ACTION

HOWARD COUNTY
PUBLIC SCHOOL SYSTEM

BOARD OF EDUCATION OF HOWARD COUNTY
MEETING AGENDA ITEM

TITLE: Swansfield Elementary School Schematic Design Report **DATE:** February 26, 2015

PRESENTER(S): Scott W. Washington, Director, School Construction

Gretchen Wagner, Project Manager, GWWO Inc./Architects

VISION 2018 GOAL: ☒ Students ☐ Staff ☐ Families and Community ☐ Organization

OVERVIEW:
The attached schematic design brochure describes the general scope of work for Swansfield Elementary School. The project consists of two phases. Phase I will address the need for additions to the school. The addition of a 100 seat classroom will eliminate the need for the existing relocatables and create space for the related arts areas and fulfill the capacity expansion needs of the school. A new administration addition adjacent to the main entrance will create a secured vestibule area. Building of the new administration area will allow for renovation of the existing space to provide a COMAR compliant health suite, pre-kindergarten classroom and toilet rooms.

Phase II, extensive renovations to the existing building, will be both programmatic and systemic upgrades. This includes the conversion of the existing open area pods to self-contained classrooms, as well as new mechanical, electrical and technology systems. It is the intent of the design to achieve a LEED (Leadership in Energy and Environmental Design) "Certified" designation.

RECOMMENDATION/FUTURE DIRECTION:
It is recommended that the schematic design report for Swansfield Elementary School be approved as submitted.

SUBMITTED BY:
Scott W. Washington, Director
School Construction

APPROVAL/CONCURRENCE:
Renee A. Foose, Ed.D.
Superintendent

Susan C. Mascaro
Chief of Staff

Camille B. Jones
Chief Operating Officer

Bruce Gist
Executive Director
Facilities, Planning and Mgmt.

ADDITIONS AND RENOVATIONS TO SWANSFIELD ELEMENTARY SCHOOL

Schematic Design Submission | February 26, 2015

HOWARD COUNTY PUBLIC SCHOOL SYSTEM

GWWO

TABLE OF CONTENTS

ADDITIONS AND RENOVATIONS TO
SWANSFIELD ELEMENTARY SCHOOL

SCHEMATIC DESIGN SUBMISSION
FEBRUARY 26, 2015

FOR THE BOARD OF EDUCATION OF HOWARD COUNTY:

Chairman	Janet Siddiqui, M.D.
Vice Chairman	Ann De Lacy
Members	Bess Altwerger, Ed.D.
	Sandra H. French
	Ellen Flynn Giles
	Christine E. O'Connor
	Cynthia L. Vaillancourt
	Patrick B. Mikulis (Student)
Superintendent of Schools	Renee A. Foose, Ed.D.
Deputy Superintendent of Schools	Linda T. Wise
Chief Operating Officer	Camille B. Jones
Executive Director Facilities, Planning & Management	Bruce Gist
Director School Construction	Scott W. Washington

PLANNING ADVISORY COMMITTEE

Molly Ketterer	Principal, Swansfield Elementary School
Heather Moraff	Assistant Principal, Swansfield Elementary School
Ferne Kroeker	Special Educator, Swansfield Elementary School
Stephany Warner	Primary Teacher, Swansfield Elementary School
Patricia Borowski	Day Chief Custodian, Swansfield Elementary School
Charles E. Young	Night Custodial Supervisor, Swansfield Elementary School
Suzanne Kuttas	Para-Educator, Swansfield Elementary School
Kathy Eckley	Physical Education Teacher, Swansfield Elementary School
Jackie Lujan	Title I Teacher, Swansfield Elementary School
Audrey Salazar	Fifth Grade Teacher, Swansfield Elementary School
Carolyn Toland	Principals Secretary, Swansfield Elementary School
Rhonda Lewis	Parent, Swansfield Elementary School
Annette Varoli	PTA Vice President, Swansfield Elementary School
Ron Morris	Administrative Director, HCPSS
Scott Washington	Director, School Construction, HCPSS
Dan Keiser	Program Manager, School Construction, HCPSS
Dan Lubeley	Manager of Design & Pre-Construction, School Construction, HCPSS
Betsy Zentz	Construction Interagency Specialist, HCPSS
Reny Toledo	AV & Network Support, HCPSS
David Shaw	Manager, Network Operations, HCPSS
Ron Miller	Manager, Safety, Environment and Risk Management, HCPSS
Frank Eastham	Executive Director, School Improvement & Administration, HCPSS
Gloria Mikolajczyk	School Facilities, Architect Supervisor, MSDE
Dan Hagan	Construction Manager, J. Vinton Schafer & Sons, Inc.
Paul Hume	Principal, GWWO Inc/Architects
Gretchen Wagner	Project Manager, GWWO Inc/Architects
Taylor Metcalf	Intern Architect, GWWO Inc/Architects

DESIGN TEAM

ARCHITECT	GWWO, Inc./Architects	Baltimore, MD
CIVIL ENGINEER	Fisher, Collins & Carter, Inc.	Ellicott City, MD
STRUCTURAL ENGINEER	Columbia Engineering, Inc.	Columbia, MD
MEP ENGINEER	James Posey Associates	Baltimore, MD
ACOUSTICAL CONSULTANT	Acoustical Design Collaborative, Ltd.	Ruxton, MD

PROJECT DESCRIPTION

Swansfield Elementary School is a 64,819 square foot, one-story structure serving pre-kindergarten through fifth grade. The original school was constructed in 1972 with additions in 1988 and 2008, as well as a renovation in 1996. The school is organized in a classroom pod configuration. Each pod was once an open classroom area. As the school evolved, gypsum board partitions and other temporary partitions were added to separate the classrooms. Currently, each grade level has four to five classrooms and a commons/circulation space. Grades four and five also have smaller extended learning rooms that are being used as overflow space for other programs in the building. There are also four portables on the site that house two gifted and talented classrooms, a technology lab, and a band and strings classroom.

The school currently has a state rated capacity of 601 and an enrollment of 590 for the 2014/2015 school year. It is projected that there will be a need to accommodate an additional 100 students post-renovation. A complete renovation and addition of the school is being planned with systemic upgrades in compliance with the Howard County Public Schools System's (HCPSS) "Guidelines Manual for Renovations and Modernizations of Existing Schools."

Two additions are being proposed for the school:

- The first addition is an administration addition which would house offices and a conference room and be constructed adjacent to the main entrance to provide a secure entrance vestibule.
- The second is a classroom addition which would house a new classroom pod with four classrooms and an extended learning room, two music classrooms, two art classrooms, an electrical room, and other additional storage and office spaces.

Other program renovation goals proposed:

- The health suite will be relocated and enlarged to meet Code of Maryland Regulations (COMAR) standards.
- Existing classrooms will be addressed through interior modifications to improve size, daylight and acoustics.
- The cafeteria will be enlarged to accommodate the additional 100 students.

The renovation work at Swansfield Elementary School will also include new windows, new doors and hardware, the addition of insulation for existing exterior walls, a new roof over the 1988 addition, new ceiling systems, new lighting and electrical systems, new sprinkler system, and new mechanical systems and plumbing upgrades. Upon completion of the project, the school will be in compliance with handicapped accessibility requirements.

Swansfield Elementary School will be designed to meet a LEED (Leadership in Energy and Environmental Design) 'Certified' level of certification. The project will be registered under the LEED for Schools v3 (LEED-S) rating system.

PROJECT AREA

	SD PHASE
Existing Building	64,819 SF
Administration Addition	1,120 SF
Classroom Addition	13,839 SF
TOTAL:	**79,778 SF**

PROJECT SCHEDULE

Planning Advisory Committee Meetings Completed	FEBRUARY 3, 2015
Schematic Design submitted to Board of Education	FEBRUARY 26, 2015
Design Development submitted to Board of Education	JUNE 25, 2015
Construction Documents submitted to Board of Education	NOVEMBER 2015
Project out for Bids	JANUARY 2016
Bids Received	FEBRUARY 2016
Construction Start	APRIL 2016
Construction Final Completion	DECEMBER 2017

PLANNING PROCESS

The design of the additions and renovations to Swansfield Elementary School were developed through a series of meetings with the HCPSS school construction staff, the planning advisory committee, and the design team. The meetings were well attended and the insight and experience provided by members of planning advisory committee, and the school construction staff were integral to the planning process.

The following items were discussed at the planning committee meetings:

- A description of the process for planning the HCPSS school renovation projects.
- An overview of the project schedule, budget, and scope.
- A review of the existing site plan and possible expansion locations.
- A review of the existing floor plan and conditions requiring improvement.
- A detailed look at the additions required to accommodate the growth of school.
- A review and discussion of the proposed floor plans.

The design of the additions and renovations conveyed in this report was developed through a collaborative process that involved discussions and revisions to achieve consensus in the proposed layout. The process began with a discussion on the proposed addition locations. Once the most suitable addition option was selected, the program adjacencies in the plan were reviewed from a basic to a detailed level.

The planning advisory committee strove to develop the best design while measuring the design decisions against the project budget. The goal was to integrate the additions and renovations to produce a functional and economical design without sacrificing the project objectives. The construction manager participated in the planning process to provide guidance in adhering to the proposed budget and constructability.

SUSTAINABLE DESIGN GOALS

The United States Green Building Council (USGBC) established the LEED program as a tool to evaluate the energy efficiency and environmental impacts of building projects. The LEED building rating system uses six categories in which projects can obtain credits to achieve certification: Sustainable Sites, Water Efficiency, Energy & Atmosphere, Materials & Resources, Indoor Environmental Quality, and Innovation and Design. The four levels of certification are, Platinum, Gold, Silver, and Certified. The number of credits required is dependent on the level of certification that the project is seeking to attain.

After discussions with the design team and the HCPSS, it was determined that Swansfield Elementary School will be pursuing LEED certification at the Certified level. The project will be registered under the LEED for Schools v3 (LEED-S) rating system. A preliminary review identified 44 credits, with 18 additional possible credits. This total allows for a comfortable margin for achieving the targeted certification level for the building with possibility of attaining a Silver certification. Below is a brief description of some of the credits that are being pursued with a full LEED scorecard on the following pages.

Sustainable Sites:

- The project is located within close proximity to public transportation. Dedicated walk and bike paths and bike racks will be provided, as well as preferred parking for low emitting vehicles.

Water Efficiency:

- The project is targeting water savings of 30 percent through the replacement of plumbing fixtures throughout the building with water efficient fixtures.

Energy & Atmosphere:

- The project proposes replacement of existing systems with a HVAC designed for greater energy efficiency.
- The project will pursue fundamental and enhanced commissioning.

Materials & Resources:

- The project will pursue building reuse by maintaining 75 percent of the exterior walls, roof structure, floor structure and interior bearing walls and columns.
- The project will pursue construction waste management by recycling and diverting 75 percent of the construction waste from the landfill.

Indoor Environmental Quality:

- The project will install low-emitting paints, adhesives, sealants, and carpet.

Innovation in Design:

- The project will pursue using the school as a teaching tool to enhance the curriculum through environmental education.

LEED SCORECARD

Y	?	N			
14	5	5	**Sustainable Sites**	Possible Points:	**24**
Y			Prereq 1	Construction Activity Pollution Prevention	
Y			Prereq 2	Environmental Site Assessment	
1			Credit 1	Site Selection	1
	4		Credit 2	Development Density and Community Connectivity	4
		1	Credit 3	Brownfield Redevelopment	1
4			Credit 4.1	Alternative Transportation—Public Transportation Access	4
1			Credit 4.2	Alternative Transportation—Bicycle Storage and Changing Rooms	1
2			Credit 4.3	Alternative Transportation—Low-Emitting and Fuel-Efficient Vehicles	2
2			Credit 4.4	Alternative Transportation—Parking Capacity	2
		1	Credit 5.1	Site Development—Protect or Restore Habitat	1
1			Credit 5.2	Site Development—Maximize Open Space	1
		1	Credit 6.1	Stormwater Design—Quantity Control	1
1			Credit 6.2	Stormwater Design—Quality Control	1
		1	Credit 7.1	Heat Island Effect—Non-roof	1
	1		Credit 7.2	Heat Island Effect—Roof	1
1			Credit 8	Light Pollution Reduction	1
		1	Credit 9	Site Master Plan	1
1			Credit 10	Joint Use of Facilities	1

3	5	3	**Water Efficiency**	Possible Points:	**11**
Y			Prereq 1	Water Use Reduction—20% Reduction	
	4		Credit 1	Water Efficient Landscaping	2 to 4
		2	Credit 2	Innovative Wastewater Technologies	2
3	1		Credit 3	Water Use Reduction	2 to 4
		1	Credit 3	Process Water Use Reduction	1

6	4	23	**Energy and Atmosphere**	Possible Points:	**33**
Y			Prereq 1	Fundamental Commissioning of Building Energy Systems	
Y			Prereq 2	Minimum Energy Performance	
Y			Prereq 3	Fundamental Refrigerant Management	
4	2	13	Credit 1	Optimize Energy Performance	1 to 19
		7	Credit 2	On-Site Renewable Energy	1 to 7
2			Credit 3	Enhanced Commissioning	2
	1		Credit 4	Enhanced Refrigerant Management	1
	1	1	Credit 5	Measurement and Verification	2
		2	Credit 6	Green Power	2

6	1	6	**Materials and Resources**	Possible Points:	**13**
Y			Prereq 1	Storage and Collection of Recyclables	
1		1	Credit 1.1	Building Reuse—Maintain Existing Walls, Floors, and Roof	1 to 2
		1	Credit 1.2	Building Reuse—Maintain 50% of Interior Non-Structural Elements	1
2			Credit 2	Construction Waste Management	1 to 2

Materials and Resources, Continued

Y	?	N			
		2	Credit 3	Materials Reuse	1 to 2
2			Credit 4	Recycled Content	1 to 2
1	1		Credit 5	Regional Materials	1 to 2
		1	Credit 6	Rapidly Renewable Materials	1
		1	Credit 7	Certified Wood	1

8 | 1 | 10 Indoor Environmental Quality — Possible Points: 19

Y			Prereq 1	Minimum Indoor Air Quality Performance	
Y			Prereq 2	Environmental Tobacco Smoke (ETS) Control	
Y			Prereq 3	Minimum Acoustical Performance	
		1	Credit 1	Outdoor Air Delivery Monitoring	1
		1	Credit 2	Increased Ventilation	1
1			Credit 3.1	Construction IAQ Management Plan—During Construction	1
1			Credit 3.2	Construction IAQ Management Plan—Before Occupancy	1
4			Credit 4	Low-Emitting Materials	1 to 4
	1		Credit 5	Indoor Chemical and Pollutant Source Control	1
1			Credit 6.1	Controllability of Systems—Lighting	1
1			Credit 6.2	Controllability of Systems—Thermal Comfort	1
		1	Credit 7.1	Thermal Comfort—Design	1
		1	Credit 7.2	Thermal Comfort—Verification	1
		3	Credit 8.1	Daylight and Views—Daylight	1 to 3
		1	Credit 8.2	Daylight and Views—Views	1
		1	Credit 9	Enhanced Acoustical Performance	1
		1	Credit 10	Mold Prevention	1

4 | 2 | Innovation and Design Process — Possible Points: 6

1			Credit 1.1	Innovation in Design: Green Housekeeping	1
1			Credit 1.2	Innovation in Design: Low Mercury Lighting	1
	1		Credit 1.3	Innovation in Design:	1
	1		Credit 1.4	Innovation in Design:	1
1			Credit 2	LEED Accredited Professional	1
1			Credit 3	The School as a Teaching Tool	1

3 | | 1 Regional Priority Credits — Possible Points: 4

1			Credit 1.1	Regional Priority: SSc4.1	1
		1	Credit 1.2	Regional Priority: SSc5.1	1
1			Credit 1.3	Regional Priority: SSc6.2	1
1			Credit 1.4	Regional Priority: EAc1	1

44 | 18 | 48 Total — Possible Points: 110

Certified 40 to 49 points Silver 50 to 59 points Gold 60 to 79 points Platinum 80 to 110

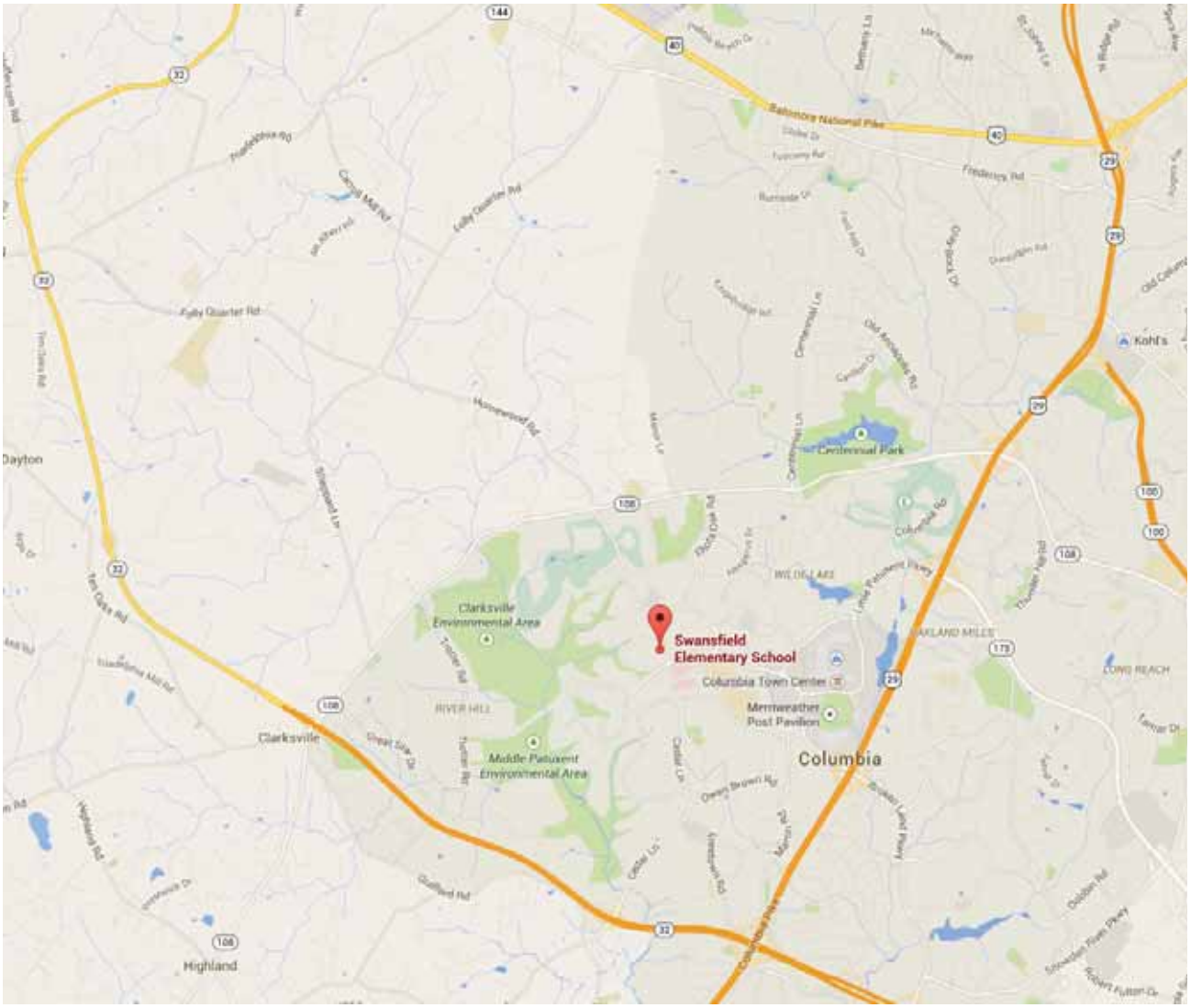
SITE DESIGN NARRATIVE

Swansfield Elementary School is located at 5610 Cedar Lane in Columbia, Maryland. The site is approximately 10 acres. The current site layout allows for the separation of the bus loop and the student drop-off. The bus loop and staff and visitor parking are located on the east side of the building directly adjacent to Cedar Lane. The bus loop accommodates 10 buses making it sufficient for the 7 buses that currently serve the school. There are 52 parking spaces in the bus loop lot and an additional 43 spaces in the adjacent overflow lot. The student drop-off is located on the north side of the building adjacent to Rock Coast Road and has 8 visitor parking spaces.

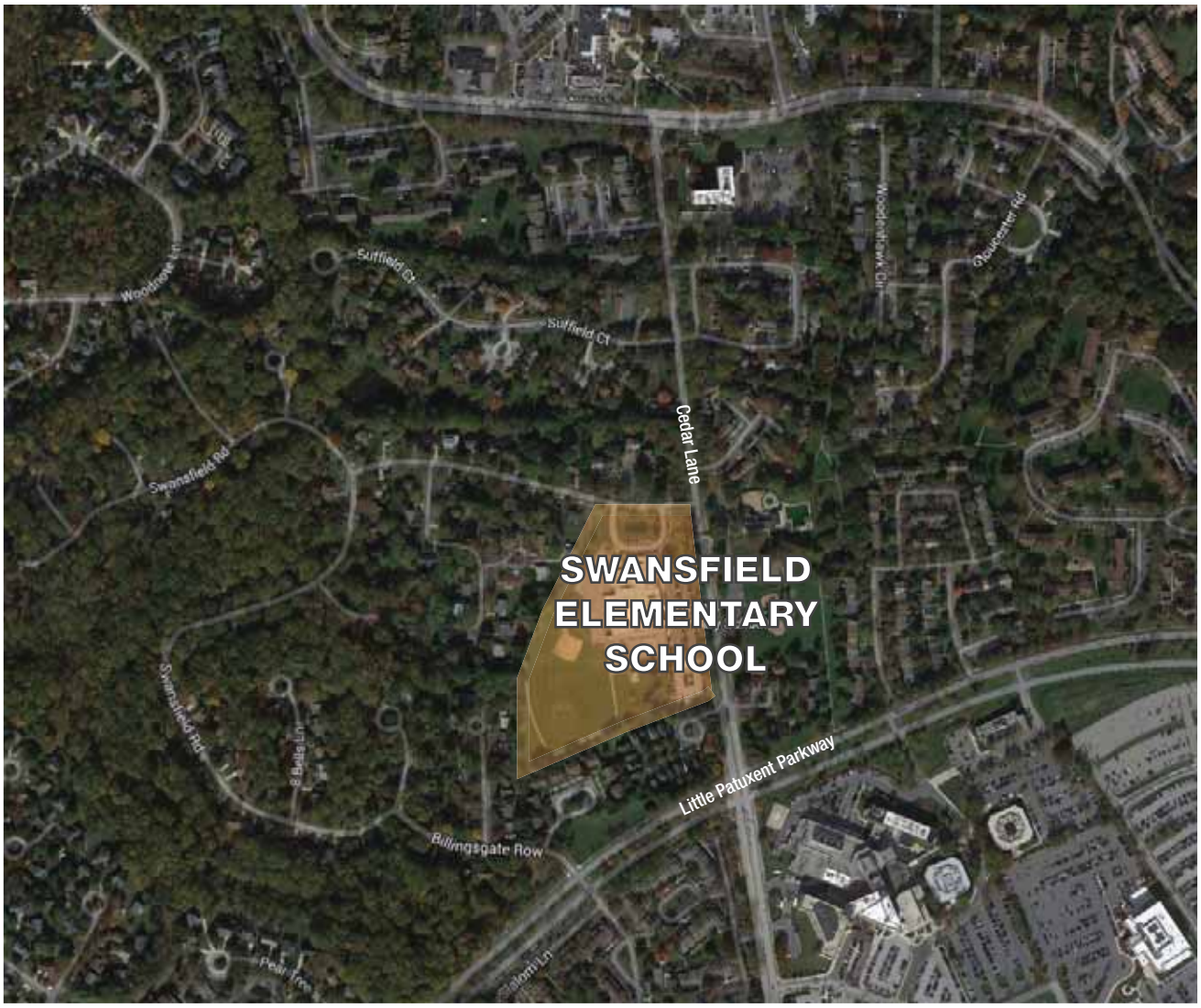
There are currently two playground areas, a large hard play area, a multipurpose field, a baseball field, and a quarter mile long walking path located on the site. There are also designated green initiative trees located on the south side of the site.

Proposed upgrades to the site will include: new paving for the bus loop and associated parking, new curb and gutter at the bus loop, new sidewalks at the student drop-off, relocation of the hard play area, and an additional stormwater management facility.

VICINITY MAP



AERIAL SITE PHOTO



EXISTING SITE PLAN

* The following items are designated with numbers on the site plan on the following page.

1. 1972 original building.
2. 1988 Addition: Two classroom pods, gymnasium, and various academic support spaces.
3. 2008 Addition: Pre-kindergarten and two kindergarten classrooms.
4. Bus loop and parking: 52 parking spaces.
5. Additional overflow parking: 43 parking spaces.
6. Student drop-off: 8 visitor parking spaces.
7. Kindergarten play area.
8. Grades 1-3 play area.
9. Hard play area.
10. Baseball field.
11. Multipurpose field.
12. Walking path.
13. Service area.
14. Generator and transformer enclosure.
15. Exterior storage units.
16. Portable classrooms.


1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
16
16
16
ROCK COAST ROAD
CEDAR LANE

EXISTING FLOOR PLAN

* The following items are designated with numbers on the site plan on the following page.

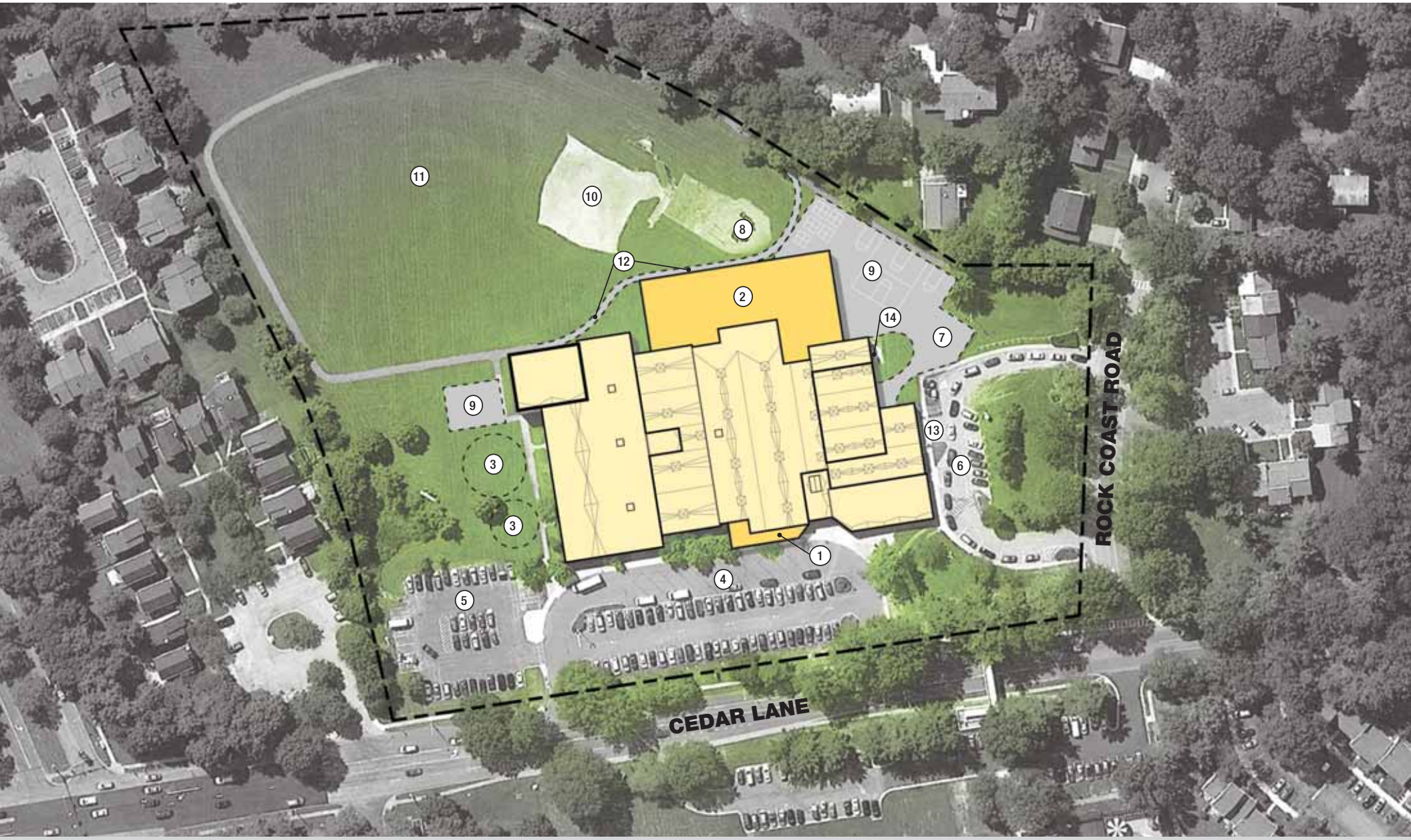
1. Administration: Undersized and not located adjacent to main entrance.
2. Health suite: Undersized and does not meet COMAR.
3. Student restrooms: Do not meet the American with Disabilities Act (ADA) accessibility standards.
4. Art room: Undersized.
5. General music: Undersized.
6. Band & strings: Located in portable.
7. Gifted & talented: Located in portables.
8. Technology lab: Located in portable.
9. Special education office: Only accessible through another classroom.
10. Classrooms: Under 660 square feet and do not qualify as teaching stations.
11. Classroom pods: Do not have enclosed extended learning rooms.
12. Gym storage: Undersized.


ADMINISTRATION
HEALTH / GUIDANCE / PSYCHOLOGY
DINING
ACADEMIC CLASSROOMS
ACADEMIC SUPPORT SPACE / OFFICE
PHYSICAL EDUCATION
MUSIC
ART
GIFTED & TALENTED
TECHNOLOGY LAB
MEDIA CENTER
MECHANICAL / SERVICE
PORTABLE 6
PORTABLE 8
PORTABLE 7
PORTABLE 7
FIFTH GRADE
FOURTH GRADE
THIRD GRADE
FIRST GRADE
SECOND GRADE
KINDERGARTEN
PRE-K
KINDERGARTEN

PROPOSED SITE PLAN

* The following items are designated with numbers on the site plan on the following page.

1. New administration addition.
2. New classroom addition.
3. Potential outdoor classrooms.
4. Existing bus loop and parking: Repaved with new curb and gutter.
5. Existing additional overflow parking.
6. Existing student drop-off: New sidewalk provided at perimeter.
7. Existing kindergarten play area.
8. Existing grades 1-3 play area.
9. New hard play area.
10. Existing baseball field.
11. Existing multipurpose field.
12. Relocated walking path.
13. Existing service area.
14. New generator, transformer and enclosure.


11
10
8
12
9
2
14
7
9
13
6
3
3
1
4
5
ROCK COAST ROAD
CEDAR LANE

PROPOSED FLOOR PLAN

* The following items are designated with numbers on the site plan on the following page.

1. Administration addition.
2. Classroom addition.
3. Building exits: Added to improve circulation flow and egress.
4. Administration: Relocated adjacent to main entrance.
5. Secure vestibule: Added to direct visitors into front office during school hours.
6. Health suite: Relocated adjacent to administration and enlarged to meet COMAR.
7. Student restrooms: Renovated to meet ADA accessibility guidelines.
8. Staff restrooms: Added additional restrooms accessible from corridors and staff lounge.
9. Kindergarten classrooms: Relocated so that all five classrooms are adjacent to each other.
10. Cafeteria expansion: Needed with the additional 100 students.
11. Second art classroom: Needed with the addition 100 students.
12. Band & strings: Relocated from portable.
13. Gifted & talented: Relocated from portables.
14. Technology lab: Relocated from portable.
15. Special education office: Relocated and accessible from corridor.
16. Classroom pods: Renovated to increase classroom size and provide enclosed extended learning rooms.
17. Gym storage: Renovated to increase size.


ADMINISTRATION
HEALTH / GUIDANCE / PSYCHOLOGY
DINING
ACADEMIC CLASSROOMS
ACADEMIC SUPPORT SPACE / OFFICE
PHYSICAL EDUCATION
MUSIC
ART
GIFTED & TALENTED
TECHNOLOGY LAB
MEDIA CENTER
MECHANICAL / SERVICE
THIRD GRADE
SECOND GRADE
FIRST GRADE
FIFTH GRADE
FOURTH GRADE
PRE-K
KINDERGARTEN
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17

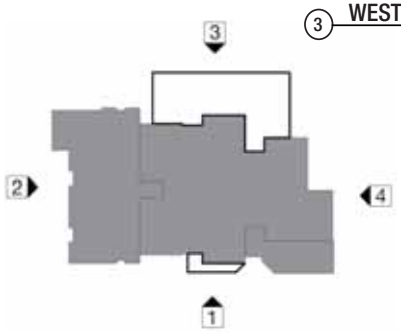
BUILDING ELEVATIONS

The existing Swansfield Elementary School is a one-story brick building. There are small, high windows in the 1972 and 2008 areas of the building, with larger windows in the 1988 addition. The design intent for the new additions is to match the character of the existing building while providing larger windows to bring more daylight into the learning spaces and a view to the bus loop from the administration offices. The exterior windows and doors of the existing building will also be replaced and the finish and mullion patterns around the building will give the building a more consistent language.

1 EAST ELEVATION

2 SOUTH ELEVATION

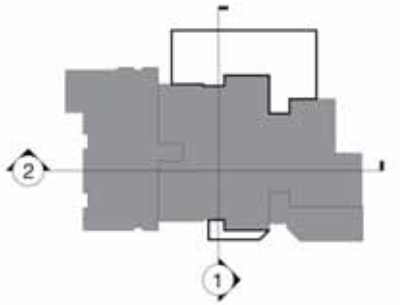
3 WEST ELEVATION



4 NORTH ELEVATION

1 EAST - WEST BUILDING SECTION

2 NORTH - SOUTH BUILDING SECTION



PROPOSED SPACE ANALYSIS

ACTIVITY / PROGRAM		SCHEMATIC DESIGN	
DESCRIPTION		AREAS	TOTAL NET AREA
ADMINISTRATION			**3,076 SF**
	SECRETARIAL/RECEPTION AREA	1	503 SF
	PRINCIPAL'S OFFICE W/CLOSET	1	249 SF
	PRINCIPAL'S PRIVATE LAVATORY	1	63 SF
	ASST. PRINCIPAL'S OFFICE W/CLOSET	1	168 SF
	SECURE TEST PREP OFFICE	1	150 SF
	CONFERENCE ROOM	1	418 SF
	SATELLITE CONFERENCE ROOM	1	253 SF
	PTA STORAGE	1	104 SF
	WORK PREP ROOM WITH STORAGE	1	475 SF
	RECORDS ROOM	1	130 SF
	STAFF LOUNGE W/ 2 UNISEX TOILETS	1	504 SF
	TOILET ROOM	1	59 SF
ALS			**776 SF**
	CLASSROOM	1	528 SF
	TOILET W/ LIFT & CHANGING TABLE	1	89 SF
	STORAGE	1	50 SF
	REFLECTION ROOM	1	109 SF
ALTERNATIVE EDUCATION AREA			**569 SF**
	CLASSROOM	1	409 SF
	OFFICE	1	160 SF
CAFETORIUM/KITCHEN			**5,007 SF**
	STUDENT DINING	1	2,997 SF
	STAGE	1	362 SF
	ADA LIFT	1	78 SF
	CHAIR STORAGE	1	188 SF
	RECYCLE ROOM / STORAGE	1	171 SF
	KITCHEN AND SERVING	1	692 SF
	DISHWASHING AREA	1	208 SF
	DRY STORAGE	1	140 SF
	SOAP STORAGE	1	8 SF
	LOCKER/LAVATORY	1	55 SF
	CUSTODIAL CLOSET	1	21 SF
	CANWASH ROOM	1	27 SF
	COOLER	1	28 SF
	FREEZER	0	- SF
	KITCHEN OFFICE	1	32 SF

ACTIVITY / PROGRAM		SCHEMATIC DESIGN	
DESCRIPTION		AREAS	TOTAL NET AREA
CLASSROOMS PK-5 and ELRs			**27,374 SF**
	PREKINDERGARTEN CLASSROOMS	1	925 SF
	PREKINDERGARTEN LAVATORIES	1	46 SF
	KINDERGARTEN CLASSROOMS	5	4,436 SF
	KINDERGARTEN LAVATORIES	5	225 SF
	GRADES 1-2 CLASSROOMS	10	7,454 SF
	GRADES 3-5 CLASSROOMS	12	9,506 SF
	EXTENDED LEARNING ROOMS/AREAS	5	2,087 SF
	PREKINDERGARTEN STORAGE	1	49 SF
	KINDERGARTEN STORAGE	5	183 SF
	GRADES 1-5 STORAGE	5	813 SF
	COMMONS	5	1,650 SF
COMPUTER ROOM			**742** SF
	COMPUTER ROOM	1	742 SF
CUSTODIAL AREA			**745 SF**
	STORAGE	1	150 SF
	JANITORS CLOSETS	2	193 SF
	OFFICE	1	165 SF
	EXTERIOR STORAGE	1	148 SF
	VENTILATED STORAGE	1	89 SF
ESOL			**351 SF**
	ESOL	1	351 SF
GIFTED & TALENTED AREA			**1,492 SF**
	G/T RESOURCE ROOM	2	1,492 SF
GUIDANCE AREA			**216 SF**
	GUIDANCE OFFICE/COUNSELING	1	216 SF
HEALTH			**733 SF**
	WAITING ROOM	1	115 SF
	TREATMENT/MEDICATION	1	107 SF
	REST AREA	1	157 SF
	OFFICE	1	107 SF
	EXAM ROOM	1	105 SF
	TOILET ROOM W/LIFT & CHANGING TABLE	1	95 SF
	STORAGE	1	47 SF
LIBRARY MEDIA CENTER			**3,827 SF**
	MAIN READING ROOM	1	2,226 SF
	TECHNOLOGY RESOURCE	1	759 SF
	OFFICE/WORK SPACE	1	210 SF
	MEDIA PRODUCTION/VIDEO AREA	1	329 SF
	STORAGE	1	123 SF
	TELECOMMUNICATION/EQUIPMENT (MDF)	1	180 SF

ACTIVITY / PROGRAM		SCHEMATIC DESIGN	
DESCRIPTION		AREAS	TOTAL NET AREA
MATH & READING SUPPORT			**1,963 SF**
	MST/RST OFFICE (2 TEACHERS)	1	232 SF
	READING RESOURCE/SPECIALIST (3 TEACHERS)	1	407 SF
	READING RECOVERY ROOM (FIRST GRADE ONLY)	1	104 SF
	CARSON READING ROOM (GRANT PROGRAM)	1	173 SF
	MATH CLASSROOM	1	742 SF
	MATH STORAGE	1	148 SF
	READING STORAGE	1	157 SF
MUSIC			**2,059 SF**
	BAND & STRINGS MUSIC	1	952 SF
	GENERAL MUSIC	1	805 SF
	STORAGE	2	302 SF
OT/PT AREA			**288 SF**
	THERAPY ROOM	1	288 SF
PARENT LIASON			**129 SF**
	PARENT LIASON OFFICE	1	129 SF
PHYSICAL EDUCATION / GYMNASIUM			**4,172 SF**
	GYMNASIUM	1	3,455 SF
	STORAGE	1	503 SF
	OFFICE W/ TOILET	1	214 SF
PSYCHOLOGICAL SERVICES AREA			**162 SF**
	PSYCHOLOGIST OFFICE	1	162 SF
SPECIAL EDUCATION			**541 SF**
	OFFICE (5 TEACHERS)	1	541 SF
SPEECH/LANGUAGE THERAPY			**166 SF**
	SPEECH THERAPY	1	166 SF
TITLE I			**340 SF**
	OFFICE (3 TEACHERS)	1	340 SF
VISUAL ART AREA			**1,441 SF**
	STUDIO	2	1,050 SF
	KILN	1	104 SF
	STORAGE	1	287 SF
TOTAL PROGRAM AREA (NET)			**56,169 SF**
GROSS AREA FACTOR (WALLS, TOILETS, CIRC., MECH.)			23,609 SF
OVERALL BUILDING AREA (GROSS)			**79,778 SF**

MECHANICAL & PLUMBING NARRATIVE

General

The mechanical systems will include work associated with heating, ventilating, and air conditioning (HVAC), plumbing, gas service, controls, commissioning, and LEED. The mechanical systems, in concert with the architectural, structural, and electrical considerations, are intended to create spaces that are flexible, functional, energy efficient and respond to the needs of this facility. The mechanical design will comply with applicable codes, regulations, standards, and authorities having jurisdiction. Sustainable technologies will be incorporated into the mechanical design to achieve the goal of LEED Certified certification.

Applicable Codes and Standards

- 2012 International Building Code (IBC)
- 2012 International Mechanical Code (IMC)
- 2012 International Energy Conservation Code (IECC)
- 2012 International Fire Code (IFC)
- 2012 National Standard Plumbing Code
- 2012 National Fuel Gas Code
- NFPA 13: Standard for the Installation of Sprinkler Systems, latest edition
- NFPA 90A: Standard for the Installation of Air Conditioning and Ventilating Systems, latest edition
- ASHRAE 2010 through 2013 Handbooks

Design Standards

HVAC system design will be based on the following conditions:

Outdoor Design Temperatures:

- Summer: 95°F (Dry Bulb) / 78°F (Wet Bulb)
- Winter: 0°F DB

Indoor Design Temperatures (per HCPSS “Guidelines for Energy Conservation”):

- Occupied Cooling Setpoint: 76°F DB (+/-2 F) / 50% Relative Humidity (Maximum)
- Occupied Heating Setpoint: 70°F DB (+/-2 F)
- Unoccupied Heating Setpoint: 55°F DB (-2 F)
- Utility Space Heating: 68°F DB (occupied)

Building Occupancy Densities:

- Architectural Furnishing Plans
- Estimated Maximum Occupancy Densities Provided in IMC Chapter 4

Ventilation Rates:

- Minimum Ventilation Rates: IMC Chapter 4 and ASHRAE Standard 62.1- 2007
- Ceiling Supply Air Systems: 1.0 Ez (Zone Air Distribution Effectiveness)

Rooftop Air-Handling Unit Filtration Criteria:

- Pre-filters: 30% efficient
- Final filters: 85% efficient (for compliance with LEED IEQc5)

Life-Cycle Cost Analysis

A 20-year life-cycle cost analysis will be conducted during the design development phase to confirm the final mechanical systems selection for the facility. The following mechanical systems will be considered as part of this analysis:

- Four-pipe rooftop variable-air volume (VAV) rooftop air-handling units with single-duct VAV terminal units. Four-pipe distribution system will be served by gas-fired condensing type boilers and a high efficiency air-cooled chiller.
- Ground-source geothermal air-handling unit system, consisting of rooftop (VAV) air-handling units with single-duct VAV terminal units. Chilled water and heating water for VAV terminal units will be generated through a modular water-to-water heat pump unit.
- Vertical four-pipe fan coil units for space conditioning and rooftop energy recovery units for ventilation. Four-pipe distribution system will be served by gas-fired boilers and a high efficiency air-cooled chiller.
- Individual ground-source geothermal heat pump units for space conditioning and rooftop energy recovery units with water-cooled compressors for ventilation.

The mechanical system described below is expected. All mechanical system components will be designed in strict accordance with all applicable codes, regulations, and the design standards described previously.

HVAC Systems

A majority of the existing mechanical systems supporting Swansfield Elementary School have exceeded their useful service life and are recommended for replacement. Those systems that will remain are described in the paragraphs below. In order to accommodate the scope of this replacement, a “phased-while-occupied” implementation of the new mechanical system components is required. New mechanical systems will be installed and operational while the existing systems are removed, maintaining the operation of the existing facility throughout the duration of construction. New mechanical components will utilize a four-pipe chilled and heating water system, helping to increase the facility’s overall energy efficiency.

A high efficiency air-cooled chiller with approximately 260-tons of cooling capacity will be located on grade adjacent to the building addition and will provide the chilled water for the facilities new four pipe system. Chilled water will be piped from the new chiller to distribution pumps located in the new mechanical room and will then be circulated throughout the building to the new mechanical equipment.

Production of heating water for the facilities new four-pipe system will be accomplished by two 3,000 MBH gas-fired condensing type boilers, located within the new mechanical room. Distribution pumps located in the new mechanical room will circulate heating water throughout the building to the new mechanical equipment.

Chilled water and heating water pumping systems will be provided with redundancy such that the operation of the building can be maintained in the event of a single pump failure. The chilled water system will include three base-mounted pumps (one primary, one secondary, and one stand-by for either primary or secondary operation). The heating water system will include two fully redundant base-mounted pumps. In addition, these pumping systems will be equipped with variable frequency drives for reduced energy consumption during periods of reduced system demand. Along with the distribution pumps, other mechanical infrastructure components, including air separators and expansion tanks will be located within a new mechanical room area.

The existing mechanical system components serving the classroom and administration areas, including packaged direct expansion (DX) rooftop units, ductwork, and air devices will be removed in their entirety. The existing mechanical system components serving the 2008 kindergarten addition will remain as currently installed, with the exception of the existing control system components serving this area. Space conditioning and ventilation for the renovated areas will be provided through a series of VAV rooftop air-handling units, complete with supply and return fans, filter section, dedicated chilled and heating water coils, and economizer section. DX cooling will be provided for the administration area. New supply air ductwork will extend from each rooftop air-handling unit to a series of single-duct VAV terminal units, complete with integral hydronic heating coils. Each classroom, learning space, and office area will have a dedicated terminal unit, providing individual room temperature control and ventilation for the area served. A ducted return air arrangement will be provided, with return air ductwork extending from each space back to the associated rooftop air-handling unit. Return air devices will be mounted near the floor within each classroom space, helping to promote good room thermal comfort.

The existing mechanical system components serving the media center and associated media center support areas will be removed in their entirety. Space conditioning and ventilation for the renovated areas will be provided through a VAV rooftop air-handling unit, complete with dedicated chilled and heating water coils. New supply air ductwork will extend from the air-handling unit to a series of single-duct VAV terminal units, complete with integral hydronic heating coils. Each media center area will have a dedicated terminal unit, with multiple terminal units expected for the main media center area. A ducted return air arrangement will be provided, with return air ductwork extending from each space back to the rooftop air-handling unit. Return air devices will be mounted near the floor within the media center area, helping to promote good thermal comfort and avoid temperature stratification.

A single-zone VAV rooftop air-handling unit will serve the cafeteria and serving line areas. Supply and return air fans will be equipped with variable frequency drives for reducing airflow quantities during periods of reduced cooling demand. A room carbon dioxide sensor will reduce minimum outdoor air quantities during periods of reduced space occupancy.

The existing gas-fired make-up air unit serving the kitchen area was replaced in 2011 and will remain. The exhaust fan serving the kitchen area will be replaced in-kind. Modifications to the existing kitchen rooftop unit, ductwork and piping systems within the kitchen area are currently not anticipated. Localized cooling through the installation of a ductless split type air-conditioning unit will be provided within the kitchen office.

A new heating and ventilating unit will replace the existing unit serving the gymnasium area. Heating for this unit will be accomplished through either a gas-fired burner, or through a hydronic heating coil provided within the unit. A summer ventilation system consisting of multiple exhaust fans and companion outdoor air intakes will provide increased room air-change rates during the summer months.

Exhaust air fans will be replaced throughout the school, including both indoor and roof-mounted fans.

Toilet rooms, storage rooms, and other heating-only areas will utilize hydronic heating terminals. These heating elements will be connected to the building's heating water distribution system.

Automatic Temperature Controls

The existing pneumatic control components and control equipment will be removed throughout the school. A new automatic temperature control system consisting of direct digital control (DDC) components will be provided. New damper and valve components will be provided with electric or electronic actuation. DDC control components will be utilized for all rooftop air-handling units, and VAV terminal unit equipment. DDC control components associated with the 2008 kindergarten addition will be replaced. All control system components will be interfaced with the central Howard County Public School System energy management control system for remote monitoring and energy management routines. All system components will be designed to meet the HCPSS automation standards and naming conventions.

Plumbing Systems

The existing incoming water service serving both the fire protection and domestic water services will be relocated under the scope of this project. All water service components will be in compliance with current plumbing codes.

The existing gas service will be replaced and relocated. The majority of gas piping within the building will be removed as the new four-pipe distribution system is installed. The new gas service will serve the boilers, water heaters, and gymnasium heating and ventilating unit (unless heating water is utilized for this equipment). Gas piping extending from the mechanical room to the gymnasium heating and ventilating unit, as well as other areas of the building, will be at the rooftop level.

The recently replaced gas-fired domestic water heater is in good condition and will remain under the scope of the renovation, unless otherwise desired by the HCPSS. An additional water-heater will be provided for system redundancy. The existing hot water infrastructure components, including associated circulation pumps, expansion tanks, and thermostatic mixing valve will also remain under the scope of the renovation. An additional water heater and circulation pump will be added for redundancy. Existing piping will be modified as needed.

All existing domestic water (cold, hot, and recirculation) piping mains will be replaced with new piping, valves and accessories throughout the building. Branch piping systems will be replaced to accommodate revised architectural floor plan and new plumbing fixture locations.
The existing plumbing fixtures are not ADA compliant and will be replaced throughout the school. All new plumbing fixtures will be institutional grade with a 1.6 gallon per flush valve on floor-mounted water closets and low flow type urinals. Lavatories will be complete with metering type faucets, complete with 0.5 gallon per minute faucet aerators.

Above-grade sanitary and vent piping systems will be replaced throughout as required for accommodating the revised architectural floor plan and associated plumbing fixture locations.
Below-grade sanitary piping systems will be reused to the greatest extent possible.
New storm water piping components, including roof drains, overflow drains, and above-grade storm water piping systems will be provided throughout. Below floor storm water piping systems will be reused to the greatest extent possible.

Fire Protection Systems

The existing building is currently provided with sprinkler coverage throughout. The existing fire service enters the building within an interior closet and serves two sprinkler zones. Each sprinkler zone is currently equipped with a zone valve assembly. Under the scope of the renovation, the incoming fire service will be relocated to accommodate the revised architectural floor plan. The existing sprinkler heads and associated branch sprinkler piping will be removed and replaced, as required to accommodate the revised architectural floor plan, new ceiling systems, and above-ceiling mechanical system components. All work will be specified to conform to standards of the National Fire Protection Association (NFPA) and will include requirements for performance verification through hydraulic calculations.

ELECTRICAL NARRATIVE

General

The electrical systems will include work associated with the power, emergency power, lighting, lighting controls, data/voice, audio/video (instructional technology), intercommunications, sound, master clock and program, security (access control, intrusion detection, video surveillance), and fire alarm systems. The electrical systems, in concert with the architectural and mechanical considerations, are intended to create spaces that are flexible, functional, energy efficient and respond to the needs of this facility. The electrical design will comply with applicable codes, regulations, standards, and authorities having jurisdiction. Sustainable technologies will be incorporated into the design to achieve the goal of LEED Certified certification.

Applicable Codes and Standards

- ADA Standards for Accessible Design, 2010
- ASHRAE Standard 90.1, Energy Standard for Buildings, 2010
- IEEE Standards, Power and Telecommunications
- IESNA Lighting Handbook, 10th Edition
- International Building Code (IBC), 2012 Edition
- International Energy Conservation Code (IECC), 2012 Edition
- Life Safety Code, NFPA 101, 2012 Edition
- Maryland Occupational Safety and Health Act (MOSH Act)
- National Electrical Code (NEC) with local amendments, NFPA 70, 2011
- National Electrical Manufacturers Association (NEMA), standards
- National Fire Alarm and Signaling Code, NFPA 72, latest edition

Electrical Service

The existing 120/208V electrical service for the building will be replaced with a new 277/480V electrical service. There will be an outdoor BGE pad-mounted utility transformer located in the service yard near to the new main electrical room of the school. (The front of the utility transformer will be within 20 feet from the service driveway.) A secondary service concrete-encased ductbank (with minimum 8 ducts) will be run from the utility transformer to the CT section of the main switchboard in the new main electrical room.

Power Distribution

The existing power distribution system (120/208-volt electrical equipment, devices, and branch circuit wiring) for the building will be replaced in its entirety.
The new main electrical room will be installed in the addition, consisting of a 2000A 277/480-volt, 3-phase, 4-wire main switchboard, distribution panelboards, dry-type step-down transformers, lighting panelboard, branch circuit panelboards, and generator-connected equipment. Generator-connected equipment will consist of automatic transfer switches, dry-type transformers, and branch circuit panelboards.

If construction phasing requires maintaining the existing electrical service during construction, the new main distribution switchboard will back-feed the existing 120/208-volt electrical service equipment via temporary step-down transformer. The existing BGE electrical service will need to be maintained until electrical equipment in the new main electrical room is energized and feeders are run to back-feed the existing electrical service equipment. The addition concept for the proposed building addition will not interfere with the existing electrical service. Therefore, the existing electrical service can be maintained while the proposed building addition is being constructed.

Panelboards will be rated at 277/480 volts and 120/208 volts. There will be dedicated panelboards for lighting, mechanical loads, general receptacle loads, and "clean power" computer receptacle loads. Panelboards will have a copper bus structure. Panelboards will be sized with approximately 25 percent spare capacity and 25 percent spare breaker space. Computer panels will have a 200 percent rated neutral bus to account for harmonic distortion. A three-phase surge protective device (SPD) will be connected to (and mounted adjacent to) each respective computer panel.

The typical dry-type transformer will have a 480-volt delta primary and 208/120-volt, 3-phase, 4-wire, wye secondary. Transformers serving general receptacle panelboards will be general-purpose, energy-efficient type, complying with NEMA TP-1. Transformers serving computer panelboards will be UL K-13 type.

Lighting will be connected at 277 volts, single-phase. Mechanical equipment will be connected at either 120 volts, single-phase; 208 volts, single-phase; 208 volts, 3-phase; 277 volts, single-phase; or 480 volts, 3 phase, depending upon the load requirements. Motors one horsepower or higher will be connected at 480 volts, 3-phase. General receptacles will be connected at 120 volts, single phase. Each feeder and branch circuit will have a separate copper grounding conductor in the same raceway.

Receptacle branch circuits will utilize number 12 wiring when the run is 50 feet or less, number 10 wiring when the run is between 50 and 100 linear feet, and number 8 wiring when the run is more than 100 linear feet in length. Power wiring will be installed in raceway/conduit. Type MC cable will be limited to a maximum 6-foot length to serve luminaires (lighting fixtures).

Emergency Public Shelter Requirement

The Maryland Emergency Management Agency (MEMA) may designate Swansfield Elementary School as an emergency public shelter. The facility and project will be reviewed with MEMA to determine the need and requirements for Swansfield Elementary School to function as an emergency public shelter. If the school is designated by MEMA and the HCPSS as an emergency shelter, individual spaces for shelter and requirements will be defined.

Electrical equipment for the MEMA emergency public shelter will include an outdoor 1200A generator docking station or quick-connect generator switchboard. The new main electrical room will have a 1200A non-fused disconnect switch, a 1200A manual transfer switch, a 1200A 277/480V distribution panelboard, step-down transformer, and 120/208V distribution panelboard. This electrical equipment will be used to connect to electrical loads serving the

gymnasium, cafeteria, kitchen, as well as mechanical loads required to support these spaces. These spaces will be designated by MEMA to be used as an emergency public shelter with the electrical loads connected to a temporary portable generator.

Emergency Power Distribution

The existing outdoor 20-kW generator will be replaced with a new outdoor natural-gas generator in a weatherproof enclosure to be located in the service yard near the new main electrical room of the school. The generator will be rated at 277/480 volts, 3-phase, 4-wire. The generator will be sized at 125 kW and be connected to two automatic transfer switches (ATS) located in the main electrical room.

ATS #1 will be the "life safety" ATS and will serve emergency panelboards. Emergency panelboards will provide power to emergency egress lighting in corridors and classrooms, and exit signs. ATS number 2 will be the "standby" ATS and will serve the automatic temperature controls/energy management control system panels, kitchen refrigerator and freezer, data/voice communications equipment, intercom equipment, security equipment, fire alarm equipment, heat trace, sump pumps, and other equipment and devices as determined by the HCPSS. The "standby" ATS will also serve selected receptacles in the principal's office, main office, health suite, corridors, gym, cafeteria, and kitchen.

Lighting and Lighting Controls

The existing lighting and associated lighting controls do not comply with the requirement of ASHRAE Standard 90.1-2010 and are not suitable for LEED certification. Therefore, lighting and lighting controls will be replaced in their entirety.

Building lighting will generally consist of recessed 2' x 4' troffer-type lensed luminaires (lighting fixtures). These luminaires will utilize either 4100K fluorescent lamps with electronic ballasts or LED light sources with electronic LED drivers. Building lighting will also include high-bay LED luminaires in the gymnasium, recessed LED downlights in selected areas, industrial-type luminaires for support spaces with open ceilings, LED exit signs with red lettering, exterior perimeter building mounted full-cutoff LED luminaires, and exterior pole mounted full-cutoff LED luminaires at parking lots (with finish selected by the Architect). Luminaires in the cafeteria and media center will be determined during the design development phase of this project.

The lighting design will comply with ASHRAE/IESNA Standard 90.1 2010, which states that the lighting power density (LPD) will not exceed 0.89 watts per square foot for the entire school. The selection of lighting fixtures for the building will be compliant with the energy standard.

Lighting levels will be designed in accordance with the recommendations of the Illuminating Engineering Society of North America (IESNA). Maintained illumination values will be calculated using a total maintenance factor of 80 percent. Classrooms will have an average between 30 and 50 foot-candles at the task plane.

Switching of luminaires will be both multi-level and zoned as appropriate for the room's use. Occupancy sensors will be used for interior lighting and a lighting relay/switching panel will be used for exterior lighting.

Lighting controls in each classroom will include a dedicated lighting room controller (to be located in the ceiling space above the entrance door), two low-voltage lighting control stations, and ceiling occupancy sensor(s). The lighting control station at the entrance door will be two-button for OFF and 50 percent lighting level. The lighting control station at the teacher's desk will be multi-button for OFF, 50 percent lighting level, 100 percent lighting level, audio/video (AV) modes, and raise/lower lighting level capability. One luminaire in each classroom will also be connected to an emergency lighting circuit (via transfer relay) and will be automatically switched ON during a power outage.

Existing wall box dimmers for stage lighting will be replaced with a lighting control system using low-voltage lighting control stations connected to a dimming panel. Automatic daylight controls (photocontrol with dimming ballasts) for daylight harvesting will be utilized only where required per ASHRAE Standard 90.1-2010, Section 9.4.1.4. Daylight harvesting will be required in rooms where the total square foot area of vertical glazing (or primary sidelighted area) in a particular room or enclosed space equals or exceeds 250 square feet. Also, daylight harvesting will be required in rooms over 900 square feet where skylights are used. Automatic daylight controls (photocontrol with dimming ballasts) for daylight harvesting where not required by ASHRAE Standard 90.1-2010, Section 9.4.1.4, will not be considered.

Data/Voice Systems

The existing data cabling infrastructure will be replaced with a new data cabling infrastructure to include equipment data racks, active data hardware, uninterruptable power supply (UPS) for each rack, wireless access points, fiber optic backbone cables, data patch panels, 1-foot data patch cords, Category 6 blue data cables, Category 6 VoIP (voice-over internet protocol) data cables, jacks, outlet boxes, conduits and raceways, and conduit sleeves through walls and floors for the installation of data cabling. Analog voice cables will also be provided for the fire alarm system.

Audio/Video (Instructional Technology) Systems

The existing media retrieval system and associated coaxial video cabling will be removed. New coaxial video cabling will not be installed.

The general classroom design will include a DVD/Blu-ray player, audio mixer/amplifier, audio override relays, and teacher wardrobe outlet housed in the teacher's wardrobe. The general classroom will also have a wall-mounted LCD short-throw projector, ceiling-mounted wireless microphone and media interface, ceiling speakers, high projector outlet, low projector outlet, and associated cabling. The audio mixer/amplifier, wireless microphone and media interface, and ceiling speakers are for classroom sound enhancement. Outlet jack configurations and connections will be in accordance with the latest HCPSS standards.

Intercommunications, Sound, Master Clock and Program Systems

The existing Rauland Telecenter 21 intercom equipment rack/cabinet in the main office will be replaced with a new central intercom equipment rack/cabinet to be located in the new main telecom (MDF) room. The intercom system will interface with the Owner's telephone system. Classrooms, instructional spaces, corridors, and large toilet rooms will have ceiling-mounted speakers. Offices and support spaces will have ceiling mounted speakers and wall-mounted volume control switches. The existing cafeteria local sound system will remain, but a CD/MP3 player and new performance ceiling speakers will be added. The gymnasium local sound system will be upgraded to include a CD/MP3 player.

Access Control System

The existing door access control panel by AMAG will be replaced in its entirety with a new AMAG control panel to be located in the new main telecom (MDF) room. New proximity card readers will be provided at locations determined by the HCPSS.

Intrusion Detection and Alarm System

The existing intrusion detection system by Ademco will be replaced in its entirety with a new Bosch intrusion detection system. The Bosch control panel should be located in the new main telecom (MDF) room. Keypads and wall-mounted motion detectors will be provided at locations determined by the HCPSS.

Video Surveillance System

The existing video surveillance system network video recorder (NVR) by TruVision (UTC/interlogix) DVR 60 with 4 terabytes of storage will be relocated to the new main telecom (MDF) room. Interior IP-based dome-type cameras with motorized varifocal lenses and exterior IP-based bullet-type cameras with motorized varifocal lenses will be provided at locations determined by the HCPSS.

Fire Detection and Alarm System

The existing fire alarm control panel (FACP) by Pyrotronics, System 3, will be replaced in its entirety with a new fire alarm control panel with voice evacuation to be located in the new main telecom (MDF) room. Existing fire alarm devices, including duct-type smoke detectors, will be removed and replaced with new fire alarm devices. Initiation devices and notification devices will be located to meet code requirements. The fire alarm system will be designed to comply with State of Maryland Fire Code, local authorities having jurisdiction, International Building Code, and NFPA.

ENERGY STATEMENT

Energy conservation is an important goal for the design and renovation of Swansfield Elementary School. Many energy saving techniques are incorporated into the building to achieve maximum energy efficiency, including the following:

- Mechanical systems will exceed the energy efficiency requirements mandated by the 2012 International Energy Conservation Code and ASHRAE Standard 90.1-2010.
- Mechanical systems (pumps and fans) will include variable frequency drives to allow systems to operate at lower capacities when building loads are reduced. Premium efficiency motors will be specified for all fans and pumps and all non-variable frequency drive motors over 10 HP will be power-factor corrected to 90 percent minimum.
- Rooftop air-handling unit systems will incorporate dry-bulb economizer control allowing the use of "free cooling" when outdoor air temperature and humidity conditions permit. Systems will include MERV 13 filtration to improve indoor air quality.
- Mechanical systems will be designed to maximize indoor air quality by effectively mixing and delivering fresh air to building occupants. Rooftop unit systems will include airflow monitoring stations on outdoor air connections to assure the delivery of outdoor air.
- High-occupancy areas will include carbon dioxide monitoring to reset the quantity of outdoor air required during periods of reduced occupancy.
- Environmentally friendly refrigerants will be specified for mechanical equipment to meet ozone depletion and global warming thresholds.
- Mechanical systems will be designed to allow occupants to control temperature within their zone and will meet the requirements of ASHRAE Standard 55.
- The HVAC system will be controlled by the latest generation of computerized energy management equipment.
- The HVAC system will be divided into multiple zones of operation for efficient year-round and after-hours use.
- Specifications will exclude materials that lead to poor indoor air quality.
- Low-flow plumbing fixtures will be specified to reduce overall building water usage. Specific strategies will include 2-position flush valves for water closets, low flow type urinals, low-flow aerators and low-flow shower heads.
- Occupancy sensors to automatically turn OFF lighting in spaces that are unoccupied.
- Daylight harvesting and lighting controls zoned by lighting fixture layout in rooms (that require automatic daylight controls per ASHRAE Standard 90.1-2010, Section 9.4.1.4) to minimize energy consumption.
- Energy saving lamps and ballasts (or LED light sources and LED drivers) specified in every luminaire (lighting fixture).

CONSTRUCTION COST ESTIMATE

	SCHEMATIC DESIGN PHASE
Phasing & Temporary Facilities:	$2,197,602
Site Work:	$752,630
Additions:	$3,910,782
Renovations:	$11,413,406
TOTAL:	$18,274,420

1. Construction cost estimate was prepared by the construction manager, J. Vinton Schafer & Sons, Inc., and assumes bids will be received in February 2016.
2. Estimate assumes a schematic design phase contingency of 10%.
3. Estimate accounts for wage rates.
4. The following additional options are being considered for this project and will be investigated further:
    - General music classroom
    - Physical education activity room
5. Estimate does not include a project contingency.