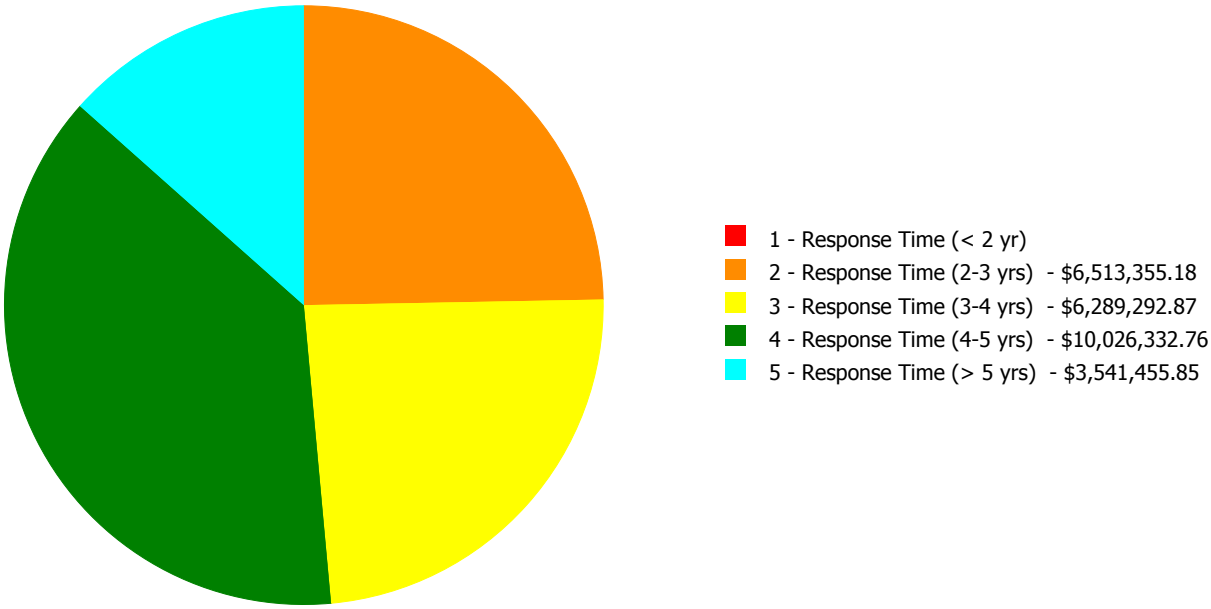
### Current Investment Requirement and Condition by Uniformat Classification

| UNIFORMAT Classification | RSLI% | FCI % | Current Repair |
|---|---|---|---|
| A10 - Foundations | 37.00 % | 0.00 % | $0.00 |
| A20 - Basement Construction | 37.00 % | 0.00 % | $0.00 |
| B10 - Superstructure | 37.00 % | 0.00 % | $0.00 |
| B20 - Exterior Enclosure | 56.51 % | 4.78 % | $823,903.21 |
| B30 - Roofing | 59.87 % | 89.16 % | $2,032,920.66 |
| C10 - Interior Construction | 39.73 % | 15.00 % | $997,762.63 |
| C20 - Stairs | 37.75 % | 71.36 % | $268,902.39 |
| C30 - Interior Finishes | 56.56 % | 49.71 % | $5,954,303.72 |
| D10 - Conveying | 57.14 % | 0.00 % | $0.00 |
| D20 - Plumbing | 75.59 % | 23.08 % | $1,075,900.69 |
| D30 - HVAC | 69.36 % | 21.86 % | $5,242,103.56 |
| D40 - Fire Protection | 92.47 % | 177.49 % | $3,433,307.14 |
| D50 - Electrical | 102.74 % | 44.22 % | $6,238,076.94 |
| E10 - Equipment | 34.29 % | 0.00 % | $0.00 |
| E20 - Furnishings | 30.00 % | 55.63 % | $284,403.20 |
| G20 - Site Improvements | 45.92 % | 1.39 % | $18,852.52 |
| G40 - Site Electrical Utilities | 50.00 % | 0.00 % | $0.00 |
| **Totals:** | **58.61 %** | **21.56 %** | **$26,370,436.66** |

### Condition Deficiency Priority

| Facility Name | Gross Area (S.F.) | FCI % | 1 - Response Time (< 2 yr) | 2 - Response Time (2-3 yrs) | 3 - Response Time (3-4 yrs) | 4 - Response Time (4-5 yrs) | 5 - Response Time (> 5 yrs) |
|---|---|---|---|---|---|---|---|
| B603001;Roxborough | 240,000 | 21.88 | $0.00 | $6,494,502.66 | $6,289,292.87 | $10,026,332.76 | $3,541,455.85 |
| G603001;Grounds | 117,200 | 1.01 | $0.00 | $18,852.52 | $0.00 | $0.00 | $0.00 |
| **Total:** | | **21.56** | **$0.00** | **$6,513,355.18** | **$6,289,292.87** | **$10,026,332.76** | **$3,541,455.85** |

### Deficiencies By Priority



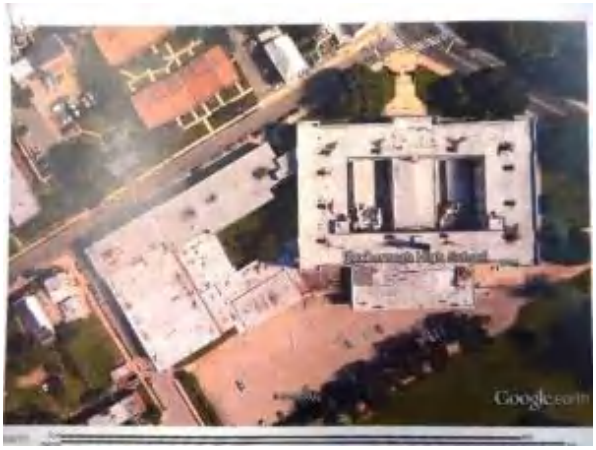

**Budget Estimate Total: $26,370,436.66**

## Executive Summary

Building condition is evaluated based on the functional systems and elements of a building and organized according to the UNIFORMAT II Elemental Classification. The grouping of these systems and elements and applying a current replacement value to them develops a representative building cost model. Cost Models are developed for similar building types and functions. Systems and their elements are evaluated based on their current replacement values, life cycles, installation dates and next renewal dates. Systems and their elements that are within their useful lives are further evaluated to identify current deficient conditions that may have a significant impact on a system's or element's remaining service life, and to determine if they are beyond their predicted expected life. The system's or element's current replacement value is based on RS Means Commercial Cost Data.

Following are the cost model's system details for this facility. The Replacement Value is the amount needed to replace the property of the same present value. The Current Repair Amount, also known as Condition Needs, represents the budgeted contractor installed costs plus owner's soft costs for the repair, replacement or renewal for a component or system level deficiency. It excludes contributing costs for other components or systems that might also be associated with the corrective actions due to packaging the work. Facility Condition Index (FCI) FCI is an industry-standard measurement of facility condition calculated as the ratio of the costs to correct a facility's deficiencies to the facility's Current Replacement Value. It ranges from 0% (new) to 100% (very poor). Condition Index (CI) is calculated as the sum of a renewable system's Remaining Service Life (RSL) divided by the sum of a system's Replacement Value (both values exclude soft-cost to simplify calculation updates) expressed as a percentage ranging from 100% (new) to 0% (expired).

| | |
|---|---|
| Function: | High School |
| Gross Area (SF): | 240,000 |
| Year Built: | 1924 |
| Last Renovation: | |
| Replacement Value: | $120,425,050 |
| Repair Cost: | $26,351,584.14 |
| Total FCI: | 21.88 % |
| Total RSLI: | 58.79 % |



**Description:**

**Attributes:**

**General Attributes:**

| | | | |
|---|---|---|---|
| Active: | Open | Bldg ID: | B603001 |
| Sewage Ejector: | No | Status: | Accepted by SDP |
| Site ID: | S603001 | | |

## Condition Summary

The Table below shows the CI and FCI for each major building system shown at the UNIFORMAT classification Level II. Note that Systems with lower FCIs require less investment than systems with higher FCIs.

| UNIFORMAT Classification | RSLI % | FCI % | Current Repair Cost |
|---|---|---|---|
| A10 - Foundations | 37.00 % | 0.00 % | $0.00 |
| A20 - Basement Construction | 37.00 % | 0.00 % | $0.00 |
| B10 - Superstructure | 37.00 % | 0.00 % | $0.00 |
| B20 - Exterior Enclosure | 56.51 % | 4.78 % | $823,903.21 |
| B30 - Roofing | 59.87 % | 89.16 % | $2,032,920.66 |
| C10 - Interior Construction | 39.73 % | 15.00 % | $997,762.63 |
| C20 - Stairs | 37.75 % | 71.36 % | $268,902.39 |
| C30 - Interior Finishes | 56.56 % | 49.71 % | $5,954,303.72 |
| D10 - Conveying | 57.14 % | 0.00 % | $0.00 |
| D20 - Plumbing | 75.59 % | 23.08 % | $1,075,900.69 |
| D30 - HVAC | 69.36 % | 21.86 % | $5,242,103.56 |
| D40 - Fire Protection | 92.47 % | 177.49 % | $3,433,307.14 |
| D50 - Electrical | 102.74 % | 44.22 % | $6,238,076.94 |
| E10 - Equipment | 34.29 % | 0.00 % | $0.00 |
| E20 - Furnishings | 30.00 % | 55.63 % | $284,403.20 |
| **Totals:** | **58.79 %** | **21.88 %** | **$26,351,584.14** |

## Condition Detail

This section of the report contains results of the Facility Condition Assessment. The building is separated into system components based on UNIFORMAT II classification. The columns in the System Listing table below represent the following:

1. System Code: A code that identifies the system.
2. System Description: A brief description of a system present in the building.
3. Unit Price $: The unit price of the system.
4. UoM: The unit of measure for of the system.
5. Qty: The quantity for the system
6. Life: anticipated service life for thesystem based on Building Owners and Managers Association (BOMA) recommendations.
7. Year Installed: The date of system installation.
8. Calc Next Renewal Year: The date of system expiration based on the life, NR stands for non renewable.
9. Next Renewal Year: The suggested system expiration date by the assessor based on visual inspection.
10. CI: The Condition Index of the system.
11. FCI: The Facility Condition Index of the system.
12. RSL: Remaining Service Life.
13. eCR: eCOMET Condition Rating (not used).
14. Deficiency $: The financial investment to repair/replace system.

## System Listing

The System Listing table below lists each of the systems organized by their UNIFORMAT II classification. The assessment team was tasked with recording the most recent replacement year of each system, determining the remaining service life based on the theoretical life, and evaluating the condition to confirm the forecast next replacement year. The system listing is the basis for all data contained in the Building Assessment Report.

Additionally, a condition rating (eCR) based on the following guidelines is provided as observed at the time of the assessment.

- Excellent (E) - No noticeable distress or damage. The entire system is free from observable defect.
- Very Good (VG) - Overall no serviceability reduction for the entire system. No degradation of critical components and minor distress and defect noticeable for some but not non critical components within the system.
- Good (G) - Slight or no serviceability reduction for the entire system. There may be noticeable defects for some non critical components and slight noticeable degradation of the critical components.
- Fair (F) - Overall serviceability is degraded but adequate. There may be moderate deterioration for very few of the critical components and few of the non critical components may have severe degradation.
- Marginal (MA) - Overall serviceability and reliability loss. Most if not all of the non critical components suffer from severe degradation and a few of the critical component may have severe degradation.
- Moderate (MO) - Overall a significant serviceability loss. Most if not all the components have severe degradation with the reminder of the component showing visible distress.
- Very Poor (VP) - Overall the system is barely functional. All of the components are severely degraded.
- Non-Functional (NF) - Overall the system does not function with all the components having no serviceability and suffer from severe degradation.

| System Code | System Description | Unit Price $ | UoM | Qty | Life | Year Installed | Calc Next Renewal Year | Next Renewal Year | RSLI% | FCI% | RSL | eCR | Deficiency $ | Replacement Value $ |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| A1010 | Standard Foundations | $27.30 | S.F. | 240,000 | 100 | 1924 | 2024 | 2052 | 37.00 % | 0.00 % | 37 | | | $6,552,000 |
| A1030 | Slab on Grade | $5.17 | S.F. | 240,000 | 100 | 1924 | 2024 | 2052 | 37.00 % | 0.00 % | 37 | | | $1,240,800 |
| A2010 | Basement Excavation | $4.36 | S.F. | 240,000 | 100 | 1924 | 2024 | 2052 | 37.00 % | 0.00 % | 37 | | | $1,046,400 |
| A2020 | Basement Walls | $9.91 | S.F. | 240,000 | 100 | 1924 | 2024 | 2052 | 37.00 % | 0.00 % | 37 | | | $2,378,400 |
| B1010 | Floor Construction | $85.34 | S.F. | 240,000 | 100 | 1924 | 2024 | 2052 | 37.00 % | 0.00 % | 37 | | | $20,481,600 |
| B1020 | Roof Construction | $14.39 | S.F. | 60,000 | 100 | 1924 | 2024 | 2052 | 37.00 % | 0.00 % | 37 | | | $863,400 |
| B2010 | Exterior Walls | $43.20 | S.F. | 240,000 | 100 | 1924 | 2024 | 2052 | 37.00 % | 6.23 % | 37 | | $645,789.44 | $10,368,000 |
| B2020 | Exterior Windows | $27.52 | S.F. | 240,000 | 40 | 2010 | 2050 | | 87.50 % | 0.00 % | 35 | | | $6,604,800 |
| B2030 | Exterior Doors | $1.16 | S.F. | 240,000 | 25 | 1924 | 1949 | 2027 | 48.00 % | 63.98 % | 12 | | $178,113.77 | $278,400 |
| B3010105 | Built-Up | $37.76 | S.F. | 60,000 | 20 | 1990 | 2010 | 2027 | 60.00 % | 89.73 % | 12 | | $2,032,920.66 | $2,265,600 |
| B3020 | Roof Openings | $0.06 | S.F. | 240,000 | 30 | 1924 | 1954 | 2027 | 40.00 % | 0.00 % | 12 | | | $14,400 |
| C1010 | Partitions | $21.05 | S.F. | 240,000 | 100 | 1924 | 2024 | 2052 | 37.00 % | 17.52 % | 37 | | $885,353.45 | $5,052,000 |
| C1020 | Interior Doors | $3.76 | S.F. | 240,000 | 40 | 2000 | 2040 | | 62.50 % | 0.00 % | 25 | | | $902,400 |
| C1030 | Fittings | $2.90 | S.F. | 240,000 | 40 | 1924 | 1964 | 2027 | 30.00 % | 16.15 % | 12 | | $112,409.18 | $696,000 |
| C2010 | Stair Construction | $1.18 | S.F. | 240,000 | 100 | 1924 | 2024 | 2052 | 37.00 % | 94.95 % | 37 | | $268,902.39 | $283,200 |
| C2020 | Stair Finishes | $0.39 | S.F. | 240,000 | 30 | 1924 | 1954 | 2027 | 40.00 % | 0.00 % | 12 | | | $93,600 |
| C3010230 | Paint & Covering | $13.21 | S.F. | 140,000 | 10 | 1924 | 1934 | 2027 | 120.00 % | 51.28 % | 12 | | $948,342.78 | $1,849,400 |
| C3010232 | Wall Tile | $2.63 | S.F. | 100,000 | 30 | 1924 | 1954 | 2027 | 40.00 % | 0.00 % | 12 | | | $263,000 |

# Site Assessment Report - B603001;Roxborough

| System Code | System Description | Unit Price $ | UoM | Qty | Life | Year Installed | Calc Next Renewal Year | Next Renewal Year | RSLI% | FCI% | RSL | eCR | Deficiency $ | Replacement Value $ |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| C3020411 | Carpet | $7.30 | S.F. | 5,000 | 10 | 2014 | 2024 | | 90.00 % | 0.00 % | 9 | | | $36,500 |
| C3020412 | Terrazzo & Tile | $75.52 | S.F. | 20,000 | 50 | 1924 | 1974 | 2027 | 24.00 % | 0.00 % | 12 | | | $1,510,400 |
| C3020413 | Vinyl Flooring | $9.68 | S.F. | 60,000 | 20 | 1924 | 1944 | 2027 | 60.00 % | 41.38 % | 12 | | $240,350.63 | $580,800 |
| C3020414 | Wood Flooring | $22.27 | S.F. | 120,000 | 25 | 1924 | 1949 | 2027 | 48.00 % | 65.45 % | 12 | | $1,749,124.26 | $2,672,400 |
| C3020415 | Concrete Floor Finishes | $0.97 | S.F. | 35,000 | 50 | 1924 | 1974 | 2027 | 24.00 % | 0.00 % | 12 | | | $33,950 |
| C3030 | Ceiling Finishes | $20.97 | S.F. | 240,000 | 25 | 1924 | 1949 | 2027 | 48.00 % | 59.94 % | 12 | | $3,016,486.05 | $5,032,800 |
| D1010 | Elevators and Lifts | $1.28 | S.F. | 240,000 | 35 | 1924 | 1959 | 2035 | 57.14 % | 0.00 % | 20 | | | $307,200 |
| D2010 | Plumbing Fixtures | $13.52 | S.F. | 240,000 | 35 | 2007 | 2042 | | 77.14 % | 0.00 % | 27 | | | $3,244,800 |
| D2020 | Domestic Water Distribution | $1.68 | S.F. | 240,000 | 25 | 2007 | 2032 | | 68.00 % | 8.51 % | 17 | | $34,306.86 | $403,200 |
| D2030 | Sanitary Waste | $2.32 | S.F. | 240,000 | 30 | 1924 | 1954 | 2047 | 106.67 % | 187.07 % | 32 | | $1,041,593.83 | $556,800 |
| D2040 | Rain Water Drainage | $1.90 | S.F. | 240,000 | 30 | 1924 | 1954 | 2025 | 33.33 % | 0.00 % | 10 | | | $456,000 |
| D3020 | Heat Generating Systems | $18.67 | S.F. | 240,000 | 35 | 1991 | 2026 | | 31.43 % | 0.00 % | 11 | | | $4,480,800 |
| D3030 | Cooling Generating Systems | $24.48 | S.F. | 240,000 | 30 | | | 2047 | 106.67 % | 43.76 % | 32 | | $2,570,789.56 | $5,875,200 |
| D3040 | Distribution Systems | $42.99 | S.F. | 240,000 | 25 | 2007 | 2032 | | 68.00 % | 18.98 % | 17 | | $1,958,209.49 | $10,317,600 |
| D3050 | Terminal & Package Units | $11.60 | S.F. | 6,000 | 20 | | | | 0.00 % | 0.00 % | | | | $69,600 |
| D3060 | Controls & Instrumentation | $13.50 | S.F. | 240,000 | 20 | 2007 | 2027 | | 60.00 % | 22.01 % | 12 | | $713,104.51 | $3,240,000 |
| D4010 | Sprinklers | $7.05 | S.F. | 240,000 | 35 | | | 2052 | 105.71 % | 202.91 % | 37 | | $3,433,307.14 | $1,692,000 |
| D4020 | Standpipes | $1.01 | S.F. | 240,000 | 35 | | | | 0.00 % | 0.00 % | | | | $242,400 |
| D5010 | Electrical Service/Distribution | $9.70 | S.F. | 240,000 | 30 | 1924 | 1954 | 2047 | 106.67 % | 141.77 % | 32 | | $3,300,516.04 | $2,328,000 |
| D5020 | Lighting and Branch Wiring | $34.68 | S.F. | 240,000 | 20 | 1924 | 1944 | 2037 | 110.00 % | 30.57 % | 22 | | $2,544,280.52 | $8,323,200 |
| D5030 | Communications and Security | $12.99 | S.F. | 240,000 | 15 | 1924 | 1939 | 2027 | 80.00 % | 1.79 % | 12 | | $55,740.82 | $3,117,600 |
| D5090 | Other Electrical Systems | $1.41 | S.F. | 240,000 | 30 | 1924 | 1954 | 2047 | 106.67 % | 99.75 % | 32 | | $337,539.56 | $338,400 |
| E1020 | Institutional Equipment | $4.82 | S.F. | 240,000 | 35 | 1924 | 1959 | 2027 | 34.29 % | 0.00 % | 12 | | | $1,156,800 |
| E1090 | Other Equipment | $11.10 | S.F. | 240,000 | 35 | 1924 | 1959 | 2027 | 34.29 % | 0.00 % | 12 | | | $2,664,000 |
| E2010 | Fixed Furnishings | $2.13 | S.F. | 240,000 | 40 | 1924 | 1964 | 2027 | 30.00 % | 55.63 % | 12 | | $284,403.20 | $511,200 |
| | | | | | | | | **Total** | **58.79 %** | **21.88 %** | | | **$26,351,584.14** | **$120,425,050** |

## System Notes

The facility description in the site executive summary contains an overview of each system. The notes listed below provide additional information on select systems found within the facility.

**System:** C3010 - Wall Finishes — This system contains no images

**Note:**
Marble Tile 40%
Painted plaster 40%
Brick 10%

**System:** C3020 - Floor Finishes — This system contains no images

**Note:**
Carpet 2%
Terrazzo Tile 8%
Vinyl 25%
wood 50%
Concrete 15%

**System:** D5010 - Electrical Service/Distribution — This system contains no images

**Note:**
There are two (2) 577 kVA service transformers and eight (8) secondary transformers, as follows:
(1) 150 kVA, 240V-208/120V, 3 phase, 4 wire, phase change
(2) 100 kVA, 240V-208/120V, 3 phase, 4 wire, phase change
(3) 50 kVA, 240V-208/120V, 3 phase, 4 wire, phase change
(1) 45 kVA, 208V-208/120V, 3 phase, 4 wire
(1) 45 kVA, 240V-240V, 3 phase, phase change

## Renewal Schedule

eCOMET forecasts future Capital Renewal funding needed to address expiring systems based on the Next Renewal year found in the Cost Models. A 3% annual inflation factor is applied to the costs for systems expiring in future years. The table below reflects recommended Capital Renewal funding needs over the next 10 years. Note: Cells with a zero value indicate systems for which renewal is not scheduled in that year.

*Inflation Rate: 3%*

| System | Current Deficiencies | 2016 | 2017 | 2018 | 2019 | 2020 | 2021 | 2022 | 2023 | 2024 | 2025 | Total |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Total:** | **$26,351,584** | **$0** | **$0** | **$0** | **$0** | **$0** | **$0** | **$0** | **$0** | **$52,387** | **$674,108** | **$27,078,079** |
| *** A - Substructure** | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | **$0** |
| *** A10 - Foundations** | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | **$0** |
| **A1010 - Standard Foundations** | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | **$0** |
| **A1030 - Slab on Grade** | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | **$0** |
| *** A20 - Basement Construction** | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | **$0** |
| **A2010 - Basement Excavation** | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | **$0** |
| **A2020 - Basement Walls** | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | **$0** |
| **B - Shell** | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | **$0** |
| **B10 - Superstructure** | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | **$0** |
| **B1010 - Floor Construction** | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | **$0** |
| **B1020 - Roof Construction** | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | **$0** |
| **B20 - Exterior Enclosure** | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | **$0** |
| **B2010 - Exterior Walls** | $645,789 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | **$645,789** |
| **B2020 - Exterior Windows** | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | **$0** |
| **B2030 - Exterior Doors** | $178,114 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | **$178,114** |
| **B30 - Roofing** | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | **$0** |
| **B3010 - Roof Coverings** | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | **$0** |
| **B3010105 - Built-Up** | $2,032,921 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | **$2,032,921** |
| **B3020 - Roof Openings** | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | **$0** |
| **C - Interiors** | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | **$0** |
| **C10 - Interior Construction** | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | **$0** |
| **C1010 - Partitions** | $885,353 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | **$885,353** |
| **C1020 - Interior Doors** | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | **$0** |
| **C1030 - Fittings** | $112,409 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | **$112,409** |
| **C20 - Stairs** | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | **$0** |

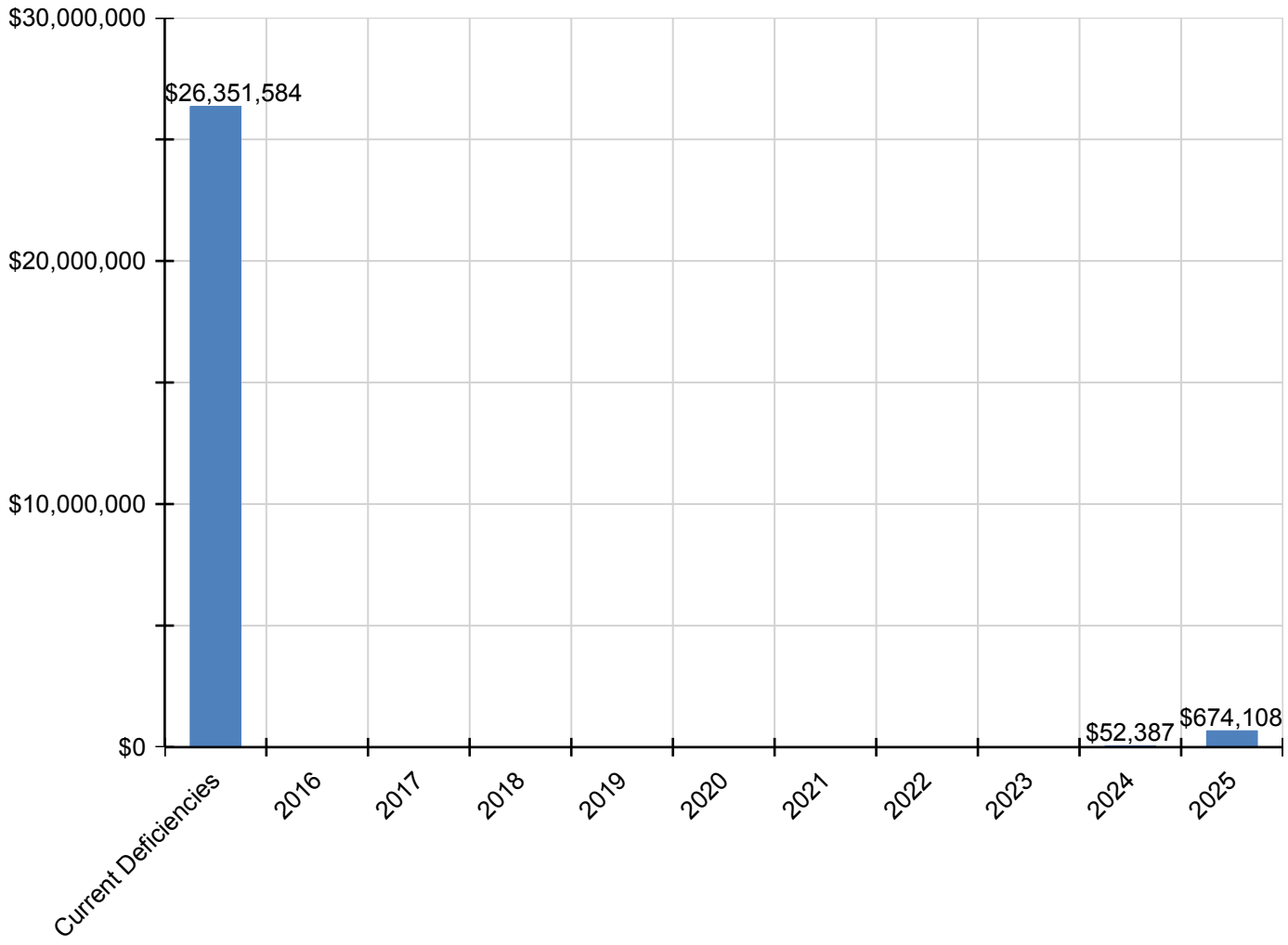
| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **C2010 - Stair Construction** | $268,902 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | **$268,902** |
| **C2020 - Stair Finishes** | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | **$0** |
| **C30 - Interior Finishes** | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | **$0** |
| **C3010 - Wall Finishes** | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | **$0** |
| **C3010230 - Paint & Covering** | $948,343 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | **$948,343** |
| **C3010232 - Wall Tile** | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | **$0** |
| **C3020 - Floor Finishes** | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | **$0** |
| **C3020411 - Carpet** | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $52,387 | $0 | **$52,387** |
| **C3020412 - Terrazzo & Tile** | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | **$0** |
| **C3020413 - Vinyl Flooring** | $240,351 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | **$240,351** |
| **C3020414 - Wood Flooring** | $1,749,124 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | **$1,749,124** |
| **C3020415 - Concrete Floor Finishes** | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | **$0** |
| **C3030 - Ceiling Finishes** | $3,016,486 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | **$3,016,486** |
| **D - Services** | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | **$0** |
| **D10 - Conveying** | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | **$0** |
| **D1010 - Elevators and Lifts** | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | **$0** |
| **D20 - Plumbing** | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | **$0** |
| **D2010 - Plumbing Fixtures** | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | **$0** |
| **D2020 - Domestic Water Distribution** | $34,307 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | **$34,307** |
| **D2030 - Sanitary Waste** | $1,041,594 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | **$1,041,594** |
| **D2040 - Rain Water Drainage** | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $674,108 | **$674,108** |
| **D30 - HVAC** | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | **$0** |
| **D3020 - Heat Generating Systems** | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | **$0** |
| **D3030 - Cooling Generating Systems** | $2,570,790 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | **$2,570,790** |
| **D3040 - Distribution Systems** | $1,958,209 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | **$1,958,209** |
| **D3050 - Terminal & Package Units** | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | **$0** |
| **D3060 - Controls & Instrumentation** | $713,105 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | **$713,105** |
| **D40 - Fire Protection** | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | **$0** |
| **D4010 - Sprinklers** | $3,433,307 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | **$3,433,307** |
| **D4020 - Standpipes** | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | **$0** |
| **D50 - Electrical** | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | **$0** |
| **D5010 - Electrical Service/Distribution** | $3,300,516 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | **$3,300,516** |
| **D5020 - Lighting and Branch Wiring** | $2,544,281 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | **$2,544,281** |

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **D5030 - Communications and Security** | $55,741 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | **$55,741** |
| **D5090 - Other Electrical Systems** | $337,540 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | **$337,540** |
| **E - Equipment & Furnishings** | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | **$0** |
| **E10 - Equipment** | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | **$0** |
| **E1020 - Institutional Equipment** | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | **$0** |
| **E1090 - Other Equipment** | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | **$0** |
| **E20 - Furnishings** | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | **$0** |
| **E2010 - Fixed Furnishings** | $284,403 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | **$284,403** |

** Indicates non-renewable system*

## Forecasted Sustainment Requirement

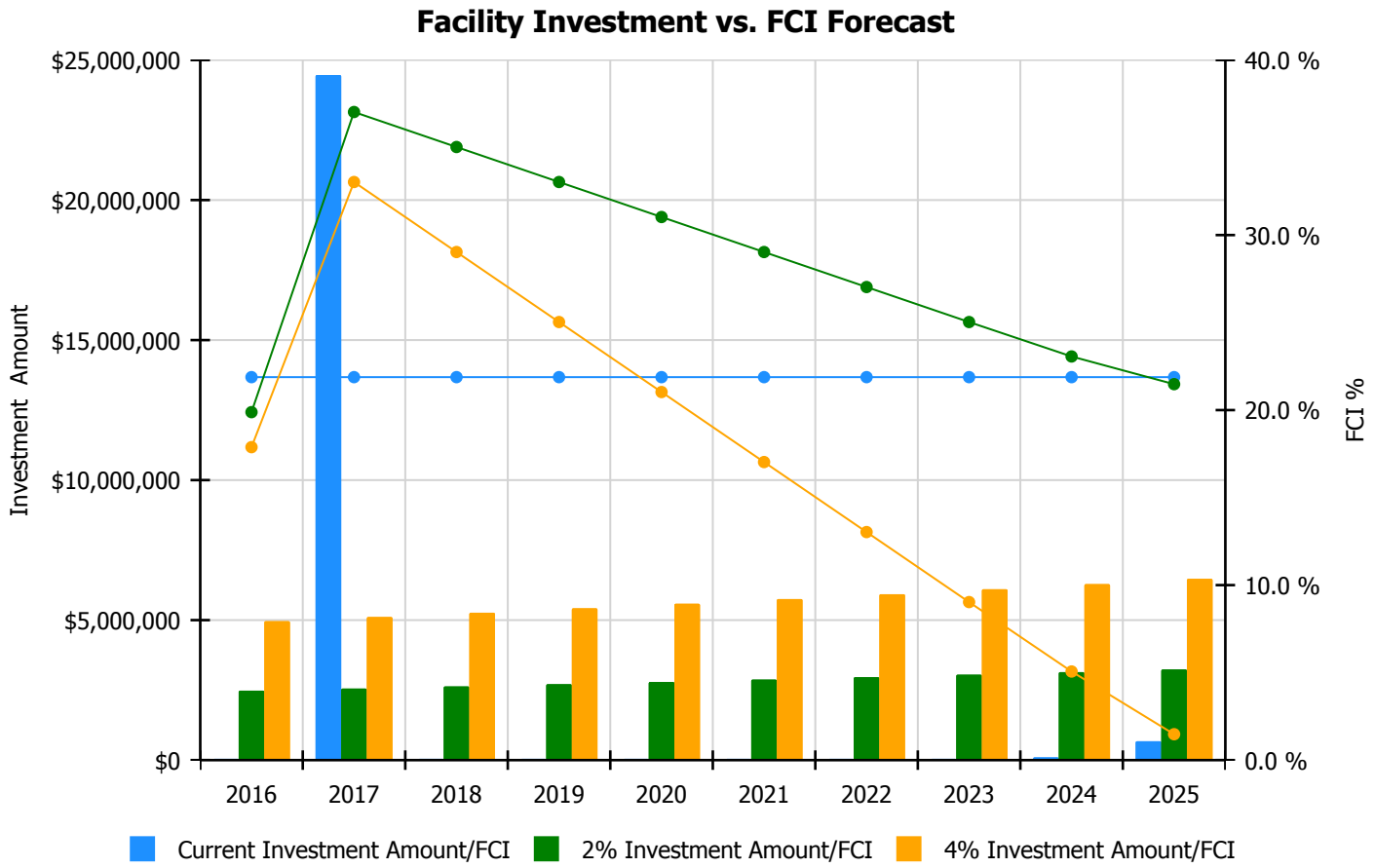
The following chart shows the current building deficiencies and forecasting sustainment requirements over the next ten years.



## 10 Year FCI Forecast by Investment Scenario

The chart below illustrates the effect of various investment levels on the building FCI for the next 10 years. The levels of investment shown below include:

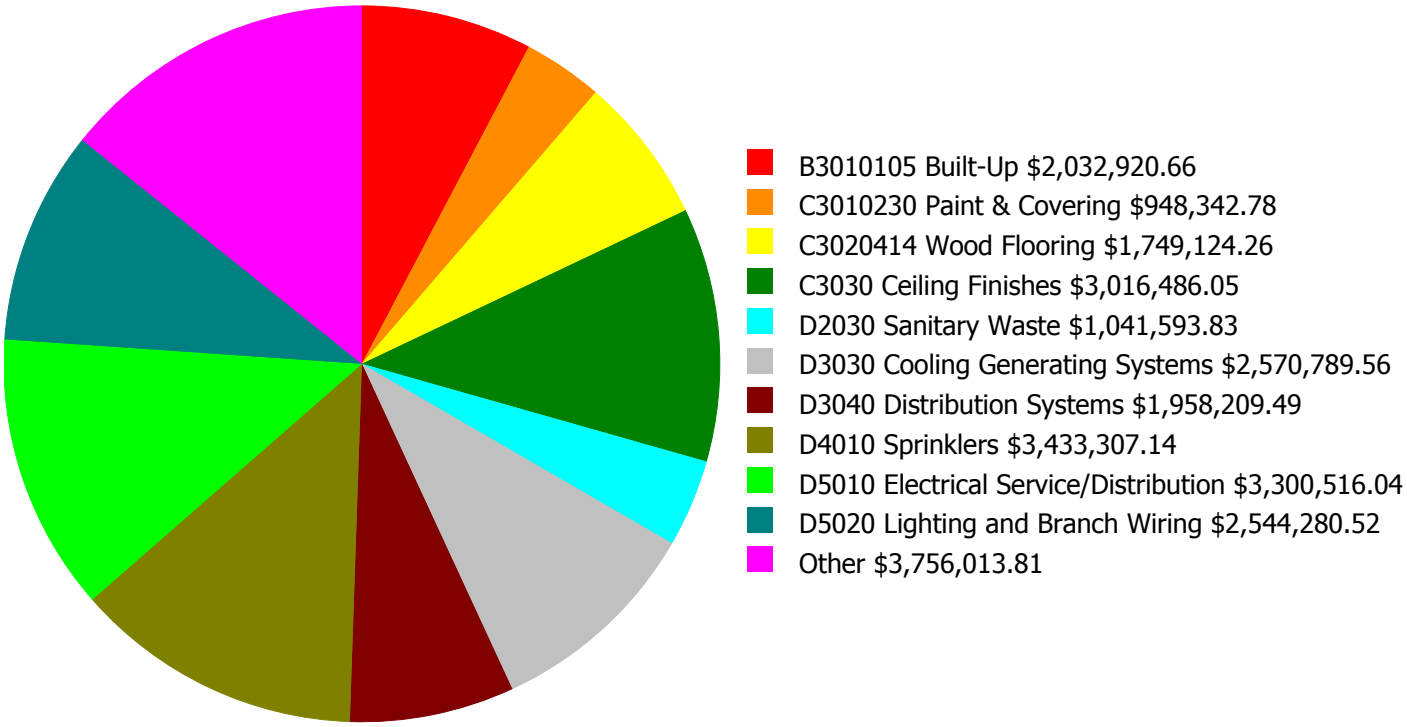
- Current FCI: a variable investment amount based on renewing expired systems to maintain the current FCI for the building
- 2% Investment: an annual investment of 2% of the replacement value of the building, escalated for inflation
- 4% Investment: an annual investment of 4% of the replacement value of the building, escalated for inflation




| Year | Investment Amount Current FCI - 21.88% | 2% Investment | | 4% Investment | |
|---|---|---|---|---|---|
| | | Amount | FCI | Amount | FCI |
| 2016 | $0 | $2,480,756.00 | 19.88 % | $4,961,512.00 | 17.88 % |
| 2017 | $24,463,611 | $2,555,179.00 | 37.03 % | $5,110,357.00 | 33.03 % |
| 2018 | $0 | $2,631,834.00 | 35.03 % | $5,263,668.00 | 29.03 % |
| 2019 | $0 | $2,710,789.00 | 33.03 % | $5,421,578.00 | 25.03 % |
| 2020 | $0 | $2,792,113.00 | 31.03 % | $5,584,226.00 | 21.03 % |
| 2021 | $0 | $2,875,876.00 | 29.03 % | $5,751,752.00 | 17.03 % |
| 2022 | $0 | $2,962,152.00 | 27.03 % | $5,924,305.00 | 13.03 % |
| 2023 | $0 | $3,051,017.00 | 25.03 % | $6,102,034.00 | 9.03 % |
| 2024 | $52,387 | $3,142,548.00 | 23.06 % | $6,285,095.00 | 5.06 % |
| 2025 | $674,108 | $3,236,824.00 | 21.48 % | $6,473,648.00 | 1.48 % |
| **Total:** | **$25,190,106** | **$28,439,088.00** | | **$56,878,175.00** | |

## Deficiency Summary by System

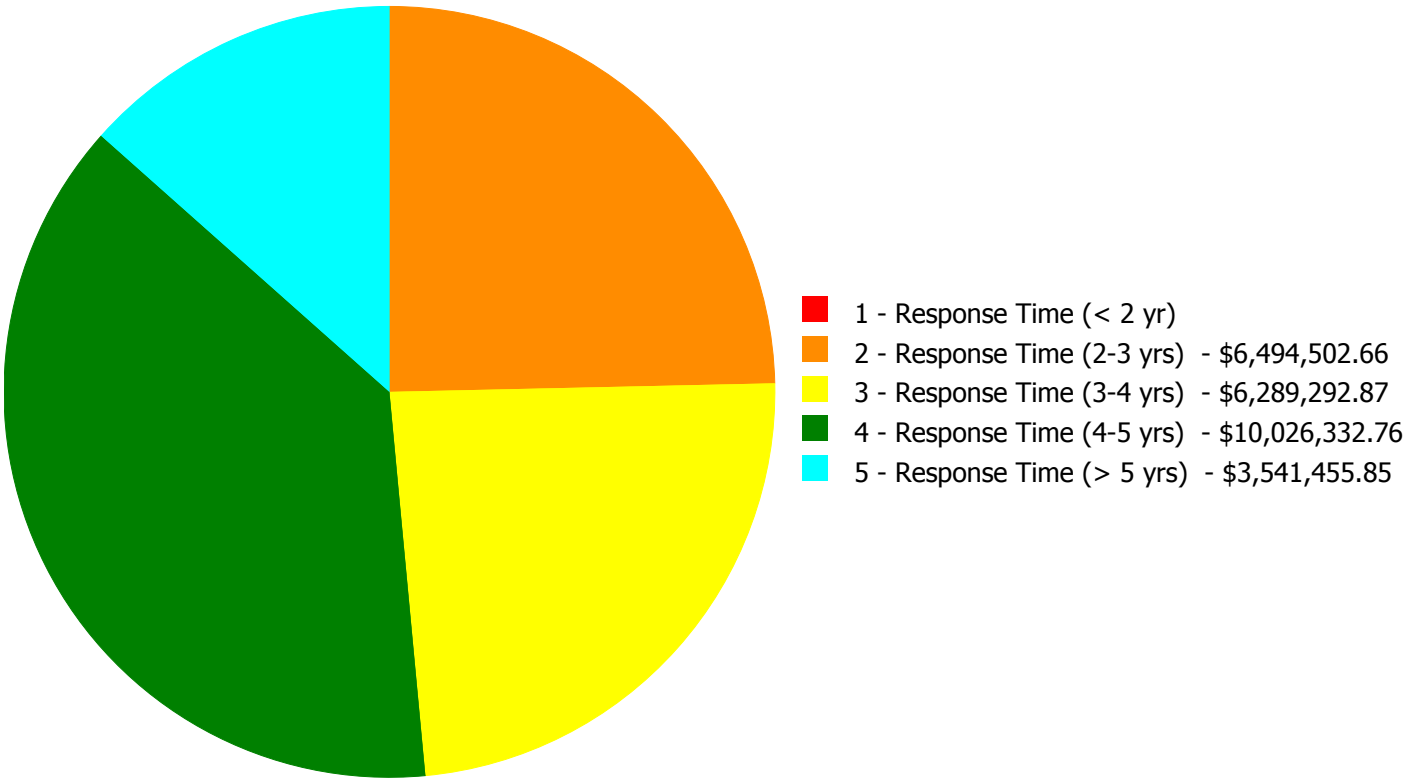
Current deficiencies included assemblies that have reached or exceeded their design life or components of the assemblies that are in need of repair. Assemblies that have reached their design life are identified as current deficiencies and assigned the distress 'Beyond Useful Life'. The following chart lists all current deficiencies associated with this facility.




**Budget Estimate Total: $26,351,584.14**

## Deficiency Summary by Priority

The following chart shows the total repair costs broken down by priority. Assessors assigned deficiencies within eCOMET to one of the following priority categories:




**Budget Estimate Total: $26,351,584.14**

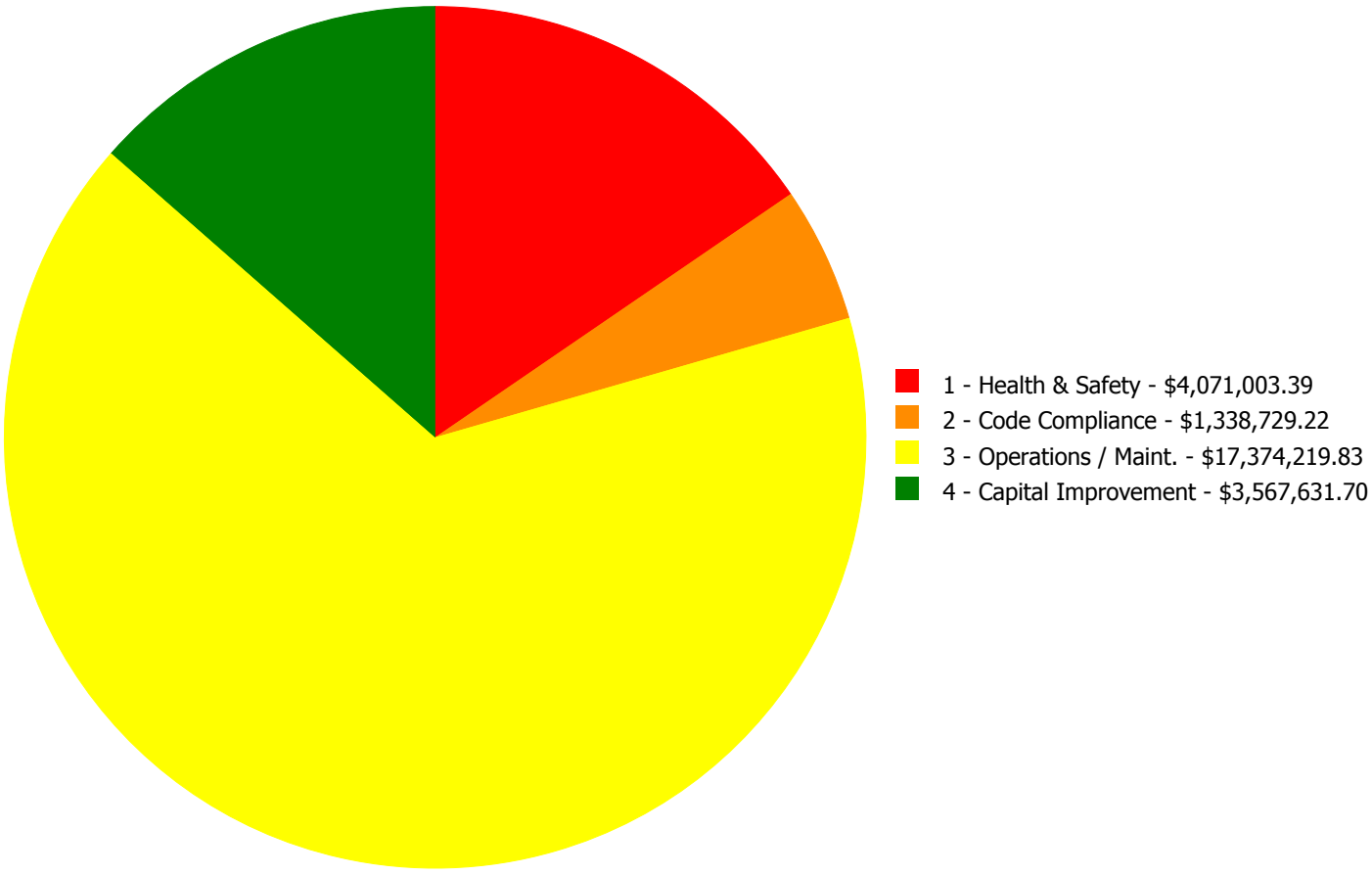
## Deficiency By Priority Investment Table

The table below shows the current investment cost grouped by deficiency priority and building system.

| System Code | System Description | 1 - Response Time (< 2 yr) | 2 - Response Time (2-3 yrs) | 3 - Response Time (3-4 yrs) | 4 - Response Time (4-5 yrs) | 5 - Response Time (> 5 yrs) | Total |
|---|---|---|---|---|---|---|---|
| B2010 | Exterior Walls | $0.00 | $0.00 | $645,789.44 | $0.00 | $0.00 | $645,789.44 |
| B2030 | Exterior Doors | $0.00 | $0.00 | $178,113.77 | $0.00 | $0.00 | $178,113.77 |
| B3010105 | Built-Up | $0.00 | $2,032,920.66 | $0.00 | $0.00 | $0.00 | $2,032,920.66 |
| C1010 | Partitions | $0.00 | $438,498.00 | $335,457.96 | $111,397.49 | $0.00 | $885,353.45 |
| C1030 | Fittings | $0.00 | $0.00 | $0.00 | $112,409.18 | $0.00 | $112,409.18 |
| C2010 | Stair Construction | $0.00 | $0.00 | $268,902.39 | $0.00 | $0.00 | $268,902.39 |
| C3010230 | Paint & Covering | $0.00 | $948,342.78 | $0.00 | $0.00 | $0.00 | $948,342.78 |
| C3020413 | Vinyl Flooring | $0.00 | $0.00 | $0.00 | $0.00 | $240,350.63 | $240,350.63 |
| C3020414 | Wood Flooring | $0.00 | $0.00 | $0.00 | $1,749,124.26 | $0.00 | $1,749,124.26 |
| C3030 | Ceiling Finishes | $0.00 | $3,016,486.05 | $0.00 | $0.00 | $0.00 | $3,016,486.05 |
| D2020 | Domestic Water Distribution | $0.00 | $0.00 | $0.00 | $34,306.86 | $0.00 | $34,306.86 |
| D2030 | Sanitary Waste | $0.00 | $0.00 | $0.00 | $1,041,593.83 | $0.00 | $1,041,593.83 |
| D3030 | Cooling Generating Systems | $0.00 | $0.00 | $0.00 | $0.00 | $2,570,789.56 | $2,570,789.56 |
| D3040 | Distribution Systems | $0.00 | $0.00 | $0.00 | $1,958,209.49 | $0.00 | $1,958,209.49 |
| D3060 | Controls & Instrumentation | $0.00 | $0.00 | $0.00 | $0.00 | $713,104.51 | $713,104.51 |
| D4010 | Sprinklers | $0.00 | $0.00 | $0.00 | $3,433,307.14 | $0.00 | $3,433,307.14 |
| D5010 | Electrical Service/Distribution | $0.00 | $0.00 | $2,291,529.23 | $1,008,986.81 | $0.00 | $3,300,516.04 |
| D5020 | Lighting and Branch Wiring | $0.00 | $2,514.35 | $2,231,960.52 | $306,426.05 | $3,379.60 | $2,544,280.52 |
| D5030 | Communications and Security | $0.00 | $55,740.82 | $0.00 | $0.00 | $0.00 | $55,740.82 |
| D5090 | Other Electrical Systems | $0.00 | $0.00 | $337,539.56 | $0.00 | $0.00 | $337,539.56 |
| E2010 | Fixed Furnishings | $0.00 | $0.00 | $0.00 | $270,571.65 | $13,831.55 | $284,403.20 |
| | **Total:** | $0.00 | $6,494,502.66 | $6,289,292.87 | $10,026,332.76 | $3,541,455.85 | $26,351,584.14 |

## Deficiency Summary by Category

The following chart shows the total repair costs broken down by deficiency categories. Assessors assigned deficiencies to one of the following categories:




**Budget Estimate Total: $26,351,584.14**

## Deficiency Details by Priority

The deficiency detail notes listed below provide additional information on identified deficiencies found within the facility.

### Priority 2 - Response Time (2-3 yrs):

**System: B3010105 - Built-Up**

**Location:** Roof

**Distress:** Damaged

**Category:** 3 - Operations / Maint.

**Priority:** 2 - Response Time (2-3 yrs)

**Correction:** Remove and Replace Built Up Roof

**Qty:** 60,000.00

**Unit of Measure:** S.F.

**Estimate:** $2,032,920.66

**Assessor Name:** System

**Date Created:** 02/23/2016

**Notes:** There are a number of roof sections and different roof elevations ranging from the main roof to the addition roof. Parapet heights, coping materials, and the height of the flashing also varies in different sections. The main roof is a built up application that was installed in the early 1990'S. The other built up roofs have not conclusive installation dates and have been seal coated several times to extend the life cycle of the application. During the time of the inspection it was reported that several leaks are active and a consistent repair program is consuming efforts to maintain the roof. Considering the age and condition of the roofing systems, universal upgrades are recommended. Remove and replace all roof sections. This deficiency is expected to be completed as part of an exterior effort coordinated with other recommendations included in this report.

**System: C1010 - Partitions**

**Location:** Abandoned Restrooms

**Distress:** Damaged

**Category:** 3 - Operations / Maint.

**Priority:** 2 - Response Time (2-3 yrs)

**Correction:** Build new gang restroom to meet code or occupant needs - select type and number of fixtures and toilet partitions for mens or womens

**Qty:** 2.00

**Unit of Measure:** Ea.

**Estimate:** $421,508.00

**Assessor Name:** System

**Date Created:** 02/23/2016

**Notes:** There are two abandoned gang restrooms on the floors that are not being used. The restrooms are original and the marble, wooden or missing partitions show the excessive problems with the restrooms. These restrooms warrant unique renovations to restore the systems to modern operations options and service to the school. Accessibility legislation requires that goods, amenities, and services offered in buildings, such as restrooms, be generally accessible to all people. There are no compliant restrooms located in this school. A unisex, compliant restroom should be added on each of the eight floors. Recommended modifications include the construction of new single occupancy restrooms in existing academic areas to accommodate requirements. This involves adding two new partitions to enclose 50 square feet of area and installing a door with hardware, ceramic tile and plaster surfaces, suspended ceilings, plumbing fixtures, electrical fixtures, piping, HVAC equipment, and accessories for each new restroom. Also, the renovation of the existing restrooms and modification to new layouts and floor plans to support modern designs and requirements for ADA legislation.

**System: C1010 - Partitions**

**Location:** Building Wide

**Distress:** Life Safety / NFPA / PFD

**Category:** 1 - Health & Safety

**Priority:** 2 - Response Time (2-3 yrs)

**Correction:** Add firestopping - per penetration - pick the type of penetration and insert the quantities in the estimate including finish restoration

**Qty:** 1.00

**Unit of Measure:** Ea.

**Estimate:** $16,990.00

**Assessor Name:** System

**Date Created:** 02/23/2016

**Notes:** As indicted in the photos the wall failure and penetrations have not been conducted with the latest code in mind. This deficiency provides a budgetary consideration to build a fire rated wall or fill to enhance this oversight. This deficiency is expected to be coordinated with other interior efforts.

**System: C3010230 - Paint & Covering**

**Location:** Building Wide

**Distress:** Damaged

**Category:** 3 - Operations / Maint.

**Priority:** 2 - Response Time (2-3 yrs)

**Correction:** Repair and repaint all interior walls - SF of wall surface

**Qty:** 140,000.00

**Unit of Measure:** S.F.

**Estimate:** $948,342.78

**Assessor Name:** System

**Date Created:** 02/29/2016

**Notes:** There are painted walls, trim, and some painted ceilings in this building. Sections of the building, some textured concrete surfaces have been painted as well. The interior finishes are in fair to poor condition depending on the location of the finish. For example due to recent roof leaks over the auditorium several areas will require repair and repainting. Also, sections of the fifth floor are damaged due to neglect. This school will require an almost continuous program of renewal of the applied finishes to maintain an acceptable appearance. Cyclical painting should be considered for a standard approach to maintaining the quality of the interior finishes. It is recommended that all previously painted surfaces be repainted according to established cycles for this occupancy and use type. Minor repairs should be completed before work begins. The abandoned section of the fifth floor is expected to require major repairs and additional efforts to restore the finishes. This effort is expected to be coordinated with other mechanical electrical efforts in order to prevent overlapping efforts.

**System: C3030 - Ceiling Finishes**

**Location:** Building Wide

**Distress:** Damaged

**Category:** 3 - Operations / Maint.

**Priority:** 2 - Response Time (2-3 yrs)

**Correction:** Remove and replace suspended acoustic ceilings - lighting not included

**Qty:** 200,000.00

**Unit of Measure:** S.F.

**Estimate:** $3,016,486.05

**Assessor Name:** System

**Date Created:** 02/29/2016

**Notes:** The ceiling finish is a mix of 12 x 12 ceiling grid, painted and 2 x 4 Acoustical tile finish. Ceilings have been repaired in several areas and is in good condition considering the age of the application and the current condition of the school. The ceiling finish is expected to require upgrades to support the recommended mechanical electrical efforts in this report. This deficiency provides a budgetary consideration for removal and replacement of the current ceiling finish to a new acoustical tile finish. Considering the recommended mechanical and electrical upgrades this effort should be completed as part of an overall renewal program for the school. No work should be considered until after the recommended exterior efforts are complete.

**System: D5020 - Lighting and Branch Wiring**

**Location:** Kitchen

**Distress:** Life Safety / NFPA / PFD

**Category:** 1 - Health & Safety

**Priority:** 2 - Response Time (2-3 yrs)

**Correction:** Replace Wiring Device

**Qty:** 12.00

**Unit of Measure:** Ea.

**Estimate:** $2,514.35

**Assessor Name:** System

**Date Created:** 01/16/2016

**Notes:** Receptacles in the kitchen were not ground-fault circuit-interrupting (GFCI) type, as required by NFPA 70, National Electrical Code (NEC), Article 210.8 (B). Replace 12 duplex receptacles in the kitchen with GFCI type.

**System: D5030 - Communications and Security**

**Location:** Various locations

**Distress:** Building / MEP Codes

**Category:** 2 - Code Compliance

**Priority:** 2 - Response Time (2-3 yrs)

**Correction:** Add fire alarm device

**Qty:** 30.00

**Unit of Measure:** Ea.

**Estimate:** $55,740.82

**Assessor Name:** System

**Date Created:** 01/16/2016

**Notes:** Provide allowance for adding (30) audible/visual fire alarm notification appliances in classrooms, multiple occupancy rooms and restrooms that are missing devices. Add fire alarm remote annunciator panel in the Main Office.

## Priority 3 - Response Time (3-4 yrs):

**System: B2010 - Exterior Walls**

**Location:** Exterior Elevation

**Distress:** Damaged

**Category:** 3 - Operations / Maint.

**Priority:** 3 - Response Time (3-4 yrs)

**Correction:** Repair cracks in masonry - replace missing mortar and repoint - SF of wall area

**Qty:** 20,000.00

**Unit of Measure:** S.F.

**Estimate:** $645,789.44

**Assessor Name:** System

**Date Created:** 02/23/2016

**Notes:** The exterior brick surfaces are generally in fair to good condition for their age. In some locations, bricks have cracked or spalled and should be replaced. The repointing of deteriorated mortar joints is also recommended, using mortar of a similar color and consistency as the original. Following the detailed examination of the brick and repair of mortar construction joints, the entire building should be pressure washed to remove stains and embedded pollutants. If moisture is found to be penetrating the masonry facade, the application of a spray sealant to the suspected exterior masonry surface is recommended.

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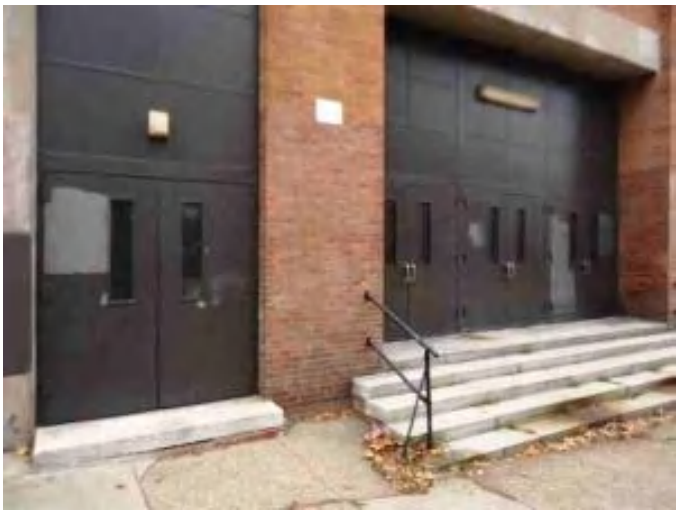
**System: B2030 - Exterior Doors**



**Location:** Exterior Elevation

**Distress:** Damaged

**Category:** 3 - Operations / Maint.

**Priority:** 3 - Response Time (3-4 yrs)

**Correction:** Remove and replace exterior doors - per leaf

**Qty:** 22.00

**Unit of Measure:** Ea.

**Estimate:** $178,113.77

**Assessor Name:** System

**Date Created:** 02/23/2016

**Notes:** The exterior doors are metal applications with metal frames. The exterior door system for this school is a very high traffic system. Most of the doors are in fair condition but are aging at a faster rate than expected based on traffic and condition. The service doors on the roof have expired and failed compromising access to elevator rooms and tower rooms. The exterior door system, store front and service doors are recommended for upgrade.

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**System: C1010 - Partitions**

**Location:** Building Wide

**Distress:** Life Safety / NFPA / PFD

**Category:** 1 - Health & Safety

**Priority:** 3 - Response Time (3-4 yrs)

**Correction:** Install fire rated walls and door where required - insert number of doors

**Qty:** 10,000.00

**Unit of Measure:** S.F.

**Estimate:** $335,457.96

**Assessor Name:** System

**Date Created:** 02/23/2016

**Notes:** A large portion of the interior corridor, exit stair doors are not code compliant. Several doors are typically wood or metal in metal frames with transom lites or sidelights, glass glazing. The older doors are generally in good condition considering the age of the application. To restore the door finishes, universal upgrades are required for the older door applications. Remove and replace original door systems with new code compliant fire rated door system.
There are several transom lites and sidelights constructed into hallway wall systems. It is recommended that the lites and sidelights be removed and replaced with a fire rated wall construction. The deficiency provides a budgetary consideration to correct the hallway, transoms, lites and sidelights.

**System: C2010 - Stair Construction**

**Location:** Stairs

**Distress:** Life Safety / NFPA / PFD

**Category:** 1 - Health & Safety

**Priority:** 3 - Response Time (3-4 yrs)

**Correction:** Replace inadequate or install proper stair railing - select appropriate material

**Qty:** 2,000.00

**Unit of Measure:** L.F.

**Estimate:** $268,902.39

**Assessor Name:** System

**Date Created:** 02/29/2016

**Notes:** Current requirements for stairs indicate that they have graspable handrails on both sides, that the rails have a specific end geometry, and that the handrails continue horizontally at the landings. In addition, guardrails must prevent the passage of a 4 inch diameter sphere (6 inches in the triangle formed by the lower rail and tread/riser angle). Although the stairs are compliant with the code enforced at the time of construction until a major renovation occurs, they are deficient in handrail and guardrail design relative to current standards. Future efforts should include comprehensive stair railing removal and replacement upgrades.

---

**System: D5010 - Electrical Service/Distribution**

**Location:** Mechanical Room 006

**Distress:** Beyond Service Life

**Category:** 3 - Operations / Maint.

**Priority:** 3 - Response Time (3-4 yrs)

**Correction:** Replace Electrical Distribution System (U)

**Qty:** 1.00

**Unit of Measure:** Ea.

**Estimate:** $2,093,559.83

**Assessor Name:** System

**Date Created:** 01/16/2016

**Notes:** Remove service entrance equipment, including utility medium voltage line circuit breakers, two (2) 577 kVA transformers and the double-ended 2500A, 120/240V, 2 phase, 5 wire Main Switchboard and 750A Panelboard MDP#2. Replace with new utility switchgear, a 1500 kVA, 5000A, 208/120V, 3 phase, 4 wire package unit substation to serve the existing building loads, thereby eliminating the need for five phase converter transformers. Provide 1500 kVA, 2500A, 480/277V, 3 phase, 4 wire package unit substation to serve central air conditioning equipment and larger mechanical loads.

---

**System: D5010 - Electrical Service/Distribution**

**Location:** Mechanical Room 006

**Distress:** Beyond Service Life

**Category:** 3 - Operations / Maint.

**Priority:** 3 - Response Time (3-4 yrs)

**Correction:** Replace Electrical Distribution System (U)

**Qty:** 1.00

**Unit of Measure:** Ea.

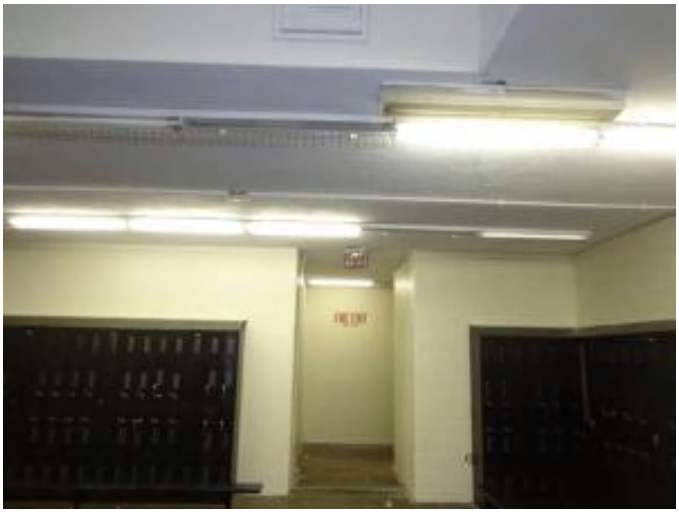
**Estimate:** $197,969.40

**Assessor Name:** System

**Date Created:** 01/16/2016

**Notes:** Remove a total of seven (7) phase change transformers: one (1) 150 kVA, two (2) 100 kVA, three (3)50 KVA and one (1) 45 kVA; feed equipment from 208/120V switchboard. Replace 600A Panelboard BP, 200A knife blade panelboard in Boiler Room, 100A Panelboard BB, 400A Kitchen panelboard in Basement, and 100A night light panelboard.

**System: D5020 - Lighting and Branch Wiring**



**Location:** Building wide

**Distress:** Beyond Service Life

**Category:** 3 - Operations / Maint.

**Priority:** 3 - Response Time (3-4 yrs)

**Correction:** Replace Lighting Fixtures (SF)

**Qty:** 113,920.00

**Unit of Measure:** S.F.

**Estimate:** $2,231,960.52

**Assessor Name:** System

**Date Created:** 01/16/2016

**Notes:** Replace fluorescent fixtures and branch wiring for fixtures that have obsolete T12 lamps, including classrooms that have not been upgraded, kitchen, cafeteria, locker rooms, Boiler Room, Basement mechanical rooms and most rooms on the Ground Floor of the 1970's building addition (classrooms 60,580 SF, kitchen 3,060 SF, cafeteria 9,040 SF, mechanical 12,000 SF, Ground Floor 18,000 SF, administrative, faculty, offices and support 11,240 SF).

**System: D5090 - Other Electrical Systems**

**Location:** Basement Mechanical Room

**Distress:** Beyond Service Life

**Category:** 3 - Operations / Maint.

**Priority:** 3 - Response Time (3-4 yrs)

**Correction:** Replace standby generator system

**Qty:** 1.00

**Unit of Measure:** Ea.

**Estimate:** $199,482.97

**Assessor Name:** System

**Date Created:** 01/16/2016

**Notes:** Remove existing 40 kW standby generator system equipment and replace with generator sized for all emergency egress and exit lighting and hydraulic elevators (estimated size is 150 kW).

**System: D5090 - Other Electrical Systems**

**Location:** Building wide

**Distress:** Beyond Service Life

**Category:** 3 - Operations / Maint.

**Priority:** 3 - Response Time (3-4 yrs)

**Correction:** Replace Emergency/Exit Lighting

**Qty:** 145.00

**Unit of Measure:** Ea.

**Estimate:** $138,056.59

**Assessor Name:** System

**Date Created:** 01/16/2016

**Notes:** Replace all exit signs with LED exit signs and add exit signs where missing (estimate replacing 121 exit signs, adding 24 exit signs).

## Priority 4 - Response Time (4-5 yrs):

**System: C1010 - Partitions**

**Location:** Building Wide

**Distress:** Damaged

**Category:** 3 - Operations / Maint.

**Priority:** 4 - Response Time (4-5 yrs)

**Correction:** Remove folding wood partitions; replace with metal studs and gypsum board painted

**Qty:** 5,000.00

**Unit of Measure:** S.F.

**Estimate:** $111,397.49

**Assessor Name:** System

**Date Created:** 02/29/2016

**Notes:** There are several movable partitions that remain in classrooms. These wall systems are no longer used and in most cases cannot be used due to damage or wall modifications to support classroom needs. This deficiency provides a budgetary consideration to remove and replace the wall systems with universal removal of the existing movable partitions and upgrades to a permeate wall systems.

---

**System: C1030 - Fittings**


**Location:** Building Wide

**Distress:** Damaged

**Category:** 3 - Operations / Maint.

**Priority:** 4 - Response Time (4-5 yrs)

**Correction:** Replace missing or damaged signage - insert the number of rooms

**Qty:** 300.00

**Unit of Measure:** Ea.

**Estimate:** $81,273.74

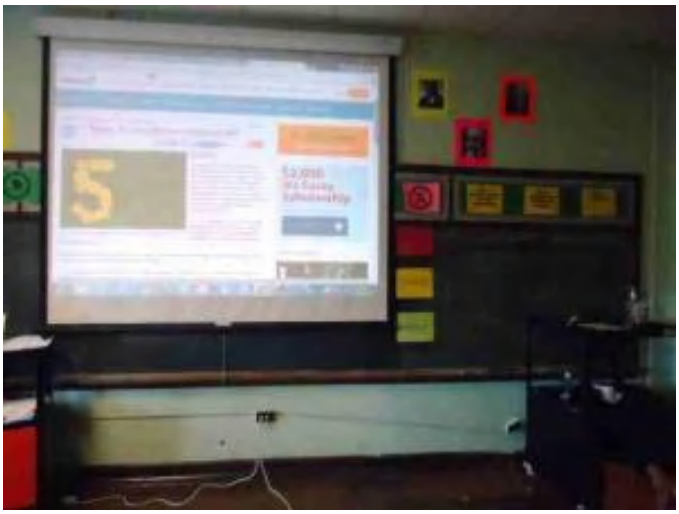
**Assessor Name:** System

**Date Created:** 02/29/2016

**Notes:** There is no directional signage and room signage is a custom design in places and scarce or painted with no consistency in others. Accessibility signage criteria have been established for the physically challenged. These include mounting heights, contrast and finish, raised and Braille characters and pictograms, and character proportions and heights. It is recommended that compliant signage be installed throughout the building.

---

**System: C1030 - Fittings**



**Location:** Classrooms

**Distress:** Damaged

**Category:** 3 - Operations / Maint.

**Priority:** 4 - Response Time (4-5 yrs)

**Correction:** Replace blackboards with marker boards - pick the appropriate size and insert the quantities

**Qty:** 20.00

**Unit of Measure:** Ea.

**Estimate:** $23,208.18

**Assessor Name:** System

**Date Created:** 02/29/2016

**Notes:** The classroom chalk boards are covered with temporary white boards in several rooms. There are several classrooms with the original chalk boards. This system is beyond its expected life and universal upgrades are warranted. Remove and upgrade chalkboards to new marker board systems.

---

**System: C1030 - Fittings**

**Location:** Building Wide

**Distress:** Damaged

**Category:** 3 - Operations / Maint.

**Priority:** 4 - Response Time (4-5 yrs)

**Correction:** Remove and replace tackboards - select size

**Qty:** 10.00

**Unit of Measure:** Ea.

**Estimate:** $7,927.26

**Assessor Name:** System

**Date Created:** 02/29/2016

**Notes:** There are several tack boards in the hallways for student displays. The systems are beyond the expected service life for this application. Remove and replace tack boards is recommended.

---

**System: C3020414 - Wood Flooring**

**Location:** Building Wide

**Distress:** Damaged

**Category:** 3 - Operations / Maint.

**Priority:** 4 - Response Time (4-5 yrs)

**Correction:** Remove and replace wood flooring

**Qty:** 60,000.00

**Unit of Measure:** S.F.

**Estimate:** $1,749,124.26

**Assessor Name:** System

**Date Created:** 02/29/2016

**Notes:** The classrooms and auditorium in this school have a wood floor finish that appears to be from original construction. As indicated in the photos the floors in the basement level were under water during the time of the inspection as a result of a water line leak discovered during the inspection. Also, on the tird floor the wooden floor under the 12x12 tile floor was saturated with water as a result of a backed up condensation line. Other sections of wooden flooring is showing signs of age such as the effects of sanding and refinishing with yearly cleaning and waxing with some repairs. Most of the floor finish is in fair condition however, the finish is beyond its expected life cycle. It is recommended that the wooden floor finish be removed and replaced with an in kind finish.

**System: D2020 - Domestic Water Distribution**

**Location:** mechanical room

**Distress:** Building / MEP Codes

**Category:** 2 - Code Compliance

**Priority:** 4 - Response Time (4-5 yrs)

**Correction:** Provide 3" reduced pressure back flow preventer

**Qty:** 1.00

**Unit of Measure:** Ea.

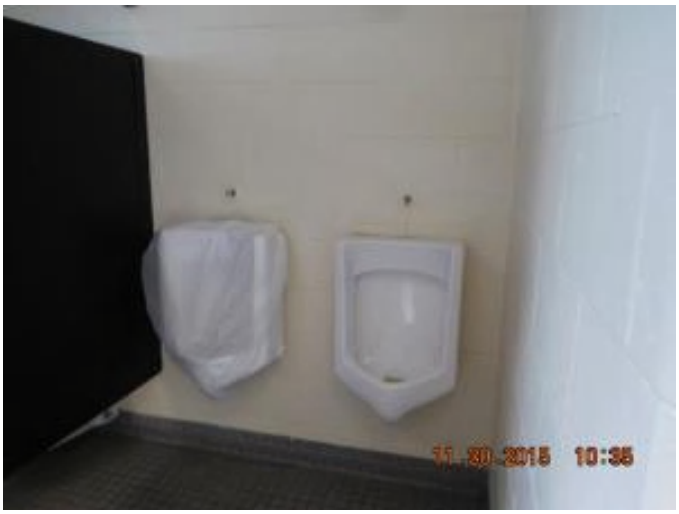
**Estimate:** $34,306.86

**Assessor Name:** System

**Date Created:** 02/05/2016

**Notes:** Install backflow preventer in existing three inch water service.

**System: D2030 - Sanitary Waste**



**Location:** entire building

**Distress:** Beyond Service Life

**Category:** 3 - Operations / Maint.

**Priority:** 4 - Response Time (4-5 yrs)

**Correction:** Inspect sanitary waste piping and replace damaged sections. (+200KSF)

**Qty:** 240,000.00

**Unit of Measure:** S.F.

**Estimate:** $1,041,593.83

**Assessor Name:** System

**Date Created:** 02/05/2016

**Notes:** Inspect old cast iron sanitary piping including camera observation and replace damaged sections.

**System: D3040 - Distribution Systems**

**Location:** cafeteria

**Distress:** Building / MEP Codes

**Category:** 2 - Code Compliance

**Priority:** 4 - Response Time (4-5 yrs)

**Correction:** Install HVAC unit for Cafeteria (850 students).

**Qty:** 1,603.00

**Unit of Measure:** Student

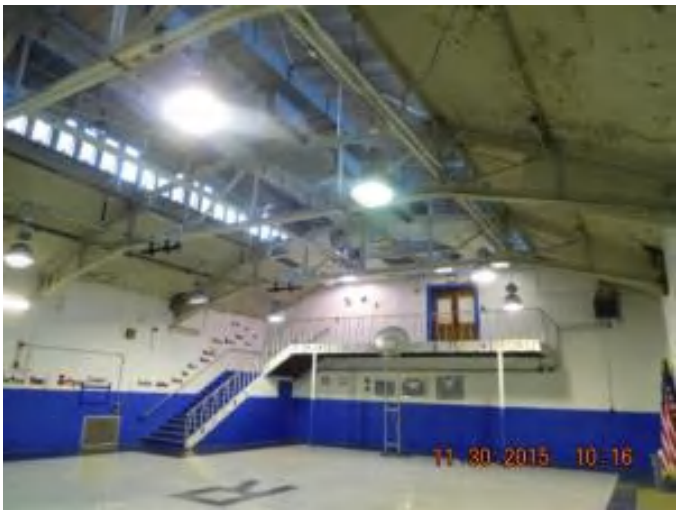
**Estimate:** $820,281.67

**Assessor Name:** System

**Date Created:** 02/05/2016

**Notes:** Provide a new central station air handling unit for the cafeteria with hot and chilled water coils, filters, outside and return air dampers, hydronic valves and controls, blower and motor. Connect to hot and chilled water systems and control system.

**System: D3040 - Distribution Systems**




**Location:** original building

**Distress:** Beyond Service Life

**Category:** 3 - Operations / Maint.

**Priority:** 4 - Response Time (4-5 yrs)

**Correction:** Perform testing to identify and replace damaged steam and condensate piping.

**Qty:** 75,000.00

**Unit of Measure:** S.F.

**Estimate:** $709,527.95

**Assessor Name:** System

**Date Created:** 02/05/2016

**Notes:**

**System: D3040 - Distribution Systems**


**Location:** auditorium

**Distress:** Building / MEP Codes

**Category:** 2 - Code Compliance

**Priority:** 4 - Response Time (4-5 yrs)

**Correction:** Install / replace HVAC unit for Auditorium (800 seat).

**Qty:** 766.00

**Unit of Measure:** Seat

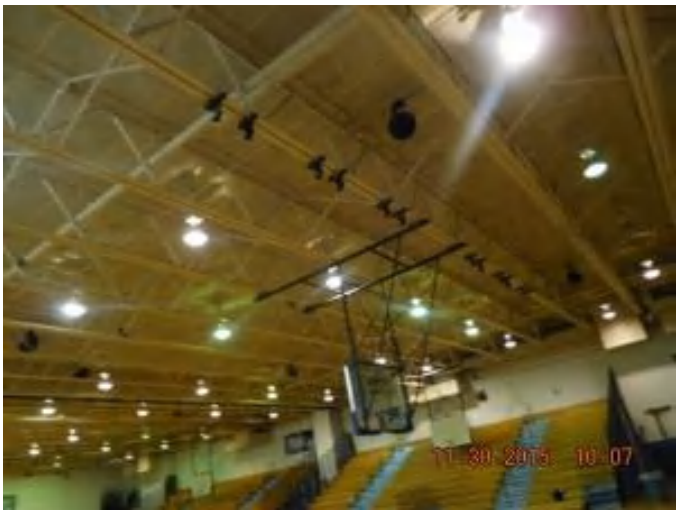
**Estimate:** $428,399.87

**Assessor Name:** System

**Date Created:** 02/05/2016

**Notes:** Provide a new central station air handling unit for the auditorium with hot and chilled water coils, filters, outside and return air dampers, hydronic valves and controls, blower and motor. Connect to hot and chilled water systems and control system.

**System: D4010 - Sprinklers**



**Location:** entire building

**Distress:** Life Safety / NFPA / PFD

**Category:** 1 - Health & Safety

**Priority:** 4 - Response Time (4-5 yrs)

**Correction:** Install a fire protection sprinkler system

**Qty:** 240,000.00

**Unit of Measure:** S.F.

**Estimate:** $3,433,307.14

**Assessor Name:** System

**Date Created:** 02/05/2016

**Notes:** Install NFPA wet pipe automatic sprinkler system in entire building, including fire service, piping sprinkler heads, standpipes and fire pump if required.

**System: D5010 - Electrical Service/Distribution**

**Location:** Building wide

**Distress:** Beyond Service Life

**Category:** 3 - Operations / Maint.

**Priority:** 4 - Response Time (4-5 yrs)

**Correction:** Replace Panelboard

**Qty:** 27.00

**Unit of Measure:** Ea.

**Estimate:** $1,008,986.81

**Assessor Name:** System

**Date Created:** 01/16/2016

**Notes:** Replace 27 panelboards located throughout the building, including replacing feeder conductors.

**System: D5020 - Lighting and Branch Wiring**

**Location:** Classrooms

**Distress:** Inadequate

**Category:** 4 - Capital Improvement

**Priority:** 4 - Response Time (4-5 yrs)

**Correction:** Provide surface raceway system and wiring devices

**Qty:** 2,100.00

**Unit of Measure:** L.F.

**Estimate:** $283,737.63

**Assessor Name:** System

**Date Created:** 01/16/2016

**Notes:** Provide surface metal raceway system with 6 to 8 duplex receptacles in each of 70 classrooms.

**System: D5020 - Lighting and Branch Wiring**

**Location:** Building wide

**Distress:** Failing

**Category:** 3 - Operations / Maint.

**Priority:** 4 - Response Time (4-5 yrs)

**Correction:** Replace Wiring Device

**Qty:** 100.00

**Unit of Measure:** Ea.

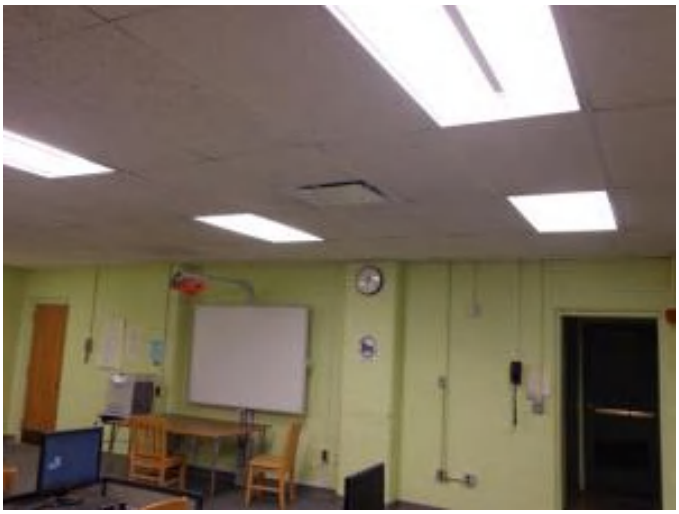
**Estimate:** $17,771.26

**Assessor Name:** System

**Date Created:** 01/16/2016

**Notes:** Provide budgetary allowance for replacement of 100 duplex receptacles throughout the building that need to be replaced because of age or condition.

**System: D5020 - Lighting and Branch Wiring**



**Location:** Classrooms and corridors

**Distress:** Damaged

**Category:** 3 - Operations / Maint.

**Priority:** 4 - Response Time (4-5 yrs)

**Correction:** Maintain Lighting Fixtures

**Qty:** 30.00

**Unit of Measure:** Ea.

**Estimate:** $4,917.16

**Assessor Name:** System

**Date Created:** 01/16/2016

**Notes:** Provide a budgetary allowance for replacement of 30 missing door frames and acrylic lenses on 2x4 fluorescent troffers in classrooms and corridors, mostly in the 1970 building addition.

**System: E2010 - Fixed Furnishings**

**Location:** Auditorium

**Distress:** Damaged

**Category:** 3 - Operations / Maint.

**Priority:** 4 - Response Time (4-5 yrs)

**Correction:** Replace auditorium seating - add tablet arms if required. Veneer seating is an option.

**Qty:** 300.00

**Unit of Measure:** Ea.

**Estimate:** $270,571.65

**Assessor Name:** System

**Date Created:** 02/29/2016

**Notes:** The school stage has a stage curtain assembly that appears to be from the original construction. Modern applications are typically fire-proof applications with adjustable tracks and electric support for operation. The curtains are torn in a few section and the track is not functioning properly, overall the system is in poor condition. It is recommended that the curtain and track system be upgraded to a new system. Special care should be considered in regards to modern fire proofing for the new installation.

## Priority 5 - Response Time (> 5 yrs):

**System: C3020413 - Vinyl Flooring**

**Location:** Classrooms

**Distress:** Damaged

**Category:** 3 - Operations / Maint.

**Priority:** 5 - Response Time (> 5 yrs)

**Correction:** Remove and replace VCT

**Qty:** 20,000.00

**Unit of Measure:** S.F.

**Estimate:** $240,350.63

**Assessor Name:** System

**Date Created:** 02/29/2016

**Notes:** This school has sections of 12x12 floor tile that represents upgrades and abatement of the 9x9 tile, several sections of 9x9 vinyl finish remains in some of the classrooms and common areas. Suspected asbestos containing materials (ACM) are believed to be limited to the original vinyl floor tile and mastic. While currently sound and manageable in place, future renovation efforts should include provision to test and abate any and all ACM.

---

**System: D3030 - Cooling Generating Systems**


**Location:** roof, mechanical room

**Distress:** Inadequate

**Category:** 4 - Capital Improvement

**Priority:** 5 - Response Time (> 5 yrs)

**Correction:** Install chilled water system with distribution piping and pumps. (+250KSF)

**Qty:** 240,000.00

**Unit of Measure:** S.F.

**Estimate:** $2,570,789.56

**Assessor Name:** System

**Date Created:** 02/05/2016

**Notes:** Provide an eighty ton chilled water system with air cooled package chillers on the roof with pumps, piping and controls. Connect to new air handling units.

---

**System: D3060 - Controls & Instrumentation**


**Location:** entire building

**Distress:** Energy Efficiency

**Category:** 4 - Capital Improvement

**Priority:** 5 - Response Time (> 5 yrs)

**Correction:** Recommission DDC Building Management System

**Qty:** 240,000.00

**Unit of Measure:** S.F.

**Estimate:** $713,104.51

**Assessor Name:** System

**Date Created:** 02/05/2016

**Notes:**

**System: D5020 - Lighting and Branch Wiring**

**Location:** Exterior Building

**Distress:** Obsolete

**Category:** 3 - Operations / Maint.

**Priority:** 5 - Response Time (> 5 yrs)

**Correction:** Maintain Lighting Fixtures

**Qty:** 17.00

**Unit of Measure:** Ea.

**Estimate:** $3,379.60

**Assessor Name:** System

**Date Created:** 01/16/2016

**Notes:** Remove exterior surface mounted lighting fixtures that are located under the overhangs on the south side of the building and provide weather-tight cover plates on outlet boxes. Fixtures are no longer used and have been replaced with surface mounted floodlighting fixtures.

**System: E2010 - Fixed Furnishings**

**Location:** Stage

**Distress:** Health Hazard / Risk

**Category:** 1 - Health & Safety

**Priority:** 5 - Response Time (> 5 yrs)

**Correction:** Remove and replace stage curtain - insert the LF of track and SF of curtain

**Qty:** 1.00

**Unit of Measure:** Ea.

**Estimate:** $13,831.55

**Assessor Name:** System

**Date Created:** 02/29/2016

**Notes:** The school stage has a stage curtain assembly that appears to be from the original construction. Modern applications are typically fire-proof applications with adjustable tracks and electric support for operation. The curtains are torn in a few section and the track is not functioning properly, overall the system is in poor condition. It is recommended that the curtain and track system be upgraded to a new system. Special care should be considered in regards to modern fire proofing for the new installation.

## Equipment Inventory

The following table represents the inventory details of the inventory found in the building, which fall under the following subsystems:

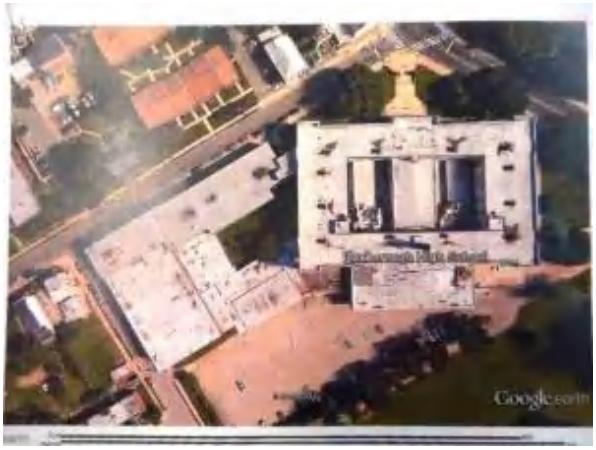
| Subsystem | Inventory | Qty | UoM | Location | Manufacturer | Model Number | Serial Number | Barcode | Life | Install Date | Next Renewal | Raw Cost | Inventory Cost |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| D1010 Elevators and Lifts | Hydraulic passenger elevators, base unit, standard finish, 1500 lb, 100 fpm, 2 stop | 1.00 | Ea. | IMC 110 | National Wheel-O-Vator | EV11 | 118951 | | 35 | | | $61,999.00 | $68,198.90 |
| D1010 Elevators and Lifts | Hydraulic, passenger elevator, 2000 lb, 5 floors, 100 FPM | 1.00 | Ea. | 1970's Wing | ThyssenKrupp TAC 20 | 590AG2 | 040207093159 | | 30 | | | $140,070.00 | $154,077.00 |
| D2020 Domestic Water Distribution | Pump, pressure booster system, 3 HP pump, includes diaphragm tank, control and pressure switch | 1.00 | Ea. | addition mechanical room | alyan | | | | 25 | 2007 | 2032 | $9,861.00 | $10,847.10 |
| D3020 Heat Generating Systems | Boiler, cast iron, gas & oil, steam, 5520 MBH | 3.00 | Ea. | mechanical room | hb smith | mills 650 | | | 35 | 1991 | 2026 | $190,236.50 | $627,780.45 |
| D5010 Electrical Service/Distribution | Load interrupter switch, 2 position, 400 kVA & above, non fusible, 4.8 kV, 600 amp, NEMA 1 | 3.00 | Ea. | Mechanical Room 006 | No Identification Nameplate | NA | NA | | 30 | | | $29,062.80 | $95,907.24 |
| D5010 Electrical Service/Distribution | Panelboard, 4 wire w/conductor & conduit, NQOD, 120/208 V, 400 A, 1 stories, 25' horizontal | 2.00 | Ea. | Kitchen | Westinghouse | Type NQB | S.O. AJ192301 | | 30 | | | $12,109.50 | $26,640.90 |
| D5010 Electrical Service/Distribution | Panelboard, 4 wire w/conductor & conduit, NQOD, 120/208 V, 400 A, 1 stories, 25' horizontal | 1.00 | Ea. | Mechanical Room 006 | Westinghouse | Type CDP | AJ159710 | | 30 | | | $12,109.50 | $13,320.45 |
| D5010 Electrical Service/Distribution | Panelboard, 4 wire w/conductor & conduit, NQOD, 120/208 V, 600 A, 1 stories, 25' horizontal | 1.00 | Ea. | Boiler Room 004 | Siemens | Series 7 | S.O. 70-28775 A01 | | 30 | 1991 | 2021 | $18,536.85 | $20,390.54 |
| D5010 Electrical Service/Distribution | Switchboards, no main disconnect, 4 wire, 120/208 V, 800 amp, incl CT compartment, excl CT's or PT's | 3.00 | Ea. | Mechanical Room 006 | Federal Pacific Electric | NA | NA | | 30 | | | $7,638.30 | $25,206.39 |
| D5010 Electrical Service/Distribution | Switchgear installation, incl switchboard, panels & circuit breaker, 120/208 V, 1200 A | 2.00 | Ea. | Mechanical Room 006 | Penn Panel & Box | Type CDP | 060575-002 | | 30 | 2007 | 2037 | $27,696.60 | $60,932.52 |
| D5010 Electrical Service/Distribution | Switchgear installation, incl switchboard, panels & circuit breaker, 120/208 V, 1200 A | 2.00 | Ea. | Mechanical Room 006 | Penn Panel & Box | Type CDP | 060575-001 | | 30 | 2007 | 2037 | $27,696.60 | $60,932.52 |
| D5010 Electrical Service/Distribution | Transformer, dry-type, 3 phase 5 kV primary 277/480 volt secondary, 500 kVA | 2.00 | Ea. | Mechanical Room 006 | Magnetic Technolgies Corp. | NA | 2116D1417-1 | | 30 | | | $55,641.60 | $122,411.52 |
| D5010 Electrical Service/Distribution | Transformer, dry-type, 3 phase 5 kV primary 277/480 volt secondary, 500 kVA | 2.00 | Ea. | Mechanical Room 006 | Magnetic Technolgies Corp. | NA | 2116D1417-2 | | 30 | | | $55,641.60 | $122,411.52 |
| | | | | | | | | | | | | **Total:** | **$1,409,057.05** |

## Executive Summary

Building condition is evaluated based on the functional systems and elements of a building and organized according to the UNIFORMAT II Elemental Classification. The grouping of these systems and elements and applying a current replacement value to them develops a representative building cost model. Cost Models are developed for similar building types and functions. Systems and their elements are evaluated based on their current replacement values, life cycles, installation dates and next renewal dates. Systems and their elements that are within their useful lives are further evaluated to identify current deficient conditions that may have a significant impact on a system's or element's remaining service life, and to determine if they are beyond their predicted expected life. The system's or element's current replacement value is based on RS Means Commercial Cost Data.

Following are the cost model's system details for this facility. The Replacement Value is the amount needed to replace the property of the same present value. The Current Repair Amount, also known as Condition Needs, represents the budgeted contractor installed costs plus owner's soft costs for the repair, replacement or renewal for a component or system level deficiency. It excludes contributing costs for other components or systems that might also be associated with the corrective actions due to packaging the work. Facility Condition Index (FCI) FCI is an industry-standard measurement of facility condition calculated as the ratio of the costs to correct a facility's deficiencies to the facility's Current Replacement Value. It ranges from 0% (new) to 100% (very poor). Condition Index (CI) is calculated as the sum of a renewable system's Remaining Service Life (RSL) divided by the sum of a system's Replacement Value (both values exclude soft-cost to simplify calculation updates) expressed as a percentage ranging from 100% (new) to 0% (expired).

| | |
|---|---|
| Function: | |
| Gross Area (SF): | 117,200 |
| Year Built: | 1924 |
| Last Renovation: | |
| Replacement Value: | $1,868,243 |
| Repair Cost: | $18,852.52 |
| Total FCI: | 1.01 % |
| Total RSLI: | 47.03 % |



**Description:**

**Attributes:**

**General Attributes:**

| | | | |
|---|---|---|---|
| Bldg ID: | S603001 | Site ID: | S603001 |

## Condition Summary

The Table below shows the CI and FCI for each major building system shown at the UNIFORMAT classification Level II. Note that Systems with lower FCIs require less investment than systems with higher FCIs.

| UNIFORMAT Classification | RSLI % | FCI % | Current Repair Cost |
|---|---|---|---|
| G20 - Site Improvements | 45.92 % | 1.39 % | $18,852.52 |
| G40 - Site Electrical Utilities | 50.00 % | 0.00 % | $0.00 |
| **Totals:** | **47.03 %** | **1.01 %** | **$18,852.52** |

## Condition Detail

This section of the report contains results of the Facility Condition Assessment. The building is separated into system components based on UNIFORMAT II classification. The columns in the System Listing table below represent the following:

1. System Code: A code that identifies the system.
2. System Description: A brief description of a system present in the building.
3. Unit Price $: The unit price of the system.
4. UoM: The unit of measure for of the system.
5. Qty: The quantity for the system
6. Life: anticipated service life for thesystem based on Building Owners and Managers Association (BOMA) recommendations.
7. Year Installed: The date of system installation.
8. Calc Next Renewal Year: The date of system expiration based on the life, NR stands for non renewable.
9. Next Renewal Year: The suggested system expiration date by the assessor based on visual inspection.
10. CI: The Condition Index of the system.
11. FCI: The Facility Condition Index of the system.
12. RSL: Remaining Service Life.
13. eCR: eCOMET Condition Rating (not used).
14. Deficiency $: The financial investment to repair/replace system.

## System Listing

The System Listing table below lists each of the systems organized by their UNIFORMAT II classification. The assessment team was tasked with recording the most recent replacement year of each system, determining the remaining service life based on the theoretical life, and evaluating the condition to confirm the forecast next replacement year. The system listing is the basis for all data contained in the Building Assessment Report.

Additionally, a condition rating (eCR) based on the following guidelines is provided as observed at the time of the assessment.

- Excellent (E) - No noticeable distress or damage. The entire system is free from observable defect.
- Very Good (VG) - Overall no serviceability reduction for the entire system. No degradation of critical components and minor distress and defect noticeable for some but not non critical components within the system.
- Good (G) - Slight or no serviceability reduction for the entire system. There may be noticeable defects for some non critical components and slight noticeable degradation of the critical components.
- Fair (F) - Overall serviceability is degraded but adequate. There may be moderate deterioration for very few of the critical components and few of the non critical components may have severe degradation.
- Marginal (MA) - Overall serviceability and reliability loss. Most if not all of the non critical components suffer from severe degradation and a few of the critical component may have severe degradation.
- Moderate (MO) - Overall a significant serviceability loss. Most if not all the components have severe degradation with the reminder of the component showing visible distress.
- Very Poor (VP) - Overall the system is barely functional. All of the components are severely degraded.
- Non-Functional (NF) - Overall the system does not function with all the components having no serviceability and suffer from severe degradation.

| System Code | System Description | Unit Price $ | UoM | Qty | Life | Year Installed | Calc Next Renewal Year | Next Renewal Year | RSLI% | FCI% | RSL | eCR | Deficiency $ | Replacement Value $ |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| G2010 | Roadways | $11.52 | S.F. | 8,200 | 30 | 1924 | 1954 | 2027 | 40.00 % | 0.00 % | 12 | | | $94,464 |
| G2020 | Parking Lots | $7.65 | S.F. | 44,100 | 30 | 1924 | 1954 | 2027 | 40.00 % | 0.00 % | 12 | | | $337,365 |
| G2030 | Pedestrian Paving | $11.52 | S.F. | 22,000 | 40 | 1924 | 1964 | 2027 | 30.00 % | 0.00 % | 12 | | | $253,440 |
| G2040 | Site Development | $4.36 | S.F. | 117,200 | 25 | 1924 | 1949 | 2027 | 48.00 % | 3.69 % | 12 | | $18,852.52 | $510,992 |
| G2050 | Landscaping & Irrigation | $3.78 | S.F. | 42,900 | 15 | 1924 | 1939 | 2027 | 80.00 % | 0.00 % | 12 | | | $162,162 |
| G4020 | Site Lighting | $3.58 | S.F. | 117,200 | 30 | 1924 | 1954 | 2030 | 50.00 % | 0.00 % | 15 | | | $419,576 |
| G4030 | Site Communications & Security | $0.77 | S.F. | 117,200 | 30 | 1924 | 1954 | 2030 | 50.00 % | 0.00 % | 15 | | | $90,244 |
| | | | | | | | | **Total** | **47.03 %** | **1.01 %** | | | **$18,852.52** | **$1,868,243** |

## System Notes

The facility description in the site executive summary contains an overview of each system. The notes listed below provide additional information on select systems found within the facility.

No data found for this asset

## Renewal Schedule

eCOMET forecasts future Capital Renewal funding needed to address expiring systems based on the Next Renewal year found in the Cost Models. A 3% annual inflation factor is applied to the costs for systems expiring in future years. The table below reflects recommended Capital Renewal funding needs over the next 10 years. Note: Cells with a zero value indicate systems for which renewal is not scheduled in that year.

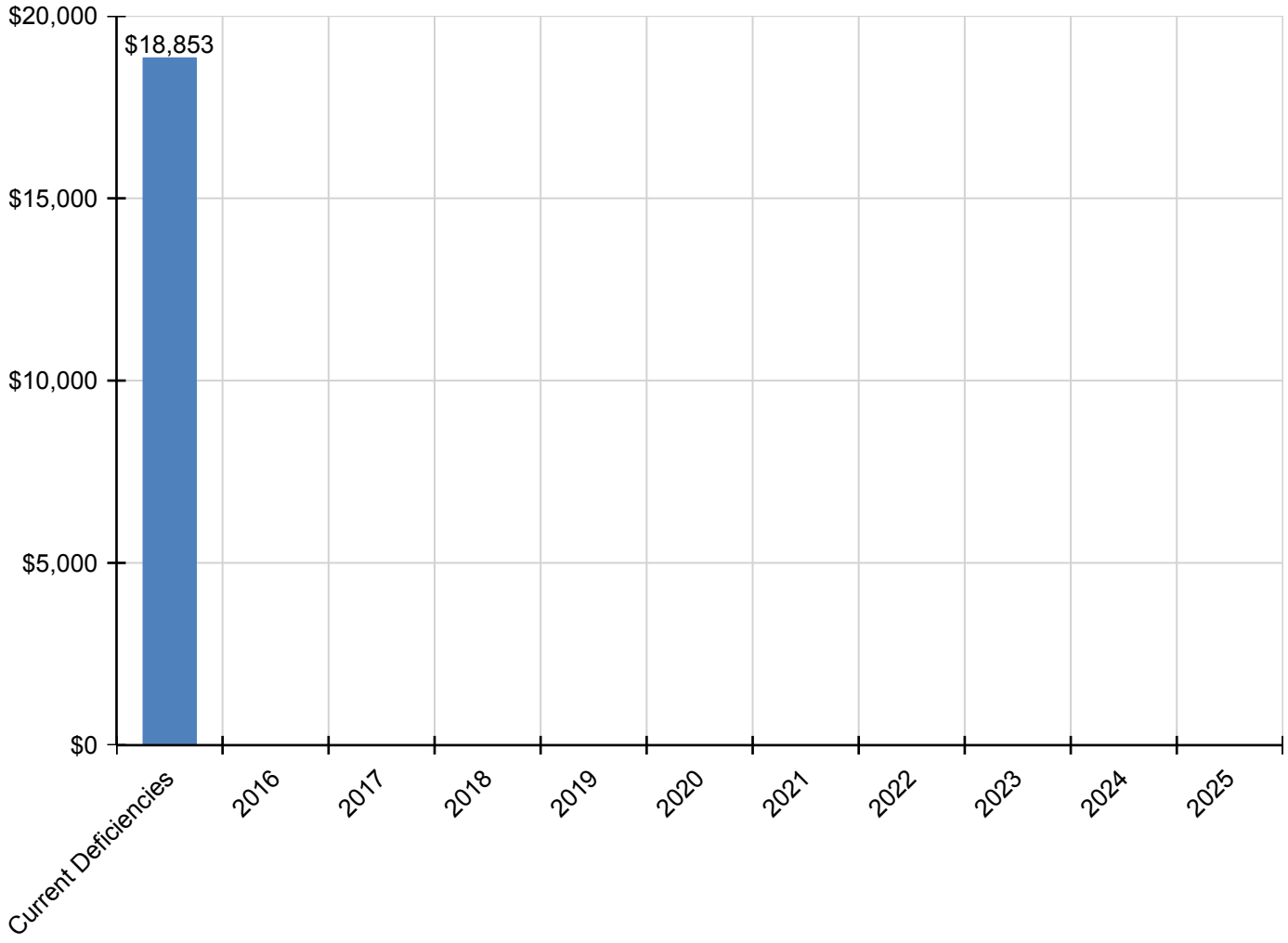
*Inflation Rate: 3%*

| System | Current Deficiencies | 2016 | 2017 | 2018 | 2019 | 2020 | 2021 | 2022 | 2023 | 2024 | 2025 | Total |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Total:** | **$18,853** | **$0** | **$0** | **$0** | **$0** | **$0** | **$0** | **$0** | **$0** | **$0** | **$0** | **$18,853** |
| **G - Building Sitework** | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | **$0** |
| **G20 - Site Improvements** | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | **$0** |
| **G2010 - Roadways** | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | **$0** |
| **G2020 - Parking Lots** | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | **$0** |
| **G2030 - Pedestrian Paving** | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | **$0** |
| **G2040 - Site Development** | $18,853 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | **$18,853** |
| **G2050 - Landscaping & Irrigation** | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | **$0** |
| **G40 - Site Electrical Utilities** | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | **$0** |
| **G4020 - Site Lighting** | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | **$0** |
| **G4030 - Site Communications & Security** | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | **$0** |

** Indicates non-renewable system*

## Forecasted Sustainment Requirement

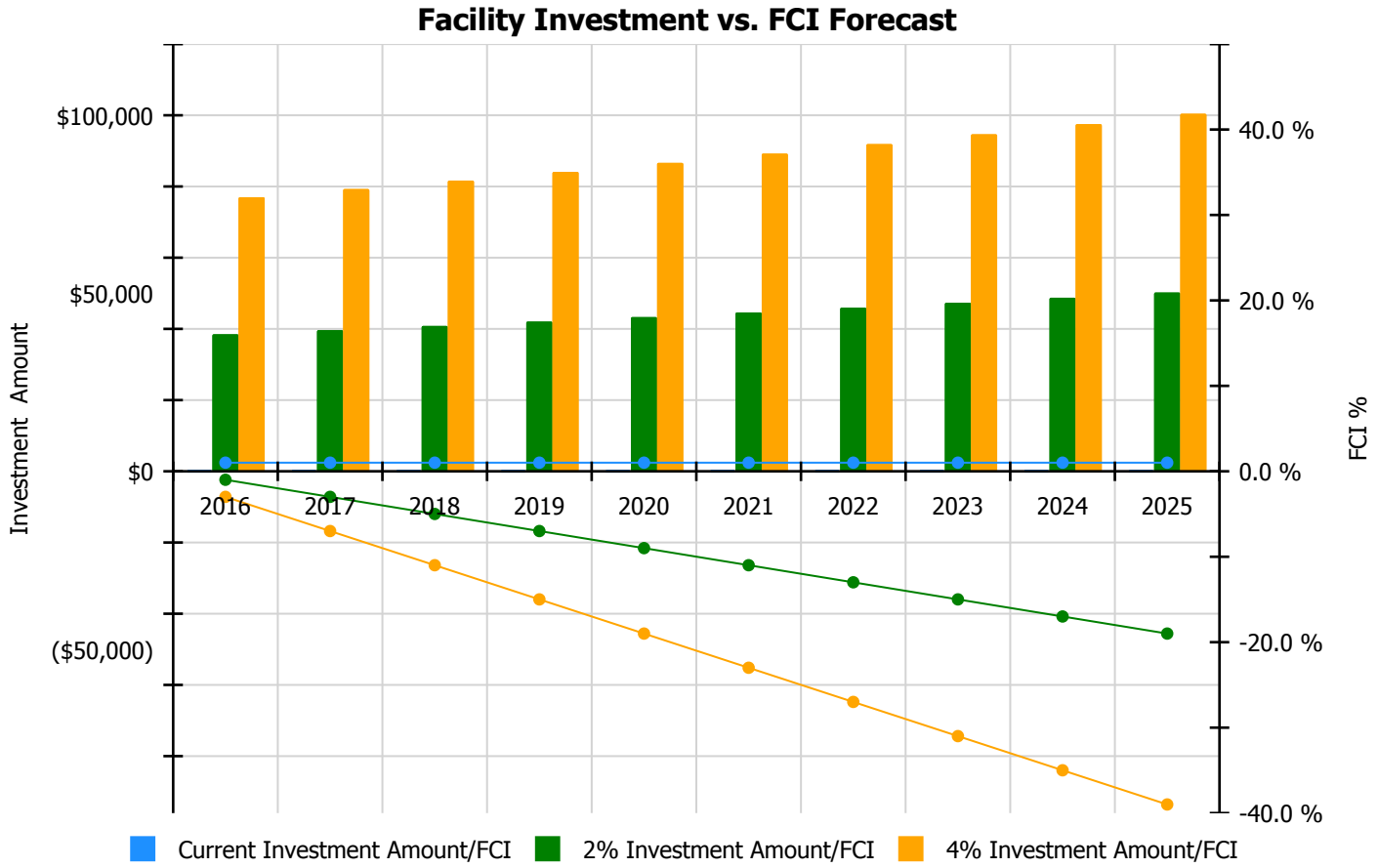
The following chart shows the current building deficiencies and forecasting sustainment requirements over the next ten years.



## 10 Year FCI Forecast by Investment Scenario

The chart below illustrates the effect of various investment levels on the building FCI for the next 10 years. The levels of investment shown below include:

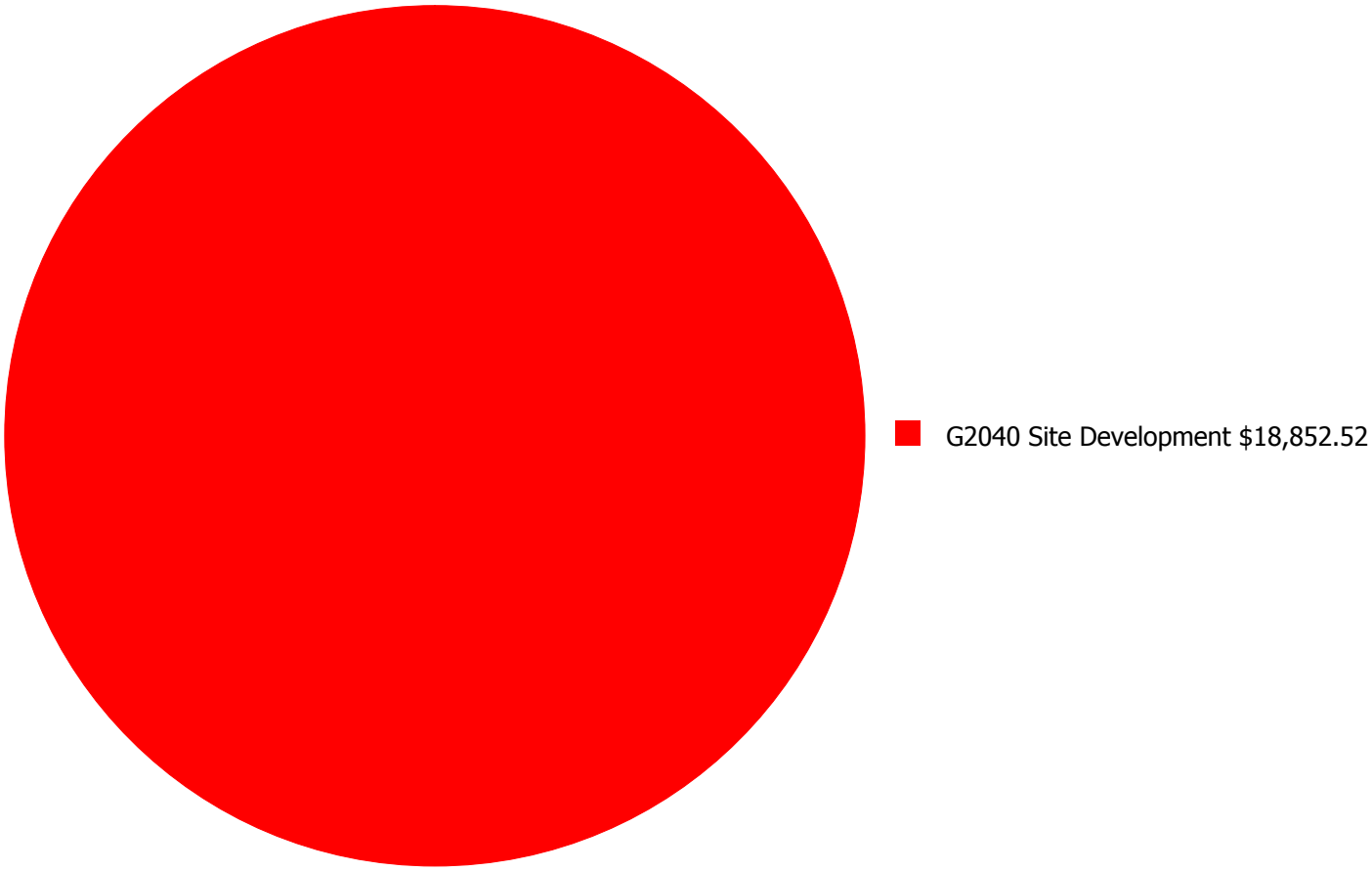
- Current FCI: a variable investment amount based on renewing expired systems to maintain the current FCI for the building
- 2% Investment: an annual investment of 2% of the replacement value of the building, escalated for inflation
- 4% Investment: an annual investment of 4% of the replacement value of the building, escalated for inflation




| Year | Investment Amount Current FCI - 1.01% | 2% Investment | | 4% Investment | |
|---|---|---|---|---|---|
| | | Amount | FCI | Amount | FCI |
| 2016 | $0 | $38,486.00 | -0.99 % | $76,972.00 | -2.99 % |
| 2017 | $0 | $39,640.00 | -2.99 % | $79,281.00 | -6.99 % |
| 2018 | $0 | $40,830.00 | -4.99 % | $81,659.00 | -10.99 % |
| 2019 | $0 | $42,054.00 | -6.99 % | $84,109.00 | -14.99 % |
| 2020 | $0 | $43,316.00 | -8.99 % | $86,632.00 | -18.99 % |
| 2021 | $0 | $44,616.00 | -10.99 % | $89,231.00 | -22.99 % |
| 2022 | $0 | $45,954.00 | -12.99 % | $91,908.00 | -26.99 % |
| 2023 | $0 | $47,333.00 | -14.99 % | $94,665.00 | -30.99 % |
| 2024 | $0 | $48,753.00 | -16.99 % | $97,505.00 | -34.99 % |
| 2025 | $0 | $50,215.00 | -18.99 % | $100,430.00 | -38.99 % |
| **Total:** | **$0** | **$441,197.00** | | **$882,392.00** | |

## Deficiency Summary by System

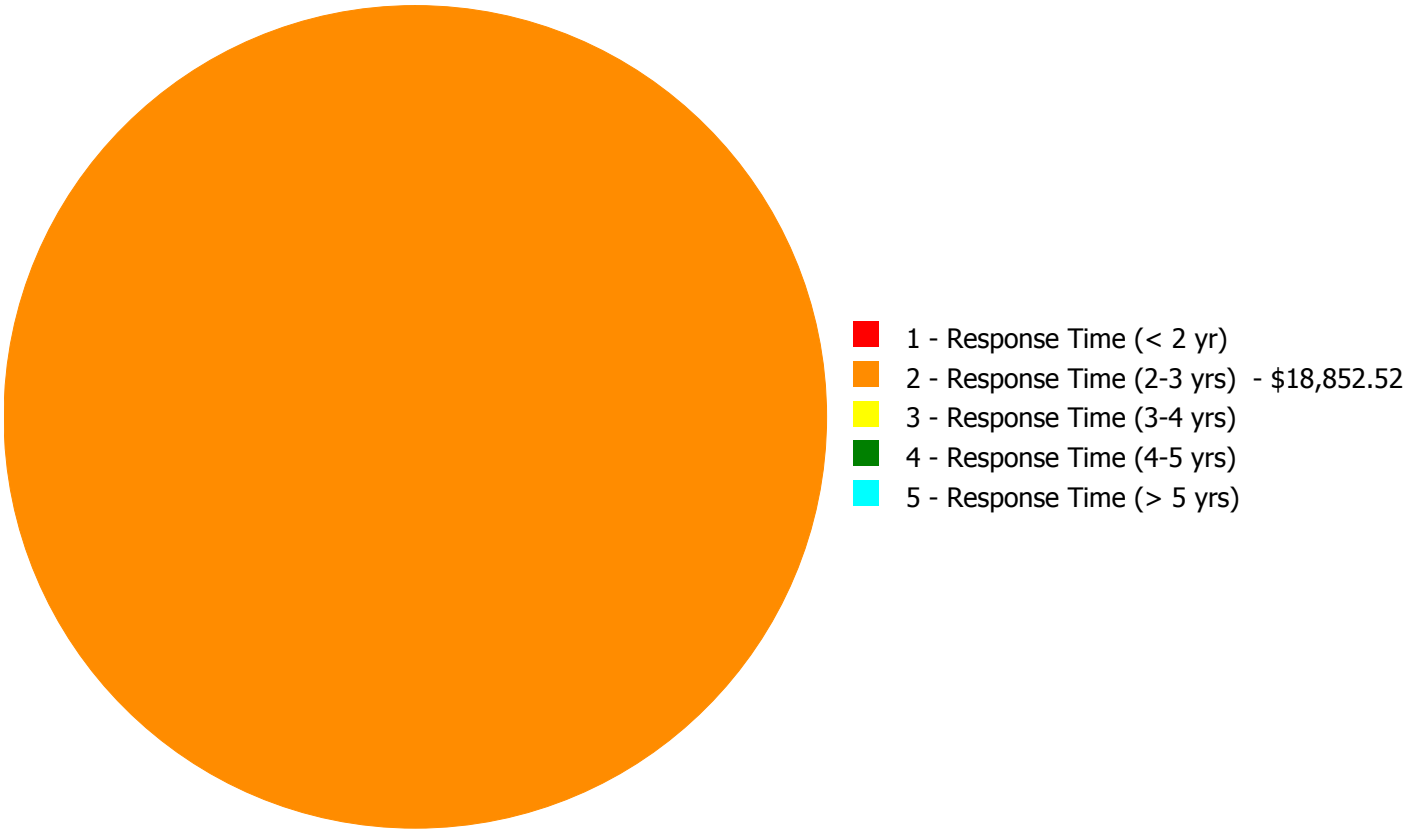
Current deficiencies included assemblies that have reached or exceeded their design life or components of the assemblies that are in need of repair. Assemblies that have reached their design life are identified as current deficiencies and assigned the distress 'Beyond Useful Life'. The following chart lists all current deficiencies associated with this facility.




**Budget Estimate Total: $18,852.52**

## Deficiency Summary by Priority

The following chart shows the total repair costs broken down by priority. Assessors assigned deficiencies within eCOMET to one of the following priority categories:




**Budget Estimate Total: $18,852.52**

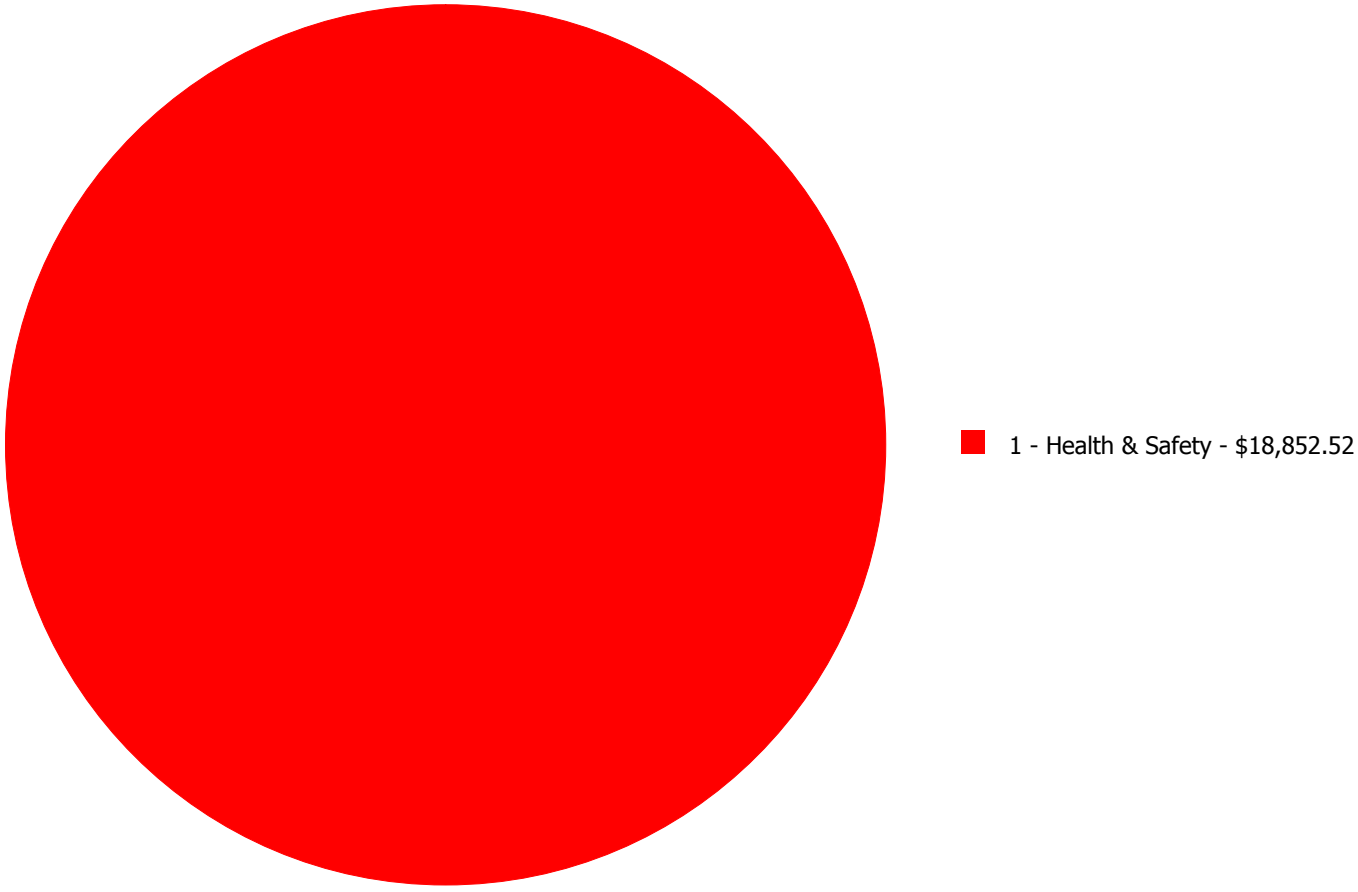
## Deficiency By Priority Investment Table

The table below shows the current investment cost grouped by deficiency priority and building system.

| System Code | System Description | 1 - Response Time (< 2 yr) | 2 - Response Time (2-3 yrs) | 3 - Response Time (3-4 yrs) | 4 - Response Time (4-5 yrs) | 5 - Response Time (> 5 yrs) | Total |
|---|---|---|---|---|---|---|---|
| G2040 | Site Development | $0.00 | $18,852.52 | $0.00 | $0.00 | $0.00 | $18,852.52 |
| | **Total:** | $0.00 | $18,852.52 | $0.00 | $0.00 | $0.00 | $18,852.52 |

## Deficiency Summary by Category

The following chart shows the total repair costs broken down by deficiency categories. Assessors assigned deficiencies to one of the following categories:




**Budget Estimate Total: $18,852.52**

## Deficiency Details by Priority

The deficiency detail notes listed below provide additional information on identified deficiencies found within the facility.

### Priority 2 - Response Time (2-3 yrs):

**System: G2040 - Site Development**

**Location:** Site

**Distress:** Health Hazard / Risk

**Category:** 1 - Health & Safety

**Priority:** 2 - Response Time (2-3 yrs)

**Correction:** Build secure trash dumpster enclosure

**Qty:** 1.00

**Unit of Measure:** Ea.

**Estimate:** $18,852.52

**Assessor Name:** Hayden Collins

**Date Created:** 02/29/2016

**Notes:** The trash dumpster is located south of the main building enclosed by site fencing but open to students. The exterior services are not protected. Upgrades to protect the exterior services and trash area is necessary for the safety of the students and the general public. Construction of a secure lockable dumpster area is recommended.

## Equipment Inventory

The following table represents the inventory details of the inventory found in the building, which fall under the following subsystems:

No data found for this asset

## Glossary

| | |
|---|---|
| ABMA | American Boiler Manufacturers Association http://www.abma.com/ |
| ACEEE | American Council for an Energy-Efficient Economy |
| ACGIH | American Council of Governmental and Industrial Hygienists |
| AEE | Association of Energy Engineers |
| AFD | Adjustable Frequency Drive |
| AFTC | After Tax Cash Flow |
| AGA | American Gas Association |
| AHU | Air Handling Unit |
| Amp | Ampere |
| ANSI | American National Standards Institute |
| ARI | Air Conditioning and Refrigeration Institute |
| ASD | Adjustable Speed Drive |
| ASHRAE | American Society of Heating Refrigerating and Air-Conditioning Engineers Inc. |
| ASME | American Society of Mechanical Engineers |
| Assessment | Visual survey of a facility to determine its condition. It involves looking at the age of systems reviewing information from local sources and visual evidence of potential problems to assign a condition rating. It does not include destructive testing of materials or testing of systems or equipment for functionality. |
| ATS | After Tax Savings |
| AW | Annual worth |
| BACNET | Building Automation Control Network |
| BAS | Building Automation System |
| BCR | Benefit Cost Ratio |
| BEP | Business Energy Professional (AEE) |
| BF | Ballast Factor |
| BHP | Boiler Horsepower (boilers) |
| BHP | Brake Horsepower (motors) |
| BLCC | Building Life Cycle Cost analysis program (FEMP) |
| BOCA | Building Officials and Code Administrators |
| BTCF | Before Tax Cash Flow |

| | |
|---|---|
| BTS | Before Tax Savings |
| Btu | British thermal unit |
| Building Addition | An area space or component of a building added to a building after the original building's year built date. |
| CAA | Clean Air Act |
| CAAA-90 | Clean Air Act Amendments of 1990 |
| CABO | Council of American Building Officials |
| CAC | Conventional Air Conditioning |
| CADDET | Center for the Analysis and Dissemination of Demonstrated Energy Technologies |
| Calculated Next Renewal | The year a system or element would be expected to expire based solely on the date it was installed and the expected useful lifetime for that kind of system. |
| Capital Renewal | Capital renewal is condition work (excluding suitability and energy audit work) that includes the replacement of building systems or elements (as they become obsolete or beyond their useful life) not normally included in an annual operating budget. Calculated next renewal The year a system or element would be expected to expire based solely on the date it was installed and the expected useful lifetime for that kind of system. Next renewal The assessor adjusted expected useful life of a system or element based on on-site inspection. |
| CDD | Cooling Degree Days |
| CDGP | Certified Distributed Generation Professional |
| CEC | California Energy Commission |
| CEM | Certified Energy Manager |
| CEP | Certified Energy Procurement Professional |
| CFC | Chlorofluorocarbon |
| CFD | Cash Flow Diagram |
| CFL | Compact Fluorescent Light |
| CFM cfm | Cubic Feet per Minute |
| CHP | Combined Heat and Power (a.k.a. cogeneration) |
| CHW | Chilled Water |
| Condition | Condition refers to the state of physical fitness or readiness of a facility system or system element for its intended use. |
| COP | Coefficient of Performance |
| Cp | Heat Capacity of Material |
| CPUC | California Public Utility Commission |
| CRI | Color Rendering Index |
| CRT | Cathode Ray Tube VDT HMI |

| | |
|---|---|
| CTC | Competitive Transition Charge |
| Cu | Coefficient of Utilization |
| Current Replacement Value (CRV) | CRV represents the hypothetical total cost of rebuilding or replacing an existing facility in current dollars to its optimal condition (excluding auxiliary facilities) under current codes and construction standards. |
| Cv | Value Coefficient |
| CWS | Chilled Water System |
| D d | Distance (usually feet) |
| DB | Dry Bulb |
| DCV | Demand Control Ventilation |
| DD | Degree Day |
| DDB | Double Declining Balance |
| DDC | Direct Digital Controls |
| Deferred maintenance | Deferred maintenance is condition work (excluding suitability and energy audit needs) deferred on a planned or unplanned basis to a future budget cycle or postponed until funds are available. |
| Deficiency | A deficiency is a repair item that is damaged missing inadequate or insufficient for an intended purpose. |
| Delta | Difference |
| Delta P | Pressure Difference |
| Delta T | Temperature Difference |
| DG | Distributed Generation |
| DOE | Department of Energy |
| DP | Dew Point |
| DR | Demand Response |
| DX | Direct Expansion Air Conditioner |
| EA | Energy Audit |
| EBITDA | Earnings before Interest Taxes Depreciation and Amortization |
| ECI | Energy Cost Index |
| ECM | Energy Conservation Measure |
| ECO | Energy Conservation Opportunity |
| ECPA | Energy Conservation and Production Act |
| ECR | Energy Conservation Recommendation |
| ECS | Energy Control System |

| | |
|---|---|
| EER | Energy Efficiency Ratio |
| EERE | Energy Efficiency and Renewable Energy division of US DOE |
| EIA | Energy Information Agency |
| EIS | Energy Information System |
| EMCS | Energy Management Computer System |
| EMO | Energy Management Opportunity |
| EMP | Energy Management Project |
| EMR | Energy Management Recommendation |
| EMS | Energy Management System |
| Energy Utilization Index (EUI) | EUI is the measure of total energy consumed in the cooling or heating of a building in a period expressed as British thermal unit (BTU) per (cooled or heated) gross square foot. |
| EO | Executive Order |
| EPA | Environmental Protection Agency |
| EPACT | Energy Policy Act of 1992 |
| EPCA | Energy Production and Conservation Act of 1975 |
| EPRI | Electric Power Research Institute |
| EREN | Efficiency and Renewable Energy (Division of USDOE) |
| ERV | Energy Recovery Ventilator |
| ESCO | Energy Service Company |
| ESPC | Energy Savings Performance Contract |
| EUI | Energy Use Index |
| EWG | Exempt Wholesale Generators |
| Extended Facility Condition Index (EFCI) | EFCI is calculated as the condition needs for the current year plus facility system renewal needs going out to a set time in the future divided by Current Replacement Value. |
| f | Frequency |
| F | Fahrenheit |
| Facility | A facility refers to site(s) building(s) or building addition(s) or combinations thereof that provide a particular service. |
| Facility Condition Assessment (FCA) | FCA is a process for evaluating the condition of buildings and facilities for programming and budgetary purposes through an on site inspection and evaluation process. |
| Facility Condition Index (FCI) | FCI is an industry-standard measurement of a facility's condition that is the ratio of the cost to correct a facility's deficiencies to the Current Replacement Value of the facilities. The higher the FCI the poorer the condition of a facility. After an FCI is established for all buildings within a portfolio a building's condition can be ranked relative to other buildings. The FCI may also represent the condition of a portfolio based on the cumulative FCIs of the portfolio's facilities. |

| | |
|---|---|
| FC | Footcandle |
| FCA | Fuel Cost Adjustment |
| FEMIA | Federal Energy Management Improvement Act of 1988 |
| FEMP | Federal Energy Management Program |
| FERC | Federal Energy Regulatory Commission |
| FESR | Fuel Energy Savings Ratio |
| FLA | Full Load Amps |
| FLF | Facility Load Factor (usually monthly) |
| FLRPM | Full Load Revolutions per Minute |
| FMS | Facility Management System |
| FPM fpm | Feet per Minute (velocity) |
| FSEC | Florida Solar Energy Center |
| Ft | Foot |
| GPM gpm | Gallons per Minute |
| GRI | Gas Research Institute |
| Gross Square Feet (GSF) | The size of the enclosed floor space of a building in square feet measured to the outside face of the enclosing wall. |
| GUI | Graphical User Interface |
| H h | Enthalpy Btu/lb |
| HCFC | Hydrochlorofluorocarbons |
| HDD | Heating Degree days |
| HFC | Hydrofluorocarbons |
| HHV | Higher Heating Value |
| HID | High Intensity Discharge (lamp) |
| HMI | Human Machine Interface |
| HMMI | Human Man Machine Interface |
| HO | High Output (lamp) |
| HP Hp hp | Horsepower |
| HPS | High Pressure Sodium (lamp) |
| HR | Humidity Ratio |
| Hr hr | Hour |

| | |
|---|---|
| HRU | Heat Recovery Unit |
| HVAC | Heating Ventilation and Air-Conditioning |
| Hz | Hertz |
| I | Intensity (lumen output of lamp) |
| I i | Interest rate or Discount rate |
| IAQ | Indoor Air Quality |
| ICA | International Cogeneration Alliance |
| ICBO | International Conference of Buildings Officials |
| ICC | International Code Council |
| ICP | Institutional Conservation Program |
| IECC | International Energy Conservation Code |
| IEEE | Institute of Electrical and Electronic Engineers |
| IESNA | Illuminating Engineering Society of North America |
| Install year | The year a building or system was built or the most recent major renovation date (where a minimum of 70 of the system?s Current Replacement Value (CRV) was replaced). |
| IRP | Integrated Resource Planning |
| IRR | Internal Rate of Return |
| ISO | Independent System Operator |
| ITA | Independent Tariff Administrator |
| k | Kilo multiple of thousands in SI system |
| K | Kelvins (color temperature of lamp) |
| K k | Thermal Conductivity of Material |
| KVA | Kilovolt Ampere |
| KVAR | Kilovolt Ampere Reactive |
| kW | kiloWatt |
| kWh | kiloWatt hour |
| L | Length (usually feet) |
| LCC | Life Cycle Costing |
| LDC | Local Distribution Company |
| LEED | Leadership in Energy and Environmental Design |
| LEED EB | LEED for Existing Buildings |

| | |
|---|---|
| LEED NC | LEED for new construction |
| LF | Load Factor |
| LHV | Lower Heating Value |
| Life cycle | The period of time that a building or site system or element can be expected to adequately serve its intended function. |
| LPS | Low Pressure Sodium (lamp) |
| Lu | Lumen Output of a Lamp or Fixture |
| M | Mega multiple of millions in SI system |
| M&V | Measurement and Verification |
| MACRS | Modified Accelerated Cost Recovery System |
| MARR | Minimum Attractive Rate of Return |
| Mbtu | Thousand Btu |
| MCF | Thousand Cubic Feet (usually of gas) |
| MEC | Model Energy Code |
| Mm | Multiple of Thousands in I/P System |
| MMBtu | Million Btu |
| MMCS | Maintenance Management Computer System |
| MMI | Man Machine Interface |
| MMS | Maintenance Management System |
| MSE 2000 | Management System for Energy 2000 (ANSI Georgia Tech Univ) |
| MW | MegaWatt |
| MWH MWh | MegaWatt hour |
| NAAQS | National Ambient Air Quality Standards |
| NAESCO | National Association of Energy Service Companies |
| NAIMA | North American Insulation Manufacturers Association |
| NEA | National Energy Act of 1978 |
| NECPA | National Energy Conservation Policy Act |
| NEMA | National Electrical Manufacturer's Association |
| NERC | North American Electric Reliability Council |
| Next Renewal | The Next Renewal date is an override of the 'Calculated Next Renewal' date and is based upon the assessor?s visual inspection. |

| | |
|---|---|
| NFPA | National Fire Protection Association |
| NGPA | National Gas Policy Act of 1978 |
| NLRPM | No Load Revolutions per Minute (speed) |
| Nn | Equipment or Project lifetime in economic analysis |
| NOPR | Notice of Proposed Rule Making from FERC |
| NOx | Nitrogen Oxide Compounds |
| NPV | Net present value in economic analysis |
| NREL | National Renewable Energy Laboratory |
| NUG | Non-Utility Generator |
| O&M | Operation and Maintenance |
| OA | Outside Air |
| ODP | Ozone Depletion Potential |
| OPAC | Off-Peak Air Conditioning |
| P | Present value in economic analysis |
| PBR | Performance Based Rates |
| PEA | Preliminary Energy Audit |
| PF | Power Factor |
| PID | Proportional plus integral plus derivative (control system) |
| PM | Portfolio Manager in Energy Star rating system |
| PM | Preventive Maintenance |
| PoolCo | Power Pool Company or Organization |
| POU | Point of Use |
| PQ | Power Quality |
| PSC | Public Service Commission |
| PSIA psia | Pounds per square inch absolute (pressure) |
| PSIG psig | Pounds per square inch gauge (pressure) |
| PUC | Public Utility Commission |
| PUHCA | Public Utilities Holding Company Act of 1935 |
| PURPA | Public Utilities Regulatory Policies of 1978 |
| PV | Photovotaic system |

| | |
|---|---|
| PV | Present Value |
| PW | Present Worth |
| PX | Power Exchange |
| q | Rate of heat flow in Btu per hour |
| Q | Heat load due to conduction using degree days |
| QF | Qualifying Facility |
| R | Electrical resistance |
| R | Thermal Resistance |
| RC | Remote controller |
| RCR | Room Cavity Ratio |
| RCRA | Resource Conservation and Recovery Act |
| Remaining Service Life (RSL) | RSL is the number of years service remaining for a system or equipment item. It is automatically calculated based on the difference between the current year and the 'Calculated Next Renewal' date or the 'Next Renewal' date whichever one is the later date. |
| Remaining Service Life Index (RSLI) | RSLI is defined as a percentage ratio of the remaining service life of a system. It usually ranges from 0 to 100 |
| REMR | Repair Evaluation Maintenance Rehabilitation (REMR) is a scale used to objectively rank systems based on their condition |
| Renewal Schedule | A timeline that provides the items that need repair the year in which the repair is needed and the estimated price of the renewal. |
| RH | Relative Humidity |
| RLA | Running Load Amps |
| RMS | Root Mean Square |
| RO | Reverse Osmosis |
| ROI | Return on Investment |
| RPM | Revolutions Per Minute |
| RTG | Regional Transmission Group |
| RTO | Regional Transmission Organization |
| RTP | Real Time Pricing |
| SBCCI | Southern Building Code Congress International |
| SC | Scheduling Coordinator |
| SC | Shading Coefficient |
| SCADA | Supervisory Control and Data Acquisition Systems |

| | |
|---|---|
| SEER | Seasonal Energy Efficiency Ratio |
| SHR | Sensible Heat Ratio |
| Site | The grounds and utilities roadways landscaping fencing and other typical land improvements needed to support the facility. |
| Soft Cost | An expense item that is not considered direct construction cost. Soft cost includes architectural engineering financing legal fees and other pre-and-post construction expenses. |
| SOx | Sulfur Oxide Compounds |
| SP | Static Pressure |
| SP SPB | Simple Payback |
| SPP | Simple Payback Period |
| SPP | Small Power Producers |
| STR | Stack Temperature Rise |
| SV | Specific Volume |
| System | System refers to building and related site work elements as described by ASTM Uniformat II Classification for Building Elements (E1557-97) a format for classifying major facility elements common to most buildings. Elements usually perform a given function regardless of the design specification construction method or materials used. See also Uniformat II. |
| T | Temperature |
| T | Tubular (lamps) |
| TAA | Technical Assistance Audit |
| TCP/IP | Transmission Control Protocol/Internet Protocol |
| TES | Thermal Energy Storage |
| THD | Total Harmonic Distortion |
| TOD | Time of Day |
| TOU | Time of Use |
| TQM | Total Quality Management |
| TransCo | Transmission Company |
| U | Thermal Conductance |
| UDC | Utility Distribution Company |
| UL | Underwriters Laboratories |
| UNIFORMAT II | The ASTM UNIFORMAT II Classification for Building Elements (E1557-97) a format for classifying major facility components common to most buildings. |
| USGBC | US Green Building Council |
| v | Specific Volume |

| | |
|---|---|
| V | Volts Voltage |
| V | Volume |
| VAV | Variable Air Volume |
| VDT | Video Display Terminal |
| VFD | Variable Frequency Drive |
| VHO | Very High Output |
| VSD | Variable Speed Drive |
| W | Watts |
| W | Width |
| WB | Wet bulb |
| WH Wh | Watt Hours |
| Year built | The year that a building or addition was originally built based on substantial completion or occupancy. |
| Z | Electrical Impedance |