

CLAYTON

Elementary School

Certificate of Necessity



Gipe Associates, Inc.
CONSULTING ENGINEERS

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Project No.: 18047
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SMYRNA
School District

CONTENTS

1 Executive Summary.....	2
1.1 Property Information and General MEP systems Condition.....	2
1.2 Anticipated Lifecycle Replacement.....	2
1.3 Cost Estimates.....	2
2 Scope and Methodology.....	3
2.1 Scope.....	3
2.2 Methodology.....	3
2.3 Condition Assessment Priority Definitions.....	3
3 Mechanical and Plumbing Systems.....	4
3.1 Heating, Ventilating and Air Conditioning (HVAC).....	4
3.2 Domestic Water Plumbing Systems.....	10
4 Electrical Systems.....	12
4.1 Electrical Service.....	12
4.2 Emergency Power.....	13
4.3 Lighting Systems.....	13
4.4 Power.....	13
4.5 Special Systems.....	13
4.6 Fire Alarm System.....	14
4.7 Code Deficiencies.....	15
Appendix A – Facility Photographs	
Appendix B – Cost Estimates	

1 EXECUTIVE SUMMARY

1.1 Property Information and General MEP systems Condition

Clayton Elementary School is located at 510 Main Street, Clayton, DE. The School has had several renovations and an addition in 2006. The building's heating and cooling sources are centrally located delivering chilled and hot water to the building equipment.

CLAYTON ELEMENTARY SCHOOL BUILDING INFORMATION	
Address	510 Main Street Clayton DE
Major Renovations	1993, 2016
Building Area	55,320 SQ-FT
System Types	4-pipe system. Central Chiller and Boilers.
Survey Date	17-Jul-18
Point of Contact	Scott Holmes

The majority of building equipment is good condition aside from the central heating system and rooftop ventilation fans which are recommended to be replaced. Additionally, a study is needed to solve comfort and humidity problems documented in Classrooms 1 – 15.

1.2 Anticipated Lifecycle Replacement

ANTICIPATED LIFECYCLE REPLACEMENT	
Priority	System / Equipment / Component
Immediate	Central Heating Plant, Kitchen Ventilation, Fans, UV Refurbishment, Water Heater, (3) Panelboards, Chiller
Short-Term	N/A
Mid-Term	Unit Ventilators, Interior and Exterior Lighting, Receptacles, Exterior Disconnect Switches at exterior HVAC units that are replaced, Specialty Systems
Long-Term	Pumps, Air Handling Units, Packaged DX Units, Split DX Units, VRF Units, VAV Boxes, Heating Units, Panelboards, Building Wiring, Fire Alarm

1.3 Cost Estimates

COST ESTIMATE		
#	Description	Estimated Project Cost
1	Central Heating System Replacement	\$ 572,500.00
2	Kitchen Ventilation Unit Replacement	\$ 154,800.00
3	Replace (8) Rooftop Exhaust Fans	\$ 109,000.00
4	Classrooms 1-15 Study and Unit Ventilator Upgrades	\$ 147,000.00
5	Domestic Hot Water Heater Replacement	\$ 58,750.00
6	Air-Cooled Chiller Replacement	\$ 591,000.00
7	(3) Panelboard Replacement	\$ 5,000.00
8	Proposed Technology Improvements	\$ 47,500.00
Total		\$ 1,685,550.00

2 SCOPE AND METHODOLOGY

2.1 Scope

The scope of this report is to assess the condition of existing MEP systems and provide the Smyrna School District a means to prioritize upgrades.

2.2 Methodology

Gipe Associates has made assessments and recommendations based on (4) main factors which include:

- Onsite surveys of equipment by visual inspection
- Review of the existing MEP drawings provided by the Smyrna School District
- Interviews with Maintenance Staff to identify chronic system issues, regular maintenance schedules and historical system operation
- American Society of Heating, Refrigerating and Air Conditioning Engineers (ASHRAE) Service Life Database (<https://xp20.ashrae.org/publicdatabase/>)

From these sources, judgements are made to assess equipment condition and determine the expected useful life remaining for MEP systems for this geographical location and use type. Condition assessments have been grouped in order of priority as defined in the next section.

2.3 Condition Assessment Priority Definitions

Code	Priority	Description
P-01	Immediate	Items that are currently overdue or that will be required within the next year (FY19). Equipment condition is either non-operational, in poor condition or not meeting performance needs.
P-02	Short-Term	Items that will be required within the next 2-3 years (FY20-FY22). Equipment condition is fair, signs of wear but still satisfactory as-is, additional maintenance and repair may be required as it continues to age.
P-03	Mid-Term	Items that will be required within the next 4-5 years (FY23-FY25). Equipment condition is good, performing satisfactory and expected to reach its estimated service life with regularly scheduled maintenance.
P-04	Long-Term	Items that will be required 5-10 years in the future (FY26+). Equipment condition is good – excellent, and has many years of useful service life remaining.

The next section tabulates all major equipment, capacities and condition assessments with a priority code.

3 MECHANICAL AND PLUMBING SYSTEMS

3.1 Heating, Ventilating and Air Conditioning (HVAC)

The main building utilizes a 4-pipe constant primary flow HVAC system distributing chilled and hot water from an air-cooled chiller and central boilers, respectively. The boilers and pumps are located in the Mechanical Room. The chiller is located in the Mechanical Yard. One variable volume air handler located in the attic serves the newest wing of the building.

In the original building, classrooms rely on 4-pipe Unit Ventilators (UV) for space conditioning and ventilation. The gym, cafeteria, and auditorium share two dedicated packaged DX units located on the roof. The Administration offices are served by a heat-recovery variable refrigerant flow (VRF) system.

The following tables group all of the building’s mechanical equipment and provide a condition assessment priority code.

HVAC Equipment Tables

CENTRAL HEATING SYSTEM		
System or Unit Type		Service Life Estimate (years)
Boiler(s), Hot Water		25
P-01	Quantity	2
	Capacity	3,392
	Performance Efficiency	80.0%
	Fuel	Dual: Natural Gas and #2 Oil
	Plant Heating Capacity	5,448 MBH
	Location	Mechanical Room
	Service	Main Building
	Nameplate Date	1993

CENTRAL COOLING SYSTEM		
System or Unit Type		Service Life Estimate (years)
Chiller, Air-Cooled Scroll		18
P-01	Quantity	1
	Capacity	155 Tons
	Performance Efficiency	Not labeled
	Compressor Qty	2
	Refrigerant	R-22
	Location	Mechanical Yard
	Service	Main Building
	Nameplate Date	2002

HYDRONIC DISTRIBUTION		
Equipment Type	Service Life Estimate (years)	
Pump(s), Base-mounted	20	
P-04	Quantity	2
	Capacity	10 HP
	Control	Constant Speed, 3-way valves
	Location	Mechanical Room
	Service	Chilled Water Circulation
	Nameplate Date	2006
Pump(s), Inline	18	
P-04	Quantity	2
	Capacity	7.5 HP
	Control	Constant Speed, 3-way valves
	Location	Mechanical Room
	Service	Heating Water Circulation
	Nameplate Date	2006

AIR DISTRIBUTION SYSTEMS		
Equipment Type	Service Life Estimate (years)	
Air Handling Unit(s), Variable Volume	24	
P-04	Quantity	1
	Capacity	6,200 CFM
	Location	Attic
	Service	Classrooms in New Wing
	Nameplate Date	2006
Packaged DX Unit, air-cooled, gas heat	17	
P-04	Quantity	1
	Capacity	120 MBH
	Refrigerant	R-410A
	Location	Roof
	Service	Kitchen
	Nameplate Date	2013
Packaged DX Unit, air-cooled, gas heat	17	
P-04	Quantity	2
	Capacity	363 MBH each
	Refrigerant	R-410A
	Location	Roof
	Service	Gym, Cafeteria, Auditorium
	Nameplate Date	2016

TERMINAL UNITS		
Equipment Type	Service Life Estimate (years)	
Air Terminal, Unit Ventilator	20	
P-01	Quantity	15
	Capacity	750 - 1,500 CFM
	Location	Exterior Walls
	Service	Original Building Classrooms
	Nameplate Date	Refurbished date unknown
P-03	Quantity	17
	Capacity	750 - 1,500 CFM
	Location	Exterior Walls
	Service	Original Building Classrooms
	Nameplate Date	Refurbished date unknown
Air Terminal, VAV box	20	
P-04	Quantity	6
	Capacity	900 - 1,200 CFM
	Location	Above Ceiling
	Service	Classrooms in New Wing
	Nameplate Date	2006

SUPPLEMENTAL UNITS		
Equipment Type	Service Life Estimate (years)	
Split DX Unit, air-cooled	17	
P-04	Quantity	3
	Capacity	15 - 144 MBH
	Refrigerant	R-410A
	Condensing Unit Location	Roof, Ground
	Service	Administration, Computer Room, Library
	Nameplate Date	2013
VRF, air-cooled split DX	17	
P-04	Quantity	1
	Capacity	72 MBH
	Refrigerant	R-410A
	Condensing Unit Location	Ground
	Service	Administration
	Nameplate Date	2016

VENTILATION SYSTEMS		
System or Unit Type		Service Life Estimate (years)
Fan Set, Kitchen Ventilation		18
P-01	Quantity	2
	Capacity	2,400; 4,000 CFM
	Location	Roof
	Service	Kitchen
	Nameplate Date	Unknown
Fan, Centrifugal		20
P-01	Quantity	8
	Capacity	Various
	Location	Roof
	Service	Dishwasher, Mech Room, General Exhaust
	Nameplate Date	Unknown

CONTROL SYSTEM		
System or Unit Type		Service Life Estimate (years)
Controls, Direct Digital (DDC)		25
P-04	Control Panel Location	Mechanical Room
	Service	All major equipment is connected to BAS Control Panels
	Nameplate Date	2003

Planned Improvements

Currently there are no improvement projects planned.

Deferred Maintenance and Replacement

The following items have been identified either during the survey effort or by the maintenance staff as items that require immediate repair or replacement:

- The central heating plant is past its useful service life and overdue for replacement. (Photograph #1)
- The exhaust/make-up air ventilation unit serving the kitchen is past its useful service life and should be replaced with a new system. (Photograph #2)
- All (8) rooftop exhaust fans are past their useful life and should be replaced. (Photograph #3)
- Classrooms 1 – 15 in the original building have comfort and humidity issues that need to be addressed in a study. It is likely that the UVs (15 total) are not properly controlling the outside air damper and will need to be upgraded. (Photograph #4)
- The air cooled chiller has aged past its recommended service life and is due for replacement.



Photograph #1 – Boilers in Mechanical Room



Photograph #2 – Kitchen Ventilation Unit



Photograph #3 – Typical Exhaust Fan



Photograph #4 – Typical Classroom Unit Ventilator

Anticipated Lifecycle Replacement

The following list summarizes all major mechanical equipment in fair – excellent condition that will eventually require replacement, refurbishment or repair once they age past their estimated useful life.

- Pumps
- Air Handling Units
- Packaged DX Units
- VRF Units
- Split DX Systems
- Fans
- Heating Units
- VAV Boxes
- Expansion Tanks

Future Use and Replacement Recommendations

Long-Term HVAC System Recommendations

Ideally, ventilation systems and space conditioning systems are decoupled. This approach provides the most effective control over space temperature, humidity, and indoor air quality with minimal energy consumption. However, depending on life cycle costs and maintenance preferences, replacement in-kind should also be considered.

When existing building systems have reached the end of their lifecycle the following system types are recommended as possible replacements:

1. Air-Cooled Variable Refrigerant Flow (VRF) - Air side heat pump units are located on the roof. Heat pumps are interlocked with ductless type terminal equipment through refrigerant piping. Simultaneous heating and cooling is possible with VRF system. All heat pump equipment utilizes variable speed compressors and fan motors. Decouple energy recovery ventilators would provide both the building exhaust and ventilation airflow. ERV units shall utilize enthalpy wheels and demand controlled ventilation components. Exterior condensing units serving ERV units will be located on the ground. Heat for ERV units will be provided by the central boiler.
2. Ground Source Water-Cooled VRF - Ground coupled heat pumps are connected to the geothermal loop condenser water system. The ground coupled heat pumps are interlocked with ductless type terminal equipment through refrigerant piping. Simultaneous heating and cooling is possible with the VRF system. All heat pump equipment utilizes variable speed compressors and fan motors. Decoupled energy recovery ventilators would provide both the building exhaust and ventilation airflow. ERV units shall utilize enthalpy wheels and demand controlled ventilation components.

It is crucially important to calculate life cycle costs to identify the most cost effective system replacement that is specific to this building.

Unit Ventilators

Unit Ventilators (UV) were standard HVAC equipment for school classrooms built in the 1990's and earlier, however they have several disadvantages that are well documented compared to modern HVAC system solutions which include:

- Source of noise within the classroom
- Valuable floor space is occupied within the classroom
- Outdoor air control limitations
- Humidity control limitations

Some, if not all of these issues have been documented at CES.

We strongly recommend refraining from UVs for all new construction and major renovations going forward. As described in the section above, a decoupled design approach is ideal.

However, since there is already a central chiller in place with useful remaining service life, it is unrealistic to recommend a complete system replacement. The best compromise is to modify existing UV controls to only provide space cooling (no ventilation) with economizer function. New Energy Recovery Units (ERU) would be installed on the roof or in mechanical mezzanines. This system modification maximizes

the use of existing equipment while decoupling ventilation and should be considered a mid-term solution until the next major renovation.

3.2 Domestic Water Plumbing Systems

Plumbing Equipment Tables

PLUMBING SYSTEMS		
Plumbing System	Description	
P-04	Domestic Supply	PEX/Galvanized Steel (4" Service)
	Waste/Sewer Piping	Cast Iron
	Vent Piping	Cast Iron/Copper
	Fire Protection	Wet Pipe Sprinkler System (6" Service)
	Water Meter Location	Mechanical Room

PLUMBING EQUIPMENT		
System or Unit Type	Service Life Estimate (years)	
Domestic Hot Water Heater, natural gas	15	
P-01	Quantity	1
	Input Capacity	Not Labeled
	Storage Capacity	100 Gallon
	Expansion Tank?	Yes
	Location	Mechanical Room
	Service	Entire Building
	Nameplate Date	Not Labeled

PLUMBING FIXTURES		
Typical Plumbing Fixture	Flush Rating / Flow Rate / Size	
P-04	Water Closet	1.6 GPF
	Urinal	1.0 GPF
	Lavatory	2.2 GPM
	Janitor Sink	4.0 GPM
	Kitchen Sink	2.2 GPM
	Drinking Fountain	0.25 GPM

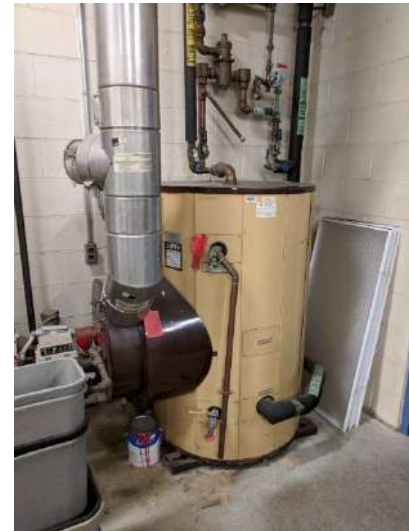
Planned Improvements

There are no planned improvements for the plumbing system.

Deferred Maintenance and Replacement

The following items have been identified either during the survey effort or by the maintenance staff as items that require immediate repair or replacement:

- Replace the domestic hot water heater and recirculation pump (Photograph #5)



Photograph #5 – Water Heater

Anticipated Lifecycle Replacement

The following list summarizes all major plumbing equipment in fair – excellent condition that will eventually require replacement, refurbishment or repair once they age past their estimated useful life.

- Expansion Tanks
- Thermostatic Mixing Valves
- Plumbing Fixtures
- Piping Systems and valves

4 ELECTRICAL SYSTEMS

4.1 Electrical Service

Equipment type				
P-04	Overhead Conductors		Underground Conductors	X
	Transformer	(1) 500kVA @ 208V, Customer Owned		
	Utility Company	Town of Smyrna		
	Service Size	(1) 1,600A @ 208V		
	Meter	Primary Meter	Location	Mounted next to transformer on Uni-strut
	Main Service Ground	Yes		
	Main Switchboard	(1) SE – 1,600A	Main Distribution Panelboard	
	Manufacturer	Square D	Installation Date	2006

Equipment Type		
Panelboard(s)		
P-01	Type	NQOB
	Manufacturer	Square D
P-04	Type	A-Series
	Manufacturer	General Electric (GE)
P-04	Type	A-II Series
	Manufacturer	General Electric (GE)
P-04	Type	NQOD
	Manufacturer	Square D

The building has one 1,600A, 120/208V, three phase switchboard located in the main mechanical room. This switchboard feeds a chiller, a couple of roof mounted condensing units, and a couple of branch panelboards in addition to a 1200A Main Distribution Panel (MDP) located in the main electrical room. The MDP feeds several branch panelboards located throughout the school. We were not able to obtain the peak building demand over the last 12 months from the Town of Clayton, but based on the peak demand at the other elementary schools in the district, it appears that the existing switchboard has adequate space and capacity to support additional load.

While the existing system has been well maintained and the panelboards are currently working, there are a few panelboards that have exceeded their useful service life. Panelboards labeled as LP-A, LP-B, and MDA-2 have all exceeded their useful service and we would recommend that the same be replaced. The switchboard SE and panelboards LP and CP were installed in 2006 and panelboards CP-1 and CP-2 were installed in 2009. Distribution Panelboard MDP and most of the other branch panelboards throughout the school are manufactured by GE and were installed in 1993.

4.2 Emergency Power

There is not a generator located at this building. The emergency lighting is controlled by wall mounted fixtures that have an internal battery pack.

4.3 Lighting Systems

Lighting Systems:		
P-03	Interior Lighting	Type: Fluorescent, T8 and T-12
P-03	Exterior Lighting	Type: Wall mounted - MH, Parking lot poles with MH light source
P-04	Exterior Lighting	Type: Wall mounted 2006 addition – LED
P-04	Emergency Lighting	Type: Wall mounted
	Illuminated Exit Signs	Yes
Switches:		
P-04	Lighting Switches (MH)	46" to center of switch
P-04	Lighting Switches (MH) ADA Compliant	Yes

4.4 Power

Equipment Type		
Power		
P-03	GFCI receptacles at required locations	Yes
	Duplex receptacles (Grounding or no)	Grounding
	Duplex receptacles at HVAC equipment	Yes
P-04	Building Wire	Copper
P-04	Interior disconnects	Good condition
P-03	Exterior disconnects	Replace exterior disconnects for all HVAC units that are replaced. Otherwise exterior disconnect switches to remain.

4.5 Special Systems

Equipment Type		
Special Systems		
P-03	Telephone Entrance	MDF Room
	Cable TV Service	Yes
	Fiber/Data on site	Yes
	Data racks (Location or spare capacity)	MDF Room, IDF rooms – Yes spare capacity
	Data Cabling	CAT 5

	CCTV	Yes
	Security (Manufacturer)	Honeywell
	Intercom (Aiphone)	No
	Card Reader(s)	Yes

The lighting fixtures throughout the school are 2'x4' fluorescent recessed acrylic lensed type fixtures with T8 or T12 fluorescent lamp source. The government has stopped companies from manufacturing T12 lamps to help promote the use of more energy efficient light sources. So over time it will be harder to obtain the T12 lamps so we would recommend that these fixtures be replaced to a more efficient lamp source. While the lighting systems are not in immediate need of replacement, as part of general improvements to the building, changing from fluorescent and metal halide light sources to LED light sources would result in energy savings. Some of the wall mounted exterior lights are beginning to show signs of wear due to the weather and will probably need to start being replaced within the next 4-5 years. Installing lighting controls such as occupancy sensors in the classrooms throughout the building could also increase energy savings as the current building does not have an automatic means to turn off the lights in that space when that space is unoccupied. The current lighting controls do not comply with the current edition of ASHRAE 90.1. Routine and periodic maintenance of the lighting system is recommended.

While the building appears to be in good condition, the recessed receptacles installed in the building are beginning to show signs of aging. Over the years, additional receptacles have been installed using surface metal raceway. The current National Electrical Code (NEC) requires that all child care facilities have tamper resistant receptacles. The code defines a child care facility as a building or portion thereof, for educational, supervisory, or personal care services for more than four children 7 years old or less. So, this elementary school would fit this definition so we would recommend that all non-locking-type 125V, 15 and 20 ampere(A) existing receptacles be replaced with tamper-resistant receptacles. Some of the exterior disconnects are beginning to show signs of rusting, so we would recommend that new NEMA 4X, stainless steel disconnects be provided for all exterior HVAC equipment that is replaced. The technology department has some planned improvements for buildings special systems as outlined below in the planned improvements section of this report.

4.6 Fire Alarm System

Equipment Type			
Fire Alarm System			
P-04	Item	Yes	No
	Horns or Bells	X	
	Strobe Lights	X	
	Voice Evacuation		X
	Battery Back-up	X	
	Automatic Dialer	X	
	Smoke Detectors	X	
	Outdoor Bell	X	
	Duct Detectors	X	
	Smoke Dampers	X	
	Manual Stations at Exit	X	
	ADA compliant	X	

	Location of FACP	MDF Room
	Fire Alarm (Addressable or Analog)	Addressable
P-04	Manufacturer	Notifier NFS-320R
	Date of Installation	2015
	Annunciator	
	Remote Annunciator	Yes
	Annunciator (Graphic or Alphanumeric)	Alphanumeric
	Remote Annunciator Location	Front Lobby

There are no immediate or significant repairs that need to be made to the building fire alarm system. Routine and periodic testing and maintenance of the fire alarm system is recommended. While the existing fire alarm is in good condition, it utilizes audible horns and visual strobe notification devices and does not have a voice evacuation system. The 2015 NFPA 101 Life Safety Code requires that any new schools with 100 or more occupants have a fire alarm system utilize an emergency voice/alarm communications system to notify occupants. Even though a change is not required now, if a major renovation was to occur to the existing school, then the existing fire alarm system would need to be upgraded to a voice evacuation system.

4.7 Code Deficiencies

1. Replace all existing building non-locking-type 125V, 15 and 20 ampere receptacles with tamper-resistant receptacles to comply with the current National Electrical Code.
2. Upgrade Fire Alarm system to voice evacuation system to comply with current NFPA 101 Life Safety Code.

Planned Improvements

- Add eleven (11) internal cameras throughout school in areas designated by school administrators.
- Add one (1) external camera under awning facing office steps.
- Add card readers at doors designated by school administrators/ technology department. (cost estimate is based on five (5) devices)
- Add wireless access points to non-educational (cafeteria, gym, guidance office) spaces. (cost estimate is based on six (6) devices)
- Provide uninterruptible power supply (UPS) at all access door control panels. (cost estimate is based on seven (7) devices)

Deferred Maintenance

- Replace panelboards MDA-2, LP-A, LP-B.

General Improvements

- Replace interior lighting throughout the school and exterior wall mounted Metal Halide fixtures with LED light source fixtures.
- Provide lighting controls in throughout the school to automatically turn lights off in spaces that are empty.

Anticipated Lifecycle Replacement

The following list summarizes all major equipment that is currently in fair – excellent condition that will eventually need replacement:

- Switchboard(s)
- Panelboard(s)
- Lighting
- Receptacles
- Fire Alarm Panel
- Security System
- Video Cameras

APPENDIX A

FACILITY PHOTOGRAPHS

Appendix A

Clayton Elementary School Mechanical Photos



Photo #1 Air Cooled Chiller in Mechanical Yard



Photo #2 Ceiling Cassettes-Front Office



Photo #3 Ceiling Cassettes-Library

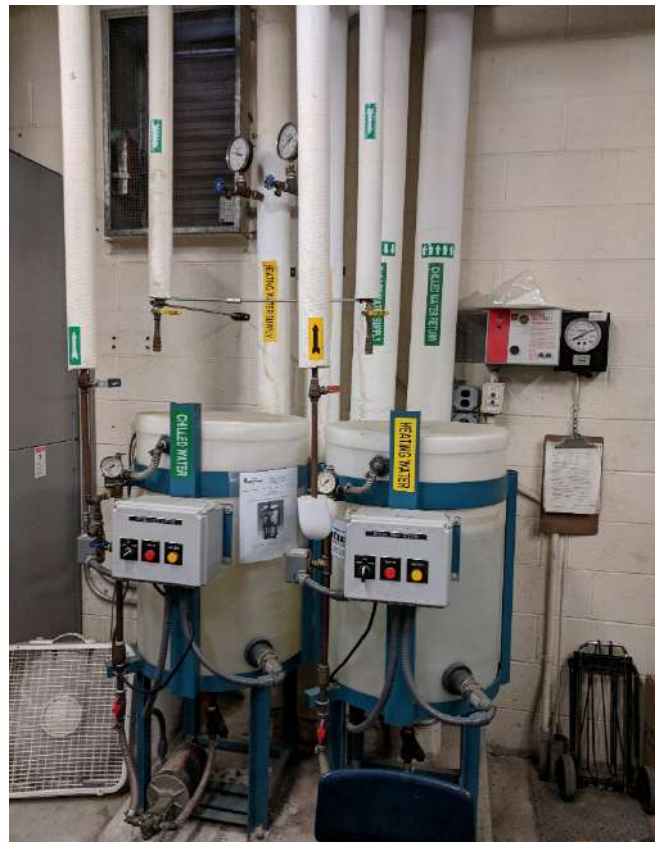


Photo #4 Chilled and Heating Water Glycol Feeders in Mechanical Room



Photo #5 Chilled water Pumps in Mechanical Room

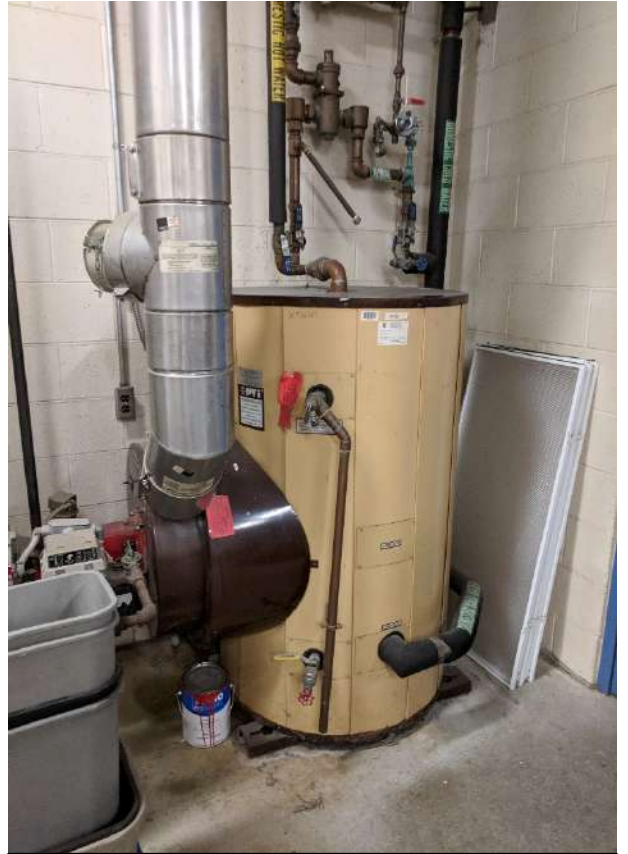


Photo #6 Domestic Hot water Heater in Mechanical Room



Photo #7 Gas Meter



Photo #8 Ground Mounted Split DX Condensing Unit



Photo #9 Heating Hot Water Pumps in Mechanical Room



Photo #10 Kitchen Ventilation System



Photo #11 Typical Roof Mounted Exhaust Fan



Photo # 12 Boilers in Mechanical Room



Photo #13 RTUs serving Cafeteria, Gym, and Auditorium



Photo #14 Typical Cabinet Unit Heater



Photo #15 Typical Fan Coil Unit



Photo# 16

Typical Indoor Wall Mounted Split System Unit



Photo# 17

Typical Cabinet Unit Heater



Photo# 18

Typical Classroom Unit Ventilator



Photo# 19

Typical Vestibule Heater



Photo # 20

Typical Bathroom Lavatory



Photo #21

Typical Bathroom Toilet



Photo #22

Typical Classroom Sink



Photo #23

Typical Urinal



Photo #24

Variable Air Volume AHU in Attic Serving new Wing



Photo #25

VRF Condensing Unit



Photo #1 Panel MDP



Photo #2 Telephone CATV incoming service



Photo #3 Fire Alarm Control Panel



Photo #4 Panelboard LPB



Photo #5 Wall Mounted FA device in typical Bathroom



Photo #6 Typical Wall Mounted Emergency Light



Photo #7 Typical Ceiling Mounted Fire Alarm Device



Photo #8 Typical Exit Sign & Recessed Lighting In Corridors



Photo #9 Exterior Disconnect on Wall



Photo #10 Typical Receptacle



Photo #11 Fire Alarm Pull Station, Card Reader, and Security Keypad



Photo #12 Exterior Camera



Photo #13 Typical Exterior Wall Pack



Photo #14 Typical Parking Lot Pole Lights



Photo #15 Exterior Lighting on the 2006 Addition



Photo #16 Transformer, Meter, and Disconnect for Fire Pump

APPENDIX B

COST ESTIMATE



Gipe Associates, Inc.

CONSULTING ENGINEERS

Mechanical | Electrical | Plumbing

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CONSTRUCTION COST ESTIMATE

PROJECT: CLAYTON ELEMENTARY SCHOOL
GAI PROJECT NO: 18047
DATE: 08/08/18
PREPARED BY:

GENERAL PROJECT INFORMATION

PROJECT SQUARE FOOTAGE: 55,000
FACILITY TYPE: EDUCATION - CLASSROOMS
OF FLOORS: 1
ARCHITECT: FEARN-CLENDANIEL
BASIS FOR ESTIMATE: CODE-B (PRELIMINARY DESIGN)
SUMMARY: SCHEMATIC ESTIMATE

1 - CENTRAL HEATING PLANT REPLACEMENT	QUANTITY		MATERIAL		LABOR		TOTAL COST
	NO. OF UNITS	UNIT OF MEASURE	PER UNIT	TOTAL	PER UNIT	TOTAL	

BASE BID COST ESTIMATE

BOILERS	2	EA	\$75,000.00	\$ 150,000.00	\$20,000.00	\$ 40,000.00	\$ 190,000.00
HOT WATER PUMPS	4	EA	\$ 3,500.00	\$ 14,000.00	\$2,000.00	\$ 8,000.00	\$ 22,000.00
AIR SEPARATOR/EXPANSION TANK/VALVES	1	LS	\$ 10,000.00	\$ 10,000.00	\$7,500.00	\$ 7,500.00	\$ 17,500.00
HOT WATER PIPING AND INSULATION	1	LS	\$ 45,000.00	\$ 45,000.00	\$50,000.00	\$ 50,000.00	\$ 95,000.00
FLUES AND COMBUSTION AIR	1	LS	\$ 12,500.00	\$ 12,500.00	\$8,500.00	\$ 8,500.00	\$ 21,000.00
GAS PIPING	1	LS	\$ 9,500.00	\$ 9,500.00	\$6,500.00	\$ 6,500.00	\$ 16,000.00
DUCT AND VENT INSULATION	1	LS	\$ 4,000.00	\$ 4,000.00	\$5,000.00	\$ 5,000.00	\$ 9,000.00
VARIABLE SPEED DRIVES	2	EA	\$ 3,000.00	\$ 6,000.00	\$2,000.00	\$ 4,000.00	\$ 10,000.00
TESTING AND BALANCING	1	LS		\$ -	\$10,000.00	\$ 10,000.00	\$ 10,000.00
ATC CONTROLS	1	LS	\$ 30,000.00	\$ 30,000.00	\$40,000.00	\$ 40,000.00	\$ 70,000.00
DEMOLITION	1	LS	\$ 1,000.00	\$ 1,000.00	\$7,500.00	\$ 7,500.00	\$ 8,500.00
WATER TREATMENT	1	LS	\$ 2,000.00	\$ 2,000.00	\$3,500.00	\$ 3,500.00	\$ 5,500.00
BACKFLOW PREVENTER	1	EA	\$ 800.00	\$ 800.00	\$1,200.00	\$ 1,200.00	\$ 2,000.00
VIBRATION ISOLATION	1	LS	\$ 2,500.00	\$ 2,500.00	\$1,500.00	\$ 1,500.00	\$ 4,000.00
GENERAL CONDITIONS	1	LS	\$ 7,500.00	\$ 7,500.00	\$7,500.00	\$ 7,500.00	\$ 15,000.00
COMMISSIONING	1	LS		\$ -	\$15,000.00	\$ 15,000.00	\$ 15,000.00
CONDUCTORS AND CONDUITS	1	LS	\$ 7,500.00	\$ 7,500.00	\$5,500.00	\$ 5,500.00	\$ 13,000.00
DISTRIBUTION PANEL	1	LS	\$ 7,500.00	\$ 7,500.00	\$6,500.00	\$ 6,500.00	\$ 14,000.00
EQUIPMENT CONNECTIONS	1	LS	\$ 20,000.00	\$ 20,000.00	\$12,000.00	\$ 12,000.00	\$ 32,000.00
ELECTRICAL DEMOLITION	1	LS		\$ -	\$3,000.00	\$ 3,000.00	\$ 3,000.00

COST ESTIMATE SUMMARY

DESCRIPTION	MATERIAL	LABOR	TOTAL
BASE BID TOTAL COST	\$ 329,800.00	\$ 242,700.00	\$ 572,500.00
TOTAL BASE BID:	\$ 329,800.00	\$ 242,700.00	\$ 572,500.00
TOTAL BASE BID COST PER SQUARE FOOT:	\$6.00 PER S.F.	\$4.41 PER S.F.	\$10.41 PER S.F.

GRAND TOTAL COST ESTIMATE SUMMARY

ADDITIONAL PROJECT COST ITEM DESCRIPTION (APPLIES TO BASE BID ONLY)	PERCENTAGE (%)	% X TOTAL BASE BID	REMARKS
CONTRACTOR OVERHEAD	0.0%	\$ -	
CONTRACTOR PROFIT	0.0%	\$ -	
GENERAL CONDITIONS	0.0%	\$ -	
BUILDER'S RISK INSURANCE	0.0%	\$ -	
PERMIT FEES	0.0%	\$ -	
CONTRACTOR INSURANCE	0.0%	\$ -	
PAYMENT BOND	0.0%	\$ -	
PERFORMANCE BOND	0.0%	\$ -	
TOTAL ADDITIONAL PROJECT COST ITEMS		\$ -	
GRAND TOTAL CONSTRUCTION COST (BASE BID + ADDITIONAL PROJECT COSTS)		\$ 572,500.00	\$10.41 PER S.F.



Gipe Associates, Inc.

CONSULTING ENGINEERS

Mechanical | Electrical | Plumbing

8719 BROOKS DRIVE
EASTON, MARYLAND
PHONE: 410-822-8688
FAX: 410-822-6306

CONSTRUCTION COST ESTIMATE

PROJECT: CLAYTON ELEMENTARY SCHOOL
GAI PROJECT NO: 18047
DATE: 08/08/18
PREPARED BY: MEO

GENERAL PROJECT INFORMATION

PROJECT SQUARE FOOTAGE: 1,500
FACILITY TYPE: EDUCATIONAL - KITCHEN AND CAFETERIA
OF FLOORS: 1
ARCHITECT: FEARN-CLENDANIEL
BASIS FOR ESTIMATE: CODE-A (NO DESIGN COMPLETED)
SUMMARY: PRELIMINARY ESTIMATE

2 - KITCHEN VENTILATION SYSTEM	QUANTITY		MATERIAL		LABOR		TOTAL COST
	NO. OF UNITS	UNIT OF MEASURE	PER UNIT	TOTAL	PER UNIT	TOTAL	

BASE BID COST ESTIMATE

	QUANTITY	UNIT OF MEASURE	PER UNIT	TOTAL	PER UNIT	TOTAL	TOTAL COST
DEMOLITION	1.0	EA	\$ -		\$ 3,000.00	\$ 3,000.00	
NEW KITCHEN HOOD	1.0	EA	\$ 10,000.00	\$ 10,000.00	\$ 10,000.00	\$ 10,000.00	\$ 20,000.00
NEW KITCHEN HOOD DUCT	1.0	EA	\$ 5,000.00	\$ 5,000.00	\$ 4,000.00	\$ 4,000.00	\$ 9,000.00
GREASE WRAP DUCT INSULATION	1.0	EA	\$ 3,500.00	\$ 3,500.00	\$ 3,000.00	\$ 3,000.00	\$ 6,500.00
NEW VARIABLE SPEED KITCHEN VENTILATION CONTROLS (MELINK)	1.0	EA	\$ 12,000.00	\$ 12,000.00	\$ 6,000.00	\$ 6,000.00	\$ 18,000.00
KITCHEN EXHAUST FAN (VARIABLE)	1.0	EA	\$ 3,000.00	\$ 3,000.00	\$ 2,500.00	\$ 2,500.00	\$ 5,500.00
KITCHEN MAKE-UP AIR UNIT WITH GAS	1.0	EA	\$ 25,000.00	\$ 25,000.00	\$ 10,000.00	\$ 10,000.00	\$ 35,000.00
MAKE-UP AIR DUCTWORK	1.0	EA	\$ 10,000.00	\$ 10,000.00	\$ 10,000.00	\$ 10,000.00	\$ 20,000.00
GAS PIPING	1.0	EA	\$ 750.00	\$ 750.00	\$ 2,200.00	\$ 2,200.00	\$ 2,950.00
MAKE-UP AIR DUCTWORK INSULATION	1.0	EA	\$ 3,000.00	\$ 3,000.00	\$ 3,000.00	\$ 3,000.00	\$ 6,000.00
PERFORATED SUPPLY PLENUMS	1.0	EA	\$ 2,000.00	\$ 2,000.00	\$ 1,000.00	\$ 1,000.00	\$ 3,000.00
NEW ROOF CURB	1.0	EA	\$ 500.00	\$ 500.00	\$ 500.00	\$ 500.00	\$ 1,000.00
ATC INTEGRATION OF KITCHEN VENT.	1.0	EA	\$ 6,000.00	\$ 6,000.00	\$ 6,000.00	\$ 6,000.00	\$ 12,000.00
NEW HOOD FIRE SUPPRESSION SYSTEM	1.0	EA	\$ 2,000.00	\$ 2,000.00	\$ 1,500.00	\$ 1,500.00	\$ 3,500.00
INTERLOCK WITH GAS SOLENOID VALVE	1.0	EA	\$ 500.00	\$ 500.00	\$ 1,000.00	\$ 1,000.00	\$ 1,500.00
ELECTRICAL DISCONNECTS	1.0	EA	\$ 1,000.00	\$ 1,000.00	\$ 500.00	\$ 500.00	\$ 1,500.00
MOTOR CONTROLLERS	1.0	EA	\$ 500.00	\$ 500.00	\$ 500.00	\$ 500.00	\$ 1,000.00
CONDUIT AND WIRE	2.0	EA	\$ 1,700.00	\$ 3,400.00	\$ 2,200.00	\$ 4,400.00	\$ 7,800.00
FIREALARM INTERFACE OF HOOD	1.0	EA	\$ 300.00	\$ 300.00	\$ 250.00	\$ 250.00	\$ 550.00

COST ESTIMATE SUMMARY

DESCRIPTION	MATERIAL	LABOR	TOTAL
BASE BID TOTAL COST	\$ 88,450.00	\$ 69,350.00	\$ 154,800.00
TOTAL BASE BID:	\$ 88,450.00	\$ 69,350.00	\$ 154,800.00
TOTAL BASE BID COST PER SQUARE FOOT:	\$58.97 PER S.F.	\$46.23 PER S.F.	\$103.20 PER S.F.

GRAND TOTAL COST ESTIMATE SUMMARY

ADDITIONAL PROJECT COST ITEM DESCRIPTION (APPLIES TO BASE BID ONLY)	PERCENTAGE (%)	% X TOTAL BASE BID	REMARKS
CONTRACTOR OVERHEAD	0.0%	\$ -	
CONTRACTOR PROFIT	0.0%	\$ -	
GENERAL CONDITIONS	0.0%	\$ -	
CONTRACTOR INSURANCE	0.0%	\$ -	
PAYMENT BOND	0.0%	\$ -	
PERFORMANCE BOND	0.0%	\$ -	
DESIGN CONTINGENCY	0.0%	\$ -	
TOTAL ADDITIONAL PROJECT COST ITEMS		\$ -	
GRAND TOTAL CONSTRUCTION COST (BASE BID + ADDITIONAL PROJECT COSTS)		\$ 154,800.00	\$103.20 PER S.F.



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CONSULTING ENGINEERS

Mechanical | Electrical | Plumbing

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PHONE: 410-822-8688
FAX: 410-822-6306

CONSTRUCTION COST ESTIMATE

PROJECT: CLAYTON ELEMENTARY SCHOOL
GAI PROJECT NO: 18047
DATE: 07/27/18
PREPARED BY:

GENERAL PROJECT INFORMATION

PROJECT SQUARE FOOTAGE: 55,000
FACILITY TYPE: EDUCATION - CLASSROOMS
OF FLOORS: 1
ARCHITECT: FEARN-CLENDANIEL
BASIS FOR ESTIMATE: CODE-B (PRELIMINARY DESIGN)
SUMMARY: SCHEMATIC ESTIMATE

3 - EF REPLACEMENT	QUANTITY		MATERIAL		LABOR		TOTAL COST
	NO. OF UNITS	UNIT OF MEASURE	PER UNIT	TOTAL	PER UNIT	TOTAL	

BASE BID COST ESTIMATE

	NO. OF UNITS	UNIT OF MEASURE	PER UNIT	TOTAL	PER UNIT	TOTAL	TOTAL COST
DUCTWORK DEMOLITION	8.0	EA		\$ -	\$ 500.00	\$ 4,000.00	\$ 4,000.00
EF REMOVAL	8.0	EA		\$ -	\$ 500.00	\$ 4,000.00	\$ 4,000.00
GRAVITY HOOD REMOVAL	8.0	EA		\$ -	\$ 500.00	\$ 4,000.00	\$ 4,000.00
NEW EXHAUST FANS (EF)	8.0	EA	\$ 1,500.00	\$ 12,000.00	\$ 1,000.00	\$ 8,000.00	\$ 20,000.00
DUCTWORK FOR EF	1.0	LS	\$ 10,000.00	\$ 10,000.00	\$ 15,000.00	\$ 15,000.00	\$ 25,000.00
GRAVITY HOODS	8.0	EA	\$ 250.00	\$ 2,000.00	\$ 250.00	\$ 2,000.00	\$ 4,000.00
EF ATC CONTROLS	1.0	LS	\$ 5,000.00	\$ 5,000.00	\$ 10,000.00	\$ 10,000.00	\$ 15,000.00
TESTING AND BALANCING	1.0	LS		\$ -	\$ 2,000.00	\$ 2,000.00	\$ 2,000.00
COMMISSIONING	1.0	LS		\$ -	\$ 3,000.00	\$ 3,000.00	\$ 3,000.00
MOTOR CONTROLLERS	8.0	EA	\$ 500.00	\$ 4,000.00	\$ 500.00	\$ 4,000.00	\$ 8,000.00
CONDUIT AND WIRE	8.0	LS	\$ 1,000.00	\$ 8,000.00	\$ 1,500.00	\$ 12,000.00	\$ 20,000.00

COST ESTIMATE SUMMARY

DESCRIPTION	MATERIAL	LABOR	TOTAL
BASE BID TOTAL COST	\$ 41,000.00	\$ 68,000.00	\$ 109,000.00
TOTAL BASE BID:	\$ 41,000.00	\$ 68,000.00	\$ 109,000.00
TOTAL BASE BID COST PER SQUARE FOOT:	\$0.75 PER S.F.	\$1.24 PER S.F.	\$1.98 PER S.F.

GRAND TOTAL COST ESTIMATE SUMMARY

ADDITIONAL PROJECT COST ITEM DESCRIPTION (APPLIES TO BASE BID ONLY)	PERCENTAGE (%)	% X TOTAL BASE BID	REMARKS
CONTRACTOR OVERHEAD	0.0%	\$ -	
CONTRACTOR PROFIT	0.0%	\$ -	
GENERAL CONDITIONS	0.0%	\$ -	
BUILDER'S RISK INSURANCE	0.0%	\$ -	
PERMIT FEES	0.0%	\$ -	
CONTRACTOR INSURANCE	0.0%	\$ -	
PAYMENT BOND	0.0%	\$ -	
PERFORMANCE BOND	0.0%	\$ -	
TOTAL ADDITIONAL PROJECT COST ITEMS	0.0%	\$ -	
GRAND TOTAL CONSTRUCTION COST (BASE BID + ADDITIONAL PROJECT COSTS)		\$ 109,000.00	\$1.98 PER S.F.



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CONSTRUCTION COST ESTIMATE

PROJECT: CLAYTON ELEMENTARY SCHOOL
GAI PROJECT NO: 18047
DATE: 08/08/18
PREPARED BY: MEO

GENERAL PROJECT INFORMATION

PROJECT SQUARE FOOTAGE: 55,000
FACILITY TYPE: EDUCATIONAL - CLASSROOMS
OF FLOORS: 1
ARCHITECT: FEARN-CLENDANIEL
BASIS FOR ESTIMATE: CODE-A (NO DESIGN COMPLETED)
SUMMARY: PRELIMINARY ESTIMATE

4 - UNIT VENT REFURBISHMENT	QUANTITY		MATERIAL		LABOR		TOTAL COST
	NO. OF UNITS	UNIT OF MEASURE	PER UNIT	TOTAL	PER UNIT	TOTAL	

BASE BID COST ESTIMATE

	NO. OF UNITS	UNIT OF MEASURE	PER UNIT	TOTAL	PER UNIT	TOTAL	TOTAL COST
REFURBISHMENT	15.0	EA	\$ 1,500.00	\$ 22,500.00	\$ 2,000.00	\$ 30,000.00	\$ 52,500.00
TESTING AND BALANCING	1.0	LS		\$ -	\$ 12,000.00	\$ 12,000.00	\$ 12,000.00
COMMISSIONING (CONTRACTOR ASSIST)	1.0	LS		\$ -	\$ 15,000.00	\$ 15,000.00	\$ 15,000.00
ATC CONTROLS	15.0	EA	\$ 2,000.00	\$ 30,000.00	\$ 2,500.00	\$ 37,500.00	\$ 67,500.00

COST ESTIMATE SUMMARY

DESCRIPTION	MATERIAL	LABOR	TOTAL
BASE BID TOTAL COST	\$ 52,500.00	\$ 94,500.00	\$ 147,000.00
TOTAL BASE BID:	\$ 52,500.00	\$ 94,500.00	\$ 147,000.00
TOTAL BASE BID COST PER SQUARE FOOT:	\$0.95 PER S.F.	\$1.72 PER S.F.	\$2.67 PER S.F.

GRAND TOTAL COST ESTIMATE SUMMARY

ADDITIONAL PROJECT COST ITEM DESCRIPTION (APPLIES TO BASE BID ONLY)	PERCENTAGE (%)	% X TOTAL BASE BID	REMARKS
CONTRACTOR OVERHEAD	0.0%	\$ -	
CONTRACTOR PROFIT	0.0%	\$ -	
GENERAL CONDITIONS	0.0%	\$ -	
CONTRACTOR INSURANCE	0.0%	\$ -	
PAYMENT BOND	0.0%	\$ -	
PERFORMANCE BOND	0.0%	\$ -	
DESIGN CONTINGENCY	0.0%	\$ -	
	0.0%	\$ -	
	0.0%	\$ -	
TOTAL ADDITIONAL PROJECT COST ITEMS		\$ -	
GRAND TOTAL CONSTRUCTION COST (BASE BID + ADDITIONAL PROJECT COSTS)		\$ 147,000.00	\$2.67 PER S.F.



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CONSTRUCTION COST ESTIMATE

PROJECT: CLAYTON ELEMENTARY SCHOOL
GAI PROJECT NO: 18047
DATE: 07/27/18
PREPARED BY:

GENERAL PROJECT INFORMATION

PROJECT SQUARE FOOTAGE: 55,000
FACILITY TYPE: EDUCATION - CLASSROOMS
OF FLOORS: 1
ARCHITECT: FEARN-CLENDANIEL
BASIS FOR ESTIMATE: CERT. OF NECESSITY
SUMMARY: PRELIMINARY ESTIMATE

5 - DOMESTIC HOT WATER HEATER REPLACEMENT	QUANTITY		MATERIAL		LABOR		TOTAL COST
	NO. OF UNITS	UNIT OF MEASURE	PER UNIT	TOTAL	PER UNIT	TOTAL	
BASE BID COST ESTIMATE							
DEMO WATER HEATER	1.0	EA	\$ 1,500.00	\$ 1,500.00	\$ 2,000.00	\$ 2,000.00	\$ 3,500.00
NEW DOMESTIC WATER HEATERS	1.0	EA	\$ 15,000.00	\$ 15,000.00	\$ 2,500.00	\$ 2,500.00	\$ 17,500.00
GAS PIPING CONNECTION	1.0	EA	\$ 500.00	\$ 500.00	\$ 1,000.00	\$ 1,000.00	\$ 1,500.00
NEW DOMESTIC WATER PIPING	1.0	LS	\$ 2,500.00	\$ 2,500.00	\$ 3,500.00	\$ 3,500.00	\$ 6,000.00
DOMESTIC WATER EXPANSION TANK	1.0	EA	\$ 2,000.00	\$ 2,000.00	\$ 1,000.00	\$ 1,000.00	\$ 3,000.00
INTAKE AND VENT PIPING	1.0	EA	\$ 1,000.00	\$ 1,000.00	\$ 1,000.00	\$ 1,000.00	\$ 2,000.00
INTAKE AND VENT TERMINATIONS	1.0	EA	\$ 500.00	\$ 500.00	\$ 2,500.00	\$ 2,500.00	\$ 3,000.00
ELECTRICAL CONNECTION/DISCONNECT	1.0	EA	\$ 500.00	\$ 500.00	\$ 2,500.00	\$ 2,500.00	\$ 3,000.00
START UP AND TESTING	1.0	EA		\$ -	\$ 1,000.00	\$ 1,000.00	\$ 1,000.00
ATC CONTROLS	1.0	EA	\$ 1,500.00	\$ 1,500.00	\$ 2,500.00	\$ 2,500.00	\$ 4,000.00
TESTING AND BALANCING	1.0	EA		\$ -	\$ 1,500.00	\$ 1,500.00	\$ 1,500.00
RECIRCULATING PUMP AND TRIM	1.0	EA	\$ 2,000.00	\$ 2,000.00	\$ 3,000.00	\$ 3,000.00	\$ 5,000.00
PIPING INSULATION	1.0	EA	\$ 1,500.00	\$ 1,500.00	\$ 2,500.00	\$ 2,500.00	\$ 4,000.00
COMMISSIONING	1.0	EA		\$ -	\$ 2,000.00	\$ 2,000.00	\$ 2,000.00
EMERGENCY KILL SWITCHES	1.0	EA	\$ 750.00	\$ 750.00	\$ 1,000.00	\$ 1,000.00	\$ 1,750.00

COST ESTIMATE SUMMARY

DESCRIPTION	MATERIAL	LABOR	TOTAL
BASE BID TOTAL COST	\$ 29,250.00	\$ 29,500.00	\$ 58,750.00
TOTAL BASE BID:	\$ 29,250.00	\$ 29,500.00	\$ 58,750.00
TOTAL BASE BID COST PER SQUARE FOOT:	\$0.53 PER S.F.	\$0.54 PER S.F.	\$1.07 PER S.F.

GRAND TOTAL COST ESTIMATE SUMMARY

ADDITIONAL PROJECT COST ITEM DESCRIPTION (APPLIES TO BASE BID ONLY)	PERCENTAGE (%)	% X TOTAL BASE BID	REMARKS
CONTRACTOR OVERHEAD	0.0%	\$ -	
CONTRACTOR PROFIT	0.0%	\$ -	
GENERAL CONDITIONS	0.0%	\$ -	
BUILDER'S RISK INSURANCE	0.0%	\$ -	
PERMIT FEES	0.0%	\$ -	
CONTRACTOR INSURANCE	0.0%	\$ -	
PAYMENT BOND	0.0%	\$ -	
PERFORMANCE BOND	0.0%	\$ -	
TOTAL ADDITIONAL PROJECT COST ITEMS	0.0%	\$ -	
GRAND TOTAL CONSTRUCTION COST (BASE BID + ADDITIONAL PROJECT COSTS)		\$ 58,750.00	\$1.07 PER S.F.



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CONSULTING ENGINEERS

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PHONE: 410-822-8688
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CONSTRUCTION COST ESTIMATE

PROJECT: CLAYTON ELEMENTARY SCHOOL
GAI PROJECT NO: 18047
DATE: 08/07/19
PREPARED BY:

GENERAL PROJECT INFORMATION

PROJECT SQUARE FOOTAGE: 55,000
FACILITY TYPE: EDUCATION - CLASSROOMS
OF FLOORS: 1
ARCHITECT: FEARN-CLENDANIEL
BASIS FOR ESTIMATE: CERT. OF NECESSITY
SUMMARY: PRELIMINARY ESTIMATE

6 - AIR COOLED CHILLER REPLACEMENT	QUANTITY		MATERIAL		LABOR		TOTAL COST
	NO. OF UNITS	UNIT OF MEASURE	PER UNIT	TOTAL	PER UNIT	TOTAL	
BASE BID COST ESTIMATE							
155 TON CHILLER	1.0	LS	\$ 200,000.00	\$ 200,000.00	\$ 200,000.00	\$ 200,000.00	\$ 400,000.00
ATC CONTROLS	1.0	LS	\$ 50,000.00	\$ 50,000.00	\$ 50,000.00	\$ 50,000.00	\$ 100,000.00
TESTING/BALANCING	1.0	LS	\$ 30,000.00	\$ 30,000.00	\$ 30,000.00	\$ 30,000.00	\$ 60,000.00
COMMISSIONING	1.0	LS		\$ -	\$ 6,000.00	\$ 6,000.00	\$ 6,000.00
SWITCHBOARD BREAKER	1.0	EA	\$ 8,000.00	\$ 8,000.00	\$ 6,000.00	\$ 6,000.00	\$ 14,000.00
CONDUCTORS AND CONDUITS	1.0	LS	\$ -	\$ -	\$ -	\$ -	\$ -
MECHANICAL EQUIP CONNECTIONS	4.0	EA	\$ 400.00	\$ 1,600.00	\$ 350.00	\$ 1,400.00	\$ 3,000.00
ELECTRICAL DEMOLITION	1.0	LS	\$ -	\$ -	\$ 8,000.00	\$ 8,000.00	\$ 8,000.00

COST ESTIMATE SUMMARY

DESCRIPTION	MATERIAL	LABOR	TOTAL
BASE BID TOTAL COST	\$ 289,600.00	\$ 301,400.00	\$ 591,000.00
TOTAL BASE BID:	\$ 289,600.00	\$ 301,400.00	\$ 591,000.00
TOTAL BASE BID COST PER SQUARE FOOT:	\$5.27 PER S.F.	\$5.48 PER S.F.	\$10.75 PER S.F.

GRAND TOTAL COST ESTIMATE SUMMARY

ADDITIONAL PROJECT COST ITEM DESCRIPTION (APPLIES TO BASE BID ONLY)	PERCENTAGE (%)	% X TOTAL BASE BID	REMARKS
CONTRACTOR OVERHEAD	0.0%	\$ -	
CONTRACTOR PROFIT	0.0%	\$ -	
GENERAL CONDITIONS	0.0%	\$ -	
BUILDER'S RISK INSURANCE	0.0%	\$ -	
PERMIT FEES	0.0%	\$ -	
CONTRACTOR INSURANCE	0.0%	\$ -	
PAYMENT BOND	0.0%	\$ -	
PERFORMANCE BOND	0.0%	\$ -	
TOTAL ADDITIONAL PROJECT COST ITEMS	0.0%	\$ -	
GRAND TOTAL CONSTRUCTION COST (BASE BID + ADDITIONAL PROJECT COSTS)		\$ 591,000.00	\$10.75 PER S.F.