

Preliminary Consultation

Hawthorne Elementary School

Major Building System Renovation



DCSD Project Number: 364-035

SSOE|S&W Project Number: 021-01172-03

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Prepared by:

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**Dekalb County School District
Hawthorne Elementary School – Major Building System Replacement**

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INTRODUCTION

Report Scope

This report will assess existing conditions at Hawthorne Elementary School and recommend replacement options for major systems and related improvements.

Project Summary/Scope of Work

Dekalb County School System has defined a scope of work to replace heating, ventilation, and air conditioning (HVAC) components at Hawthorne Elementary School. The scope of work includes the following items from the original RFP #RFQu 21-752-032 for Hawthorne (364-35), dated 03.25.21:

- Replacement of HVAC components throughout the building

The above is not intended to be an all-inclusive list of the scope of work. At the pre-proposal meeting held on August 13, Brian Albanese reiterated the RFQ's intent for SSOE | S&W to make scope recommendations based on the existing conditions observed as part of our report. SSOE | S&W recommends the following items to be added to the scope, to be elaborated in the remaining sections of our report.

- Roof replacement
- Full HVAC system replacement
- Fire alarm replacement
- Intercom replacement
- Outdoor and classroom lighting replacement
- Emergency generator installation
- Fire sprinkler installation
- Ceiling replacement
- Modifications to room layout to allow for the creation of a dedicated electrical room separate from mechanical room 99.4, affecting rooms 99.4, 101, 101.1, 101.2 102, and 102.1.
- Plumbing fixture replacement one for one
- Main sewer line replacement – approximately 100' of subgrade exterior
- Wheelchair lift for stage

Schedule Summary

The construction phase is tentatively scheduled to occur per the RFP from 07.01.22 through the 07.31.23. Design work is to be completed by mid-January 2022, with permitting and bidding scheduled for early 2022, allowing time for a contractor to begin procuring equipment prior to construction start.

Budget Summary

The construction budget for this project is **\$3,350,000**. The preliminary cost review included in this report is based on this narrative and will be used to reconcile the scope with the budget.

Our preliminary cost review has a proposed construction budget of **\$5,671,659**. This initial cost analysis shows a 69% increase in the stated cost limitation defined by the original RFQ.

CONTEXT / EXISTING CONDITIONS

Hawthorne Elementary School is a 53,418 square foot one-story elementary school building in the Dekalb County School System. The original building (building 2010) is 32,060 square feet and was constructed in 1961. A one-story 6,240 square foot addition (building 2011) was built in 1963, a 9,640 square foot one-story addition (building 2012) was built in 1966, and a 5,478 square foot gym (building 2020) was built in 2003.



^ Hawthorne Elementary School Aerial View

HVAC: The school has several types of HVAC systems.

- Building 2010, 2011, 2012: 2-pipe system water source heat pump (WSHP) with zone level WSHPs, and unit ventilators. The 2-pipe system distributes condenser water to the WSHPs.
- Building 2010: The administration area is partially separated from the main system and served by mini-split ductless units with condensers on grade outside.
- Building 2020: gymnasium has a 25 ton packaged air conditioning unit installed on grade on the north side of the building. The unit cools supply air by direct expansion (DX) refrigerant and heats utilizing natural gas. Supply and return duct work is installed on the building exterior.
- The existing boiler exploded recently and has not been replaced. The zone pumps are leaking throughout the building.
- Abandoned unit ventilator cabinets still exist along the exterior wall of all classrooms, and are open to unconditioned outside air.
- Existing 1960s ductwork is not insulated properly in select locations around the building.

- Piping systems are insulated with asbestos laden material identified with warning language labeled on the insulation. Replacement will require hazardous materials remediation.

Fire Protection: The facility is not currently served by a fire sprinkler system.

Plumbing: Restroom fixtures are not operational in many locations and beyond their useful life. Partition doors are attached to demising walls built of glazed units and CMU. Doors are consistently pulled out of broken glazed units. Water heater dates vary but are past their useful life. The school sanitary system backs up frequently due to a problem downstream in the main line. Scoping will be required to verify the issue.

Electrical: Electrical systems for each building appear to date to the original construction for each building. Lighting has been replaced in the corridors, media center, and cafeteria with flat panel LED fixtures. Classrooms, administrative offices, and back-of-house spaces are provided with fluorescent fixtures.

Low Voltage: Fire alarm and sound system appear to date to the original construction for each building.

Design Criteria

SSOE | S&W will follow the Dekalb County School District Design Guidelines for Facility Construction, version 2018.04.04.

SSOE | S&W has also reviewed the School Assessment Reports for the school dated May 19, 2016 and April 15, 2021. Based on our review of these reports, the scope of work and our recommendations for renovation / replacement will align with the recommendations of these reports.

Building Codes

State Minimum Standard Codes

- International Building Code (IBC), 2018 Edition w/ Georgia Amendments dated 2020
- International Fire Code (IFC), 2018 Edition as amended by OICFSC Rules and Regulations 120-3-3
- International Plumbing Code (IPC), 2018 Edition w/ Georgia Amendments dated 2020
- International Mechanical Code (IMC) 2018 Edition w/ Georgia Amendments dated 2020
- International Fuel Gas Code (IFGC) 2018 Edition w/ Georgia Amendments dated 2020
- National Electrical Code, 2020 Edition w/ Georgia Amendments dated 2021
- International Energy Conservation Code, 2015 Edition w/ Georgia Supplements and Amendments dated 2020.
- NFPA 101 Life Safety Code, 2018 Edition as amended by OICFSC Rules and Regulations 120-3-3
- Georgia Accessibility Code as adopted and amended by OICFSC Rules and Regulations 120-3-20

Life Safety Code 2018 - Chapter 43.4

The project scale per LSC Chapter 43 Building Rehabilitations definition for Renovation will apply for most of Hawthorne Elementary School. New work shall comply with the requirements of Chapter 15 Existing Education and associated referenced sections. New interior finish materials will need to meet the requirements for new construction. A proposed Modification per Section 43.5 is provided as shown in Appendix 2 to resolve the existing mechanical and electrical room 99.4 clearance issues. The new fire riser location is proposed in mechanical room 99.4. The addition of sprinklers to Hawthorne Elementary School may require the work to comply with Section 43.5 Modifications which requires the new work to comply with the requirements of new construction, Chapter 14 Education, and associated referenced sections.

Means of Egress occupancy load and exit capacity will be confirmed based on current Certificates of Occupancy or assumption of occupancy based on classroom occupants:

- Hawthorne ES– Since no Certificate of Occupancy is available for this building, assume 40 occupants per classroom (25 classrooms = **1,000** occupants) + the cafeteria occupancy at 15 SF per occupant in **4,426 SF = 296** occupants for a total max occupancy of **1,296**, well within the calculated existing exit capacity of **2,240**, utilizing 7 double doors.

GA IBC 2020 Amendments – Section 3401

The Georgia Amendments to the 2018 IBC added Section 3401.7 'Existing System conformance' to clarify the extents of existing systems that will have to be modified to conform to the requirements of the State Minimum Standard Codes. Item #1 will require new work to be brought into conformance with the current codes if the new work is less than 50% of the replacement cost of the existing system. Item #2 will require the entire system to be made to conform to current codes if the new work is equal to or greater than 50% of the replacement cost of the existing system. Most of the proposed project scope will fall under item #2 requiring the entire system meet current code. Systems impacted will be existing mechanical, electrical, plumbing, and life safety systems. Plumbing fixture replacement will be one for one and will not include renovation of the toilet rooms.

Hawthorne Elementary School HVAC Solutions

DCSD scope for Hawthorne Elementary is listed as component replacement. Based on the age of systems and site assessment SSOE | S&W is recommending that the scope be modified to include a complete system replacement. The system replacement recommended is a water source heat pump condenser water loop system, including all associated duct work.

Demolition:

At building 2010, 2011, and 2012, remove and discard the existing HVAC systems including:

- Cooling tower
- Natural gas fired boiler
- Condenser water pumps
- Packaged WSHPs
- Exhaust fans
- Split systems
- Condenser water piping
- Metal and non-metal duct work
- Grilles, registers, and diffusers
- Direct digital controls systems
- All systems in the ceiling plenum that have been previously abandoned in place.
- All systems and equipment on the roof that have been previously abandoned in place.

Existing systems to remain include:

- Gymnasium (building 2020) is served by a brand-new packaged unit mounted on grade. No work shall be required in this building.
- Process systems are not part of this scope of work and as such will not be replaced. This pertains primarily to all existing kitchen systems.

Proposed HVAC System:

DCSD acceptable equipment manufacturers for select equipment:

- Exhaust fans: Greenheck, Cook, Jennaire, Gaylord, Halton, and CaptiveAire
- Cooling Towers: Evapco
- Water treatment: Superior Water Services, Inc.
- Boilers: Ajax, Rite, and Apac
- Chillers (air cooled only): Carrier
- Pumps: Bell & Gossett, Flo-Fab, Patterson, Taco, Inc., and Armstrong
- Dehumidification Units: Munters
- Heat Exchangers: Sondex, Inc.
- Flow Controls and Balancing Valves for Supply and Return Line Assemblies: Flow Design, Inc., Griswold, and Bell & Gossett

- Automated Temperature Controls and Energy Management System: Direct digital control system sole source is STAEFA TALON. Submit listing of control points for approval by DeKalb County School District.
- Building automation system controls shall be Web Control by CCI only.

The following is a schematic summary of the new HVAC systems:

1. Central Energy Systems
 - a. Provide two (2) new natural gas fired condensing boilers totaling 4.25 MBTU/hr (one 2,000 MBTU/hr and one 1,000 MBTU/hr).
 - b. Provide one (1) new 150 ton / 360 gallon per minute (gpm) cooling tower with water side economizer. Cooling tower shall be closed circuit type.
 - c. Provide two (2) new 25 horse power (hp) condenser water pumps.
 - d. Provide new chemical treatment system for hydronic loop.
 - e. Cooling tower fan and condenser water pumps shall be variable frequency drive (VFD).
2. Controls
 - a. Provide all new direct digital controls (DDC).
3. Ventilation Systems
 - a. Provide two (2) new dedicated outdoor air systems (DOAS), one for each classroom wing. Each DOAS shall serve fourteen classrooms, each with 30 students. Outdoor air flow shall be provided at 10 CFM per person and 0.12 CFM per ft². Each classroom shall be provided with 400 CFM. Each DOAS shall provide 5,500 CFM.
 - b. DOAS units shall ventilate core restrooms and classroom restrooms in each wing. Each core restroom shall require approximately 1,300 CFM of exhaust air. Each classroom restroom shall require approximately 100 CFM of exhaust air.
 - c. DOAS units shall have powered exhaust accessory to relieve excess pressure.
 - d. Janitor's closet shall have dedicated inline exhaust fan (EF) estimated to be 150 CFM.
4. Environmental Units
 - a. Kitchen
 - i. Packaged roof top unit (RTU) with natural gas heating. Estimated size of 5 tons.
 - b. Cafeteria
 - i. Packaged water source heat pump (WSHP). Estimated size of 25 tons.
 - c. Media Center
 - i. Packaged water source heat pumps (WSHP). Three (3) units with estimated size of 5 tons each.
 - ii. Office and work room and conference rooms shall be placed on independently controlled, separate zones.
 - iii. Media Center shall be equipped with humidity sensors.
 - d. Administration
 - i. Packaged RTU with natural gas heating. Estimated size of 7.5 tons.
 - e. Classrooms
 - i. Packaged WSHP. Twenty-five (25) units with estimated size of 3 tons each.

- f. IT/Telecom Room: One (1) wall mounted ductless mini-split with estimated capacity of 1.5 tons.
 - g. Mechanical rooms shall be ventilated using a roof mounted EF, and heated using wall mounted electric unit heaters.
 - h. Vestibules and corridor areas adjacent to exterior doors shall have ceiling mounted electric unit heaters.
5. Filtration
- a. Air filtration shall be a minimum MERV 13.
 - b. Bipolar ionization shall be provided for all units recirculating indoor air. Ionization shall not be required for outdoor air systems.
6. Air Distribution
- a. Duct work downstream of new RTUs shall be 4 inwc pressure class.
 - b. Duct work downstream of new WSHPs shall be 2 inwc pressure class.
 - c. Duct work downstream of new EFs shall be 2 inwc pressure class.
7. Insulation
- a. Duct work: 2 inch fiberglass batt insulation, 75 lb/ft³ with foil jacket.
 - b. Condenser piping: 2 inch cellular glass with jacketing.
 - c. Condenser water piping with insulation installed outdoors, or in mechanical rooms shall be protected with metal jacketing.
- BUILDING 2010, 2011, AND 2012

Description of Heating, Air Conditioning, and Ventilation Systems to be completely furnished and installed shall include, but not be limited to, the following:

- The heating and air conditioning of the new classrooms will be provided by water source heat pumps. This year-round system will consist of horizontal above-the-ceiling heat pumps sized to handle the individual zones served. The system shall tie into a two-pipe closed water loop maintained throughout the year in a temperature range of between 60 deg. F and 100 deg F. The temperature range shall be maintained by supplemental heating being injected into the water loop, and cooling shall be maintained by the rate of heat rejection capability of the cooling tower. Heating is introduced by gas-fired boilers (or electric boilers, based on owner's preference) located in the mechanical equipment room and cooling is supplied by cooling towers and plate and frame heat exchangers (type 304 Stainless Steel). One heat pump will serve each classroom.
- Water in the loop is distributed throughout the building to the heat pumps by variable speed circulating pumps located in the mechanical room.
- The cooling tower fan and associated condenser water pumps shall be VFD.
- Ventilation air shall be introduced into the classrooms by a constant volume, 100 percent outside air units with heat reclaim via an exhaust air heat exchanger. Air shall be supplied into the building via horizontal ducts in the ceiling cavity following treatment of air by an air-to-air energy recovery unit. Each wing shall be provided with its own energy recovery unit.

- The internal surfaces of air units, heat pumps, plenums, supply and return ductwork, etc. shall be protected during construction from dirt, dust and debris. These items shall be clean when the systems are turned over to the Owner.
- The new water source heat pumps shall be equipped with a quick opening/slow closing two-way solenoid water valve for variable speed pumping requirements. Water Source Heat Pumps shall be provided with hot-gas reheat for humidity control.
- Ionic generation by Global Plasma Solutions shall be used in the supply ductwork of the new heat pumps to improve air quality and help mitigate the proliferation of COVID-19. The whole building will have ionic generation.
- Provide the highest Minimum Efficiency Reporting Value (MERV) applicable for the HVAC units (WSHP and DOAS). MERV 13 is recommended minimum if equipment can accommodate pressure drop and MERV 14 is preferred.
- During a Pandemic event, the HVAC control system shall have the capability to disable any Demand Control Ventilation (DCV) and introduce the maximum possible outdoor air flow 24/7 until the event expires. During this event indoor environmental conditions may require limiting comfort setpoints.
- IDF rooms will be cooled utilizing a split system air conditioning unit with condensing unit mounted on roof.
- Electrical rooms will be cooled utilizing a split system air conditioning unit with condensing unit mounted on roof.
- Space air diffusers, registers and grilles shall be complimentary to the ceiling spaces utilized in the individual spaces.
- New packaged HVAC systems will be used for: the Administration Area, Media Center, Cafeteria/Stage, and Kitchen.
- All ductwork systems will be galvanized steel constructed per the latest SMACNA Standards. Duct work between the Energy Recovery Unit will be constructed to 2" pressure requirements.
- All duct work will be insulated with a FSK faced blanket insulation that has an installed R-value of 4.2 or greater. For exposed ductwork less than 8' above the finished floor, provide rigid duct board insulation with aluminum jacketing. Provide glass-fab tape and low-VOC vapor barrier mastic. Foil tape is not acceptable even for patching tears.
- Split systems
 - Air-cooled split systems will be provided to cool IDF rooms to allow these spaces to be placed on backup power systems.
 - Wall mounted or ceiling cassette split system fan coil units with condensate pumps will be provided for each space. Wall mounted thermostats by the manufacturer will be provided.
 - Air-cooled outdoor units will be located on the roof or at grade.

Additional Requirements

- DDC Controls:
 - DDC controls will be utilized for all equipment. Individual microprocessor based digital equipment controllers with a standalone building management system that will report to a central local area network for building global communications from a central location. All major equipment controllers will have standalone capability with respect to the specific equipment in each system that is served from a dedicated control panel.
 - The DDC system for this facility will consist of a central building controller connected to lower-level application specific equipment controllers through a local area network cable system. The central building controller in this facility will include the interface necessary for internet-based access. However, the DDC controllers will have stand-alone operational capability, with the respective equipment related to each system served from a dedicated control panel. The central building controller will be equipped to connect to a laptop computer for local set point adjustment.
 - Individual room/zone temperature control will be provided through wall mounted temperature sensors with local timed override and user temperature set point adjustment within 2-degrees of set point at 1-degree intervals.
 - Each classroom, media center, and other high occupancy area will include a humidity sensor to provide input so that systems can be manipulated to maintain space humidity below the set point. Classrooms shall have occupancy sensors to control HVAC setback.
 - Each classroom will also include a CO₂ sensor to indicate occupancy. The CO₂ sensor will be used to modulate the outside air level to maintain space the CO₂ differential set point.
 - The DDC System will be capable of displaying status, entering and leaving conditions, etc. for all equipment. This system will be capable of trending simultaneous control points. This system will also be capable of individual user IDs & passwords with multiple levels of access to the DDC System. The DDC System will only be accessible to authorized users through a secure internet interface.
- TESTING, ADJUSTING AND BALANCING (TAB):
 - All airside equipment will require a comprehensive testing and balancing process by an AABC or NEBB certified firm.

- The TAB contractor will be a third-party firm, and not a subcontractor of the mechanical and/or plumbing contractor.
- All reports will be submitted on AABC or NEBB forms.
- COMMISSIONING:
 - The owner will be responsible for obtaining the services of a qualified commissioning agent capable of the level of commission (basic or enhanced commissioning).
 - The mechanical contractor, DDC contractor, and all of their sub-contractors will provide all necessary support required to complete the commissioning process.

Hawthorne Elementary School Electrical Solutions

Demolition

- Existing lighting fixtures throughout facility were replaced within the last 4-5 years with an assortment of 32W T8 fluorescent lamped linear lighting fixtures mostly 2'x4' volumetric center basket type and lensed troffers found in administrative areas, classrooms and cafeteria.
- Most of the original power distribution equipment was replaced within the last 4-5 years, except for computer dedicated panelboards and transformer, a few loadcenters, and gymnasium panel and transformer.

Power Distribution

- Existing surface raceways and devices (receptacles, teacher station outlets, data, etc.) should be replaced with an aluminum dual compartment type surface raceway with new devices to match existing and DCSD guidelines.
- Provide GFCI type receptacle outlets at HACR equipment and in utility spaces.
- Provide GFCI type receptacle outlets or GFCI type circuit breakers serving kitchen equipment per NEC.
- Main Mechanical room shall be reconfigured to improve on code required clearances and headroom above electrical equipment. Various water pipes are indiscriminately routed above and around existing electrical equipment. Water puddling is present around electrical equipment. Existing power distribution added 4-5 years ago found in good working conditions will be relocated to new Electrical Room. See architectural sketch.
- Provide new power distribution equipment to match existing Computer Dedicated panel boards (208V) and step down transformer in new Electrical Room. See architectural sketch.
- Replace Gymnasium panelboard, transformer and disconnect switch.
- Provide dedicated spaces for new power distribution equipment that will replace existing equipment currently located in Custodian Rooms and near water piping.

- Provide surge protective devices at Main Service, sources serving roof top mounted equipment and sensitive electronic loads.
- Provide a natural gas generator, est. 125KW, 480Y/277V, 3ph, 4w.
- Provide a generator docking station for maintenance, 100A, 480Y/277V, 3ph, 4w.
- Provide fault current study, arc flash hazard study and coordination study. The emergency system shall be selectively coordinated.

Lighting Fixtures and Controls

- Outdoor lighting fixtures mounted on walls and underside of soffits and canopies shall be replaced with LED lighting fixtures.
- Replace existing lighting throughout with new LED lighting fixtures.
- Provide new LED exit signs throughout.
- Provide occupancy and vacancy controls throughout. Corridors shall be time clock controlled.
- Lighting switches shall be lowered to ADA mounting heights.
- Provide elementary school level theatrical lighting batten and lighting instruments and dimming control console.

Low Voltage

- Remove abandoned equipment and low voltage cabling from above the ceilings and roof.
- Replace existing intercommunications and time clock system with new to include headend equipment, call stations, speakers, and cabling.
- Data cabling management above equipment racks shall be improved by securely fastening in place. Relocate patch panel, switch, data cabling and patch cables from shelf to a wall mounted cabinet. Provide new CAT6 cabling from patch panel to the workstation area outlet.

Fire Alarm

- Replace existing fire alarm control panel, power boosters, Digital Alarm Communicator Transmitter, initiation devices (smoke detectors, pull stations), notification appliances (strobes, strobe/horns, bells) and cabling with a new fully addressable and code compliant coverage throughout the facility. Provide voice evacuation control for assembly areas (cafeteria, gymnasium, Media Center).
- Provide testing for an Emergency Responders Radio Coverage System and include allowance for a new system.

Hawthorne Elementary School

Life Safety Solutions

- Provide complete wet system automatic sprinkler throughout the building in accordance with NFPA 13, & 24 latest edition, Georgia State Minimum Standard Fire Prevention Code (International Fire Code), 2018 Edition, State of Georgia Chapter 120-3-3 "Rules of Safety Fire Commissioner, Rules and Regulations. The system shall and consist of the following major elements:
 - The building will have a post indicator valve, backflow preventer, and rough brass wall mounted fire department connection provided in accordance with NFPA 24, "Standard for the Installation of Private Fire Service Mains and their Appurtenances" as amended by 120-3-3.
 - Provide fire department hose and test connections as and where required by the Fire Marshal.
- Provide pressure reducing stations as required if main water pressure fluctuates and exceeds fire protection system working pressure.
- Fire Sprinkler Heads:
 - Suspended Ceiling Types: Semi-recessed pendent type with matching push on two-piece escutcheon plate. Finish: Chrome. Escutcheon Plate Finish: Enamel, chrome.
 - Gypsum Board Ceiling Type: Concealed pendent type with cover plate. Sprinkler Finish: Brass. Cover Plate Finish: White.
 - Exposed Area Type: Standard upright type with guard when below 8'-0" AFF. Finish: Brass.
 - Sidewall Type: Standard horizontal sidewall type with matching push on two-piece escutcheon plate. Finish: Chrome. Escutcheon Plate Finish: Enamel, chrome.
- The fire protection design will include a minimum of 10 psi safety factor to allow for future losses in the water service pressure characteristics
- Automatic sprinkler system materials:
 - Buried piping: ductile iron pipe, ansi-21.51, 250 psi minimum working pressure with slip-on joints, ansi-a21.11.
 - Above Ground Piping: Black carbon steel pipe. 2-inch and Smaller: ASTM-A-135, Grade A, schedule 40 with 175 lb. black threaded cast iron fittings. 2-1/2-inch thru 6-inch: ASTM-A-135, ASTM-A-53, grade A, schedule 10 with malleable iron grooved pipe fittings.

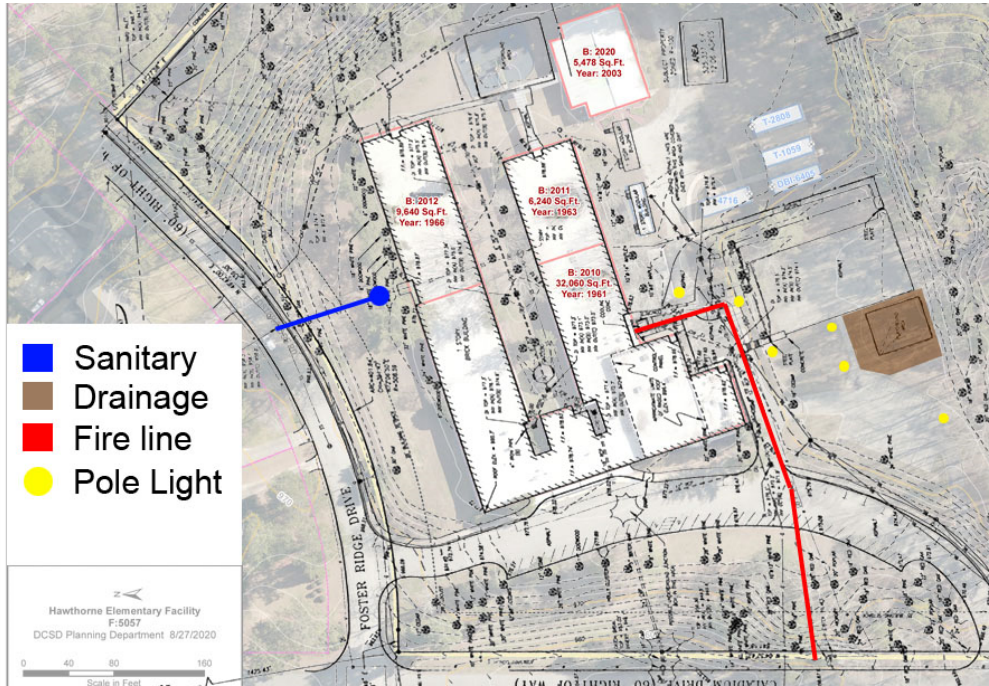
Hawthorne Elementary School Plumbing Solutions

- All existing plumbing fixtures shall be replaced with new fixtures (one for one). Plumbing fixtures to be replaced included, but not limited to, the following:
 - Water Closets
 - Urinals
 - Lavatories
 - Sinks
 - Water Fountains
 - Janitor Sinks
 - Hand Sinks located in the Kitchen will be replaced as required. No other Kitchen equipment is to be replaced.
- All plumbing fixtures shall be water efficient. The plumbing system will be designed with water efficiency goals.
- All existing water heaters and recirculating pumps will be replaced with new. Preferred manufacturers are Rheem, and Rudd.
- Specified materials and equipment will be standard products of manufacturers regularly engaged in the manufacture of such products.
 - Toilet areas and plumbing fixtures will be handicapped accessible.
 - All other control components and equipment requiring adjustment and/or maintenance shall be readily accessible through the use of lay-in ceilings and/or appropriately sized access doors.

Hawthorne Elementary School Site Improvement Solutions

Based on visual site review, the following site modification items will be included in the scope of work:

- Provide a new fire line with double detector check valve assembly from Caladium Drive NE to a new vault outside the building. New line will go to existing mechanical room 99.4 and split into 2 risers.
- A Reduce Pressure Zone (RPZ) will be added to the existing Domestic Water main for building service.
- Approximately 100-feet of existing sanitary main will need to be replaced (blue). Existing line will need to be scoped in both directions from the manhole to confirm extents of the damage.
- Playground and surrounding area (brown) is waterlogged. Existing yard drains appear adequate in number, but playground loose rubber will need to be removed to add drainage system, and replaced with rubber mulch and modular plastic curbs.



^ Hawthorne Elementary School Utility Plan

Hawthorne Elementary School Architectural Solutions

ROOFING:

Although the existing modified bitumen roof not included in the DCSD Scope of work, we observed roof leaks in multiple locations and the roof system is nearing the end of its estimated useful life. Due to the duration of ongoing roof leaks, the underlying insulation is most likely waterlogged. Full replacement is recommended.

CEILINGS:

Although the existing ceilings are not included in the DCSD Scope of work, per our review of the existing acoustical ceiling panels and grid systems, the ceilings appear to be in fair shape. With the scope of work identified by the electrical, HVAC, and new fire sprinkler, it is our opinion that the existing acoustical ceilings would not be salvageable or re-useable. We are recommending replacement of all acoustical ceiling systems.

Demolition: All acoustical ceiling panel systems will be removed and discarded in association with replacement of building lighting and HVAC systems, including acoustical panels, metal grid, and hangars.

All existing devices to remain mounted to the existing ceiling will be identified, removed, bagged and tagged and placed above ceiling, or otherwise protected during construction for re-installation after construction. These devices include LED lighting, smoke detectors, cameras, and wireless devices.

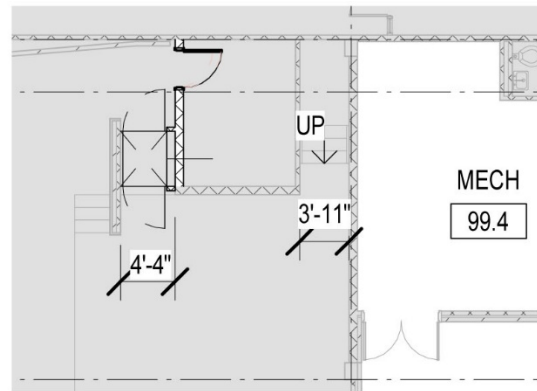
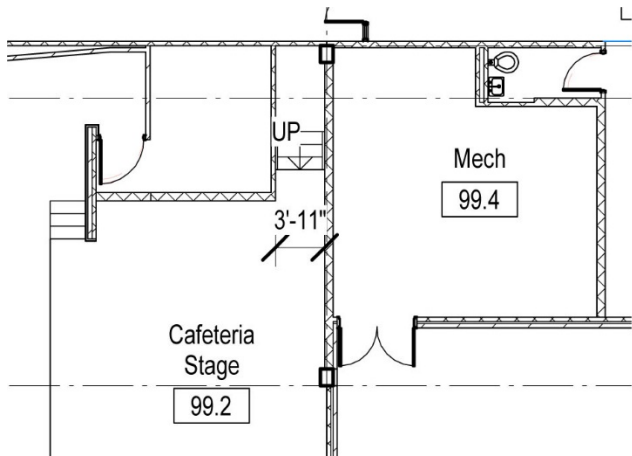
New 2x2 acoustical panel ceilings will replace demolished ceilings unless noted otherwise. Ceiling tiles basis of design to be 24 x 24 format - Armstrong Ceilings Cortega 770. Ceiling grid

basis of design to be 15/16" exposed tee grids – Armstrong Prelude. Scrubbable ceiling tiles will be provided in the kitchen and restroom areas.

Existing finishes to be repaired as needed for patching or repairing areas affected by HVAC and electrical modifications. This should include repainting of all hard ceilings due to lighting replacement.

STAGE WHEELCHAIR LIFT:

DCSD requested that we consider the feasibility of a permanent ADA accessible wheelchair lift for the stage. Provided below is a sketch showing a possible location and minimum clearances for the lift based on previous projects with similar scope.

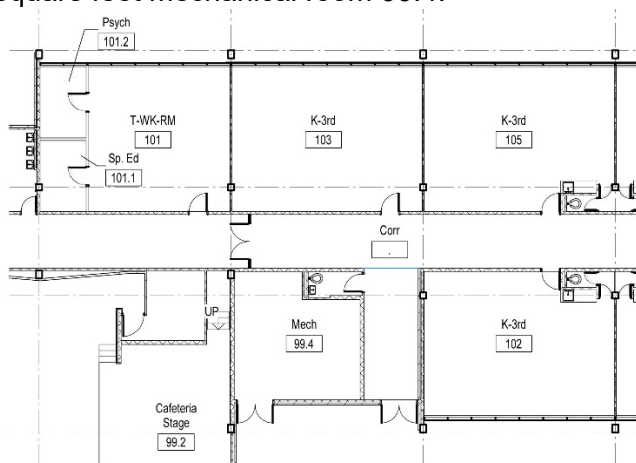


^ Hawthorne Elementary School existing Stage and storage

^Proposed new storage entry and wheelchair lift

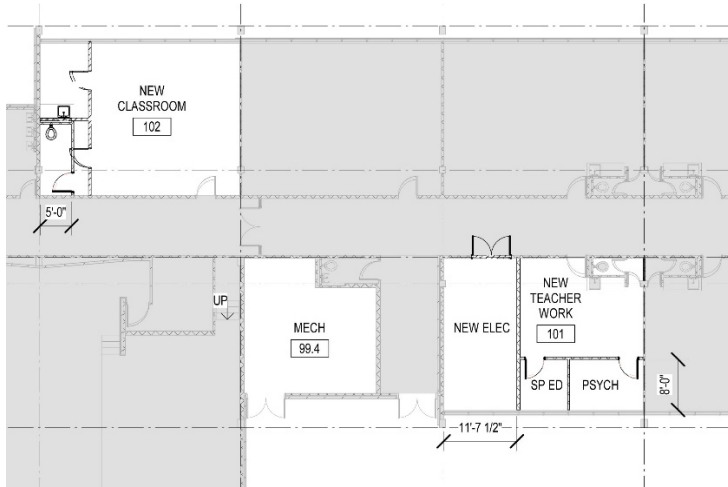
MECHANICAL/ELECTRICAL ROOMS, CLASSROOM AND TEACHER WORKROOM:

The new electrical distribution main with separate dedicated emergency power will require clearance and fire safety requirements that do not fit in the existing conditions located in the 400 square feet mechanical room 99.4.



^ Hawthorne Elementary School existing Electrical/Mechanical Layout

We propose to carve out a new electrical room from the old classroom 102. The remaining old classroom space will be re-purposed as a new teacher workroom with psych and special ed offices 101, 101.1, and 101.2, respectively. The Teacher workroom will be smaller than existing conditions. The old teacher workroom 101 will then be re-purposed as a new location for classroom 102 by adding an ADA toilet room and exterior sink/cabinets as shown, demolishing the old Sp ed/psych demising walls. Finishes, including VCT/ceramic tile flooring, paint, cabinets, plumbing fixtures, ceilings, etc. will be new to match existing conditions.



^ Hawthorne Elementary School proposed Electrical/Mechanical Layout

Hawthorne Elementary School Executive Summary

Hawthorne Elementary School will undergo a building systems-focused renovation due to the age and current condition of the systems. SSOE | S&W recommends the following scope of work:

The HVAC systems will be replaced with new equipment to provide a 2 pipe water source heat pump system for classrooms and new packaged units for administration, media center, gymnasium, and kitchen/cafeteria.

The electrical power distribution system will be replaced along with selected panel boards. Existing lighting and power distribution equipment will remain. A new generator will be provided.

Plumbing fixtures will be replaced one for one.

Fire alarm, intercom, and clock systems will be replaced.

The facility will be provided with a fire sprinkler system.

All acoustical ceiling tile systems will be replaced.

Modification of the existing mechanical room and adjacent classroom and teacher work room is proposed to accommodate a new electrical room.

A lift system will be installed to provide access to the stage.

Site improvement will replace a section of sanitary sewer line to correct sewage back-up issues. A playground area will be re-graded for proper drainage.

Existing roofing will be removed and replaced with a modified bitumen built-up roof.

Architectural finishes will be patched and finished where required due to other renovation work. Architectural modifications will be required for the new electrical room and wheelchair stage lift.

Our cost analysis indicates a potential cost for this project of **\$5,671,659**. This is approximately an 69% increase over the stated budget of **\$3,350,000**, with considerable scope added for this report. The cost analysis detail document is included at the end of this report.

APPENDIX 01

PRELIMINARY ASSESSMENT ANALYSIS

For The

HAWTHORNE ES MAJOR BLDG SYSTEM REPLACEMENT

Atlanta, Georgia

Prepared: September 9, 2021

Revised:

CODE	DESCRIPTION	QTY	UNIT	COST	TOTAL
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RENOVATION SUMMARY

<u>SCOPE ITEMS</u>	<u>Project Costs</u>	<u>Cost/SF</u>
A. REPLACE HVAC SYSTEMS	1,223,275	22.90
B. REPLACE ELECTRICAL SYSTEMS	1,451,744	27.18
C. REPLACE PLUMBING FIXTURES	276,549	5.18
D. REPLACE FIRE ALARM, COMM, & CLOCK SYSTEMS	554,505	10.38
E. PROVIDE FIRE SPRINKLER SYSTEM	328,958	6.16
F. REPLACE ACOUSTICAL CEILING TILE SYSTEM	288,843	5.41
G. MODIFY ROOM LAYOUT FOR NEW ELEC RM	67,325	1.26
H. PROVIDE LIFT SYSTEM AT STAGE	50,039	0.94
I. SITE IMPROVEMENTS TO SS & PLAYGROUND	68,451	1.28
J. REPLACE ROOFING SYSTEM	1,361,969	25.50

BUILDING CONSTRUCTION COSTS	\$ 5,671,659	\$ 106.18
	53,418 SF	
PROPOSED SCL CONSTRUCTION BUDGET	\$ 3,350,000	\$ 62.71
(OVER IN RED/UNDER IN BLACK)	\$ (2,321,659)	

CODE	DESCRIPTION	QTY	UNIT	COST	TOTAL
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RENOVATION DETAIL

A. REPLACE HVAC SYSTEMS

A1010	Demo HVAC Systems	47,707	SF	1.50	71,561
A1011	New HVAC Sytems	47,707	SF	17.50	834,873

Replace HVAC Subtotal **906,433**

GENERAL REQUIREMENTS/CONDITIONS	7.0%	63,450
FEE	5.0%	48,494
PERMITS, INSURANCES, AND BONDS	4.0%	40,735
DESIGN CONTINGENCY	10.0%	105,911
ESCALATION (5% Per Year)	5.0%	58,251

REPLACE HVAC TOTAL **\$ 1,223,275**

COST/SF **53,418 SF** **\$ 22.90**

B. REPLACE ELECTRICAL SYSTEM

B1010	Demo Power Distribution Systems	47,707	SF	3.00	143,121
B1011	New Power Distriibution Sytems	47,707	SF	15.00	715,605
B1064	<i>Emergency System:</i>				
B1065	150KW Generator	1	LS	107,500.00	107,500
B1066	Emergency Panels	1	LS	40,000.00	40,000
B1067	Emergency Feeder Circuits	1	LS	65,000.00	65,000
B1068	Chain Link Security Fencing	60	LF	75.00	4,500

Replace Elec Subtotal **1,075,726**

GENERAL REQUIREMENTS/CONDITIONS	7.0%	75,301
FEE	5.0%	57,551
PERMITS, INSURANCES, AND BONDS	4.0%	48,343
DESIGN CONTINGENCY	10.0%	125,692
ESCALATION (5% Per Year)	5.0%	69,131

REPLACE ELEC TOTAL **\$ 1,451,744**

COST/SF **53,418 SF** **\$ 27.18**

CODE	DESCRIPTION	QTY	UNIT	COST	TOTAL
C. REPLACE PLUMBING FIXTURES					
C1010	Protect Existing Finishes - Allowance	370	SF	1.00	370
C1011	Demo Plumbing Fixtures	96	EA	150.00	14,400
C1012	Demo Water Heaters	2	EA	500.00	1,000
C1013	Demo Recirculating Pumps	2	EA	250.00	500
C1014	New Water Closets	40	EA	1,400.00	56,000
C1015	New Urinals	15	EA	1,500.00	22,500
C1016	New Sinks/Lavatories	30	EA	1,350.00	40,500
C1017	New Mop Sinks	5	EA	1,800.00	9,000
C1018	New Drink Fountains	12	EA	2,150.00	25,800
C1019	Gas Water Heater - 80 Gal	2	EA	10,500.00	21,000
C1020	DHW System Recirculating Pumps	2	EA	1,050.00	2,100
C1021	Patch/Repair Ceramic Tile - Allowance	1	LS	1,250.00	1,250
C1021	Dom Water - Reduced Pressure Zone - Allowance	1	EA	10,500.00	10,500
Replace Plumbing Subtotal					204,920
GENERAL REQUIREMENTS/CONDITIONS			7.0%		14,344
FEE			5.0%		10,963
PERMITS, INSURANCES, AND BONDS			4.0%		9,209
DESIGN CONTINGENCY			10.0%		23,944
ESCALATION (5% Per Year)			5.0%		13,169
REPLACE PLUMBING TOTAL					\$ 276,549
COST/SF		53,418	SF		\$ 5.18

CODE	DESCRIPTION	QTY	UNIT	COST	TOTAL
D. REPLACE FIRE ALARM, COMM, & CLOCK SYSTEMS					
D1010	Demo Existing Fire Alarm System	53,514	SF	0.50	26,757
D1011	New Fire Alarm System	53,514	SF	3.50	187,299
D1012	Demo Existing Intercom System	53,514	SF	0.25	13,379
D1013	New Intercom System	53,514	SF	1.75	93,650
D1014	Demo Existing Clock System	53,514	SF	0.15	8,027
D1015	New Clock System	53,514	SF	1.50	80,271
D1016	Patch/Repair CMU Walls - Allowance	1	LF	750.00	750
D1016	Touch-up Paint CMU Walls - Allowance	1	LF	750.00	750
FA, Comm, Clock Subtotal					410,882
GENERAL REQUIREMENTS/CONDITIONS				7.0%	28,762
FEE				5.0%	21,982
PERMITS, INSURANCES, AND BONDS				4.0%	18,465
DESIGN CONTINGENCY				10.0%	48,009
ESCALATION (5% Per Year)				5.0%	26,405
FA, COMM, CLOCK TOTAL					\$ 554,505
COST/SF		53,418	SF		\$ 10.38

CODE	DESCRIPTION	QTY	UNIT	COST	TOTAL
E. PROVIDE FIRE SPRINKLER SYSTEM					
E1010	New Fire Sprinkler System	53,418	SF	3.00	160,254
E1011	Demo Lanscaping/Sod/Fixtures - Allowance	1	LS	1,500.00	1,500
E1013	Fire Line - Remove Street For Tie-In	580	SF	15.00	8,700
E1014	Fire Line - 8" DIP Fire Line To Building	434	LF	75.00	32,550
E1015	Fire Line -Tap Into Existing Water Line	1	EA	2,000.00	2,000
E1016	Fire Line - New Post Indicator Valve	1	EA	2,250.00	2,250
E1017	Fire Line - New Double Detector Check System	1	EA	17,500.00	17,500
E1018	Fire Line - New Wall Mtd Fire Dept Connector	1	EA	2,500.00	2,500
E1019	Fire Line - Repair Street	580	SF	25.00	14,500
E1020	Replace Lanscaping/Sod/Fixtures - Allowance	1	LS	2,000.00	2,000
Sprinkler Subtotal					243,754
GENERAL REQUIREMENTS/CONDITIONS			7.0%		17,063
FEE			5.0%		13,041
PERMITS, INSURANCES, AND BONDS			4.0%		10,954
DESIGN CONTINGENCY			10.0%		28,481
ESCALATION (5% Per Year)			5.0%		15,665
SPRINKLER TOTAL					\$ 328,958
COST/SF		53,418	SF		\$ 6.16

F. REPLACE ACOUSTICAL CEILING TILE SYSTEM

F1010	Demo/Remove Existing ACT Ceiling System	43,516	SF	1.00	43,516
F1011	Demo/Remove Plaster Ceilings At Kitchen	1,470	SF	2.00	2,940
F1012	Bag & Tag Extg Lighting/Smk Det/Cameras - Allowance	44,985	SF	0.18	7,872
F1013	New 2x2 ACT Ceiling System/W/ Grid	43,516	SF	3.50	152,306
F1014	New 2x2 ACT Ceiling System/W/ Grid - Scrubbable	1,470	SF	3.50	5,145
F1015	Patch 8" CMU Wall - Allowance	1	LS	750.00	750
F1016	Touch-up Paint At Int Walls - Allowance	1	LS	1,500.00	1,500
ACT System Subtotal					214,029
GENERAL REQUIREMENTS/CONDITIONS			7.0%		14,982
FEE			5.0%		11,451
PERMITS, INSURANCES, AND BONDS			4.0%		9,618
DESIGN CONTINGENCY			10.0%		25,008
ESCALATION (5% Per Year)			5.0%		13,754
ACT SYSTEM TOTAL					\$ 288,843
COST/SF		53,418	SF		\$ 5.41

CODE	DESCRIPTION	QTY	UNIT	COST	TOTAL
G. MODIFY ROOM LAYOUT FOR NEW ELEC RM					
G1010	Remove/Replace Furniture - By Owner	-	LS	NIC	NIC
G1011	Remove/Store Classroom Fixtures - Allowance	1	LS	500.00	500
G1012	Demo ACT Ceiling At Extg CR #102	-	SF	<i>incl above</i>	<i>incl above</i>
G1013	Demo ACT Ceiling At Extg T-Work #101	-	SF	<i>incl above</i>	<i>incl above</i>
G1014	Demo Extg VCT Flooring/Base At #102	755	SF	1.50	1,133
G1015	Demo Extg VCT Flooring/Base At #101	731	SF	1.50	1,097
G1016	Sawcut CMU/Concrete At Demo - Allowance	1	LS	750.00	750
G1017	Demo/Remove Doors And Frames - Single	2	EA	50.00	100
G1018	Demo/Remove Int CMU PartitionWalls	378	SF	2.00	756
G1019	Demo/Remove SOG At Now Plumbing - Allowance	40	SF	15.00	600
G1020	SS Line Fom Ne RR To Extg Group RR - Allowance	1	LF	1,250.00	1,250
G1021	Concrete Slab Fill-in At New RR Plumbing	25	SF	35.00	875
G1022	Patch/Prep Extg Int Concrete SOG At Demo	1,486	EA	0.10	149
G1023	Repair Extg CMU Partitions At Wall Demo	60	SF	15.00	900
G1024	Patch/Prep Extg CMU Partitions To Remain	1,970	SF	0.25	493
G1025	New 8" CMU Interior Partitions	622	SF	15.00	9,330
G1026	Grout Fill At 8" CMU Ext Wall (50%)	311	SF	3.50	1,089
G1027	HM Frm/SC Wood Door - 3-0 x 7-0 - Single	3	EA	1,150.00	3,450
G1028	HM Frm/SC Wood Door - 3-0 x 7-0 - Pair	1	EA	2,250.00	2,250
G1029	Interior Finish Hardware - Per Leaf	5	EA	550.00	2,750
G1030	Ceramic Floor Tile In RRs	90	SF	11.00	990
G1031	Ceramic Tile Base In RRs	35	SF	11.50	403
G1032	Floor Finish - VCT	1,128	SF	4.50	5,076
G1033	Floor Finish - Sealed Concrete At New Elect Rm	300	SF	4.50	1,350
G1034	Paint Existing CMU Partitions	1,970	SF	2.00	3,940
G1035	Paint New CMU Partitions	1,037	SF	2.00	2,074
G1036	Paint Interior Doors/Frames	8	EA	50.00	400
G1037	New ACT Ceiling At New Classrooms	-	SF	<i>incl above</i>	<i>incl above</i>
G1038	New ACT Ceiling At New Teacher Work #101	-	SF	<i>incl above</i>	<i>incl above</i>
G1039	New PL Base Cabinets W/ PL Countertop	6	LF	225.00	1,350
G1040	New Sink Fixture - Complete	1	LS	2,800.00	2,800
G1041	New Toilet Fixture - Complete	1	LS	2,600.00	2,600
G1042	Handicap Grab Bars	2	EA	75.00	150
G1043	Toilet Tissue Holder - Double Roll	1	EA	65.00	65
G1044	Toilet Seat Cover Dispenser	1	EA	85.00	85
G1045	Sanitary Napkin Disposal	1	EA	110.00	110
G1046	Coat/Towel Hooks	1	EA	35.00	35
G1047	Framed Mirror - 2'-0W x 3'-6"H	1	EA	135.00	135
G1048	Hand Soap Dispenser	1	EA	55.00	55
G1049	Paper Towel Disp/Waste Receptacle	1	EA	300.00	300

CODE	DESCRIPTION	QTY	UNIT	COST	TOTAL
G1050	Replace Existing Classroom Fixtures - Allowance	1	LS	500.00	500
Modify Rooms Subtotal					49,887
	GENERAL REQUIREMENTS/CONDITIONS			7.0%	3,492
	FEE			5.0%	2,669
	PERMITS, INSURANCES, AND BONDS			4.0%	2,242
	DESIGN CONTINGENCY			10.0%	5,829
	ESCALATION (5% Per Year)			5.0%	3,206
MODIFY ROOMS TOTAL					\$ 67,325
		COST/SF	53,418 SF		\$ 1.26

H. PROVIDE LIFT SYSTEM AT STAGE

H1010	Remove/Replace Furniture - By Owner	-	LS	<i>NIC</i>	<i>NIC</i>
H1011	Demo ACT Ceiling At Cafeteria	-	SF	<i>incl above</i>	<i>incl above</i>
H1012	Demo Extg VCT Flooring/Base Stor Rm	54	SF	1.50	81
H1013	Sawcut CMU/Concrete At Demo - Allowance	1	LS	750.00	750
H1014	Demo/Remove Doors And Frames - Single	1	SF	50.00	50
H1015	Demo/Remove Int GWB Partition Walls At Stor Rm	216	SF	2.50	540
H1016	Demo/Remove CMU Wall At Stage	81	SF	7.50	608
H1017	Patch/Prep Extg Int Concrete SOG At Demo	54	SF	4.00	216
H1018	Patch/Prep Extg CMU Partitions To Remain	377	SF	1.00	377
H1019	Modify/Tooth New CMU to Extg	41	SF	15.00	615
H1020	New 8" CMU Interior Partitions	216	SF	17.50	3,780
H1021	Grout Fill At 8" CMU Ext Wall (50%)	108	SF	3.50	378
H1022	New GWB Interior Partitions	42	SF	15.00	630
H1023	New GWB Bulkhead	35	SF	8.50	298
H1024	HM Frm/SC Wood Door - 3-0 x 7-0 - Single	1	EA	1,150.00	1,150
H1025	Interior Finish Hardware - Per Leaf	1	EA	550.00	550
H1026	Floor Finish - VCT	45	SF	4.50	203
H1027	Floor Finish - Sealed Concrete	24	SF	5.00	120
H1028	Paint Existing CMU Partitions	377	SF	2.50	943
H1029	Paint New CMU Partitions	448	SF	2.50	1,120
H1030	Paint GWB Interior Partitions	42	SF	2.00	84
H1031	Paint GWB Bulkhead	15	SF	4.00	60
H1032	Paint Interior Doors/Frames	1	EA	50.00	50
H1033	New ACT Ceiling At New Classrooms	36	SF	4.50	162
H1027	HDCP Lift At Corridor	1	EA	22,500	22,500
H1028	Wheelchair Lift Power Circuit - Complete	1	LS	1,815.00	1,815.00
Provide Lift Subtotal					37,078
	GENERAL REQUIREMENTS/CONDITIONS			7.0%	2,595
	FEE			5.0%	1,984

CODE	DESCRIPTION	QTY	UNIT	COST	TOTAL
	PERMITS, INSURANCES, AND BONDS		4.0%		1,666
	DESIGN CONTINGENCY		10.0%		4,332
	ESCALATION (5% Per Year)		5.0%		2,383
PROVIDE LIFT TOTAL				\$	50,039
COST/SF		53,418	SF	\$	0.94

I. SITE IMPROVEMENTS TO SANITARY SEWER & PLAYGROUND

<i>Sanitary Sewer Main</i>					
I1010	Demo Lanscaping/Sod/Fixtures - Allowance	1	LS	500.00	500
I1011	Remove Street For Tie-In	32	SF	100.00	3,200
I1012	Demo/Remove 10" Sanitary Sewer Line	104	LF	20.00	2,080
I1013	New 10" Sanitary Sewer Line	104	EA	65.00	6,760
I1014	Clean Out Existing SS Manhole - Allowance	2	EA	1,000.00	2,000
I1015	Scope Extg SS Sewer Line To Bldg - Allowance	1	EA	5,000.00	5,000
I1016	Repair Street Paving	32	SF	75.00	2,400
I1017	Replace Lanscaping/Sod/Fixtures - Allowance	1	LS	1,500.00	1,500
I1018	Miscellaneous/Unforeseen Demo And/Or Replace	1	LS	2,500.00	2,500
	<i>Subtotal :</i>	<i>\$</i>	<i>25,940</i>		
<i>Playground Drainage</i>					
I1020	Demo/Remove Existing Playground Rubber Mulch	1,870	SF	0.50	935
I1021	Demo/Remove Existing Sod/Topsoil	2,250	SF	0.75	1,688
I1022	Clean Existing Yard Drains - Allowance	1	LS	750.00	750
I1023	Add Yard Drains At Playground - Allowance	2	EA	2,500.00	5,000
I1024	Tie-in To Extg Storm Drains	2	EA	1,500.00	3,000
I1025	Re-grade Playground At New Drains - Allowance	4,120	SF	0.25	1,030
I1026	New Modular Plastic Curbing At Playground	172	LF	7.50	1,290
I1027	Rubber Mulch	23	CY	300.00	6,900
I1028	Landsaping - Sod	2,252	SF	0.75	1,689
I1029	Miscellaneous/Unforeseen Demo And/Or Replace	1	SF	2,500.00	2,500
	<i>Subtotal :</i>	<i>\$</i>	<i>23,847</i>		

Site Improvements Subtotal **50,722**

GENERAL REQUIREMENTS/CONDITIONS	7.0%	3,551
FEE	5.0%	2,714
PERMITS, INSURANCES, AND BONDS	4.0%	2,279
DESIGN CONTINGENCY	10.0%	5,927
ESCALATION (5% Per Year)	5.0%	3,260

SITE IMPROVEMENTS TOTAL **\$ 68,451**

COST/SF **53,418 SF** **\$ 1.28**

CODE	DESCRIPTION	QTY	UNIT	COST	TOTAL
J. REPLACE ROOFING SYSTEM					
J1010	Demo/Remove Modified Bitumous Roofing System	47,705	SF	2.50	119,263
J1011	Demo/Remove Metal Parapet Coping	2,296	LF	1.50	3,444
J1012	New Modified Bitumen Roof System (Gym NIC)	47,705	SF	17.50	834,838
J1013	New Metal Parapet Coping	2,296	SF	22.50	51,660
Roof System Subtotal					1,009,204
GENERAL REQUIREMENTS/CONDITIONS				7.0%	70,644
FEE				5.0%	53,992
PERMITS, INSURANCES, AND BONDS				4.0%	45,354
DESIGN CONTINGENCY				10.0%	117,919
ESCALATION (5% Per Year)				5.0%	64,856
ROOF SYSTEM TOTAL					\$ 1,361,969
COST/SF		53,418	SF		\$ 25.50